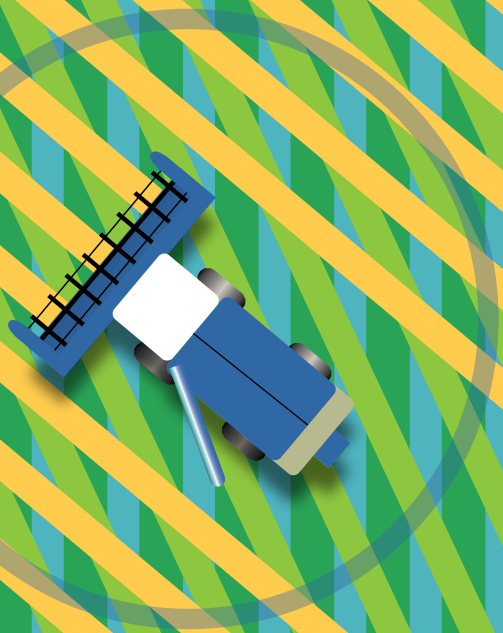
TRANSITION IN **ACTION**

Agri-food



Climate Bonds INITIATIVE

THE FINANCE HUB

GORDON AND BETTY MOORE FOUNDATION

Prepared by the Climate Bonds Initiative

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Introduction

Contents

With the global population projected to reach close to ten billion by 2050, the agri-food sector has to expand.[1] Balancing current and future production with nature preservation will be a major challenge as food security deteriorates due to limited availability of land to cultivate, changing weather patterns and intensive farming, leading to soil degradation and depleted groundwater. The Agriculture, Forestry and Other Land Use (AFOLU) sector is deeply impacted by the climate and biodiversity crisis but is also contributing approximately 30% of the total global anthropogenic greenhouse gas (GHG) emissions.[2] Adequate financial mechanisms are required to help farmers reverse the impact of food production on the environment and ensure resilience to climate risks later.

The Organisation for Economic Co-operation and Development (OECD) defines transition finance as the expenditure deployed by corporates to implement their net-zero transition, in line with the Paris Agreement goal to limit global warming, and based on a credible corporate climate transition plan.[3] This report will use the term climate transition finance to emphasise the primary goal of reaching net zero.[4] Climate transition finance can be instrumental in supporting the AFOLU sector to become part of the climate solution, improve food security, and raise the standard of living of millions of people.

The AFOLU sector has several specificities that explain the slow uptake of climate transition finance:

- It comprises hundreds of millions of farms that finance must reach to ensure a system wide shift.[5] There is insufficient funding going towards the sector in the first place.[6]
- Levers to achieve the climate transition are multiple and context specific, so that measuring their impact can be challenging. The financial sector needs more guidance on what a credible transition for this sector looks like.

As observed by the International Panel on Climate Change (IPCC), the sector has the unique potential to sequester more carbon than it emits, reduce meaningful quantities of carbon relatively cheaply, and provide raw materials to enable mitigation within the other sectors.[7] Investing in the climate transition of the sector can deliver the multiple objectives of climate mitigation, adaptation and resilience (A&R), biodiversity protection and restoration, and lifting millions of individuals out of poverty but, as this report illustrates, this can only be achieved if all the objectives are tackled in parallel. Climate transition financing solutions that focus exclusively on carbon reduction will not have the required effect. Impactful investment must incorporate climate, green and social considerations, which is referred to as sustainable finance.

Sustainable debt is already being used to support the AFOLU market transition but is being considered for other forms of financing including those commonly used by the AFOLU sector, irrespective of the size of the business. It has been shown to deliver competitive pricing and higher investor interest in the bond market than vanilla bonds.[8] These instruments are increasingly encouraged by the financial system as they constitute a tangible building block upon which banks themselves will transition to net-zero financing.

In 2024, Climate Bonds Initiative (Climate Bonds) will publish two new science-based Sector Criteria: Agriculture Production and Deforestation and Conversion Free Sourcing (DCF). These can guide the structuring of climate transition finance instruments in those sectors and enable a commodity agnostic, global certification scheme for entities, assets and debt instruments that assures potential creditors of the issuer's financial project credibility.

This report presents what is observed already in the AFOLU sustainable debt market and highlights what should be added to drive further system change.[9] It then dives into how corporates of all sizes along the supply chain can use sustainable debt. It illustrates how the latest international disclosure initiatives and guidance from Climate Bonds Sector Criteria can be used, and in particular showcases examples of metrics in addition to scope 3 GHG emissions that can be used for green and sustainable debt reporting or for sustainability-linked key performance indicators (KPIs). It also outlines what is happening on the banking side and the central role local banks can play in reaching farmers, making the transition inclusive, and alleviating poverty.

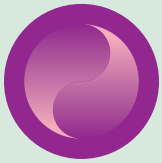
The report focuses on crop and livestock production and does not cover fishery and forestry.

Key messages

The transition is underway

The transition has started and there is a growing understanding of how to deliver it involving a whole ecosystem of start-ups to support implementation.

Climate Bonds Sector Criteria can define sustainable debt instruments

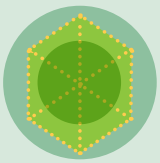


Non-financial corporate entities and banks are encouraged to explore the latest Climate Bonds Sector Criteria as these establish a robust categorisation of green activities and activities that should be linked to monitoring metrics and better capture the recommendations of the IPCC.

Farmers need access to sustainable debt

Finance must flow to the farmers; rather than push them further into debt it should help lift them out of poverty and pay them for the Nature-based Solutions (NbS) they are implementing. Direct payments and sustainable supply chain finance, within the supply chain or using local banks as intermediaries, must be scaled. Sustainable finance at farm level must first and foremost have a resilient, socio-economic, and environmental impact.

The loan market needs greater transparency



Downstream, traders, manufacturers, and retailers already use climate transition finance via bilateral loans with banks or by issuing bonds bearing thematic labels. The loan market would benefit from greater visibility and transparency as most of the market cannot currently be tracked.

Innovative financing solutions are needed

Collaboration among all stakeholders along the value chain is key to avoid carbon leakage, reducing costs, and accelerating the transition. The financial sector could play a scaling role with a series of sustainability-linked or green cofinancing or cross value chain solutions.

Key performance indicators must be material

Sustainability-linked instrument KPIs and impact reporting metrics should capture the complexity of the sector in addition to the underlying project nature and size, and not be restricted to scope 3 GHG emissions. Various examples of alternative KPIs for each actor along the value chain are suggested in this report. In particular, KPIs monitoring the scaling of sustainable initiatives could be used.

New Climate Bonds Sector Criteria	Deforestation and Conversion Free Sourcing	Crops and livestock
Mitigation Criteria	✓	✓
Adaptation and Resilience	✗	Partially, adaptation measures are included
Scope	Deforestation and land conversion free in supply chain since 2020	All food commodities produced on land (including livestock and aquaculture)
New assets	✗	✓
Mitigation measures retrofits	✗	✗
Entity Certification	✓	✓
Pathway thresholds	In line with the IPCC 1.5°C pathways for the Land Use sector	In line with the IPCC 1.5°C pathways for the Land Use sector

2023 labelled bonds

Climate Bonds screening

Climate Bonds screens labelled debt for inclusion in its datasets. Presently there are three screening methodologies:

1. The Green Bond Database Methodology

2. The Social and Sustainability Bond Database Methodology

3. The Sustainability-Linked Bond (SLB) Database Methodology

Green, social, and sustainability bonds captured by Climate Bonds meeting the requirements outlined in Climate Bonds screening methodology qualify for inclusion in the datasets and are classified as aligned. Labelled bonds for which there is not enough information to determine eligibility for database inclusion are classified as pending until sufficient disclosure is available to decide. Bonds failing to meet the requirements of Climate Bonds screening methodology are classified as non-aligned and are excluded from the datasets.

Green, social, and sustainability bonds	Aligned	Pending	Excluded
Cumulative USD billion as of 31 December 2023	4.4tn	79.8bn	751.7bn

SLBs are assessed according to Climate Bonds Sustainability-Linked Bond Database Methodology, and classified according to four levels of alignment.[10]

1. Fully aligned: SLB targets cover all material sources of emissions and are aligned with the relevant pathway.

2. Strongly aligned: SLB targets cover all material sources of emissions and will be aligned with the relevant pathway by 2030.

3. Aligning: SLB targets cover all material sources of emissions, are aligned with the pathway on a % reduction basis, and the issuer has the basic tenets of a transition plan.

4. Not aligned: SLB targets fail to meet any of the above criteria, or do not meet the other requirements detailed in the SLB Database Methodology.

