

IISD's State of Sustainability
Initiatives Review

Standards and Investments in Sustainable Agriculture

April 2022

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THEMATIC REVIEW

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IISD's State of Sustainability Initiatives Review: Standards and Investments in Sustainable Agriculture

April 2022

Written by Vivek Voora, Cristina Larrea, Gabriel Huppé, and Francesca Nugnes

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Foreword

The latest report of the Intergovernmental Panel on Climate Change (2022) is clear: limiting global warming to around 1.5°C requires greenhouse gas (GHG) emissions to peak by 2025 at the latest and drop by 43% by 2030. This is just around the corner, and efficient actions are needed to make this happen.

Contributing to almost 20% of global GHG emissions (Climate Watch, n.d.) and the main driver of close to 90% of global deforestation (Food and Agriculture Organization of the United Nations, 2021b), the agriculture sector has significant potential for reducing emissions and removing and storing carbon through the implementation of sustainable agricultural practices, including reduced conversion of forests, ecosystem restoration and reforestation, and soil conservation. These practices can all significantly contribute to mitigating climate change.

For that to happen, a large number of investments are needed to support millions of smallholder farmers in developing countries in the implementation of sustainable agriculture practices. These farmers rely on the agriculture sector for their livelihoods and contribute considerably to global food security, making their role critical for all. Evidence suggests that there is still a huge investment gap in financing smallholder farmers and small agribusiness, and that closing it is essential to supporting them moving toward sustainability.

Financial service providers (FSPs) around the world are increasingly committed to sustainable investing and are allocating their assets to initiatives that can mitigate climate change or build community livelihoods. Despite the growth of sustainable investing in the agriculture sector, we are still in the early stages in comparison to other sectors that attract more capital (i.e., renewable energy, clean technology). FSPs are wary of investing more in supporting the transition to sustainable agriculture in developing countries for several reasons, including a perception that agricultural operations carry high risks among FSPs; limited knowledge about risks derived from social and environmental issues and how these can be mitigated; and a lack of agribusiness “readiness” to receive financing.

In this report, we shed light on these issues to support FSPs in driving investments toward sustainable agriculture. *IISD's State of Sustainability Initiatives Review: Standards and Investments in Sustainable Agriculture* examines how voluntary sustainability standards (VSSs) operating in the agriculture sector can reduce financial risks while contributing to development outcomes to catalyze investments in sustainable agriculture initiatives.

The report unpacks economic, environmental, and social issues affecting a number of commodity sectors that can constitute financial risks for investments in agriculture. It explains how VSSs can reduce these risks, as well as what issues need further improvement. It also illustrates investment opportunities in VSS-compliant agricultural operations. Finally, it offers case studies of FSPs that have financed smallholder farmers in developing countries by leveraging VSSs. Based on this

analysis, we provide several recommendations to FSPs, VSSs, and governments to best leverage VSSs to catalyze investments in sustainable agriculture.

My hope is that, with this report, we convey the urgency of increasing investments in sustainable agriculture and support millions of farmers that need financing to make the transition to sustainability with concrete pathways for different actors.

Cristina Larrea

Lead, Sustainability Standards, International Institute for Sustainable Development

Executive Summary

The world is changing rapidly, and the agricultural sector will need to shift toward more sustainable forms of production to remain viable over the long term. Enabling this shift is crucial for a sector that underpins human well-being by remaining the main source of global food security. The financial sector has an essential role in transitioning the agricultural sector to sustainability—as farmers and agribusiness require financing to make the transition happen—while voluntary sustainability standards (VSSs) can act as catalysts for investors to make lower-risk investments with sustainable development potential. Fortunately, the financial sector is moving toward sustainable investments as a new normal, coinciding with a USD 260 billion investment deficit in agriculture to meet the targets for Sustainable Development Goal 2 (zero hunger) in developing countries—a deficit that has widened due to the COVID-19 pandemic.

This report shows how VSSs can be useful tools for financial service providers (FSPs)¹ to lower their financial risks and enable sustainable development outcomes when investing in the agricultural sector.² They do so primarily by requiring VSS-compliant farmers to adopt more sustainable farming practices, monitoring compliance with the standard, and evaluating the sustainability impacts associated with implementing their standard.³ These measures allow VSS-compliant farmers to distinguish themselves in the marketplace by offering consumers more sustainable agricultural products with fewer embedded environmental and social risks, which can result in higher farm gate prices and premiums as well as direct sales contracts with buyers.⁴

Our analysis shows that VSS-compliant farming can result in operational improvements that have the potential to improve agribusiness profitability. VSSs also require the adoption of sound farming business and management practices, such as record-keeping and compliance with relevant regulations, and more sustainable farming practices. According to our analysis, they often provide the impetus for farmers to form associations, cooperatives, or small to medium-sized agribusinesses; improve negotiating power; and facilitate market access—all of which has the potential to lift farmers out of poverty. Support in the form of training, technology transfer, and even access to finance often accompanies the process of becoming VSS compliant.⁵ These measures can all reduce financially material business risks while generating sustainability impacts, making VSS-compliant farming operations more attractive investment propositions, as they can

¹ This document uses the acronym FSP to refer to public and private finance service providers unless otherwise specified.

² Investors can leverage VSSs to reduce financial risks, including credit/investment, regulatory, reputational, and legal risks.

³ Some VSSs, including Bonsucro, have adopted performance criteria, such as water consumption and greenhouse gas emissions per unit of product, to assess the impacts associated with the adoption of their standard.

⁴ For instance, the Fairtrade standard offers farmers minimum price guarantees that give them better financial certainties to plan their upcoming planting seasons.

⁵ The Roundtable for Sustainable Palm Oil (RSPO) set up a MYR 11.5 million fund in 2014 for smallholder palm oil farmers to access the financial resources they need to become RSPO-certified.

help to comply with investment due diligence requirements and reduce the turn-around time for credit appraisals.

Nevertheless, the agricultural sector remains relatively risky for investors, especially in developing countries, where a lack of infrastructure and capacity is most acute. Blended finance models provide opportunities to share risks more evenly by leveraging public and private financing to achieve investment and sustainable development objectives. To establish these blended finance initiatives, VSSs can facilitate collaboration between stakeholders, such as technical service providers, development organizations, and FSPs. These types of innovative investment models will be increasingly necessary to rapidly shift the agricultural sector toward sustainability.

This report finds that FSPs can leverage VSSs in their investment due diligence and decision-making processes in different ways. VSSs can provide valuable information to structure financial products to meet farming cash-flow needs at specific times during crop production and commercial cycles. They can provide greater potential for return on investment by facilitating market access and buyer relationships for farmers that can serve as guarantees for investors. They can also help FSPs meet their due diligence requirements by ensuring that potential investees incorporate social and environmental considerations in their agribusinesses, which can mitigate financial risks (i.e., prohibition of agrochemical use, deforestation, and forced labour).

Regularly monitored and audited standard-compliant farming operations can offer FSPs lower-risk investment opportunities with sustainable development potential, which can support their ability to meet their corporate objectives. FSPs can also use VSS compliance and sustainability impact evidence to disclose non-financial information, which can make them more competitive. Lastly, FSPs that invest in more sustainable agricultural operations, such as VSS-compliant ones, may be better positioned to attract capital from shareholders who want their financial resources to address sustainable development issues such as climate change mitigation, biodiversity conservation, or human rights protection.

Benchmarking the production criteria of 12 widely and internationally implemented VSSs against sustainable finance aspects revealed that there are clear opportunities to better design VSSs for farmers to become more attractive to prospective investors and access financing. As it stands, VSS-compliant farming operations may not always fulfill FSP investment due diligence and decision-making requirements to receive financial support. However, the fact that VSS-compliant farms use regularly monitored farming and business practices should give FSPs more clarity and comfort when making investment decisions.

VSSs had fewer requirements on the economic dimensions than on environmental and social dimensions, even though FSPs view economic and business considerations as fundamentally important when they assess financial requests from agricultural producers. This suggests that requiring farmers to adopt sound business and management practices could make it easier for them to access financing. Although the environmental dimension had better coverage, environmental challenges such as climate change may prompt VSSs to develop tougher environmental production criteria. For instance, requiring farmers to adopt measures that support

climate mitigation and adaptation is very important, given the universal threat that climate change poses to the agricultural sector.

VSS-compliant farming operations can improve workplace conditions and foster better community relations, which can result in well-compensated, healthy, and safe workers and supportive communities, which can, in turn, mitigate potential reputational risks. Nevertheless, VSSs have fewer criteria on gender equality, community development, and Indigenous Peoples—specifically concerning International Labour Organization Convention 169, known as C169—which could limit their usefulness for FSPs looking to invest in agricultural initiatives that are aligned with these goals.

This report makes recommendations for standard-setting bodies, FSPs, and governments to leverage VSSs to attract much-needed investment in sustainable agriculture. These recommendations, which are briefly described below and presented in full detail in Chapter 4, aim to help VSS-compliant farmers access financing and facilitate investments in VSS-compliant agricultural operations. This is particularly important, as agricultural production will need to increase sustainably to ensure global food security, and sustainable investing is becoming the new normal in the financial sector.

Recommendations for VSSs

1. **Develop VSS requirements that help farmers access finance:** VSS production criteria that farmers must satisfy to become and remain compliant could be better aligned with FSP requirements for farmers to access finance. This can include keeping records on the farming business that provide a history of agricultural production costs and revenues (see Appendix C for related VSS production criteria).
2. **Assess VSS-compliant farming operation sustainability impacts:** Establishing a robust evidence base resting on independently conducted VSS sustainability impact studies in agriculture across geographies and sectors will be invaluable to attract investments needed to facilitate a shift toward more sustainable forms of agriculture. Some VSSs are also shifting from practice-based to performance-based requirements for specific sustainability outcomes to become and remain VSS compliant, which can support documenting their impact.
3. **Ensure full product traceability and transparency:** Leverage technological developments to establish real-time farm-monitoring systems that can provide full product traceability and transparency related to its sustainability. These systems should be designed to support farming decision making and operational course corrections for sustainable outcomes.
4. **Support business diversification in VSS-compliant operations:** Diversify revenue-generating activities of farming operations to improve farming resilience to unforeseen disturbances, shocks, and stresses. This is becoming increasingly important in the context of climate change.

5. **Improve farmer financial knowledge and decision making:** Provide guidance documents, training, and extension services for farmers to access financing and avoid being exploited by formal and informal FSPs. These capacity-building efforts can be extended to include insurance products (i.e., crop insurance, default loan insurance), which can help farmers deal with unexpected events.

Recommendations for FSPs

1. **Develop preferential investment and loan programs:** These preferential investment and loan programs could be tailored to farmers with different resources and capacities who are looking to adopt standard-compliant practices. This could include flexible loan requirements, payment schemes, below-market interest rates and fees, capacity-building activities, and grace periods.
2. **Train investment teams on sustainability risks:** Leverage VSS sustainability compliance and impact information to educate and train investment officers on the social and environmental risks associated with agricultural investments. Translating the risk-reduction benefits of more sustainable farming practices into financial terms could help convey their importance.
3. **Establish VSS-focused investment products:** Work with VSSs to develop investment products for VSS-compliant operations, such as certification bonds. FSPs can also work with VSSs to identify agribusinesses in different commodity sectors and geographies to establish a diverse portfolio of potential investees and investment products.
4. **Leverage VSSs to achieve development objectives:** FSPs can leverage VSSs to address social and environmental challenges. Development impact investors can support the expansion of VSSs in areas that can benefit most from their implementation and offer greater opportunities for them to have sustainability impacts, such as in least-developed countries.
5. **Establish loan programs for farmers aiming to become VSS compliant:** FSPs could develop specific financial support programs for farmers to become VSS compliant. These loan programs can be seen as a business investment to expand their customer base.

Recommendations for Governments

1. **Help farmers secure property rights:** Establishing clear land tenure systems, especially for women, can encourage farmers to adopt more sustainable agricultural practices. Land tenure is fundamental to accessing financing and attracting investments.
2. **Promote the creation of farming organizations:** Governments in producing countries can help farmers organize into formal groups or associations and support their transition to VSS-compliant production by offering extension services aligned with VSS and FSP requirements, reaching last-mile farmers by leveraging VSS networks.

3. Create favourable investment conditions in VSS-compliant production:

Governments in producing countries can attract investments in agriculture by improving the infrastructure that supports agricultural production, supporting commercial readiness and value-addition programs for farms, and providing incentives to transition to VSS-compliant production (i.e., payments for ecosystem services, extension services, and subsidizing part of the compliance costs).

4. Promote business relationships to catalyze investments: Governments can set up business relationship platforms to enable joint contracts among VSS-compliant farmers, investors, and buyers. These platforms can be leveraged to support blended finance models⁶ to invest in transitioning higher-risk farmers toward more sustainable agricultural production systems.

5. Provide guarantees and insurance programs for VSS-compliant farmers:

Governments can offer guarantees to VSS-compliant farmers to cover part of their loan default risk and provide weather-based insurance to protect farming operations against changing weather patterns.

6. Support and encourage FSPs to increase lending to VSS-compliant farmers:

Central banks could encourage FSPs to invest in VSS-compliant operations by offering them lower taxation, regulatory capital reserves, or collateral requirements. Government could also provide concessionary loans to FSPs for on-lending to VSS-compliant businesses.

⁶ “Blended finance is the use of catalytic capital from public or philanthropic sources to increase private sector investment in sustainable development” (Convergence, 2021).

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Abbreviations and Acronyms

4C	Common Code for the Coffee Community
BCI	Better Cotton Initiative
CBI	Centre for the Promotion of Imports from developing countries
CI	Conservation International
CmiA	Cotton made in Africa
EBA	Enabling Business for Agriculture
ESG	economic, social, and governmental
EU	European Union
FAF	Fairtrade Access Fund
FAO	Food and Agricultural Organization of the United Nations
FHL	Fairtrade Standard for Hired Labour
FPIC	Free, Prior, and Informed Consent
FSP	financial service providers
FSPO	Fairtrade Standard for Small-scale Producer Organization
GHG	greenhouse gas
GIIN	Global Impact Investing Network
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GM	genetically modified
GRASP	GLOBALG.A.P. Risk Assessment on Social Practice
HDI	Human Development Index
ICO	International Coffee Organization
IFC	International Finance Corporation
IISD	International Institute for Sustainable Development
ILO	International Labour Organization
IPM	integrated pest management
LDC	least-developed country

LIFT	Leveraging in Farmers Technology
NDPE	No Deforestation, No Peat, No Exploitation
Mt	million tonnes
PTF	ProTerra Foundation
RSPO	Roundtable on Sustainable Palm Oil
RTRS	Roundtable for Responsible Soy
SDG	Sustainable Development Goal
SME	small and medium-sized enterprise
TEEB	The Economics of Ecosystems and Biodiversity
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
VSS	voluntary sustainability standard
WWF	World Wildlife Fund

1.0 Increasing Investments in Sustainable Agriculture



The agricultural sector remains an important source of livelihoods and economic development in most parts of the world. More than 60% of all people depended on agriculture in one form or another for their livelihoods in 2013 (World Bank, n.d.). Furthermore, 65% of poor working adults relied on agriculture to make a living in 2016 (World Bank, 2020a). The World Bank (2020b) considers the agricultural sector to be one of the best ways to lift people out of poverty, as its growth is two to four times more effective than other sectors in increasing incomes among the poorest. In addition to providing livelihoods, the sector is an important driver of economic growth, and its raw and value-added products represented one third of global GDP in 2014 (World Bank, 2020a).

The agricultural sector is particularly important for least-developed countries (LDCs) as it plays a key role in employment, agricultural output, and export earnings. Agriculture accounts for 40%–80% of total employment in most of these countries and is responsible for 24% of value addition generated across LDCs (United Nations Conference on Trade and Development [UNCTAD], 2015). In addition, the share of LDC agricultural exports remains high despite a declining trend in the last two decades, particularly for food and agricultural exports (UNCTAD, 2015). The sector also provides an important sustainable

development pathway for many countries and is clearly linked to achieving several of the 17 United Nations Sustainable Development Goals (SDGs) (Sustainable Development Goals, n.d.).⁷ Furthermore, the agricultural sector is key to meeting the food security of a burgeoning global population projected to reach 9.7 billion by 2050 (World Bank, 2020a). The Food and Agriculture Organization of the United Nations (FAO) estimates that this will require doubling grain production (Deutsche Bank, n.d.; FAOSTAT, 2017).

Despite its role as an engine for sustainable development, UNCTAD warns that relying on agricultural commodities can undermine long-term development largely because of the vagaries of international markets. This challenge can be addressed via countercyclical policies such as monetary and fiscal strategies or programs and economic diversification (UNCTAD, 2019).^{8,9} UNCTAD identified 37 countries (mostly developing and low income) as dependent on agricultural commodities based on the value of their merchandizable exports from 2013 to 2017. These findings highlight the importance of diversifying the agricultural sector and promoting agricultural commodity value addition in producing countries.

Moreover, the agricultural sector continues to have devastating effects on natural environments. Today, 38% of land and 70%

⁷ The agricultural sector is most likely to have a direct impact on SDG 1 (no poverty), SDG 2 (zero hunger), SDG 6 (clean water and sanitation), SDG 8 (decent work and economic growth), SDG 12 (responsible consumption and production), SDG 13 (climate action), and SDG 15 (life on land) (Sustainable Development Goals, n.d.).

⁸ “A country is commodity-dependent if commodities account for more than 60% of its total merchandise exports (in value terms)” (UNCTAD, 2019, p. 2).

⁹ Countercyclical policies such as revenue stabilization funds can prevent the negative impacts of agricultural commodity price fluctuations on economic development (UNCTAD & FAO, 2017).

of freshwater consumption are appropriated for agriculture (FAO, n.d.-a, 2016). This trend is likely to continue as the growing population, along with urbanization, is expected to drive up demand for agricultural products and water by 70% and 50%, respectively, by 2050 (Beck & Villarroel Walker, 2013; Dubreuil et al., 2013; Stigson, 2013). The sector is also an important driver of climate change and biodiversity loss, mainly due to the clearing of natural environments (World Bank, 2020b).¹⁰ The disappearance of the Aral Sea associated with irrigated cotton and the deforestation of the Amazon because of soy production are notable examples of environmental impacts driven by agriculture (Barona et al., 2010; Hoskins, 2014). Human rights violations are also prevalent in the agricultural sector. Social injustices, such as forced and child labour, persist in the sector. Forced labour in Uzbekistan cotton fields, worker mistreatment in Indian tea plantations, and child labour on cocoa farms in Côte d'Ivoire continue to plague these sectors (Fountain & Huetz-Adams, 2018; Pandey, 2014; Somayajula, 2019; Tulane University, 2015).

Consequently, there is a major and pressing need to transition global agricultural production systems toward more sustainable ones, which will require investment.

The International Fund for Agriculture Development stresses the need to invest in long-term rural development for a prosperous and stable world. In addition, sustainable agriculture can strengthen resilience to changing climatic conditions, which increasingly threaten agricultural production worldwide.¹¹ Despite this clear need, investments in agriculture have been sorely lacking. UNCTAD estimated in 2014 that there was a USD 260 billion annual investment gap to meet SDG 2 (zero hunger) targets in developing countries (UNCTAD, 2014).¹² In 2021, UNCTAD reported that these investments had significantly dropped as a result of the COVID-19 pandemic. The value of greenfield¹³ and project finance investments earmarked for agriculture, research, and rural development in developing and transition economies, as well as LDCs, dropped 49% between 2019 and 2020 (UNCTAD, 2021).

Financial service providers' (FSPs)¹⁴ risk perceptions associated with agricultural sector investments continue to be a major hurdle to increasing much-needed investments in the agricultural sector (Nugnes & Larrea, 2020; Shakhovskoy et al., 2019). The Global Impact Investing Network (GIIN) identified external risks (78%), such as weather effects or consumption patterns, as the main risks

¹⁰ "Agriculture, forestry and land use change are responsible for 25% of greenhouse gas emissions. Mitigation in the agriculture sector is part of the solution to climate change" (World Bank, 2020a).

¹¹ According to the FAO, sustainable agriculture conserves land, water, and plant and animal genetic resources and is environmentally non-degrading, technically appropriate, economically viable, and socially acceptable (Principles for Responsible Investment, 2018a).

¹² UNCTAD estimated in 2014 that about USD 220 billion was being invested every year to meet SDG 2, while investments of USD 480 billion a year in "agriculture-specific infrastructure, natural resource development, research, and food safety nets" were needed to meet the goal (UNCTAD, 2014, p. 143).

¹³ Greenfield investments in agriculture are projects where the required infrastructure and land conditions must be developed.

¹⁴ This document uses the acronym FSP to refer to public and private finance service providers unless otherwise specified.

associated with agricultural investments, followed by execution risks (29%) associated with managing the agribusiness (Sunderji et al., 2020). Access to sufficient finance for the agricultural sector has been a challenge in developing countries for decades due to perceptions of the sector's low profitability; lack of collateral, savings, or insurance; high risks in terms of production quality or quantity; fluctuating prices; and weather shocks. These risks are likely to increase as climate change impacts become more prominent (Howlett & Muyungi, 2016, p. 2). An expert consultation conducted by the International Institute for Sustainable Development (IISD) in 2019 with 51 agricultural investors revealed that governance (73%), business management practices of the agribusiness (68%), and addressing climate change (56%) were perceived as highly important for reducing agricultural investment risks in developing countries (Nugnes & Larrea, 2020).

Thus, increasing investments in sustainable agriculture will require strategies to mitigate agricultural production risks, including improving yields, securing sales contracts with better prices, strengthening agribusiness management, and building climate resilience. This means that farming systems must supply products in a way that results in sustainability outcomes such as improving natural resources, protecting human rights, and increasing farm incomes. Voluntary sustainability standards (VSSs) aim to enable more sustainable forms of agriculture that can reduce investment risks while generating positive development outcomes.

Not All Voluntary Standards Are Created Equal

VSSs operating in the agricultural sector can be described as pseudo-governance systems to move supply chains toward sustainability. VSSs are voluntary schemes that guide agricultural production toward delivering positive economic, environmental, and social outcomes in exchange for formal recognition of VSS-compliant production in the marketplace. However, they are not created equal. Each VSS has its own theory of change, governance systems, geographical focus, criteria with which producers must comply, and assurance systems to monitor and ensure standard compliance—making them uniquely structured to enable more sustainable agriculture. Developed to meet market demands for more sustainably grown products, VSSs have expanded significantly in recent decades, both in numbers and in market share. Historically characterized by their focus on niche markets, the turn of the century saw several single-sector VSSs emerge that focused on penetrating mainstream agricultural commodity markets (Potts et al., 2014). Since then, VSSs operating in at least four agricultural commodity sectors—bananas, coffee, cocoa, and cotton—have captured close to 10%–15% of their respective markets by 2018 (Meier et al., 2020).

By encouraging the adoption of more sustainable agricultural practices, VSSs are well placed to help address some of the negative impacts driven by the agricultural sector mentioned above, including deforestation, water scarcity, and basic human rights violations, thus potentially mitigating

FSPs' perceived risks. By doing so, they can also contribute to delivering positive economic, social, and governmental (ESG) outcomes for the benefit of agribusinesses, communities, and the environment. Most VSSs operating in agricultural sectors have incorporated measures to protect the resource base needed to maintain agricultural production and prevent human rights infringements. Water and soil conservation measures, preservation of High Conservation Value Areas, integrated pest management, minimum wages, and protection of basic labour rights are a few examples of essential requirements found in most VSSs with an international presence operating in the agricultural sector.

Nevertheless, VSSs can also act as barriers to entering markets for farmers who cannot afford to invest the resources needed to become standard compliant. To address this challenge, several VSSs have developed specific and more accessible standards for smallholders operating in their sectors. As they continue to grow in the marketplace, VSSs are expected to remain an important tool for helping the agricultural sector become more sustainable.

VSSs can reduce investment risks and enhance their potential development impacts in a number of different ways. For farmers to attain and maintain VSS compliance, they are trained and given capacity-building opportunities. They are also offered technical assistance to improve their cultivation methods, such as crop rotation, soil moisture, and forest cover, which can result in more sustainable and resilient production systems. VSSs can also motivate farmers to form cooperatives and associations, as well as small and medium-sized enterprises (SMEs), to

benefit from economies of scale and achieve group VSS compliance. Farmer cooperatives and associations provide various services (i.e., sharing storage facilities, marketing, price negotiation), which can reduce perceived investment risks and facilitate access to finance (Tibbo et al., 2015; Zook et al., 2015). Furthermore, investing in farming cooperatives and associations lowers FSP transaction costs compared to investing in individual farmers.

By requiring agricultural operations to comply with more sustainable production criteria, VSSs can also reduce investment risks while enhancing their potential development impacts. For instance, VSS-compliant agricultural operations must adopt conservation practices for soil and water, which are essential resources for agricultural productivity, thus reducing potential investment risks. Integrated pest management required by many VSSs protects crops from misuse or overuse of pesticides while maintaining ecosystem integrity, which can ease financial risks (i.e., market and reputational risks). More specifically, VSSs in the soybean and palm oil sectors require farmers to preserve forests, which can be critical to lowering reputational risks. They also require decent working conditions, which can boost labour productivity and investment profitability. There is clearly a link between sustainability and improving financial performance, which aligns with the principles of sustainable investing (Deloitte, 2012; Weber et al., 2008).

VSSs can help farmers differentiate themselves in the marketplace, access new markets, and obtain direct sales contracts that can be used as collateral to reduce FSPs' investment risks. Furthermore, VSS-

compliant farmers have the potential to earn more via price premiums that can be reinvested to improve farming operations and farming communities. This can be attractive for investors. To maintain the integrity of their products, VSS-compliant farmers often must follow chain-of-custody standards,¹⁵ which can improve product supply chain traceability and transparency related to the sustainability of its production, as well as build trust across value chain stakeholders. Tracing agricultural products back to their origin can enhance supply chain visibility, providing valuable information for FSPs to ascertain investment risks (i.e., deforestation-free crops). VSSs can offer some assurances that agricultural goods were produced more sustainably. To do so, they require farmers to record various aspects of their farming operations, such as sales and agricultural inputs consumed, which can be leveraged by FSPs to assess and monitor investment risks. Record-keeping can also provide farmers with information to better manage their operations and improve productivity. All of these measures can reduce FSP risk perceptions and transaction costs, which can result in better interest rates for VSS-compliant farmers.

Sustainable Investments: The new normal

Sustainable investing is becoming the new normal. It allows investors to pursue financial returns while contributing to the advancement of sustainable development. “Sustainable investing—also called responsible investing or value-based investing—involves incorporating

environmental, social, and governance factors when making investment decisions rather than relying purely on financial considerations” (Uzsoki, 2020, p. 2). Although it started gaining momentum after the Kyoto Protocol was established in 1997 and the Equator Principles were adopted in 2003, it was not until the 2008 financial crisis that sustainable investments increased significantly, reaching USD 30,700 billion by 2018 (+34% since 2016) and USD 35,300 billion by 2020, with growing market shares (Weber, 2012) (see Table 1). Sustainable investing encompasses the following main investment strategies (GIIN, n.d.; Global Sustainable Investment Review, 2020; Uzsoki, 2020):

- **Negative screening** excludes investment opportunities that might harm society and/or the environment (i.e., through pollution, forced labour, conflict).
- **Positive screening** includes investment opportunities in agribusinesses that might have superior performance relative to other peers on targeted issues (i.e., climate change mitigation, human rights protection, water conservation).
- **ESG investing** integrates environmental, social, and governance criteria (i.e., climate change mitigation, freedom of association, tax contributions) to inform investment decisions, mostly to exclude cases that do not comply with such criteria.
- **Sustainability-themed investing** focuses on supporting specific sustainability solutions, such as

¹⁵ Chain of custody standards provide guidance for tracking and tracing products across all stages of a supply chain from feedstock production to consumption.

investments in renewable energy, sustainable agriculture, or inclusive finance.

- **Impact investing** aims to create positive social, economic, and environmental impacts that are measured and disclosed.

According to the latest Global Sustainable Investment Alliance report, ESG investing stands out as the largest in total assets under management, followed by negative screening. However, sustainability-themed investing, ESG integration, and positive screening grew the most, as measured by the compound annual growth rate (CAGR) from 2016 to 2020 (Global Sustainable Investment Review, 2020).

Cultural shifts, preferences among institutional and private investors, and regulatory frameworks have driven growth

in sustainable investment in the last decade. Consumers globally are becoming more aware of the environmental and social issues associated with the production of agricultural commodities and are demanding more sustainably produced goods. A recent KPMG study revealed that 76% of global investment firm chief executives interviewed recognized that “their organization’s growth will depend on their ability to navigate the shift to a low-carbon, clean technology economy” (KPMG International, 2018). Incorporating ESG considerations in business and investment activities is increasingly considered a competitive edge and a source of business opportunities and potential market distinction rather than a simple risk-mitigation factor (IISD, 2019).

Several countries have created regulatory frameworks that encourage investors to incorporate material sustainability factors

Table 1. Growth of sustainable investing assets by region in local currency 2014–2020

	Currency	2014	2016	2018	2020	CAGR 2014–2020
Europe*	EUR	9,885	11,045	12,306	10,730	1%
United States	USD	6,572	8,723	11,995	17,081	17%
Canada	CAD	1,011	1,505	2,132	3,166	21%
Australasia*	AUD	203	707	1,033	1,295	36%
Japan	JPY	840	57,056	231,952	310,039	168%

Note: Asset values are expressed in billions. New Zealand assets were converted to Australian dollars. In 2020, Europe includes Austria, Belgium, Bulgaria, Denmark, France, Germany, Greece, Italy, Spain, the Netherlands, Poland, Portugal, Slovenia, Sweden, the United Kingdom, Norway, Switzerland, and Liechtenstein. *Europe and Australasia have enacted significant changes in the way sustainable investment is defined in these regions, so direct comparisons between regions and with previous versions of this report are not easily made.

Source: Global Sustainable Investment Review, 2020.

in their activities and disclose related information. The European Commission adopted the Non-Financial Reporting Directive in 2014 and the Sustainable Finance Disclosure Regulation in 2019. The former required large companies to disclose how they operate and manage sustainability challenges, such as climate change and maintaining human rights, and the latter established “sustainability disclosure obligations for manufacturers of financial products and financial advisers toward end-investors” (European Commission, n.d.-a, n.d.-b). Government pension funds in Japan, Norway, and California have also taken steps to increase the share of sustainable investing in their portfolios. There have been some 500 government interventions worldwide in the last decade to promote the inclusion of ESG factors in investment activities (Bloomberg Finance, 2018; KPMG International, 2018; Uzsocki, 2020). These developments suggest that sustainability investing is becoming an important trend in the financial sector and will continue growing (Bernow et al., 2017; Nugnes & Larrea, 2020; Uzsocki, 2020).

Impact investors have largely driven sustainable agricultural investments in the last decade to address concerns such as deforestation, water scarcity, and labour rights infringements, and to generate positive impacts (Principles of Responsible Investment, 2018b). The small number of impact investors involved in sustainable agriculture is expected to grow as the market demand for and the retail value of sustainable agricultural products rise (Meier et al., 2020; Principles of Responsible Investment, 2018b).

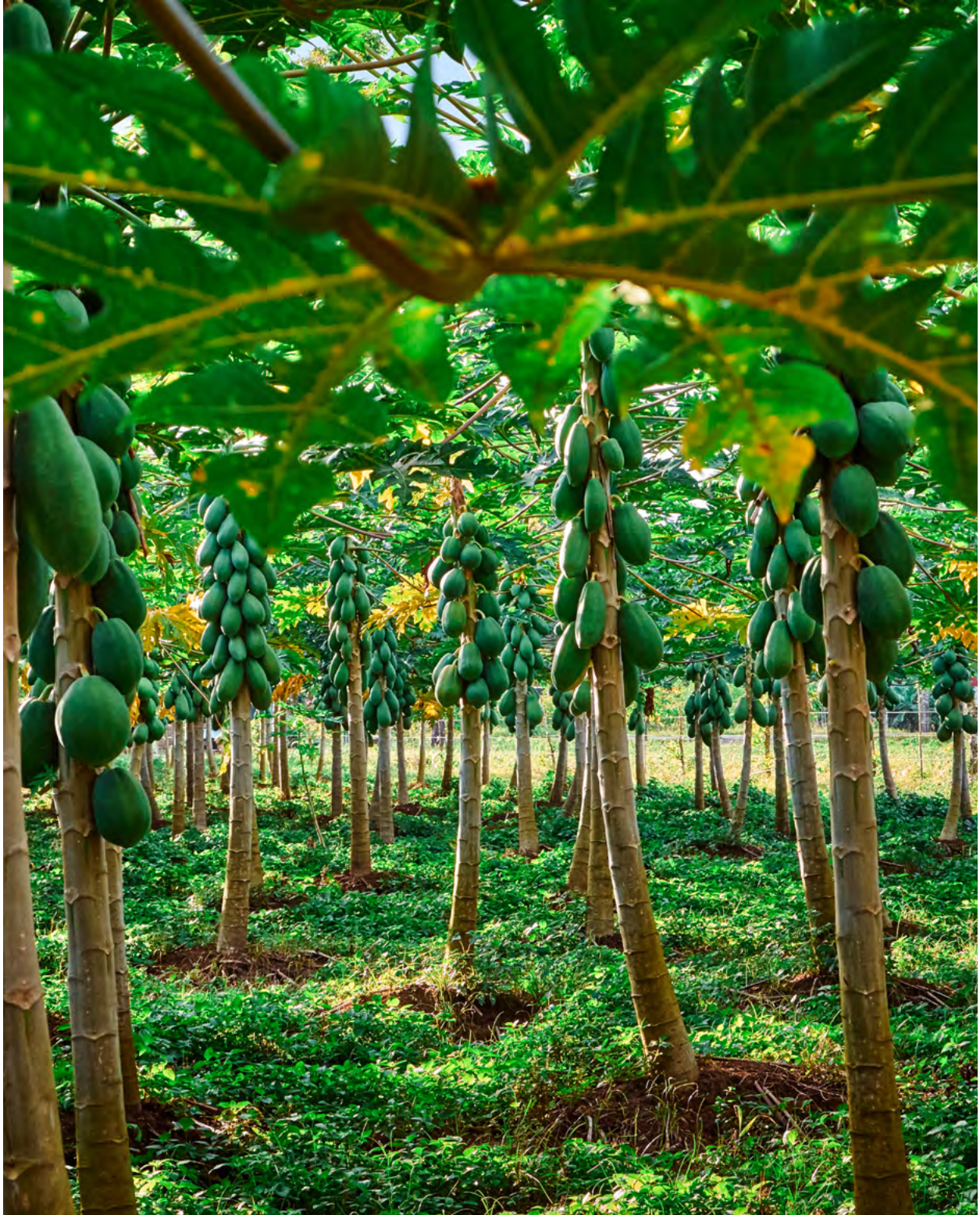
GIIN reported that 360 of 402 agricultural impact investments made from 1998 to 2019 contributed to more sustainable agriculture

and land management practices (Sunderji et al., 2020). “Over a one-year period, the average investment managed 7,956 hectares of land through sustainable cultivation practices or environmental stewardship” (Sunderji et al., 2020, p. 31). These investments averaged USD 2.1 million, while the median was USD 375,000 (Sunderji et al., 2020). GIIN found that 53% of the investments in the sample had a third-party certification compliant with VSS (Sunderji et al., 2020).

Report Objective

In short, VSSs require the adoption of sustainable agricultural practices that can translate into potential investment opportunities for FSPs and valued sustainable development outcomes with fewer investment risks. Section 1 has set the context. The next two sections of this report explore this potential, providing a basis for VSSs to be used to enable investments in sustainable agricultural production by broadly examining the following: (i) VSS market status, trends, and investment opportunities in select agricultural commodity sectors where they are most active (Chapter 2) and (ii) how VSS production criteria are and are not supporting sustainable finance frameworks to reduce investment risks in agriculture and enable sustainable development (Chapter 3). Lastly, the report offers standard-setting bodies and FSP recommendations on how they can leverage VSSs to transition global agricultural production systems toward more sustainable ones and, in doing so, build back better from global disturbances, such as climate change and the COVID-19 pandemic (Chapter 4).

2.0 Commodity Investment Profiles



Investments in agriculture are required to meet present and projected growing global food security needs. Nevertheless, these investments will need to be oriented toward agricultural production systems that can improve food security and maintain a livable planet (Bennett et al., 2014). For this reason, investments in more sustainable forms of agriculture that can address various socio-ecological challenges are urgently needed. VSSs in agriculture have been established

for agricultural production to have more sustainable outcomes. Consequently, they offer potentially attractive opportunities for investors to help shift agriculture production systems toward sustainability.

Given that demand for food is expected to increase by more than 35% by 2050, investing in agriculture would seem to be a low-risk proposition with the potential for high returns (Noé, 2020). Nevertheless, the agricultural sector faces socio-ecological challenges that

Table 2. Agricultural investment financially material business risk categories in agricultural supply chains

Risk category	Definition
Market risks	The environmental and social challenges associated with agricultural operations threaten to adversely affect agribusinesses' access to financial and buyers' markets. For example, the credit ratings of the agribusinesses may fall with a failure to implement risk-mitigation processes, resulting in higher financing costs, or there may be losses due to the environmental or human rights impacts of its operations.
Reputational risks	The investing agribusiness could risk generating adverse publicity concerning its business practices and associations. This could lead to a loss of confidence in the integrity of the company, brand equity impacts from negative publicity or advocacy campaigns, and a loss of commercial relationships.
Regulatory risks	These arise from violations of existing regulations and legislation by the agribusiness and a lack of preparedness to comply with broader regulatory changes.
Operational risks	Potential losses result from external physical events and the failure of agribusiness management to plan for and mitigate these events, which can lead to reduced primary crop quantity and quality or stranded assets due to shifting production areas.
Litigation risks	These are risks of legal sanctions stemming from the failure of an agribusiness to comply with laws, regulations, rules, related self-regulatory organization standards, and codes of conduct.

Source: Modified from Ceres, 2017b.

can translate into financial and material risks for FSPs. These investment risks can be further categorized into market, reputational, regulatory, operational, and litigation-related risks (see Figure 2) (Ceres, 2017b, p. 17). For instance, forced and child labour and poor working conditions that continue to plague the agricultural sector can result in reputational and even litigation risks for investors (Ceres, 2017b, p. 17). Furthermore, agricultural production has damaged natural environments through deforestation, biodiversity loss, and water pollution, which can constitute reputational and regulatory risks for investors as governments work to implement more restrictive environmental regulations to prevent and reverse environmental losses (Ceres, 2017b, p. 17). Climate change, which is expected to disrupt agricultural production worldwide, is an important operational risk that needs careful consideration, as it can negatively impact return on investment.

Despite these potential risks, investment needs in the agricultural sector are wide-ranging, from improving infrastructure to move agricultural products to market to building capacity efforts for enhancing agricultural yields. Investments are also needed to expand technological innovation and more sustainable production models, such as precision agriculture and regenerative farming (Gosnell et al., 2019). For instance, converting farmland that supports conventional farming to higher-return organic

farming as a way of accessing more lucrative markets can be more profitable for investors over the long term (Harvest Returns, 2018). Although some agricultural investments typically require longer time horizons to generate returns, they can provide stability in investment portfolios. Blended finance models¹⁶ can be leveraged to meet public and private objectives and share potential financially material business risks associated with the agricultural sector (Responsible Investor, 2021).¹⁷

More sustainable forms of agriculture offer investment opportunities with potentially lower risks and possibilities to enable sustainable development. By requiring farmers to adopt more sustainable production practices, such as soil and water conservation and integrated pest management, and to support labour rights protection, decent wages, and safe and healthy working conditions, VSSs can improve productivity and profitability and, as a result, de-risk agricultural investments. Furthermore, VSS-compliant farmers are regularly monitored to provide some assurance that they are properly implementing the standard, and this can help FSPs track their investment risks and make timely course corrections. Some VSSs are composed of performance-based indicators that allow for monitoring and reporting compliance and tangible progress toward sustainability objectives. FSPs can use these to improve their competitiveness

¹⁶ “Blended finance is the use of catalytic capital from public or philanthropic sources to increase private sector investment in sustainable development” (Convergence, 2021).

¹⁷ Blended finance typically consists of public and private investments that are leveraged together to meet development objectives (Responsible Investor, 2021). Public and private sector entities collaborate and share potential investment risks to enable a transition toward more sustainable agriculture systems, which has transformative impacts on farmers and farming communities (Responsible Investor, 2021).

by showcasing that they support more sustainable businesses.

Much of the case for investing in VSS-compliant farming operations is linked to their sustainable production requirements, assurance, monitoring, and impact assessment systems. An investment case also lies in supporting agricultural producers to become VSS compliant, which could lead to better market access, profitability, and the financial health of farming businesses. The following subsections present commodity investment profiles for the banana, cocoa, coffee, cotton, palm oil, soybean, sugarcane, and tea sectors, where VSSs in agriculture are most active. These profiles include information on market status and outlook, sustainability challenges, and investment profiles, which present a business case for investing in VSS-compliant agriculture.

Bananas

Bananas are among the most popularly grown and traded fruits in the world due to their nutritional value (Voora, Larrea, & Bermúdez, 2020b). Banana plants grow best in warm and humid tropical climates (from 30° north to 30° south of the Equator), requiring rich soils to be productive (Cohen, 2009; Reay, 2019). The involvement of smallholders in banana cultivation is most relevant in LDCs where bananas are subsistence crops, often traded in local and regional markets (Hays, 2009; Tripathi et al., 2007).

Market Status and Outlook

Domestic banana consumption provides nutritional and food security for around 400 million people and 25% of the daily

caloric intake in many sub-Saharan countries (FAO, 2021a). This is why only 20% of global banana production, or 22.7 million tonnes (Mt), was exported in 2017 (Voora, Larrea, & Bermúdez, 2020b). India is a case in point, as it produces 31% of all bananas but represents just 0.75% of global exports (Mordor Intelligence, 2020a). The value of worldwide banana exports climbed more than 40% in 5 years to USD 14.7 billion in 2019 (Workman, 2021b). While Asia is the largest banana-producing region, Latin America and the Caribbean is the largest exporting region, responsible for about 80% of global exports (Organisation for Economic Co-operation and Development & FAO, 2019; Voora, Larrea, & Bermúdez, 2020b). Global banana production is expected to rise at a CAGR of 4.1% from 2021 to 2026, with demand increasing due to population growth in developing countries, greater purchasing capacity in the Asia-Pacific region, and health concerns driving up fruit consumption in Europe and North America (FAO, 2021a; Mordor Intelligence, 2020a).

COVID-19 has created labour and input shortages in the banana market. The pandemic, combined with the need for adequate post-harvest handling and transportation for this perishable product, has led to production losses (Altendorf, 2020; Mordor Intelligence, 2020a). Nevertheless, compared to other tropical fruits, such as mangoes and guavas, bananas have proven relatively resilient to the negative effects of COVID-19 (Altendorf, 2020).

Beyond the pandemic, the banana sector faces major sustainability challenges that can constitute material risks for investors. Some of the key challenges—including pests and diseases, low farm gate prices, poor

employment practices, and climate change—are described in detail below.

- **Pests and diseases:** Bananas are often grown on large-scale monoculture plantations with limited genetic diversity, making them vulnerable to the spread of pests and diseases (Mlot, 2004). This encourages farmers to rely heavily on pesticides to maintain productivity in banana plantations (Hutter et al., 2021; Lunder, 2014; Mendez et al., 2018; Stewart, 2020). There is concern that the rise of the Black Sigatoka blight, which can reduce production by 30%–35%, and fusarium wilt, which can affect commercial viability and threatens the Cavendish, could compromise investments (Altendorf, 2019, p. 10). Preventing these diseases from spreading requires sound agricultural practices as well as quarantining and cleaning infected areas (Altendorf, 2019). As the development of pest-resistant cultivars has not yet been successful, farmers are limited to using harmful pesticides that can negatively impact human and ecological health, potentially leading to healthcare and environmental remediation costs as well as challenges in product marketability due to exceeding maximum residual pesticide limits (Bubici et al., 2019; van Wendel de Joode et al., 2012).
- **Low farm gate prices:** It is estimated that workers on banana plantations receive 1%–3% of commercial prices, which is often below a living wage (Banana Link, 2011, 2016). Part of this low wage problem stems from what producers perceive as low prices.

Price-based competition between a few multinational companies (e.g., Del Monte, Fyffes, Dole, and Chiquita) along with large retailers, which purchase directly from countries to lower retail prices, have kept farm gate prices low (Voorra, Larrea, & Bermúdez, 2020b). Some countries are taking action to address low farm gate prices and provide greater income certainty for banana farmers. The Government of Ecuador has established minimum prices, which could reduce competitiveness and exportation compared to other exporting countries operating without minimum prices (Ministerio de Agricultura y Ganadería, 2019; Primicias, 2019).

- **Labour rights:** Disagreements about labour rights are deeply rooted in the banana sector, dating as far back as the late 1800s and early 1900s (Human Rights Watch, 2002; van Rijn et al., 2020). Child labour, anti-union tactics, and workplace safety continue to challenge the sector, threatening to harm productivity and agribusiness reputations. Decades of aerial pesticide spraying have injured workers, and a lack of safety equipment and adequate health care and living facilities remain problematic (Barraza et al., 2020).
- **Climate change:** Climate change is expected to reduce yields in the sector (Varma & Bebbler, 2019). Climatic events are already affecting banana yields in the largest exporting countries, especially in Latin America and the Caribbean, resulting in supply fluctuations (Craymer, 2018; FAO, 2018a, p. 12). Unreliable yields are

major operational risks for banana producers and their creditors.

VSSs have been established in the banana sector to address its sustainability challenges. VSS-compliant banana production started in 1996 with small shipments of organic bananas to the United States and Fairtrade bananas to Europe (Committee on Commodity Problems, 2001; Lernoud et al., 2018). VSS-compliant banana production, which initially came from smallholders, expanded substantially at the turn of the century, as large plantations owned by Dole, Fyffes, and Chiquita became certified (Voora, Larrea, & Bermúdez, 2020b). Since then, VSS-compliant banana production expanded rapidly from 0.4% of total global production in 2008 to 7.1% in 2018 at a CAGR of 35.2% (FAOSTAT, 2021; Meier et al., 2020) (see Figure 1). Nine Latin American countries, along with Côte d'Ivoire, are the largest producers of VSS-compliant bananas (Meier et al., 2020).

