



RESEARCH PROGRAM ON  
**Climate Change,  
Agriculture and  
Food Security**



# **Financing the Transformation of Food Systems Under a Changing Climate**

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# **About KOIS Invest**

KOIS Invest is an impact investment fund with portfolios in Europe and India, primarily in agriculture, education, employment, and healthcare; and an innovative finance advisory firm with a focus on sustainable living and climate change. Within the advisory arm, KOIS Invest aims to develop innovative and scalable financing structures that can channel public and private sector financing to tackle some of the most pressing development issues. KOIS Invest is headquartered in Brussels, with offices in London, Paris and Mumbai.

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# I. IMPERATIVE FOR ACTION TO BUILD LOW-CARBON AND RESILIENT GLOBAL FOOD SYSTEMS

**The global food system will need to produce food more efficiently and sustainably to achieve the Sustainable Development Goals ('SDGs') and meet the 2°C climate commitments of the Paris Agreement.** Agriculture, forestry and other land-use ('AFOLU') already contribute roughly 24 percent of total GHG emissions – of which net deforestation is responsible for approximately 10 percentage points and agriculture accounts for the other 14 percentage points.<sup>1</sup> By 2050, an increasingly depleted natural resource base and a growing global population – with per capita income increases and changing diets – will require the food system to deliver 50 percent more food.<sup>2</sup>

**As climate change affects food systems, governments, food and agriculture companies, and public and private investors need to better identify and address the numerous climate-related risks they face.** A 1°C increase in average temperatures can lead to a 5-10 percent decrease in the yield of major food and cash crop species.<sup>3</sup> Additionally, more frequent extreme weather events and natural disasters are expected to severely impact food systems least-equipped to handle these shocks: between 2003-2013, 25 percent of the impact of climate-related disasters were absorbed by the agriculture sector in low-income countries.<sup>4</sup> Climate impacts are also expected to cause significant price increases of staple crops: 37 percent for rice, 55 percent for maize, and 11 percent for wheat by 2050.<sup>5</sup> This will require actors to assess the exposure and risk profile of their portfolios and design innovative strategies to address these critical challenges.

**This can also be an inflection point to take advantage of new investment opportunities that the transformation to low-carbon and resilient food systems presents.** In 2016, the Business and Sustainable Development Commission estimated that business opportunities in the implementation of the SDGs related to food could be worth over US\$2.3t annually for the private sector by 2030. Investment required to achieve these opportunities would be approximately US\$320b per year, including use of technology, waste reduction and developing or expanding markets.<sup>6</sup>

**Climate-smart investments to transform food systems, however, are not yet at scale. This will require addressing core market failures to unlocking private sector financing from food and agriculture companies, domestic and international financial institutions, and specialised investors.** The progress in building climate-smart financial systems is still slow; and resilient and low-emissions agricultural supply chains, including zero net deforestation commitments, are not being supported by investment at scale. Indeed, climate finance has disproportionately flowed to mitigation finance, with renewable energy, energy efficiency, and sustainable transportation accounting for the overwhelming majority of investment; and, total adaptation finance – which is fundamental to transforming food systems – represents c.US\$22b (of which, only c.US\$4b for land use) of the c.US\$455b in total climate finance mobilised in 2016.<sup>7</sup> In order to increase climate mitigation and adaptation finance to transform food systems, there is a need to both: (i) embed climate considerations into the underlying financial system architecture through effective government policy and regulatory frameworks; as well as (ii) address core market failures to create new sustainable investment opportunities that incentivise private capital flows and strengthen the underlying economics of making financial systems climate-conscious.

Whilst this paper highlights the clear need and role for the former, it explores in greater depth innovative strategies to address the core market failures of the latter:

- 1. Lack of deep pipeline of bankable projects, today:** one of the biggest challenges to private sector investment in food systems is not the lack of pledged/committed capital seeking investments with measurable environmental benefits and financial returns, but rather identifying bankable projects with attractive risk-adjusted returns. In 2015, Forest Trends' Ecosystem Marketplace estimated that over 30 percent of capital committed for sustainable food and fibre production, habitat protection, or clean water remained undeployed (of the 128 banks, corporates, fund managers, family offices, and non-governmental organisations surveyed) – lack of deals was cited as the biggest obstacle to investment; despite this, encouragingly almost all planned to raise or reallocate more capital to the sector;<sup>8</sup>
- 2. High investment risk and lack of primary data/information asymmetries:** unproven/early-stage business models with long development lead times and technical assistance requirements, and uncertain financial/environmental upside – particularly within the smallholder farmer context in developing countries – reduce investor appetite for opportunities outside of business-as-usual agriculture and forestry investments. Additionally, a fundamental lack of accurate and accessible primary data both at the farm level and throughout the supply chain makes it difficult for corporate and financial investors to assess investment risks (both real and perceived) and execute risk-mitigation strategies, further discouraging capital deployment; and
- 3. Lack of intermediation to efficiently connect different pools of capital to investments:** currently high transaction costs and small ticket sizes pose significant barriers to the overall scale and growth of investments, as more commercially-oriented investors (and in particular institutional investors) prefer sizeable investment-grade assets with exit/liquidity features. While the underlying drivers are common to previous market failures (e.g., lack of data, early stage and/or disaggregated deals), they are also reflected in an ineffective and inefficient intermediation market: many transactions involve complex and/or bespoke terms and features, and smaller deals are difficult to aggregate, securitise, and match to the risk-return and liquidity features of large-scale investors.

**Against this backdrop, the CCAFS and its partners highlight a diverse set of policy options, innovative financial solutions, and strategies for how government, food and agriculture companies, public and private donors and investors can support the transformation to low-carbon and resilient food systems.** In November 2018, the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS), the BioCarbon Fund – Initiative for Sustainable Forest Landscapes-, the World Bank, and the United Kingdom's Department for International Development (DfID) held a scenario analysis workshop with 35 leading public and private financiers to help identify these innovative strategies. In addition, CCAFS and KOIS Invest conducted a series of 26 expert stakeholder consultations in early 2019 to further advance this work and develop this paper.<sup>9</sup>



II. ROBUST POLICY OPTIONS,  
INNOVATIVE FINANCIAL  
SOLUTIONS, AND STRATEGIES  
TO TRANSFORM FOOD SYSTEMS  
UNDER A CHANGING CLIMATE

This briefing paper identifies a set of recommended solutions to unlock private sector financing from food and agricultural companies, domestic and international financial institutions/banks, and specialised financial investors to transform food systems under a changing climate. Though there are encouraging signs that many of the strategies identified in this briefing paper can work – and have worked in targeted interventions – these strategies individually are not considered a short-term panacea, but rather represent a holistic set of recommendations that need to work in tandem to lead to transformative change over the next decades. Additionally, although this paper details how each solution can address each of three core market failures to unlocking financing, many solutions should be considered cross-cutting and can indeed address multiple market failures (e.g., strengthening the enabling environment, access to reliable primary data; blending public and private capital; or leveraging digital solutions to both develop pipeline and de-risk investments).

Below is a brief snapshot of the structure of this paper, outlining market failures, overall solutions, and recommended strategies to address each. Additionally, case studies are provided throughout the body of the paper, where relevant, to highlight specific examples of innovative financial solutions and strategies currently being piloted and scaled in the market. Finally, this paper concludes with a strategic roadmap for a way forward, which aims to provide clear action-oriented recommendations, respectively, for government, donors, corporates, and public and private sector investors in the short-, medium-, and long-term. This strategic roadmap is a fundamental call to action for these actors to make the transformation to low-carbon and resilient food systems a reality.