SLBs	Fully aligned	Strongly aligned	Aligning	Not aligned
Cumulative USD billion as of 31 December 2023	40.3bn	2.2bn	4.7bn	278.9bn

The AFOLU sustainable debt market

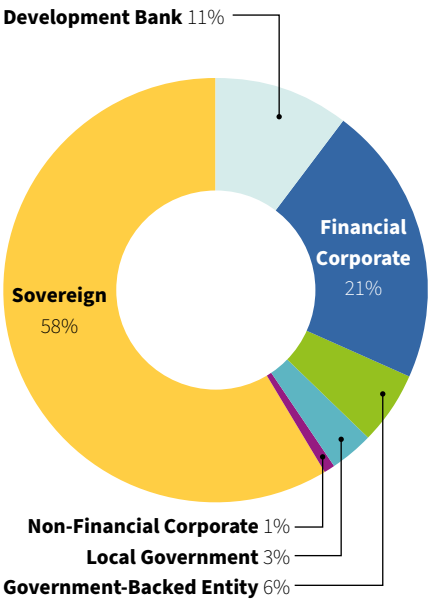
This research report is based on aligned deals with any part of their UoP earmarked for AFOLU projects, which include deals with sustainable agriculture or fishery, or forestry or land conservation/biodiversity listed among their eligible project categories.

Agriculture and fishery production are an infinitesimal fraction of the universe of eligible activities

In 2023, Climate Bonds recorded volumes of aligned green, social, and sustainability bonds of USD871.9bn.[11] Among those, volumes with UoP earmarked for sustainable financing frameworks that include agriculture or fishery projects reached USD160bn. A further USD6.2bn in cumulative volumes from issuers operating in the agri-food sector were identified in SLBs, of which Climate Bonds classified USD3.6bn as fully aligned.

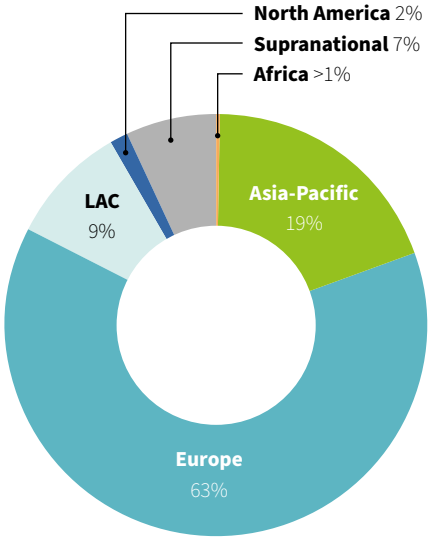
Sovereigns are the largest source of AFOLU UoP

Volume per issuer type



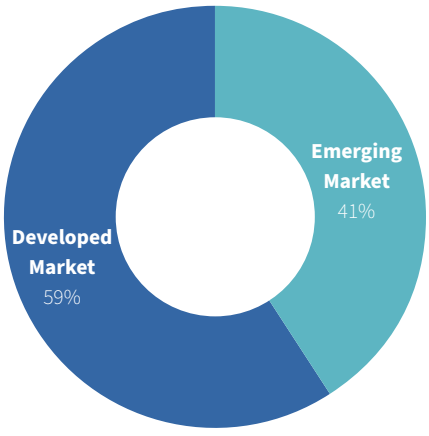
Europe is the most prolific region

Volume per region



Emerging market is an active source of AFOLU use of proceeds

Separation EM/DM per volume



Scaling is needed

In 2023, The International Fund for Agricultural Development (IFAD) estimated that USD400bn is needed annually until 2030 in rural development and across food systems. While substantial, the amount is not that material compared to the amount of financing already going to the agri-food sector from both public and private sources. The challenge facing the transition of the sector is not primarily driven by a lack of available financing at global scale, but rather by a historical lack of efficient financial mechanisms to channel national and international capital towards the millions of farmers and Small and Medium Enterprises (SMEs) that need the financing. The current figures suggest that much more needs to be done, particularly in Africa.

Labelled bonds can support the transition

Three types of instruments emerge from the market analysis and illustrate the potential to deliver impact at scale.[12]

1. UoP debt, with its clear requirement for proceeds to be used for financing social or green activities, can support non-financial corporates and sovereigns in financing their shift towards sustainable production or procurement and a just transition.

2. Green or sustainability deals priced by financial institutions are the most impactful instruments as they link the international market to small stakeholders. These instruments include:

- Green loans to farmers or cooperatives and credit unions;
- Securitisation instruments, enabling the aggregation of loans or, although far less common, aggregation of illiquid assets used for supply chain financing (Agribusiness Receivables Certificates are an example of these instruments used in Brazil).[13,14,15,16]

3. Sustainability-linked debt, which is increasingly used by major agri-food companies to finance their operations. When SLBs or sustainability linked loans (SLLs) are issued by companies that demonstrate credible and ambitious transition plans, they are excellent impact investing financing tools for both investors and corporates.

The market, however, finances many more instruments to facilitate international trade and supply chains. Climate Bonds expects instruments linked to sustainability credentials to grow and rely on sustainable finance frameworks established initially for the bond and loan markets.

Financial institutions should finance a wider range of eligible projects

Of the 46 financial corporates including sustainable agriculture and fishery production as part of the UoP eligible categories:

- Approximately half listed certified production as eligible, organic being the most frequent and mainly used by European banks;
- Eight added to certified production a wide range of eligible activities to encourage the shift to more sustainable agriculture practices (conservation farming, no till practices, agro forestry etc.,). These more advanced frameworks were mainly observed in emerging markets (EM);
- Projects to improve the supply chain were barely seen (two banks);
- Alternative protein was listed by one issuer.

The sustainability financing frameworks of banks do not reflect the broad range of activities that can be financed to support the transition at this stage, nor are they structured clearly enough to capture the impact these investments can bring. Such frameworks should reflect the priority actions highlighted by Planet Tracker: traceability of the supply chain, a reduction in food loss and waste, cessation of deforestation, a reduction in methane emissions, a shift to sustainable agriculture/aquaculture, and investment in alternative proteins.[17] The Climate Bonds Standard and suite of Sector Criteria provide a global, coherent, cross sector transition financing standard that informs banks on how to set up frameworks and distinguish between green lending and sustainability linked lending. The most recent Sector Criteria cover Agriculture Production and Deforestation and Conversion Free (DCF) Sourcing, which complement existing criteria also relevant to agri-food businesses on Waste, Water Infrastructure, and Bioenergy. A last criterion on Supply Chains will be developed by the end of 2024.[18,19]

Section 3 will discuss how banks can accelerate the transition in more detail.

Agribusiness Receivables Certificates (CRA): CRAs were introduced in 2004 to allow credit receivables generated from entities operating in agro-industrial chains to be grouped into a single security and offered to investors via the capital market. They are seen as an alternative method of financing for rural producers alongside existing sources of credit offered by banks and within the supply chain, potentially allowing them to get access to the national and international investment market and creating greater resilience to political and economic fluctuations.[21]

Robust green CRAs, a subset of green bonds, focus on achieving environmental benefits with the funding allocated to sustainable agriculture production. To be credible, they would benefit from a mechanism to be verifiable. As this report highlights, the tools and certification schemes already exist and just need to be deployed.

Major non-financial corporate entities must indicate stronger commitments to sustainable production and procurement

The credibility of SLBs relies on companies deriving a transparent and ambitious transition plan.[20] This can drive investor interest and introduce financial benefits for issuers. Climate Bonds analysed the transition plans of SLB issuers against its Standard and certain Sector Criteria that are key to the transition of the whole sector. The analysis does not aim to criticise current deals, given each company starts from a different point and evolves at its own pace, but instead to inform on specific features that should be included in future deals to ensure impact.

Ten of the eleven SLB issuers in 2023 linked their deals to environmental performance (one issuer did not disclose its KPIs).

KPI	Number of issuers
GHG emissions	7
Food waste and renewable energy in operations	1
Renewable installed capacity	1
Environmental, social, and governance (ESG) score	1

The results highlight several action points:

- Companies are issuing SLBs without a strong DCF commitment in place. No credible decarbonisation strategy can ignore DCF production and procurement.[23]
- There is a recognition among the major corporates that they need to engage with farmers, whose transition to sustainable practices requires financial support. Leading companies have established various pilot landscape-based projects worldwide but more disclosure is needed to assess the impact of these initiatives and how they will be scaled. This could be achieved via sustainable finance instruments using common standards, which will be explored further later in this report. Hardly any companies had short-term targets for scope 3, particularly when plans covered only land use related emissions, when issuing their first SLB. **This is understandable considering the complexity of impacting the supply chain but other metrics should be deployed in sustainable finance instruments to monitor short-term corporate action.**
- KPIs monitoring a company's transition plan cannot be limited to reducing the carbon footprint which only decreases significantly at the end of the transition journey of production systems. Sustainable finance can be used for short-, medium-, and long-term projects and be applied to specific activities. A vast number of metrics can be used to capture the impact of the financing, as the rest of this report will show. In addition, the transition of the agri-food sector goes beyond the mitigation of climate impact, and must also ensure its resilience, reverse biodiversity loss, and improve the living standards of millions of farmers. These objectives can be captured by the metrics used in sustainable finance.