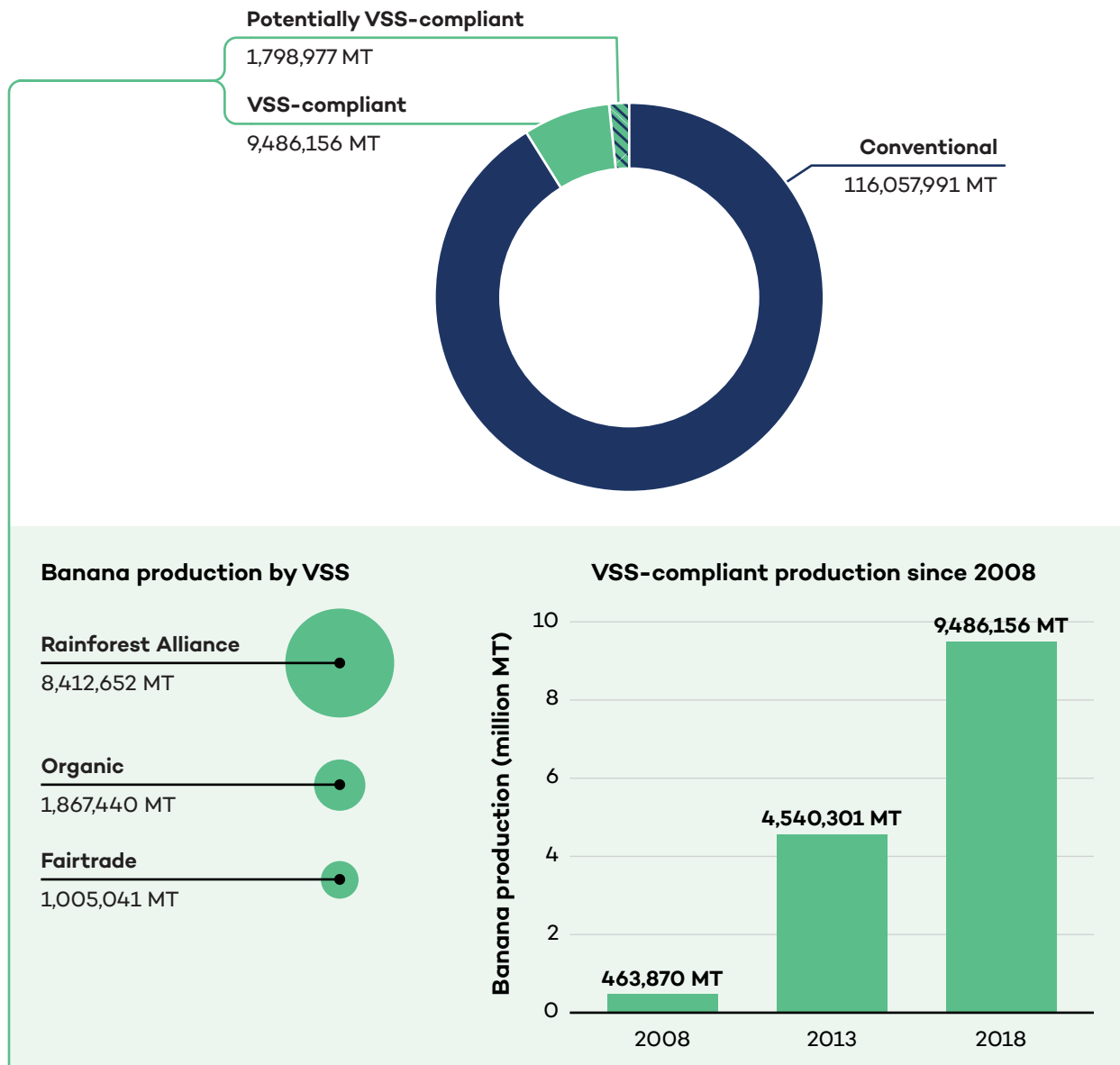
GLOBALG.A.P. is the main VSS used in business-to-business transactions to guarantee that bananas have been grown using good agricultural practices for food safety; environmental protection; and worker health, safety, and welfare (Masood & Brümmer, 2014). Although GLOBALG.A.P. is not a consumer-facing label, end consumers can verify that grocery stores have committed to sourcing only GLOBALG.A.P.-certified bananas. The other major VSSs in the sector—the Rainforest Alliance, with 8.4 Mt of certified bananas; Organic, with almost 1.9 Mt; and Fairtrade, with about 1 Mt certified in 2018—are business-to-consumer with consumer-facing labels. Although VSSs try to internalize the socio-environmental costs of banana production, such as insufficient

wages and incomes and water depletion, it is believed that almost half of these external costs are not addressed. For instance, the external costs in 2017 were estimated at USD 6.70 per 18.14 kg box of conventional bananas and at USD 3.70 per box of Fairtrade-produced bananas (de Groot Ruiz et al., 2017).

On the demand side, most VSS-compliant bananas that are produced are sold and marketed as such. About 80% of VSS-compliant bananas are exported, driven by consumer preferences for sustainably grown options, mainly in Europe and North America (Ostertag et al., 2014; Voora, Larrea, & Bermúdez, 2020b). Some of the major distributors, including Chiquita, Del Monte, and Fyffes, have committed to sourcing sustainable bananas (Banana Link, 2020). The market share of VSS-compliant bananas exceeds 10% in Europe and North America (Banana Link, 2020; Voora, Larrea, & Bermúdez, 2020b). Fairtrade- and Organic-certified bananas are more popular in the European Union (EU), while Organic-certified bananas are preferred in the United States (Voora, Larrea, & Bermúdez, 2020b). Nevertheless, there is still room to grow demand as VSS-compliant exports made up 36% of the total in 2017 (Produce Business, 2017).

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Figure 1. Global banana production in 2018, where VSS-compliant bananas has reached about 7%–9% of total production



Note: Production data for GlobalG.A.P. certification was not available when writing the report. The scheme reported a total of 299,071.31 ha of land harvested certified globally in 2018, which represented the largest VSS-certified banana area in 2018. The next *Global Market Report* (forthcoming 2022) will provide production volumes for GlobalG.A.P.

Source: Elaborated by authors based on data from Meier et al., 2020; FAO, 2018.

sustainable bananas (Banana Link, 2020). The market share of VSS-compliant bananas exceeds 10% in Europe and North America (Banana Link, 2020; Voora, Larrea, & Bermúdez, 2020b). Fairtrade- and Organic-certified bananas are more popular in the European Union (EU), while Organic-certified bananas are preferred in the United States (Voora, Larrea, & Bermúdez, 2020b). Nevertheless, there is still room to grow demand as VSS-compliant exports made up 36% of the total in 2017 (Produce Business, 2017).

Investment Opportunities

The business case for investing in VSS-compliant banana production is based primarily on growing export markets, untapped potential for rising demand in domestic markets, and the ease of anticipating impending regulatory measures as well as development impact prospects among smallholder banana farmers and plantation workers. All European retailers require compliance with GLOBALG.A.P. to meet food safety standards, and around 36% of the banana export market is VSS compliant with a consumer-facing label such as Organic, Fairtrade, or the Rainforest Alliance (Fiankor et al., 2017; Voora, Larrea, & Bermúdez, 2020b). VSSs have measures prohibiting or controlling pesticide applications (i.e., integrated pest management, risk management plans). VSS-compliant banana operations are therefore better positioned to comply with more stringent pest management measures, effectively mitigating regulatory and market access risks (Sarkar et al., 2021).

VSS compliance can improve the livelihoods and working conditions of smallholder banana farmers and workers on larger banana

plantations, which can reduce reputational risks. For instance, CEBIBO is an Organic- and Fairtrade-certified banana cooperative in Peru that sells its products to Equal Exchange, a worker cooperative from the United States that buys Fairtrade-certified products and offers farmers higher prices (Davis, 2016; Equal Exchange, n.d.). Most banana smallholders surveyed in Colombia and Ecuador recognize that their financial situation has improved since they became Fairtrade certified, and Rainforest Alliance certification has had positive effects on the wages of banana plantation workers (Ostertag et al., 2014; Rainforest Alliance, 2019a; van Rijn et al., 2020).

Investments are needed to help banana plantations become VSS compliant. For example, to comply with the GLOBALG.A.P. standard, banana plantations require infrastructure investments for handwashing and produce packing and storage facilities (Masood & Brümmer, 2014). These types of investments are especially needed for small banana producers with fewer resources to become VSS compliant, which can improve their access to export markets and attract investments by providing additional assurances that producers can repay loans. For instance, a study on Fairtrade certification in Colombia revealed that banana smallholders had lowered their production costs and increased their income and stability via the Fairtrade minimum price and premium, which helped them improve their liquidity and access to credit (Ostertag et al., 2014; Fairtrade Foundation, 2011).

Investment opportunities in the banana sector can be informed by examining the Enabling Business for Agriculture (EBA) scores for producing countries (Table 3 provides metrics

for the top 10 VSS-compliant producing countries). For instance, countries with high EBA scores have institutional capacities to help control plant diseases¹⁸ and facilitate access to international markets. Peru is a particularly interesting case, as most of its banana exports are Organic-certified and produced by smallholder farmers belonging to associations or cooperatives that often have better negotiating power with buyers to obtain better prices and reimburse their

investors (Secretariat of the World Banana Forum, 2017).

Strategic public investments can result in favourable conditions for private sector investments in the banana sector. For instance, the EU provided funds to the Government of Jamaica for improving infrastructure, such as irrigation and roads, and ensuring compliance with Fairtrade and GLOBALG.A.P. certification to enhance the export capacity of small banana plantations

Table 3. Indicators for the top 10 VSS-compliant banana-producing countries by volume of production as of 2018

	VSS-compliant production: Mt, 2018 (5-year CAGR)	VSS-compliant area: ha, 2018 (5-year CAGR)	EBA (2019)	HDI (2018)	% Credit to Agriculture (2018)
Colombia	2,072,529 (26%)	44,599 (6%)	High	High	-
Costa Rica	1,906,831 (19%)	35,636 (3%)	-	Very high	High
Ecuador	1,342,580 (42%)	76,106 (4%)	-	High	-
Guatemala	1,267,606 (0%)	26,447 (4%)	High	Medium	-
Dominican Republic	940,353 (21%)	37,340 (11%)	Medium	High	-
Honduras	499,451 (10%)	9,786 (0%)	Medium	Medium	-
Côte d'Ivoire	318,082 (93%)	6,471 (78%)	Medium	Low	Very high
Panama	255,416 (1%)	6,348 (5%)	High	Very high	-
Mexico	194,298 (86%)	10,522 (104%)	High	High	-
Peru	187,200 (1%)	10,240 (13%)	Medium	High	-

Note: HDI = Human Development Index

Source: Elaborated by authors based on data from FAOSTAT, 2021; Meier et al., 2020; United Nations Development Programme (UNDP), 2021; World Bank, 2019.

¹⁸ The EBA score includes indicators for protecting plant health, illustrating the strength of country legislation and phytosanitary frameworks, as well as how effectively they are implemented.

(Jamaica Observer, 2015). These investments gave the Government of Jamaica the potential to create favourable conditions for private investors to finance other needs required to produce more sustainable bananas. These types of initiatives open investment opportunities for private investors to help banana plantations become VSS compliant and leverage market opportunities.

Chapter 3 details how the main VSSs active in the banana sector—GLOBALG.A.P., the Rainforest Alliance, Organic, and Fairtrade—are designed to address its main sustainability challenges and investment risks. If properly implemented, VSSs can lower investment risks, provide beneficial development impacts, help fulfill a broad range of investment objectives, and improve financial returns. For instance, GLOBALG.A.P. is oriented toward maintaining food safety while the Rainforest Alliance seeks to prevent deforestation while meeting market needs. The Organic standard requires more ecologically friendly banana-production practices, while Fairtrade provides minimum price guarantees and premiums, which can mitigate against volatile international banana markets. Each of these VSSs offers different and compatible requirements to shift the banana sector toward sustainability and reduce investment risks.

Cocoa

Cocoa trees, grown in agroforestry systems and plantations, need 5 years to start producing beans that are harvested and processed as a basic ingredient for flavouring foodstuffs and for cosmetics (MarketWatch, 2019). The sector's value-addition potential is significant, with chocolate having a retail

market value of USD 106.9 billion in 2017 (MarketWatch, 2019). Cocoa production is concentrated in developing countries (including 16 low-HDI countries) where farming practices rely on manual labour (Gayi & Tsowou, 2015; Meier et al., 2020; Nieburg, 2015, 2016a). Some 40 million–50 million people depend on the cocoa sector for their livelihoods, and 5 million cocoa farmers live in extreme poverty (Houston & Wyer, 2012).

Market Status and Outlook

Global cocoa bean production reached almost 5.6 Mt in 2018, and its export value was USD 9.56 billion in 2019 (Eghbal, 2018; Observatory of Economic Complexity, 2019a; United Nations Department of Economics and Social Affairs, 2019). Most cocoa is used by the chocolate confectionery industry, which consumed 43% of global production in 2017 (Eghbal, 2018). Cocoa demand is expected to grow due to increasing demand from emerging economies and sustained demand from developed economies. The global cocoa bean market had been forecast to grow at a CAGR of 7.3% from 2019 to 2025 (before the COVID-19 pandemic) to reach a market value of USD 16.3 billion (Grand View Research, 2019a; Skelly, 2017; The Economist Intelligence Unit, 2015).

Structural supply and demand imbalances and global surpluses, fuelled by undersupply concerns, have kept cocoa prices low since the price crash in 2016 (Fountain & Huetz-Adams, 2018; International Cocoa Organization, 2019; The Economist Intelligence Unit, 2015). Low farm gate prices and yields have motivated farmers to shift to more profitable crops that can thrive in nutrient-depleted soils, such as rubber

trees, effectively undermining supply (The Economist Intelligence Unit, 2015). In 2020, the largest exporters of cocoa beans in export value were Côte d'Ivoire (43.9%), Ghana (14.2%), Cameroon (8.8%), Ecuador (7.4%), and Nigeria (5.7%) (Tridge, 2020a). The top importers were the Netherlands (38%), the United States (16.7%), Germany (12.4%), and the United Kingdom (5%) (Tridge, 2020a).

The COVID-19 pandemic has had negative repercussions on the cocoa sector. A reduction in demand, requests to delay deliveries, and structural oversupply have pushed prices down. For instance, cooperatives and farms in Côte d'Ivoire have experienced as much as 33% in monthly export backlogs (Sterk, 2021). To complicate matters, Côte d'Ivoire and Ghana introduced a USD 400 per tonne living income differential to cocoa bean prices in October 2020 to support their farmers, perturbing an already fragile market (Sterk, 2021). The effects of unpredictable waves of infection have stifled cocoa production recovery efforts in Côte d'Ivoire (Aboa, 2021).

Long before the pandemic, major sustainability challenges plagued the cocoa sector's long-term viability. Cocoa farm gate prices have remained low and volatile, which has led to systemic poverty among cocoa farmers in most producing countries (Fountain & Huetz-Adams, 2018). Cocoa farmers remain largely fragmented and unorganized, lowering their ability to negotiate better farm gate prices. Maintaining financially viable cocoa farming operations has come at the expense of social and environmental impacts in the form of labour rights infringements and deforestation. The

main sustainability challenges facing the cocoa sector include:

- **Low farm gate prices:** Farm gate prices range from 3%–7% of average chocolate bar prices (Nieburg, 2016c). Low incomes jeopardize investments needed to replace aging cocoa trees and access more productive lands to improve productivity (Schroth et al., 2016). The introduction of the living income differential by Ghana and Côte d'Ivoire guarantees a price floor, providing farmers with price certainty (Dontoh & Garcia Perez, 2019; Nieburg, 2019; Sterk, 2021). Furthermore, smallholders that typically rely on family labour produce the vast majority of cocoa. The fragmented and largely unorganized producer base for cocoa further reduces their negotiating power and pushes down farm gate prices, undermining the profitability of cocoa operations (Neilson, 2008).
- **Geographic and market concentration:** Cocoa production is geographically concentrated in the West African countries of Côte d'Ivoire, Ghana, Cameroon, and Nigeria, exposing the sector to regional geopolitical risks (Marc et al., 2015; Linzer, 2019; Observatory of Economic Complexity, 2019a). Purchasing power is also concentrated, with three multinationals accounting for 40% of cocoa processing, which mostly occurs outside of producing countries (International Cocoa Organization, 2014). For instance, six multinational trading companies—Barry Callebaut, Cargill, Ecom, Olam, Sucden, and Touton—buy most Ivorian cocoa

exports, essentially barring access to major chocolate processors (Sterk, 2021). Processing cocoa in countries of origin can encounter market barriers, including trade tariffs to export cocoa-based products, effectively disincentivizing value addition to diversifying their markets (Aziz et al., 2017; International Labour Organization [ILO], 2018).

- **Labour rights:** Labour rights infringements received significant attention in the early 2000s. As a result, the Harkin-Engel Protocol (2001) was developed to end the worst forms of child and forced labour in the cocoa sector. It required the industry to form an independent organization to address child and forced labour issues and to implement global standards to prevent such practices in cocoa supply chains (Potts et al., 2014). Labour rights infractions can result in reputational and market risks for agribusinesses and FSPs.
- **Deforestation:** As an agroforestry crop, growing cocoa is amenable to biodiversity conservation. Nevertheless, expanding cocoa production has often occurred at the expense of natural and protected forests, as experienced in the West African Guinea Forest, Malaysia's Sabah and Sarawak region, and Indonesia's Sulawesi region (Pearce, 2019; World Cocoa Foundation, 2021). While converting agroforestry cocoa to monoculture farming increases productivity, it is more vulnerable to climate change, further exacerbating forest encroachments (Schroth et al., 2016; World Cocoa Foundation, 2021).

Deforestation associated with cocoa may constitute regulatory, reputational, and market risks to agribusiness and its investors, as more stringent regulations to protect forests are being developed in cocoa-producing and consuming countries (World Cocoa Foundation, n.d.; European Parliament, 2020).

VSSs have been established in the cocoa sector to address its sustainability challenges (Fountain & Huetz-Adams, 2020). At least 1.7 billion tonnes of VSS-compliant cocoa was produced in 2018, amounting to almost 31% of cocoa production (see Figure 2). Global VSS production grew at a CAGR of 5% from 2013 to 2018, while conventional production contracted by a CAGR of 0.5% in the same period. This growth has been especially important for Low Human Development Countries (FAOSTAT, 2019; Meier et al., 2020). The major VSSs operating in the sector in order of their production in 2018 were UTZ, Fairtrade, the Rainforest Alliance, and Organic.

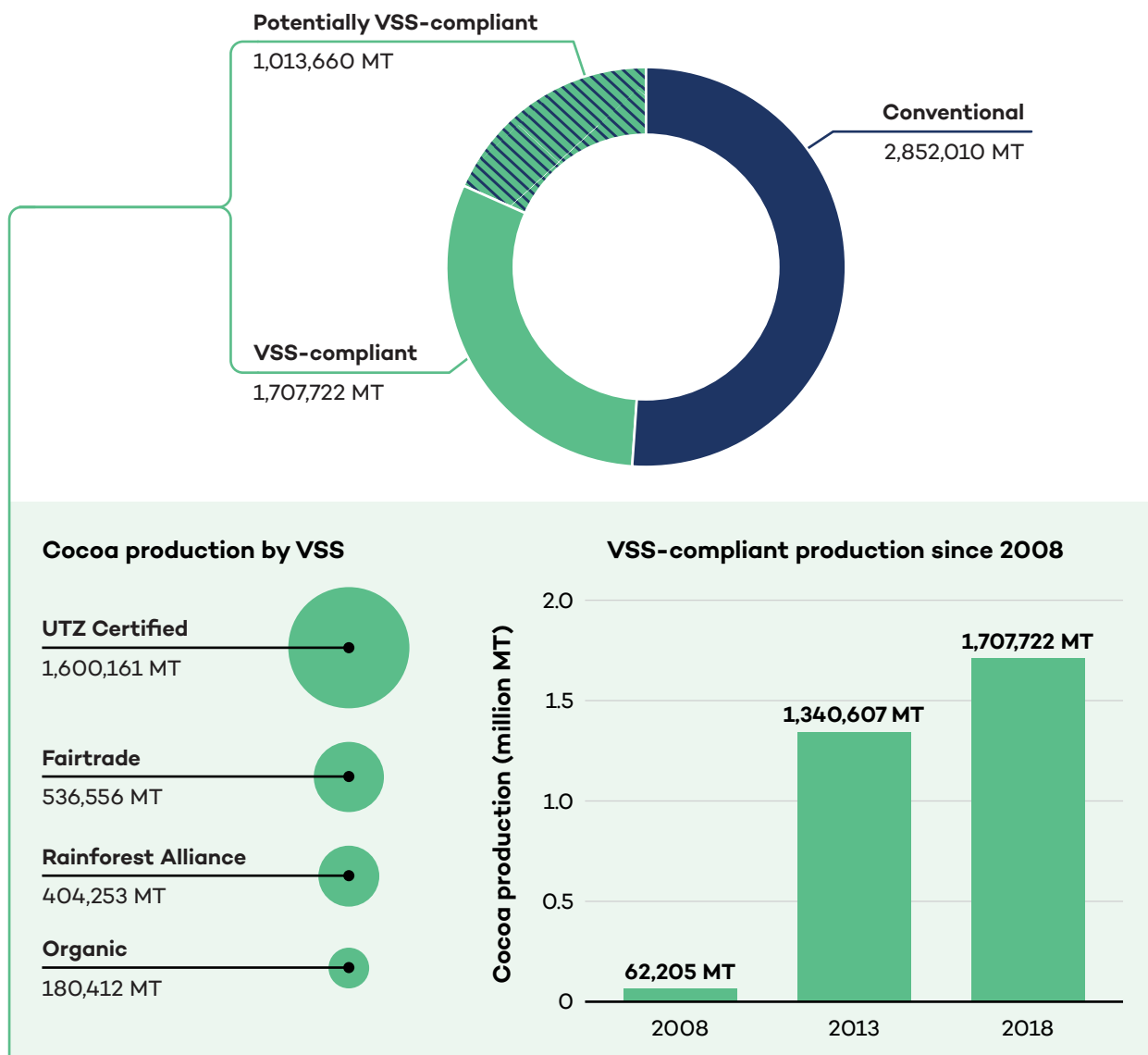
Investment Opportunities

The business case for investing in VSS-compliant cocoa is based primarily on the growing demand for more sustainable cocoa, systemic poverty among smallholder cocoa farmers, and the significant value-addition opportunities in cocoa-producing countries. Furthermore, cocoa investments increasingly face legal and reputational risks as companies commit to sourcing their cocoa from zero-deforestation areas (e.g., Barry Callebaut, Cargill, and Ferrero) and cocoa bean tracing and cocoa tree registers come online (Cargill, 2020; World Cocoa Foundation, 2021). VSSs for cocoa that require more sustainable farming practices could be attractive for

FSPs wishing to remain ahead of legislation that could disrupt the sector. For instance, the EU is examining various regulatory and non-regulatory measures to promote the consumption of products, including cocoa from deforestation-free supply chains (European Commission, 2021).

Increasing demand for more sustainable cocoa and the reputational risks associated with conventional cocoa have motivated many of the largest cocoa traders and chocolate manufacturers to adopt sustainable sourcing commitments (Voora, Bermúdez, & Larrea, 2019a). To meet these commitments, many of

Figure 2. Global cocoa production in 2018, where VSS-compliant cocoa has reached about 31%–49% of total production



Source: Elaborated by authors based on data from Meier et al., 2020; FAO, 2018.

these companies are sourcing VSS-compliant cocoa through buyer contracts with farmer groups, which can reduce FSP lending risks. For instance, the Beyond Chocolate Initiative aims for all Belgian chocolate to be made from VSS-compliant cocoa by 2025 (IDH – The Sustainable Trade Initiative, 2021). To this end, the initiative has secured commitments from major Belgian chocolate producers to source VSS-compliant cocoa (IDH – The Sustainable Trade Initiative, 2021). This initiative could reshape the European cocoa market, as the Belgian port of Antwerp is a key entry point for cocoa imports that are eventually re-exported across Europe. Impact investors such as Incofin, Oiko Credit, and Alterfin are contributing to the Beyond Chocolate Initiative by leveraging their investments in cocoa-producing countries. More specifically, Oiko Credit invests in West African farming cooperatives and local exporters growing and trading Rainforest Alliance- and Fairtrade-certified cocoa (Komacló, 2020). Despite growing demand, VSS-compliant cocoa is not always sold as such, disadvantaging farmers who have made investments to comply with VSSs.

The vast majority of cocoa is produced by smallholders, who often suffer from systemic poverty that can affect supply and threaten the viability of downstream industries (Pipitone, 2018). Addressing this challenge will require major investments in sustainable cocoa farming, in which chocolate confectioneries have started contributing via sustainable cocoa farming programs (Voora, Bermúdez, & Larrea, 2019a). Creating cocoa producer organizations represents a major opportunity to assist smallholders in the sector by increasing their price-negotiating power and access to finance (ISF, 2015). These efforts can go hand in hand with

VSS-compliant cocoa production and can incentivize smallholders to form cooperatives or associations to become certified (Fairtrade International, n.d.).

The presence of smallholders in the cocoa sector has attracted impact investors seeking to improve their living conditions. VSS-compliant cocoa operations with improved access to inputs, markets, and extension services make for more attractive investments that can result in better yields, incomes, working and living conditions, and environmental conservation (Ingram et al., 2017, 2018). Increasing yields is particularly important, as smallholders typically attain one third of the theoretical maximum (Fountain & Huetz-Adams, 2020; Rainforest Alliance, 2019a). FSPs can leverage profitability and socio-ecological improvements to attract more capital and business opportunities. Smallholder cocoa farmer groups in the Democratic Republic of the Congo, Ecuador, Peru, and Nicaragua selling high-quality and certified cocoa beans via direct trades with chocolate manufacturers and in lucrative bean-to-bar markets are examples of VSS-compliant production that has led to improved incomes and living conditions for smallholders (Centre for the Promotion of Imports from developing countries [CBI], 2019).

FSPs can also leverage information collected from VSSs to identify investment risks and differentiate themselves from their competition (Council on Smallholder Agriculture Finance, 2020; Naeve & DoCampo, 2020; Schiff et al., 2016). VSSs monitor farming operations to ensure they remain standard compliant, which can be used to ascertain investment risks. For example, the Rainforest Alliance determined that several cocoa farms in Côte d'Ivoire failed

to comply with forest conservation and child labour requirements, which led to revoking their certification and pausing granting new certifications in Côte d'Ivoire (Rainforest Alliance, 2019b; Whoriskey, 2019).

FSPs can also use VSS impact data to better compete (Council on Smallholder Agriculture Finance, 2020; Naeve & DoCampo, 2020; Schiff et al., 2016). For instance, Root Capital discloses the number of its certified investees (76% in 2020) to show that it is investing in companies that support sustainable development. More specifically,

Root Capital's investment report in Peru revealed that farmers affiliated with its investees obtained 29% more income from cocoa production than their counterparts in 2018 thanks to certification (i.e., Organic, Fairtrade), origin denomination, and direct trading with buyers. The study also revealed that farmers affiliated with its investees received more training and input assistance than their counterparts, which greatly benefited women (Council on Smallholder Agriculture Finance, 2020; Naeve & DoCampo, 2020).

Table 4. Indicators for the top 10 VSS-compliant cocoa-producing countries by volume of production for 2018

	VSS-compliant production: Mt, 2018 (5-year CAGR)	VSS-compliant area: ha, 2018 (5-year CAGR)	EBA (2019)	HDI (2018)	% Credit to Agriculture (2018)
Côte d'Ivoire	973,496 (23%)	1,706,480 (21%)	Medium	Low	Very high
Ghana	229,996 (22%)	619,826 (21%)	Medium	Medium	-
Nigeria	124,658 (55%)	264,516 (38%)	Medium	Low	-
Dominican Republic	70,625 (0%)	73,250 (-7%)	Medium	High	-
Ecuador	64,786 (43%)	59,300 (28%)	-	High	-
Cameroon	59,957 (82%)	117,530 (91%)	Low	Medium	-
Peru	31,894 (5%)	36,950 (4%)	Medium	High	-
Sierra Leone	25,900 (113%)	61,550 (-5%)	Low	-	-
Indonesia	25,162 (-14%)	41,498 (-5%)	-	High	Very high
Bolivia (Plurinational State of)	15,000 (49%)	4,000 (-4%)	-	-	Very high

Source: Elaborated by authors based on data from FAOSTAT, 2021; Meier et al., 2020; UNDP, 2021; World Bank, 2019.

Investment opportunities in the sector can also be identified by examining the EBA scores of cocoa-producing countries (see Table 4). Important investment opportunities in VSS-compliant cocoa are found in Côte d'Ivoire, Ghana, and Nigeria, which are characterized by low and medium EBA scores. For instance, long-term investments in renovating cocoa trees can increase productivity while preventing land clearing. Long-term financing risks associated with cocoa farming operations in these three countries could be mitigated by investing in VSS-compliant operations. Recent evidence suggests that VSSs can also help improve the management capacities of farmer groups, which can result in better-managed farming operations and reduced loan repayment risks (Swiss Platform for Sustainable Cocoa, 2019). Furthermore, they can offer price guarantees and premiums, which buffer farmers against price volatility (Swiss Platform for Sustainable Cocoa, 2019). Dominican Republic, Ecuador, Peru, and Indonesia are also areas of interest for investment in production processes. Impact investors may find that investing in smallholder cocoa farmers in Cameroon and Sierra Leone, which have low EBA scores, is interesting due to the potential for improving their quality of life. There is also potential for expanding VSS-compliant cocoa in Peru and Indonesia, which both have high EBA scores and low VSS cocoa production.

Investments to support cooperatives and SMEs are particularly important in countries with low HDI. Furthermore, there are many investment opportunities for the value addition of cocoa beans in producing countries such as Madagascar, Nigeria, and Côte d'Ivoire. Mon Choco, an

Ivorian chocolate manufacturer, uses West African Organic-certified cocoa beans and environmentally friendly processing practices to produce chocolate bars adapted to local tastes (The Luxe Digest, 2020).

Nevertheless, the prevalence in the cocoa sector of smallholders with limited capacities and resources requires well-thought-out investment models to minimize material risks. Collaborative investment models that include public and private FSPs, as well as VSSs, can mitigate investment risks. For instance, Convergence awarded a grant to the Rainforest Alliance, in collaboration with the International Finance Corporation (IFC) and Rabobank, to design a financial facility called the Conservation Investment Blueprint. This facility obtains blended finance from public and private FSPs to sustain a first-loss guarantee facility, establish a crop reserve fund by farmers, and provide short-term finance to smallholders, along with long-term finance/patient capital for cocoa plant rehabilitation. The Rainforest Alliance is de-risking investments by providing technical assistance to farmers on sustainable agricultural practices and improving the traceability of cocoa beans (Coalition for Private Investment in Conservation, 2019; Convergence, 2018).

Chapter 3 details how Fairtrade, the Rainforest Alliance, and Organic are designed to address sustainability challenges in the cocoa sector. For instance, the Rainforest Alliance aims to prevent forest losses while meeting market demands. The new Rainforest Alliance standard is based on a continuous improvement model that aims to embark farmers on a sustainable agricultural production journey. Fairtrade provides smallholder cocoa farmers with

minimum price guarantees and premiums, buffering them against volatile cocoa prices. The Organic standard focuses on requiring ecologically friendly production practices, such as prohibiting the use of agrochemicals. Each of these VSSs offers different and compatible requirements to shift the sector toward sustainability, which also reduces investment risks.

Coffee

Consumed primarily for its taste and caffeine content as a hot beverage, coffee is harvested on more than 11 million hectares by some 25 million farms, mostly smallholdings, which represented almost 70% of global production in 2016 (Acosta-Alba et al., 2020). An estimated 125 million people depend on coffee for their livelihoods (Fairtrade Foundation, n.d.). Coffee is grown in subtropical regions (16°–24° latitude) at altitudes of 550–1,100 m, where coffee has one maturation season, and equatorial regions (0°–10° latitude), where frequent rainfall induces two harvest seasons (Coffee Research, 2006). Arabica and Robusta, the two main coffee varieties, are grown at altitudes of 1,100–1,900 m and below 1,100 metres, respectively (Coffee Research, 2006). Both varieties require sufficient rainfall (1,500–3,000 mm annually) at specific times for plant growth, budding, and flowering (Panhuisen & Joost, 2014). Arabica is preferred for its taste and for brewing, while Robusta has higher caffeine content, is more heat tolerant, and is used for instant coffee. About 6% of the coffee grown in 2015 was Arabica, while the remainder was Robusta (FAO, 2015).

Market Status and Outlook

Although the COVID-19 pandemic slowed the growth of the coffee market, it is expected to grow at a CAGR of 4.28% from 2021 to 2026, while the coffee bean market is expected to grow at a CAGR of 3.3% from 2020 to 2025 (360 Market Updates, 2020; Mordor Intelligence, 2020b). About 70% of global coffee production was exported in 2016, and coffee exports remain one of the most consistently valuable agricultural commodities traded globally (International Coffee Organization [ICO], 2018). Coffee exports are a key source of income for many low- to upper-middle-income countries (FAO, 2015; Talbot, 2004). Coffee produced in Brazil, Vietnam, Colombia, Indonesia, and Ethiopia accounted for 68% of global production and USD 11.3 billion in export value, while Europe consumed 34% of the world's total coffee production in 2019 (CBI, 2020; FAOSTAT, 2021). Coffee exports have more than quadrupled since the 1990s from about USD 8 billion to USD 35.6 billion by 2008 (ICO, 2020a). The largest coffee-buying companies, such as the Kraft Heinz Company, The Coca-Cola Company, Nestlé SA, JM Smucker Company, and JAB Holding Company, are sourcing more and more sustainable coffee (Mordor Intelligence, 2020b).

The COVID-19 pandemic has exacerbated the sustainability challenges facing the coffee sector. Coffee farming has become increasingly difficult as prices have become more volatile and production costs have climbed, jeopardizing the many livelihoods that depend on the sector (ICO, 2020b). Resource mobilization and strategic investments will be needed to increase the sustainability

and resilience of the sector by specifically addressing the following challenges:

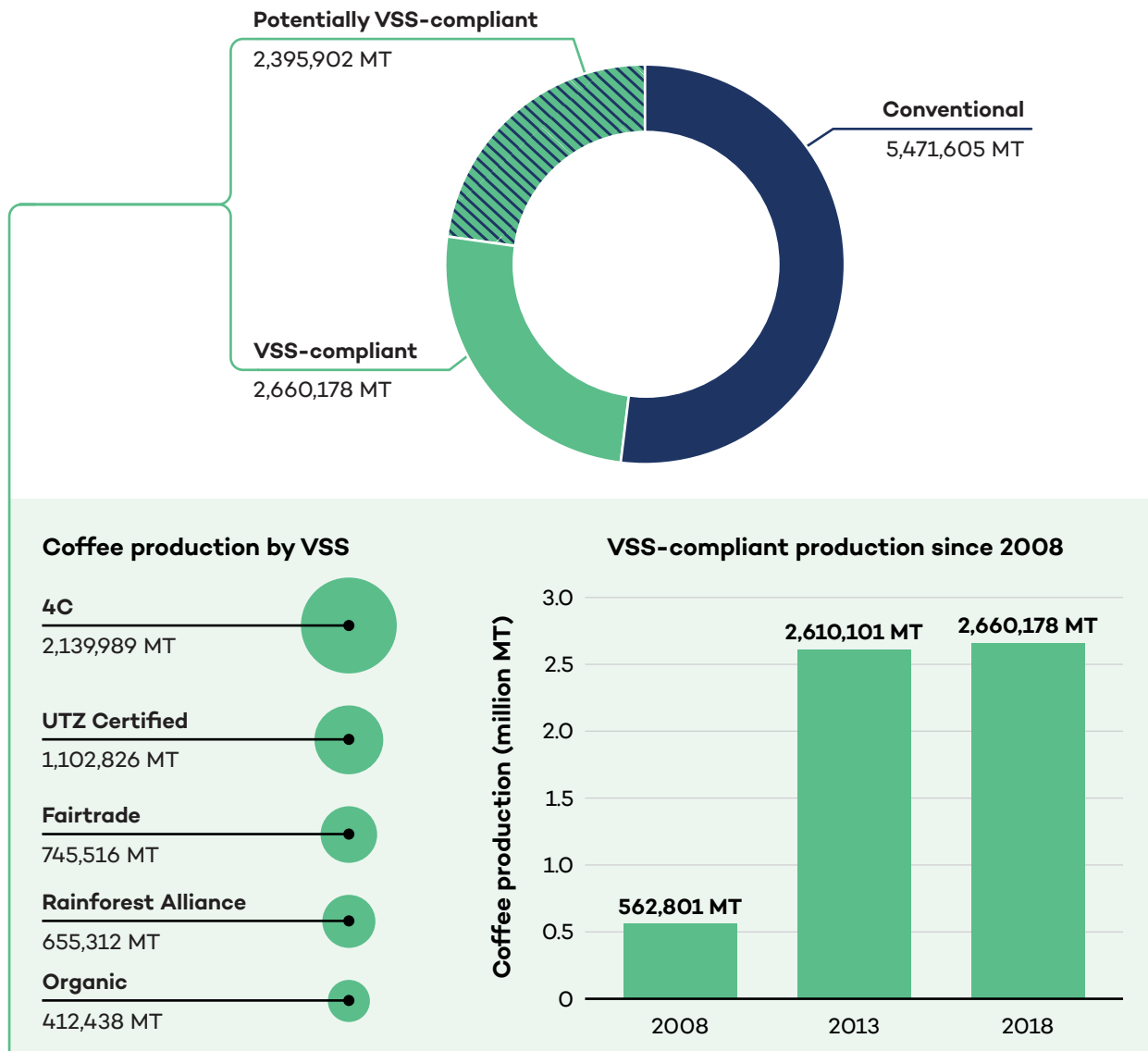
- **Low farm prices and high price volatility:** The coffee market is plagued by volatile international market prices, which have remained low despite growing demand, affecting coffee farmers' profitability and access to finance. Smallholders produce most of the world's coffee but face decreasing and volatile farm gate prices, which have been dropping in the last 10 years while production costs have advanced (Lewin et al., 2004; Panhuysen & Joost, 2021).
- **Working conditions:** Working conditions in the coffee sector need to be improved. Hired workers represent the poorest segment of the supply chain and are susceptible to poor working conditions and low wages (Potts et al., 2003).¹⁹ Forced and child labour are long-standing issues that persist, which can constitute reputational risks for agribusinesses and investors (Hansen et al., 2009; Verité 2016).
- **Deforestation:** Coffee is a suitable agroforestry crop that can grow well under shaded conditions with at least 40% canopy cover. Nevertheless, the coffee sector has been a driver of deforestation as farmers try to increase yields. Shade systems decreased from 43% to 24% of total cultivation area between 1996 and 2010 (Jha et al., 2014). The impact of coffee on deforestation is significant: 80% of the total area devoted to coffee cultivation is in current or former rainforest areas (Halweil, 2002). Moreover, deforestation and canopy removal affect biodiversity, soil fertility, and pest and predator populations, which can increase the need for fertilizer and pesticide applications (de Blécourt et al., 2019; Kassa et al., 2017). Although full-sun monocrop coffee systems may offer higher short-term yields and returns, they could reduce profitability in the medium to long term.
- **Climate resilience:** The coffee sector faces a pressing need to build climate resilience, and climate adaptation has become increasingly important, with yields and quality expected to drop due to changing weather patterns that will increase the operational risks of coffee sector investments (Koh et al., 2017; Worland 2018). Abnormally high temperatures, droughts, and excess rain in coffee-growing regions have already reduced productivity and led to disease outbreaks such as coffee leaf rust for Arabica in Central and northern South America and the coffee wilt disease for Robusta in Africa (Davis et al., 2019; ICO, 2013). Climate change is expected to halve the land suitable for growing Arabica coffee by 2050, threatening 60% of wild coffee and putting the world's coffee supply at risk (Davis et al., 2019). For instance, Ugandan coffee production at lower altitudes (less than 1,300 m) is expected to become untenable due to mounting incidences and intensities of drought and increased pests and diseases (Panhuysen & Pierrot, 2014).

¹⁹ Coffee wages vary by a multiplier of 17 between countries, with monthly wages ranging from USD 20 in Ethiopia to USD 350 in Costa Rica (Pinedo Caro, 2020). None of the plantations surveyed in Guatemala paid the minimum wage; the majority paid less than half the minimum wage (Oxfam GB, 2001).

VSSs emerged in the coffee sector in the late 1960s to address some of these sustainability challenges. VSS-compliant coffee grew rapidly from 2008 to 2016 at a CAGR of about 24%, reaching at least 3 Mt valued at USD 7.2 billion and representing 34.5%–55.9% of global coffee production in 2016 (Lernoud et al., 2018; Panhuysen & Joost, 2018).

Although the percentage of global coffee production certified under one scheme or another in 2016 reached at least 35%, there are signs that expansion slowed up to 2018 to potentially balance market demand (Lernoud et al., 2018; Panhuysen & Joost, 2018; Voora, Larrea, Bermúdez, & Baliño, 2019). VSS-compliant coffee increased at a CAGR of

Figure 3. Global coffee production in 2018, where VSS-compliant coffee has reached about 25%–48% of total production



Source: Elaborated by authors based on data from Meier et al., 2020; FAO, 2018.

0.4% from 2013 to 2018, indicating that market growth slowed compared with the CAGR of almost 17% from 2008 to 2018. In 2018, VSS production dropped to 25% of world coffee production (FAOSTAT, 2021; Meier et al., 2020). More recent evidence suggests that the production volume of VSS-compliant coffee declined from 2018–2019 to just over 20% of total coffee production (International Trade Centre et al., 2021). In 2018, the largest VSSs in order of production were the Common Code for Coffee Community (4C), UTZ Certified, Fairtrade, the Rainforest Alliance, and Organic (see Figure 3). Major players, including Starbucks and Nestlé, have also established their own sustainable coffee production programs, CAFÉ Principles and Nespresso AAA, respectively (Voorra, Larrea, Bermúdez, & Baliño, 2019).

Investment Opportunities

VSS-compliant coffee offers opportunities to strengthen the business case for investing in a more sustainable coffee sector.²⁰ Furthermore, expanding VSS-compliant coffee production will continue to require important investments as coffee farmers with greater resources and capacities become certified (Potts et al., 2014). FSPs have started leveraging the advantages of investing in VSS-compliant coffee farms to lower their material risks. Farmers who adopt VSSs can strengthen their market relations and

sustainable farming capacities while providing assurances to consumers that their coffee is grown more sustainably, all of which can lower investment risks.²¹ For instance, VSSs require their farmers to adopt production practices that can lower investment operational risks, such as soil conservation and fertility measures that can enhance yields and quality as well as canopy cover and shading to protect coffee shrubs from weather extremes, while diversifying livelihoods through agroforestry (Elder, 2021; Havemann et al., 2017; Rahn et al., 2018).

Climate change adaptation is one of the main investment opportunities for VSS-compliant coffee, as it can enhance farmers' access to technical assistance and finance (Jassogne et al., 2013). Investments in coffee plantations that adopt sustainable practices such as tree planting, water and soil conservation, mulching, and pest management can build resilience while improving yields and quality (de Sousa et al., 2019; Gomes et al., 2020). Rainforest Alliance and Fairtrade certification, for instance, requires forest conservation measures. In addition, VSS-compliant coffee offers FSPs climate change mitigation opportunities through carbon storage and sequestration. For instance, the Rainforest Alliance's forest carbon project in the Oaxaca region of Mexico aims to reforest the coffee plantations owned by 250 smallholder farmers to capture 130,000

²⁰ For instance, 12Tree, a private investor, promotes the advantages of agroforestry; it invests both in food crops and high-value crops for the local communities (i.e., plantain and dates) but also in high-value crops such as coffee, benefiting local communities and attracting investors (12Tree, 2019).

²¹ For instance, the cooperatives and farmer associations involved in the project (Procafé, Coomcafe, Aldea Global) source coffee from small-scale farmers who are certified (Fairtrade, Rainforest Alliance, etc.) and benefit from market linkages and secure contracts with buyers. Promessa-Cafca, for its part, provides extension services to farmers, including agronomic services, business management, and technological innovation.

tonnes of carbon dioxide emissions over 30 years (Rainforest Alliance, 2018a).

VSSs are also working to make coffee farming more profitable for the producers who underpin the entire sector. For instance, some VSSs offer minimum price guarantees, and VSS-compliant coffee often receives premiums that are funnelled back to producers. The Fairtrade minimum price guarantee for Arabica washed certified coffee in 2021 is about 40% more than the market price. Farmers also earn a premium of USD 20 cents per pound to be invested in community development projects (Fairtrade International, 2021). Furthermore, VSSs have requirements to improve the salaries and working conditions of workers. For instance, the Finca Chimelb in Guatemala, an investee of 12Tree, pays its workers 40% more than the national minimum wage to produce coffee, cocoa, rubber, lemon, and cardamom, complying with VSSs such as the Rainforest Alliance, Forest Stewardship Council, and Organic (Uncommon Cacao, n.d.). Perhaps more importantly, VSS-compliant farming operations can secure coffee contracts from companies sourcing sustainable coffee—such as Keurig Green Mountain, which sources Fairtrade International, Fairtrade USA, and Rainforest Alliance coffee—thus lowering investment risks associated with VSS-compliant coffee operations (Root Capital, 2014a, 2014b; Schueneman, 2015).

Investment opportunities in VSS-compliant coffee operations can be found in countries listed in Table 5. Countries with high EBA indices—including Brazil, Colombia, Indonesia, Nicaragua, and Mexico—indicate

potentially lower investment risks, while countries with medium and low EBA indices—such as Honduras, Sierra Leone, and Ethiopia—constitute opportunities for impact investors or development finance institutions. For example, profitable investments were made in VSS-compliant coffee operations in Vietnam by leveraging transportation and processing infrastructure in the coffee belt in combination with support from a World Bank line of credit²² to help farmers become VSS compliant (IDH – The Sustainable Trade Initiative, 2020a; VNExpress, 2016). Similarly, FSPs can add value to VSS-compliant coffee operations by coalescing supporting actors to de-risk investments in coffee operations in less-developed countries. For instance, the SNV and Promessa-Cafca project in Nicaragua invested in coffee bean wet and dry milling to enhance product quality while improving waste management (SNV, 2020).

The coffee sector recognizes VSSs as a benchmark for assessing sustainable coffee production that can provide producers with market access and technical support. The eco.business Fund knows that climate change threatens coffee plants and that sustainable coffee practices can increase their longevity (eco.business Fund, 2018, 2019). The fund gives loans to financial institutions in coffee-growing countries for on-lending to coffee agribusinesses to obtain financial and environmental returns and build resilient plantations. Local financial institutions lend to coffee agribusinesses that are certified or adopt biodiversity and natural resource conservation measures aligned with the fund's sustainability mandate. The fund

²² This credit line of the World Bank refers to the Vietnam Sustainable Agriculture Transformation project (2015–2022).

also leverages blended finance from its partners (i.e., UK Aid Direct, Financierings-Maatschappij voor Ontwikkelingslanden, Kreditanstalt für Wiederaufbau) to provide technical assistance and training to its investees to build their capacity to adopt sustainable practices that protect biodiversity and promote sustainable natural resource management and climate adaptation (eco. business Fund, 2018, 2019). VSSs play a key role by enabling the fund to pre-select coffee agribusinesses that meet their conservation

criteria, save monitoring and verification costs, and leverage impact measurements to better understand and report on the benefits of VSS-compliant coffee investments (eco. business Fund, 2018, 2019).²³

Table 5. Indicators for the top 10 VSS-compliant coffee-producing countries by volume of production as of 2018

	VSS-compliant production: Mt, 2018 (5-year CAGR)	VSS-compliant area: ha, 2018 (5-year CAGR)	EBA (2019)	HDI (2018)	% Credit to Agriculture (2018)
Brazil	1,005,751 (-1%)	517,221 (-6%)	High	High	Medium
Vietnam	420,834 (-5%)	124,346 (-5%)	Medium	High	-
Colombia	365,789 (0%)	326,694 (1%)	High	High	-
Peru	121,515 (3%)	161,551 (3%)	Medium	High	-
Honduras	101,828 (2%)	58,112 (4%)	Medium	Medium	-
Sierra Leone	80,150	37,700	Low	Low	-
Indonesia	58,320 (7%)	59,850 (11%)	High	High	Very high
Ethiopia	51,435 (5%)	159,850 (2%)	Medium	Low	High
Nicaragua	46,439 (14%)	42,512 (-10%)	High	Medium	-
Mexico	43,453 (-11%)	78,181 (-19%)	High	High	-

Source: Elaborated by authors based on data from FAOSTAT, 2021; Meier et al., 2020; UNDP, 2021; World Bank, 2019.