<b>Market failure</b>	<b>Overall solution</b>	<b>Recommended strategies</b>
<b>1. Lack of deep pipeline of bankable projects, today</b>	Create investment opportunities in the transformation of food systems	<ul style="list-style-type: none"> <li>A. Corporates raise the bar for sustainability on existing business-as-usual investments, and continue mainstreaming ESG commitments;</li> <li>B. Scale up green financing linked to climate outcomes;</li> <li>C. Government support to embed the external costs of unsustainable food systems into business-as-usual decision-making, create market incentives for new sustainable opportunities, and support market-building interventions (through regulations/national climate accounting, taxation and fiscal incentives, and public subsidy reform);</li> <li>D. Blended finance to develop a deeper pipeline of bankable projects and catalyse private investments in new markets and business models (by strengthening the ecosystem, developing ag. value chains, scaling pilots through link with private capital, and increasing co-investments); and</li> <li>E. Digital solutions to support pipeline development, as well as new standalone investment opportunities (by strengthening the enabling environment for mainstream adoption, increasing investments in R&amp;D/product development, financing early-stage market building, and facilitating aggregation and scale-up of digital services)</li> </ul>

Market failure	Overall solution	Recommended strategies
<p><b>2. High investment risk, and lack of primary data/information asymmetries</b></p>	<p>Accurately assess risk and deploy appropriate risk-mitigating mechanisms</p>	<p>A. Blended finance to de-risk and catalyse private capital (by standardising requirements/aggregation of public capital, realigning returns and leverage expectations, increasing effective application of risk tools, and increasing allocation of public capital for de-risking); and</p> <p>B. Equipping investors with data and risk tools necessary to execute better risk assessment and management strategies (by developing/sharing primary data and building benchmarks for due diligence, leveraging digital risk tools, and incorporating risk-sharing mechanisms)</p>
<p><b>3. Lack of intermediation to efficiently connect different pools of capital to investments</b></p>	<p>Intermediate/match to the respective risk-return profiles of different sources of private capital</p>	<p>A. Market-accepted climate valuation methodologies, as well as simpler and standardised products;</p> <p>B. Aggregation and securitisation to convert investment products into marketable securities to a wider pool of investors with different risk-return appetites;</p> <p>C. Deal matchmaking platforms to facilitate transactions between a pipeline of investable projects and pools of investment capital; and</p> <p>D. Shift in the investor mentality of the private sector, to take advantage of the growing momentum in blended finance to participate in less traditional asset classes and markets</p>

## 1. Create investment opportunities in the transformation of food systems

**A. In the immediate short-term, food and agricultural corporates can already easily ‘raise the bar’ for sustainability on existing business-as-usual investments – and continue mainstreaming environmental, social and governance (‘ESG’) commitments to green supply chains.** The prevailing sentiment from the World Economic Forum in Davos in January 2019 shows a mainstream shift in the business and investor communities towards thinking about climate change and its implications. Bridging the gap between high-level interest and concrete investment opportunities – and more importantly action on the ground – is, however, no easy task. Furthermore, many of these ESG commitments entail minimal measurement and reporting requirements.<sup>10</sup> While this strategy will not shift the needle by itself, it is nonetheless an important first step in embedding a sustainability dimension into business-as-usual decision-making.

- ***Increase internal communication and collaboration between corporate social responsibility (‘CSR’) and business teams:*** this will be key for corporates to identify cost-effective mechanisms that allow them to maximise business opportunities whilst placing sustainability at the core of their business. Only in this way will they be able to balance short-term profitability drivers with long-term value of sustainability for the bottom-line. This corporate understanding of the economic value of sustainability is increasingly evident particularly in Western consumer-facing markets with increased consumer awareness of fair trade and environmental sustainability. As an encouraging example, siloes between CSR departments and sourcing departments are being reduced as there is an increased appetite of companies to “strategise” the service supply to smallholder farmers (e.g., Olam’s Livelihood Charter).<sup>11</sup> But there is also a need to move away from pure customer- and corporate social responsibility-driven action: embedding sustainability thinking into the core business models – and budgeted (research and development, and operations) accordingly within their own balance sheets – across global supply chains can be a game-changer/transformational, particularly in markets where sustainability standards aren’t as strict
- ***Increase external communication and collaboration across corporates, other public/private sector actors, and consumers:*** public-private collaborative research/modelling of climate/financial risks, external ESG-focused conferences (e.g., Global Landscapes Forum), workshops (e.g., CCAFS scenario analysis workshop in November 2018), sustainability trade movements (e.g., Fairtrade), and consultative working groups (e.g., Cerrado Working Group; Smallholder and Agri-Food SME Finance and Investment Network’s Investment Prospectus process) can foster greater information sharing and collaboration between government, public and private financiers, food and agricultural companies, and civil society organisations. Sustainability trade movements and multi-stakeholder working groups, in particular, can help food and agricultural companies to understand the strategic value of sustainability and develop roadmaps and action

plans with each other and other local and international stakeholders to implement more resilient agriculture and sustainable practices along their supply chains. With clear – and realistic – objectives and action plans, these efforts can also send a clear message to other supply chain actors and markets of their commitment to influence long-term consumer and corporate behavioural change, as well as more effectively push a common agenda with public policymakers.

**B. Scaling up green financing linked to climate outcomes can also be a first step to attracting new and diversified mainstream institutional investors into climate finance, as well as an additional financial incentive for greater corporate action towards sustainability in the short-term.** There is a growing appetite by international private investors to incorporate green financing products linked to positive ESG performance, into their broader investment portfolios. Green financing products, including corporate and sovereign green bonds, have proven to be an important tool for attracting new and more diversified mainstream institutional investors interested in environmental co-benefits. In January 2017, for example, the French government’s first €7.5b green bond issuance – of which c.22 percent of proceeds related specifically to sustainable land use – was 3x oversubscribed by institutional investors.<sup>12</sup>

Institutional investors and sovereign wealth funds looking at agriculture, however, typically focus first on large-scale farmland and agriculture in more developed and emerging economies. For most potential issuers in the agricultural sector in developing countries – and in particular those working with smallholder farmers – interest rate differentials (if any) can often be too small of a financial incentive to justify the higher risk and added administrative costs related to reporting requirements at the primary producer (instead of intermediary) level. Although it is encouraging that interest in green financing products is growing, the market faces several challenges to scale in agriculture, including: high levels of uncertainty related to primary data at producer level, lack of standardised ESG metrics/clear definitions of sustainable agriculture and resilience/financial regulation, and high administrative costs related to traceability and reporting requirements. As many of these challenges are similar to unlocking financing in food systems more generally, they (and their recommended solutions) are highlighted in more detail later in this paper.

### **Case study 1: Bunge, Banco Santander Brasil, and The Nature Conservancy soy initiative**

As part of a commitment to eliminate deforestation from its agricultural supply chains globally by 2025, Bunge has partnered with Banco Santander Brasil and The Nature Conservancy to develop a scalable financing programme to promote soy production expansion on cleared pastureland in Brazil. Preferential terms pre-export loan terms will be offered to farmers in the form of lower interest rates, longer tenors or flexible repayment schemes, under the condition that farmers commit to avoid further deforestation or conversion of natural vegetation. The programme sets incentives where the financial, legal and environmental context in Brazil do not: long-term financing is not commonly available to farmers, law still permits opening of forested area for crop production, carbon markets are not yet bringing strong value to standing forest, and the perceived impact of adopting international environmental standards is still low.

**C. To truly shift the needle, however, government support is needed to fundamentally embed the external costs of unsustainable food systems into business-as-usual decision-making, create market incentives for new sustainable opportunities, and support market-building interventions.** Government action through regulation, taxation, fiscal incentives, and public subsidy reform can accelerate the transition from business-as-usual to climate-conscious business and finance at a systemic level in the medium- to long-term:

- ***Develop national climate accounting standards and create regulation to incorporate climate considerations into decision-making:*** central banks and regulators will need to play a fundamental role in integrating climate considerations into the decision-making of corporates, specialised financial investors, and domestic and international financial institutions/banks at a systemic level. Governments should create national advisory boards to develop national climate accounting standards (i.e., defining the boundaries of what sustainable agricultural practices are in the national food system, standardising ESG metrics, and developing climate accounting principles) in collaboration with civil society and industry bodies. The Task Force on Climate-related Financial Disclosure – which aims to increase transparency and efficiency of capital markets, by developing voluntary, consistent climate-related financial risk disclosures for use by companies in providing information to investors, lenders, and insurers;<sup>13</sup> or the World Economic Forum’s initiative to Build an Effective Ecosystem for ESG<sup>14</sup> – are examples of initiatives that can support development and sharing of best practices.