Criteria of transition plan key to transitioning the whole sector	Number of issuers meeting the criteria out of 11 issuers
The company has a company-wide commitment to achieve DCF production and/or procurement for all high-risk commodity supply chains. Justification: Land Use Change (LUC) from deforestation or land use conversion is the number one cause of carbon emissions by the agri-food sector. Isolated initiatives targeting a reduction in LUC intervening in the production of some commodities in certain regions just shifts the risk of LUC elsewhere.[22] It is therefore paramount that the whole agri-food sector commits to DCF procurement.	7
The company has set short-term (maximum five years) decarbonisation targets for all scopes of GHG emissions. Justification: the company can commit on a short timeframe, which is an indication of the degree of maturity of the transition plan.	Two had set short-term but five had medium-term (2030) decarbonisation targets which highlights that these companies have started planning.
The company offers support (training or/and financing) to smallholder producers to help them enter responsible supply chains and/or achieve compliance with company commitments. Justification: the transition of the sector will not happen if the risk and costs fall on the smallholders.	7

Sustainable finance along the supply chain

This report will explore how sustainable finance can be used along the supply chain by producers, traders, manufacturers, and retailers, excluding the input providers (for example fertiliser producers) whose transition is driven by a completely different set of measures. The decarbonisation levers and metrics identified upstream can and should be used by the stakeholders downstream as the transition is underpinned by strong collaboration along the value chain. The report focuses on the levers and KPIs specific to agri-food production and traceability along the value chain. It is by no means exhaustive; it leverages existing disclosure initiatives and is an invitation to develop a suite of sustainable debt instruments that better capture and monitor the transition of the sector.[24]

Sustainable finance for producers

Investment in sustainable agriculture production has multiple impacts on GHG emission reduction, food security, poverty alleviation, and resilience. It is also strongly linked to investments in other environmental services as farmers often deliver both food production and nature conservation or restoration services. Defining the activities that qualify as green and quantifying their expected impact is, however, challenging. Sustainable agriculture production is a context-dependent system of multiple farming practices so finding the correct trade-off between food security, biodiversity, resilience, human health, social and economic development, and water security varies from field to field and takes time to implement. Sustainable finance standards in the sector must remain flexible enough to embrace the differences, and allow producers the freedom and time to develop the optimal approach. Any financing must also be linked to safeguards to avoid any unintended negative social or environmental consequences.

Use of Proceeds debt

Climate Bonds Agriculture Production Sector Criteria acts as a guide for the green financing frameworks of investors.

The new Criteria identified production that is free from land conversion or deforestation (DCF) as the first precondition to green lending. The cut-off date for DCF should be no later than end of 2020 to align with the Accountability framework initiative (Afi) and 2010 for Climate Bonds Certification. Once those requirements have been satisfied, the Criteria identify three categories of eligible agriculture practices:

- Practices aiming to reduce GHG emissions,
- Practices aiming to sequester carbon,
- The Sector Criteria include the full list of eligible practices, their definitions and additional conditions that should be satisfied, in particular to ensure A&R of the production system and that they do not cause significant harm to other social or environmental features. It also incorporates a certain number of enabling activities.

One or more can be applied at a time and the following focuses on the rationale for the categorisation.

- **GHG emission reduction practices**: examples include 1) using on-farm organic fertiliser to reduce N_2O emissions, 2) conservation agriculture, 3) R&D on meat and dairy alternatives etc.[25] Of note is that the list of activities includes only those with strong scientific evidence of positive impact on absolute GHG emissions reduction, as per IPCC reports and the consensus reached by global experts in the Climate Bonds Sector Criteria Technical Working Group (TWG). In particular, it excludes practices and systems, such as better feeding practices in intensive livestock operations, or new fossil fuels-based N fertiliser application systems to increase nitrogen use efficiency, which if applied may improve emissions marginally but would not lead to fundamental improvements and could lead to locked-in emissions. The levers identified by IPCC to reduce enteric fermentation are not included in the green list at this stage as there is no scientific certainty that they can bring about the shift to the level required for rapid methane reduction.[26] These levers can however be financed through sustainability-linked debt that would link their financing to a commitment of absolute GHG emissions reduction according to the 1.5°C transition pathway.

Agri Resources Group S.A.

Agri Resources Group S.A. (Agri Resources) is a producer and processor of fruit, vegetables, and spices, headquartered in Luxembourg. The company operates throughout the European and African markets. In 2021, Agri Resources priced a EUR40m sustainability bond to support the development of environmental and social projects. The list of eligible projects included, among others:

- Development and certification of existing landbanks, with KPIs to monitor progress, such as number of certifications, number of hectares (ha) covered by sustainable land practices, and water resource management practices etc.
- Creation of a traceability system for vanilla; KPIs to monitor this included the number of farmers trained, number of farmers benefitting from incentives.
- Protection of residual forests located within their plantation and agroforestry. KPIs include the number of ha preserved and created.

As of mid-2023, the company's sustainable finance framework had mobilised 60% of the bond's proceeds for the development and certification of plantations, acquisition of land, research and development (R&D), agroforestry, and farmer training. The rationale for issuing a sustainability bond was part of the business's financial strategy to secure an asset base by investing in land and equipment, building a network with certifications to qualify products for the EU, the USA, and Asian markets, and general business growth.[28]

Responsible Commodities Facility

The green CRAs priced by the Responsible Commodities Facility (RCF) are an example of the direct financing of DCF farming by European investors.[29] In 2022, the RCF priced USD11m of green CRAs. The proceeds were used to finance loans to a selected number of soy farmers in the Cerrado, Brazil, who committed not to clear any new areas of native vegetation. The monitoring and verification of DCF production is done by an independent monitoring firm through satellite images. Crops are sold to soy traders and loans are repaid at the end of the growing season.

- **Carbon sequestration practices**: including increasing organic soil carbon in grasslands and croplands, restoration of agricultural land, and agroforestry. These practices are outcome based and technology agnostic. For example, many of these practices could be included in the broad terminology of 'regenerative agriculture'. However, as the definition of what constitutes regenerative agriculture is not agreed, the criteria list a certain number of agriculture practices. To ensure the material impact of these practices, Climate Bonds Sector Criteria for Certification specifies that there should be a 20% carbon input increase into the production system over 10 years, maintained until 2050 or at least 20 years from Certification date. This is to ensure that the crucial mitigation lever of carbon sequestration remains a realistic outcome in any given system (i.e., without increased carbon input into the system, net carbon sequestration cannot be ensured). It is also relevant to note that carbon sequestration practices should prevent unintended consequences to the surrounding environment and habitats. For example, heavy use of chemical pesticides and fossil fuel-based N fertilisers aiming to increase carbon inputs (through increased yields) might negate emissions savings and harm biodiversity and environmental health. Ensuring farming practices have strong risk assessment capabilities in place for minimising harm to the surrounding environment will be key to safeguarding (i.e., minimal use of pesticides, low and efficient use of non-fossil fuel-based fertilisers).
- **Enabling and A&R activities**: enabling activities such as supply chain technology tools to measure, verify, and report (MVR) the implementation of the production shift, sourcing and use of renewable or clean technologies etc., and A&R activities such as water management (irrigation, water storage), eco-system-based adaptation approaches such as agroecological approaches, on-farm diversification etc.

Most eligible activities under a green framework are not linked to a minimum improvement quantitative criterion (e.g., % GHG improvement, minimum surface covered) to reflect the fact that producers typically experiment on a fraction of the land and the correct mix of measures can take many years to be reached. Even with local technical support, the positive impact might take a few years to materialise. Similar considerations apply when using green project finance to fund the pilot programmes of larger corporates. This is why the list of activities under a green label must contain only those for which there is enough evidence that the overall impact is positive.

The International Capital Markets Association (ICMA) recommends in its Green Bond Principles (GBP) that issuers of green instruments should report the impact of the investment; a set of common measurements would also facilitate aggregation of loans by financial institutions. ICMA suggests a few impact reporting metrics for biodiversity projects and crop/livestock production. Building upon these recommendations, the main disclosure frameworks, and Climate Bonds new Sector Criteria and market analysis, the following list captures both the impact and degree of advancement of the transition at farm level. The selection of the metrics is driven by the underlying activities and is therefore context specific.