²³ In its impact report, the fund leverages certification data to disclose information on the area under sustainable management. It also reports on carbon dioxide stored in agroforestry systems and provides a rationale for the fund's theory of change.

Box 1. The Mercon Group sustainability-linked loans

Commodity: Coffee

Regional focus: Nicaragua, Honduras, Guatemala, Brazil, and Vietnam

VSSs: Rainforest Alliance, 4C, CAFÉ Principles, AAA Nespresso

Investee: Mercon Group

A consortium of banks led by Rabobank established the Mercon Group in 2018 to administer USD 450 million in sustainability-linked loans to support sustainable coffee practices. Its interest rates are linked to sustainability outcomes that include social and environmental issues, including deforestation, child labour, and pest and pesticide management. These issues can be mitigated by VSSs that provide third-party verification of sustainability requirements with which producers must comply to address certain of these issues.

The Mercon Group also has a sustainability program called Leveraging in Farmers Technology (LIFT) that offers services adapted to producing-country necessities, which can include technical assistance, support for VSS compliance, and access to capital and coffee varieties. For example, the program targets productivity and access to capital in Central America, while in Brazil and Vietnam, it focuses on resource-use efficiency, technology, and social and environmental best practices. Mercon and the farmers who participate in the LIFT program contribute—with their incomes increased thanks also to the program—to community development, for example, through the Seeds for Progress Foundation. The outcomes of the LIFT program are measured by specific performance indicators as defined in the LIFT Index, and on which the interest rates of the sustainability-linked loan depend. The index—which is third-party verified—tracks 18 sustainability practices aligned with Rainforest Alliance standards.

Achieving sustainability targets reduces Mercon's financing costs and frees funding to support the LIFT program. Mercon announced that it closed on a deal for a USD 450 million Sustainability Linked Senior Secured Revolving Credit Facility, the first in commodity trading in the United States and the first coffee-only sustainability facility globally. The pricing on this facility is linked to key sustainability initiatives measured by performance indicators. If sustainability targets are unfulfilled, the funding is invested into similar sustainability programs sponsored by Rabobank, ING Capital LLC, and BNP Paribas. Roasters that sponsor producer clusters, including Paulig, Caffé Nero, illy Caffé, and S & D Coffee, support LIFT. The roasters also audit the program to measure the impact on coffee farms.

This case demonstrates that investors can play an active role in fostering the adoption of sustainable agricultural practices by linking loan interest rates with sustainability outcomes. Further, the alignment of the Mercon LIFT Index with Rainforest Alliance standards denotes the coffee industry's recognition of VSSs' pertinence and usefulness for achieving sustainability outcomes.

VSS-compliant coffee production requires large-scale and long-term investments to build climate resilience. A landscape approach is required to ensure that VSS-compliant coffee enhances sustainable production, natural resource management, forest conservation, and community well-being—all of which require multistakeholder collaboration (Shames & Scherr, 2015; IDH – The Sustainable Trade Initiative, 2017; Verburg et al., 2019). The IDH – The Sustainable Trade Initiative landscape program promotes 4C certification in collaboration with impact investors and governments to build a portfolio of landscape investment-ready projects (IDH – The Sustainable Trade Initiative 2015, 2017). Root Capital, in partnership with Keurig Green Mountain, the Skoll Foundation, and the Inter-American Development Bank, established the Coffee Farmer Resilience Initiative in 2013 to provide long-term loans for farmers to renovate coffee plants affected by coffee leaf rust. At least USD 7 million has been disbursed as long-term investments from public and private sources with varying return expectations and grants supporting farming capacity building to reduce investment risks (Root Capital, 2016; Schueneman, 2015; Sustainable Coffee Challenge & USAID, 2016).

Details on how the main VSSs operating in the coffee sector—4C, Organic, Fairtrade, and the Rainforest Alliance—are working to address coffee cultivation sustainability challenges and investment risks are presented in Chapter 3. VSS-compliant coffee operations can lower investment risks by requiring more sustainable farming practices, secure buyer contracts, and better quality.

These requirements favour the viability of investments in VSS-compliant coffee across origins to meet financial and sustainability goals (International Comunicaffe, 2016; Lerner et al., 2021; SNV, 2020). Each VSS in the sector offers different and compatible requirements to achieve sustainability objectives that can reduce investment risks (Voora, 2016). For instance, 4C is oriented toward meeting mainstream market needs. The Rainforest Alliance and UTZ Certified, which have merged, aim to enable sustainable coffee production while preventing deforestation. The Organic standard focuses on requiring more ecologically friendly coffee production. Fairtrade aims to improve the socio-economic conditions of smallholder coffee farmers and coffee plantation workers by ensuring them fair compensation for their harvests and labour.

Cotton

Cotton is a staple crop for the global textile sector that has grown into a trillion-dollar industry (Grand View Research, 2021). Cotton fibres remain the most sought-after natural fibre due to their breathability, flexibility, durability, and drying characteristics, representing 30% of the total fibres consumed globally (International Cotton Advisory Committee, 2016; Sette, 2015). Cotton is grown on about 3% of agricultural land, of which more than half is irrigated (IDH – The Sustainable Trade Initiative, n.d.; Newell, 2016; Soth et al., 1999; Triodos Investment Management, n.d.). Most cotton that is cultivated is genetically modified (64% in 2016) and of the Upland variety (Pines, 2021; Triodos Investment

Management, n.d.).²⁴ Smallholders in 70 countries, representing 99% of all cotton farmers worldwide, produce approximately 75% of all cotton (IDH – The Sustainable Trade Initiative, n.d.). There are stark differences in how it is grown across the world, with technologically advanced production methods using genetically modified (GM) seeds, irrigation, and highly mechanized cultivation practices to more rudimentary approaches relying on local seeds, precipitation, and manual labour.

Market Status and Outlook

Demand for cotton is tightly linked to the global textiles sector, which is expected to grow by a CAGR of 4.4% from 2021 to 2028 (Grand View Research, 2021). As a raw material, cotton lint accounted for 39% of the textile market's revenue in 2020 (Grand View Research, 2021). The sector experienced a 6.5% downturn that year due to the COVID-19 pandemic but is expected to rebound in 2021/22, with cotton production rising by 4.7% as the global economy gets back on track (Johnson et al., 2021). Cotton is a heavily traded agricultural commodity involving some 150 countries, many of which rely on its export for foreign exchange earnings, GDP, and tax income (Mordor Intelligence, 2020c). All central Asian countries and about 57% of African countries depend greatly on cotton exports for their economic growth (Mordor Intelligence, 2020c). The global cotton trade is expected to rise by 6% to 43.9 million bales from 2020/2021 to 2021/2022 (Johnson et al., 2021). Most of the top countries to

export and import cotton are in Asia (China, India, Bangladesh), the world's textile manufacturing centre (Workman, 2020, 2021a).

Despite this positive outlook, the cotton sector faces sustainability challenges that must be addressed if it is to remain competitive (SGS, 2021; Triodos Investment Management, n.d.). These challenges can affect cotton-farming productivity and profitability and result in material risks for FSPs. For example, threats to cotton harvests constitute loan repayment risks, and the negative impacts associated with cotton farming can become reputational risks for investors and brands that can ultimately affect their bottom line (Principles for Responsible Investment, 2018a). Some textile companies have lost brand value and profits by ignoring sustainability challenges, such as upholding decent working conditions and labour rights, in their supply chains (Blanding, 2016; Sanders et al., 2019).

More specifically, changing climatic conditions, water use and pollution, agrochemical misuse, and poor employment practices are among the main sustainability challenges facing the cotton sector that translate into material business and financial risks for textile companies and investors (Blanding, 2016; Sanders et al., 2019). For instance, changing climatic conditions can result in operational risks due to harvest losses, while erroneous employment practices can lead to market, reputational, and litigation risks. The main sustainability challenges facing the cotton sector are described in more detail below.

²⁴ Most cotton grown is Upland cotton (90%), followed by extra-long staple cotton (8%), tree cotton (less than 2%), and levant cotton (less than 2%) (Pines, 2021).

- **Climate change:** Changing weather patterns are expected to disrupt agriculture worldwide; this will affect agricultural commodity prices. Increased precipitation variability will reduce cotton fibre yields and quality, which could drive up its price (Cotton Incorporated, 2017). For instance, floods in 2011 in key cotton-producing countries, such as Burkina Faso, affected production and drove up cotton prices, lowering sovereign and textile company credit ratings (Schlef et al., 2018; Stoeffler et al., 2016). Cotton cultivation contributes about 0.3% to 1% of global greenhouse gas (GHG) emissions, which is probably considerably less than synthetic fibres, cotton's main competitor in the textile sector (Tons & Kasterine, 2011).
- **Water conservation:** Unsustainable irrigated cotton can lead to water scarcity, which can affect cotton fibre yields and quality (FAOSTAT, 2017; Principles for Responsible Investment, 2018a; Radhakrishnan, 2017). An estimated one third of global irrigated cotton is already or soon to be affected by soil salinization, which can lower productivity and cause soil erosion and degraded terrestrial and aquatic ecosystems (Mollae et al., 2019; Razzouk & Whittington, 1991; Rengasamy, 2016; Singh, 2015; Wang et al., 2019).
- **Pest management:** While cotton is grown on just 3% of the world's agricultural land, its cultivation consumes approximately 6% of global pesticides affecting human and ecological health (IDH – The

Sustainable Trade Initiative, n.d.; Pesticide Action Network UK, 2017). GM cotton, designed with some pest-resistant properties, has not always resulted in lowering pesticide use, leading to pest resistance in some cases (i.e., the “superweed” Palmer amaranth) (Bourland, 2017; Brookes & Barfoot, 2020; Hsaio, 2015; Kranthi & Stone, 2020).

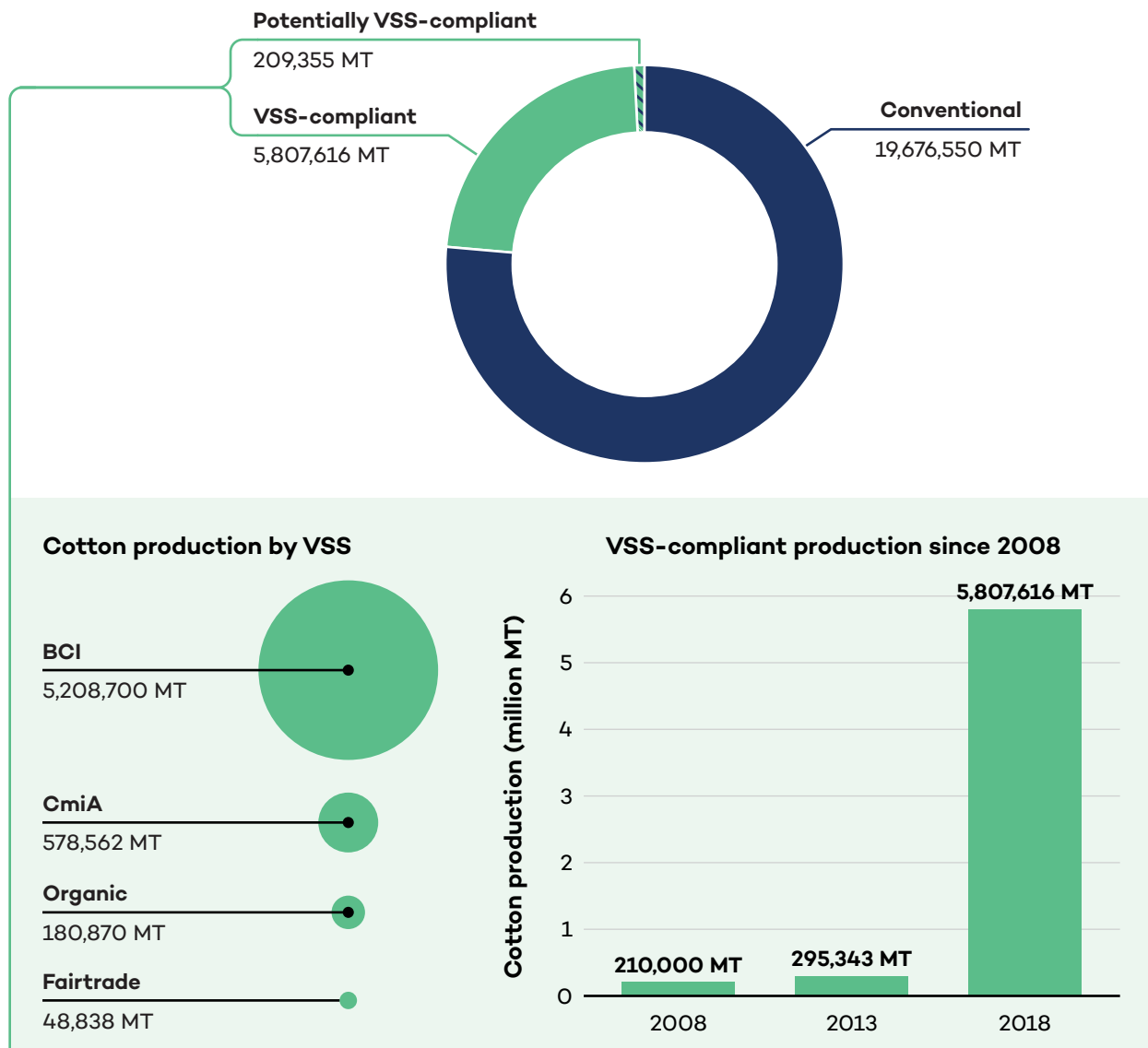
- **Economic viability:** Cotton farmers can fall into vicious cycles of indebtedness as they must cope with decreasing and volatile cotton prices and increasing agricultural input costs hurting their profitability. This dynamic has led to rampant farmer suicides in the Indian cotton belt (Gutierrez et al., 2015).
- **Employment practices:** Cotton workers are still susceptible to low wages, slave labour, child labour, and low health and safety standards (IISD, 2017; Olmstead, 2017; Olmstead & Rhode, 2018). Until recently, cotton produced in Uzbekistan was supported by forced and child labour (ILO, 2021).

VSSs operating in the cotton sector have been working to address these challenges since the first Organic-certified cotton was produced in the early 1990s. Cotton compliance with the main VSSs operating in the sector—the Better Cotton Initiative (BCI), Cotton made in Africa (CmiA), Organic, and Fairtrade—has grown to more than 20% of global cotton production since then (see Figure 4) (BCI, 2020; Organic Trade Association, 2020; Textile Exchange, 2020a). VSS-compliant cotton-production growth trends have outperformed conventional cotton to meet demands for more sustainable goods

worldwide. For example, organic cotton production grew 31% from 2018 to 2019 and was expected to expand by 10% from 2019 to 2020 (Textile Exchange, 2020b). The same can be said for cotton compliant with the BCI, whose sales climbed by 40% from 2018 to 2020 to more than 1.5 Mt, or 6% of global cotton production (BCI, 2020).

VSS-compliant cotton is often earmarked for export to meet consumer demands for sustainable products, primarily in Europe and North America. The largest cotton consumers in the textile sector, including H&M, Inditex, and C&A, are driving demand for VSS-compliant cotton to meet their sustainable sourcing commitments to lower their supply

Figure 4. Global cotton lint production in 2018, where VSS-compliant cotton has reached 22%–23% of total production



Source: Elaborated by authors based on data from Meier et al., 2020; FAO, 2018.

chain and reputational risks (Voora, Larrea, & Bermúdez, 2020a). The increased demand for VSS-compliant cotton in European and North American markets and its projected growth open opportunities for FSPs willing to invest in existing and aspiring VSS-compliant cotton operations to improve the sustainability of cotton operations and secure a financial return.

Investment Opportunities

As long as cotton continues to be a basic material found in most textile products, the cotton supply chain²⁵ is likely to remain of potential interest for FSPs. Furthermore, rising demands from the public and private sectors for more sustainable textiles are important to create investment opportunities linked with VSS-compliant cotton. In 2019, for example, Germany adopted the green button label, the first government-led sustainable textile standard, and Triodos Investment Management, with investments reaching 99,000 smallholders, has required its investees to source sustainable cotton since 2016 (FashionUnited, 2019; Deutsche Gesellschaft für Internationale Zusammenarbeit [GIZ], 2019; Glover, 2021; Triodos Investment Management, 2019).²⁶ Meeting this demand will require shifting the cotton sector toward sustainability with strategic investments, particularly at the farm level,²⁷ to reduce risks and generate

positive impacts. To this end, VSSs operating in the sector have been providing guidance and incentives for producers in many cotton-producing countries to adopt more sustainable farming practices.

Much of the investment case for VSS-compliant cotton operations is tied to their sustainable production requirements, assurance, and monitoring and evaluation systems. VSSs require cotton producers to adopt more sustainable farming practices, which can include soil and water conservation, integrated pest management, and workers' health and safety. All of these can reduce material risks to improve yields and reduce costs, resulting in greater profits, which is a sign of financial health for prospective FSPs. Assurance and monitoring and evaluation systems give FSPs some certainty that VSS-compliant cotton operations use more sustainable farming practices in compliance with VSS production criteria.

The positive financial effects associated with more sustainable practices can lead to attractive investment opportunities. For instance, an Egyptian organic cotton business reported that lower farm costs and improved average yields by almost 30%, along with better quality cotton, resulted in annual revenue increases of 14% from 2006 to 2011 (Haanaes et al., 2013). The BCI reported higher profits for its farmers in the 2017–

²⁵ The cotton supply chain is primarily composed of agricultural producers that grow and harvest seed cotton, ginners that separate seed cotton into lint and seeds, spinners that turn the cotton lint into yarn, cut and sew operations that turn cotton fabric into textile products, and retailers and brands that sell the finished textiles.

²⁶ Triodos Investment Management reported (2019) that “the weighted average of sustainably sourced or recycled materials used by all companies in the Triodos Organic Growth Fund portfolio amounts to 90% in 2019.”

²⁷ Investments at the agricultural production level include providing working capital for agricultural inputs and labour as well as asset investments such as irrigation and drainage systems, harvesting machinery, and storage facilities (Burney et al., 2010; Dhar et al., 2010, p. 24).

2018 harvest season compared to control groups in countries including China (+25% higher profits), India (+24%), Pakistan (+40%), and Turkey (+13%) (BCI, 2018).

FSPs can also find VSS-compliant cotton operations strategic in terms of supporting positive social-ecological outcomes. For instance, organic cotton can potentially lower GHG emissions by 46% and reduce water consumption by 91% compared to conventional cotton (Textile Exchange, 2014). The BCI reports an increasing number of women participating in its training efforts; in

China, India, and Turkey, women represented 33%–35% of trained cotton farmers (BCI, 2018). To date, 18% of CmiA-compliant smallholders are women, and several gender-equality initiatives have been implemented in cotton-growing communities (CmiA, 2020). FSPs can then report on the sustainability outcomes supported by their investments in their non-financial disclosure activities and corporate reports (i.e., female smallholder beneficiaries, GHG emission reductions).

Investment opportunities in the sector can also be identified by examining HDI and

Table 6. Indicators for the top 10 VSS-compliant cotton-producing countries by volume of production as of 2018

	VSS-compliant production: Mt, 2018 (5-year CAGR)	VSS-compliant area: ha, 2018 (5-year CAGR)	EBA (2019)	HDI (2018)	% Credit to Agriculture (2018)
China	1,053,000 (152%)	520,000 (81%)	High	High	-
India	652,000 (52%)	785,000 (27%)	Medium	Medium	Very high
United States	-	-	-	-	-
Brazil	2,027,000 (1052%)	1,121,000 (15%)	High	High	Medium
Pakistan	906,000	1,072,000 (41%)	Medium	Low	-
Turkey	53,000 (49%)	26,000 (30%)	High	Very high	Low
Uzbekistan	-	-	Low	High	-
Australia	92,000	55,000 (15%)	High	Very high	-
Mexico	-	-	High	High	-
Greece	850	1,153	Very high	Very high	Medium

Source: Elaborated by authors based on data from FAOSTAT, 2021; Meier et al., 2020; UNDP, 2021; World Bank, 2019.

EBA scores of cotton-producing countries (see Table 6). VSS-compliant operations in countries with higher HDI and EBA scores, such as Brazil, China, and India, offer FSPs the potential to stay ahead of future regulations requiring more sustainable cotton-production practices. Furthermore, countries with high levels of domestic credit have a developed local financial market, which can assist with international and local investor collaborations to identify potential investment cases that can leverage local

knowledge and benefit from joint access to local and hard currencies. Investing in cotton-producing countries with lower HDI and EBA scores typically entails greater risks as well as potential returns while offering FSPs the possibility to have a development impact. For instance, West African cotton-producing countries, including Burkina Faso, Côte D'Ivoire, and Ghana, offer investment opportunities in VSS operations with development impact potential because small farmers dominate cotton production. VSSs

Box 2. INOKS Capital and CmiA

Commodity: Seed cotton and cotton lint

Region: Ghana

VSS: CmiA

The Ghanaian cotton industry, established in 1968, has struggled with low productivity due to limited seedling availability, agrochemical reliance, and obsolete production technologies. The Government of Ghana renewed the sector in 2010 and assigned production to three companies. Wienco Cotton Ltd., widely known as WICO, is the only one of the three that has survived. The company has been ginning seed cotton into cottonseed and lint for export since 2011, providing inputs and supporting services to farmers from which it sources to improve their productivity. The company's success has been supported by the adoption of the CmiA standard and by INOKS Capital, which finances its entire value chain from agricultural inputs to exported cotton bales.

INOKS Capital financing allowed WICO to improve its product export marketability by sourcing inputs that comply with European, U.S., and Japanese standards, ensuring timely farmer payments and increasing cotton lint production and quality through improved cultivation and ginning practices. These investments, coupled with the adoption of more sustainable cotton-production practices, as required by the CmiA standard, have favoured bottom-line effects and increased income levels for the investee. To further leverage this successful cotton-production model, WICO plans to invest USD 10 million to support its farmers and increase their seed cotton productivity from 4,000 Mt to 50,000 Mt in 6 years, though the starting date is not clear. The WICO experience demonstrates that combining the adoption of sustainability standards at the farm and gin levels with agronomic support and tailored, flexible, and timely investments like those provided by INOKS Capital constitutes a solid foundation for creating a more sustainable cotton sector.

can support these investments by providing incentives for cotton producers to form cooperatives, sustainable agriculture technical assistance, and access to markets.

Collaborative investment models can de-risk investments and provide financial services to smallholders in low-HDI countries, where transaction and administrative costs can be exorbitant. For example, the Africa Agriculture and Trade Investment Fund uses blended finance to mobilize private and public capital while simultaneously fulfilling development objectives, reaching small-scale cotton growers to improve their productivity, cotton quality, and sustainable agricultural practices. The fund includes a first-loss guarantee by Germany's Federal Ministry for Economic Cooperation and Development and a technical assistance facility. To enable sourcing of VSS-compliant cotton grown by Ghanaian smallholder producers, the fund gave a 3-year loan to a buyer that provides technical assistance to cotton growers and agricultural inputs on credit (Blended Finance Taskforce, 2020; CmiA, 2015; Convergence, 2015). These types of strategic collaborations among public and private investors, buyers, and VSS-compliant farmers can also lead to the development of novel investment products, such as sustainability bonds supported by VSSs. For instance, Otto Group raised EUR 250 million by issuing sustainability bonds for capital markets in 2019 that were partly used to buy 87 million CmiA-labelled textiles benefiting CmiA smallholder cotton farmers (CmiA, 2020).

The CmiA, Gates Foundation, and GIZ partnership, supported by an alliance of textile companies established by the Aid by Trade Foundation, provides an exemplary model, as it delivered the right blend of

support, capacity building, financing, and market access to expand sustainable cotton-production practices in Cameroon and Côte D'Ivoire. In doing so, the partners improved the investment readiness of cotton agribusinesses (GIZ, 2009). Creating the right organizational collaborations to support VSS-compliant cotton production helps de-risk investments and improve cotton-farming livelihoods, which is vital to moving the sector toward sustainability.

Details on how the main VSSs operating in the cotton sector—the BCI, Organic, Fairtrade, and the CmiA—are working to address cotton cultivation sustainability challenges and investment risks are presented in Chapter 3. For instance, the BCI is oriented toward meeting mainstream market needs by maintaining a more accessible standard for cotton farmers. The Organic standard focuses on requiring more ecologically friendly cotton-production practices, such as banning the use of synthetic fertilizers and pesticides. Fairtrade cotton aims to improve the socio-economic conditions of smallholder farmers by ensuring them fair compensation for their harvests. The geographical focus of the CmiA standard targets cotton-farming communities where poverty alleviation is desperately needed. Each of these VSSs offers different and compatible requirements to shift the sector toward sustainability, which can reduce investment risks (Voora, 2016).

Palm Oil

The optimal conditions for growing oil palm are found 10° north and south of the Equator in climates with high levels of humidity and warmth. For this reason, oil

palm plantations have expanded since the early 1990s at the expense of tropical forests. Small farmers account for 40% of palm oil production (Voora, Larrea, Bermúdez, & Baliño, 2020). Plantations typically need to be replanted after 25 years to maintain productivity (Bronkhorst et al., 2017; Sahara & Kusumowardhani, 2017). Oil palm is the highest-yielding oilseed among all vegetable oils, accounting for 36% of all vegetable oil on only 6% of the land allocated for vegetable oil production (Ritchie & Roser, 2020). Although palm oil has become essential to maintain global food security, it also provides essential raw materials for personal care products and biofuels (Bergen, 2016; imarc, 2019). Palm oil became popular after trans-fats were banned in some countries and the World Health Organization recommended limiting trans-fat intake, but its nutritional properties are still contested due to its comparatively high saturated fat content (Assemblée Nationale, 2018; Tullis, 2019). Nevertheless, its productivity, which can be up to 10 times more than other oilseed crops, makes it a very attractive investment opportunity (Rabobank, n.d.; Voora, Larrea, Bermúdez, & Baliño, 2020).

Market Status and Outlook

Around 404 Mt of oil palm fruit were harvested in 2018, yielding about 71 Mt of palm oil or double the global production obtained in 2008 (FAOSTAT, 2018). The overall export value of palm oil was USD 13.6 billion in 2020 (Tridge, 2020b).²⁸ Global demand for edible oils is expected to quadruple by 2050, and palm oil has the

potential to meet around 60% of this demand (Rabobank, n.d.). Palm oil is generally destined for export. The main exporters in 2019 were Indonesia (USD 16.9 billion) and Malaysia (USD 9.5 billion). Asian countries are the largest importers of palm oil, led by India (USD 5 billion) and China (USD 4.6 billion). The EU and the United States consume only 15% and 3.5%, respectively, of the total palm oil production (ResourceTrade. Earth, 2020). This fact highlights the limited leverage of developed economies to foster more sustainable palm oil production through their demand.

Demand for palm oil has recently outpaced supply, lowering stockpiles in producing countries to 8 Mt by 2020 (Voora, Larrea, Bermúdez, & Baliño, 2020). The COVID-19 pandemic caused a drop in forecasted demand and less foreign labour in Malaysia and Indonesia, which affected production in 2020 (Craymer, 2021; Malaysian Palm Oil Council, 2021). Nevertheless, palm oil demand remained strong due to lower sunflower and rapeseed oil production because of La Niña in 2020–2021 and China's rising preference for vegetable oils over animal fats. As a result, there was a palm oil supply deficit in the second half of 2020 and the first half of 2021. Production is expected to catch up with demand in the second half of 2021 (Craymer, 2021).

Despite this positive outlook, the sector faces sustainability challenges that must be addressed for it to continue thriving. These challenges can affect palm oil productivity, profitability, and market access, which can result in material risks for FSPs. For instance,

²⁸ Refers to palm oil and fractions other than crude, whether or not refined, not chemically modified (HS Code: 151190).

deforestation associated with palm oil could affect brand value, which can translate into investment market and reputational risks. More specifically, deforestation and biodiversity losses, changing climatic conditions, and poor employment practices are among the main sustainability challenges facing the palm oil sector that translate into material business risks for companies and investors. They are further described below:

- **Deforestation and biodiversity loss:** Deforestation associated with palm oil is a major concern, as around 18 million hectares of tropical forests have been cleared for palm oil production (FAOSTAT, 2018). More than half of all deforestation in Borneo, Indonesia, from 2005 to 2015 was associated with palm oil production. The loss of rainforests has destroyed habitats for endangered animals, including orangutans and the Sumatran tiger, while opening the way for poachers (International Union for Conservation of Nature, 2018; Vijay et al., 2016). Much of the land clearing for oil palm has been illegal, without proper government approvals or consideration of Indigenous Peoples' land rights. Local communities are bringing a growing number of lawsuits against companies associated with palm oil operations that are not respecting land rights, which can affect agribusiness viability and investor returns (RBC Global Asset Management, 2019). Deforestation, biodiversity loss, and land rights infringements pose regulatory legal and reputational risks for FSPs (Global Landscapes Forum,

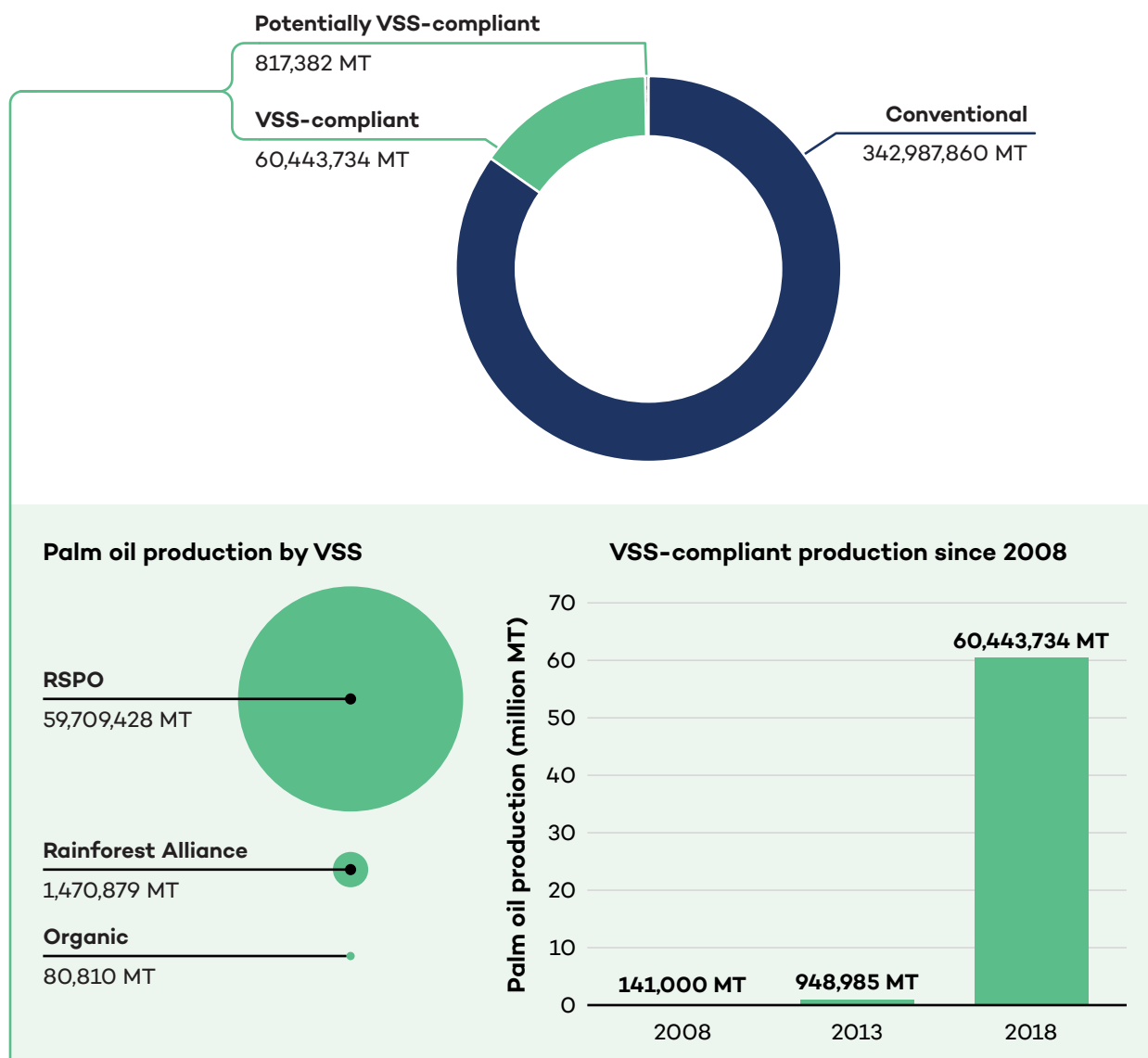
2020; Robeco, 2019; Thoumi, 2018; van der Werf, 2019).

- **Climate change:** More extreme weather events (i.e., floods and droughts), as well as rising sea levels, are expected to affect plantations greatly in terms of productivity, land suitability, and coastal oil palm plantation destruction (Ahmed et al., 2021; Sarkar et al., 2020). On the other hand, deforestation in Southeast Asia, Central Africa, and Western Africa and the destruction of peatlands associated with oil palm plantations are also major sources of GHG emissions (Global Forest Atlas, 2019). To reduce its carbon footprint, the industry is starting to make greater use of degraded lands with low-carbon stocks (Ruysschaert et al., 2011). The lack of access to mid- to long-term financing prevents farmers from replanting and improving oil palm plantation productivity, making it more cost-effective to exploit new lands (Sahara & Kusumowardhani, 2017). There are clearly investment opportunities to improve oil palm plantation productivity and to lower the sector's carbon footprint by preventing deforestation and ecosystem degradation, which will help mitigate climate change.
- **Labour rights:** Despite efforts to improve labour rights in the sector, there are still many cases of forced and child labour, insufficient wages, excessive working hours, and lack of employment security (Amnesty International, 2016; TFT, 2017). With oil palms growing 3 m to 20 m tall and fruit bunches weighing 10 kg to

25 kg, harvesting oil palm fruit can be dangerous. Workers use long steel poles and usually have insufficient protective gear. A lack of workplace safety can result in production and profitability losses (Leonard et al., 2013; Myzabella et al., 2019).

Global VSS-compliant oil palm fruit production climbed from less than 1 Mt in 2013 to 60 Mt in 2018 (or 15% of total oil palm fruit production) at a CAGR exceeding 128.5% in that period. VSS-compliant palm oil operations are reportedly more profitable than their counterparts. Two studies in Malaysia from 2000 to 2016 and from 2012

Figure 5. Oil palm fruit production in 2018, where VSS-compliant fruit has reached 15% of total production



Source: Elaborated by authors based on data from Meier et al., 2020; FAO, 2018.

to 2019 found that operations certified by the Roundtable on Sustainable Palm Oil (RSPO) financially outperformed conventional plantations (Johansson, 2019; Tey et al., 2019). Complying with the RSPO standard led to better productivity and business and operations management. The major VSSs operating in the sector are RSPO, with production close to 59 Mt, followed by the Rainforest Alliance with almost 1.5 Mt, and Organic with 0.08 Mt (see Figure 5).

Demand for VSS-compliant palm oil has risen in the last decade, led by Europe and then North America. Cargill, Wilmar International, Nestlé, and Unilever have established sustainable sourcing commitments for palm oil (Voora, Larrea, Bermúdez et al., 2020d). Kellogg's and Pepsico have pledged to source more sustainable palm oil and require their suppliers to comply with the No Deforestation, No Peat, No Exploitation (NDPE) policy, building on the RSPO standard (Ball & Miller, 2020; Miller, 2020; Pepsico, 2020). Government initiatives are also supporting more sustainably grown palm oil. For instance, the EU's Action to Protect and Restore the World's Forests, adopted in 2019, encourages consumption from deforestation-free supply chains and works with producer countries to reduce pressures on forests (European Commission, 2019a). On the supply side, Indonesia issued a moratorium on clearing primary forests and peatlands for palm oil and timber harvesting (Higgins, n.d.; Reuters, 2019).

Investment Opportunities

Investment in palm oil production is attractive, as oil palm is highly productive per hectare and the oil palm fruit is very versatile as a raw material that can be used for a wide

range of products. Nevertheless, growing concerns about the sustainability of the sector provide a strong rationale for investing in VSS-compliant palm oil, which can yield important benefits. Increasing pressure from the public and private sectors to shift the sector toward sustainability offers many short- and long-term investment opportunities.

Much of the investment case for VSS-compliant palm oil is associated with mitigating environmental, social, and governance risks. FSPs investing in palm oil operations driving deforestation and violating human rights are being targeted: “[social and environmental] controversies concerning palm oil across the supply chain have become a material issue for investors” (RBC Global Asset Management, 2019). As a response, many investment banks and asset management companies have integrated the NDPE and the RSPO as part of their palm oil supply chain policy (HSBC, 2014; Rabobank, n.d.; van der Werf, 2019). The RSPO's updated standard includes NDPE requirements, thus aligning investor policies with its standard requirements (HSBC, 2019). Fifty-six FSPs representing about USD 7,900 billion in assets under management signed a statement in 2018 encouraging their investees in the palm oil sector to commit to full traceability of palm oil to the plantation level and to report regularly on their progress toward these commitments (Principles for Responsible Investment, 2019). These efforts have had a major effect: 83% of Malaysian and Indonesian palm oil refining capacity had adopted NDPE policies as of April 2020 (ten Kate et al., 2020). HSBC also reports that its customers have started seeking RSPO certification since it stopped financing

companies that do not comply with NDPE commitments (HSBC, 2014).

VSS compliance can both improve productivity and profitability and result in important socio-ecological benefits. Businesses have reported that RSPO certification led to fewer community conflicts, operational improvements through documentation and improved management practices, better staff morale, and lower turnover, as well as higher revenues and improved market and loan access (World Wildlife Fund [WWF-] India, 2012). VSS-compliant palm oil operations are also better positioned to meet existing and future regulatory requirements as they must

conserve primary forests and peatland to remain certified.

Investments are required for palm operations to become VSS compliant in terms of covering certification and audit costs, such as conducting high conservation value and environmental impact assessments. Once compliant, palm oil operations may choose to invest in equipment required for identity-preserved or segregated chain-of-custody models such as storage tank facilities and shipping vessels (WWF-India, 2012). There are also many financing opportunities among VSS-compliant palm oil smallholder farmers, where financial support for training or monitoring may be needed (Pramudya

Table 7. Indicators for the top 10 VSS-compliant oil palm fruit-producing countries by volume of production as of 2018

	VSS-compliant production: Mt, 2018 (5-year CAGR)	VSS-compliant area: ha, 2018 (5-year CAGR)	EBA (2019)	HDI (2018)	% Credit to Agriculture (2018)
Indonesia	31,627,402	1,461,116 (11%)	-	High	Very High
Malaysia	19,273,538	872,368 (-1%)	Medium	Very high	High
Papua New Guinea	3,086,397	139,542 (10%)	-	Low	-
Colombia	1,030,169 (66%)	47,902 (62%)	High	High	-
Costa Rica	856,470	40,806	-	Very high	High
Guatemala	810,903 (4%)	32,918 (6%)	High	Medium	-
Thailand	513,736	25,997 (5%)	Medium	High	Low
Ecuador	369,806 (113%)	22,468 (56%)	-	High	-
Honduras	332,650 (12%)	16,643 (15%)	Medium	Medium	-

Source: Elaborated by authors based on data from FAOSTAT, 2021; Meier et al., 2020; UNDP, 2021; World Bank, 2019.

et al., 2017; WWF-India, 2012). Long-term financing is required to replace oil palm trees that are no longer productive and to cover the 3- to 10-year production gap until palms start producing fruit (Bronkhorst et al., 2017; Sahara & Kusumowardhani, 2017). Long-term investments are especially important for smallholder farmers, who tend to have access only to working capital (Sahara & Kusumowardhani, 2017). To address this need in Indonesia, public and private FSPs established an innovative financial scheme that provides long-term financing to smallholders, some of which are VSS compliant (Bronkhorst et al., 2017).

Investment opportunities in VSS-compliant palm oil operations can be found in countries listed in Table 7. Indonesia and Malaysia are the largest producers of conventional and VSS-compliant palm oil. Malaysia has a medium EBA score, which indicates potentially lower investment risks. Countries rated high in EBA scores include Colombia, and Guatemala. Thailand and Honduras rate medium on EBA scores and offer business conditions that may be better suited to impact investors. Investments in VSS-compliant palm oil can help less-developed countries avoid some of the negative impacts associated with palm oil production. For instance, VSS-compliant palm oil investments in sub-Saharan Africa could provide important development benefit potential due to the region's need for food security and employment creation while avoiding deforestation and labour rights infringements.

VSS-compliant palm oil operations must also benefit VSS-compliant small-scale farmers as “certification is profitable *only* if independent smallholders consistently receive high premium prices and fees”

(Suhada et al., 2018). Natural Habitats is a cooperative that sources palm oil from Ecuadorean smallholder farmers compliant with Organic or Fairtrade standards and sells their production to international niche markets. The premiums obtained help increase farmer incomes. The Rabo Rural Fund provides working capital finance to the cooperative, which offers technical assistance to its farmers, showcasing how an FSP, a cooperative, farmers, and certification schemes can synergistically work together to produce more sustainable palm oil with positive socio-ecological impacts (Rabobank, 2020). The Golden Agri-Resources Innovative Financing Scheme leverages support from the Indonesian government to legalize smallholder land titles, which is necessary for them to obtain the credit and training on good agricultural practices that are essential to becoming Indonesia Sustainable Palm Oil certified. The scheme provides subsidized interest rates and establishes a 4-year grace period during the production gap resulting from replanting oil palms (Bronkhorst et al., 2017).

Chapter 3 details how the RSPO, the Rainforest Alliance, and the Organic standard are designed to address sustainability challenges in the palm oil sector. For instance, the RSPO aims to shift the entire sector toward sustainability by having standards oriented toward palm oil mills and independent smallholders as well as providing flexible chain-of-custody models from identity preserved to book and claim. The Rainforest Alliance is oriented toward preventing forest losses while meeting market demands. The Organic standard focuses on requiring ecologically friendly production practices. Each of these VSSs offers different and

compatible requirements to shift the palm oil sector toward sustainability, which can also reduce investment risks.

Soybeans

Soybeans are a versatile product that has become an important source of protein (Sharma et al., 2014; Voora, Larrea, & Bermúdez, 2020c). Soybean-based oil is the second most consumed worldwide and is increasingly used for biodiesel production (Hanson, 2019; ReportBuyer, 2017). The crop cultivation area doubled from 2000 to an estimated 125 million ha in 2018 (FAO, 2020b). To support this escalating production, the sector has become highly mechanized, with large-scale farms producing more than 80% of the global soybean production (Voora, Larrea, & Bermúdez, 2020c). The development of varieties adapted to tropical climates and herbicide resistance through genetic modification has fostered the expansion of soy cultivation (Martin et al., 2019; Northwestern University, 2018).

Market Status and Outlook

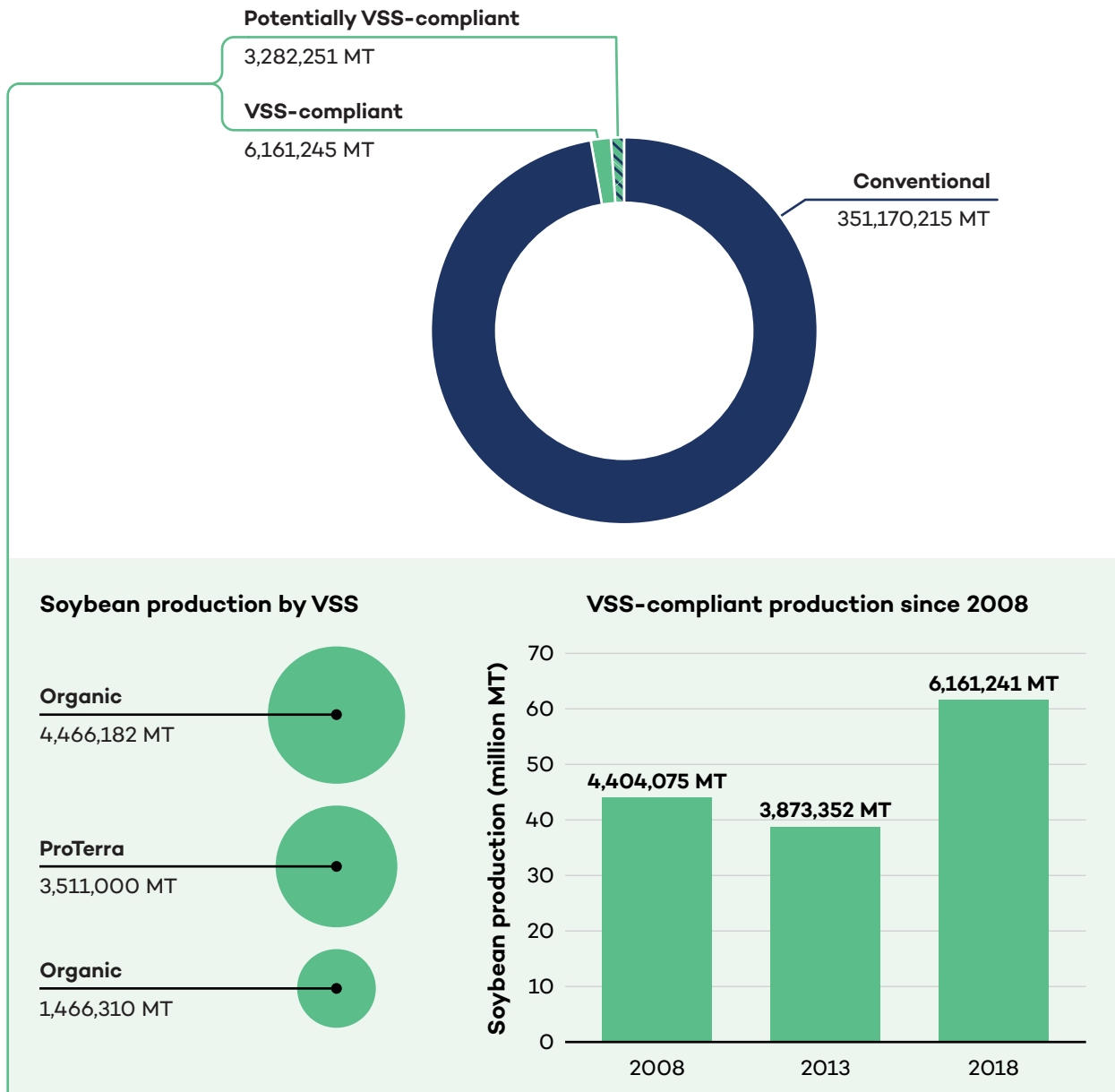
Global soybean production amounted to 360 Mt in 2018, of which 148 Mt were exported (FAOSTAT, 2021; Organisation for Economic Co-operation and Development & FAO, 2020; United Nations, n.d.). The current soybean oversupply in international markets is expected to be absorbed through various market dynamics (Northwestern University, 2018; Transparency Market Research, 2018; Voora, Larrea, & Bermúdez, 2020c). The global soybean market is expected to grow at a CAGR of 3.2% from 2021 to 2024 (Market Reports World, 2021).