In the medium- to long-term, a concerted move towards mandatory reporting of sustainability metrics, climate accounting, and climate-related financial risk disclosures will be needed to increase transparency for capital markets and fundamentally embed climate considerations into the financial system architecture and onto corporate balance sheet accounting. This is an important consideration, especially for national finance ministers, given the implications that a lack of transparency/uncertainty around rising climate costs on food systems will have on sovereign debt markets. Some noteworthy early examples include the Central Bank of Paraguay’s recently-approved ‘Guide for Environmental and Social Risk Management’, to be integrated within the credit risk analysis of financial institutions;<sup>15</sup> legal frameworks, such as Article 173 in France, making it mandatory to report climate risk in financial institution portfolios and on ESG spending;<sup>16</sup> and the Central Bank in Bangladesh creating a sub-green finance department.<sup>17</sup>

- ***Enact a mix of taxation and fiscal incentive measures to embed external costs of unsustainable food systems and create market incentives for new sustainable opportunities:*** more effective fiscal policy can align corporate incentives and private finance by increasing the cost of unsustainable practices through taxation and creating new business opportunities. Canada’s Greenhouse Gas Pollution Pricing Act,<sup>18</sup> for example, will implement a federal revenue-neutral carbon tax (C\$20 per tonne in 2019, rising to C\$50 in 2022) – following on the success of British Columbia’s

provincial carbon tax in 2008. New Zealand's Zero Carbon Act,<sup>19</sup> and its considerations on nitrogen and methane taxation, is another encouraging example of progressive climate regulation. These taxes, however, still do not cover the significantly higher estimated global median social cost of US\$417 per tonne,<sup>20</sup> though they do represent a promising gradual first step and model to be replicated globally. Indeed, taxation can often be politically-sensitive and difficult to implement in the short- to medium-term (as is the case with Brazil's New Forest Code, which aims to financially penalise landowners that fail to meet/offset certain forest coverage requirements but has yet to be implemented since legislation passed in 2012). Canada's revenue-neutral model – in which carbon tax revenues are returned to corporations, small businesses and the public through lower tax rates and other fiscal incentives – was critical to winning public support.

Taxation and fiscal incentives can additionally create market incentives for new sustainable business opportunities (e.g., carbon offset markets). For example, market expectations of Brazil's New Forest Code coming into force has created a nascent potential market for agroforestry/forest restoration projects selling forest coverage/ carbon offsets. These new sustainable opportunities, however, can only monetise revenues if governments credibly and effectively embed a climate cost on business-as-usual agriculture/food systems and forestry.

In the short- to medium-term, access and penetration of carbon finance instruments in agriculture should also be pursued further. Whilst carbon finance's share in overall climate finance remains low, Article 6 of the Paris Agreement explicitly foresees international transfers of mitigation outcomes. A number of initiatives are under way that aim to build the methodological foundations and track record of successful transactions needed to enable the agriculture sector to fully participate in existing and future carbon markets. Noteworthy examples include the Transformative Carbon Asset Facility (TCAF), creating and demonstrating new types of carbon assets at scale that could be traded under Article 6, the BioCarbon Fund's Initiative for Sustainable Forest Landscapes' (ISFL) piloting of functional results-based approaches to emission reductions from, and in, the land use sector by taking jurisdictional approaches; and the recent completion of the first soil carbon sequestration based carbon credit transaction in Australia using innovative discounting methods to reduce monitoring, reporting and evaluation costs whilst boosting buyer confidence in results achieved. Given that pathways to a 2°C world call for large negative emissions from the land use sector, results-based carbon finance approaches have the potential to offer attractive opportunities to add income streams to investments in the agriculture sector that could be used in multiple ways and which would complement other carbon pricing tools mentioned elsewhere in this report.

- **Reform public subsidy programmes to reallocate significant public resources to more efficient market-building interventions:** while US\$580b are spent by governments on subsidising and regulating production or inputs per year, World Bank studies show that subsidies often fail to promote low-carbon and resilient food systems, and in some cases lead to an inefficient allocation of resources, environmental damage and other negative externalities.<sup>21</sup> Public subsidies need to be better targeted and used to incentivise private sector investment (e.g., reviewing state support of financial service providers to the agriculture sector to ensure commerciality is encouraged); create effective policies and regulation; and finance essential public goods and services such as human capital, agricultural research, extension services, land tenure registration, establishment of efficient finance and labour markets, and development of complementary public infrastructure.<sup>22</sup>

**D. Alongside government policies and regulations, blended finance – the strategic use of public and philanthropic capital – will play an essential role to develop a deeper pipeline of bankable projects and catalyse private investments into new markets and business models.** Currently while agriculture is a critical issue in many developing countries, it only represents 13 percent of blended finance deals – with a majority of deals in agriculture finance (ranging from short-, medium- and long-term loans, to leasing and insurance).<sup>23</sup> More can and needs to be done: specifically, early-stage support from donor capital, climate funds, multilateral development banks ('MDBs') and development finance institutions ('DFIs') to strengthen enabling environments, develop agricultural value chains, and finance higher-risk early-stage investments for pipeline development; and increased coordination and co-investment by corporate and private financial investors (both specialised financial investors and domestic and international financial institutions/banks) to bring these public-funded programmes and new business models to scale.

Four core strategies emerge:

- **Strengthen the broader ecosystem to create long-term enabling environment for project development:** development challenges across the broader ecosystem (e.g., poor infrastructure, lack of primary data, lack of clear legal/regulatory frameworks and property rights, underdeveloped human capital) will continue to hinder the ability to create bankable projects. Creating favourable enabling environments can have significant implications on project preparation: for example, improved road infrastructure and/or digital connectivity can massively reduce transaction costs and increase market linkages; similarly, improving primary data collection through agricultural extension services, national cadastral registers for property rights and collateral would significantly reduce the risk for financial institutions/banks to channel financing to smallholder farmers. Governments and national development banks need to take the lead to strengthen this underlying primary infrastructure. Donor capital from foundations, international development agencies, and climate funds can play a strong complementary role to government efforts; however, there is a need to

coordinate across development and climate finance programmes as to not duplicate efforts/work in isolation when what is needed is a holistic approach across different economic and social interventions supporting each other.

- ***Develop agricultural value chains through coordinated technical assistance programmes and pilot projects:*** strategically allocating donor capital and government subsidies for technical assistance (from farmer/SMEs and project developers to financial institutions/banks working with them), project aggregation, and pipeline development programmes across value chains can support and accelerate investment-readiness of early-stage investments. Incubator/accelerator platforms for new business models (e.g., IDH's vertical integration of value chains through cooperatives, contract farming and outgrower models) can additionally promote innovation and green investment in start-ups and pilot programmes on the ground.

Donors need to improve coordination, however, to prevent silo-ing small programme initiatives that may struggle to reach scale once donor funding lapses. There is already some movement towards this, with Germany, Norway, and the United Kingdom looking to pool and coordinate their international climate finance. This trend towards coordination needs to continue not only across international development finance, but also in partnership with national development banks. Additionally, more coordination is needed across aligning donor programme objectives. Currently, most donor programmes either focus on social or environmental impact, rather than addressing both simultaneously, even though both are inextricably linked. Narrowly focusing on one objective may have contradictory outcomes (e.g., agricultural intensification that may have environmental consequences).

## **Case study 2: Farmfit by IDH and the Mastercard Foundation**

*Farmfit* works on innovative tools for smallholder service providers to increase the efficiency, profitability and viability of service delivery and thereby of local value chains. By analysing over 40 smallholder service provider models across 20 countries, Farmfit has built evidence on best practices and key drivers for resilient and profitable smallholder farming. This has resulted in the development of a benchmarking database and business support functions for companies and banks that are willing to engage sustainably with smallholders.