Other metrics exist for soil health and organic matter, biodiversity, pesticide use, water quality, but no standardised measurements exist and as the optimal choice of measures is context specific, disclosing on each separately and only using some of them to monitor impact should be subject to caution. Various initiatives are ongoing

Table 1. Metrics at production stage

Suggested impact metrics	Comment
Metrics measuring the impact of new practices at production level	
GHG absolute emission and absolute carbon sequestration	Should follow the GHG protocol, in absolute terms, separating emissions from sequestration and for the three main gases CO_2, N_2O and CH_4
Emission intensity by commodity production units	See section on sustainability-linked debt (page 9) GHG emissions should be measured separately for each commodity (CO_2, N_2O or CH_4)
Replacement of feedstock reliant on long-haul transportation with sustainable on-farm sources/ local alternatives (% of total volume)	For sustainability-linked projects; it implies increasing circularity locally by growing the feed and using the manure of the feedstock as fertiliser
Carbon stock	Should be maintained and will increase over time until reaching its full potential
Reduction in net equivalent GHG emissions and GHG emission intensity (per unit of output)	These metrics should not be used without also monitoring the emission reduction of CO_2, N_2O and CH_4 separately
Water savings (e.g. m^3/year)	From water management activities
Intensity and absolute metrics related to water use efficiency	This is context specific
Percentage of food loss and total quantity produced	
Increase production yields with adequate and efficient use of inputs	Context specific and depends on the outcome sought. Year-on-year yield increases are not to be expected from the start
Metrics monitoring the scaling of the practice implementation	
Percentage of spatial footprint, if relevant, and total area (km^2) that is rehabilitated for sustainable production	This applies to degraded land
Percentage of spatial footprint, if relevant, and total area (km^2) in agricultural land set aside for biodiversity conservation (e.g., rewilding, conversion of land along field edges to woodland)	
Percentage of spatial footprint and total area (km^2) under management practices targeting improved ecosystem services provision (e.g., pollination)	
Percentage of spatial footprint and total area (km^2) under either a GHG reduction set of practices, or a carbon sequestration set of practices	

to build a globally consistent framework for farm-level metrics.[27] There is sufficient scientific evidence to demonstrate that the practices quoted above have a positive impact on the environment and therefore the reporting could be qualitative for a period of time. Alternatively, organisations independently monitoring the ongoing implementation of sustainable practice and helping with the outputs of sustainable activities can bring credibility. For example, the SAI platform, a precompetitive forum of agri-food corporates, has developed a system, the FSA, to monitor farm progress toward sustainability, which farmers can be verified against.

Sustainability linked debt

Sustainability-linked bonds or loans are increasingly being used by non-financial corporates to implement their transition strategies. As the proceeds are for general purposes, they are only regarded as impactful if the KPIs reference a robust transition plan. These instruments are particularly suited for protein and dairy producers with high GHG emissions who might not be yet on a 1.5°C aligned pathway because qualifying green UoP is not required.

Climate Bonds' new Sector Criteria suggests the practices a producing company could implement to target a robust and credible 1.5°C aligned transition in line with the latest scientific evidence.

Some key elements of the criteria are highlighted below and metrics to be used in a sustainability-linked debt financing framework are given in Table 1. Essentially, the criteria stipulate that:

- Producers transitioning to net zero should first ensure no deforestation, no conversion, no high-carbon loss with at the latest a cut-off date by the end of 2020;
- Direct emissions per commodity production unit must be reduced, expressed in emission intensity, and cover the relevant GHG (CH_4 from rice, manure management and livestock, N_2O from fertilised soils, etc.); netting with carbon sequestration should not be deployed at this stage;
- Input emissions (carbon intensive sources of energy etc.) should also be reduced;
- Producers should work on sequestering carbon as well as maintaining the carbon stock, aiming to in-set their absolute emissions and reaching net zero by 2050 or as soon as possible;
- The overall GHG emissions should net GHG emissions and GHG reduction and be kept in absolute form to ensure emission reduction. This metric could be used to monitor overall carbon absolute emission reduction but should not be the only one being used as already mentioned; Climate Bonds Sector Criteria gives emission intensity and pathway by type of commodity production (a diverse set of crop and livestock commodities).

KPIs used for SLBs could include:

- Those covered in the previous section,
- Emission intensity from commodity production units,
- Other metrics capturing the scaling of the implementation of new practices.

Climate Bonds new Criteria highlight the importance of monitoring the gross emission intensity of CH_4 or N_2O, when relevant, from commodity production units. These are more material GHG emission indicators for sustainability-linked instruments than total gross GHG emission for certain commodities like dairy, livestock, and crop producers using a material amount of fertilisers.

The Sector Criteria also list systems and practices that can be considered.

Choosing which KPIs would be most appropriate for sustainability-linked debt instruments depends on the issuer type, business, stage of transition, and on the instrument (debt, loan, credit facility) and its term; the core criteria being that the KPIs should be fully anchored in the transition strategy of the issuer and be externally verifiable.

Measurement, verification, and reporting

Various MVR technology platforms have emerged to allow farmers to estimate their environmental footprint and are becoming increasingly sophisticated as a result of the vast amount of data gathered.[42] MVR platforms are a powerful tool to scale sustainable finance by considerably facilitating traceability and certification of types of production.

Ucrop.it, for instance, is a collaborative, comprehensive but also agnostic MRV platform that aims to simplify digitalisation and traceability in agriculture by inviting farmers to enter their crop-story and have it blockchain recorded. The platform delivers assisted guidance to farmers in their sustainability journeys. Ucrop.it can also incorporate any data or supporting evidence that is required to accomplish any specific goal into the Crop-story, whether this comes from an Earth Observation Solution with a certain parameter of precision, a precision agriculture software solution, or a verification scheme.

FriedlandCampina

FrieslandCampina is a multinational Dutch cooperative producing and selling cow's milk and dairy products. It is one of the largest dairy cooperatives in the world, co-owned by just under 10000-member dairy farms. In 2023, the company priced a EUR300m SLB with four KPIs:

1. Scope 1 and 2 GHG emissions (cover production of dairy products and transport, exclude production of milk on farms) with a 2030 target to be reduced by 63% from a 2015 baseline,

2. A fraction (estimated to 78% of the total) of scope 3 GHG emissions (production of milk on member dairy farms) with a 2030 target to be reduced by 33% from a 2016 baseline,

3. The ratio of packaging materials designed to be recycled with a target of 95% by 2025 from a 2021 baseline at 90%,

4. The revenue from sustainable products with a target of 74% by 2025 from a 2020 baseline at 70%.

FrieslandCampina built a transition plan to net zero and explained which decarbonisation levers it would deploy. For scope 3, due to its own member farms, those included:

- Land use conversion free feed production,
- Breeding programmes and feed supplements,
- Housing systems and manure management.

Issuing an SLB with a KPI on the most material source of emissions, scope 3, and anchoring the issuance to the company's transition plan gives transparency and credibility to the climate transition debt instrument. The latest Climate Bonds Sector Criteria highlight the necessity to set different targets on the three main GHG gases (CO_2, CH_4 and N_2O) when those are material. Cutting CH_4 and N_2O emissions needs to happen, independently from CO_2 emissions, to ensure a 1.5°C aligned decarbonisation pathway in line with IMP SP (the scenario that ensures safeguarding biodiversity and sustainable development, while limiting the pressure on land from bioenergy production to enable sufficient carbon sequestration in forest land and forest and ecosystem restoration, in addition to safeguarding food security).[41]

By way of example, an SLL could be project level and the KPIs could be linked to the monitoring of the implementation of a pilot project aiming at shifting part of the production to more sustainable practices. These instruments would however be impactful only if the entity was transparent as to the role of the project in the overall strategy of the entity.

Entity level certification: an open door to climate transition financing

Climate Bonds Standard and Certification scheme is a labelling scheme for real economy entities, assets, and debt instruments. Climate Bonds derives multisectoral scientific criteria that guide entities in their transition strategy to ensure it aligns with Paris Agreement goal of limiting global warming to 1.5°C. The Certified entity can then issue any kind of debt instrument which can be included in a portfolio aligned with the goals of Paris Agreement because financial institutions have the assurance that these entities are genuinely contributing to addressing climate change.

Finally, but most importantly, Climate Bonds Sector Criteria have identified several categories of production systems for which sustainability-linked and green finance should be facilitated until 2030 because:

- They can improve resilience and bring multiple co-benefits: agroecology, organic farming (with some conditionality explained in the criteria),
- In vulnerable contexts where low farm productivity is common, significant investments are needed to increase yields, crop production, and input-use efficiency with sustainable practices.

Agroecology and organic farming systems might not necessarily have a sole focus on mitigation potential, yet they were identified as having significant overall benefits to justify facilitating their financing (as it was singled out in the consensus reports by the IPCC latest 6th Assessment Report, 2023).[30] Additional practices, linked to regenerative agriculture, could be added in the future if the underlying practices selected can be defined and certified (as done under the UoP proxies for green practices, which entities are encouraged to apply when setting their transition pathways). A cut-off of 2030 was chosen to give time for the GHG accounting tool to be widely deployed in any market but at the same time to capture the need to have organic producers or practices operating under an agroecology model, also reducing their emission post 2030. The reader should refer to the Climate Bonds Standard v4 for additional safeguarding measures.