Soybean-based meat substitutes, marketed by the food and fast-food industry, may signal a shift away from meat-based consumption that could lower demand for soybean-based feed but boost demand for higher-quality non-GM soybean inputs (Euromonitor, 2019; vegconomist, 2019). More demand in the pharmaceutical, biomaterial, and biofuel production industries is also anticipated (ResourceTrade.Earth, n.d.; Ritchie & Roser, 2018; Transparency Market Research, 2017, 2018). China is the largest importer of soybean feed, accounting for almost 69% of global imports in 2020, followed by Europe (Brack & Wellesley, 2016; IDH – The Sustainable Trade Initiative, 2019). The leading exporting countries are Brazil and the United States (Tridge, 2020c). The soybean sector experienced some setbacks due to COVID-19 that were largely offset by rising Chinese demand for soybean feed, resulting in an overall price increase in 2020 (Arita et al., 2021; Cullen, 2020; Holbrook, 2020).

The soybean sector faces a number of sustainability challenges primarily linked to uncontrolled growth in harvested areas (Bicudo Da Silva et al., 2020; WWF, 2019). These challenges could affect profitability and pose a material risk for FSPs. The major challenges posed by deforestation and ecosystem degradation, changing climatic conditions, pesticide overuse, and threats to smallholder livelihoods are described in detail below:

- **Deforestation:** Accelerated soybean cultivation in countries such as Brazil, Paraguay, and Argentina has led to deforestation, biodiversity losses, and the displacement of Indigenous communities (Hobbs, 2012; WWF,

Figure 6. Soybean production in 2018, where VSS-compliant soybean has reached almost 2% of total production



Source: Elaborated by authors based on data from Meier et al., 2020; FAO, 2018.

2019).²⁹ Deforestation is a key driver of climate change, which is undermining soybean productivity. Climatic changes such as higher temperatures, increased occurrences of pests, and early-season diseases can lower soybean yields (Billore et al., 2018; Zhao et al., 2017). Significant productivity losses are expected in Brazil, while milder losses are being projected for Argentina, Bolivia, Colombia, and Uruguay, highlighting the need to adopt more aggressive climate mitigation and adaptation efforts in the sector, such as preventing deforestation and adopting longer-cycle varieties and irrigation. Agricultural commodities associated with deforestation represent potential reputational risks for FSPs (Ceres, 2017b).

- **Pesticide management:** Many pesticides are used when cultivating soybeans. Soy farmers apply almost 35% of all pesticides used in Brazil (WWF, 2014). This is partly due to glyphosate-resistant GM soybeans, which make up 80% of total soybean production destined for animal feed (International Service for the Acquisition of Agri-biotech Applications, 2018). Toxic pesticides have contaminated ecosystems, soil, and water bodies in major soy-growing regions and bio-accumulated in humans living in proximity (de Andrade Palma, 2011). In response, Argentina

has started restricting agrochemical use, and institutional investors are advocating for less agrochemical use to protect workers (Field, 2020; Interfaith Center on Corporate Responsibility, 2021; Koop, 2020). Thus, FSPs might face reputational and regulatory risks stemming from increased use of pesticides.

- **Sustainable livelihoods:** In Brazil, Argentina, and Paraguay, soybeans are mostly produced by large-scale farms (The Dutch Soy Coalition, 2006; Tholen & Lenstra, 2013). Small farms have difficulty competing with larger farms, which benefit from economies of scale, and will need support if they are to remain competitive in the sector.

The sustainability challenges associated with soybean cultivation prompted the establishment of VSSs in the sector. Organic soybeans have been produced since the 1970s, while the ProTerra Foundation (PTF) and the Roundtable for Responsible Soy (RTRS) started operating in 2006. VSS-compliant soy production grew by a CAGR of 2.62% from 2008 to 2016, to at least 1.62% of total production (Voora, Larrea, & Bermúdez, 2020c). The CAGR was 6.65% from 2016 to 2018, rising to 1.8% of global production. The biggest VSSs in the sector by production volume in 2018 were the RTRS (4.5 Mt), the PTF (3.5 Mt), and Organic (0.8 Mt) (Voora, Larrea, & Bermúdez, 2020c) (see Figure 6).

²⁹ A moratorium has partially halted soy-driven deforestation in the Amazon, which shifted pressure to cultivate in the Cerrado savannah of Brazil (Rudorff et al., 2011). Retailers, brands, and FSPs (including the FAIRR, a network of more than 40 FSPs) adopted a manifesto in 2017 to protect the Cerrado, but it was not adopted by the major soy traders Bunge, Cargill, and Amaggi (Rosen, 2018). In 2019, a group of 58 FSPs representing USD 6,300 billion in assets issued a joint statement calling for agribusinesses to become deforestation-free (Holger, 2019).

Demand for VSS-compliant soybeans is growing, mainly in Europe and the United States, but not as fast as supply. The mismatch between VSS-compliant production and sales limits current market uptake (Voora, Larrea, & Bermúdez, 2020c). There are encouraging signs of VSS expansion among countries producing a large share of the world's soybeans. The top soybean-growing countries—the United States, Brazil, Argentina, India, and China—offer good prospects to increase sustainable soybean production (Voora, Larrea, & Bermúdez, 2020c). Consequently, there are promising investment opportunities in existing and aspiring VSS-compliant soybean operations to meet growing demand, support a more sustainable sector, and secure a financial return.

Investment Opportunities

The business case for investing in VSS-compliant soybeans consists primarily of growing demands for more sustainable soybeans, staying ahead of regulatory measures, and supporting smallholder soybean producers. VSS-compliant soybeans remain a niche product mainly sought by consumers in Europe, North America, and the Asia-Pacific (Voora, Larrea, & Bermúdez, 2020c). China, the biggest soybean market, still consumes relatively few VSS-compliant soybeans (Cabezas et al., 2019; COFCO International Ltd., n.d., p. 4). The slow uptake in VSS-compliant soybeans may be due to preferences for company-led sustainability schemes—such as Cargill's Triple S, Amaggi's Responsible Soy Standard, and Bunge's Pro-S—among the largest soybean trading companies (Lernoud et al., 2018; Potts et al., 2014). Furthermore, as

a sizable portion of soybeans is consumed indirectly in the form of meat, poultry, and fish products, consumers are simply not aware of feed composition.

Nevertheless, demand for sustainably grown soybeans, in concert with increasing soy-based products for human consumption, has had noticeable effects on the VSS-compliant soybean market. For instance, major processing and trading companies, including Bayer, Amaggi, Bunge, Cargill, and Louis Dreyfus, all source VSS-compliant soybeans (Voora, Larrea, & Bermúdez, 2020c). Commitments by soybean supply chain stakeholders, such as the 2017 Cerrado Manifesto, to support more sustainably grown soy are favouring VSS-compliant soybean demand (Nepstad et al., 2006). Furthermore, private sector collaborations with VSSs can result in better investment opportunities and signal to FSPs the potential for VSS to improve profitability. For instance, Bayer launched a joint initiative in 2018 with the RTRS and the Certified Sustainable Agriculture standard of the Argentine Association of Producers in Direct Sowing to mobilize producers and distribution networks to certify their soybean production (Bayer Crop Science, 2019; European Seed, 2018). Cargill Acqua Nutrition, a salmon and soybean protein concentrate producer, collaborates with the PTF to improve value chain transparency for zero-deforestation in soybean operations by using technology to identify farm origin and cultivation practices (Byrne, 2019).

Producing-country measures to reduce deforestation associated with soybean production—such as mandatory due diligence, cross-border frameworks, and trade agreements—have also contributed

to increasing demand for VSS-compliant soybeans. For example, the soybean moratorium and the Brazil Forest Code require soybean businesses to comply with Brazilian forest conservation regulations (Carvalho et al., 2019). Lowering regulatory risks in investor portfolios can provide a competitive advantage (CDP, 2015). VSS-compliant soybean agribusinesses can provide a means to reduce regulatory risks as their adherence to VSS forest conservation requirements typically puts them ahead of regulatory measures.

VSSs can benefit smallholders by providing them with a means to differentiate themselves

in the marketplace so they can compete with larger producers (The Dutch Soy Coalition, 2006; United Soybean Board, 2008). They also offer sustainable agriculture technical assistance and an incentive for producers to form into cooperatives. VSS-compliant smallholder soybean producers may also be in a better position to access long-term loans. For example, a mechanism set up by Bunge, Banco Santander, and The Nature Conservancy offers long-term loans (i.e., up to 10 years) to soybean farmers committed to sustainable agricultural practices and natural ecosystem preservation (Bunge, 2018). Paraguay offers investment opportunities in small-scale soybean plantations that comply

Table 8. Indicators for the top 10 VSS-compliant soybean-producing countries by volume of production as of 2018

	VSS-compliant production: Mt, 2018 (5-year CAGR)	VSS-compliant area: ha, 2018 (5-year CAGR)	EBA (2019)	HDI (2018)	% Credit to Agriculture (2018)
Brazil	3,886,465 (6%)	1,040,807 (-7%)	High	High	Medium
China	775,000 (15%)	243,000 (7%)	High	High	-
Argentina	373,514 (11%)	142,071 (5%)	High	Very high	Very high
Ukraine	150,000 (134%)	48,000 (93%)	High	High	-
Italy	150,000 (73%)	47,000 (72%)	Very high	Very high	-
India	141,500 (19%)	117,000 (22%)	Medium	Medium	Very high
United States	110,200 (4%)	45,400 (-1%)	-	-	Medium
Russia	109,100 (305%)	74,250 (351%)	High	Very high	-
Germany	60,000 (76%)	19,000 (60%)	Very high	Very high	-
Togo	59,650 (134%)	32,800 (62%)	Low	Low	Low

Source: Elaborated by authors based on data from FAOSTAT, 2021; Meier et al., 2020; UNDP, 2021; World Bank, 2019.

with VSSs. Small-scale plantations account for about 70% of total soybean producers but only 6% of total production (Base Investigaciones Sociales, 2018), suggesting opportunities exist for investing in operational improvements. The overall sector, however, is responsible for 17% of national GDP and 62% of total exports. Paraguayan smallholder producers have relied on the support of the Green Commodities Paraguay program to promote the sustainability of their soybean sector since 2019 (Plataforma Nacional de Commodities Sustentables, n.d.).

VSS compliance (i.e., forest conservation, lower pesticide use, improved working conditions) can draw investment capital toward agribusinesses and is becoming increasingly important to access financing and secure markets (Nature Sustainability, 2019). JPMorgan Chase, the investment bank, started requiring its investees to demonstrate commitment to sustainable soybean cultivation practices with reference to RTRS certification (JPMorgan Chase, 2017).³⁰ Sustainability bonds targeting soybean operations offer FSPs another means to invest more in the sustainable soybean sector. There is certainly a need for a wide range of investments to help agribusinesses adopt and maintain VSS compliance measures, which can include implementing conservation tillage, organic fertilization practices, worker health and safety training, identifying and maintaining High Conservation Value Areas, and conducting environmental and social

impact assessments (IFC, 2013a; PTF, 2019; United Nations Soybean Export Council, 2015). Infrastructure investments are also needed to trace and segregate GM and non-GM beans and monitor deforestation (PTF, 2019; U.S. Farmers & Ranchers in Action et al., 2021).

Investment opportunities in VSS-compliant soybeans can be found in the countries listed in Table 8. VSS-compliant operations in countries with high EBA scores, such as Brazil, China, and Argentina, indicate potentially lower investment risks. Investments in VSS-compliant soybeans in countries with very high to high EBA scores could be advantageous, as they can offer opportunities to stay ahead of future regulations (i.e., deforestation or agrochemical use). Among the top 10 VSS-compliant soybean countries, Togo is the only country with low indices, where investments may be riskier but where the development potential may be higher. Investments that address structural issues, such as poverty and gender equity, may be of interest to international and public institutions and well-suited for blended finance interventions to support more sustainable soybean operations.

Blended finance may be required to support the adoption of sustainable soybean cultivation practices, especially in low-income communities. For instance, the UN Environmental Programme, in partnership with Sustainable Investment Management,

³⁰ A group of 58 FSPs investing in soybean operations and together managing USD 6,300 billion of assets issued a joint statement calling for the integration of ESG factors in investment due diligence and decision making (Principles for Responsible Investment, n.d.). They asked agribusinesses to publicly disclose the material risks associated with their soybean operations and to provide “evidence” about measures taken to address them. VSS-compliant soybean operations can be ahead of the curve and support providing evidence of managing material risks (i.e., deforestation, pest management).

launched the Responsible Commodities Facility in 2019. The facility is listed in the London Stock Exchange and provides financial incentives to Brazilian soybean agribusinesses that demonstrate potential for cultivating soy in degraded areas to avoid land clearing by pre-purchasing soybeans at arranged market prices. Compliance with eligibility is monitored using satellite technology and big data analysis (Mulder, 2019; Sustainable Investment Management, n.d.). VSS-compliant soybean agribusinesses are well positioned to meet the eligibility criteria of the fund (Brazil Innovation Lab for Climate Finance, 2018).

VSSs play an important role in countering the negative socio-ecological impacts of the soybean sector, such as deforestation. Chapter 3 details how the RTRS, the PTF, and Organic standards address the sustainability challenge in the soybean sector and investment risks. For instance, the RTRS is oriented toward meeting market demands by issuing sustainable production requirements for GM and non-GM soybeans. The PTF focuses on meeting market demands for non-GM soybeans and is based on a continuous improvement model for farmers to adopt more sustainable agricultural production practices over time. Organic focuses on requiring ecologically friendly production practices. Each of these VSSs offers different and compatible requirements to shift the soybean sector toward sustainability, which also reduces investment risks. Furthermore, they all require some amount of product traceability, which is an important challenge to overcome if we are to attain a deforestation-free soybean sector.

Sugarcane

Grown in tropical environments, sugarcane has very high photosynthetic efficiency and requires rainfall above 1,500 mm during the growing season or irrigation to be productive (FAO, n.d-b.; Gust, 1996). It has become an important feedstock for producing food and fuel and is used to produce more than 80% of the world's sugar (Voora, Bermúdez, & Larrea, 2020). Sugarcane cultivation and processing provide livelihoods for 100 million people across the world (Voora, Bermúdez, & Larrea, 2020). The industry employs more than 1 million people in Brazil—nearly 25% of its rural workforce. The Thai sugarcane supply chain employs 1.5 million people, including 107,000 smallholders, and around 500,000 people in South Africa depend on the industry for their livelihoods (Voora, Bermúdez, & Larrea, 2020). Sugarcane harvesting is an expensive process and is increasingly being mechanized in many producing regions. Nevertheless, about half of all sugarcane worldwide is still harvested by hand, even in developed locations such as Florida in the United States. The controversial practice of burning sugarcane plantations before harvesting is still common in many regions (Kinsey, 2020).

Market Status and Outlook

Almost 170 billion tonnes, or about 80% of the world's sugar, came from sugarcane in 2019. This represented more than 0.06% of the world trade, with a value of USD 11.4 billion. About 75% of this sugar is used to sweeten foods and beverages, and the remaining 25% is used for biofuels and industrial products (Ceres, 2017a, p. 16; Observatory of Economic Complexity,

2019b). Brazil and India are the leading producers of cane sugar, with 39% and 20% of the world production, respectively, followed by Thailand, China, Pakistan, and Mexico (FAOSTAT, 2019). The main exporters of raw cane sugar in 2019 were Brazil, Thailand, Australia, Mexico, and India, and the top importers were Indonesia, the United States, China, Algeria, and Bangladesh (Observatory of Economic Complexity, 2019b).

Demand for sugar is expected to stagnate in developed countries due to slowing population growth, dietary changes, health concerns related to sugar consumption such as obesity and diabetes, and government interventions to reduce sugar intake (Voora, Bermúdez, & Larrea, 2020). On the other hand, developing countries account for approximately three quarters of global sugar consumption and are expected to have more demand in the coming years with increasing consumption of caloric sweeteners, processed products, sugar-rich confectionery, and soft drinks (Voora, Bermúdez, & Larrea, 2020). Cane sugar production is expected to grow at a CAGR of 5.3% from 2020 to 2025 (Mordor Intelligence, 2020b). Market balances are variable due to variability in production and consumption, but a future of market surplus is generally expected, along with increases in productive area and productivity (FAO, 2019), regardless of the negative effects on the price of surplus balances.

Nevertheless, demand for sugarcane is expected to escalate as bioethanol demand grows. This demand is prevalent in Brazil, where about 60% of its sugarcane production was mostly destined for domestic ethanol production and consumption in 2014/2015 (United States Department of Agriculture Foreign Agricultural Services, 2016).

The production of sugarcane bioethanol is under scrutiny, however, as it competes for agricultural land with food products (Castro et al., 2021). Despite these debated issues, sugarcane is preferred as a bioethanol feedstock over other starch crops, such as corn, because of its high efficiency and development potential for Caribbean and African countries (Drexler, 2008; IRENA, 2016; Shah et al., 2014).

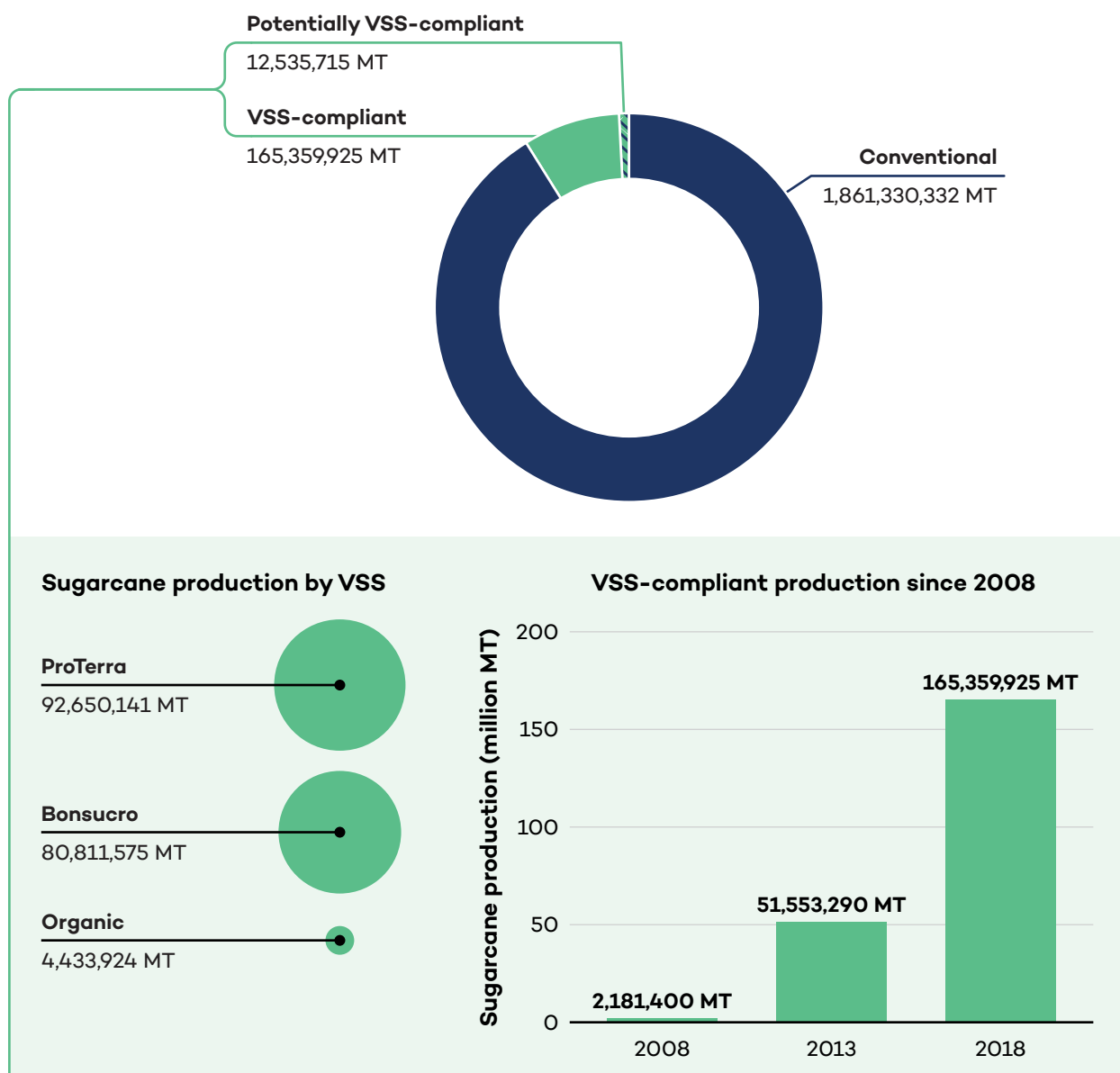
The COVID-19 pandemic appears to have had no significant impact on sugarcane demand, but it may have accelerated mechanized harvesting practices (Nicavera, 2020). For instance, 10% of cane sugar planting and harvesting is mechanized in India, and increased mechanization could reduce labour demands by 30% (Reuters, 2020). In addition to the potential effects of the pandemic, sugarcane production faces the following sustainability challenges, which may constitute investment risks:

- **Low and volatile prices:** The price of cane sugar is highly volatile and influenced by weather, government interventions, and fluctuating domestic demands in major exporting countries (Voora, Bermúdez, & Larrea, 2020). As a result of this volatility and global surpluses, prices can fall below production costs, affecting the financial viability of sugarcane farmers (Fairtrade Foundation, 2013).
- **Labour rights:** According to the United States Department of Labour (2018), forced and/or child labour is widespread in 19 sugarcane-producing countries. Workplace health and safety issues are also widespread in sugarcane plantations and mills, which can

negatively affect workers (Cole, 2018; Kiezebrink et al., 2015). Legislative and regulatory measures, such as the UK Modern Slavery Bill 2014 and the EU Directive on Non-Financial Information, have been established for

companies to improve labour rights along their supply chain that constitute reputational, legal, and operational risks for investors (Croft et al., 2018; Dawkins et al., 2016).

Figure 7. Sugarcane production in 2018, where VSS-compliant sugarcane has reached at least 8% of total production



Source: Elaborated by authors based on data from Meier et al., 2020; FAO, 2018.

- **Water availability and quality:** Sugarcane is a thirsty crop, requiring 1,500 mm to 2,000 mm of water per hectare annually or irrigation systems to maintain productivity, which can put pressure on local water resources and lead to conflict between water users.³¹ Sugarcane production can also pollute water bodies via fertilizer and pesticide runoff and sugarcane milling wastewater, which has led to ecological decline in many parts of the world—including Florida’s Everglades and Australia’s Great Barrier Reef—and can result in reputational risks (WWF, 2004).³²
- **Ecosystem degradation:** Deforestation and biodiversity losses are associated with sugarcane plantations. Sugarcane production in forested areas and pasturelands has expanded rapidly in countries with suitable growing conditions and aggressive biofuel policies (Resultante, 2019).³³ Increasing demand for bioethanol must take into account indirect land-use change (South African Sugar Association, 2021). Illegal deforestation driven by sugarcane cultivation has led to important biodiversity losses and the destruction of Indigenous livelihoods (Beltrão et al., 2019; ScienceDiscoveries, 2018; World Economic Forum, 2020). Land grabbing associated with the expansion of sugarcane has been

reported in Brazil, Sierra Leone, Indonesia, Kenya, Zambia, Mali, and Cambodia (Kiezebrink et al., 2015). FSPs operating in biodiversity hotspots face operational, reputational, and legal risks, and many banks have begun to factor illegal deforestation into credit risk calculations (FEBRABAN, 2020; Resultante, 2019).

VSSs started operating in the sugarcane sector to address its sustainability challenges. They only started capturing a relevant share of production in 2011, after the Bonsucro standard began gaining momentum (Bonsucro, 2018; Solidaridad Network, 2011) (see Figure 7). More recently, the PTF has expanded into sugarcane and is now the largest VSS in production volume operating in the sector (PTF, 2019; VIVE Sustainable Supply Programme, 2019). The production of VSS-compliant sugarcane grew rapidly from 55 Mt in 2016 to 165 Mt in 2018, reaching 8% of total sugarcane production (FAOSTAT, 2021; Meier et al., 2020).

Increasing demand for VSS-compliant cane sugar and more sustainable biofuel can translate into investment opportunities in VSS-compliant sugarcane (Czarnikow, 2019; Nielsen, 2018). Large cane sugar-consuming companies, such as Coca-Cola, Pepsico, Nestlé, and Unilever, have adopted sustainable sourcing commitments to meet increasing consumer demands for more sustainable sugar (Voora, Bermúdez,

³¹ Corn-based ethanol has a smaller water footprint than sugarcane-based ethanol, which is notable given that much of the sustainability focus has been on their relative GHG profiles (Gerbens-Leenes & Hoekstra, 2012).

³² Sugarcane mill wastewater is typically heated, acidified, and contaminated with bacteria (Gunkel et al., 2007).

³³ Between 2000 and 2010, the global sugarcane harvested area increased by 4.3 million hectares. Much of this expansion occurred in Brazil’s biodiverse Cerrado region, which initially involved the removal of natural vegetation but more commonly occurs now on exhausted pastureland (de Arruda et al., 2017).

& Larrea, 2020). Growing demand for bioethanol and legislation, such as the EU's Renewable Energy Directive, have boosted Bonsucro certification (FAO, n.d.-b). However, limited traceability in the cane sugar value chain and consumer reticence to pay premium prices have stifled the expansion of VSS-compliant sugarcane (Jenkins et al., 2015; Nieburg, 2016b).

Investment Opportunities

The business case for investing in VSS-compliant sugarcane consists of increasing demand for more sustainable cane sugar and bioethanol as well as its product versatility and value-addition potential.³⁴ The potential socio-ecological benefits associated with more sustainable sugarcane cultivation also offer attractive investment opportunities for ethical and impact investors. Although demand for VSS-compliant cane sugar is still limited to meeting niche markets, rising bioethanol demand provides expansion opportunities for VSS-compliant sugarcane operators to support transitions toward low-carbon economies (Gates, 2020; Johnson & Nyambane, 2017).³⁵ Investments are particularly needed in infrastructure such as drip irrigation equipment, as well as to improve existing mills and build new ones, which typically have 4- to 7-year payback periods (Islam et al., 2016; Simonne et al., 2018). Furthermore, there is considerable potential to scale up the production of sustainable bioenergy from sugarcane in some southern African countries, which have sugarcane industries that can be a source

of sustainable heat, power, and biofuels (International Renewable Energy Agency, 2019).

The development of new sugarcane-based materials, such as bioplastics, offers investment opportunities for venture capitalists (1212 Capital Partners, 2019). For instance, companies in the fashion sector are seeking to replace plastic made with fossil fuels with natural products. Research is ongoing to develop the technology needed to extract substances from sugarcane to replace highly polluting plastic and rubber. Amyris and Chanel are working with sustainably produced sugarcane to develop more sustainable products and materials (Gonzalez-Rodriguez, 2020; Yarns and Fibers News Bureau, 2020).

VSS-compliant sugarcane operations offer investment opportunities to FSPs looking to green their investment portfolios. VSS compliance requires the adoption of more sustainable sugarcane cultivation and milling practices, which can result in socio-economic benefits such as improved yields, water conservation and water pollution prevention, and carbon dioxide emission reductions (Das et al., 2020; Plaisier et al., 2017). Investments in VSS-compliant sugarcane help conserve water to avoid water scarcity and stress, reduce operational costs, and increase profitability. Many FSPs acknowledge the positive effects of implementing VSSs; for instance, HSBC, which supports Bonsucro and aims to contribute to its implementation for sustainable development (HSBC, 2014).

³⁴ VSSs operating in the sugarcane sector have some measures to address potential perverse effects from using sugarcane as a feedstock for producing bioethanol, such as exceeding GHG neutrality and indirect land-use change.

³⁵ For instance, Bonsucro certified the first African sugarcane mill in 2019. The mill, located in Mauritius, produces bioethanol and energy out of bagasse (Bonsucro, 2019b).

Proparco, the investment arm of the Agence Française de Développement, gave Bonsucro-certified Acucar Guarani in Brazil a USD 50 million loan to improve its sugarcane ethanol processing facilities (Guarani, 2020). Proparco noted that the ethanol produced for vehicles helped reduce GHG emissions by 80%–90% (Proparco, 2010). Investors have various openings, especially in the biofuel sector, given the more pressing and necessary transition to a low-carbon economy.

VSS assurance systems and impact assessment requirements demand data collection on various practices and sustainability indicators to provide FSPs with the information needed to assess and mitigate material risks. For example, Bonsucro-certified mills are required to collect data on water consumption and carbon dioxide emissions. They reported an 80% reduction in water consumption from 2012 to 2018 and a reduction of 5.5% in carbon dioxide emissions one year after initial certification (Bonsucro, 2020; Smith et al., 2019). VSS-

Table 9. Indicators for the top 10 VSS-compliant sugarcane-producing countries by volume of production as of 2018

	VSS-compliant production: Mt, 2018 (5-year CAGR)	VSS-compliant area: ha, 2018 (5-year CAGR)	EBA (2019)	HDI (2018)	% Credit to Agriculture (2018)
Brazil	69,585,638 (153%)	734,810 (-2%)	High	High	Medium
Thailand	37,590,000 (161%)	499,615 (150%)	Medium	High	Low
Malawi	33,728,688 (-)	313,289 (-)	Low	Low	-
Dominican Republic	4,906,469 (-)	71,181 (-)	Medium	High	-
Colombia	2,989,883 (81%)	23,494 (58%)	High	High	-
Australia	2,622,200 (-)	16,574 (-32%)	High	Very high	-
Costa Rica	2,523,287 (146%)	29,686 (41%)	-	Very high	High
Paraguay	1,705,200 (36%)	30,450 (-2%)	-	High	-
Nicaragua	1,668,027 (-)	16,381 (-)	High	Medium	-
Mexico	1,250,000 (95%)	18,574 (88%)	High	High	-

Source: Elaborated by authors based on data from FAOSTAT, 2021; Meier et al., 2020; UNDP, 2021; World Bank, 2019.

compliant sugarcane operations are required to collect information on social responsibility and human rights. The information collected on and by VSS-compliant sugarcane operations can give FSPs some assurance to mitigate material risks and contributes to fulfilling their investment impact reporting requirements.

Investment opportunities in VSS-compliant sugarcane operations can be found in the countries listed in Table 9. Countries with high EBA scores, such as Australia, Colombia, and Mexico, indicate potentially lower investment risks, while countries with medium to low EBA scores may be better suited for impact investors. For instance, a sugarcane mill in Brazil received a financing flow of BRL 50 million over a 10-year period and with a 3-year loan payment grace period to increase its area under sustainable management, reduce its GHG emissions, and reforest cleared natural areas with native tree species (De Castro Alves, 2019). Malawi has a low EBA score, reflecting the need for more integrated investment strategies with potential opportunities for ethical investors willing to invest in improving the condition of disadvantaged sugarcane smallholders. Countries in sub-Saharan Africa also have good potential for expanding VSS-compliant sugarcane production due to their favourable sugarcane growing conditions (barring sufficient access to water resources) and close proximity to the European market (Bauner et al., 2012; Hess et al., 2016). Expanding South African sugarcane production could also provide development opportunities in the region (Hess et al., 2016).

Blended finance models involving development agencies can be conducive environments for private investments, as

risks can be shared through various means, such as agricultural extension services. Development agencies such as the African Development Bank, the Agence Française de Développement, and the United Nations Environment Programme (UNEP) are working to create favourable conditions for private investments in support of sustainable development in the sugarcane sector (Groupe de la banque Africaine de développement et al., n.d.). For instance, UNEP and Rabobank created the Agri3 Fund to catalyze private investments for sustainable sugarcane, cattle, dairy, rice, soy, and cotton cultivation in Brazil, Indonesia, and India. More specifically, the Albioma Group commissioned a 100% bagasse power plant in Martinique with the support of the public French investor, Caisse des Dépôts Croissance (Caisse des Dépôts Groupe, 2019). The Albioma power plant sources its bagasse from several suppliers, including Tereos in Brazil, whose raw material is 62% sustainably certified with schemes such as Bonsucro (Tereos, 2020). The group's business model is based on long-term local partnerships, which protects thousands of upstream jobs. A portion of the revenues generated from the bagasse power plant goes toward supporting sugarcane growers and mills.

Chapter 3 details how the PTF, Bonsucro, and Organic standards are designed to address sustainability challenges in the sugarcane sector. For instance, the PTF focuses on supporting sustainable feed and food production via transparent and traceable supply chains. Bonsucro offers a platform and standards oriented toward sugarcane mills and smallholder farmers to measure and improve their sustainability performance. The Organic standard focuses on requiring

ecologically friendly production practices, such as prohibiting the use of agrochemicals. Each of these VSSs offers different and compatible requirements to shift the sugarcane sector toward sustainability, which also reduces investment risks.

Tea

Tea is one of the most consumed and traded beverages in the world, offering appealing flavours to a broad range of consumers. It originates from processing the young leaves of the *Camellia sinensis* bush, which has a productive lifespan of 40–100 years (Harler, 2020). Tea cultivation is geographically limited to areas offering a well-distributed annual rainfall of 1,150 mm to 1,275 mm, temperatures above 11°C, and acidic soils (pH below 5.8) (FAO, 2018b; Harler, 2020). More than 2,000 leaves, processed within six hours of being harvested, are needed to make half a kilogram of tea (Harler, 2020). This processing requirement has shaped the industry, which has evolved toward a vertically integrated value chain reliant on closely located tea cultivation and processing facilities and intensive labour (Intergovernmental Group on Tea, 2018b, 2018c). Some 13 million people, of whom 9 million are smallholders, depend on tea production for their livelihoods (Solidaridad Network, n.d.).

Market Status and Outlook

Global tea production reached 8.95 Mt in 2018, and 1.58 Mt, with a value of USD 7.98 billion, was exported (FAOSTAT, 2021; United Nations Department of Economics and Social Affairs, 2019). The global tea retail market is expected to grow at a CAGR

of 6.6% from 2020 to 2027 to reach a retail market value of USD 68 billion (Allied Market Research, 2021). Black and green teas are the most widely consumed varieties, and demand for semi-green Oolong tea is expected to rise significantly due to its health properties (Grand View Research, 2019b).

Despite these positive projections, climate change and the COVID-19 pandemic have negatively affected global harvests in some regions, such as India and Turkey, which has increased prices and competitive imbalances in global markets (Parkin & Terazono, 2021). Production is highly concentrated, with China, India, Sri Lanka, and Kenya producing about half of the world's tea (Ethical Tea Partnership, 2019; Solidaridad Network, 2014; Workman, 2019a, 2019b). China alone was responsible for 31.8% of global exports in 2020 (Mordor Intelligence, 2020b). China, India, and Turkey are also large consumers of their domestic production (Workman, 2019a, 2019b). The main tea-importing countries in 2019 were Pakistan, Russia, and the United States (Workman, 2019a).

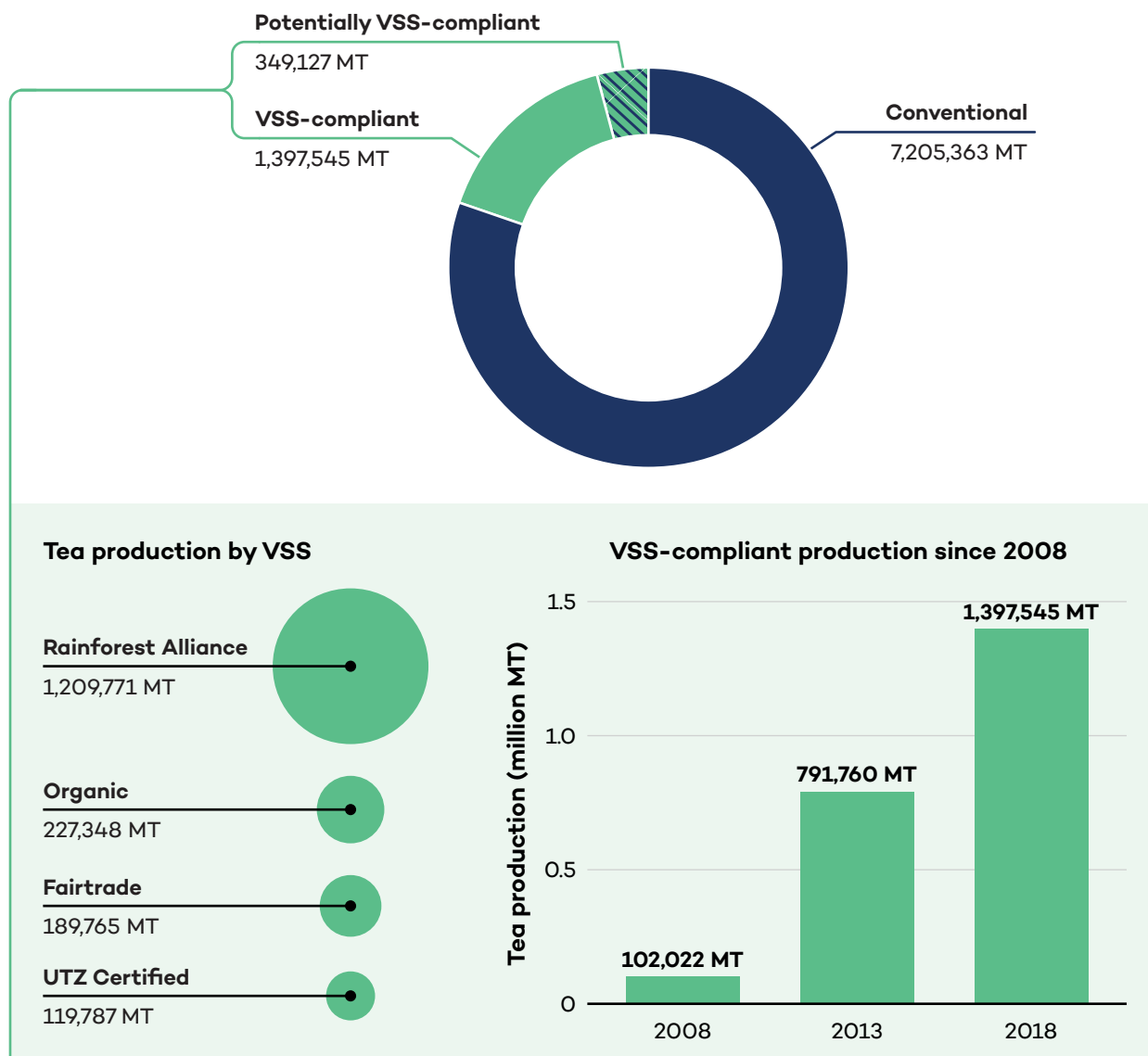
To maintain its long-term viability, the tea sector must address the following sustainability challenges, which may constitute material risks for FSPs:

- **Climate change:** Climate change is expected to have a significant impact on the sector as the tea plant is highly climate sensitive. Its limited geographic suitability is narrowing due to changing climatic conditions such as rising temperatures and precipitation variability, which affect the product quantity and quality at existing tea plantations (Chang & Brattlof, 2015).

- Pests and diseases:** Monoculture tea plantations can be highly susceptible to pests and diseases (Harler, 2020). In northeast India, pests and diseases damage 30 million kg of tea per annum (Harler, 2020). Pests cause major losses in tea production, and pesticides, widely used to prevent losses, have become a

health concern. Studies in countries such as China and India have found high residue levels of banned substances in tea production areas (e.g., DDT, methomyl, endosulfan) and pesticide residues in final products (Spear, 2012). The breach of legal and security measures may pose a risk to FSPs

Figure 8. Global tea production in 2018, where VSS-compliant tea has reached about 16% of total production



Source: Elaborated by authors based on data from Meier et al., 2020; FAO, 2018.

while endangering consumer health. The excessive misuse of pesticides can imperil tea workers and consumer health, and this could pose reputational and market risks to investors.

- **Supply chain integration:** The tea sector is concentrated in the hands of a few multinational companies that are managing their supply chains for profitability. This concentration limits the bargaining power of tea farmers and workers to negotiate decent wages and working conditions, such as access to protective equipment, health care facilities, and adequate housing (Lalitha et al., 2013; The Times of India, 2020). Labour rights infringements such as forced and child labour are also worrisome (Ahmmed & Hossain, 2016; Centre for Workers' Management, 2015) and may pose reputational risks for agribusinesses and their investors.
- **Deforestation:** Tea is grown in areas of high biodiversity and has historically been associated with the removal of tropical forests for tea cultivation and drying (Clay, 2004). Cultivated in monoculture plantations, tea contributes to habitat loss and is linked with the decline of endangered species such as India's lion-tailed macaque and Sri Lanka's Horton Plains slender loris (McLennan, 2011).

VSSs were first implemented in the tea sector in 1983 to respond to sustainability challenges facing the sector (Intergovernmental Group on Tea, 2016). VSS-compliant tea grew at a CAGR of 29.9% from 2008 to 2018 to almost 16% of global production by 2018, or 8.9 Mt, greatly outpacing conventional tea production by a factor of 10 (FAOSTAT, 2021; Meier et

al., 2020). Most VSS production is Rainforest Alliance-certified, with about 1.2 Mt certified in 2018, followed by Organic, Fairtrade, and UTZ (0.23 Mt, 0.19 Mt, and 0.12 Mt of certified products, respectively) (see Figure 8). The Trustea standard in India and the Lestari standard in Indonesia are worth mentioning, as they had grown to verify more than 0.6 Mt of tea by 2019 (Bouckley, 2014; Solidaridad Network, 2017a, 2017b; Trustea, 2019).

Demand for VSS-compliant tea is expected to continue growing in traditional markets, mainly Europe and North America (CBI, 2017; Intergovernmental Group on Tea, 2018b). Responding to this demand, large tea manufacturers, including Twining's, Unilever, and Tata, now rely on VSS-compliant tea to achieve their sustainability sourcing commitments (Voora, Bermúdez, & Larrea, 2019b). Increasing demand for organic tea appears to be related to its health benefits and lifestyle changes that favour ready-to-drink tea, where major beverage companies such as Coca-Cola have a stake (Grand View Research, 2019b; The Coca-Cola Company, 2019). Consumption of VSS-compliant tea is expected to grow in the middle class in China, India, Indonesia, and Sri Lanka, as well as in Rwanda, Uganda, and Kenya (CBI, 2017; FAO, 2018b; Gicobi, 2018). However, consumers in the largest tea-consuming countries, including China and India, fail to show major interest in VSS-compliant tea as they tend to be more price sensitive (Intergovernmental Group on Tea, 2018a, 2018c). Addressing these market dynamics is important to expand VSS-compliant tea, whose markets are oversupplied, resulting in a lower price (Voora, Bermúdez, & Larrea, 2019b).

Investment Opportunities

The business case for investing in VSS-compliant tea consists of meeting increasing demands for more sustainable tea products, improving productivity, and supporting smallholder tea producers. The largest tea manufacturers have started sourcing more sustainable tea to tackle the sustainability issues facing the sector, which in turn has increased demand for VSS-compliant tea, contributing to de-risking investments. For instance, the Jalinga Tea Estate, located in the province of Assam in India, grows Organic and Fairtrade tea for export. To remain compliant with these standards, the

estate protects several hundred hectares of forests, provides improved education and health care access for its 1,500 employees, and supports smallholder tea growers to become Organic and/or Fairtrade certified. It has become the first carbon-neutral certified tea estate in the world as it applies climate-smart practices, such as shifting from using coal to solar energy to process tea leaves and conserving forests, which have contributed to the estate's profitability (Rogers, 2018). In addition, VSS monitoring and assurance systems can be used to identify investment risks and implement corrective measures. For instance, the Assam Company in India lost its Rainforest Alliance certification in

Table 10. Indicators for the top 10 VSS-compliant tea-producing countries by volume in 2018

	VSS-compliant production: Mt, 2018 (5-year CAGR)	VSS-compliant area: ha, 2018 (5-year CAGR)	EBA (2019)	HDI (2018)	% Credit to Agriculture (2018)
Kenya	523,803 (10%)	232,726 (11%)	High	Medium	-
India	250,995 (20%)	137,359 (19%)	Medium	Medium	Very high
China	193,000 (13%)	71,000 (7%)	High	High	-
Indonesia	74,784 (5%)	33,839 (6%)	-	High	Very high
Sri Lanka	59,317 (19%)	42,605 (22%)	Medium	High	Very high
Malawi	46,758 (-3%)	18,089 (-1%)	Low	Low	-
Argentina	45,239 (6%)	15,415 (16%)	High	Very high	Very high
Rwanda	29,873 (19%)	18,544 (26%)	Low	Low	-
Uganda	28,368 (8%)	10,565 (26%)	Medium	Low	Very high
Tanzania	24,279 (2%)	12,945 (8%)	Medium	Low	-

Source: Elaborated by authors based on data from FAOSTAT, 2021; Meier et al., 2020; UNDP, 2021; World Bank, 2019.

2016 because it was not adequately replacing protective equipment for workers. As a result, Twining's and Taylors of Harrogate stopped doing business with the company (Deith, 2016).

VSS compliance has led to greater productivity and profitability in tea estates in several ways. Improved working conditions that lead to more efficient production processes have been reported in Rainforest Alliance- and Fairtrade-certified tea plantations. For example, SORWATHE, a Rwandan Organic- and Fairtrade-certified tea company, introduced kindergartens in its plantations with the assistance of UNICEF, which increased productivity among mothers by 5 kg to 20 kg of tea harvested per day (Houser, 2018; UNICEF Rwanda, 2017). Several tea estates in Sri Lanka have collaborative programs with the Ethical Tea Partnership and CARE International to create community development forums where labour conditions are negotiated transparently by tea stakeholders; this has reduced the number of strikes and increased worker productivity (Roscoe et al., 2013). The adoption of VSSs among small-scale tea growers has led to profitability gains. In India's Assam province, incomes generated from Organic-certified tea are reported to be 10% higher than those from conventional production (Deka & Goswami, 2021). Fairtrade premiums distributed to producers amounted to EUR 5.3 million in 2017 (Fairtrade Foundation, 2019). Improving income through price premiums benefits smallholders and FSPs alike.