By building the business case for financial institutions and value chain actors, Farmfit aims to show private investors that a risky investment in smallholders can translate into meaningful financial returns and impact. For instance, Farmfit advises service providers on how to minimise the costs of servicing farmers, how to build a supportive enabling environment and how to improve access to a package of financial services, input provision and innovative technologies. The Farmfit Fund provides concessional finance and match-making services to co-fund the design, implementation, and monitoring and evaluation of scalable projects.

- **Scale successful pilots through a more direct link between early-stage donor-funded programmes and private sector investment:** the strategic design and use of donor/ climate funds capital with the private sector in mind is needed to ensure that achievements from promising pilots are not lost once donor funding lapses (e.g., Farmfit by IDH). Political priorities and/or hope for quick wins by replicating global examples of successful pilot programmes (without consideration of local needs) can often lead to donors funding interventions that may not necessarily be demand-driven by the market; or worse, donors may be hesitant to use public capital to support interventions seen as directly benefitting corporations (which may be perceived as ‘evil’ and the main contributors to climate change). Early consultation with civil society and private actors (particularly food and agricultural companies on-the-ground) can ensure that development interventions explicitly address local market needs and can secure ongoing funding from the private sector for scale-up. Additionally, better primary data-sharing and connecting donor pilot programmes (that are providing early-stage technical assistance) to corporates/private financial investors (that need to provide scale-up capital) can also reduce origination and pipeline development costs for the private sector.
- **Increase co-investment between public and private stakeholders as new business models gain track record:** as track record in the sector develops, private capital can – and needs to – take a more proactive role in co-designing/co-investing in developing project pipeline. When early-stage upfront investment costs and risk levels remain high, investment by public actors, such as donors, MDBs/DFIs and climate funds, will still be required to test the profitability of new business models, though private investors should take responsibility for financing ongoing costs for scale-up. Indeed, by having ‘skin in the game’, private sector actors will align incentives to ensure this clear link between upfront public funding and on-going private sector investment. This public-private partnership will also help public and private actors to develop a common language and collaborate to test new models that maximise business opportunities with a sustainability lens.

Additionally, co-investment will help private investors build track record in sustainable investments. Encouragingly, there are many investment funds already scaling up co-investment with the public sector (e.g., Althelia Climate Fund II and Land Degradation Neutrality Fund by Mirova Natural Capital, AGR13 by Rabobank, Tropical Landscape Finance Facility by ADM Capital and BNP Paribas). In the longer term this track record will play an essential role to crowd-in mainstream institutional investment and green corporate supply chains (e.g., TLFF notes), thus supporting a transformational shift from purely consumer demand-side driven action to sustainability as business-as-usual.

### Case study 3: AGR13

*AGR13 Fund*, launched in October 2018, aims to unlock US\$1b for forest protection and sustainable agriculture and bridge “the gap between the needs of farmers and the limitations of the banks”. Specifically, the fund aims to provide local and smallholder farmers access to financing and skills to transition to sustainable and climate smart agriculture, by blending public and private sources to enable projects that would have otherwise not materialised due to risk profile.

AGR13 Fund consists of a junior capital Finance Fund (FF) and a related TA Fund (TAF). The FF co-invests alongside commercial banks/senior capital into sustainable agricultural supply chains through subordinated loans and guarantees. Risk mitigation offered by guarantees is primarily for tenor extension, (partial) credit guarantees, as well as first loss risk, and by loans for subordination in cash repayment. The TAF provides support for pipeline development, monitoring and evaluation and capacity-building.

- E. Digital solutions have the potential to both support pipeline development, as well as represent new standalone investment opportunities. But digital disruption at scale will need coordinated action between government, public and private capital providers, and other ecosystem stakeholders.** There is significant focus on the role that digital solutions can play in increasing productivity, reducing costs and improving delivery channels for climate-smart agriculture. Indeed, innovative digital solutions can strengthen pipeline opportunities in food systems in many ways, in particular by: sourcing SME/smallholder farmer primary data efficiently and cost-effectively; facilitating dissemination of technical knowledge/information, including agricultural best practices and up-to-date market information; increasing SME/smallholder farmer access to capital/financing through mobile solutions; reducing trade costs for value chain actors by streamlining/digitalising trade logistics, as well as financial intermediation; strengthening quality input procurement and market linkages between smallholder farmers and supply chains through digital platforms and marketplaces; and improving traceability to ensure supply chain origin, quality and ESG-sustainability. Furthermore, in addition to supporting broader pipeline development for opportunities in food systems, these agri-tech/fin-tech start-ups represent new business models that can also be a nascent set of standalone investment opportunities for venture capital.

A number of innovative digital start-ups focused on transforming food systems already exist – though none at truly disruptive scale: for example, mobile solutions to disseminate agricultural best practices/market information (e.g., Digifarm with Safaricom in Kenya;<sup>24</sup> BlocRice with Oxfam in Cambodia);<sup>25</sup> satellite/drone imagery, soil sensors (e.g., HARA in Indonesia), artificial intelligence (e.g., Tanaris in Israel),<sup>26</sup> big data (e.g., Crop Performance Intelligence Platform),<sup>27</sup> and automation systems (e.g., Hands Free Hectares in the UK)<sup>28</sup> for precision farming; digital marketplaces for market linkages (e.g., Twiga Foods in Kenya;<sup>29</sup> Binkabi);<sup>30</sup> blockchain/big data for primary data record-keeping/proof of income to increase access to capital (e.g., AgriLedger),<sup>31</sup> equipment leasing (e.g., Hello Tractor);<sup>32</sup> satellite technology/big data to address collateral/property rights (e.g., Land LayBy Kenya);<sup>33</sup> and blockchain for traceability (e.g., U.K.-based retailer Coop with Provenance;<sup>34</sup> Carrefour with IBM Food Trust).<sup>35</sup>

#### Case study 4: HARA

*HARA* is a blockchain-based data exchange and smart farming platform, including c.12k farmers across over 200 villages in Indonesia. HARA aims to create a more transparent supply chain by collecting relevant agricultural and farmer data through connected devices, sensors and satellite data, whilst also providing commercial incentives for farmers to provide data. Key platform features include farmer digital ID registration, digital land-tagging, farm crop and input usage collection, etc. This data can be used by: (i) farmers and food and agriculture companies to improve farming management, inventory management, product flow scheduling, delivery reliability, and reduced loss from product spoilage, etc.; and (ii) financial institutions to formulate farmer credit scoring and risk profiling, calculate insurance premiums with better risk predictions, and facilitate mobile banking implementation.

For these innovative digital solutions to be truly transformational for food systems, however, there needs to be mainstream roll-out and adoption by the end-users: SMEs/smallholder farmers, supply chain actors, and financial intermediaries. But digital disruption at scale faces many challenges – especially given often high customer education/acquisition and service costs, low smallholder farmer purchasing power, and a highly fragmented market, in addition to physical infrastructure, regulatory, and cultural challenges. Many of the same strategic recommendations applicable to scaling finance in the broader sector are similarly applicable to scaling finance for digital smallholder agri-tech and fin-tech solutions. Specifically:

- ***Strengthen the enabling environment to support development and mainstream adoption of digital technologies:*** government/donor capital to support physical/primary infrastructure and data development; policy and regulation to provide incentives for start-ups/innovation risk, as well as developing straightforward regulatory frameworks/clear oversight over nascent technologies and industries (e.g., data privacy, digital market exchange regulations); donor capital and climate funds to support capacity-building with potential end-users (i.e., improving literacy and understanding of technology, working around traditional cultural norms and traditions that may discourage adoption of new technologies).
- ***Increase investment in demand-driven R&D/product development adapted to local context for greater uptake:*** universities/think-tanks/research organisations can support ecosystem development through demand-driven research targeted at addressing specific end-user challenges (and also how best to design a solution that can influence farmers' and SMEs' behavioural change and increase adoption of low-emissions and climate-resilient practices) for dissemination as a public good; incubators/accelerators can then leverage this knowledge to support local start-ups in product development and entrepreneurial scale-up.

