

# Agri-food Transition Principles

**Draft summary version**

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## 1. Introduction

The agri-food sector contributes a third of global Green House Gas (GHG) emissions,<sup>1</sup> consumes around 70% of global fresh water withdrawals<sup>2</sup> and is the primary driver of habitat and biodiversity loss; Food and Agriculture Organisation (FAO) reports it is responsible for 90% of deforestation globally.<sup>3</sup> Meanwhile, around 55% of the world's crop calories go towards feeding people directly; the rest are fed to livestock (36%) or turned into biofuels and industrial products (9%).<sup>4</sup> Out of the food produced, as much as 31% is lost or wasted along the supply chain: around 14% is lost from production before reaching the retail level<sup>5</sup> and a further 17% wasted in households, catering and retail.<sup>6</sup>

At the same time, agri-food is highly vulnerable to climate change, as production depends on predictable temperatures, rainfall and stable storage conditions. As such, the sector must be at the forefront of a resilient transition to net zero that both decarbonises the sector but also increases resilience to climate shocks, protects biodiversity and ensures food security. The global climate change scenarios that plot decarbonisation paths have made it clear that the wider agriculture, forestry and land use (AFOLU) sector is required to reach net zero before 2050 in order to balance GHG emissions through carbon removal (sequestration).<sup>7</sup>

However, the diversity, fragmentation and context specificity of agri-food systems all create challenges for defining this transition to net zero. In addition, agri-food supply chains are complicated and geographically diffuse meaning supply chain transparency and responsible sourcing can be a challenge to establish and expensive to monitor.

To support action, a range of science-based pathways to net zero are being developed for the sector, these need to be incorporated into the transition plans being developed by companies to deliver on their net zero commitments. Technologies are also emerging that have the potential to greatly reduce GHG emissions, including precision farming and cold chain technologies through to alternative proteins and feed additives to reduce methane from livestock.

The complex nature of the agri food sector means that its transition must address a wider range of issues than solely climate mitigation. Ending deforestation and conversion of natural habitats, protecting biodiversity, and improving water use and quality are also crucial, as well as just transition and social resilience.

Transition finance instruments have already been issued for agri-food investments, including Sustainability-Linked Bonds (SLBs), Use of Proceeds (UoP) and Sustainability-Linked-Loans (SLLs), but their climate credentials appear unreliable; gaps are observed between pledges and actual actions and scope 3 emissions coverage is lacking. Therefore, a robust framework is needed to align with 1.5°C climate targets, and the aforementioned sustainability goals to generate market confidence, as well as provide issuers with guidance as to what 'good' looks like.

## 2. Transition Principles from an agri-food perspective

'Good' transition finance must be credible. To help define this, Climate Bonds has established a set of five **Transition Principles**<sup>8</sup>. They require science-based, 1.5-degree aligned targets, exclude offsets but include scope 3 emissions, are based on technological viability and depend on action rather than pledges. These are discussed further below.

Importantly, **any entity, activity or project** meeting these principles is considered to be substantially contributing to the attainment of the Paris Agreement goals and should therefore be eligible for capital investment that has a climate or environmental mandate. Whilst the Principles were initially designed to address GHG emissions reductions, they can also be applied to other agri-food system goals.

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<sup>1</sup> FAO, (2021), [The share of agri-food systems in total greenhouse gas emissions \(fao.org\)](https://www.fao.org/3/cb000e/cb000e01.htm)

<sup>2</sup> World Bank, (2022), [Water in Agriculture \(worldbank.org\)](https://www.worldbank.org/en/topic/agriculture)

<sup>3</sup> FAO, (2022), [COP26: Agricultural expansion drives almost 90 percent of global deforestation \(fao.org\)](https://www.fao.org/3/cb000e/cb000e01.htm)

<sup>4</sup> Cassidy et al, (2013), [Redefining agricultural yields: from tonnes to people nourished per hectare, Environmental Research Letter, vol. 8 no. 3](https://www.researchgate.net/publication/260211111)

<sup>5</sup> FAO, (2019), [The state of food and agriculture \(fao.org\)](https://www.fao.org/3/cb000e/cb000e01.htm)

<sup>6</sup> UNEP, (2021), [UNEP food waste index report 2021 \(unep.org\)](https://www.unep.org/foodwaste)

<sup>7</sup> IPCC, (2022), [Climate Change 2022- mitigation of climate change - summary for policy makers\(ipcc.ch\)](https://www.ipcc.ch/report/2022/)

<sup>8</sup> Climate Bonds, (2020), [Principles for Transition \(climatebonds.net\)](https://www.climatebonds.net/principles)

To support the implementation of the principles, Climate Bonds has established four **transition categories** for economic activities, each one reflecting the potential for alignment with a net zero economy: near zero, pathway to net zero, interim and stranded. See Table 1 below for further explanation and agri-food examples.

The categorisation is based on: (1) the length of time a product or service delivered by the activity is needed, this depends on the availability of low-carbon substitutes, and (2) the possibility of decarbonising the activity, so that it aligns with the Paris Agreement.