Small tea producers have limited bargaining power and are thus less able to compete. Development finance institutions and impact investors may be more inclined to support

VSS-compliant smallholder tea farmers, as they are often organized in cooperatives or linked to larger tea states. Investment opportunities supporting small tea producers include financing working capital, asset development for irrigation and value addition, and long-term financing to relocate tea bushes in response to climate change and to cover the lack of productivity during the first 5 years (IDH – The Sustainable Trade Initiative, 2020b; Jia et al., 2019; Myassamtea, n.d.; Rainforest Alliance, 2018b; United States Agency for International Development, 2006; Beveragedaily.com, 2019). Support may also be needed for smallholder tea farmers to transition to VSS-compliant production, such as training and extension services for tea growers to adopt VSS-compliant production practices. There are also innovative impact investment opportunities associated with VSS-compliant tea. For instance, the RUNA tea company sources Fairtrade- and Organic-certified guayusa tea leaves from the Ecuadorian Amazon that are processed locally and sold as ready-to-drink tea in premium markets in the United States. This social enterprise is benefiting more than 3,000 Indigenous families in the Amazon by incentivizing community forest preservation while providing a community land-ownership structure that lowers investment risks (Hajjar & Oldekop, 2018; Partners Group, 2015). The Rainforest Alliance and IKEA Foundation partnership support smallholder Kenyan tea growers to consume locally produced no-smoke briquettes, which preserves more than 80,000 trees by reducing firewood consumption in tea factories by 30% while also reducing tea-drying energy costs (Rainforest Alliance, 2018c).

Investment opportunities in VSS-compliant tea can also be found in the largest VSS-compliant tea-producing countries, including Kenya, China, and Argentina (see Table 10). These countries have high EBA scores, suggesting there is a suitable business environment and supporting regulations for investing in the sector. New investment models are being developed for countries with lower EBA scores, such as Malawi and Rwanda, where tea is mainly grown by smallholder farmers, community groups, and small enterprises. For example, blended finance along with blockchain technology is being used to provide VSS compliance assurances in real time (i.e., the origin of tea and land titles) while offering favourable lending conditions to Malawian growers supplying tea to Unilever and Sainsbury (Chadwick, 2017; University of Cambridge, 2017). In these countries, FSPs can invest in VSS-compliant tea to leverage market access but also preserve forests, empower tea workers, and protect Indigenous and land rights.

VSSs can attract blended finance, where private sector investors leverage public investments by providing technical assistance, business development services, and market access to tea producers (Tamilnadu Tea Plantation Corporation, 2011). For example, a public bank granted a long-term loan to Tantea, a primary tea manufacturing company in Tamil Nadu, India, to modernize four of its six factories. The company is transitioning to Rainforest Alliance certification to improve quality, access European markets, and sell directly to buyers (The Times of India, 2020). The factory refurbishments and Rainforest Alliance certification is expected to benefit 10,000 tea

workers and growers via improved workplace safety, labour rights, and forest conservation measures.

Chapter 3 details how the Rainforest Alliance, Fairtrade, Organic, and UTZ are designed to address sustainability challenges in the tea sector, which can also lower investment risks. The new Rainforest Alliance standard resulting from its merger with UTZ is based on a continuous improvement model that requires farmers to adopt more sustainable farming practices over time. Fairtrade gives minimum price guarantees and premiums to smallholder tea farmers and workers. The Organic standard focuses on requiring ecologically friendly production practices, such as prohibiting agrochemicals use. Each of these VSSs offers compatible requirements to shift the tea sector toward sustainability, which also reduces investment risks.

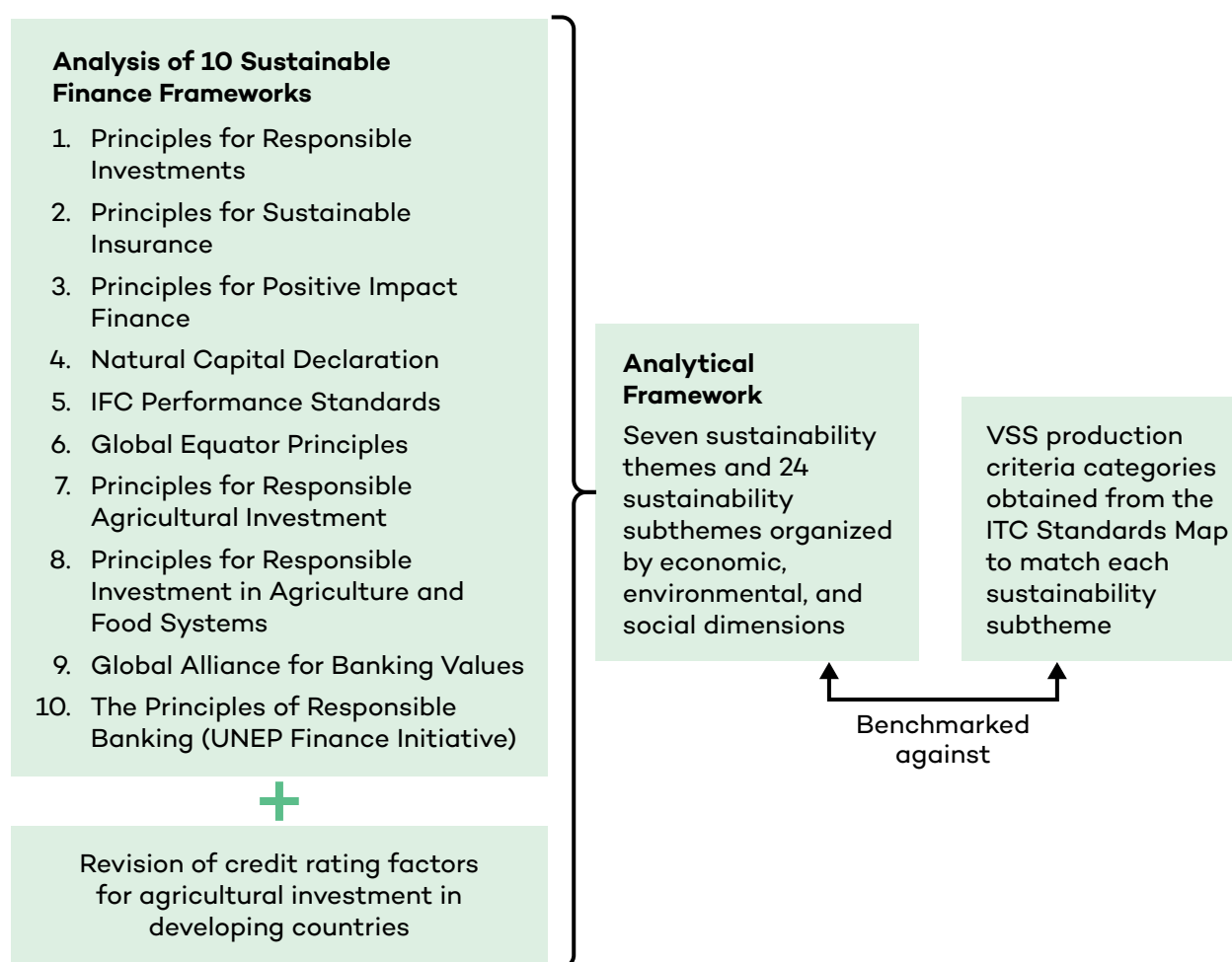
3.0 Benchmarking VSSs Against Sustainable Finance Schemes



This chapter focuses on benchmarking the production criteria of 12 VSSs operating in the agricultural sector against sustainable finance frameworks, such as the Principles of Responsible Investment, to examine how they can mitigate investment risks while enabling sustainable outcomes for investors.

FSPs that have adopted sustainable finance frameworks understand the risk-mitigation and sustainable development potential of more sustainable agricultural production systems, such as those promoted by VSSs. Furthermore, this benchmarking effort provides FSPs with a better understanding of how VSSs can

Figure 9. Process to benchmark the VSS production criteria against the sustainable finance analytical framework



Source: Elaborated by authors based on information coming from the VSS documents listed in Table 12 and other documents consulted: Association of South-East Asian Nation, 2015; Committee on World Food Security, 2014; Global Alliance for Banking Values, 2011; International Finance Corporation, 2012c, 2015; Moody's Analytics, 2014; Nugnes & Larrea, 2020; Rabo Rural Fund, n.d.; Standard & Poor's Global Rating Services, 2013a, 2013b, 2015; The Equator Principles Association, 2013; UNEP Finance Initiative, n.d., 2012; UNEP Finance Initiative & Global Canopy Programme, 2012; Principle of Responsible Investment, n.d.; UNCTAD et al., 2010.

mitigate their investment risks. Economic considerations in assessing financial risk have a long tradition. However, as mentioned in Chapter 2, there is increased recognition for incorporating ESG considerations in investment strategies (Potts et al., 2010).³⁶ As the IFC (2013) notes, many in the financial sector recognize VSSs as “a primary risk mitigator,” as they contribute to the following aspects of agricultural production:

- Reputational risk management and value protection
- Access to capital and associated services
- Enhanced reputation and better market advantage
- Security of supply, supplier competence, and loyalty
- Improved compliance with legislation and “soft” law
- Cost savings from gains in efficiency and productivity.

Figure 9 shows the process used to benchmark VSS production criteria against the sustainable finance analytical framework themes and subthemes (described in more detail in Appendix B). An analytical framework was first established by examining 10 sustainable finance frameworks and credit rating factors for agricultural

investments in developing countries (see Appendix A for more details on sustainable finance frameworks).³⁷ The sustainable finance frameworks examined were selected due to their proliferation in the financial sector as well as their orientation toward and prominence for enabling sustainable financing in the agricultural sector.³⁸ The various components of the frameworks were disaggregated to better understand their essential elements, and credit rating factors such as the robustness of accounting methods and record-keeping, debt maturity profiles and solvency, profitability, and market positioning were reviewed. From this review, seven sustainability themes and 24 subthemes were established to benchmark the VSS production criteria obtained from the International Trade Centre's Standards Map (see Table 11 for the sustainable finance themes and subthemes derived for the benchmarking effort).

The benchmarking effort examined the production criteria of 12 VSSs, selected for their international presence and significant share of agricultural commodity production along a number of sustainable finance themes to better understand their potential for lowering finance risks (see Table 12). It is important to note that the VSSs examined should not be compared with each other,

³⁶ According to Potts et al. (2010, p. 126) “over the past few years, the more traditional drivers of corporate transparency, namely the investment community, have begun to make formal links between supply chain sustainability and materiality. The launch of the UNEP Finance Initiative in 1991, the Equatorial Principles in 2003, and the IFC Performance Guidelines in 2007 all provide high-profile examples of the growing and increasingly systemic interest by the financial sector in corporate sustainability performance—or, in the language of the investment community, Environmental, Social and Corporate Governance (ESG) concerns.”

³⁷ Organizations such as Standard and Poor's, the IFC, RaboRural Fund, and the ASEAN Economic Community widely use rating factors.

³⁸ More specifically, the financial framework themes were selected based on their level of adoption in the financial sector; inclusivity of ESG aspects; focus on agriculture; and advice received from an expert panel comprised of seven members representing the finance, development, non-governmental, and VSS sectors.

Table 11. Sustainable finance analytical framework themes and subthemes

Sustainability theme		Sustainability subtheme
Economic	Governance	<ul style="list-style-type: none"> • Compliance with laws and regulations • Corruption and bribery prevention • Transparency
	Business Management	<ul style="list-style-type: none"> • Supply chain practices • Quality systems • Record-keeping • Traceability • Sustainability planning and management systems • Economic viability
Environmental	Climate Change	<ul style="list-style-type: none"> • Climate mitigation • Climate adaptation
	Pollution Prevention	<ul style="list-style-type: none"> • Water pollution • Solid waste prevention • Pest management
	Biodiversity and Natural Resource Management	<ul style="list-style-type: none"> • Biodiversity conservation • Forest conservation • Water conservation • Soil conservation
Social	Local Communities	<ul style="list-style-type: none"> • Indigenous rights • Cultural preservation • Community health, safety, and security
	Worker	<ul style="list-style-type: none"> • Labour rights • Workers' health and safety • Employment practices • Employment practices-gender specific

Source: Authors.

as they operate with different objectives and in different sectors and contexts. The benchmarked VSS production criteria were then weighted as follows to reflect the timeline in which the requirements must be met to become and remain standard compliant:

- 0% = not covered
- 20% = improvement or recommendation – implementation suggested in standard document but not required
- 40% = longer-term requirement (more than 3 years)
- 60% = medium-term requirement (between 1 and 3 years)
- 80% = short-term requirement (within the first year)
- 100% = immediate – must be met immediately to be recognized as VSS compliant.

Table 12. VSS standard documents, crop and producer focus, and weighting approach for assessing production criteria against sustainable finance frameworks

VSS standard document		Common Code for the Coffee Community (4C): 4C Code of Conduct V4.0 – 2020
Crop & producer focus		Coffee: Managing entities, business partner producers, business partner service providers, intermediary and final buyers, smallholders
Production criteria implementation stringency and weighting approach for each VSS examined	Immediate (100%)	Level 1
	Within 1 year (80%)	
	Between 1 and 3 years (60%)	Level 2
	In more than 3 years (40%)	Level 3+
	Recommended (20%)	Continuous
VSS standard document		BCI Better Cotton Principles and Criteria V2.1 – 2018
Crop & producer focus		Cotton: Smallholders, medium-sized and large farms
Production criteria implementation stringency and weighting approach for each VSS examined	Immediate (100%)	Core
	Within 1 year (80%)	
	Between 1 and 3 years (60%)	
	In more than 3 years (40%)	
	Recommended (20%)	Improvement

VSS standard document		Bonsucro: Bonsucro Production Standard V4.2 – 2016
Crop & producer focus		Sugarcane: Sugar mills
Production criteria implementation stringency and weighting approach for each VSS examined	Immediate (100%)	Core & 80% indicators to be met
	Within 1 year (80%)	
	Between 1 and 3 years (60%)	
	In more than 3 years (40%)	
	Recommended (20%)	
VSS standard document		CmiA: Cotton made in Africa Criteria Matrix Volume 4 – 2020
Crop & producer focus		Cotton: Smallholders
Production criteria implementation stringency and weighting approach for each VSS examined	Immediate (100%)	Exclusion Criteria
	Within 1 year (80%)	
	Between 1 and 3 years (60%)	
	In more than 3 years (40%)	
	Recommended (20%)	
VSS standard document		Fairtrade International: <ul style="list-style-type: none"> • Fairtrade Standard for Small-scale Producer Organizations V2.2 – 2019 • Fairtrade Standard for Hired Labour V1.5 – 2014
Crop & producer focus		All crops: Smallholder cooperatives and hired workers
Production criteria implementation stringency and weighting approach for each VSS examined	Immediate (100%)	Core 0
	Within 1 year (80%)	Core 1
	Between 1 and 3 years (60%)	Core 3 Dev 3
	In more than 3 years (40%)	Dev 6
	Recommended (20%)	

VSS standard document		GLOBALG.A.P.: IFA V5.2 July 17 – Crops Base Module 150727, GRASP-Module V3.1 – 2019*
Crop & producer focus		All crops: All farms
Production criteria implementation stringency and weighting approach for each VSS examined	Immediate (100%)	Major–must Minor–must
	Within 1 year (80%)	
	Between 1 and 3 years (60%)	Traffic Light Assessment
	In more than 3 years (40%)	
	Recommended (20%)	Recommend GRASP-Module requirements
VSS standard document		Organic Standard: IFOAM-Organics International, October 2019 (Edited version of the IFOAM Norms 2014)
Crop & producer focus		All crops: All farms
Production criteria implementation stringency and weighting approach for each VSS examined	Immediate (100%)	Requirements
	Within 1 year (80%)	
	Between 1 and 3 years (60%)	
	In more than 3 years (40%)	
	Recommended (20%)	Recommendations
VSS standard document		PTF: ProTerra Standard V4.0 – 2018
Crop & producer focus		Non-GM soybeans: All farms
Production criteria implementation stringency and weighting approach for each VSS examined	Immediate (100%)	Core
	Within 1 year (80%)	Other
	Between 1 and 3 years (60%)	
	In more than 3 years (40%)	
	Recommended (20%)	

*It must be noted that GlobalG.A.P. farming operations can adopt an optional add-on, entitled GLOBALG.A.P. Risk Assessment on Social Practice (GRASP), which focuses on improving social practices such as worker health and safety. Please also note that the scheme will release an updated version of the standard in 2022 with new criteria covering economic, environmental, and social issues

VSS standard document		Rainforest Alliance: Rainforest Alliance Sustainable Agriculture Standard: Farm Requirements V1.0 – 2020
Crop & producer focus		Tree crops, fruits, nuts, and cut flowers: Group and individual certification for small and large farms
Production criteria implementation stringency and weighting approach for each VSS examined	Immediate (100%)	Core
	Within 1 year (80%)	Mandatory improvement – level 1
	Between 1 and 3 years (60%)	
	In more than 3 years (40%)	Mandatory improvement – level 2
	Recommended (20%)	Self-selected improvement requirements
VSS standard document		RSPO: Principles and Criteria for the Production of Sustainable Palm Oil – 2018
Crop & producer focus		Palm oil: Oil palm plantations
Production criteria implementation stringency and weighting approach for each VSS examined	Immediate (100%)	Critical
	Within 1 year (80%)	
	Between 1 and 3 years (60%)	
	In more than 3 years (40%)	
	Recommended (20%)	
VSS standard document		RTRS Association – Standard for Responsible Soy Production V3.1 – 2017
Crop & producer focus		GM and non-GM soybeans: All farms
Production criteria implementation stringency and weighting approach for each VSS examined	Immediate (100%)	Immediate
	Within 1 year (80%)	Short term
	Between 1 and 3 years (60%)	Mid term
	In more than 3 years (40%)	
	Recommended (20%)	

Source: Elaborated by authors based on information coming from the VSS documents listed in the table.

The benchmarking effort was enriched by including the perspectives of 51 FSPs that invest in agricultural operations in developing countries (consulted in 2019) on the most important sustainability issues that need to be addressed to reduce investment risks and generate sustainable development outcomes (percentage of FSPs that regard a sustainability issue as highly important to lower financial risks and enable sustainable development). Including the perspectives of these 51 FSPs alongside the benchmarking effort provided direct insights on the sustainability issues that matter most when providing finance.³⁹

The FSPs that were consulted responded to 96.5% of the survey questions, which has enabled a comprehensive analysis of their responses. The FSPs consulted were mainly based in Latin America (32%) and North America (22%), but some also came from Africa (20%), Europe (14%), Oceania (6%), and Asia (4%). Their typology was: 9.80% private actor in the agriculture value chain (i.e., buyer, trader, input supplier); 7.84% (foundations); 1.96% microfinance institution; 1.96% diversified institutional asset owner; 5.88% large investment manager; 17.65% development finance institution; 15.69% commercial finance institution; 21.57% impact-first/social investor; and 17.65% identified as other (Nugnes & Larrea, 2020).

It must be noted that although VSSs were not directly designed to give farmers access to financing or to strengthen their investment readiness, many of the VSS production

criteria required to become VSS compliant could lead to important business and production improvements that can facilitate their access to financial resources from FSPs. Furthermore, examining how VSS production criteria align with sustainable finance frameworks could provide insights that may better enable farmers to obtain financing, which could represent an incredibly important competitive advantage for agricultural standards.

This benchmarking effort is not intended to delineate “good” versus “bad” performance among the VSSs. While there will be a natural tendency to regard more complete coverage as “better,” this may not always be the case. To the extent that more stringent criteria also represent a higher bar for producers, increased competitiveness may make sustainable markets less accessible to farmers with fewer resources, thereby restricting the ability of such initiatives to promote sustainable development objectives among those who could benefit most.

This chapter presents the results obtained from benchmarking the production criteria of 12 agricultural VSSs against the sustainable finance framework’s themes and subthemes organized by the economic, environmental, and social dimensions of sustainable development. The results are also discussed from the perspective of whether VSSs can mitigate potential investment risks and deliver sustainable development outcomes that can help VSS-compliant farmers access financing from FSPs.

³⁹ The detailed report on the FSP consultation was published by IISD in 2020 and is called *Expert Consultation with Financial Service Providers: Understanding the Sustainability Issues Agricultural Producers Need to Consider to Be Investment-Ready and Access Finance*.

Economic Dimension

FSPs must assess the economic viability of agricultural operations to make investment decisions. VSSs often include production criteria that require farmers to adopt more sound business governance and management practices to mitigate potential financial risks. Consequently, VSS-compliant farmers can be more attractive for prospective FSPs compared to farmers involved in conventional agricultural production. VSSs can also reduce transaction costs by requiring producers to collect information used to assess financial risks (Angel et al., 2013). Therefore, criteria focused on the economic governance and management aspects of agricultural operations are examined to determine how business-oriented VSS production criteria can reduce financial risks while helping to deliver sustainable development outcomes. These essential agribusiness aspects are fundamental for FSPs to make proper investment decisions.

Economic Governance

Good business governance systems must be adopted to ensure that agricultural operations remain legal, ethical, and fair. Business governance practices that enable legal compliance, prevent corruption and bribery, and facilitate transparency can give FSPs confidence that a farming business can continue operating to provide a return on investment in the following ways (Macqueen et al., 2018):

1. **Compliance with laws and regulations** where farming operations are being undertaken, such as requiring land tenure, production permits, and legal registration, provides more

certainty that they can continue operating legally into the foreseeable future.

2. **Corruption- and bribery-prevention** measures against fraud, dishonest behaviour, and taking or receiving something of value to gain influence can improve the accuracy of business-related information.
3. **Transparency processes** contribute to sharing information needed to remain transparent on business governance issues, which can result in better stakeholder and customer relations affected by agricultural operations (Craig, 2018).

Figure 10 illustrates the extent to which VSSs have production criteria that fulfill the legal compliance, corruption and bribery prevention, and transparency processes subthemes. It also shows the percentage of FSPs consulted that perceive these subthemes as highly important for lowering financial risks and enabling sustainable development. The results allowed for a comparison of the VSS coverage and FSP perceptions for these business governance aspects. For the most part, the VSSs require compliance with laws and regulations, which is crucial for FSPs.

Comparing the coverage of the requirements of the VSSs examined on corruption and bribery (10%) and transparency (25%) with FSP perceptions about the importance of these two subthemes for mitigating financial risks (78% and 76%, respectively) and enabling sustainable development (80% and 75%, respectively) suggests that VSSs should consider including anticorruption and business transparency requirements to meet FSPs' preferences for these attributes

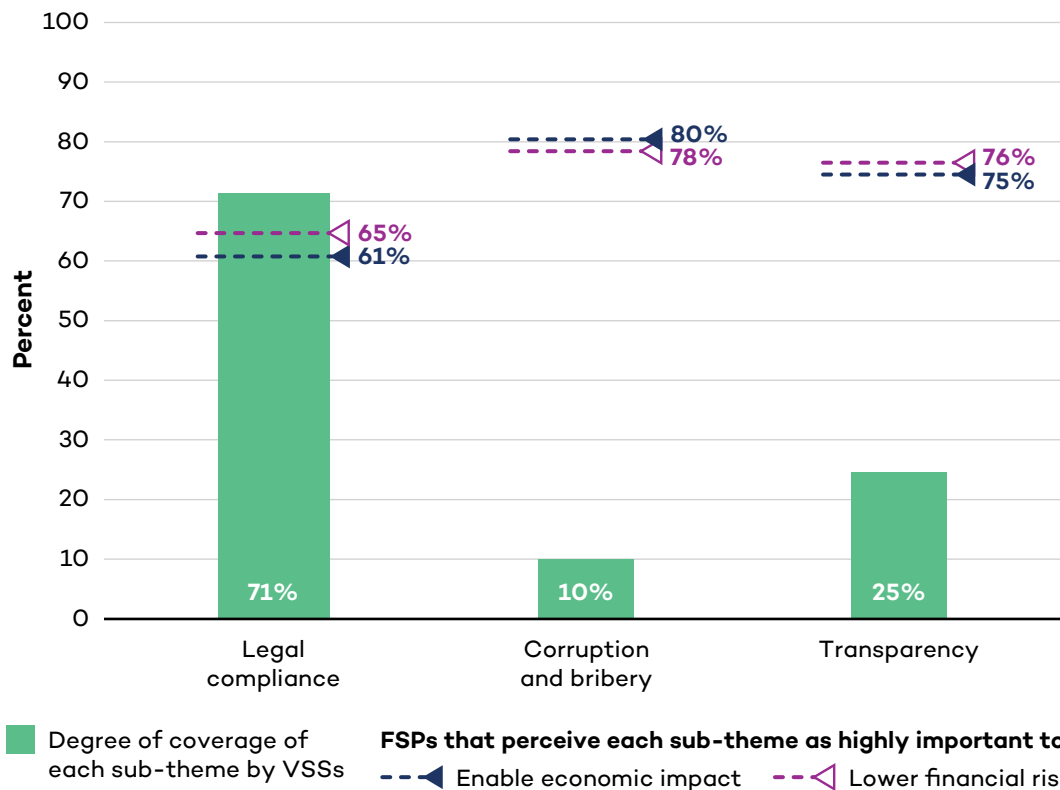
in potential investees. The information shown in Figure 10 is disaggregated by VSS and business governance aspects in the subsections below.

Compliance with Laws and Regulations

Most VSSs operating in the agricultural sector require farmers to comply with international, national, and local laws and regulations. This includes obtaining all agricultural production rights and permits, such as land tenure documentation and water use permits,

while being legally registered. These permits provide some certainty that agricultural operations can continue without interference from local governments and surrounding communities. Moreover, operating illegally can result in operational risks, leading to potential disruptions and legal costs. VSS-compliant farming operations monitored for legal compliance can be attractive for prospective FSPs, as they can lower the need for background checks and due diligence requirements (see Box 3). This may be particularly important for FSPs without local offices, as they can rely on VSSs instead of

Figure 10. VSS coverage of legal compliance, corruption and bribery prevention, and transparency processes and the percentage of FSPs that perceive them as highly important to lower financial risks and enable sustainable development



Source: Elaborated by authors based on information coming from the VSS documents listed in Table 12 and in Nugnes & Larrea, 2020.

having to become familiar with local laws and regulations, which increases transaction costs. Nevertheless, this would imply that VSSs need to have effective conformity monitoring and assessment processes in place to enforce their standards. The FSP consultation revealed that proof of land-use rights, compliance with relevant laws, and agribusiness legal registration were perceived as very important to reduce financial risks and enable sustainable development (Nugnes & Larrea, 2020).

With the exception of the Organic standard, the 12 VSSs examined have explicit requirements to observe all relevant laws and regulations to become standard compliant, which can include measures such as following local zoning restrictions and having legal land tenure. All of the VSSs except the CmiA require production permits to become and remain standard compliant.⁴⁰ Nevertheless, VSS requirements for business legality and respecting local zoning and land tenure are not as stringent. This may represent opportunities for VSSs to strengthen these

Box 3. Yield Uganda and VSSs

Commodity: Agriculture

Region: Uganda

VSS: Organic and Fairtrade

Smallholder Ugandan farmers face barriers that prevent them from becoming economically viable, such as a lack of land, capital, technical skills, and access to markets. The Yield Fund helps address these challenges by investing in loans, equities, and quasi-equity products (with each investment ranging from EUR 250,000 to EUR 2 million) to improve productivity value addition. The fund, managed by Pear Capital Partners, focuses on the long-term profitability of its investees and smallholder impacts, subject to risk management constraints while observing internationally recognized ESG standards. The Yield Fund cost-sharing model, enabled by blended public and private finance, helps investees become Organic-certified and improve operational efficiencies. The fund invests in locally managed agricultural value chains by applying sustainability criteria in its due diligence process, such as absence of domestic price controls, product quality matching or exceeding industry standards, realistic marketing and growth plans, measurable farmer impact, and the existence of engagement mechanisms that contribute to socio-economic development (i.e., equal development opportunities for women, biodiversity conservation, and natural resource management). VSSs can support compliance with these criteria and play a key role in investor due diligence.

⁴⁰ CMiA works primarily with African smallholder cotton farmers who may not have or require production permits in order to cultivate. Nevertheless, CMiA cotton farmers require legal land tenure to convert land for agricultural purposes.

Table 13. VSS coverage of business governance legal compliance (%)

	4C	BCI	BSC	CMIA	FHL	FSPO	GG	ORG	PTF	RA	RSPO	RTRS	Average
Legal compliance	93	50	100	67	83	83	50	17	97	83	50	83	71
Local zoning	60	0	100	100	0	0	0	0	80	100	0	0	37
Production permits	100	100	100	0	100	100	100	100	100	100	100	100	92
Land tenure	100	0	100	0	100	100	0	0	100	100	0	100	58
Legal compliance	100	100	100	100	100	100	100	0	100	100	100	100	92
Business legality	100	0	100	100	100	100	0	0	100	0	0	100	58
Environmental law	100	100	100	100	100	100	100	0	100	100	100	100	92

Source: Elaborated by authors based on information coming from the VSS documents listed in Table 12.

requirements, which could facilitate farmers' access to financing from FSPs. For instance, requiring farmers to have land tenure could incentivize them to have the land-ownership documentation needed for collateral.

The Bonsucro, PTF, and 4C are the most rigorous VSSs, requiring farmers to follow all relevant laws and regulations and to have all production permits, including land tenure as well as business legality documentation.⁴¹

Corruption and Bribery Prevention

Eliminating corruption and bribery in agriculture is in the best interest of VSS-compliant farmers, as they can affect profitability and limit the reliability of sustainability claims. Corruption is

especially problematic in countries with weak market-supporting institutions, where it can be endemic (IFC, 2013b).⁴² Widespread corruption can even result in black markets where certified goods are sold at lower prices (Steering Committee of the State-of-Knowledge Assessment of Standards and Certification, 2012). For these reasons, corruption can result in market and reputational risks as well as disinvestment. The FSP consultation revealed that anticorruption and bribery measures were perceived as important to reduce financial risks and enable sustainable development.

The VSSs generally lack rigorous requirements to prevent corruption and

⁴¹ The PTF was first implemented in the soy sector where land dispossession and displacement has been an important issue, particularly in Brazil. For this reason, the PTF has strong requirements for meeting the business governance legal compliance measures examined.

⁴² See Transparency International for a global ranking of corruption (www.transparency.org).

Table 14. VSS coverage of business governance corruption and bribery (%)

	4C	BCI	BSC	CMIA	FHL	FSPO	GG	ORG	PTF	RA	RSPO	RTRS	Average
Corruption and bribery	25	0	0	50	25	0	0	0	0	0	20	0	10
Anti-bribery corrective actions	0	0	0	100	0	0	0	0	0	0	0	0	8
Anti-bribery internal controls	0	0	0	0	0	0	0	0	0	0	0	0	0
Anti-bribery policy communications	0	0	0	0	0	0	0	0	0	0	0	0	0
Bribery prevention	100	0	0	100	100	0	0	0	0	0	80	0	32

Source: Elaborated by authors based on information coming from the VSS documents listed in Table 12.

bribery in agricultural operations. Only four of the 12 VSSs require farmers to adopt bribery-prevention measures. None require their participating farmers to have internal controls or corrective actions to deal with cases of corruption and bribery or to have an antibribery policy in place. Interestingly, the CmiA standard requires smallholder African cotton farmers to adopt bribery-prevention measures, indicating that they should be within reach of farming operations that have more resources than smallholders. Furthermore, VSSs may need safeguards to prevent corruption and bribery associated with standard-compliance certification and verification processes, which could undermine their very credibility. Examining this potential dynamic is beyond the scope of this report.

Transparency Processes

Transparency processes in VSS-compliant farming operations provide some assurance that agricultural goods are produced in accordance with a sustainability standard so they can be differentiated in the marketplace (Trade Standards Practitioners Network, 2010). “Transparency represents an important instrument for maintaining trust and market buy-in” (Potts et al., 2010, p. 128). Transparency also allows FSPs to access the information they need to make better risk calculations and investment decisions. The FSP consultation revealed that compliance with recognized financial accounting standards and the existence of third-party financial auditing were considered to be important for lowering financial risks and enabling sustainable development (Nugnes & Larrea, 2020). VSS production criteria associated with requiring publicly available

Table 15. VSS coverage of business governance transparency (%)

	4C	BCI	BSC	CMIA	FHL	FSPO	GG	ORG	PTF	RA	RSPO	RTRS	Average
Transparency	25	0	25	0	25	45	25	0	25	50	50	25	25
Audit information discrepancies procedures	100	0	0	0	0	0	100	0	0	0	0	0	17
Auditor access	0	0	0	0	0	100	0	0	0	100	0	0	17
Publicly available E&S management reports	0	0	0	0	0	80	0	0	0	0	100	100	23
Publicly available worker's rights policy	0	0	100	0	100	0	0	0	100	100	100	0	42

Source: Elaborated by authors based on information coming from the VSS documents listed in Table 12.

workers' rights policies, environmental and social management reports, procedures for dealing with auditing discrepancies, and auditor access to production sites were assessed to determine how they require transparency processes.

Some of the VSSs examined require producers to have a publicly available workers' rights policy, which can support workers' awareness and efforts to exercise their rights and can help mitigate labour conflicts. On the other hand, few require reporting on environmental and social management systems, dealing with auditing discrepancies, or giving auditors access to production sites. GlobalG.A.P. and 4C were the only VSSs that required auditing discrepancy procedures. The Rainforest Alliance and the RSPO have the most

stringent production criteria for ensuring transparency. The RSPO works with palm oil mills, where establishing clear workers' rights policies and having an environmental and social management system can have an important role in producing more sustainable palm oil. These standards can reduce potential palm oil cultivation operational or reputational risks, such as labour-related conflicts and deforesting natural environments to expand oil palm plantations. Overall, the VSSs examined have the potential to strengthen their business governance transparency criteria to further build trust among supply chain stakeholders and support FSP due diligence requirements.

Business Management

Proper business management practices are crucial to maintaining the long-term economic viability of farming operations, which is necessary for accessing financing from FSPs. Ensuring that agricultural operations have good business management practices can be advantageous when seeking financial support, as it can give FSPs more certainty that they will get a return on investment. The following six sustainability subthemes are used to examine VSS capacities to foster improved business management:

1. **Economic viability** is associated with maintaining a farming operation's economic prosperity. This implies having a profitable and solvent agribusiness, which is essential for accessing financial resources.
2. **Quality systems** seek to uphold product quality standards and meet customer expectations to generate revenues and maintain market share.
3. **Record-keeping** captures and maintains information in a formal manner. Cash-flow records are often required to access financing (Angel et al., 2013).
4. **Supply chain practices** can build stronger relationships with suppliers and buyers. This can lead to bigger and more secure sales as well as capturing more market share.
5. **Sustainability planning and management systems** are designed to address and resolve sustainability issues. They provide some certainty that socio-environmental risks are being factored

into business planning and mitigation strategies.

6. **Traceability** involves tracking and tracing production inputs and outputs throughout supply chains, which can be very important to prove the origins and qualities of agricultural goods.

VSS production criteria were benchmarked against these six areas of business management. Figure 11 shows the extent to which VSSs have production criteria that fulfill the economic viability, quality system, record-keeping, supply chain, sustainability planning and management, and traceability subthemes. It also shows the percentage of FSPs consulted that consider these subthemes to be highly important for lowering financial risks and enabling sustainable development. The results allowed for a comparison of the VSS coverage and FSP perceptions for these business management aspects.

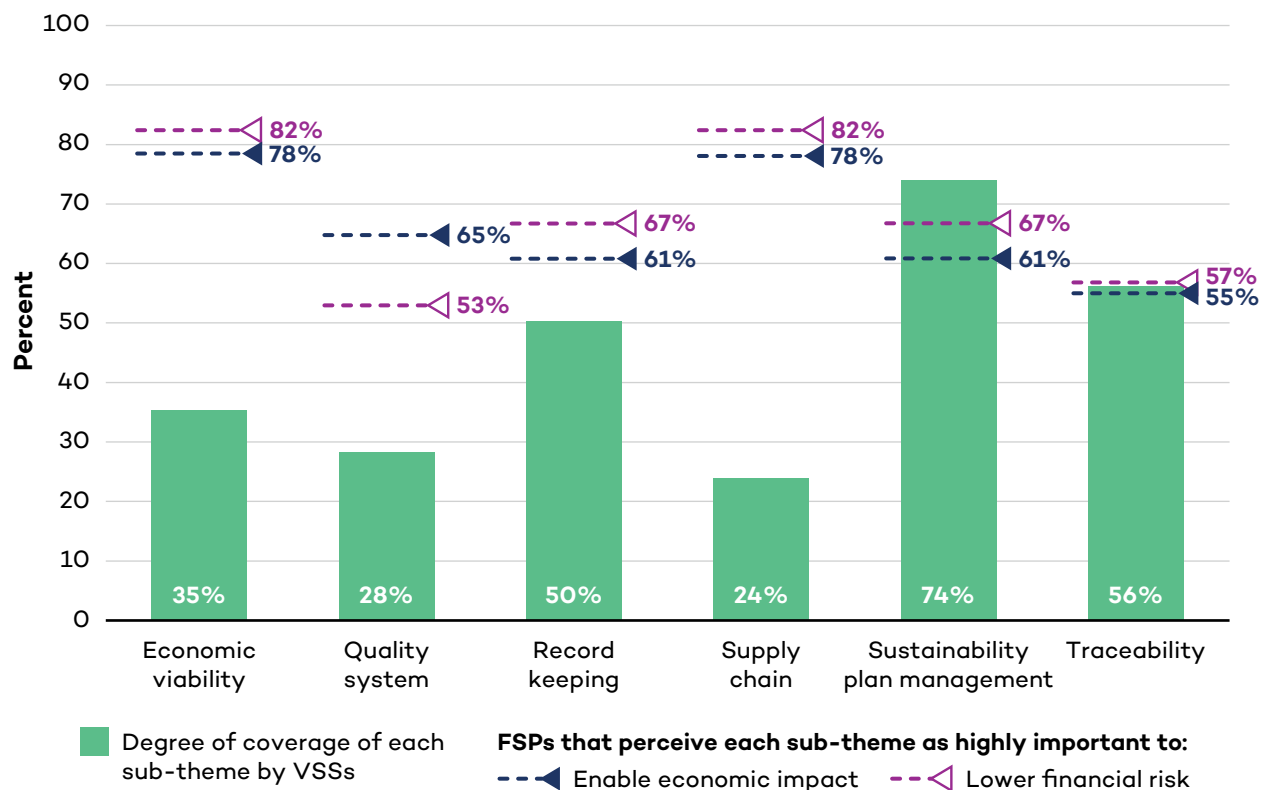
Except for sustainability planning and management and traceability, the VSSs examined do not sufficiently cover these business management areas. Most of the VSSs require sustainability planning and management, which at least 60% of the FSPs perceived as highly important. On the other hand, comparing the coverage of requirements of the VSS examined on supply chain (24%) and economic viability (35%) with FSP perceptions about their importance for mitigating financial risks and enabling sustainable development (82% and 78%, respectively) suggests that VSSs should consider strengthening their supply chain and economic viability requirements to meet FSP preferences. Ensuring that VSS requirements are in place to reduce investment risks associated with economic viability, product

quality, record-keeping, supply chain, sustainability planning, and traceability aspects of agricultural businesses could strengthen the potential of VSS-compliant farmers to access financing. The information presented in Figure 11 is disaggregated by VSS and business management aspects in the subsections below.

Economic Viability

VSSs can motivate agricultural operations to implement more robust business management practices by requiring them to adopt productivity measures, business plans, and viability studies and fostering business diversification (see Box 4).⁴³ These practices can increase economic viability and reduce operational risks. VSS economic viability requirements can also lower due diligence costs associated with assessing

Figure 11. VSS coverage of economic viability, quality system, record-keeping, supply chain practices, sustainability planning and management, and traceability systems, and the percentage of FSPs that perceive them as highly important for lowering financial risks and enabling sustainable development



Source: Elaborated by authors based on information coming from the VSS documents listed in Table 12 and in Nugnes & Larrea, 2020.

⁴³ In the case of small producers, producer organizations and training often support VSS business requirements.

the financial viability of agribusinesses. For instance, formal business plans, such as those developed with business advisors, can enhance the credibility of business claims, which FSPs value. The FSP consultation revealed that projected cash flows and sale revenues were perceived as very important to reduce financial risks and enable sustainable development (Nugnes & Larrea, 2020). Productivity records and cost structures were similarly seen as very important to

forecast the economic viability of agricultural operations.

Half or less of the VSSs examined require farming operations to have a business plan, financial resilience, productivity improvement measures, or business diversification. CmiA, 4C, FSPO, PTF and the Rainforest Alliance have business diversification requirements, which are increasingly important for maintaining the economic viability of

Box 4. The Moringa Fund and business diversification

Commodity: Agroforestry products – Organic and conventional mango puree

Regional focus: Mali

VSSs: Organic, Fairtrade, Rainforest Alliance

Investee: ComaFruits

Mali is a landlocked country with limited water resources. To compensate local communities that were displaced by the Sélingué Dam, the government planted a mango orchard. Mango farmers were initially without a market and therefore without incomes. ComaFruits in Sikasso, one of Mali's poorest regions, helps mango farmers remain financially viable by providing them with a commercialization channel as well as technical and financial support, including assistance with becoming certified with Organic, Fairtrade, or the Rainforest Alliance. ComaFruits trains producers to grow tasty and healthy mango varieties, and VSSs supported these efforts by requiring better quality aligned with strict importing country requirements. The Moringa Fund, an agroforestry investment company, invested in ComaFruits to add value, build a fruit-drying plant to broaden its mango products (dried and frozen mango), provide technical assistance, and develop other fruit products to diversify farmer revenues (i.e. guava, oranges, cashews, apples, tomatoes, pineapples, pomegranates, and ginger). Farmers adopting agroforestry practices for mango production and market linkages favoured by certification drove this value-addition investment. Moringa adopts ESG screening in its pre-investment phase and regularly monitors the social and environmental impacts of its investments.

The Moringa Fund shows tangible impacts throughout all its investments. In 2019, the fund's investments supported 12,600 farmers, enabled the sustainable management of 15,400 ha, and helped establish 2,300 jobs with an expected return for Moringa investors of 10%–12%. Investors like the Moringa Fund allow companies to diversify and add product value for farming communities to access markets so they can become more profitable and resilient.

Table 16. VSS coverage of business management economic viability (%)

	4C	BCI	BSC	CMIA	FHL	FSPO	GG	ORG	PTF	RA	RSPO	RTRS	Average
Economic viability	55	25	75	80	0	40	0	0	40	60	50	0	35
Business diversification	40	0	0	20	0	60	0	0	80	20	0	0	18
Business plan	100	0	100	100	0	0	0	0	80	100	0	0	40
Financial resilience	40	0	100	100	0	100	0	0	0	20	100	0	38
Productivity improvement	40	100	100	100	0	0	0	0	0	100	100	0	45

Source: Elaborated by authors based on information coming from the VSS documents listed in Table 12.

agribusinesses as global pressures such as climate change threaten agriculture livelihoods in many parts of the world. As economic viability is the aim of agricultural operations, VSSs may not feel the need to explicitly require farmers to commit to economic improvement. Nevertheless, economic viability requirements, such as projected cash flows, could help agricultural operations access financial resources. CmiA had the highest economic viability requirements out of the VSS examined.

Quality Systems

VSSs often require producers to have policies for addressing quality issues to ensure that their goods can enter specific markets. For this reason, VSS production criteria may require meeting national and international quality requirements, which can be more demanding to remain ahead of new quality

requirements that may be imposed on agricultural producers. To this end, some VSS, such as GlobalG.A.P. and 4C, require their farmers to undertake product quality risk assessments so they can take steps such as establishing quality monitoring and control systems to detect deficiencies promptly and enable mitigation measures (e.g., surpassing maximum residue limits in final products). The FSP consultation revealed that product quality and safety control measures up to delivery were perceived as very important to reduce financial risks while enabling sustainable development (Nugnes & Larrea, 2020). Ensuring product quality and proper storage until delivery is critical to satisfy and maintain commercial relationships, which can serve as collateral to access financing.

None of the VSSs examined have requirements for remaining legally compliant with quality requirements, and only four

Table 17. VSS coverage of business management quality systems (%)

	4C	BCI	BSC	CMIA	FHL	FSPO	GG	ORG	PTF	RA	RSPO	RTRS	Average
Quality system	37	20	17	50	33	17	67	50	17	33	0	0	28
Compliance with quality legislation	0	0	0	0	0	0	0	0	0	0	0	0	0
Quality management policy	40	20	100	100	0	0	100	100	0	100	0	0	47
Quality monitoring	40	0	0	0	0	0	100	0	0	0	0	0	12
Quality risk assessment	40	0	0	0	0	0	100	0	0	0	0	0	12
Suitable storage facilities	0	100	0	100	100	0	0	100	0	0	0	0	33
Traceability and record-keeping	100	0	0	100	100	100	100	100	100	100	0	0	67

Source: Elaborated by authors based on information coming from the VSS documents listed in Table 12.

require suitable product storage facilities.⁴⁴ The Organic standard is particularly sensitive to having suitable storage facilities to prevent contamination and maintain product quality.⁴⁵ Few of them require agricultural operations to have a quality-management policy in place. GLOBALG.A.P. has the most stringent product quality requirements, followed by CmiA and Organic. These standards demand more efforts from farmers to maintain product quality, which aligns with having to meet national and international

quality standards (i.e., sanitary and phytosanitary measures), which is critical for maintaining market access.

Record-Keeping

Farmers who keep records are more likely to make better decisions for their farming operations, as they can assist with business planning and forecasting (i.e., crop price, crop management to improve yields) (Rainforest Alliance & Citi Foundation, 2018). FSPs often favour VSS-compliant producers, as

⁴⁴ VSSs may not have explicit requirements for meeting legislated quality requirements because farming operations need to meet these requirements to maintain the viability of their businesses.

⁴⁵ Organic production strictly prohibits the use of GM organisms to maintain certification. Consequently, contaminating a certified organic product with GM products would render it non-compliant.

Table 18. VSS coverage of business management record-keeping (%)

	4C	BCI	BSC	CMIA	FHL	FSPO	GG	ORG	PTF	RA	RSPO	RTRS	Average
Record-keeping	67	57	67	67	50	43	33	17	47	80	47	30	50
Accident records	40	20	100	100	100	0	0	0	80	100	80	0	52
Accounting problem records	0	0	0	0	0	0	0	0	0	0	0	0	0
Market information records	100	100	0	100	0	0	0	0	0	100	100	0	42
Payroll records	100	20	100	100	100	100	0	0	100	100	0	80	67
Pesticide application records	100	100	100	100	100	100	100	100	100	100	100	100	100
Water-use records	60	100	100	0	0	60	100	0	0	80	0	0	42

Source: Elaborated by authors based on information coming from the VSS documents listed in Table 12.

they are required to keep records of their farming operations (Rainforest Alliance & Citi Foundation, 2018). This allows FSPs to access timely and potentially robust information on the farming operations they finance when required. The extent to which VSSs require producers to keep the following records is examined: input costs such as agrochemicals and labour; market information, which can include prices and sales; and contingencies, which include accidents and fines. The importance of record-keeping for FSPs to assess financial risks to grant financial support cannot be overstated. The FSP consultation revealed that formally recorded financial transactions as well as farming operation records such as

agrochemicals and water volumes consumed were deemed very important and important respectively to reduce financial risks and enable sustainable development (Nugnes & Larrea, 2020).

All 12 VSSs require farmers to maintain records on different aspects of their operations. They all require farmers to keep records on pesticide use, while none require records on accounting irregularities. The Rainforest Alliance has the most stringent requirements for record-keeping across the VSSs examined. Record-keeping requirements may exclude farmers with lower capacities and resources to become VSS compliant. Smallholder farming businesses

may not be able to dedicate the time and resources necessary to have rigorous record-keeping measures in place to track their operation. VSSs could strategically require farmers to record information that FSPs seek—such as yields, prices, sales, costs, and profitability, as well as other risk factors—to facilitate their access to financing (Angel et al., 2013). Furthermore, the lack of record-keeping among smallholder farmers leads to information asymmetries that VSSs are trying to rectify by requiring some amount of record-keeping, which can drive financing through to their farming networks.