- **Use donor capital and climate finance to take the lead in early-stage market-building:** similar to other interventions, donor capital, climate finance and even MDBs and other DFIs will be key to supporting the high upfront (and high risk) development costs of early-stage digital ventures from design through to pilot stage. This can be particularly important within the smallholder farmer context in developing countries, given that the challenges of lower revenues, higher service costs, and higher fragmentation may disincentivise the private sector from addressing this market on its own. Donor capital and climate finance can alternatively be used through a challenge fund to incentivise local entrepreneurs to develop digital solutions adapted to the local smallholder context.

As technologies and their applications mature, the private sector can then take a more proactive role in providing additional investment in their development and application, further reducing technology and service costs for greater mainstream adoption (as has been the case in the clean energy sector).

- **Facilitate aggregation and scale-up of digital services through bundled partnerships and/or through supply chain networks:** partnerships with banks and mobile network operators ('MNOs') will be key to lowering the costs of aggregation and increasing accessibility/adoption of digital services by end-users. For example, bundling together digital agri-services with traditional mobile services through extensive bank/MNO agent networks can increase adoption. Additionally, working with large off-takers/aggregators that are beginning to think about or incorporate climate considerations into the business case (and not through CSR budgets) can also be a short-term pathway to pushing adoption of digital solutions across the value chain.

## 2. Accurately assess risk and deploy appropriate risk-mitigating mechanisms

### A. Blended finance is essential to de-risk investments and catalyse private capital.

Concessional capital is particularly needed when financing the transformation of food systems, given the early-stage nature and the longer tenure of potential investments opportunities, as well as the exposure to agronomic/climate risks and macro risks common to investing in developing markets. Designing more innovative financing structures blending public and private capital (e.g., Global Innovation Lab for Climate Finance) can be instrumental to addressing these specific risks across potential transactions.

#### Case study 5: Global Innovation Lab for Climate Finance

The *Global Innovation Lab for Climate Finance* identifies and develops innovative financial instruments to mobilise private finance for climate mitigation and adaptation. The Lab brings public and private actors together to share goals to turn innovative ideas into investable mechanisms ready for piloting and implementation. The Lab has launched 35 innovative financing instruments to date, enabling to mobilise US\$1.5b. Several instruments have focused on smallholders already, including the Climate-Smart Lending Platform by F3 Life (see Case Study 6) the Responsible Commodities Facility by BV Rio, and a Smallholder Forestry Vehicle.

The work of the Global Innovative Lab is key in a context where more adequate and demand-based financial products are needed by smallholders to access not only working capital, but also investment capital for climate resilient and low carbon solutions. By bringing public de-risking capital, the Lab helps develop financial products and services that take into account the additional challenges that climate outcomes will require: longer tenors, larger upfront costs and incentive mechanisms that accelerate climate action in the agricultural sector.

Private investors, however, can often be discouraged from blended finance because of high administrative costs (in fundraising, due diligence, and reporting requirements), misalignment of expectations between public and private investors (particularly around risk-return profiles and leverage ratios), and lengthy time often required to negotiate terms and secure blended public capital.

Four key strategies can help scale blended finance flows and its effectiveness in catalysing private capital:

- **Standardise requirements/aggregation of public capital to reduce administrative costs:** while there is already some progress across global industry bodies (e.g., MDBs, DFIs and the International Development Finance Club) to standardise requirements and processes, strict pre-conditions (e.g., priority geographies, value chains) and bureaucratic processes still represent significant costs – both in terms of time and money – and disincentivise the private sector from seeking public capital. In addition,

while blended capital is available to many DFIs, lack of incentives for risk-taking and/or capacity limit its use. In developing countries the role of national DFIs in blended finance, including in agriculture, is likely to be much more significant than the role of international DFIs – and they will likely require specific benchmarking and standardisation processes. Finally, aggregating public capital into common blended finance windows/platforms across DFIs and other public/philanthropic investors can help standardise as well as reduce administrative costs for private financiers.

- **Realign returns and leverage expectations:** public capital providers can often demand investment returns that are comparable to commercial/market rates, which disallows risk-taking; similarly, expectations of high public-private leverage ratios further limit the universe of potential projects to the lowest-hanging fruit – for example, to late-stage (processing/trade) opportunities with low risk profiles. This has the dual effect of not only limiting the amount of risk capital available, but also crowding out potential private sector investors – both of which are counterproductive to what the sector needs and what the role should be for MDBs/DFIs, climate funds, and other public capital providers. Instead, they should place more emphasis on absorbing early-stage risks for the private sector (e.g., piloting innovations, reducing transaction costs) and providing risk-mitigation instruments (e.g., guarantees, hedging, and insurance). Ultimately, this implies taking on greater risks and being prepared for higher default rates by building in greater loss provisions on balance sheets. Building up qualified internal teams – or leveraging intermediaries – with experience at the cross-section of finance, agriculture and climate change, can facilitate stronger alignment of expectations and more efficient deployment of capital.
- **Increase effective application of risk tools:** while guarantees and risk insurance are currently present in 21 percent of blended finance deals and growing in importance,<sup>36</sup> key barriers remain that prevent a wider use of guarantees for private capital mobilisation, including for example limitations on guarantees qualifying as ODA within OECD guidelines. Recent policy and regulatory trends have the potential to accelerate the growth of guarantees as part of the blended finance toolkit, particularly for MDB/DFIs, including but not limited to: (1) pilot institutional reforms such as allowing for full wrap-around guarantees (as currently allowed for example for some MDBs on an exceptional basis) or reducing the equity capital allocation required for partial/political risk guarantees; (2) incentives and staff training on guarantees (as well as broader menu of blended finance tools); and (3) measuring guarantees as development aid, by taking into account the opportunity costs to issue guarantees and the mobilisation effect on private investment. In addition new market-based insurance solutions are needed to address current gaps, and/or provide cost-effective alternatives to the current risk mitigation tools from public actors.

- ***Increase allocation of capital from bilateral/development agencies, national/international climate funds, MDBs/DFIs and other public/philanthropic capital for de-risking:*** significant amounts of resources have already been committed to addressing climate change and transforming food systems, but these have failed to deliver the transformational climate and development outcomes at scale needed, given bureaucratic processes, insufficient focus on systemic/transformational changes and/or inefficient/market-distorting practices. In addition to the role that MDBs/DFIs and national/international climate funds can play in providing de-risking capital, it is critical that the billions of US\$ already mobilised and invested as climate finance (specifically designed for driving climate outcomes) also play a catalytic role on this.

**B. Recourse to blended finance de-risking capital should be considered a temporary solution to bridge current financing gaps. In the longer term, investors need to be equipped with the data and risk tools necessary to better execute risk assessment and management strategies.** Specifically, access to primary data and better investment, credit, and climate risk assessment strategies are needed by private capital providers at the portfolio/project investment level (e.g., corporate and specialised financial investors), as well as at the SME/smallholder farmer loan portfolio level (e.g., corporate and financial institutions/banks), respectively. Additional risk management strategies, including ensuring formal property rights/alternative forms of collateral and risk-sharing through insurance, can also reduce investor risk:

- ***Develop and share primary data to reduce information asymmetries; build benchmarks for investor due diligence:*** primary data collection/dissemination and publicly-verifiable investment data platforms (both on financial opportunities/risks, as well as on impact) can facilitate investor due diligence by allowing public and private investors to more accurately value risk-return profiles and incorporate climate considerations in the investment process. Already as a first step, existing donor programmes and government agricultural extension services can systematically share agricultural field data on publicly-available platforms; similarly, donor-funded partnerships with food and agricultural companies should require a minimum level of information dissemination as a public good (keeping in mind business sensitivities) as a condition for access to public funding. In the longer term, governments will need to invest significantly in strengthening agricultural extension services and primary agricultural data collection/sharing systems, whilst also putting in place general data protection and information privacy regulatory frameworks.