Sustainable finance instruments for trading companies

According to Chaopeng Hong et al., '27% of land-use emissions and 22% of agricultural land are related to agricultural products ultimately consumed in a different region from where they were produced. Roughly three-quarters of embodied emissions are from land-use change, with the largest transfers from lower-income countries such as Brazil, Indonesia, and Argentina to more industrialised regions such as Europe, the United States, and China.'[31]

By sourcing raw commodities and exporting them worldwide, traders connect farmers to the international market of food manufacturers and retailers. They can have a material impact on agricultural practices in each region and accelerate the entire production system shift through collaboration with aggregators and farmers upstream.

Trading companies are already actively using sustainable debt, especially SLLs or equivalent. An impactful use of these instruments would be to see the funding passed on to the farmers through internal value chain finance mechanisms, payments, or carbon insetting in exchange for more sustainable practices.

The overarching indicator capturing the climate mitigation effort of trading companies is, following GHG protocol standards, scope 3 emissions from purchased products. However, other metrics are more suitable for monitoring short-term change in production practices that trading companies must support:

- Monitoring the establishment of full traceability and transparency in the supply chain,
- Monitoring the establishment of DCF production and contribution to the restoration effort,
- Developing fair and environmentally sustainable agriculture practices.

Monitoring the traceability effort

In line with the Taskforce on Nature Related Finance Disclosure (TNFD) LEAP approach, the first lever of transition is to locate the origin of commodities, which is a challenge for most trading companies purchasing from a multitude of direct suppliers and indirect suppliers that have their own direct and indirect suppliers. Adding to the complexity, various pilot projects aiming to tackle deforestation and inequalities in emerging markets highlighted the need to implement a landscape or jurisdictional approach that factors in the social, economic, and environmental specificities of a location to increase the chance of permanent change.[32,33] Widespread impact on food security, farmer livelihood, and sustainable land use will be reached if support goes to the farmers, and addresses constraints such as access to infrastructure, land ownership, public services, and agricultural finance.[34] A system-level change towards sustainable production is far more complex than any one company can manage and extensive collaboration among non-financial and financial corporates, governments, and local communities is key to its achievement.[35] The whole supply chain must set the same level of demands to avoid carbon leakage. Various non-governmental organisations and private consulting organisations with local presence have stated their support of market requirements to develop these approaches.[36]

Wilmar International Limited

Wilmar International Limited (Wilmar), is an Asian agribusiness group headquartered in Singapore. Wilmar's business activities include palm oil cultivation, oilseed crushing, edible oils refining, flour and rice milling, sugar milling and refining, and the manufacture of various consumer products, oleochemicals, biodiesels, and fertilisers.

While Wilmar has already implemented a few measures to reduce GHG emissions, a transition plan is yet to be published so the company could be seen as barely starting its transition journey. However, Wilmar's transition is primarily about ensuring DCF sustainable procurement of raw materials, which is why Wilmar joined forces with other major trading groups to initiate the transition at production level. Wilmar is part of the Tropical Forest Alliance's Agriculture sector roadmap to 1.5°C, which aims to reduce land-use change in the supply chain, support the transition to forest-positive land-use management, and more broadly the whole sector transformation. The Alliance has defined metrics to monitor the progress made by the companies.

As of end of December 2022, Wilmar had priced SLLs with cumulative value of USD2.2bn. No public information is available on the exact nature of the KPIs and SPTs deployed, which is a strong limitation of the SLL market. Transparency of KPIs and SPTs would facilitate the aggregation and potential securitisation of these instruments and open the road to having these instruments as UoP for green bond financing sold to institutional investors, thereby potentially attracting cheaper funding and scaling.

The Accountability Framework initiative (AFi) provides consensus-based principles and guidance to help companies and financial institutions to set up supplier policy and goals, act, monitor progress, and have these verified.[37,38] The Implementation Reporting Framework is one example of a tool that can be used to report verified progress towards No Deforestation, No Expansion on Peat, and No Exploitation (NDPE) in alignment with AFi's reporting guidance.[39] Using this guidance and reporting tools, KPIs for sustainability-linked instruments can be derived if there is a third-party certification. Alternatively, green debt can be used to finance operating expenditure (opex) on supply chain traceability for sustainability purposes.[40] The KPIs should focus on the commodities that are the most material to the business.

The choice of KPIs depends on the level of advancement of the traceability, the scale of the financed project, and the environmental or social objectives.

Monitoring the DCF procurement effort and investing in land restoration

The key indicator to ensure traceability and transparency, and facilitate the deployment of common sustainability monitoring tools for the whole supply chain is the total production area that has been geo localised (GPS polygon mapped) in the company's supply chain. Geo localisation of the plots of land enables the tree cover to be monitored and facilitates the certification and audit of farmers.

To reduce costs yet have an immediate mitigation impact, companies might decide to identify deforestation risk hotspots and focus engagement effort with the suppliers at the highest level of risk first. Similarly, the recent European Union Deforestation Free regulation (EUDR) covers only the commodities most at risk of deforestation and has criteria based on due diligence requirements with more stringent conditions for regions judged the most at risk.[43]

Relevant KPIs for sustainable finance are summarised in Table 2.

In parallel to halting deforestation, investment in land restoration by downstream traders and companies is one of the most effective solutions to land degradation and ensures sustainable supply, whilst reviving rural economies and producing tangible benefits for nature and the climate. KPIs for restoration projects are summarised in Table 2.[44]

Table 2. KPIs typically used at trading company level and downstream

Metric	Comment
Traceability	
Percentage of commodity volume purchased, sourced, or used by the company that can be traced to the level of 1) the production unit or 2) the sourcing area or 3) the level of country of origin	
Supplier management	
Number and percentage of farmers with land rights or land tenure documentation in direct supply chain	Absence of documents is a major problem in some jurisdictions.
Number and percentage of farmers in the current financial year enrolled in a form of financing with the support of the company	
Number and percentage of farmers benefiting from direct extra financial support or training by the company to implement sustainable practices	
Percent volume of food lost from production site	This could address food loss via investment in storage, processing, transportation
DCF procurement	
Total area (km^2) and percentage of farm land that is GPS/ polygon mapped	This would typically apply to the direct supply chain. Both metrics are needed to capture the impact and the progress
Total volume of a certified DCF commodity purchased over the total volume of that commodity purchased	Cut-off date to be specified and AFi suggests the end of 2020. This indicator being relative, additional metrics should be added to ensure there is no increase in deforestation or conversion. The AFi suggests the following two KPIs:
For direct suppliers: the extent (km^2) of land change by type of ecosystem and type of business activity since the cut-off date.	
For indirect suppliers: the maximum deforestation or conversion (in km^2) in supply shed, jurisdiction, or region that could be attributable to expansion commodity production in a company's supply chain.	
Supporting farmers in restoration projects	
Percentage of spatial footprint if relevant and total area (km^2) that is rehabilitated for sustainable production	
Percentage of spatial footprint and total area (km^2) restored under natural and diverse vegetation and corresponding area.[52]	
Establishing certified sustainable agriculture practices	
Percentage of spatial footprint if relevant and total area (km^2) under a certified sustainable agriculture scheme.	Examples of certified sustainable practices: Bonsucro, RPSO, Fairtrade, Rainforest Alliance.
Percentage of total commodity volume under a certification scheme.	Specify the traceability model. This relative metric should also be supported by evidence that it is not contributing to an increase in deforestation or conversion.

Establishing certified sustainable agriculture practices

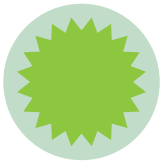
There are multiple commodity specific certification schemes with DCF standards. Market leading schemes include the Roundtable on Sustainable Palm Oil (RPSO), Roundtable on Sustainable Soy Association, and Fairtrade. These certification schemes can form the basis for defining transition finance KPIs capturing the shift to sustainable procurement of the underlying commodities.