Supply Chain Practices

Agribusinesses that want to lower reputational risks must understand the effects of their

procurement decisions on sustainability. Supply chain mapping (i.e., suppliers, clients, financial and distribution services) can enable a better understanding of potential reputational risks to establish strategies to mitigate them. VSSs can contribute to more transparent agricultural supply chains by requiring supply chain mapping, sales contracts, minimum price guarantees, and price premiums, which can provide legal and financial certainties for FSPs.⁴⁶ VSSs that address the sustainability of supply chains contribute to establishing a network of suppliers, contractors, and traders that aim to observe sustainability principles. The FSP consultation revealed that information on existing buyers and relationships with them was deemed very important to reduce financial

Table 19. VSS coverage of business management supply chain practices (%)

	4C	BCI	BSC	CMIA	FHL	FSPO	GG	ORG	PTF	RA	RSPO	RTRS	Average
Supply chain	44	4	20	20	60	56	0	0	0	64	20	0	24
Access to finance	20	20	0	100	0	0	0	0	0	20	0	0	13
Minimum price guarantees	0	0	0	0	100	100	0	0	0	100	0	0	25
Price premiums	0	0	0	0	100	80	0	0	0	100	0	0	23
Supply chain mapping	100	0	100	0	0	0	0	0	0	100	0	0	25
Trader written contracts	100	0	0	0	100	100	0	0	0	0	100	0	33

Source: Elaborated by authors based on information coming from the VSS documents listed in Table 12.

⁴⁶ Yet to be widely implemented technology solutions, such as blockchain, may be poised to provide significantly more transparency in supply chains.

risks and enable sustainable development. They also perceived sale price records and sales contracts as very important, indicating that secure commercial relationships and offtake agreements can be critical for accessing financial resources, as they can serve as collateral (Nugnes & Larrea, 2020).

Few of the VSSs require minimum price guarantees (Fairtrade Standard for Hired Labour [FHL], Fairtrade Standard for Small-scale Producer Organizations [FSPO], and the Rainforest Alliance⁴⁷), access to finance (4C, BCI, CmiA, and the Rainforest Alliance), or written trade contracts (4C, FHL, FSPO, and RSPO). Minimum price guarantees can make a big difference for small producers, as they protect them from price fluctuations, making for a more stable investment for FSPs. Only four VSSs require written contracts with traders that provide clear terms, which can protect producers from potential sales infractions such as deviations from payment amounts and deadlines. The Rainforest Alliance, the FHL and the FSPO had the most demanding requirements among the 12 VSSs examined. There are clear opportunities for VSSs to require farmers to adopt supply chain practices, such as minimum price guarantees and trader contracts that could improve their access to financing.

Sustainability Planning and Management

Sustainability planning and management, or environmental and social management systems, are expected to prevent, reduce, and

compensate for potential negative impacts associated with agribusinesses (IFC, 2012c). Doing so can improve agribusinesses' financial results as well as the environmental and social outcomes of the communities and natural environments where they operate. VSS requirements for sustainability planning and management can include social and environmental management monitoring and improvement systems, environmental and social risk-mitigation measures, new production impact assessments, and long-term sustainability planning. The FSP consultation revealed that sustainability risk assessments, mitigation plans, and impact assessments were considered moderately important to reduce financial risks and enable sustainable development (Nugnes & Larrea, 2020).

Table 20 shows that most of the VSSs examined have requirements for sustainability planning and management. Many of them require agribusinesses to establish long-term sustainability plans and mitigate the environmental and social risks associated with their operations. Fewer VSSs require farmers to improve the environmental and social management of their farming operations, which can benefit FSPs that adopt gradual investment models where agribusinesses need to reach milestones before getting additional financing. Even fewer require farmers to monitor the management of the social and environmental risks of their operations. Bonsucro, CmiA, Rainforest Alliance, and PTF standards had average coverage of 90% or higher. Having measures in place for

⁴⁷ The Rainforest Alliance requires a guaranteed minimum amount to be paid by buyers to certified farmers to account for the additional costs of producing sustainably, which is referred to in their standard as the sustainability differential. This minimum amount or sustainability differential is part of the overall price paid by buyers for certified Rainforest Alliance products and hence can be considered a partial minimum price guarantee.

Table 20. VSS coverage of business management sustainability planning and management (%)

	4C	BCI	BSC	CMIA	FHL	FSPO	GG	ORG	PTF	RA	RSPO	RTRS	Average
Sustainability plan management	80	80	100	100	80	64	20	20	92	96	80	76	74
E&S management improvement	100	100	100	100	100	100	0	0	100	100	0	0	67
E&S management monitoring	100	0	100	100	0	80	0	0	80	80	100	100	62
E&S risk mitigation	100	100	100	100	100	60	0	100	100	100	100	100	88
Impact assessment for new production	0	100	100	100	100	0	100	0	100	100	100	100	75
Long-term sustainability plan	100	100	100	100	100	80	0	0	80	100	100	80	78

Source: Elaborated by authors based on information coming from the VSS documents listed in Table 12.

farmers to engage in sustainability planning management can result in significant short- and long-term cost savings that can be attractive for FSPs; they can also prevent reputational and legal risks associated with negative social and environmental impacts.

Traceability

Reliable traceability systems are important for producers to maintain consumer trust and product marketability. Different traceability systems can be used with varying

costs and potential for maintaining product characteristics. Physical segregation has the greatest potential for preserving product characteristics. For instance, VSS-compliant GM organism-free products require physical segregation from GM products to avoid contamination. Maintaining product identity associated with a specific origin or producer groups may require identity preservation from farm to retailer (Trade Standards Practitioners Network, 2010).⁴⁸ Other traceability systems include mass balance

⁴⁸ Identity-preserved traceability requires products from a specific origin to be kept separate so they can be traced back to their source (de Koning & Wiegant, 2017, p. 37).

and book and claim.⁴⁹ VSS requirements associated with tracing and labelling GM products, traceability of agricultural inputs, and the traceability and recording of food product supply chains are examined to determine how VSS production criteria address traceability. The FSP consultation revealed that tracking and tracing agricultural inputs and outputs and their key attributes through the value chain were perceived as important for reducing financial risks and enabling sustainable development. On the other hand, product labelling was considered moderately important (Nugnes & Larrea,

2020). Product traceability can also help FSPs assess financial risks (i.e., deforestation associated with the product) and better understand their investment impacts to attract investors to support their funds.

Table 21 shows that most of the VSSs examined operating in agricultural commodity sectors oriented toward food production require traceability systems to track standard-compliant products through supply chains. The Organic standard has strict rules against using GM varieties, requiring separate supply chains and adequate traceability systems for organic products.

Table 21. VSS coverage of business management traceability (%)

	4C	BCI	BSC	CMIA	FHL	FSPO	GG	ORG	PTF	RA	RSPO	RTRS	Average
Traceability	87	33	0	33	67	67	100	100	87	67	0	33	56
Traceability of inputs/varieties	60	100	0	100	0	0	100	100	100	0	0	100	55
Food production traceability system	100	0	0	0	100	100	100	100	80	100	0	0	57
Food production traceability records	100	0	0	0	100	100	100	100	80	100	0	0	57

Source: Elaborated by authors based on information coming from the VSS documents listed in Table 12.

⁴⁹ Mass balance traceability requires keeping an exact account of volume ratios between VSS-compliant and conventional products as they are mixed and move through supply chains. The amount of VSS-compliant product equals the amount of VSS-compliant product sold to the end consumers. Book and claim allows companies that mix and trade non-sustainable products to make sustainability claims by purchasing sustainability certificates or credits so they can make sustainability claims based on the amount of certificates issued and traded (de Koning & Wiegant, 2017, p. 37).

GLOBALG.A.P. also had demanding requirements due to its strong focus on food safety, where traceability can be important to prevent and rectify potential issues. The PTF certifies non-GM soy, and contamination can threaten market access for farmers. The low coverage observed in some of the VSSs may be due to separate chain-of-custody standards that must be followed along with production standards. For instance, Bonsucro has a chain-of-custody standard that must be followed, along with its sugarcane production standard, to become certified.⁵⁰

Economic Dimension Conclusion

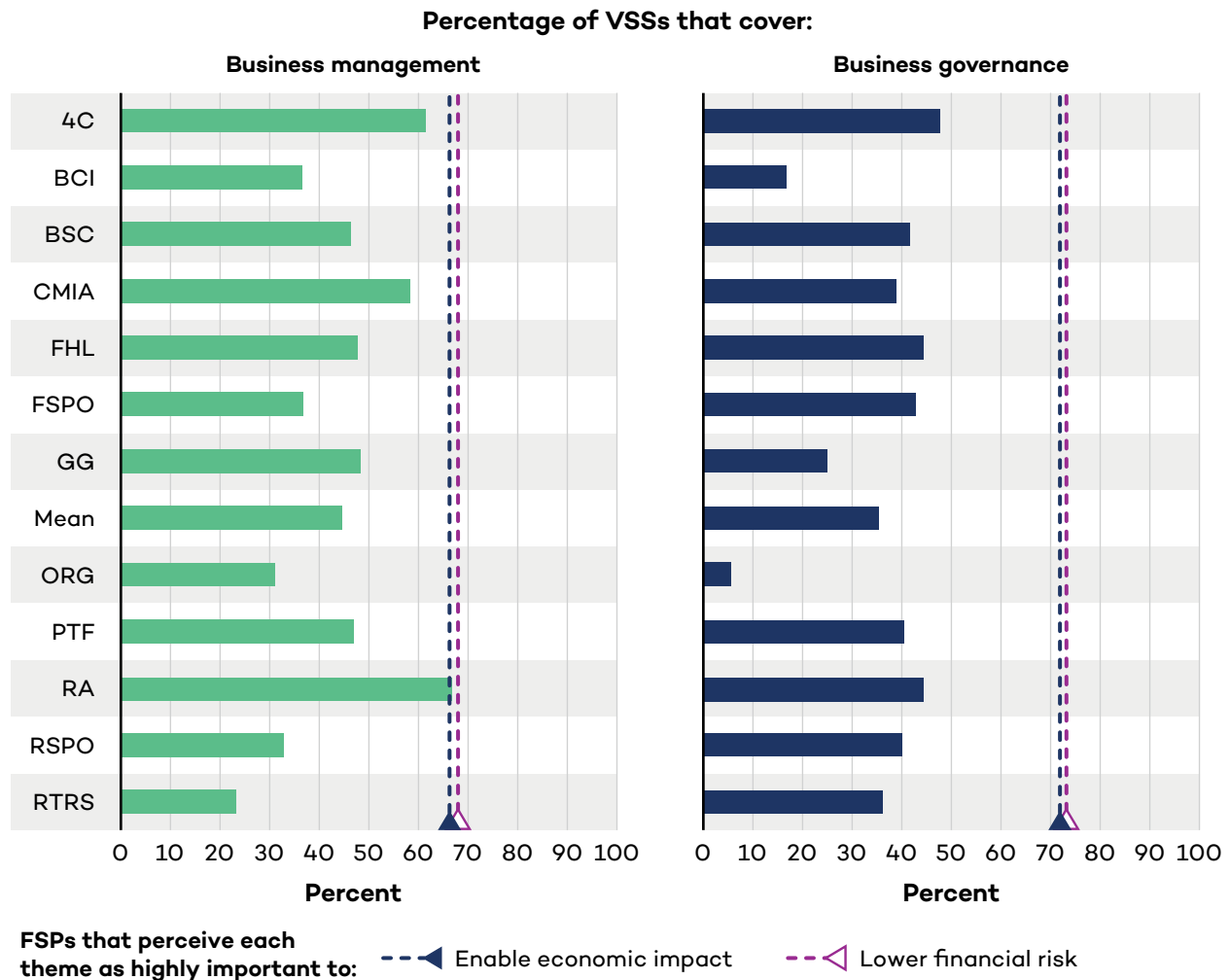
VSSs have traditionally focused on internalizing the external socio-economic and environmental costs of agricultural production. Some examples of internalizing external socio-economic and environmental costs include requiring farmers to maintain soil fertility, preserve water sources, or guarantee workers' health and safety. Consequently, incorporating production criteria in the business aspects of agricultural production has been a lower priority. Most agricultural operations exist because they have been economically viable as a business. Nevertheless, FSPs do emphasize the importance of economic factors in determining their willingness to provide financial support. According to Figure 12, at least 73% and 68% of FSPs surveyed regard business governance and business management, respectively, as highly important for reducing financing risks, and 72% and 66%, respectively, for enabling sustainable development. Ensuring that good

business practices—such as legal compliance for business and agricultural production, economic viability, and good record-keeping—are being adopted can be favourable for FSPs, providing them with assurance that good business governance and management practices are being implemented to lower financial risks and support sustainable development.

The VSSs examined cover, on average, about 40% of the subthemes of the economic dimension. When examining business governance, the 4C, FHL, and Rainforest Alliance standards had the highest coverage, which signals their orientation toward certifying farming cooperatives as well as farmers. For business management, the Rainforest Alliance, 4C, and CmiA had the highest average coverage, showing their orientation toward business performance. Sustainability planning management was one of the aspects of business management where most of the VSSs examined had high coverage. Although VSSs have generally not prioritized business considerations, any better business requirements, such as written trader contracts, projected cash flows, and sale records, constitute potential risk mitigation for FSPs.

⁵⁰ Bonsucro's chain-of-custody standard includes specifications regarding tracking Bonsucro sugarcane using mass balance as well as requirements for validating, reconciling, tracing, and sharing Bonsucro data and documentation along the supply chain (Bonsucro, 2019a).

Figure 12. VSS coverage and FSP perceptions on the business governance and management sustainable finance themes



Source: Elaborated by authors based on information coming from the VSS documents listed in Table 12 and in Nugnes & Larrea, 2020.

Environment Dimension

Productive and economic activities can harm natural environments, often resulting in their degradation and disappearance. More efficient and environmentally friendly production practices can reduce costs by conserving natural resources and fostering good community relations. Adopting

environmentally friendly production practices can make good business sense and is increasingly viewed as a competitive advantage, rather than strictly a cost-reduction and risk-mitigation measure (IFC, 2012c). Agriculture, which relies heavily on a healthy natural resource base to remain viable, underscores the importance of environmentally friendly production practices.

VSSs in the agricultural sector have production requirements designed to maintain natural resources and ecosystems. For instance, all 12 VSSs have requirements for conserving fertile soils, water resources, and biodiversity. VSS production criteria vary, reflecting their objectives and the geographies and agricultural commodity sectors in which they work. Farmers who adopt VSS production criteria can lower their material risks by mitigating and adapting to climate change, preventing pollution, and maintaining natural resources and biodiversity, which can all ensure harvest, reduce production costs, and enhance farm performance. In this way, becoming VSS compliant can result in more profitable agricultural operations over the long term and, consequently, more attractive and sustainable investment opportunities.

Climate Change

Climate change affects agriculture greatly because the sector relies on predictable weather patterns. Not surprisingly, the importance of climate mitigation and adaptation practices in agriculture is increasingly gaining global relevance.⁵¹ Farmers are now expected to address climate change through mitigation (e.g., reducing their GHG emissions) and adaptation. Unpredictable weather is also affecting agricultural investments and insurance products. Unfortunately, climate

finance allocated to agriculture remains disproportionately small compared to the sector's GHG emissions (Climate Policy Initiative, 2015).⁵² Similarly, insurance products need to better serve agribusinesses to become climate resilient (Climate Policy Initiative, 2015). Climate mitigation and adaptation will likely become more important as the global community coalesces to curb climate change impacts. Consequently, farming operations that incorporate climate change mitigation and adaptation measures may be more attractive for FSPs and insurance companies. VSS climate change mitigation and adaptation requirements, further defined below, are examined to assess how they could lower investment risks:

1. **Climate mitigation measures** lower GHG emissions, which are changing the composition of the atmosphere and driving climate change. For agricultural operations, this includes lowering consumption of non-renewable energy and preventing land-use changes that result in carbon emissions, such as converting natural ecosystems to agricultural land via deforestation and draining peatlands and wetlands that act as natural carbon stocks.
2. **Climate adaptation measures** improve the resilience of farming operations to climatic changes. These typically include adopting practices that

⁵¹ The IFC (2012a) says that “understanding climate risks and adaptation is critical to supporting clients. The long-term impact of climate change will be felt by many businesses as changes in temperature, rainfall patterns, sea level, and storm conditions require new adaptation strategies. There is also public pressure for companies to decrease their greenhouse gas emissions” (p. 1).

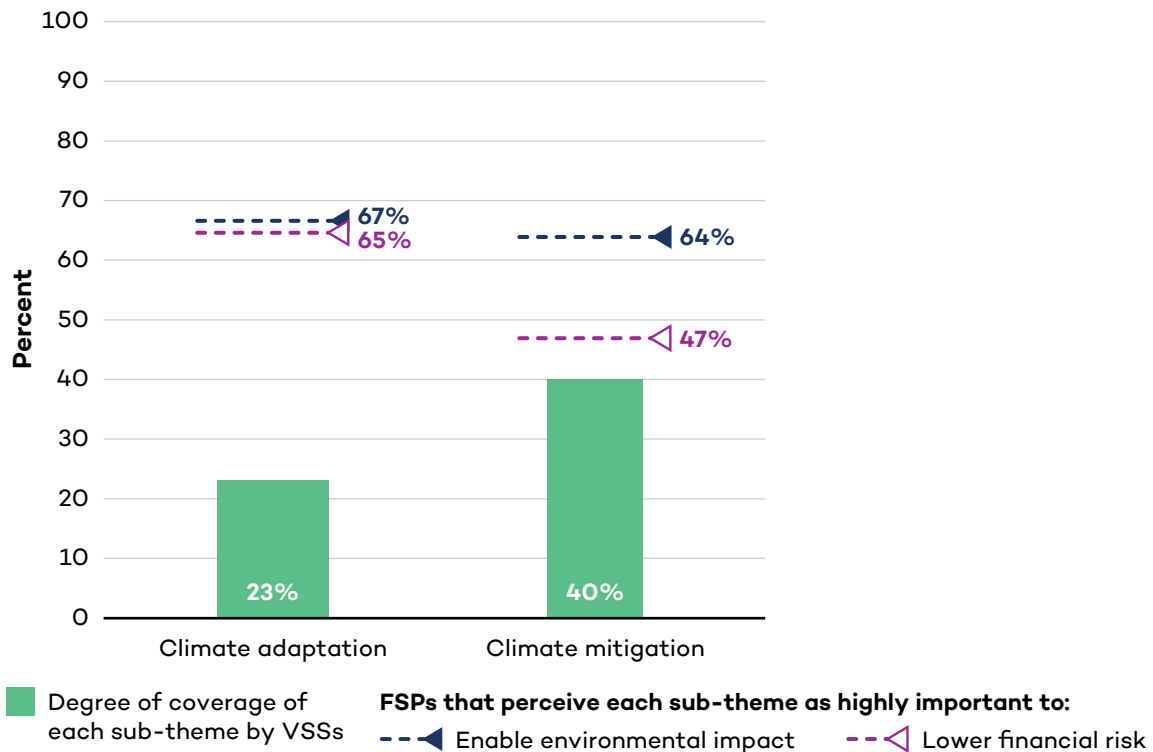
⁵² In 2014, only 2% of total climate finance disbursed was invested in agriculture, forestry, and other land uses, as opposed to 93% invested largely in clean-energy initiatives. Given this disparity, there is growing recognition of the need to finance climate-smart initiatives that promote productivity and climate change adaptation while reducing GHG (World Bank, 2016).

enable farming operations to withstand more unpredictable weather events, such as droughts or more intense precipitation events. These measures can include diversifying agricultural production, planting more climate-resistant varieties, and practising conservation tillage and mulching to maintain soil moisture during long droughts.

for lowering financial risks and enabling sustainable development. Comparing coverage of VSS requirements on climate change adaptation (23%) and mitigation (40%) with FSP perceptions about the importance of these two subthemes for mitigating financial risks (65% and 47%, respectively) and enabling sustainable development (67% and 64%, respectively) suggests that VSSs should consider including climate change adaptation and mitigation requirements to strengthen the potential of VSS-compliant farmers to access financing from FSPs. Although VSSs have seemingly low climate mitigation and adaptation

Figure 13 depicts the extent to which the VSSs examined are oriented toward fulfilling the climate mitigation and climate adaptation subthemes. It also shows how much FSPs perceive these issues as highly important

Figure 13. VSS coverage of climate change mitigation and adaptation and FSPs that perceive them as highly important for lowering financial risks and enabling sustainable development



Source: Elaborated by authors based on information coming from the VSS documents listed in Table 12 and in Nugnes & Larrea, 2020.

requirements, the more sustainable farming practices that they require contribute to climate change mitigation and adaptation in several ways. For instance, preserving High Conservation Value Areas can prevent and sequester carbon dioxide emissions, while maintaining soil moisture can build resilience to droughts. The information presented in Figure 13 is disaggregated by VSSs and climate change subthemes in the subsections below.

Climate Change Mitigation

Agriculture generates GHGs by consuming fossil fuels, rearing livestock, releasing soil carbon, and converting natural environments. Farming operations can reduce their carbon footprint by reducing fossil fuel consumption, restoring or avoiding the destruction of natural environments, and adopting soil conservation measures. They can also sequester carbon by growing biomass in various ways, which could generate carbon credits or carbon tax breaks.⁵³ Avoided deforestation, for instance, via agroforestry

Box 5. AlphaMundi and climate change mitigation

Commodity: Avocado oil

Region: Kenya

VSSs: Fairtrade, Organic

Investee: Olivado Kenya

Olivado specializes in avocado oil production sourced from Fairtrade- and Organic-certified farmers. The Kenyan company helps farmers tackle climate challenges and access markets by providing training for sustainable agriculture practices and offering avocado farmers a reliable customer to buy their product. AlphaMundi Group—through its impact debt fund SocialAlpha Investment Fund (SAIF)—gave a working capital loan to Olivado to bridge the funding gap between the company's cash-flow requirements. The working capital is represented by a flexible credit line to meet Olivado's needs during its production cycle. The company also leveraged a research and development grant offered by the AlphaMundi Foundation in 2020 to explore ways to manage organic wastes and produce electricity, fuel, and fertilizer.

SAIF targets early- and growth-stage investees who often lack financial services and need loans of USD 200,000–USD 2 million. SAIF accompanies the investee as it achieves financial and impact milestones and supports SME financial planning, governance, and operations. SAIF's approach can be complemented by VSSs, which also follow continuous improvement models. VSS third-party certification processes can also be leveraged to monitor SMEs' progress and enable course corrections.

⁵³ Although it may gain more relevance in coming years, carbon financing is not assessed in this report due to its complexity and state of development.

systems for coffee or oil palm, may be economically and socially valued for its climate change mitigation effects (see Box 5). Climate change mitigation practices can improve the profitability of farming operations by improving energy efficiencies and using renewable energies, which can lower operational costs. They can also increase environmental resilience and social recognition and provide access to carbon financing. For these reasons, the extent to which VSSs require energy conservation, use renewable energy sources, lower GHG emissions, sequester carbon, and monitor and manage High Carbon Stock areas is examined.

Most of the VSSs examined require energy use reduction, which can be a key cost-saving measure that lowers GHG emissions for farming operations relying on fossil fuels. Monitoring requirements can identify potential GHG reduction opportunities that can help farming operations lower costs. Five VSSs have GHG emission sequestration requirements, while four require High Carbon Stock area management.⁵⁴ With climate change becoming an increasingly greater global concern, sequestering GHG and managing High Carbon Stock areas could represent business opportunities for entrepreneurial farmers in the form of carbon credits and carbon tax deductions while also

Table 22. VSS coverage of climate change mitigation (%)

	4C	BCI	BSC	CMIA	FHL	FSPO	GG	ORG	PTF	RA	RSPO	RTRS	Average
Climate mitigation	7	0	67	13	47	67	7	20	91	37	77	43	40
Energy use reduction	20	0	100	20	80	60	20	100	100	80	80	60	60
GHG monitoring	0	0	100	0	40	40	0	0	80	20	100	60	37
GHG reduction	0	0	100	20	40	100	0	0	100	20	100	60	49
GHG sequestration	0	0	0	20	40	40	0	0	80	0	0	60	20
Management of HCS areas	0	0	100	0	0	100	0	0	100	0	100	0	33
Renewable energy use	20	0	0	20	80	60	20	20	80	100	80	20	42

Source: Elaborated by authors based on information coming from the VSS documents listed in Table 12.

⁵⁴ A High Carbon Stock Approach can help companies achieve “no deforestation” commitments.

being attractive for climate-oriented FSPs. For instance, Donofrio et al. (2020) estimate that USD 320 million in carbon offsets were purchased in 2019. The PTF standard, primarily implemented in the soy sector, and the RSPO standard, operating in the palm oil sector, have the highest coverage for mitigating climate change.

Climate Change Adaptation

The climate-adaptive capabilities of farmers need to feature more prominently in financial decision making due to the exposure of agribusinesses to changing climatic conditions, which constitutes an important operational risk. FSPs that want to mitigate climate risks can look for agribusinesses engaging in climate adaptation efforts, such as selecting better-suited cultivars and breeds as well as preserving biodiversity and natural

resources. VSS climate change adaptation requirements give FSPs the opportunity to invest in VSS-compliant producers working to lower their exposure to more extreme and changing climatic conditions. VSS requirements for climate adaptation activities, emergency response plans, and managing water-scarce areas are examined to assess their climate change adaptation.

The 4C, BCI, CmiA, and FSPO are the only VSSs examined that require climate adaptation activities. The Rainforest Alliance is the only standard that requires hazard emergency response plans. Slightly more than half of the VSSs require management of water-scarce areas, reflecting the importance of water resources to agriculture. Nevertheless, many more sustainable agricultural practices can support climate

Table 23. VSS coverage of climate change adaptation (%)

	4C	BCI	BSC	CMIA	FHL	FSPO	GG	ORG	PTF	RA	RSPO	RTRS	Average
Climate adaptation	27	67	33	7	20	33	0	0	27	33	0	33	23
Climate adaptation activities	20	100	0	20	0	60	0	0	0	0	0	0	17
Hazard emergency response plan	0	0	0	0	0	0	0	0	0	100	0	0	8
Management of water-scarce areas	60	100	100	0	60	40	0	0	80	0	0	100	45

Source: Elaborated by authors based on information coming from the VSS documents listed in Table 12.

adaptation. Water conservation, for instance, can provide buffers against unpredictable climatic patterns, such as extended droughts and extreme temperatures (i.e., wetlands can store water during droughts and retain water during floods). VSSs are likely to require farmers to adopt more climate adaptation measures as climate change increasingly threatens global agricultural production.

Pollution Prevention

Pollution refers to the degradation of soil, water, and air via emissions classified as poisonous to living organisms or the excessive presence of substances considered innocuous in smaller concentrations, such as dust, noise, vibrations, heat, or visual impacts (Merriam-Webster, 2021). Pollution may also result from continuous, sporadic, or accidental emissions or accumulation over time. It must be prevented to avoid undesirable effects on human and environmental health. Pollution can result in reputational costs when affecting populated areas. Pollution prevention in the agricultural sector includes reducing agrochemical inputs, preventing runoff affecting water bodies, and reducing solid waste. The benefits of reducing pollution from agricultural operations include cost savings via reducing wasted inputs, more resilient and productive crops, healthier supporting ecosystems, and avoiding pollution remediation and legal costs. VSSs often require pollution prevention measures, which can reduce investment risks (Ceres, 2017b). The following pollution prevention measures are examined to assess how VSSs may be contributing to their implementation:

1. **Waste-prevention** measures reduce solid and non-solid waste from farming

operations and its potential impacts via proper treatment and disposal.

2. **Water pollution prevention** measures prevent water quality impacts. Water pollution from agricultural operations includes point sources (water pollution originating from specific sources) and nonpoint sources (water pollution originating from diffuse sources).
3. **Pesticide pollution prevention** measures minimize or eliminate pesticide use by monitoring and controlling pest-related issues in farming operations caused by diseases, insects, and weeds.

Figure 15 shows the extent to which the VSS examined are oriented toward preventing pollution and the percentage of FSPs consulted that perceive this as highly important to lower financial risks and enable sustainable development. Comparing coverage of VSS requirements on water pollution prevention (43%) with FSP perceptions about the importance of this subtheme for mitigating financial risks (49%) and enabling sustainable development (67%) suggests that VSSs should consider strengthening their water pollution prevention requirements to meet FSPs' preferences. On the other hand, VSS requirements associated with waste generation and pesticide pollution prevention seem to satisfactorily reduce investment risks, which can strengthen the potential of VSS-compliant farmers to access financing.

Preventing pollution from agricultural operations can be advantageous to access financing from FSPs. It can help preserve the natural resource base needed for agricultural production, lowering operational costs, meeting food safety standards by cutting

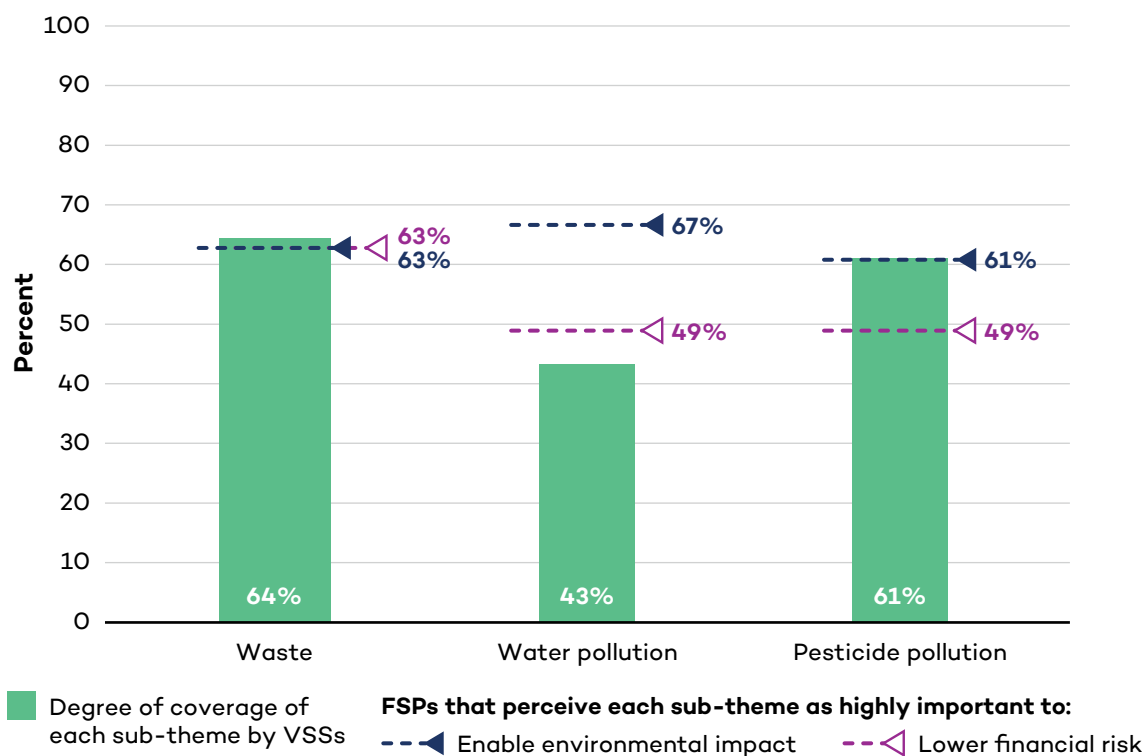
pesticide use, reducing reputational risks from polluting the surrounding environment, and avoiding potential backlash from affected parties. All of these can give FSPs more certainty that they will get a return on investment. The information presented in Figure 14 is disaggregated by VSSs and pollution prevention aspects in the subsections below.

Waste Prevention

Some VSSs include provisions for preventing solid waste and its impacts. Excess solid waste often indicates operational and production inefficiencies. For instance,

recycling crop residues as fertilizers (compost or mulch) can benefit crop productivity. Hazardous waste, such as pesticide containers, must be adequately disposed of to avoid environmental risks. Solid waste prevention can therefore be understood as productivity cost-reduction strategies for agricultural operations. The absence of solid waste indicates good farm management and can lower reputational risks with local communities while delivering development outcomes. Solid waste prevention is examined according to the extent VSSs require reduction, reuse, recycling, treatment, and disposal of solid and non-solid waste.

Figure 14. VSS coverage of waste, water, and pesticide pollution prevention and percentage of FSPs that perceive this as highly important for lowering financial risks and enabling sustainable development



Source: Elaborated by authors based on information coming from the VSS documents listed in Table 12 and in Nugnes & Larrea, 2020.

Table 24. VSS coverage of waste management (%)

	4C	BCI	BSC	CMIA	FHL	FSPO	GG	ORG	PTF	RA	RSPO	RTRS	Average
Waste	63	37	83	30	73	60	100	50	83	77	43	73	64
Proper hazardous waste disposal	100	100	100	20	80	80	100	0	100	100	20	100	75
Proper waste disposal	40	20	100	100	80	60	100	0	100	100	80	100	73
Solid waste reduction	60	0	100	20	80	60	100	100	0	0	0	60	48
Solid waste reduction, reuse and recycling	60	100	100	20	80	60	100	100	100	60	80	60	77
Solid waste treatment	60	0	0	20	60	60	100	100	100	100	0	60	55
Non-solid waste treatment	60	0	100	0	60	40	100	0	100	100	80	60	58

Source: Elaborated by authors based on information coming from the VSS documents listed in Table 12.

Table 24 indicates that the proper disposal of hazardous and non-hazardous waste—as well as solid waste reduction, reuse, and recycling—were fairly common requirements among the 12 VSSs. Yet these VSSs had less coverage of solid waste reduction as well as solid and non-solid waste treatment. The GLOBALG.A.P., Bonsucro, and PTF standards have the most stringent waste-prevention requirements. Nevertheless, waste-prevention requirements can vary from one VSS to another simply due to their different orientations. For instance, the Organic standard prohibits the use of synthetic pesticides, which largely eliminates the need

for organic farmers to properly dispose of hazardous waste.

Water Pollution

Water pollution can affect the water security of affected populations, preventing them from accessing clean water. Surface and groundwater pollution due to agricultural operations is largely a result of crop-processing effluents and runoff from agricultural fields that move soil particles, organic matter, and agrochemicals into water bodies. Water pollution from agricultural operations can result in reputational, operational, and even legal risks. Preventing water pollution from agricultural operations

Table 25. VSS coverage of water pollution (%)

	4C	BCI	BSC	CMIA	FHL	FSPO	GG	ORG	PTF	RA	RSPO	RTRS	Average
Water pollution	33	20	50	33	50	27	67	33	67	67	30	43	43
Proper wastewater disposal and storage	60	0	100	0	60	40	100	0	100	100	0	100	55
Run-off prevention	40	100	0	100	0	40	100	100	100	100	0	80	63
Transboundary water pollution prevention	0	0	0	0	0	0	0	0	0	0	0	0	0
Wastewater reduction	0	0	0	0	80	0	0	0	0	0	0	0	7
Wastewater treatment	60	0	100	0	60	40	100	0	100	100	80	0	53
Water contamination prevention	40	20	100	100	100	40	100	100	100	100	100	80	82

Source: Elaborated by authors based on information coming from the VSS documents listed in Table 12.

starts with reducing water consumption and agrochemical use in the form of excess fertilizers and pesticides, which can run off from agricultural fields and pollute surface waters and/or infiltrate and pollute groundwater. Agricultural VSS water pollution prevention measures are examined by how their production criteria address agricultural wastewater, runoff, and surface and groundwater contamination.

All 12 VSSs require farmers to prevent water contamination. Some have measures to prevent agricultural runoff, which is often difficult to treat as it is a more diffuse form

of water pollution. Measures to reduce, treat, store, and properly dispose of wastewater apply mainly when some processing takes place. Several VSSs require farming operations to have wastewater treatment, storage, and disposal facilities to minimize impacts on downstream users and aquatic ecosystems. The Rainforest Alliance, PTF, and GLOBALG.A.P. standards have the most demanding requirements for water pollution prevention.

Table 26. VSS coverage of pesticide pollution (%)

	4C	BCI	BSC	CMIA	FHL	FSPO	GG	ORG	PTF	RA	RSPO	RTRS	Average
Pesticide pollution	80	70	30	60	80	68	80	70	74	60	60	48	61
Integrated pest management	100	50	50	100	100	60	100	50	90	100	100	40	78
Pesticide prohibition	0	0	0	0	0	0	0	100	0	0	0	0	8
Prohibition of hazardous chemicals	100	100	100	100	100	100	100	100	100	100	100	100	92
Targetted application	100	100	0	100	100	80	100	0	100	100	100	100	70
Respect permitted pesticides list	100	100	0	0	100	100	100	100	80	0	0	0	57

Source: Elaborated by authors based on information coming from the VSS documents listed in Table 12.

Pesticide Pollution

Agricultural pesticides have had significant detrimental impacts on human health and natural ecosystems (Dudley et al., 2017; Yadav et al., 2015). This is why avoiding the use of banned pesticides as defined in international conventions is imperative.⁵⁵ Integrated pest management (IPM) requires a more holistic approach to preventing pest-related crop damage that does not rely solely on pesticides. IPM often consists

of monitoring plant health and pest and predator populations combined with pest control practices such as plowing, natural traps, and protecting predator populations. IPM can also prevent water and air pollution and minimize hazardous solid waste while reducing pesticide costs (Holt et al., 2016; Peshin et al., 2014). Furthermore, pesticide-free agricultural products may be more valued by some consumers.⁵⁶ VSSs that require the adoption of IPM can improve profitability

⁵⁵ Refers to the prohibition of hazardous chemicals use as defined by WHO 1A and B, 2, and the Stockholm and Rotterdam conventions.

⁵⁶ Farmers may need financial incentives to restrict pesticide use, as they may be more vulnerable to pest outbreaks. IPM aims to minimize pest outbreaks by using a range of pest control measures that can result in a more environmentally friendly, cost-effective outcome for farmers.

and product marketability, strengthening the business case for FSPs to invest in VSS-compliant farming operations. To examine how VSSs prevent pesticide pollution and their requirements for prohibiting banned pesticides, adopting IPM, minimizing synthetic pesticide use, and fostering selective and targeted pesticide application are examined.

All 12 VSSs require their participating farmers to adopt IPM measures. The Organic standard is the only VSS that forbids the use of synthetic pesticides. All the VSSs examined, except GLOBALG.A.P., prohibit farmers from using pesticides made with hazardous chemicals in accordance with the Stockholm and Rotterdam conventions. All the VSSs except Organic and Bonsucro require targeted pesticide applications to protect human health and natural ecosystems. 4C, FHL, and GLOBALG.A.P. had the most demanding requirements across the pesticide pollution prevention measures examined. Pressures for more stringent pesticide pollution prevention measures are likely to mount as evidence grows of their negative impacts on human health and ecosystems. This could create market opportunities for VSS-compliant farmers and attract FSPs looking to invest in pesticide-free agriculture.

Biodiversity and Natural Resource Management

Living and physical natural resources underpin agricultural production (The Economics of Ecosystems and Biodiversity [TEEB], 2015). Despite this fact, the agricultural sector is a major driver of global biodiversity losses, deforestation, soil degradation, and freshwater exploitation (Bennett et al., 2014). Still, agriculture that enhances biodiversity and natural resources can improve the long-term productivity and profitability of agribusinesses, making them better able to cope with challenges such as pest outbreaks, droughts, and nutrient deficiencies. The biodiversity and ecosystem conservation potential of sustainable farming has gained attention among some FSPs. Although reversing biodiversity loss was touted more than a decade ago as the next big challenge for the finance sector to tackle in addition to climate change, it remains underrepresented in a number of sustainable finance frameworks (Mulder, 2007). Nevertheless, biodiversity conservation is gaining momentum in the finance sector as commitments to reverse biodiversity losses mount (Finance for Biodiversity Pledge, 2020; UNEP Finance Initiative & Global Canopy Programme, 2012).⁵⁷

In contrast to the finance sector, biodiversity and ecosystem conservation has been a mainstay of agricultural VSSs since their inception. Consequently, investing in VSS-

⁵⁷ The Natural Capital Declaration, signed in 2012, constitutes an important effort to mainstream natural capital (which includes all of the Earth's natural assets that make up our biodiversity: soil, air, water, flora, and fauna) in financial products, accounting disclosure, and reporting frameworks within the financial sector (UNEP Finance Initiative & Global Canopy Programme, 2012). More recently, the Finance for Biodiversity Pledge was launched in 2020 and signed by 26 financial institutions representing more than EUR 3,000 billion in assets calling on global leaders to reverse nature losses within this decade (Finance for Biodiversity Pledge, 2020).

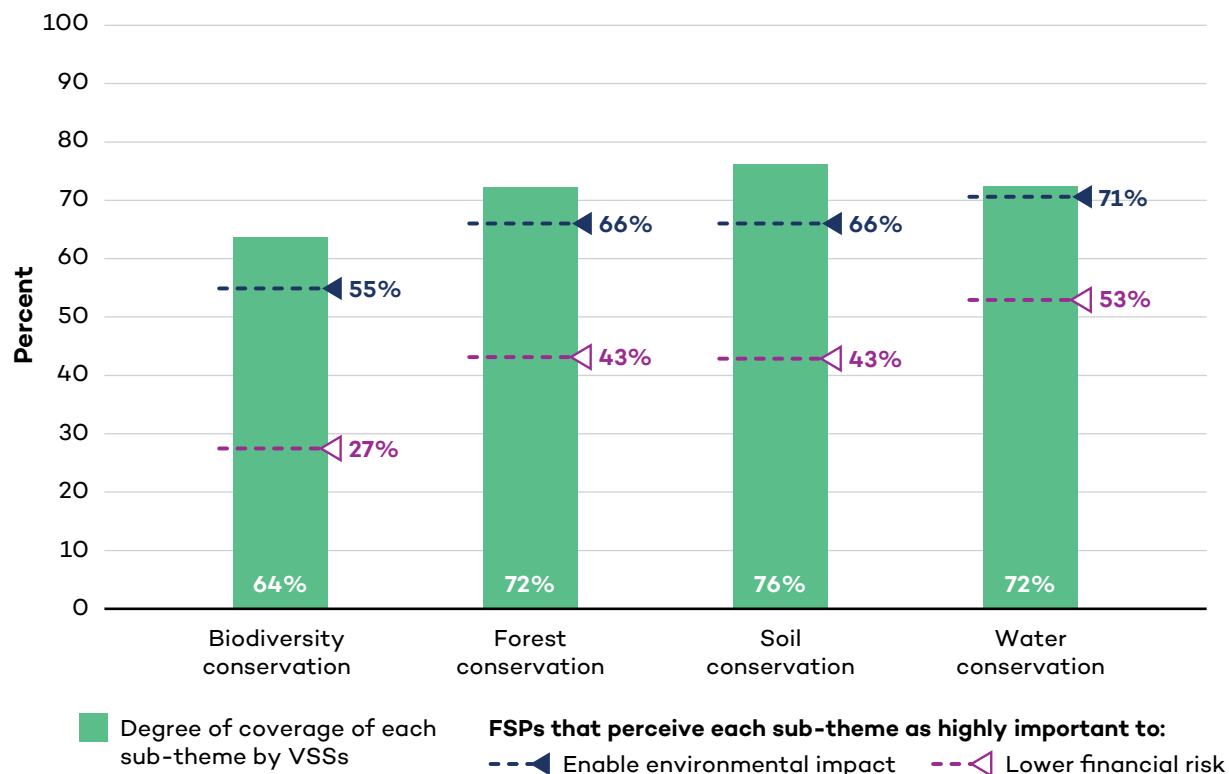
compliant agricultural operations represents an opportunity for FSPs seeking to preserve biodiversity and ecosystems and lower potential reputational risks associated with deforestation and biodiversity losses (Ceres, 2017b; Nugnes & Larrea, 2020). To assess the effects of VSSs on biodiversity and natural resource management, the following categories were examined:

1. **Biodiversity conservation** measures associated with protecting and conserving all living organisms, which includes their natural habitats and ecosystems. Maintaining biodiversity can provide pollination and pest control services to agricultural operations and support soil formation.
2. **Forest conservation** measures to avoid deforestation associated with farming operations that promote forest conservation, reforestation, and/or afforestation. Forests can retain water and maintain microclimates, both of which are essential for agriculture. Agroforestry can ensure that agricultural and non-timber forest production in forest ecosystems can coexist.
3. **Water conservation** measures associated with the preservation of water resources. Agricultural operations that conserve water via rainwater harvesting, efficient irrigation systems, and water recycling and treatment systems can reduce operational costs while supporting their long-term viability.
4. **Soil conservation** measures associated with maintaining soil resources and natural ways to maintain soil fertility, such as planting nitrogen-fixing

crops and using organic fertilization. Conserving fertile soils is fundamental to the sustainability of many agricultural operations.

Figure 15 illustrates the extent to which the VSSs examined are oriented toward managing biodiversity and natural resources and the percentage of FSPs consulted that perceive this as highly important for lowering financial risks and enabling sustainable development. Comparing the VSS coverage and FSP perceptions reveals that the VSSs adequately cover biodiversity, forest, soil, and water conservation based on the percentage differences observed. Interestingly, large gaps were observed between FSPs that consider biodiversity, forest, soil, and water conservation to be highly important for lowering financial risks and enabling sustainable development (close to 20% across all subthemes). The low number of FSPs consulted that perceive biodiversity conservation as highly important for lowering financial risks signals that the financial sector may not have fully grasped the significance of biodiversity for maintaining agricultural production. Ongoing efforts to translate biodiversity and natural resource losses in financial terms can demonstrate to FSPs their importance for maintaining a return on investment in the agricultural sector (TEEB, 2015). Consequently, agricultural operations that enhance biodiversity and natural resources should be more attractive to FSPs, as they can maintain long-term agricultural productivity (TEEB, 2015). The information presented in Figure 15 is disaggregated by VSS and biodiversity and natural resource management aspects in the subsections below.

Figure 15. VSS coverage of biodiversity, forest, soil, and water conservation and percentage of FSPs that perceive them as highly important for lowering financial risks and enabling sustainable development



Source: Elaborated by authors based on information coming from the VSS documents listed in Table 12 and in Nugnes & Larrea, 2020.

Biodiversity Conservation

Biodiversity is vital to sustaining agricultural operations over the long term (IFC, 2012a). For instance, pest outbreaks and associated crop losses are less likely in biodiverse environments (Philpott, 2013). Soils that are biodiverse have fewer fertilization needs and provide a buffer against nutrient deficits (Luo et al., 2018; Sidibé et al., 2018). VSSs with biodiversity conservation requirements can potentially mitigate operational and reputational risks while ensuring that there is some market recognition for more biodiversity-friendly agricultural products.

Furthermore, increased environmental awareness and activism will continue pushing farmers to integrate more biodiversity-friendly practices (Dudley et al., 2017). The VSS production criteria examined align with the principles of ecosystem restoration, rehabilitation, connection, and buffering. Special considerations to protect High Conservation Value Areas and threatened species and ecosystems were also assessed.