Finally, DFIs/MDBs can publish portfolio performance data across financial, social and environmental outcomes from decades of investments with SMEs/smallholders farmers in emerging markets, thus providing a unique benchmark for investors on real investment opportunities and risks (e.g., Global Emerging Markets Risk Database by a consortium of DFIs).<sup>37</sup> As corporates and private financial investors build track record, investor data platforms focused on sustainability investments can aggregate this information, as is done in traditional financial markets; similarly, initiatives to

aggregate environmental and climate-related impact metrics across investment portfolios for risk management can be developed (e.g., Clarmondial's Environmental Impact Report in Agriculture initiative).<sup>38</sup>

- **Leverage digital solutions to develop data and risk assessment and management tools:** digital solutions can play an important role in increasing the accuracy/reducing the cost of primary data collection, to address the high cost or inability to assess farmer productivity/profitability; develop alternative credit scoring systems; strengthen formal property rights; and create alternative forms of collateral. Addressing these fundamental issues is particularly important to unlocking financing from financial institutions/banks that may otherwise not seek recourse to blended finance given administrative costs and/or are not incentivised to lend outside property/real asset sectors given the higher returns/lower risk in these markets, as compared to the agriculture sector. Many innovative digital solutions to address these challenges already exist: mobile technology (e.g., Climate Smart Lending Platform for credit risk assessment), blockchain (Binkabi in Nigeria using blockchain tokens as movable collateral),<sup>39</sup> and big data and machine learning (e.g., FarmDrive with Safaricom to build credit score for smallholder farmers in Africa).<sup>40</sup>

Even with the support of these innovative digital solutions, in the longer term, governments – with donor capital for capacity-building support – will still need to fundamentally address the legal and institutional frameworks underpinning agricultural data collection, national credit risk rating systems/regulations and formal property rights/national cadastral registers.

### Case study 6: The Climate-Smart Lending Platform

The *Climate Smart Lending Platform* ('CSLP') aims to develop climate-smart lending deals between local lenders and smallholder farmers who are required to adopt sustainable and climate resilient agricultural practices. The CSLP uses remote-sensing mobile technologies to identify climate risks and assess the bankability of farmers located in environmentally suitable areas. By doing so, the CSLP provides innovative data-driven tools to price externalities associated with unsustainable farming practices and reduce the resulting credit default by smallholder farmers, which ultimately improves agricultural lenders' portfolio resilience to climate change. The platform also enables to overcome cost barriers in the management of smallholder credits by streamlining loan origination processes and providing access to a plug-and-play credit-scoring tool.

- ***Incorporate risk-sharing mechanisms:*** although less frequently used, insurance products can be an additional tool (even as an alternative to guarantees) to protect investors and creditors from key real and perceived risks of investing in emerging markets. Insurance products (both at end-user and portfolio level), however, remain nascent and still require donor capital support for product development and pilot-testing. Crop index-based insurance is a common example leveraging digital solutions to transfer risk from smallholder farmers and their creditors to insurance underwriters. Although there are some successful examples of crop index-based insurance in developing countries and how smallholder farmers have benefited through insurance pay-outs (e.g., R4 Rural Resilience Initiative;<sup>41</sup> ACRE Africa with Syngenta),<sup>42</sup> many have been highly subsidised and mainstream adoption remains limited. Other financial instruments to transfer risk are being developed, including risk hedges against climate and price risks for smallholders (e.g., International Fund for Agricultural Development's CACHET initiative),<sup>43</sup> but are still unproven.

### 3. Intermediate/match to the respective risk-return profiles of different sources of private capital

#### A. The development of market-accepted climate valuation methodologies, as well as simpler and standardised products will support the creation of climate finance products as an investable and well-understood asset class for financial investors. Specifically,

- **Develop an industry-standard climate valuation methodology:** currently, there is no adequate valuation of natural capital. Similarly, there is no generally-accepted valuation appraisal methodology to measure climate outcomes and their value to the business bottom line. This lack of a market-accepted climate valuation methodology prevents investors (even those that understand the long-term value of sustainable practices) from embedding climate considerations into investment decision-making as underlying business valuations cannot justify the additional costs of sustainable practices. To this end, the development of sustainability guidelines for investors and integrated profit and loss (IP&L) reporting frameworks – either as mandated by regulation or simply as generally-accepted accounting principles by the industry – can play a critical role in communicating natural, social, and financial value to investors.

Going forward, collecting IP&L reporting data and information, as well as climate outcome metrics, to better understand the environmental and social impact of ESG/ green investments and their underlying financial benefits (e.g., improved productivity, cost savings, reduced risks) will help convince a broader pool of mainstream/ institutional investors of the value creation of sustainable/climate-oriented practices.

- **Standardise investment products to become a well-understood asset class:** many blended finance transactions are still fairly complex and involve bespoke structures and terms, and do not meet the needs of commercial investors – particularly for features such as exit/liquidity and domicile. This increases the costs and time to market, posing significant barriers to attracting private investors (and in particular, institutional investors) at scale. Standardising overall structures, as well as the underlying terms and conditions by type of capital (e.g., standardised guarantees, central counterparty clearing, for example), can ease the participation of private capital – by reducing complexity and costs, as well as addressing the requirements of institutional investors for features like liquidity and rating. Public-private initiatives (e.g., Global Innovation Lab for Climate Finance) and other intermediaries can take the lead in designing these bespoke innovative financial structures that can cope with specific smallholder risk profiles, whilst creating standardisable investment features/ products that can also be easily understood by mainstream institutional investors (e.g., Food Securities Fund and its liquid fixed income structure).

### Case study 7: Food Securities Fund

The Swiss investment advisor Clarmondial developed the *Food Securities Fund*, which combines an innovative investment strategy with a standard and liquid fixed income fund structure in Luxembourg.

The fund addresses the gap in season-long (i.e. pre-harvest) working capital loans for agricultural production in emerging markets, to contribute to the UN Sustainable Development Goals and promote climate smart practices. It uses blended finance to reduce the risk of each loan, through a combination of first loss guarantees by agricultural corporates and a pari passu risk sharing agreement with USAID's Development Credit Authority (subsidised by the Bureau for Food Securities) on the remaining exposure. Quarterly liquidity is available to investors due to various factors, especially portfolio diversification across commodity seasons.

Clarmondial recently announced a firm investment commitment by Lombard Odier. The Fund is also supported by Convergence, the global network for blended finance, and Climate-KIC, as well as by leading companies in the agricultural sector and Conservation International.

### B. Aggregation and securitisation will also be key to converting investment products into marketable securities to a wider pool of investors with different risk-return appetites.

It is estimated that US\$5.8b of project level finance commitments for land use mitigation and adaptations were made in 2012/2013, while total business-as-usual investments in agriculture and forestry were in the hundreds of billions.<sup>44</sup> One of the biggest challenges for many investors is the inability to match investable opportunities to their respective risk-return profiles. This is especially important, for example, for institutional investors that may require large ticket sizes and stable returns, with risk levels comparable to investment-grade corporate bonds. Consolidating the current pipeline of smaller deals and funds in sustainable agriculture (outside of large forest and agricultural landholdings) for investment, however, is difficult. In sustainable land use, for example, the large bulk of private sector capital has flowed into sustainable timber investment management organisations, the primary (if not only) mainstream asset class in the sector; while newer and/or more innovative investments across forest conservation, reforestation, and sustainable agriculture for avoided deforestation, typically ranging from c.US\$5-20m, are often too small for institutional investment.<sup>45</sup>

Both MDBs/DFIs and private asset managers can play a key role through asset pooling and securitisation: MDBs/DFIs can set ambitious targets to mobilise private finance, and scale their portfolios by thematic/sector areas globally, with food transformation/agriculture as one core thematic (rather than by geographical targets); and private asset managers can help create multi-billion dollar funds/fund of funds, working with DFIs to pool and diversify portfolios across this core thematic. In addition, through securitisation, risk tranches can be layered to offer higher-risk products to public/philanthropic and/or impact investors with greater risk appetite, whilst still allowing investors with lower risk appetite to participate in transactions (e.g., TLFF).

### Case study 8: The Tropical Landscape Finance Facility by ADM Capital and BNP Paribas

The *Tropical Landscape Finance Facility* (TLFF) offers long-term loans to projects in renewable energy and sustainable agriculture where outcomes include improved livelihoods, reduced deforestation, better agricultural efficiency, restored lands and other objectives.