The certification schemes typically focus on one commodity, and the traceability of that commodity in relation to a specific set of environmental and social attributes. For instance, among the pillars of the Bonsucro Standard, which promotes sustainable sugar cane, are measures to ensure DCF production but also GHG emission reductions and regenerative agriculture measures such as pest, disease, weed, and soil management, water stewardship plans, water reduction, biodiversity monitoring and protection etc.[45]

The number of certification schemes is expanding, and some are government led (such as the Brazilian Embrapa Low Carbon Soybean).[46] To improve industry alignment, the SAI Platform has created the Farm Sustainability Assessment (FSA) which provides a common reference point for farm sustainability schemes as well as a consistent approach to benchmarking them.[47] In parallel, the International Social and Environmental Accreditation and Labelling Alliance (ISEAL) is developing a certification atlas, which would display the location of operations of ISEAL members that have been certified against sustainability standards.[48] These initiatives will considerably enhance the traceability and transparency along the supply chain and the sustainability reporting of all downstream stakeholders, including financial institutions.[49,50]

Climate Bonds has developed Agri-Food DCF Sourcing Criteria for the certification of Agri-Food Entities. Entities can be Certified if they have implemented traceability and due diligence systems in their agri-food supply chain under the commitment of DCF Sourcing from 31 Dec 2020, in line with AFi guidance and mirroring requirements from EUDR to facilitate consistency across entities in the global agri-food sector.

Sustainable finance for manufacturers and retailers



Opportunities for manufacturers and retailers to transition include:

- Building stronger relations with the supply chain and participation in the financing of the production shift,
- Leveraging synergies between corporates with overlapping or shared supply chains and cofinancing projects,[51]
- Reducing food loss, one of the major sources of GHG emissions,
- Supporting a shift in consumption on the demand side,
- Giving preference to procurement from local production.

The following metrics are in addition to those proposed in the previous sections.

Metric	Comment
Supplier engagement	
Percentage of suppliers engaged on sustainability issues	As per CDP[55]
Percentage of procurement spend with specific sustainability criteria	As per CDP
Food loss	
Total weight of food loss and percentage of food loss	See also Transition Plan Taskforce (TPT) guidance for the food and beverage industry[56]
Carbon sequestration and scope 3 decarbonisation measures	
Percentage of scope 3 reduction linked to carbon sequestration/carbon insetting and total amount[57]	See also TPT
Percentage of scope 3 reduction linked to carbon emission reduction measures (based on gross emission and not after netting with carbon sequestration measures) and total amount.	Climate Bonds latest Sector Criteria As highlighted in section 1.1, carbon sequestration at producer level cannot replace other GHG direct emission reduction.
Encouraging demand shift	
Percentage and total number of products produced or sold that are plant based	

Sustainable supply chain finance

Supply chain finance (SCF) refers to financing solutions that help to optimise and balance working capital within supply chains. It can notably improve the financial condition of weak suppliers within the supply chain by leveraging the buyer's stronger credit rating. SCF integrates financial flows with product and information flows within supply chains, which in future could also include supplier sustainability profiles and commitments and link to financing terms. This could be another route to scaling transition of the supply chain.[53,54]

Sustainable finance instruments in action

Mars inc. (Mars) is an American multinational manufacturer of confectionery, pet food, and other products and services. In 2023, Mars issued two sustainability bonds for a total of USD1bn with an extensive list of eligible UoP categories aiming to decarbonise all three scopes of emissions. It was the first deal from a corporate entity to capture many of the levers needed to decarbonise production.[58] Among those measures were the inclusion of Environmentally Sustainable Management of Living Natural Resources and Land Use among the eligible project categories which included:

- **Climate smart or regenerative agriculture.** Investments and expenditures, including supplier development, project investment and research and development, towards products, processes and technologies that improve productivity and environmental performance, in the following categories:

  1. Carbon Efficient Farming. Development of initiatives to enhance agricultural management practices to reduce farm carbon emissions such as those from energy use, fertilizers and field/livestock emissions, including precision fertiliser applications and alternate wetting and drying practices;

  2. Regenerative Agriculture. Programmes to introduce and promote regenerative farming practices aimed at improving soil health and increasing soil carbon such as no-till farming, incorporating cover crops, more complex crop rotation, and use of nitrogen fixing plants and tree crops; and

  3. Climate Resilience. Initiatives focused on ensuring the resilience of agricultural systems to increasing temperatures and increased variability in precipitation patterns.

- **DCF Supply Chains.** Investments and expenditures in projects and programmes to increase transparency, mapping and traceability of supply chains specifically for soy, palm oil, cocoa, pulp and paper, and beef with the goal of preventing deforestation in the supply chain. Eligible expenditures include:

  1. Education and awareness programmes for farmers on agroforestry and forest protection;

  2. Satellite monitoring and associated traceability systems; and

  3. Supplier development investments such as investments in information management systems, training, and verification capacity.

- **Development of more sustainable ingredients.** Expenditure related to the research, development, and acquisition costs of lower carbon and/or other sustainability impacts (such as improved livelihoods), and raw materials (such as novel proteins).

The Carbon Sequestration category includes investments and expenditure either directly or/with projects or in funds that develop and invest in nature-based carbon sequestration projects focused where positive environmental impacts can be quantified. All such projects will be validated and any credit issuances verified under third party registries such as Verra, Gold Standard or ACB. Example projects may include:

1. Afforestation/reforestation,

2. Improved forest management, and

3. Soil carbon sequestration.

Established farmers programmes such as Shubh Mint (India), LEAP (Cote d'Ivoire), ACTIVE (Indonesia) and Livelihoods Funds for Family Farming (L3F) are designed to put farmers and farm workers on a path to sustainable living incomes and wages.

The category of socioeconomic advancement and empowerment includes:

- Investments to fight child labour, support ethical migrant recruitment through coalitions etc.,
- Investments and expenditures in the development, design, operation or maintenance of facilities, systems or services that enhance access to essential financial resources and training programmes for financial competency etc.

The Mars framework also quotes a certain number of metrics that could be used for impact measurements. The framework is the first from a non-financial corporate to cover many of the activities major manufacturers should action to participate in system change: DCF Supply Chains, alternative diet solutions, collaboration to improve farmers' living conditions, carbon sequestration practices and carbon emission reduction practices. In future issuance, Climate Bonds recommends strengthening the following aspects:

- The carbon sequestration category should ensure all projects have a positive focus on environmental impacts. Afforestation tends to be monoculture plantations with uncertain positive impact.
- Carbon credits, when used as an additional source of income for farmers in payment for eco services, could accelerate the transition. Climate Bonds Standard considers however that companies buying carbon credits should not use them to offset their own emissions or delay their own decarbonisation measures.
- The standards for carbon credits or certified agriculture practices used should be clearly stated. There are ongoing initiatives to facilitate the benchmarking of standards and issuers should seek to facilitate the process.[48]
- Greater clarity and transparency in the method and the amount of CO_2 and non-CO_2 GHG emissions reduction. CH_4 and N_2O are major GHG emissions from crop and livestock production, and clear levers for their mitigation should be incorporated in transition pathways in transparent and accountable measures.

Carrefour is a French multinational retailer, which is actively financing its activities through SLBs, pricing five deals since 2022 with cumulative volume of EUR3.2bn. Carrefour's SLB framework includes four KPIs:

1. GHG emission scope 1 and 2,

2. GHG emission on partial scope 3,

3. Tonnes of packaging avoided,

4. Food waste generated in stores.

For each deal, the company is adjusting its targets and KPI choices as it progresses on its transition journey.

Scaling sustainable finance

Section 2 identified how emerging technologies can proliferate the disclosure needed by financial institutions and investors to deploy sustainable finance at scale.

Local banks

Local banks have a pivotal role in the growth of DCF and sustainable commodity production and restoration, as they are in direct contact with production units.

In response to the real economy sustainable financing needs, banks are developing sustainable finance frameworks as internal guides to classify green and social activities that can be financed by sustainability-linked instruments. These frameworks specify a list of eligible activities being financed under green loans and SLLs, including credit facilities. These frameworks can also guide the bank categorisation of its portfolios in stages of climate transition, as part of a bank's own transition to net-zero economy financing. They are being designed to consider local needs and bank client bases.

Climate Bond's market analysis highlighted that only a fraction of eligible activities are captured by bank frameworks. In addition to listing which activities can be considered as green and separating them according to their main contribution in terms of either emission reduction, carbon sequestration, A&R, or enabling, the strength of the new Climate Bonds Sector Criteria is the distinction between activities and entities that can and those that cannot be considered green depending on whether they are on a pathway aligned with 1.5°C. It clarifies how protein producers should be categorised. More broadly, it facilitates the ongoing effort of organising investments into various categories of transition by distinguishing companies already aligned with 1.5°C from those that are aligning with that pathway.[59]

Sustainable finance instruments must be adapted to ensure incentives reach farmers and the financing factors in the time needed to shift the production system. Financing that helps the farmer can take the form of:

- Extending the term of debt financing to factor in the environmental response time,
- Reducing the cost of credit,
- Facilitating longer commercial offtake agreements between producers and buyers,
- Better terms for supply chain financing,[60]
- Micro-finance,
- Insurance on more favourable terms.