Most of the VSSs examined require the monitoring and protection of High Conservation Value Areas. Several VSSs also require farmers to protect natural

Table 27. VSS coverage of biodiversity conservation (%)

	4C	BCI	BSC	CMIA	FHL	FSPO	GG	ORG	PTF	RA	RSPO	RTRS	Average
Biodiversity conservation	73	30	83	70	73	57	7	67	97	80	67	60	64
Ecosystem Rehabilitation	40	20	100	100	60	40	0	100	100	80	0	80	60
Fragmentation safeguards	100	0	0	0	0	40	20	100	100	0	100	0	38
Integration of buffer zones	40	100	100	20	100	0	20	100	100	100	100	80	72
Protection of rare and threatened species	100	20	100	100	80	60	0	0	80	100	100	100	70
Protection of rare, threatened, and endangered ecosystems	100	20	100	100	100	100	0	0	100	100	0	0	60
HCV monitoring and protection	60	20	100	100	100	100	0	100	100	100	100	100	82

Source: Elaborated by authors based on information coming from the VSS documents listed in Table 12.

habitats on their lands by integrating natural habitat buffer zones and preventing their fragmentation. Some of the VSSs even require the rehabilitation of ecosystems. At least eight VSSs have requirements for protecting endangered and threatened species and ecosystems, an important issue in agriculture. For instance, palm oil plantations have been associated with the drop in Sumatran tiger and orangutan populations found in Malaysia and Indonesia (Voora, Larrea, Bermúdez, & Baliño, 2020). Several FSPs have supported these operations, which can

result in important reputational risks for their operations (Aidenvironment, 2017). The PTF and Rainforest Alliance standards had the highest coverage of biodiversity conservation requirements. Future global biodiversity protection targets may require many VSSs to rethink their approach to biodiversity conservation, as agriculture remains one of the key drivers of biodiversity loss.

Forest Conservation

Forests provide valuable ecosystem services such as clean air and water, soil retention, biodiversity, and climate regulation. Forests can also be a source of non-timber forest products, which can give farmers additional sources of revenue (see Box 6). Agricultural

operations that preserve and regenerate forests benefit from their ecosystem services, which are vital for their long-term sustainability (TEEB, 2015). VSSs that include forest conservation in their production criteria can reduce reputational risks associated with deforestation, improve product marketability, and provide sources

Box 6. Conservation International Ventures and community building

Commodity: Organic açai berries and palm hearts

Region: Colombia, particularly the Amazon and the Pacific Coast

VSSs: Organic certifications

Investee: CorpoCampo

Large-scale agriculture, logging, mining, and the cocaine trade are deforesting Colombia, one of the most biodiverse countries in the world. CorpoCampo works with local communities, providing them with technical assistance to adopt sustainable agriculture and agroforestry practices. In doing so, the company has benefited 1,200 families and 15,600 hectares of forest and agroforest. To meet various market needs, CorpoCampo works with EcoCert and USDA Organic.

CorpoCampo received financing from Conservation International (CI) Ventures, which invests in SMEs that can solve environmental landscape and seascape challenges. By forging commercial partnerships for conservation investments, CI Ventures provides concessional loans and quasi-equity and revenue-based financing products ranging from USD 100,000 to USD 500,000 for a maximum 5-year term. In 2019, CI Ventures gave CorpoCampo a USD 500,000 five-year loan with an annual interest rate of 9.25%. The interest rate can be lowered to 7.25% if CorpoCampo expands its operations into post-conflict areas, provides technical assistance to farmers, and sources from communities participating in the Naturamazonas program created by CI Ventures and its partners to reduce deforestation and increase community prosperity.

CorpoCampo sources its products from rural communities, offering livelihoods in post-conflict zones that are key areas for achieving conservation objectives. Organic certification allows CorpoCampo to access markets by differentiating its açai berries and palm heart products; it generates positive socio-ecological impacts, which can also reduce operational costs (i.e., recycling of organic compost as fertilizers). VSS compliance increases the transparency of production practices and enables market linkages, thereby mitigating investment risks.

Table 28. VSS coverage forest conservation (%)

	4C	BCI	BSC	CMIA	FHL	FSPO	GG	ORG	PTF	RA	RSPO	RTRS	Average
Forest conservation	100	67	67	100	67	60	7	0	100	100	100	100	72
Deforestation prevention and remediation	100	0	0	100	0	80	0	0	100	100	100	100	57
Forest preservation	100	100	100	100	100	0	20	0	100	100	100	100	77
Forest conversion prevention	100	100	100	100	100	100	0	0	100	100	100	100	83

Source: Elaborated by authors based on information coming from the VSS documents listed in Table 12.

of revenue via non-timber products and payment for environmental services. They can also enable agricultural operations and FSPs to align and get ahead of forest conservation policies and regulations, such as the European Green Deal, the EU Deforestation Law and Non-Financial Reporting Directive, and the forthcoming Environmental Bill of the United Kingdom, which are increasingly focused on preventing deforestation in agricultural commodities (European Parliament, 2020; Government of the United Kingdom, 2020; Government of the United Kingdom, 2021). FSPs are also increasingly adopting NDPE financing policies as a way to mitigate deforestation risk (Aidenvironment, 2017). To assess how VSSs incorporate forest conservation measures in their production criteria, forest preservation and deforestation remediation requirements were examined.

Most of the VSSs examined require forest conservation measures. With a few

exceptions, the VSSs prohibit the conversion of forests to agricultural lands. They also have requirements for preventing and remediating deforestation. The 4C, CmiA, PTF, Rainforest Alliance, RSPO, and RTRS standards had the highest coverage for the forest conservation measures examined. Reflecting the palm oil sector's impact on global deforestation, the RSPO has high forest conservation requirements.

Soil Conservation

Fertile soils are essential for the viability of farming operations. Agricultural soils can be difficult to conserve, as they are often composed of top layers with the right characteristics for growing crops. For this reason, soil conservation practices are imperative for sustainable agricultural operations to maintain the agricultural soil resource base and lower agricultural inputs and irrigation requirements. Soil conservation

Table 29. VSS coverage of soil conservation (%)

	4C	BCI	BSC	CMIA	FHL	FSPO	GG	ORG	PTF	RA	RSPO	RTRS	Average
Soil conservation	67	87	83	87	57	50	87	83	80	100	50	83	76
Soil compaction	60	20	0	20	0	0	100	0	0	100	0	100	33
Soil preservation	60	100	100	100	80	60	100	100	100	100	0	100	83
Soil erosion	60	100	100	100	60	60	100	100	100	100	100	100	90
Soil general principle	60	100	100	100	80	60	20	100	100	100	100	100	85
Soil productivity	60	100	100	100	60	60	100	100	100	100	0	100	82
Soil risk assessment	100	100	100	100	60	60	100	100	80	100	100	0	83

Source: Elaborated by authors based on information coming from the VSS documents listed in Table 12.

practices can also prevent erosion, which can lead to costly impacts on infrastructure and the quality of water resources. VSS production criteria often require soil conservation measures, which can reduce operational risks to changing conditions, leading to greater profit margins for agricultural producers and FSPs. To understand how VSSs integrate soil conservation practices in their production criteria, measures that prevent soil erosion, compaction, and nutrient depletion (i.e., assessing the nutrient balance between crop extraction and what is biochemically available) are examined.

Due to the importance of soil resources to agriculture, all the VSSs examined have measures to prevent soil erosion and manage soil resources. Many have measures in place for assessing potential risks to soil resources,

which can result in the adoption of soil conservation measures. The Rainforest Alliance had the greatest coverage for conserving soils. Ensuring that agricultural soils remain productive underpins the viability and profitability of farming operations. This is why all 12 VSSs have some soil conservation requirements, with some having more detailed and specific measures than others.

Water Conservation

Access to water is vital for agricultural operations to remain sustainable over the long term. For this reason, it is important to assess water availability to determine how much water can be consumed for agriculture without having negative impacts on natural ecosystems and other water-dependent socio-economic activities. This can avoid

Table 30. VSS coverage of water conservation (%)

	4C	BCI	BSC	CMIA	FHL	FSPO	GG	ORG	PTF	RA	RSPO	RTRS	Average
Water conservation	48	100	100	100	64	32	80	80	80	64	52	68	72
Water extraction and irrigation efficiency	40	100	100	100	80	60	100	100	100	100	80	80	87
Water management plan	60	100	100	100	0	0	100	0	100	0	80	100	62
Water reuse, recycling, and harvesting	40	100	100	100	80	60	100	100	100	20	0	0	67
Water usage impact assessment	60	100	100	100	60	40	100	100	0	100	100	60	77
Wetland and watercourses protection	40	100	100	100	100	0	0	100	100	100	0	100	70

Source: Elaborated by authors based on information coming from the VSS documents listed in Table 12.

potential conflicts that can have economic and reputational costs. Adopting water conservation measures that increase water consumption efficiencies and enable water recharge can also mitigate operational risks associated with changing climate conditions, which can result in moisture deficits and extended droughts. VSS water conservation measures are examined by focusing on water reuse and harvesting, the existence of water management plans, and the protection of wetlands and water bodies.

For the most part, the VSSs examined require water resource conservation.

Some do not require farmers to have water management plans in place or to undertake water use impact assessments, which could improve the viability of farming operations. Most have requirements to improve irrigation efficiencies. All but two require farmers to reuse, recycle, and harvest rainwater to reduce water consumption, and eight also require the protection of water bodies, such as rivers and wetlands. BCI, Bonsucro, and CmiA have the highest coverage of the water conservation requirements examined. Water conservation measures required by VSSs are likely to become more important with

rising variabilities in precipitation driven by climate change.

Environment Dimension Conclusion

Including environmental considerations in VSS production criteria is critical to maintaining the long-term sustainability of the agricultural sector, as it relies on ecosystem services such as pollination, climate regulation, and soil formation to remain viable. As already mentioned, the sector—the largest consumer of fresh water and appropriator of soil resources—has been one of the most important drivers of deforestation and biodiversity loss, underscoring the necessity to adopt more sustainable farming practices. Historically, agricultural VSSs have been implemented to address environmental issues. As environmental challenges are context specific and continue to evolve, VSSs have developed measures to protect the environment that must be reviewed to maintain their relevance. VSS production requirements that protect the environment can lower operational and reputational risks for FSPs by helping agricultural producers adopt farming practices that enable climate change mitigation and adaptation, pollution prevention, and biodiversity and natural resource conservation, which can ultimately improve the profitability of agricultural operations.

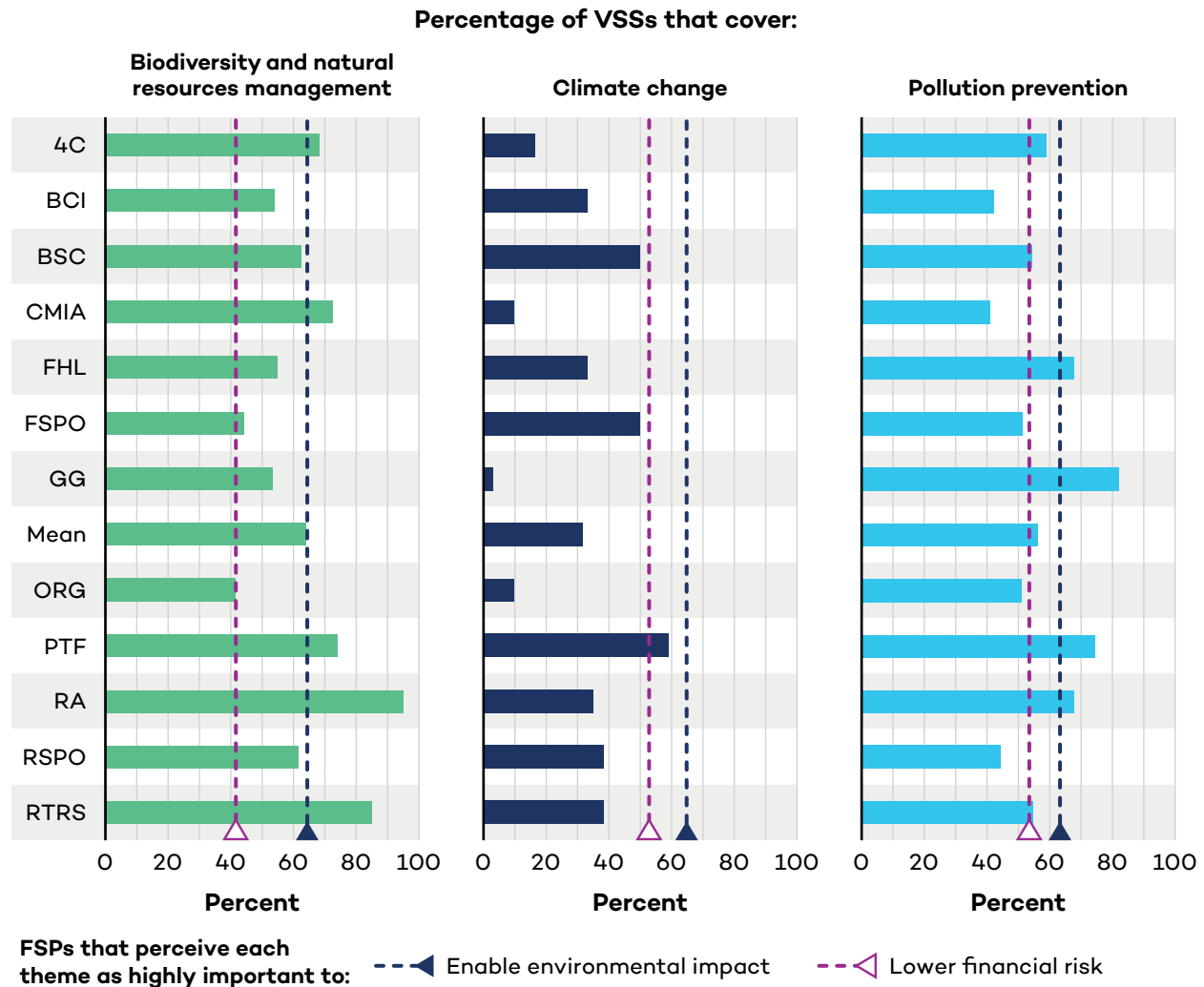
Figure 16 shows that 56% of the FSPs surveyed regard climate change mitigation as highly important for reducing financing risks, while 65% view climate change mitigation as highly important for achieving sustainable development impacts. Furthermore, 54% of

the FSPs consider preventing pollution from agricultural operations to be highly important for reducing financial risks, while 63% viewed aspects associated with pollution prevention as highly important for achieving sustainable development impacts. Lastly, 42% of the FSPs surveyed regard biodiversity and natural resource conservation as highly important for reducing financial risks, while 64% believe biodiversity and natural resource conservation is highly important for achieving sustainable development impacts.

The coverage average across the 12 VSSs examined was about 51%, with the PTF, Rainforest Alliance, and RTRS standards having the highest coverage. The lower coverage of climate change-related considerations greatly affected the overall results. Some VSSs—such as GLOBALG.A.P. and CmiA—have low climate change requirements while it is prominent in others—such as the PTF, Bonsucro, and FSPO standards. Nevertheless, many VSS sustainable farming requirements contribute to mitigation and adaptation. For instance, natural habitat protection prevents biodiversity loss but can also enable carbon sequestration. This example highlights how more sustainable farming practices can have multiplying risk-mitigation effects. In general, the VSSs had relatively high production criteria coverage for preventing pollution and sustainably managing biodiversity and natural resources.

As environmental challenges become more common with the onset of global challenges such as climate change, deforestation, and biodiversity loss, VSSs should consider developing production criteria that support farming operations that regenerate natural environments. VSSs will have to strengthen

Figure 16. VSS coverage and FSP importance perceptions on the climate change, pollution prevention, biodiversity, and natural resource management sustainable finance subthemes



Source: Elaborated by authors based on information coming from the VSS documents listed in Table 12 and in Nugnes & Larrea, 2020.

requirements for their climate change mitigation and adaptation to better align with FSP perceptions on the importance of addressing climate change to reduce financial risks and enable sustainable development. Nonetheless, VSSs operating in the agricultural sector hold many solutions to mitigate and adapt to climate change,

prevent pollution, and reverse environmental degradation. FSPs can therefore have more confidence that investing in standard-compliant farmers adopting more sustainable farming practices will minimize the financial risks and enhance the development potential of their agricultural investments.

Social Dimension

Including social sustainability considerations in agricultural VSSs, largely derived from international regulatory frameworks such as the ILO conventions, can give FSPs some assurance that measures are in place to avoid socially unacceptable misconduct and, in doing so, maintain the sustainability and profitability of standard-compliant agricultural operations. VSS requirements for producers to engage with workers and communities in mutually beneficial ways constitute grounds for collaborative and productive relationships. These relationships help avoid conflict that can jeopardize agricultural operations as well as the reputations of companies and the FSPs under which they operate.

Local Communities

Socially responsible relations between farmers and the communities where they operate can ensure that they maintain their social licence to operate.⁵⁸ Good community relations can also minimize potential negative impacts on human rights, cultures, and development, which are particularly important for vulnerable groups. Furthermore, minimizing potential conflicts associated with agricultural operations can improve access to qualified local workers while reducing reputational risks (IFC, 2012c). Communities negatively affected by agricultural operations can demand that producers adopt less harmful practices or even oppose continued production altogether. Fostering good relations with the communities where

they operate represents good business for agricultural producers. Farmers who have good community relations can lower financial risks for FSPs while being better positioned to contribute to community development. The following subthemes are examined to assess VSS requirements for enhancing local community relations:

1. **Community development** measures to improve community health, safety, and security. Agricultural production can be an important source of environmental degradation via land conversion, water appropriation, pollution, etc. Adopting more sustainable agricultural production practices can help maintain the health, safety, and security of local communities.
2. **Gender-equitable community development** measures include efforts that provide equal opportunities for women and men to provide input for decision making and contribute to community well-being. Agricultural operations can also help enable gender-equitable community development by promoting women's land tenure, participation in training, and representation in leadership roles.
3. **Cultural preservation** measures to protect cultural heritage and traditional knowledge, including respect for cultural production practices as well as natural and cultural heritage surroundings. Agriculture can support the cultural preservation of local communities by maintaining

⁵⁸ A social licence to operate is an informal licence granted by a community to an agricultural producer conveying that the community accepts and approves of its agricultural operations (The Ethics Centre, 2018).

employment opportunities, pride in local products, traditional agricultural practices, rural landscapes, and opportunities for urban dwellers to connect with rural environments.

4. **Indigenous rights** protection measures to promote Indigenous rights, collective property, culture, and livelihoods. Agricultural expansion has been linked to cases of land grabbing, which has sometimes harmed Indigenous Peoples. This is why Free, Prior, and Informed Consent (FPIC) has become an important pillar of Indigenous rights.⁵⁹

Figure 17 shows the extent to which the 12 VSSs are oriented toward supporting community development, cultural preservation, and Indigenous rights, as well as the percentage of FSPs that perceive these as highly important for lowering financial risks and enabling development. FSP perception data on specific measures that enable gender-equitable community development were not collected. Comparing VSS requirements on community development (35%) and cultural preservation (27%) with FSP perceptions about the importance of these two subthemes for mitigating financial risks (55% and 26%, respectively) and enabling sustainable development (68% and 48%, respectively) suggests that VSSs should consider including stronger community development and cultural preservation requirements to meet FSPs preferences. FSPs have been made

aware of the importance of maintaining community well-being with their investments to lower financial risks and enable community development. To this end, many sustainable investment schemes have measures designed to improve community well-being.⁶⁰ For the most part, the VSSs examined require upholding Indigenous rights, which was deemed highly important for at least 35% of the 51 FSPs consulted. There is a clear opportunity for VSSs to strengthen their requirements for maintaining the well-being of local communities and, in doing so, reduce the potential financial risks associated with investing in VSS-compliant farms. This could facilitate access to financial services for standard-compliant producers and attract FSPs seeking a greater return on their investments. The information presented in Figure 17 is disaggregated by VSSs and local community aspects in the subsections below.

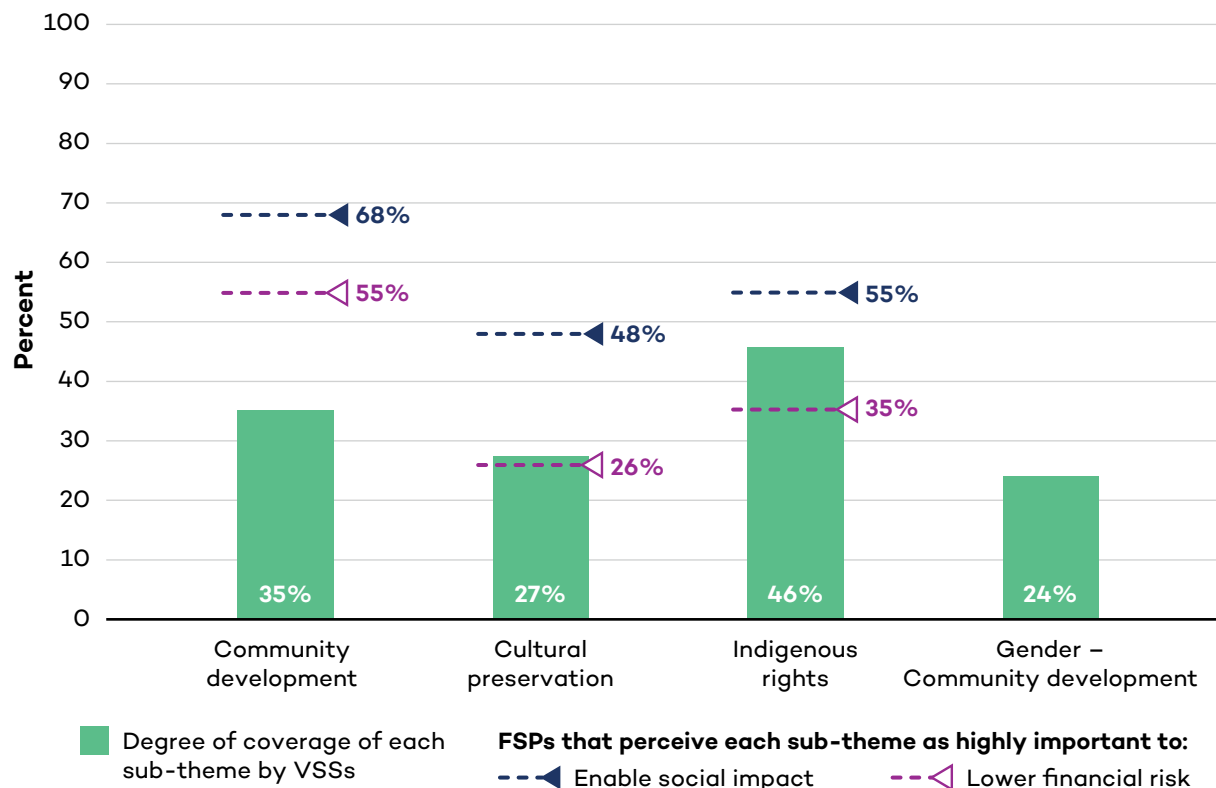
Community Development

Supporting community development can help agricultural operations avoid conflicts, access qualified workers, and enjoy improved public appreciation, all of which can improve socio-economic sustainability (see Box 7). VSS production criteria that enable community development are examined in terms of community investments, community impact assessments (health, safety, and security), the existence of grievance mechanisms, and support for community economic development.

⁵⁹ FPIC is a standard protected by international human rights law. It states that “all peoples have the right to self-determination” and “all peoples have the right to freely pursue their economic, social, and cultural development. With those rights come certain safeguards, and one of those safeguards is that those rights can’t be affected or impacted or diminished without consultation and Free, Prior and Informed Consent” (Cultural Survival, 2012).

⁶⁰ For instance, both the IFC Performance Standards and the FAO Principles for Responsible Agricultural Investment have measures aimed at maintaining community well-being in areas such as poverty alleviation, involuntary resettlement, Indigenous rights, food security, and gender equality.

Figure 17. VSS coverage of community development, equitable gender community development, cultural preservation, and Indigenous rights and the percentage of FSPs that perceive them as highly important for lowering financial risks and enabling sustainable development



Source: Elaborated by authors based on information coming from the VSS documents listed in Table 12 and in Nugnes & Larrea, 2020.

The VSSs examined generally do not have extensive measures to enable community development. Five of the 12 VSSs require farmers to have a grievance mechanism for communities. Some VSSs require farming operations to support community economic development and investments. Less than half have measures in place to assess the potential human rights and community impacts that their farming operations may have on surrounding communities.

The PTF, RTRS, and RSPO standards have the most requirements for enabling community development. Depending on the context, strengthening VSS requirements for community development could encourage standard-compliant farmers to improve their community relationships and, in doing so, enhance the resilience and profitability of their farming operations.

Box 7. Fair Trade Access Fund and community development

Commodity: Coffee

Region: Eastern Democratic Republic of the Congo

VSSs: Fairtrade and Organic

Investee: Cooperative La Solidarité pour la Promotion des Actions Café et le Développement Intégral (SOPACDI)

Despite being resource-rich, the Democratic Republic of the Congo is among the world's LDCs, as most of its population lives in extreme poverty. Coffee farmers from the civil war-ravaged eastern part of the country were forced to smuggle their harvest across Lake Kivu, a notoriously dangerous journey during which many have perished. Incofin's Fairtrade Access Fund (FAF) is one of the few international creditors in the region backed by AgriFI and other private and public investors. It works with the cooperative SOPACDI, lending money for the cooperative to buy coffee from its members for processing and export. FAF provides flexible finance products to meet coffee farming and trade needs, conducts smallholder risk management systems, and requires compliance with VSSs in the fund due diligence procedures. FAF also supports farmer skill development with a non-repayable technical assistance facility, co-financed by SOPACDI, that helps farmer organizations comply with VSSs and improve social and environmental performance, productivity, and coffee quality—all of which can ease investment risks.

FAF focuses on loans of up to 5 years and on collaboration between public and private investors to create value. By doing so, it generated a 2%–3% return on equity in 2018, which helped attract investors such as Lombard Odier. The fund is an exemplary investment model in several sectors, including coffee, and its efforts have led to tangible results—a 6% increase in producer organization productivity and USD 540 in incremental income per farmer family across fund investees. Since its inception in 2012, and as of December 2019, FAF had disbursed USD 2.7 billion, affecting the lives of more than 330,000 farmers. The fund's investment in SOPACDI demonstrates that blended finance can also be successful in LDCs.

Table 31. VSS coverage of community development (%)

	4C	BCI	BSC	CMIA	FHL	FSPO	GG	ORG	PTF	RA	RSPO	RTRS	Average
Community development	17	3	33	7	33	27	0	7	86	40	77	83	35
Community economic development	20	0	0	20	100	80	0	20	80	40	0	60	35
Community grievance mechanism	0	0	100	0	0	0	0	0	80	100	100	100	40
Community investments	0	0	0	20	100	80	0	20	80	40	80	60	43
Community services impact assessment	40	0	0	0	0	0	0	0	80	0	100	100	27
Human rights and community engagement	0	20	100	0	0	0	0	0	100	60	80	80	37
Human rights impact assessment	40	0	0	0	0	0	0	0	100	0	100	100	28

Source: Elaborated by authors based on information coming from the VSS documents listed in Table 12.

Community Development: Gender equality

Specific measures to enable gender equality in community development efforts can be important to ensure that standard-compliant farming operations have greater potential to benefit all of the members of the farming communities where they operate. More equitable communities can result in more opportunities to collectively improve their quality of life. For instance, equal opportunities for men and women

to inform decision making will result in better outcomes for communities (Sexsmith, 2019). VSS production criteria that enable equitable community development include gender-sensitive stakeholder engagement and impact assessments, establishing gender-equality policies, and promoting the economic role of women.

Several of the VSSs examined require farmers to address gender issues when interacting with their local communities so they can be better understood and addressed. Some VSSs require

Table 32. VSS coverage of gender-equitable community development (%)

	4C	BCI	BSC	CMIA	FHL	FSPO	GG	ORG	PTF	RA	RSPO	RTRS	Average
Gender – Community development	28	40	20	24	12	32	0	0	0	36	60	36	24
Gender and local community interactions	100	100	0	20	0	0	0	0	0	0	100	80	33
Gender equality policies	40	100	0	100	60	60	0	0	0	100	100	100	55
Gender-sensitive impact assessment	0	0	0	0	0	100	0	0	0	80	0	0	15
Gender-sensitive stakeholder engagement	0	0	100	0	0	0	0	0	0	0	100	0	17
Promotion of women's economic role	0	0	0	0	0	0	0	0	0	0	0	0	0

Source: Elaborated by authors based on information coming from the VSS documents listed in Table 12.

community development initiatives and policies that promote gender equality. Only two VSSs require farming operations to engage in gender-sensitive stakeholder engagements. Two VSSs require farmers to carry out a gender-sensitive community impact assessment of their operations. The RSPO standard has the most stringent requirements for enabling community development that supports gender equality. Enabling gender equality is an important development opportunity for farming operations, as both men and women are important talent pools to draw from in order for farming and agricultural ventures to flourish.

Cultural Preservation

Preserving cultural heritage from adverse impacts can be necessary to avoid local community conflicts, which can result in legal challenges, reputational risks, and reduced business profitability (IFC, 2012c). Equally important, culture is at the heart of a successful development intervention, and agricultural operations that support local culture by leveraging local knowledge, skills, and resources are more likely to support sustainable development outcomes (United Nations Educational, Scientific and Cultural Organization, 2017). VSS provisions for

Table 33. VSS coverage of cultural preservation (%)

	4C	BCI	BSC	CMIA	FHL	FSPO	GG	ORG	PTF	RA	RSPO	RTRS	Average
Cultural preservation	20	33	33	33	33	0	0	0	67	50	0	67	27
Access to cultural heritage	0	0	0	0	0	0	0	0	0		0	100	9
Respect natural and cultural heritage	60	100	100	100	100	0	0	0	100	100	0	100	63
Traditional production practices	0	0	0	0	0	0	0	0	100	0	0	0	8

Source: Elaborated by authors based on information coming from the VSS documents listed in Table 12.

cultural preservation include respecting natural and cultural heritage, community access to cultural sites, and enabling traditional production practices.

Few of the VSSs examined have measures in place to preserve culture. Some require farmers to respect natural and cultural heritage as designated by the United Nations Educational, Scientific and Cultural Organization when planning and siting agricultural operations. Only one VSS requires the protection of traditional production practices and maintaining community access to cultural heritage sites.

PTF and RTRS had the most requirements for preserving culture. Cultural preservation is more or less important, depending on where farming is taking place.

Indigenous Rights

Respecting the rights of Indigenous Peoples⁶¹ includes maintaining their continued access to their ancestral lands and resources and ensuring that they can enjoy a safe and healthy living environment. Minimizing the impacts of agricultural operations on Indigenous Peoples can include preventing environmental and biodiversity degradation.

⁶¹ ILO Convention 169 on Indigenous Peoples applies to “(a) tribal peoples in independent countries whose social, cultural, and economic conditions distinguish them from other sections of the national community, and whose status is regulated wholly or partially by their own customs or traditions or by special laws or regulations; (b) peoples in independent countries who are regarded as Indigenous on account of their descent from the populations which inhabited the country, or a geographical region to which the country belongs, at the time of conquest or colonization or the establishment of present state boundaries and who, irrespective of their legal status, retain some or all of their own social, economic, cultural, and political institutions” (ILO, 2017).

Table 34. VSS coverage of Indigenous rights (%)

	4C	BCI	BSC	CMIA	FHL	FSPO	GG	ORG	PTF	RA	RSPO	RTRS	Average
Indigenous rights	50	75	50	0	75	25	0	5	45	75	75	75	46
Community FPIC	100	100	100	0	100	0	0	0	80	100	100	100	65
Indigenous rights (ILO 169)	0	100	100	0	100	100	0	0	100	100	100	100	67
Protection of Indigenous Peoples	0	100	0	0	100	0	0	20	0	100	100	100	43
Resettlement activities	100	0	0	0	0	0	0	0	0	0	0	0	8

Source: Elaborated by authors based on information coming from the VSS documents listed in Table 12.

To avoid agricultural operations from having negative impacts on Indigenous Peoples, their formal and informal rights to land, water, and natural resources must be assessed so measures can be taken to maintain their rights (IFC, 2012c). VSS requirements for upholding Indigenous rights include demanding the FPIC of local communities, protecting the minority rights of Indigenous Peoples, and planning and implementing resettlement activities.

Several VSSs have measures in place to protect Indigenous rights and their way of life, which can be of greater concern where clearing natural ecosystems for agricultural production is prevalent. Eight of the 12 VSSs require community FPIC, which entails obtaining permission from local and Indigenous communities before undertaking agricultural operations that could have

negative impacts. None of the VSSs has community resettlement requirements, which can be critical when agricultural operations interfere with Indigenous Peoples' land. The BCI, FHL, Rainforest Alliance, RSPO, and RTRS standards have the most demanding requirements for protecting Indigenous rights. Palm oil and soy agriculture have been important drivers of global deforestation, particularly in Southeast Asia and South America, which has made it more difficult for forest-dwelling Indigenous Peoples to maintain their way of life (Global Forest Coalition, 2019; Human Rights Watch, 2019; Ioris, 2018).

Working Conditions

The relationship between workers and management in agricultural operations is

central to maintaining productivity (IFC, 2012c). Maintaining decent working conditions contributes to employee well-being, which can improve the ability of an agribusiness to compete (ILO, 2019). Furthermore, companies that invest in women's empowerment can increase productivity and reduce production costs, which can improve profit margins (IFC, 2016; Nugnes & Larrea, 2020). Empowering women in the agricultural sector is important, as they play a vital role in agricultural production and post-harvesting activities (IFC, 2016; Nugnes & Larrea, 2020). Ensuring that good and gender-equitable employer practices are adopted, labour rights are upheld, and health and safety measures are in place in farming operations can be advantageous when seeking financing, as it can provide FSPs with more certainty that they will get a return on investment. The way VSSs can affect labour relations via their production criteria is assessed by focusing on the following aspects of the workplace environment in agricultural operations (IFC, 2012c):

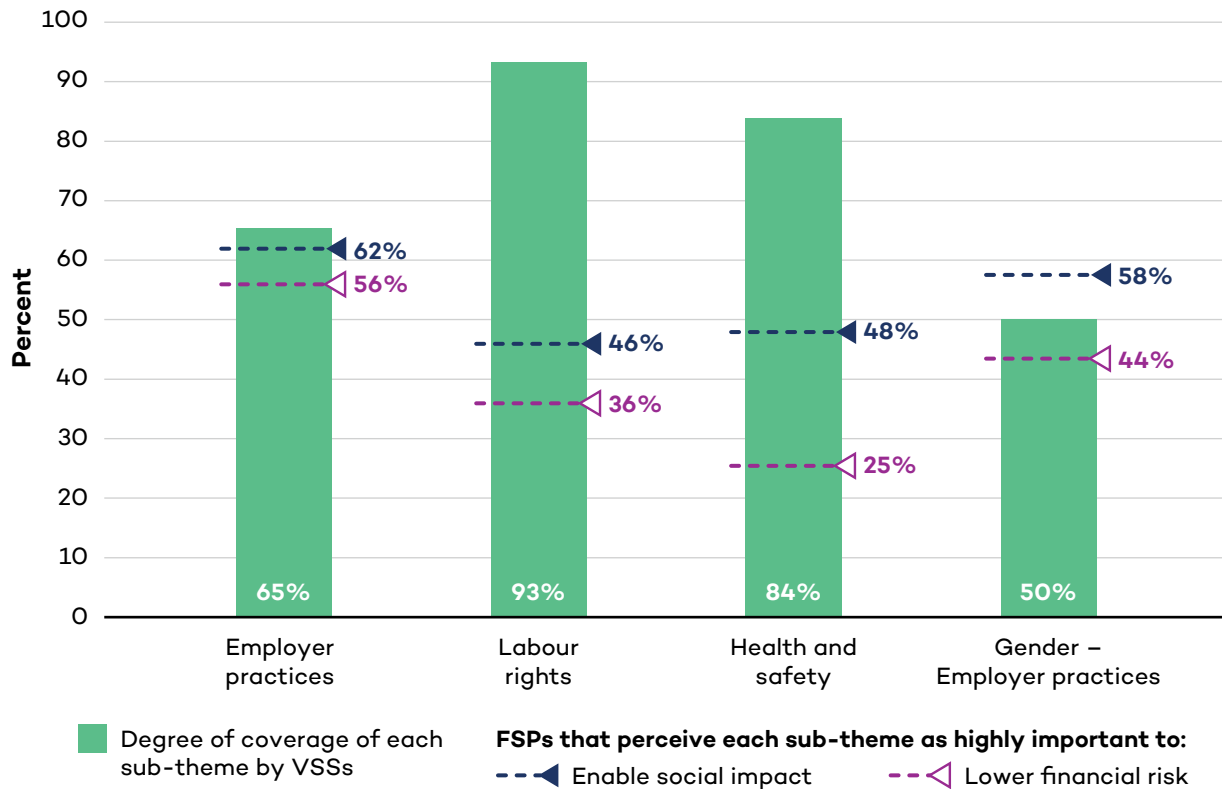
1. **Employer practices** to improve and ensure decent and equitable conditions regarding working hours, wages, and the training and professional development of employees. Employer practices that support fair and productive work environments can improve worker productivity, which can affect the profitability of farming operations.
2. **Gender-equitable employer practices** focus on considerations to avoid gender discrimination and foster socially inclusive work environments. These include promoting women's education, professional training,

employment and participation in decision-making structures, and measures to protect and promote equal remuneration and guaranteed rights for parental and sick leave.

3. **International labour rights** measures to prevent forced labour and exploitive child labour, to protect and promote the right to organize and collective bargaining, and adherence to related ILO conventions. Reports about forced and child labour have affected the brand reputation of some companies and resulted in important market losses.
4. **Worker health and safety** measures to maintain healthy and safe working conditions in farming operations make good business sense. Lost productivity due to workplace accidents and illness can be costly to agribusinesses.

Figure 18 shows the extent to which the VSSs examined are oriented toward supporting community development, cultural preservation, and Indigenous rights, as well as the percentage of FSPs that perceive these as highly important to lower financial risks and enable sustainable development. Comparing the VSS coverage and FSP perceptions reveals that the 12 VSSs adequately cover employer practices, labour rights, and worker health and safety based on the percentage differences observed; however, there is some room to improve gender-equitable employer practices. Respecting labour rights and adopting health and safety measures in the agricultural sector is a VSS cornerstone, as conveyed by their coverage of these working conditions issues, which was respectively 93% and 84% across the VSSs.

Figure 18. VSS coverage of employer practices, labour rights, health and safety, and gender—employer practices and percentage of FSPs that perceive them as highly important for lowering financial risks and enabling sustainable development



Source: Elaborated by authors based on information coming from the VSS documents listed in Table 12 and in Nugnes & Larrea, 2020.

VSSs could strengthen their requirements for gender equity in the workplace, which is seen as a key way to improve productivity in the agricultural sector.⁶² Doing so could facilitate access to financial services for standard-compliant farmers and attract FSPs seeking better returns on their investments. Interestingly, a relatively lower percentage of FSPs perceive labour rights and workplace health and safety as highly important for

mitigating financial risks. Nevertheless, FSPs are concerned about reputational risks associated with poor working conditions, which can result in the loss of sales contracts and reduced market access for agribusinesses. For this reason, the financial risk-mitigation potential that VSS-compliant agricultural operations can offer—that is associated with good working conditions—can be attractive for FSPs. The information presented in

⁶² Women make up approximately 50% of the workforce in agriculture in developing countries, and gender inequities, such as land tenure rights and access to financing, can limit women as well as men from attaining their full potential in terms of agricultural productivity (Ignaciuk & Chit Tun, 2019).

Figure 18 is disaggregated by VSSs and working condition aspects in the subsections below.

Employment Practices

Better work environments can attract and retain workers, which can improve business profitability and reputation via increased productivity, higher quality, and improved customer service. Worker engagement can ensure that employers “design or update [their] human resources (HR), employment, contracting, and purchasing policies and procedures in ways that enhance the long-term viability and success of the business while safeguarding the rights of workers”

(IFC, 2012b, p. 2). VSS production criteria can provide structure and incentives for employers to offer better work environments. To assess how VSSs address employment practices, their production criteria for providing a fair and safe work environment are examined. These practices include employment and hiring, maximum working hours, fair and timely payment of wages, pensions and social security benefits, and maternity and paternity leave, as well as sexual exploitation and harassment protections.

Most of the VSSs examined require farming operations to ensure that minimum wages are paid in a fair and timely manner. A few have

Table 35. VSS coverage of employment practices (%)

	4C	BCI	BSC	CMIA	FHL	FSPO	GG	ORG	PTF	RA	RSPO	RTRS	Average
Employer practices	57	37	83	70	90	73	10	67	80	83	67	67	65
Employment legal compliance	60	0	100	0	100	100	0	0	100	100	100	100	63
Fair and timely wages	100	100	100	100	100	100	20	100	100	100	100	100	93
Living wage	20	0	0	20	80	100	0	0	0	100	100	0	35
Maximum working hours	60	20	100	100	100	0	20	100	100	100	0	100	67
Minimum wage	100	100	100	100	100	100	20	100	100	100	100	100	93
Pensions and social security benefits	0	0	100	100	60	40	0	100	80	0	0	0	40

Source: Elaborated by authors based on information coming from the VSS documents listed in Table 12.

incorporated living wage requirements in their standard—this is a notable improvement over just requiring minimum wages. Some VSSs demand compliance with employment laws and maximum working hours. Fewer require farming operations to provide pensions and social security benefits. The FHL had the most demanding requirements on fair employer practices. Living wages are likely to become more prominent amid growing demands for fairer wealth distribution across agricultural supply chains. On the whole, the 12 VSSs have provisions to ensure that employer practices are fair and appropriate, which can result in important dividends for agricultural productivity and profitability. Employer practices can be important for prospective FSPs concerned about the short- and long-term viability of the farming operations that have been given financing because better work environments are likely to remain viable over the long term.

Employment Practices: Gender equality

Enabling gender equality in workplaces can provide access to a more diverse and empowered workforce.⁶³ Drawing from a talented pool of men and women can give agricultural operations better prospects to remain competitive. It can also lead to the development of new products and access to new markets while improving the viability and sustainability of agricultural businesses over time. To assess how agricultural VSSs address employer practices that enable gender equality, their requirements vis-à-vis workplace gender-equality policies,

equal remuneration for equivalent work, family-friendly policies, anti-discrimination measures, and improved employment conditions for women were examined.

Many VSSs compel their farmers to adopt anti-discrimination measures in their operations, protect their workers from sexual exploitation and harassment, and offer equal remuneration in accordance with ILO 100. The BCI is the only VSS examined that requires improved employment conditions for women. Several require farmers to have workplace gender policies and measures to protect women's working rights in place. Although nine VSSs require farmers to grant maternity and paternity leaves, only six require family-friendly policies. The RSPO had the most stringent requirements for enabling gender equality within employer practices. Although gender equality is a major issue in agriculture, not all VSSs have adopted strict measures to address it. This represents an important opportunity for VSSs to better integrate gender-equality requirements in their production criteria.

⁶³ Gender equality implies that the interests, needs, and priorities of both women and men are considered while recognizing their diversity (Sexsmith, 2019). Advancing gender equality is also critical to ensuring that equal rights, responsibilities, and opportunities are granted for women, men, girls, and boys.

Table 36. VSS coverage of gender-equitable employment practices (%)

	4C	BCI	BSC	CMIA	FHL	FSPO	GG	ORG	PTF	RA	RSPO	RTRS	Average
Gender – Employer practices	56	54	20	80	72	56	4	0	58	70	90	40	50
Anti-discrimination measures	100	100	100	100	100	100	0	0	100	100	100	100	83
Equal remuneration (ILO 100)	60	100	100	100	80	40	20	0	100	100	100	100	75
Family-friendly policies	40	0	0	100	100	100	0	0	0	100	100	0	45
Improve women's employment conditions	0	20	0	0	0	0	0	0	0	0	0	0	2
Maternity/paternity leave	60	0	0	100	100	40	20	0	80	100	100	100	58
Migrant women integration	0	0	0	0	60	0	0	0	0	0	100	0	13
Protection from sexual exploitation and harrassment	100	100	0	100	100	100	0	0	100	100	100	100	75
Protection of women's working rights	100	100	0	100	60	60	0	0	100	100	100	0	60
Women's career development	0	20	0	100	60	60	0	0	0	0	100	0	28
Workplace gender policy	100	100	0	100	60	60	0	0	100	100	100	0	60

Source: Elaborated by authors based on information coming from the VSS documents listed in Table 12.

Labour Rights

VSS compliance often requires alignment with the ILO conventions and national labour rights regulations, which ensure that workers' rights are respected. Upholding labour rights can also result in increased worker satisfaction, productivity, profitability, and product marketability. The way VSSs contribute to enabling labour rights via their production criteria is assessed by examining labour rights aligned with the ILO conventions⁶⁴ as well as contractual and minimum wage requirements. Adhering to labour rights can lower financial risks for FSPs, in part because labour rights infractions can affect the economic viability of investees via penalties, legal charges, and loss of sales and brand value.

With just one exception, all the VSSs examined require that labour rights are upheld in accordance with the ILO conventions. Prohibiting forced labour and allowing freedom of association and collective bargaining are important requirements. Preventing child labour is important and a challenge that must be carefully met, as many farming operations rely on labour from family members to remain viable. Nevertheless, child labour should not take opportunities away from child development, such as imposing dangerous tasks or preventing school attendance. All the VSSs except for GLOBALG.A.P. had 100% coverage of the labour rights aspects that were assessed. Labour rights are addressed in the GRASP add-on module of the GLOBALG.A.P.

Table 37. VSS coverage of labour rights (%)

	4C	BCI	BSC	CMIA	FHL	FSPO	GG	ORG	PTF	RA	RSPO	RTRS	Average
Labour rights	100	100	100	100	100	100	20	100	100	100	100	100	93
Child labour (ILO 138)	100	100	100	100	100	100	20	100	100	100	100	100	93
Collective bargaining (ILO 98)	100	100	100	100	100	100	20	100	100	100	100	100	93
Freedom of association (ILO 87)	100	100	100	100	100	100	20	100	100	100	100	100	93
No forced labour (ILO 29 & 105)	100	100	100	100	100	100	20	100	100	100	100	100	93

Source: Elaborated by authors based on information coming from the VSS documents listed in Table 12.

⁶⁴ The ILO conventions on labour rights pertain to forced labour (ILO 29 and ILO 105); child labour and minimum age (ILO 138); freedom of association (ILO 87); equal remuneration (ILO 100); and collective bargaining (ILO 98).

standard, which is not mandatory for GLOBALG.A.P. certification. For the most part, FSPs investing in VSS-compliant agricultural operations can have some certainty that basic labour rights are being respected.

Health and Safety

Safe and healthy working conditions contribute to worker retention and productivity. This is especially important in countries with limited occupational health and safety laws and enforcement capacity. Adopting VSSs in agriculture often requires following worker health and safety ILO conventions and national laws to ensure safe and healthy working conditions. The following

health and safety measures were examined to determine how VSSs incorporate worker health and safety in their production criteria: compliance with worker health and safety laws, worker occupational health and safety as defined in ILO 155 and ILO 184, and access to personal protective equipment and medical services. Health and safety measures within agribusinesses can improve their profitability, which can improve returns on investments.