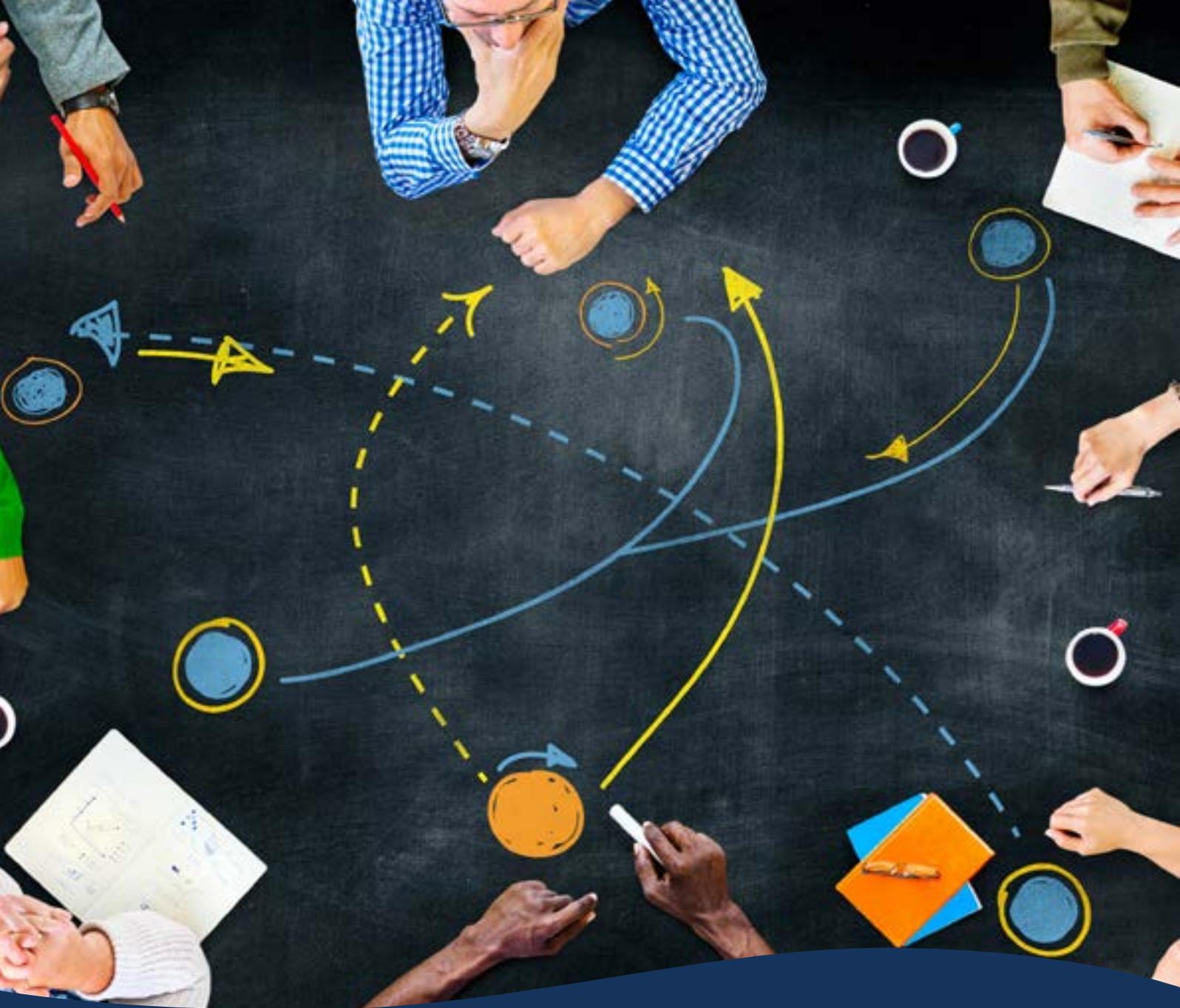
TLFF consists of a “Loan Facility” that funds early-stage projects using credit-enhancing instruments of development investors to leverage private finance. Once the projects reach maturity and generate sustainable cash flows, they are aggregated and repackaged as “Medium-Term Notes” sold by BNP Paribas to patient capital investors in tranches according to risk capacity (sector/geography), with the objective to reach US\$1b. This structure helps to recycle loan capital for further lending activity.

In 2018, TLFF launched its inaugural transaction: a US\$95m loan to help finance a sustainable natural rubber plantation in two heavily degraded landscapes in Indonesia. This will enable PT Royal Lestari Utama – an Indonesian JV between Barito Pacific and Michelin – to train, employ and provide stable revenues to thousands of farmers while also protecting tropical rainforest on the plantation.

- C. Deal matchmaking platforms are needed to facilitate transactions between a pipeline of investable projects and pools of investment capital.** IA matchmaking platform can reduce the transaction costs of matching demand for and supply of investment capital. For example, in addition to generating data and intelligence on blended finance deals globally, Convergence provides an online matchmaking platform, providing investors with access to high quality deals currently fundraising, as well as recommendations based on interest.<sup>46</sup>

Additionally, matchmaking platforms can serve as an aggregation tool to aggregate investment products (e.g., fund of funds) at the necessary scale for larger institutional investors. MDBs/DFIs (e.g., the World Bank’s Invest4Climate platform, but with a stronger focus on agriculture) and incubators/accelerators, for example, can play an aggregator/matchmaking role to identify, prepare initiatives for scaling up, and make the information public to different types of investors. By building investment-ready portfolios of bankable projects, it can also match investments to investors with different tickets size requirements (e.g., US\$5-20m for impact investors, US\$100m for commercial banks, larger for institutional investors).

- D. Finally, there needs to be a fundamental shift in the investment mentality of the private sector.** Financial investors need to reframe risk-return calculations and look to longer-term investments (e.g., evergreen funds where technical financial solutions can provide alternate forms of liquidity to investors, instead of forced short-term exits). While fiduciary duties and regulations (e.g., Basel III) hamper investments in emerging and frontier markets, the growing momentum for blended finance offers private investors a unique opportunity to start participating in less traditional asset classes and markets, with public capital increasingly willing to de-risk SDG-related investments. At the portfolio level, this is a significant opportunity to diversify portfolios through non-correlated investment across business models, value chains and geographies.



## III. STRATEGIC ROADMAP FOR WAY FORWARD

Short-term strategies (1-3 years)	Medium-term strategies (3-10 years)	Long-term strategies (10+ years)
<b>Government</b>		
<ul style="list-style-type: none"> <li>Support ecosystem development through demand-driven research by public research institutions targeted at addressing local end-user challenges for dissemination as a public good</li> <li>Create national advisory boards to develop national climate accounting standards (i.e., defining the boundaries of what sustainable agricultural practices are in the national food system, standardising ESG metrics, and developing climate accounting principles) in collaboration with industry bodies</li> <li>Begin multi-stakeholder consultation (e.g., public/civil society, business, government) to develop economic/environmental modelling and policy advice on climate-smart regulation</li> <li>Reallocate more international/national climate finance to de-risking instruments</li> </ul>	<ul style="list-style-type: none"> <li>Move towards mandatory reporting of national climate accounting standards and climate-related financial risk disclosures</li> <li>Enact regulation and tax/fiscal incentives to legally embed sustainability into accounting/financial calculations (e.g., carbon, forest coverage taxes)</li> <li>Reform public subsidy programmes that may be market-distortionary/politically-popular; reallocate resources to more efficient market-building interventions</li> </ul>	<ul style="list-style-type: none"> <li>Strengthen broader ecosystem to create long-term enabling environment for project development (i.e., develop physical/primary data infrastructure, human/social capital, property rights, legal and investment frameworks)</li> <li>Support consumer behavioural change through regulation and/or development/educational programmes</li> </ul>
<b>Public and philanthropic donors (w/o financial return)</b>		
<ul style="list-style-type: none"> <li>Support ecosystem development through demand-driven research by civil society actors targeted at addressing local end-user challenges for dissemination as a public good; incubate new demand-driven digital technologies/business models addressing local market needs</li> <li>Develop agricultural value chains through coordinated technical assistance programmes and pilot projects – while improving donor coordination across programmes/alignment of programme objectives</li> <li>Leverage digital solutions to support technical assistance and pipeline development; and develop primary data</li> <li>Scale successful pilots through more direct links, stronger collaboration and primary data-sharing between donor-funded project preparation/pipeline development programmes and public/private investors</li> </ul>	<ul style="list-style-type: none"> <li>Develop common blended finance window/platform across DFIs and other public/philanthropic investors to reduce administrative costs for private financiers</li> </ul>	<ul style="list-style-type: none"> <li>Finance development programmes to complement government efforts to strengthen broader ecosystem/enabling environment for project development</li> <li>Support consumer behavioural change by financing development/educational programmes</li> </ul>