Some of these sustainable debt or supply chain financing instruments can be funded by UoP labelled bonds by the lending bank, reducing risk and increasing lending capacity. For instance:

- In Brazil, credit receivables generated from businesses in agro-industrial chains can be grouped into a security (CRM) and resold in the capital market.[61]
- Microfinance is commonly quoted as a UoP in social or sustainability bonds. Aligned cumulative issuance of such bonds had reached close to USD100bn by the end of 2023, with micro-finance projects covering all sectors.
- Green or sustainability bonds with underlying loans UoP. This requires standardisation in lending criteria and tagging to enable banks to maximise the potential of their loan books.

Banco de Bogota

Banco de Bogota issued a USD230m sustainability bond in 2023. The eligible UoP included:

- Certified production (list of eligible certifications added);
- Conversion of non-certified production to third-party certified production;
- Acquisition of equipment and other investments that permit the elimination of soil tillage;
- Investments to promote the use of native or traditional crops, as well as silvopastoral systems, if no conversion of natural land is involved and applicable certifications is secured;
- Investments to promote climate adaptation measures such as silvopastoral systems, vertical farming, rotational grazing, drought resistant crops, forage crops, reduction of soil erosion, adoption of sustainable aquaculture techniques and reduction of on-farm waste, if no conversion of natural land is involved.

This example of a bank's framework illustrates the growing understanding of what sustainable finance can include where the local context could inform on a subset of practices that should be prioritised. Climate Bonds Sector Criteria list the practices for which there is enough confidence in a sustainable outcome.

Climate Bonds Agri-Food Deforestation and Conversion Free Sourcing Criteria

An entity level DCF certification would considerably facilitate a bank's commitment in ensuring its financing supports DCF practices.

Climate Bonds newly released Agri-Food DCF Sourcing Criteria can be used to certify any entity within the food value chain, beyond the point of agriculture production, that is able to demonstrate that its sourcing of commodities is free from deforestation and conversion of natural ecosystems. It differs from existing certification schemes that are commodity based and mostly regional in scope. It applies to all commodities that individually contribute at least 1% of an entity's total agri-food commodities spend.

The preferential pricing obtained in some instances through the issuance of labelled debt can be then passed on to the producers.

Additional support might be needed (see page 16).

Regarding non-financial corporates, the first step for regional banks is to align and implement anti-deforestation policies, DCF financing, and then to further develop their criteria for transition financing.[62]

Impact reporting of investment in the agri-food sector by banks is still in its infancy but the technology exists to improve data collection and reporting and should be a priority for local banks. Various private companies, banks included, are developing digital applications that farmers can use to input the perimeter of their land, land rights, sustainable practices, and get training. These applications can also serve as fintech solutions for microfinance and supply chain finance. These farm-level observations can be aggregated into landscape-level observations to inform sustainability strategies, environmental foot printing, reporting, and target setting. By aggregating the farmer or SME geolocalised data to the landscape level, banks could build a series of metrics monitoring the impact of their portfolio. This data linked to satellite imagery and machine learning can help to monitor carbon stocks and sequestration, land conversion, and be used to ensure certification of DCF activity financing.[63,64] Additional metrics on sustainable practice might not initially fall under a production certification scheme but other metrics could be used to monitor progress, such as those introduced in the previous sections.

The same portfolio impact metrics could be used for labelled debt issuance and reporting.

Koltiva

Koltiva is a provider a holistic end-to-end technology and service solutions that offers:[70]

- Producer profiling and plot mapping,
- Production traceability tools, LUC mapping, and risk alerts,
- Training,
- Solutions for decarbonising and implementing climate smart agriculture,
- Fintech solutions to implement micro finance and insurance solutions.

Koltiva also facilitates the deployment of verification schemes.

International banks

Regional and international financial institutions are increasingly factoring in climate and nature risks and actioning their transition plans. The 141 signatories of the Net-Zero Banking Alliance (NZBA) have committed to set targets to transition their operational and attributable greenhouse gas (GHG) emissions from their lending and investment portfolios to align with pathways to net zero by 2050 or sooner. While the agri-food sector is rarely one of the five priority sectors chosen at the time of joining the NZBA, it is expected to be included among the second set of sectors covered. This should trigger an increasing level of engagement from banks on the transition of their major agri-food clients.[65]

International banks typically underwrite labelled bonds and SLBs, and lend green loans and SLLs (including contingent facilities) to major corporate institutions. More emphasis is needed to ensure that KPIs are material and SPTs are sufficiently ambitious to credibly scale the market, together with strong corporate engagement to ensure financing is reaching farmers. Banks also have a major role to play in developing the offering of sustainable trade finance but there is lack of transparency on the amount currently financed and the underlying principles.[66,67]

Regarding local peers, it is essential that the banking industry sets and actions common DCF policies to create best practice standards and avoid deforestation leaks. More broadly, banks are expected to increasingly conduct more rigorous assessments of each client's transition plan to ensure financing effectively contributes to the decarbonisation of the economy. The University of Cambridge Institute for Sustainability Leadership has proposed building a shared data vault gathering geolocalised production data linked to financial transactions which would considerably improve transparency along the supply chain.[68]

There is an ongoing discussion among NZBA members on the choice of measures of the technological impact achieved by climate transition finance, in addition to the metrics related to GHG emissions. The agri-food sector would benefit from establishing a series of social and environmental KPIs that encompass the multidimensional characteristics of its sector transition.[69]

Standard Chartered

Standard Chartered is a British multinational bank with operations in consumer, corporate and institutional banking, and treasury services. Around 90% of its profits come from Asia, Africa, and the Middle East.

Its latest green financing framework includes various eligible UoP categories:[71]

Agricultural and aquaculture processes:

- Improving the energy efficiency of irrigation.
- Investment in integrated cropland-livestock forestry systems and agroforestry systems targeted at smallholder farmers with sustainable forestry management plans in place.
- Investments in improved farming techniques and equipment which improve yields and reduce inputs such as water, pesticides, and fertilisers. Examples include promotion or implementation of sustainable agricultural techniques and practices including no-till farming systems, soil recovery and restoration of degraded pasture, agricultural practices that use no synthetic fertilizers and pesticides, and crop rotation for carbon sequestration and nitrogen accumulation purposes.
- Investments in vertical farming projects powered by renewable energy sources or power sources with a carbon intensity threshold of 100 gCO_2e/kWh.
- Investment in management and maintenance of protected areas (national and regional natural parks and other protected areas, including coastal and marine ecosystems).

Financing of products and associated activities with certifications applicable to natural materials (list provided).

Investment in alternative proteins

- R&D towards cultured meat.
- R&D and production of fermented meat with significantly lower GHG emissions compared to plant and animal production counterparts.
- R&D and production of plant-based protein with (i) evidence of life-cycle GHG emissions being significantly lower than meat counterparts and (ii) production that procures raw materials from certified sustainable sources listed above.

Climate change adaptation

For example:

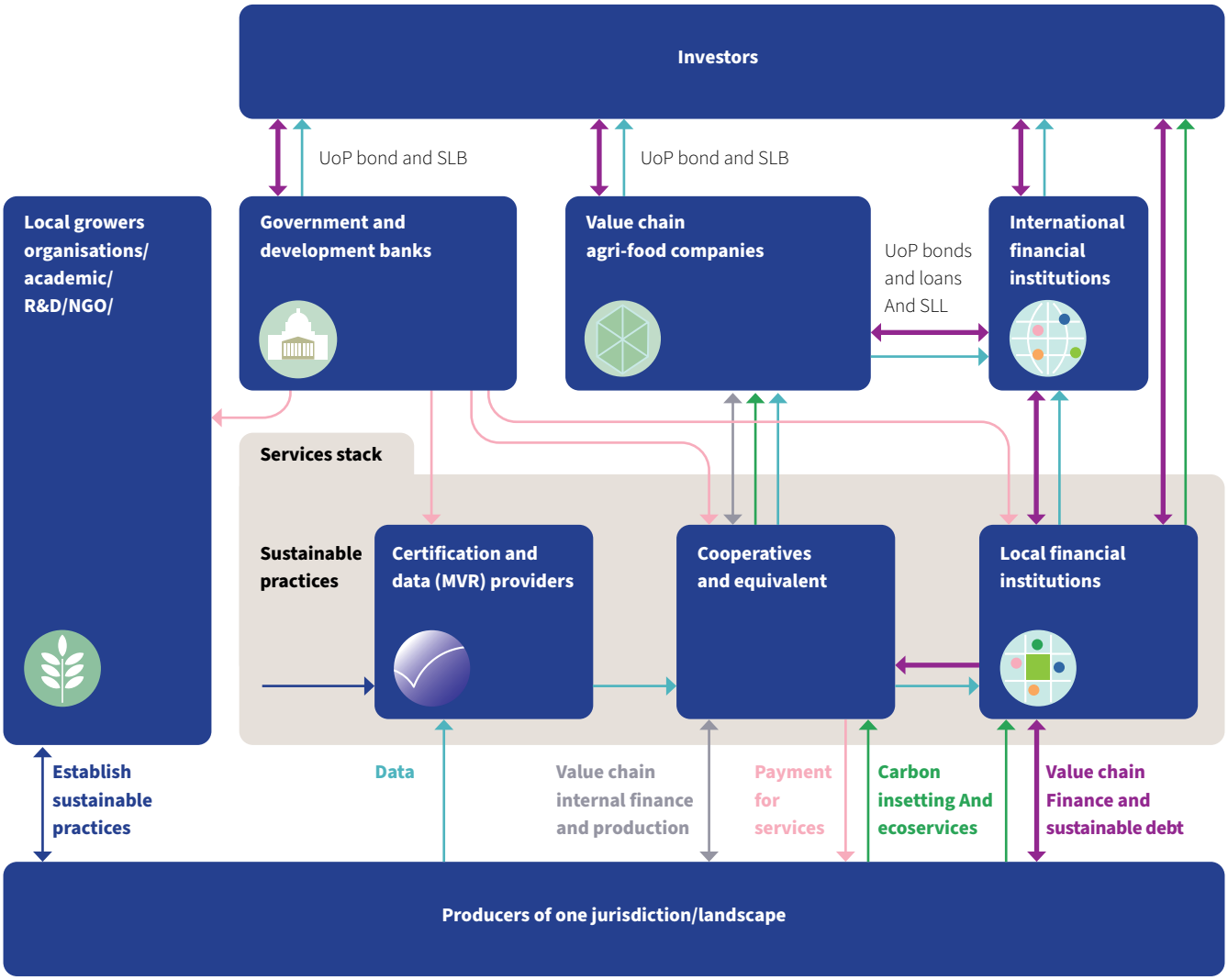
- Use of climate resilient crops (e.g., drought resistant seeds) and drip irrigation for agricultural production systems, stormwater storage, grain storage, soil rehabilitation, climate resilient livestock infrastructure (e.g., cooling sheds, emergency shelters).
- Wildfire safety infrastructure and equipment such as HD-cameras, weather stations, fire resilient utility lines.
- Wild brush clearing, species diversification, transmigration of species more capable of survival, nature-based solutions such as afforestation and reforestation, mangrove conservation and replanting, restoration of salt marshes, peatland restoration.

Activities which enhance food security

- Investment in the manufacture, logistics, provision and distribution of food and nutritional supplements in developing but not high-income countries as per the UN WESP report, where there is an explicit need to tackle food security or food loss that will be affordable to all regardless of ability to pay.
- Investment in infrastructure such as warehouses aimed at providing adequate storage, improved food conservation or connectivity in the food chain for reducing food loss.
- Goods which are Fairtrade certified.
- Support to smallholder farmers, including equipment and facilities that help to prevent food loss and waste, improve productivity, and increase market access to smallholder producers.

Standard Chartered sustainable finance framework is one of the most detailed and holistic frameworks observed among the 2023 issuances. Future frameworks could include loans for activities that need transitioning but how these would be structured to be credible enough for inclusion in bank sustainable finance bond issuances has yet to be defined by sustainable finance standards. Climate Bonds Standards and Sector Criteria can serve as a benchmark for a set of minimum criteria, strong enough to ensure credibility.

Figure 1: multi stakeholder sustainable financing model



Towards a multi-stakeholder sustainable financing model and catalytic funding

Building on the previous work of CISL, the World Economic Forum, and the previous sections, a model for financing the agri-food transition is depicted in figure 1 and highlights the flow of transition finance between key stakeholders.[72]

Impactful transition at production level needs a landscape or jurisdictional approach that incorporates a certain number of services for the farmer that are compatible with one another. These services include collaboration and training with other growers, NGOs or academic partners, a standard setter, a certification provider, a data platform provider, and local financial services. Some of these services can be developed by agritech and fintech companies.

In addition to receiving better terms for classical debt instruments and internal or external supply chain finance directly linked to the production of commodities, farmers might need upfront payments or guarantees to cover their losses during the first years of implementation. By building precompetitive collaborations between the various actors along the value chain and financial institutions, aggregative capital can cover the costs, and risks can be shared and lowered for all. Some regions might need the involvement of development banks and governments to provide catalytic concessional and long-term investments.

Co-financing opportunities

The Africa Rural Climate Adaptation Finance Mechanism (ARCAFIM) is a financing programme being structured and launched by the International Fund of Agriculture Development (IFAD) to catalyse and scale private sector climate change adaptation financing targeting smallholders and rural businesses in Africa.

ARCAFIM has two components: a loan facility, and technical assistance (TA). The blended finance loan facility leverages international concessional capital to crowd-in local private capital to finance climate change adaptation investments. IFAD, on behalf of international funders, namely the Green Climate Fund (GCF), the Government of Finland, and the Nordic Development Fund, will provide a loan of USD90m to Equity Bank (Kenya) Limited (EBK), the largest banking subsidiary of Equity Group Holdings PLC, to fund part of the first-loss tranche and the second-loss tranche of the loan facility. EBK will on-lend loans from IFAD to Equity Bank Uganda Limited, Equity Bank Rwanda PLC, and Equity Bank (Tanzania) Limited. Equity Group will contribute a matching amount of USD90m, hence bringing the total financing available for CCA loans to small producers and agri-MSMEs in the four target countries to USD180m.[73]

In 2023, IFAD issued a USD123m sustainability bond to finance its development projects and programmes.

Development banks and governments must also invest in infrastructure (irrigation technology, storage facilities, telecommunications) to lower food waste and alleviate poverty.

Sustainable finance is already actively used by these institutions. By the end of 2023, Climate Bonds had recorded 50 countries with sovereign GSS+ deals in alignment with its methodology. The cumulative volume of aligned sovereign GSS+ deals was close to USD0.5tn. UoP often include both nature conservation and agriculture. In 2023, development banks issued USD24bn of UoP bonds in alignment Climate Bonds database methodologies.

Ecosystem services and carbon credits have been advanced as an additional way to finance the agricultural production shift and more generally as a form of payment for the environmental services farmers participate in by maintaining natural habitat, reducing water pollution and flooding, ensuring higher food quality, and reducing emissions. Sustainable finance can also be used to raise funds for ecosystem conservation. In 2023, UoP bonds with cumulative volume of USD250bn included sustainable land management in their eligible project categories.

African Development Bank

In 2023, the African Development Bank priced four green bonds for a cumulative sum of about USD500m. The UoP eligible activities included, among others:

Agriculture

- Certified agricultural practices such as Global Good Agriculture Practices (GAP), UTZ (sustainable farming) or IFOAM (International Federation of Organic Agriculture Movements),
- Sustainable agriculture practices incentivising minimal or no use of synthetic fertilisers and pesticides,
- Climate smart agriculture practices and farm inputs,
- Increased food storage.

Biodiversity and ecosystems

- Biosphere and ecosystem conservation projects,
- Improvement of the resilience of ecosystems and local populations,
- Soil recovery and protection against erosion,
- Coastal adaptation projects including flood protection infrastructure and flood risk reduction.

Malaysia's sovereign sustainability sukuk

In 2023, the government of Malaysia issued a USD2.2bn sustainability sukuk to support its achievement of the UN SDGs.

The UoP eligible project categories included sustainable management of agriculture including:

Monitoring, control and surveillance for fisheries, mangroves, wetlands, forest cover and national parks. Automated weather stations and systems;

Implementation of sustainable agriculture techniques which may include remediation and restoration of degraded soil, minimum or no use of synthetic fertilizer and pesticides, crop rotation, no-till farming, and precision farming;

Sustainable agriculture production which may include production of organic farming under myOrganic and myGap.

Outlook

This report illustrates that sustainable finance for the AFOLU sector is already being deployed by international financial and non-financial institutions. By facilitating the financing of both social and environmental projects, sustainable finance is versatile enough to capture the multifaceted financing needs of the sector.

The transition of the AFOLU sector is about supporting strong collaboration among all private stakeholders, both small and large, and jurisdictions to ensure a system-wide shift.

Farmers need incentives and support to shift production practices. Understanding their socio-economic needs and building local expertise in adequate sustainable practices are the foundations which must underpin impactful sustainable finance instruments. Local institutions like banks, NGOs, or public services and farmer representatives must collaborate to identify the resulting financing needs. This set of local services can build the bridge between sustainable finance that is at this stage deployed mainly by international stakeholders, and small-scale producers. Climate Bonds Sector Criteria on Agriculture Production and Deforestation and Conversion Free (DCF) Sourcing facilitate the transposition of local financing needs into a harmonised sustainable finance framework that can be understood by international stakeholders. These criteria can be used for any commodity production and any location, and they bring scientific rigor to the selection of practices eligible for sustainable financing frameworks.

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