All 12 VSSs have workplace health and safety requirements. Many require farmers to follow safety at work measures in accordance with ILO 184, adopt workplace safety measures, and comply with workplace safety laws. All

Table 38. VSS coverage of health and safety (%)

	4C	BCI	BSC	CMIA	FHL	FSPO	GG	ORG	PTF	RA	RSPO	RTRS	Average
Workers' safety	63	60	100	100	100	93	83	50	97	100	80	80	84
Access to medical services	60	20	100	100	100	100	100	100	100	100	80	100	88
Occupational health and safety (ILO 155)	60	20	100	100	100	100	100	0	100	100	0	60	70
Safety at work – Legal compliance	0	20	100	100	100	100	0	0	100	100	100	100	68
Safety at work (ILO 184)	60	100	100	100	100	100	100	100	100	100	100	60	93
Safety equipment and personal protection equipment	100	100	100	100	100	60	100	100	100	100	100	100	97
Workplace safety	100	100	100	100	100	100	100	0	80	100	100	60	87

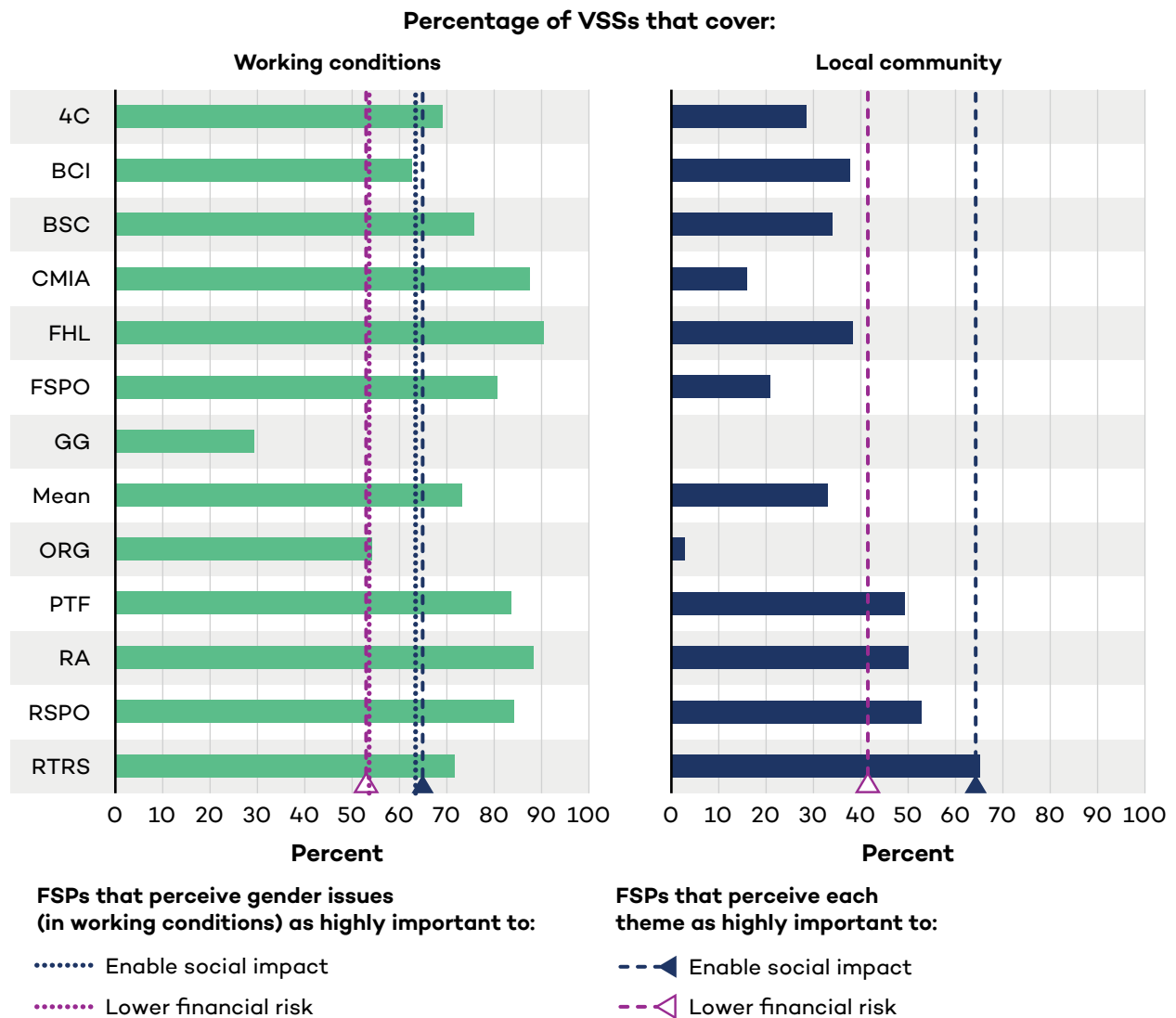
Source: Elaborated by authors based on information coming from the VSS documents listed in Table 12.

the VSSs require that employers provide workers with protective equipment and access to medical services. Bonsucro, CmiA, FHL, and Rainforest Alliance standards have the most stringent health and safety requirements. For the most part, FSPs investing in VSS-compliant farming operations can have confidence that workplace health and safety measures are in place.

Social Dimension Conclusion

VSSs have been working to establish more equitable and fair working conditions for agricultural producers and labourers since the start of the Fairtrade movement in 1997. Most VSSs require farming operations to uphold labour rights and workplace health and safety. In addition, many require

Figure 19. VSS coverage and FSP importance perceptions in the local community and working conditions sustainable finance subthemes



Source: Elaborated by authors based on information coming from the VSS documents listed in Table 12 and in Nugnes & Larrea, 2020.

producers to support the development of their local communities. More recently, gender considerations have been incorporated into VSSs to improve working conditions and community relations. The potential for gender equality to have a significant sustainable development impact in agriculture cannot be overlooked and deserves special attention (Sexsmith, 2019). For instance, gender equality in agriculture can lead to improved agricultural productivity by ensuring equal access to land and inputs, as well as household food security, by diversifying through the production of cash as well as food crops (Sexsmith, 2019).

The social dimension of VSS production requirements can lower operational and reputational risks for FSPs by supporting farmers who strive for equitable and safe working conditions and gender equality, potentially improving the profitability of agricultural operations. Figure 19 shows that 39% of the FSPs surveyed regard local communities as highly important for reducing financing risks, while 57% view local communities as highly important for achieving sustainable development. Furthermore, 39% of the FSPs consider the effects of agricultural operations on working conditions to be highly important for reducing financial risks, and 57% deem aspects associated with local communities as highly important for achieving sustainable development. Lastly, 42% of FSPs surveyed regard gender-equitable working conditions as highly important for reducing financing risks, while 57% view gender-equitable working conditions as highly important for enabling sustainable development.

The overall coverage of the VSSs assessed across the socio-economic dimension is

53%. Rainforest Alliance, RSPO, and RTRS standards have the highest coverage across the VSSs examined. Most of these VSSs have requirements for more sustainable working conditions, which could satisfy FSPs that perceive sustainable working conditions as highly important for reducing financial risks and enabling sustainable development. On the other hand, requirements for maintaining good relations with local communities seem to be a lower priority for some of the VSSs, contrasting with the percentage of FSPs that considered local community relations as highly important to reduce financial risks and enable sustainable development. This may be due to the crops and contexts in which VSSs work. For instance, the palm oil sector is comprised of large plantations and smallholders that may need to foster good relations with local communities, particularly when their operations can result in community displacement.

Nevertheless, the results obtained for local communities do not capture the full extent to which VSSs can affect farming communities. Fairtrade requires premiums to be invested in community-oriented projects such as building schools and medical centres. The CmiA has a fund to support development projects in cotton cultivation communities. FSPs that invest in VSS-compliant farmers can lower their financial risks, as they are typically required to improve working conditions and foster better community relations. This ensures that the farming operations they support have greater potential to provide a return on investment as they continue producing with motivated, fairly compensated, healthy, and safe workers within supportive communities.

4.0 Conclusions and Recommendations



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The agricultural sector is an important source of livelihoods and economic development across the world. According to the UNCTAD (2015), the agricultural sector remains one of the best ways to lift people out of poverty, as it accounts for 40%–80% of total employment in Low Human Development Countries. Nevertheless, the agricultural sector remains an important driver of climate change, deforestation, biodiversity loss, water appropriation, and ecosystem pollution, as it uses 38% of the world's land, 70% of fresh water, and large amounts of agrochemicals. Moreover, human rights infractions such as forced labour, child labour, and poor working conditions are still prevalent in the sector. Consequently, there is a pressing need for more sustainable forms of agricultural production that can provide decent farmer and worker livelihoods and regenerate natural environments while meeting global food security, which will require important private and public investments. The USD 260 billion annual investment gap to meet SDG 2's zero hunger targets in developing countries has only widened as a result of the COVID-19 pandemic.

One of the main barriers to increasing agricultural investments among FSPs is the perceived risk, which can include weather effects on crop productivity and quality, volatile crop prices, inadequate business governance and management practices, and a lack of collateral and insurance. Nevertheless, FSPs are becoming more aware of ESG issues associated with agricultural production—such as deforestation, forced labour, and water contamination—that may constitute financially material business risks.

As a result, FSPs are increasingly seeking to mitigate these risks and enable sustainable development to benefit farming communities with their investments.

The *Standards and Investments in Sustainable Agriculture* review examines how agricultural VSSs can lower financial risks and generate sustainable development outcomes, which can improve access to financing for VSS-compliant farmers. To this end, Chapter 2 reviews the market performance of VSSs operating in eight agricultural commodity sectors where they are most prominent (bananas, cocoa, coffee, cotton, palm oil, soybeans, sugarcane, and tea), followed by a discussion on VSS-compliant farming investment opportunities in these sectors. Chapter 3 examines the production criteria of 12 VSSs operating in the agricultural sector to determine how their requirements fulfill various aspects of sustainable finance. The analysis provides insights for fine-tuning VSS requirements to improve access to financing and how they can specifically lower potential investment risks in the agricultural sector.

For the most part, VSS-compliant production in the eight agricultural commodities examined is growing faster than conventional production. With the exception of bananas,⁶⁵ soybeans, and sugarcane, VSS-compliant production represents more than 10% of global production within the sectors examined. VSS-compliant production experienced a CAGR of more than 10% from 2008 to 2018 in all eight sectors. Nevertheless, there are signs that this growth may be slowing in some sectors, such as cocoa and coffee. Furthermore, VSS-compliant

⁶⁵ The VSS-compliant production estimate excludes GLOBALG.A.P.-certified bananas, which would have likely brought overall VSS-compliant production of the fruit above 10% of total global production.

farmers in some sectors still struggle to sell their products as VSS compliant, undermining their potential to get a better return. Despite these challenges, market signals indicate that there is demand for more sustainable goods, including VSS-compliant agricultural products, which has only been heightened by the COVID-19 pandemic.

Consequently, VSS-compliant farming operations may represent attractive investment opportunities for FSPs in terms of potentially securing a greater return on investment, lowering financial risks, and enabling sustainable development. Rising demand for agricultural products signals that investing in agriculture should provide returns, but this remains challenging, as agricultural production is closely linked to factors that are often difficult or impossible to control, such as climate and international markets. Investing in VSS-compliant operations is an investment in more sustainable agricultural production, which can lower financial risks and enable much-needed sustainable development in farming and rural communities.

More specifically, investing in VSS-compliant farming operations can offer advantages to FSPs. These include market linkages and assurance through business relationships and sales contracts with buyers as well as operational improvements resulting in increased product yields and quality, garnering better prices, premiums, and prices guarantees. All of these can improve profitability. VSS requirements can improve business and management effectiveness and lower financially material business risks via the adoption of more sustainable farming practices, which are regularly monitored. VSSs often provide farmers with the impetus

to organize into groups, cooperatives, and SMEs with better negotiation power for securing inputs and selling products and networks to access support such as technical assistance and financing. All these measures can support FSPs to better leverage VSSs for investing in more sustainable agriculture.

Blended finance models that share risk between public and private stakeholders offer great promise to mobilize desperately needed financial resources to increase agricultural production while enhancing the ecosystems and supporting the communities that underpin agriculture. This is especially important in contexts where farmers have fewer resources and capacities to adopt more sustainable agricultural practices. VSSs can play a central role in blended finance investment efforts by providing crucial information on farming capacities, farmer training and extension services, and standard monitoring and impact assessments to track progress and outcomes associated with agricultural investments.

The production criteria of the 12 agricultural VSSs with an international presence were examined along the sustainable finance analytical framework's themes and subthemes to better understand their potential to lower financial risks and enable sustainable development outcomes. Although not designed to enable investment readiness, VSS requirements could result in more sustainable business and production practices that can facilitate access to financing and more sustainable investments. The analysis provided insights for fine-tuning VSS production criteria to improve VSS-compliant farmer access to financing from FSPs. The VSSs examined have not typically focused on the business aspects of agricultural production.

Consequently, their coverage of the economic and business sustainable finance aspects was relatively low at 34%. On the other hand, the VSS coverage of environmental and social sustainable finance aspects was 45% and 47%, respectively.

As environmental challenges become more serious, widespread, and imminent with the onset of global challenges such as climate change, deforestation, and biodiversity loss, VSSs must require farming operations to protect and regenerate natural environments. The agricultural sector holds many solutions to mitigate and adapt to climate change, prevent pollution, and reverse environmental degradation, which are covered to some extent in VSS production criteria. VSS requirements that improve working conditions and foster better community relations can ensure that farming operations continue producing with motivated, fairly compensated, healthy, and safe workers within supportive communities, which can give FSPs financial as well as socio-economic returns that benefit agricultural producers. Consequently, FSPs can be more confident that investing in VSS-compliant farming operations can minimize the financially material business risks associated with their agricultural operations to maintain their viability over the long term.

VSSs offer promising avenues to increase investment in sustainable agriculture in developing countries. They can also enable agricultural producers to access finance to support their business development while improving their social and environmental performance.

The findings of the analysis suggest that VSS-compliant production does not necessarily

meet all the requirements that FSPs seek in their due diligence and investment decision making when granting financing to agricultural producers. This might be because serving this purpose is not the overall goal of VSSs. There are opportunities for improvement, however, given that VSSs work closely with agricultural producers, define farming and business criteria that producers must observe, provide capacity building to farmers, and monitor their practices. They have the potential to help FSPs reduce financial risks and strengthen farmers' bankability while enhancing their impact.

Recommendations

The following recommendations aim to help standard-setting bodies, FSPs, and governments fully leverage VSSs to enable much-needed investments in sustainable agriculture. More specifically, they seek to improve VSS-compliant farmer access to financing and facilitate investments in VSS-compliant agricultural operations. This is particularly important, as agricultural production will need to increase sustainably to meet global food security, and sustainable investing is becoming the new normal in the financial sector.

For VSSs

1. **Develop VSS requirements that facilitate farmers' access to finance:** VSS production criteria that farmers must implement to become and remain compliant offer opportunities to ensure that they meet FSP requirements to access finance (see Appendix C for VSS production criteria). Based on the benchmarking analysis

conducted for this report, the VSSs examined had relatively undemanding requirements for farming business and economic aspects, while they are perceived by FSPs as highly important when assessing financial requests from agricultural producers. These requirements include keeping records of the farming enterprise that provide a history of agricultural production costs and revenues. Designing VSS production criteria aligned with access to finance requirements would preferably be tailored to local contexts. Furthermore, the VSS compliance information collected by agricultural producers (i.e., price records, sales information, pesticide use records) could be compiled in a way that directly supports FSP investment due diligence and reporting requirements. For instance, VSS-compliant farmers could align the information they are required to collect, which can include forest conservation and GHG emissions, with EU guidelines on reporting climate-related information that the financial sector must follow. The format in which VSS information is collected and compiled might not always align with the format that FSPs require, which can limit its usefulness for FSPs.

- 2. Assess VSS-compliant farming operation sustainability impacts:** Although sustainability impact studies associated with implementing VSSs in agriculture have been mounting, empirical evidence is still lacking across geographies and sectors. Establishing a robust evidence base resting on independently conducted sustainability impact studies across geographies and

sectors will be invaluable to attract investments needed to facilitate a shift toward more sustainable forms of agriculture. To address this need, an increasing number of independent VSS sustainability impact studies have been undertaken, and evidensia.eco, a repository of sustainability impact studies, has been established. VSSs have also responded by collecting economic, environmental, and social impact data associated with the farming operations applying their standards. Some VSSs are shifting from practice-based to performance-based requirements that would require farmers to achieve specific sustainability outcomes to become and remain VSS compliant. This shift would allow FSPs to readily report on their investment-related sustainability impacts and comply with disclosure regulations. Furthermore, VSS sustainability impact measurements could be quantified into ESG risk reduction to communicate to FSPs the economic value of VSS-compliant farming.

- 3. Ensure full product traceability and transparency:** Existing VSS chain-of-custody standards and product traceability requirements allow for tracking product origins and characteristics. However, they do not always allow for full product traceability back to the farm or plantation and full product transparency associated with farming practices and sustainability outcomes. Full VSS-compliant product traceability and transparency can support FSPs in meeting more stringent non-financial reporting regulations and provide evidence of sustainable practices

associated with their agricultural investments. VSSs must leverage technological developments to establish real-time farm-monitoring systems that can provide full product traceability and transparency. These systems need to be designed to support farming decision making and operational course corrections for sustainable outcomes. The information collected could also be leveraged to assess and forecast farming sustainability risks, which can be communicated to FSPs.

4. **Support business diversification within VSS-compliant operations:**

The revenue-generating activities of farming operations should be diversified to improve farmers' resilience to potentially detrimental unforeseen disturbances, shocks, and stresses, which are becoming increasingly important in the context of climate change. These can include crop and business diversification activities supported by the farm, such as implementing agroforestry systems, agrotourism, and undertaking ecosystem restoration and climate mitigation projects to generate payments for ecosystem services and carbon credits.

5. **Improve farmers' financial knowledge and decision making:**

VSSs need to establish guidance documents, training, and extension services for farmers so they can access financing and avoid exploitation by formal and informal FSPs. Farmers may lack adequate knowledge and capacities to access the financing they need to maintain their operations. Providing farmers with knowledge and

understanding about how financial institutions function and what they require to access financing can be useful, especially for farmers who may need bridge financing to get from one harvest season to the next. Farmers also need to be better equipped to identify unfair and predatory lending practices that can trap them into spiralling debt. VSSs' access to finance training can be extended to provide farmers with a better understanding of insurance products (i.e., crop insurance, credit insurance), which could help farmers deal with unexpected events.

For Finance Service Providers

1. **Train investment teams on sustainability risks:** Leverage VSS sustainability compliance and impact information to educate and train investment officers on the social and environmental risks associated with agricultural investments. Translating the risk-reduction benefits of more sustainable farming practices, such as biodiversity, water, soil, and forest conservation, into financial terms could help to convey the importance of sustainability considerations to reduce financial risks. Furthermore, use data from VSSs to inform risk-mitigation strategies and thus support investment decision making and its incorporation into return-on-investment considerations.
2. **Leverage VSSs to make investment decisions:** VSSs can help FSPs make investment decisions and conduct investment due diligence by assessing the sustainable development

performance of potential investees or farming operations by using VSS production criteria that require farmers to adopt more sustainable farming practices. VSS-compliant farming operations can provide FSPs with lower-risk investments. Pre-selecting and selecting VSS-compliant investees can lower investment risks as they are working toward achieving SDGs (i.e., biodiversity conservation, climate mitigation, and living wages), which can be aligned with FSP investment objectives and are regularly monitored for VSS compliance. VSSs can also provide some certainty that an investee incorporates more sustainable business and farming practices in agribusiness operations to mitigate potential investment risks (i.e., they can avoid issues such as agrochemicals use, deforestation, and forced labour).

- 3. Develop preferential investment and loan programs:** Work with VSSs to develop preferential investment and loan programs for farmers that adopt more sustainable cultivation practices, which lower the external costs of agriculture. This will give farmers and cooperatives additional incentives to become VSS compliant and accelerate the transition to more sustainable forms of agriculture (i.e., net-zero, “nature positive,” regenerative agriculture, agroforestry) and other regenerative, nature-based solutions. These preferential investment and loan programs could also be tailored to farmers with different resources and capacities, who are looking to adopt standard-compliant practices. This could include flexible loan requirements, payment schemes,

below-market interest rates, capacity-building activities, and grace periods. Public FSPs are best positioned to develop these programs and support private FSPs in implementing them through incentives or subsidized interest rates.

- 4. Establish VSS-focused investment products:** VSSs can give FSPs information on VSS-compliant farmer needs, crop production, and commercial cycles to support the development of effective investment products. FSPs should work with VSSs to develop investment products for VSS-compliant operations, such as certification bonds. For instance, investors can issue a Fairtrade bond to raise capital that would then be invested in a pool of Fairtrade-certified agribusinesses. Certification bonds can be sector and theme focused (i.e., agricultural certification bonds or forestry certification bonds, VSS-compliant deforestation-free agribusinesses, or women-led agribusinesses). FSPs can also work with VSSs to identify VSS-compliant agribusinesses in different commodity sectors and geographies to establish diverse portfolios of potential investees and investment products. In addition, VSSs can be used as catalysts to establish blended finance partnerships to address difficult sustainability issues and make more risky investments in farmers with fewer resources and capacities. FSPs could also develop tailored financial support programs for farmers aspiring to become VSS compliant; this could expand their customer base with lower investment risks. These programs

must allow farmers to recover their investment to become VSS compliant.

5. **Leverage VSSs to achieve sustainable development objectives:**

FSPs can leverage VSSs to address social and environmental challenges. Investments in VSS-compliant agricultural operations can help FSPs attract capital from shareholders wanting their investments to address specific environmental or social goals, such as climate change mitigation, biodiversity conservation, or labour rights protection. For instance, VSS-compliant farming operations can support climate-related investments that have GHG emissions reduction and climate adaptation objectives. Development impact investors can support the expansion of VSSs in areas that can benefit most from their implementation, such as LDCs, which represent greater opportunities for them to have sustainability impacts. Furthermore, some VSS-compliant agricultural producers prefer to receive financial support from FSPs with similar values focused on making sustainable investments. Lastly, information gathered on VSS-compliant agricultural operations can support FSPs to report the sustainability impacts of their investments and to disclose non-financial information such as climate mitigation and biodiversity conservation.

For Governments

1. **Support farmers in securing property rights:** Establishing clear land tenure systems, especially for

women, can encourage farmers to adopt more sustainable agricultural practices and maintain the agricultural productivity and ecological resilience of their own lands. Land tenure is essential to accessing financing and attracting investments. Governments in producing countries can set up programs to support the registration of land titles and the issuance of land certificates to landholders, including women (Agada et al., 2021; Brown & Hughes, 2017).

2. **Promote the establishment of farming organizations:** Governments in producing countries can support farmers to organize into formal groups or associations. They can also support their transition to VSS-compliant production by offering extension services aligned with VSS and FSP requirements, reaching last-mile farmers by leveraging VSS networks.
3. **Create favourable investment conditions in VSS-compliant production:** Governments can attract investments in agriculture by improving the infrastructure that supports farm production, such as roads, irrigation, and communication networks, as well as storage facilities. They can also attract capital by supporting farmers with commercial readiness and value-addition programs (i.e., agro-processing). To support the adoption of VSS-compliant agriculture, governments can offer incentives to transition to VSS-compliant production. These can include payment for ecosystem services (i.e., flood retention, water treatment, carbon sequestration and storage), extension services for VSS-

compliant farmers, subsidizing part of the compliance costs, and incentivizing sustainable consumption.

4. **Promote business relationships to catalyze investments:** Platforms can be established to enable joint contracts among VSS-compliant farmers, investors, and buyers. The platforms can also be used to connect private and public investors, philanthropists, extension service providers, and first-loss investors to support blended finance vehicles to invest in helping higher-risk farmers transition to more sustainable agricultural production systems.
5. **Provide guarantees and insurance programs for VSS-compliant farmers:** Governments can offer guarantees to VSS-compliant farmer groups to cover part of the default risk of a loan and provide weather-based insurance to protect farmers against changing weather patterns, including temperature and rainfall that can impact their productivity. These measures may encourage investment in VSS-compliant farmers as they can lower FSPs' operational risks.
6. **Support and encourage FSPs to increase lending to VSS-compliant farmers:** Central Banks can provide incentives to FSPs who provide financing to VSS-compliant businesses. This could include tax incentives and favourable regulatory requirements (i.e., lower collateral, compensatory capital reserves requirements) in lieu of extending credit to VSS-led businesses.

Central Banks could also provide concessionary loans to FSPs for on-lending to VSS-compliant businesses.

VSSs and FSPs need to work synergistically to increase investments in sustainable agriculture, particularly in developing countries. Governments must play a critical role in mitigating financial risks and providing incentives for farmers to transition to more sustainable forms of agricultural production, including VSS-compliant production. The *Standards and Investments in Sustainable Agriculture* review explores how VSSs can reduce investment risks in agriculture that primarily revolve around market uptake, risk reduction, and sustainable development impact. The increasing market uptake of VSS-compliant commodities, including banana, cocoa, cotton, and oil palm, opens up commercial relationships for agricultural producers to secure sales contracts and return on investment. VSS-compliant farming operations can mitigate FSP investment risks⁶⁶ by getting technical assistance to implement more sustainable production practices that are regularly monitored. Consequently, they can deliver documented sustainable development outcomes aligned with FSP objectives, which can be reported to shareholders and the investment community. Facilitating alignment and collaboration between VSSs and FSPs could facilitate investments in sustainable agriculture that are desperately needed in developing countries, where investment risks—as well as returns—are higher.

⁶⁶ Operational risk: harvest losses; reputational risk: deforestation; regulatory risk: overuse of agrochemicals.

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Appendix A. Examining Sustainable Finance Schemes

The 10 sustainable finance schemes examined in this report include 65 principles that were broken down into 150 constituent parts. The analysis of these parts reveals that components of each principle relate to activities that financial services providers (FSPs) can undertake to adopt policies and practices to integrate sustainable investing in their financial activities and business strategies. Others relate to their investees and their business operations. Thus, there are two categories of principle constituent parts: those that apply exclusively to the FSP and those that apply to the potential investee—and which FSPs consider for investment decision making. The latter are more prevalent across the sustainable finance schemes examined and have been considered to define the sustainable themes and subthemes that constitute the analytical framework. However, it is interesting to know what the first category includes to understand what aspects FSPs are encouraged to adopt to advance sustainable investing. These aspects can be grouped into three categories: corporate culture; effective partnerships; and integration of environmental, social, and governance (ESG) considerations in investment analysis and decision making.

Corporate culture refers to the inclusion of sustainable investment values in an FSP's philosophy. For instance, Principle 1 of the Natural Capital Declaration says: “build [internally] an understanding of the impacts and dependencies of natural capital relevant to our operations, risk profiles, customer portfolios, supply chains and business opportunities” (UNEP Finance Initiative & Global Canopy Programme, 2012). Principle 5 of the Principles of Responsible Banking says FSP signatories “will implement our commitment to these Principles through effective governance and a culture of responsible banking, demonstrating ambition and accountability.” Three of the 10 sustainable finance schemes include provisions on corporate culture, meaning 5% of the 150 constituent parts are related to it.

Effective partnerships refer to engagement activities an FSP can undertake to raise awareness among its investees and financial industry actors for the integration of ESG issues and/or sustainable investing principles in business strategies and investment activities. For instance, Principle 5 of the United Nations Principles of Responsible Investment (2018) says signatory FSPs “will work together to enhance our effectiveness in implementing the Principles.” Principle 3 says, “we will work together with governments, regulators, and other key stakeholders to promote widespread action across society on environmental, social, and governance issues.” Four of the 10 sustainable schemes analyzed include provisions to promote effective partnerships, with 7% of the constituent parts related to this issue.

Integration of ESG considerations in investment analysis and decision making refers to the ways an FSP includes ESG issues in risk-assessment activities, investment decision making, policies on asset ownership, design of financial products, and accounting methods. For instance, Principle

2 of the Natural Capital Declaration says to “support the development of methodologies that can integrate natural capital considerations into the decision-making process of all financial products and services including in loans, investments, and insurance policies. ... Systematically consider and value natural capital in core insurance business strategies and operations including risk management” (UNEP Finance Initiative & Global Canopy Programme, 2012) Principle 1 of the Global Alliance for Banking Values states, “triple bottom line approach at the heart of the business model. Values-based banks integrate this approach by focusing simultaneously on people, the planet, and prosperity. Products and services are designed and developed to meet the needs of people and safeguard the environment.” Four of the 10 schemes include provisions on integrating ESG considerations in investment analysis and decision making, with 5% of the constituent parts examined referring to it.

As mentioned above, the principles examined refer largely to FSPs’ potential investees. Although only two of the sustainable finance frameworks are specific to the agricultural sector, all of them apply to financial investments in agricultural operations. Our analysis reveals that the 10 sustainable finance frameworks include an important number of principles related to assessing and managing the socio-environmental risks of an investee’s operations.

Indeed, 45% of the 150 constituent parts refer to the sustainability planning and management systems subtheme within the theme “business management in the economic dimension.” This subtheme has the highest coverage across the sustainable finance schemes analyzed, with nine of the 10 schemes covering it. Further analysis of the principles integrated into this subtheme reveals that the most covered issue is the existence of ESG risk assessment, management, and mitigation activities, followed by clear strategies to develop solutions to ESG concerns. The use of proper monitoring and evaluation methodologies to report ESG impact comes third, followed by the existence of grievance mechanisms and compensation for negative impacts to local communities and affected stakeholders. Finally, the principal constituent parts examined under this subtheme cover two aspects concerning stakeholder engagement and the inclusion of affected populations in business decision making, as well as the existence of stakeholder, environmental, and social management plans. Figure A1 illustrates this breakdown.

Transparency and compliance with laws and regulations follow as the subthemes with greater coverage across the constituent parts examined, with 9% and 7% of the principles referring to them, respectively. Both subthemes are part of the governance theme in the economic dimension. Transparency includes the disclosure of ESG issues affecting an agricultural investment, as well as the targeted and achieved impacts. The Principles of Responsible Agricultural Investment also refer to making the investment process transparent to all concerned stakeholders.

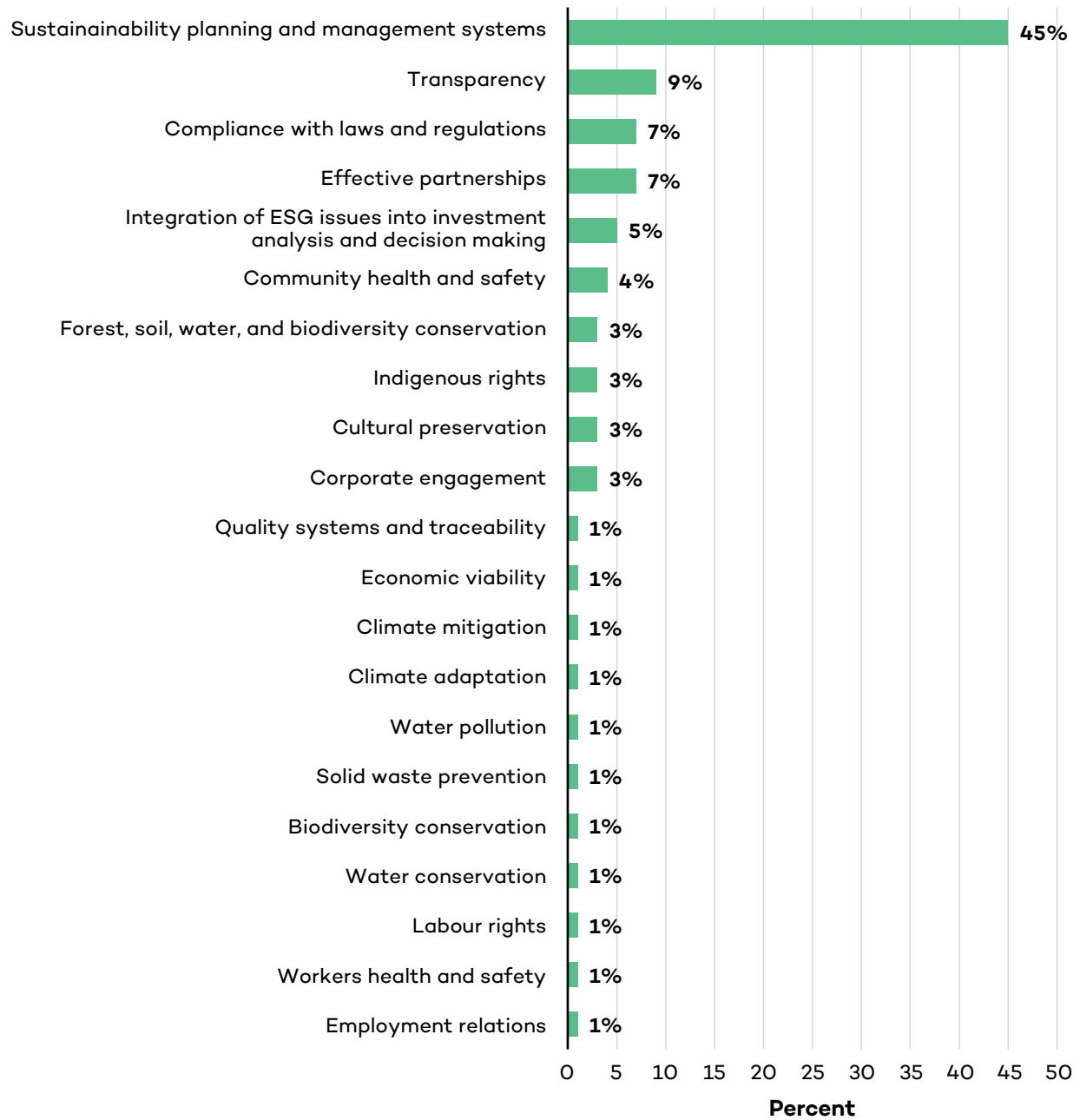
Compliance with laws and regulations refers to environmental and social laws that apply when an investment is made, as well as other regulations on forest management, waste management, and labour rights. The Principles for Responsible Investment in Agriculture and Food Systems details compliance of the agricultural investment with regulations on land and forest tenure as well as water access (Committee on World Food Security, 2014).

Biodiversity conservation and natural resource management is another subtheme with notable coverage across the 10 schemes, with 4% of the constituent parts explicitly referring to it. This subtheme includes protection and conservation of biodiversity; maintaining the benefits of ecosystem services; and forest, water, and soil conservation. International Finance Corporation (IFC) Performance Standards stand out as the scheme with the greatest coverage of this sustainability subtheme (IFC, 2012c).

Only a few principles are directly related to climate adaptation and mitigation. IFC Performance Standards and the Principles for Responsible Investment in Agriculture and Food Systems address climate change. The former integrates a principle to reduce project-related greenhouse gas emissions, and the latter focuses on building the resilience of agricultural operations. Principle 10 of the Equator Principles asks investees to publicly report greenhouse gas emission levels for projects emitting more than 100,000 tonnes of carbon dioxide equivalent annually. This principle has been associated with the transparency sustainability theme.

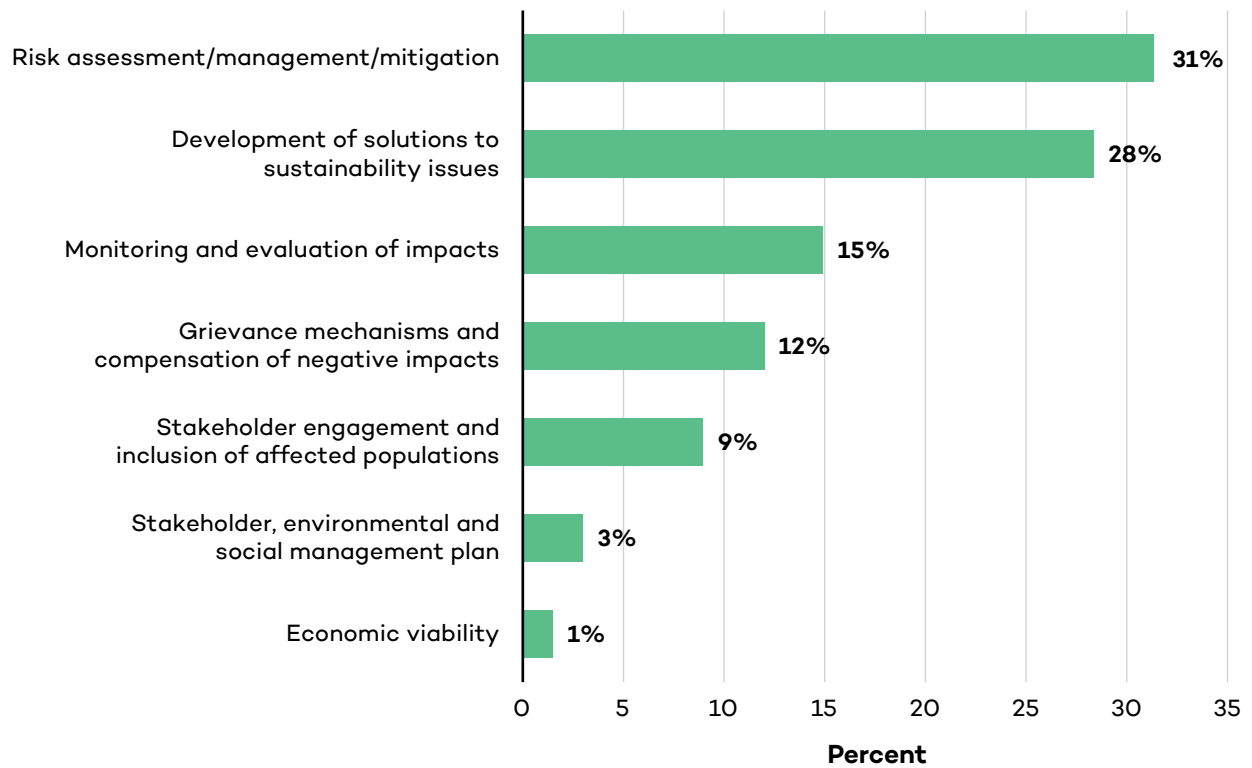
The 10 sustainable finance schemes have little coverage of social issues. The sustainability theme “community health, safety, and security” accounts for 4% of the constituent parts related to social issues. Some issues covered under this subtheme are maintaining the health and safety of affected communities, safeguarding human rights, and minimizing displacement due to the financial investment in agricultural operations. IFC Performance Standards cover several principles related to this subtheme. Both this scheme and the Principles for Responsible Investment in Agriculture and Food Systems also cover the protection of Indigenous rights and cultural preservation. Limited coverage of social issues may be due to the fact that our analysis has associated the principles related to stakeholder engagement and inclusion of affected and vulnerable populations and the principles related to the existence of grievance mechanisms and compensation for negative impacts under the subtheme “sustainability planning and management systems,” which is categorized in the economic dimension. As illustrated in Figure A2, 9% and 12% of all the principal constituent parts examined relate to the former and the latter, respectively, with six and two of the 10 schemes covering them, respectively.

Figure A1. Coverage of the sustainability subthemes by 10 sustainable finance schemes



Source: Elaborated by authors based on information coming from documents of the 10 principles listed in Figure 10

Figure A2. Issues covered in the sustainability planning and management systems subtheme



Source: Elaborated by authors based on information coming from documents of the 10 principles listed in Figure 10.

Appendix B. Voluntary Sustainability Standards and Sustainable Finance Benchmarking Approach

The benchmarking process consisted of two steps: 1) establishing the sustainable finance analytical framework consisting of themes and subthemes and 2) benchmarking the themes and subthemes of the sustainable finance analytical framework against the production criteria of voluntary sustainable standards (VSSs).

Establishing the Sustainable Finance Analytical Framework

The sustainable finance analytical framework was established by examining the various aspects of sustainable finance schemes and credit rating factors in accordance with their relevance and importance for standard-setting bodies, agricultural producers, and financial services providers (FSPs).

Relevance

The relevance of this analysis underlies the analytical framework, which can be described as an effort by VSSs to enable sustainability in both the financial and agricultural sectors. More specifically, establishing the relevance of the analysis for the financial and agricultural sectors and for VSSs made it possible to identify major analytical themes and important subthemes:

- **Financial relevance and importance:** FSPs typically focus on profiting from investments that will provide a financial return over time. Decisions to invest are based on risk assessments of the potential for investees to return the investment over a time frame. Sustainable investing incorporates environmental, social, and governance factors into investment assessment and decision making, targeting investees that conduct their business in a responsible and sustainable manner. Impact investing supports business operations that enable sustainable development, which can lower financial risks while having economic, social, and environmental impacts.
- **Agricultural relevance:** Agriculture is an inherently risky business due to its seasonal nature and reliance on often unpredictable growing environments that can affect productivity, quality, and profitability. Offering farmers needed financial resources can often be a lifeline for farmers trying to make ends meet from one growing season to another. Reducing agricultural production risks by adopting more sustainable production practices will make an agricultural operation more financially viable and more attractive to prospective FSPs. Therefore, linking more sustainable production practices via the adoption of VSS production criteria with FSP requirements to access finance is an important opportunity to enable more viable agriculture and finance sectors. Furthermore, as rising

global populations and changing consumption patterns threaten food security, pressures on agricultural production systems are expected to grow over time.

- **Agricultural VSS relevance:** Moving the agricultural sector toward more sustainable forms of production is the primary objective of VSSs, which can be viewed as market-based instruments and governance structures for enabling sustainability within supply chains. VSSs have typically emphasized creating a fair, safe, and just working environment and adopting production practices that protect natural environments—all of which reduce the material risks associated with agricultural operations. Furthermore, VSSs usually have assurance systems in place to monitor and document compliance by their participating farmers. Some VSSs are starting to measure the tangible sustainability impacts of applying their production criteria. Taken together, these VSS features or characteristics (sustainable production criteria, assurance systems, and, in some cases, impact measurement) could be leveraged to help their participating farmers access financial resources.

Importance

Seven key themes emerged from the 10 sustainable finance schemes and credit rating factors that were reviewed: Economic – Governance and Business Management; Environmental – Climate Change, Pollution Prevention and Pesticide Management, and Biodiversity and Natural Resource Management; and Social – Local Communities and Worker Considerations. These themes were further broken down into 24 subthemes. These themes and subthemes can be thought of as practices that enable sustainable business operations (economic considerations) and reduce the material risks of agricultural production (environmental and social considerations) to result in more sustainability impacts.

Benchmarking Process

The VSS production criteria were then benchmarked against the sustainability themes and subthemes of the sustainable finance analytical framework. To do so, VSS production criteria categories were defined to sharpen the focus on which criteria should be included in the analysis. These criteria were collected from the International Trade Centre (ITC) Standards Map database,⁶⁷ and steps were taken to verify the accuracy of the information collected with the standards' documents. The availability, usefulness, and comprehensiveness of the information reviewed were considered when deciding which VSS production criteria categories to include in the benchmarking effort.

Availability

The ITC collects, stores, and compiles VSS production criteria information that is publicly available via the online Standards Map database. As part of this effort, ITC created production

⁶⁷ The ITC Standards Map database can be accessed here: www.standardsmap.org/en/home.

criteria categories to examine VSS criteria coverage along various sustainability themes. Information in the ITC database was used to carry out the criteria coverage analysis for the VSSs covered in this *Standards and Investments in Sustainable Agriculture* review. The ITC criteria categories were examined to determine which ones could fulfill the analysis framework elements. This means identifying which categories correspond best with the sustainability themes and subthemes that make up the analytical framework. For instance, the “antibribery external reporting and communication” criteria category relates to the standard requirement for external reporting and communication of antibribery policies, which is aligned with the sustainability subtheme “corruption and bribery prevention” under the governance theme. The sequestration of greenhouse gas criteria category aligns with the climate change mitigation subtheme under the climate change theme. This mapping process required the input of three analysts with backgrounds in sustainable finance and VSSs.

Usefulness

The number of criteria categories that were selected across the themes and subthemes of the analytical framework was further refined by applying comparability, significance, and conceptual logic⁶⁸ lenses to choose those that best align with each theme and subtheme. This process allowed for the selection of four to seven criteria categories that best align with each of the sustainability subthemes. Targeting relatively consistent and equal criteria category weightings across the analytical framework themes and subthemes helped to keep the analysis manageable. Similar criteria categories aligned with a sustainability subtheme were aggregated and analyzed together. The production criteria of each VSS examined in this review were then extracted from the ITC Standards Map and assessed to determine how they matched up with the criteria categories mapped onto the analysis framework.

Comprehensiveness

To finalize the selection of production criteria categories, a comprehensiveness analysis took place to optimize coverage and divergence among criteria categories. It was validated with an external reviewer. Coverage refers to the extent to which the selected production criteria address the important issues encompassed by each subtheme. Divergence refers to the extent to which the selected production criteria measure different aspects of each subtheme. Weighing the considerations of “coverage” and “divergence” at the level of each subtheme, the pre-selected criteria categories were assessed against each other to arrive at the final set of 136 criteria categories.

⁶⁸ Comparability refers to the applicability of the criteria category across different geographies and agricultural crops. Significance refers to ensuring that an observation can be attributed to a specific practice, in this case captured by a criteria category. Conceptual logic refers to criteria categories that allow for monitoring outcomes directly linked to specific production activities.

Appendix C. Voluntary Sustainability Standard Production Criteria Enhancements for Financial Service Providers

Examining the voluntary sustainability standard (VSS) criteria coverage and financial service providers' (FSPs') perceptions of the sustainability subthemes examined in this report revealed that VSSs should strategically improve their criteria coverage to match FSP information requirements, particularly related to transparency, antibribery and corruption, economic viability, and climate mitigation and adaptation. Based on the analysis undertaken in this report and an FSP consultation and complemented with other sources, VSS criteria that could be incorporated to strengthen the investment profiles of their participating farmers include the following (Nugnes & Larrea, 2020; CARE, 2009; European Commission, 2019b; Organisation for Economic Co-operation and Development, 2020)⁶⁹:

Economic Governance Subthemes

- Transparency:
 - Disclosure of environmental and social risk management reports
- Corruption and antibribery
 - Antibribery and corruption policies that clearly articulate the types of corrupt conduct they mean to prohibit and the procedures the business defines to prevent bribery (i.e., facilitation payments, secure a business)

Business Management Subthemes

- Economic viability:
 - Productivity records for the last 2–3 years and productivity projections
 - Information on cost structures and selling price records
 - Projected sales revenues of farming activities and net income
 - Economic and financial risk management plans

⁶⁹ A complete assessment of the potential incorporation of some of these criteria in the schemes requires evaluating the capacity of farmers to comply with the criteria.

- Supply chain practices:
 - Records of existing buyers, identity, length, and type of relationship
 - Records of sales contracts
- Record-keeping
 - Records and archives of financial transactions the farm has conducted with supporting documentation

Climate Change Subthemes

- Climate change mitigation
 - Monitor greenhouse gas emissions
 - Monitor and measure carbon stocks at the farm/plantation
- Climate change adaptation
 - Climate change projections affecting the farm/plantation, risk assessment, and management plans
 - Assessment reports of climate vulnerability and adaptation capacities at the farm/plantation

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