**Short-term strategies**  
(1-3 years)

**Medium-term strategies**  
(3-10 years)

**Long-term strategies**  
(10+ years)

**Public and philanthropic donors (w/o financial return)**

- Co-design/co-invest new donor-funded pilot programmes with private investors; structure public capital to finance upfront costs with private capital to finance on-going project costs
- Standardise public capital investment requirements and administrative processes to streamline the fundraising process for investors seeking blended capital
- Reallocate more international/national climate finance to de-risking instruments
- Structure/design new financial instruments to mobilise private finance (e.g., blended/layered capital structures, risk-transfer)

**Public and philanthropic investors (w/ financial return)**

- |   |   |   |
|---|---|---|
| <ul style="list-style-type: none"> <li>• Build up qualified teams to deploy capital in a more-timely fashion, as well as better understand private sector investor requirements; engage with intermediaries at cross-section of agriculture and finance</li> <li>• Recalibrate returns and leverage expectations (i.e., increase risk appetite and default/loss provisions to cover early-stage risks; be pragmatic and flexible about public:private leverage ratios closer to 1-2x); set targets for private sector mobilisation</li> <li>• Structure/design new financial instruments to mobilise private finance (e.g., blended/layered capital structures, risk-transfer)</li> <li>• Standardise public capital investment requirements and administrative processes to streamline the fundraising process for investors seeking blended capital</li> <li>• Leverage digital solutions to support pipeline development; and develop data and risk assessment and management tools</li> </ul> | <ul style="list-style-type: none"> <li>• Increase effective application of risk tools, through institutional reforms (e.g., full wrap around guarantees), incentives and training for staff, and ODA accounting</li> <li>• Develop common blended finance window/platform across DFIs and other public/philanthropic investors to reduce administrative costs for private financiers</li> <li>• Create investment matchmaking platforms to aggregate deals and facilitate investor due diligence/risk assessment</li> </ul> | <ul style="list-style-type: none"> <li>• Finance development programmes to strengthen broader ecosystem/enabling environment for project development</li> </ul> |
|---|---|---|

Short-term strategies (1-3 years)	Medium-term strategies (3-10 years)	Long-term strategies (10+ years)
<b>Public and philanthropic investors (w/ financial return)</b>		
<ul style="list-style-type: none"> <li>Coordinate with industry/national advisory boards to develop and adopt generally-accepted climate/natural capital accounting and valuation methodologies; climate-related financial risk disclosures</li> <li>Share portfolio performance data across financial, social and environmental outcomes in emerging markets, to provide a benchmark for investors on real investment opportunities and risks</li> </ul>	<ul style="list-style-type: none"> <li>Pool portfolios by thematic/sector areas globally, with food transformation/ agriculture as one core thematic (rather than by geographical targets)</li> </ul>	
<b>Corporate actors</b>		
<ul style="list-style-type: none"> <li>Continue to 'raise the bar' for climate performance in existing investments (e.g., creating responsible palm oil standards, soy moratorium and the Cerrado declaration)</li> <li>Create collaborative internal cross-functioning teams to develop common language across sustainability/corporate social responsibility and business units</li> <li>Collaborate in multi-stakeholder working groups that can develop a common language around sustainability (importantly, between corporate and private financiers); create/share a wealth of data/science and knowledge to help inform action/investment decisions; develop clear – and realistic – implementation plans; and send clear message of corporate commitment to consumers and public policymakers</li> <li>Expand market offerings for green financing products like ESG/green bonds in agriculture, linked to ESG at primary producer level</li> <li>Coordinate with industry/national advisory boards to develop and adopt generally-accepted climate/natural capital accounting and valuation methodologies; climate-related financial risk disclosures</li> </ul>	<ul style="list-style-type: none"> <li>Invest in agricultural research and development to develop climate-smart inputs/ technologies; new sustainable opportunities</li> <li>Shift from pure customer- and corporate social responsibility-driven action to sustainability at the core of business models (i.e., maximise business opportunities with sustainability thinking; incorporate sustainability accounting into balance sheet)</li> </ul>	<ul style="list-style-type: none"> <li>Support consumer behavioural change through product development/marketing campaigns to create new opportunities in sustainable business models; sustainable trade movements</li> <li>Increase transparency and support power balance shift so consumers and specifically producers have a much greater voice</li> </ul>

**Short-term strategies**  
(1-3 years)

**Medium-term strategies**  
(3-10 years)

**Long-term strategies**  
(10+ years)

**Corporate actors**

- Incorporate climate adaptation/resilience risk analysis into ESG approaches and financial risk approaches  
Co-design/co-invest with blended capital in ‘low-hanging fruit’/existing donor-funded pilot programmes as bankable projects to develop track record; increase ‘skin in the game’ and take increasing responsibility for financing ongoing costs to ensure project sustainability even if public capital needed to finance upfront costs
- Leverage digital solutions to support pipeline development; and develop data and risk assessment and management tools

**Private financial investors**

- |  |  |   |
|--|--|---|
| <ul style="list-style-type: none"> <li>• Collaborate in multi-stakeholder working groups that can develop a common language around sustainability (importantly, between corporate and private financiers); create/share a wealth of data/science and knowledge to help inform action/investment decisions; develop clear – and realistic – implementation plans; and send clear message of commitment to own investors and public policymakers</li> <li>• Co-design/co-invest with blended capital in ‘low-hanging fruit’/existing donor-funded pilot programmes as bankable projects to develop track record; increase ‘skin in the game’ and take increasing responsibility for financing ongoing costs to ensure project sustainability, even if public capital needed to finance upfront costs</li> <li>• Leverage digital solutions to support pipeline development; and develop cost-effective data collection and risk assessment and management tools</li> </ul> | <ul style="list-style-type: none"> <li>• Reframe investment mentality/risk-return calculations and look to longer-term investments</li> <li>• Standardise overall blended/layered capital structures and underlying terms and conditions by type of capital to create a well-understood asset class for investment by mainstream institutional investors</li> <li>• Create portfolio diversification strategies (across business models, value chains, geographies, asset classes) to blend mainstream vanilla investments and more adventurous/less traditional asset classes (with support from public capital)</li> </ul> | <ul style="list-style-type: none"> <li>• Develop track record in sector/portfolio performance data to strengthen case for mainstream institutional investors</li> </ul> |
|--|--|---|

Short-term strategies (1-3 years)	Medium-term strategies (3-10 years)	Long-term strategies (10+ years)
<b>Private financial investors</b>		
<ul style="list-style-type: none"> <li>• Coordinate with industry/national advisory boards to develop and adopt generally-accepted climate/natural capital accounting and valuation methodologies; climate-related financial risk disclosures</li> <li>• Incorporate climate adaptation/resilience risk analysis into ESG approaches and financial risk approaches</li> <li>• Expand market offerings for green financing products like ESG/green bonds as first step to attract mainstream institutional investors; and/or provide financial incentive for corporate sustainability</li> <li>• Structure/design new financial instruments (e.g., blended/layered capital structures, market-based risk-pooling/transfer instruments, as cost-effective alternatives to public guarantees) that can mitigate risk/ securitise tranches to respective pools of capital</li> </ul>	<ul style="list-style-type: none"> <li>• Pool portfolios by thematic/sector areas globally, with food transformation/ agriculture as one core thematic (rather than by geographical targets)</li> <li>• Create investment matchmaking platforms to aggregate deals and facilitate investor due diligence/risk assessment</li> </ul>	

# Notes

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