**Table 1 Transition categories: example activities and measures<sup>9</sup>**

Category	Economic activity	Decarbonisation measure (to decarbonise economic activity)	Measures to transition away from unsustainable activities
<b>Near zero</b>	Bioenergy generation from agricultural waste Landscape restoration (of deforested areas)		n/a
<b>Pathway to net zero</b>	Crop production Mixed farming systems  Feed manufacture Food, drink and ingredients manufacture Logistics, supply/ cold chain  Food retail/ grocery Catering	Climate-smart crop management (regenerative farming, agroforestry, precision tech, controlled environments)  Post-harvest tech to reduce losses  Supply chain transparency, traceability, responsible sourcing, due diligence  Installation/ retrofit of energy efficient cold chain and processing facilities, eliminating HFCs / CFCs  Reduce, recycle, re-use packaging  Switch to renewable energy use  Food waste reduction and processing  Promotion of healthy diets	n/a
<b>Interim</b>	Livestock breeding/ production	Climate-smart livestock management (regenerative, organic farming, agroforestry, precision farming)  Anaerobic digestion	Switch to mixed farming systems with cropping and/or silvopasture
<b>Stranded</b>	Biofuel production Fossil fuel fertiliser manufacture		Phase out biofuel production  Early decommission of fossil fuel fertiliser manufacture
<b>Enabling</b>	Farm advisory and extension services	Remote delivery through IT solutions	n/a

<sup>9</sup> The activities and measures shown are non-exhaustive and carry no ranking or weighting

**Principle 1 In line with 1.5-degree trajectory**

All goals and pathways need to align with zero carbon by 2050 and nearly halving emissions by 2030.

The Paris Agreement aims to keep global warming below 2 degrees and ideally 1.5 degrees, equating to global net zero emissions collectively by 2050 and halving emissions by 2030. This is a challenging goal requiring all sectors to maximise both emissions reduction and carbon sequestration as early as possible and continuously improve over time, in line with their sector-based pathways. For the AFOLU sector, net-zero can be reached ahead of 2050 and will require a number of actions taken by actors across the sector to rapidly decarbonise as well as address the other food system goals outlined above. Activities that will support alignment with these science based AFOLU pathways will include protection and restoration of forests and other natural ecosystems, improving soil health, investing in precision agriculture, vertical farming<sup>10</sup> and alternative proteins, reducing food loss and waste, improving resource use efficiency through circularity, and promoting healthy diets (see Table 1). If these activities are pursued effectively, in combination, they have the potential to create a large negative emissions balance for AFOLU well before 2050, helping to reduce global emissions to net zero.

**Principle 2 Established by Science**

All goals and pathways must be led by scientific experts and be harmonized across countries.

Benchmarking of corporate performance against independently established, scientifically grounded, forward-looking transition pathways is important to ensure 1) the requisite level of climate ambition and 2) comparability between those setting targets. Benchmarking simply against own prior performance or against peers is not sufficient.

Existing international standards guidance is available from the Intergovernmental Panel on Climate Change (IPCC) for mitigation pathways compatible with 1.5 degree global warming; the Science Based Targets Initiative (SBTi) has recently released its Forest Land and Agriculture (FLAG) guidance and the GHG Protocol land sector and removals guidance is due out late 2022.

Sustainable finance taxonomies<sup>11</sup> are available, some of which cover agriculture, including the [Climate Bonds taxonomy](#), first launched in 2021, and the [Colombian Green Taxonomy](#), published in 2022. The People's Bank of China (PBoC) has a taxonomy that includes guidance on green agriculture standards and classifications of certified activities. The EU published its taxonomy in 2020 and, whilst it does not initially cover agriculture, work is under way to prepare technical criteria for the sector; the responsible Technical Expert Group (TEG)<sup>12</sup> has indicated that credible transitional pathways should be based on science and a consensus over mitigation or adaptation effects and wider agri-food system goals. Various other countries are developing criteria in the sector, including Singapore and South Africa.

Whilst there are differences between the focus and categorisation of activities in respective taxonomies and standards, each help to provide stakeholders with greater clarity on the sustainability of transition activities.

**Principle 3 Offsets alone are not sufficient and pathways should include scope 3 emissions**

Credible transition goals and pathways should not rely on offsets ahead of internal transitional activities. Scope 3 emissions should be counted.

Scope 3 emissions, those stemming from bought and sold products, are highly prevalent in agri-food value chains; firms will be expected to improve upstream traceability of upstream scope 3 and downstream influence. Whilst sector fragmentation creates its challenges, not least current difficulties in traceability, sustainable sourcing is a valid expectation for any credible transition.

<sup>10</sup> The cultivation of crops using hydroponic and aeroponic technologies, organised in vertically stacked layers

<sup>11</sup> Frameworks that classify assets and projects to help indicate their sustainability credentials

<sup>12</sup> EU, (2019), [Taxonomy Technical Report \(ec.europa.eu\)](#)

First and foremost, entity transition pathways must be based on decarbonisation activities, rather than offsetting. Once every technologically feasible decarbonisation avenue has been exhausted then the balance of remaining emissions can be offset.

**Principle 4 Technological viability trumps economic competitiveness**

Pathways must include current and expected technologies. Where a viable technology exists, even if expensive, it should be used to determine the decarbonization pathway for that economic activity.

Transition pathways need to be ambitious and technically feasible to maximise opportunities to reduce emissions and embrace measures that incentivise innovation and emerging technologies (see Table 1).

Technologically feasible options already in commercial use should not be ruled-out, even if expensive compared to business-as-usual. Short-term economic barriers to uptake can rapidly be addressed through incentives and support.

**Principle 5 Action, not pledges**

A credible transition is backed by a clear plan rather than a commitment/pledge to follow a transition pathway at some point in the future. In other words, this is NOT a transition to a transition.

There is a need for practical action to be taken to identify means to rapidly decarbonise activities and increase carbon sequestration. These should involve steps being taken to engage with suppliers and increase supply chain transparency and monitoring, clear commitments to due diligence and avoidance of commodities associated with land conversion, and identification of value chain points where food loss and waste can be addressed for example. The necessary capital expenditure (CapEx) and operating expenditure (OpEx) investments should be identified and action taken to earmark or raise the finance.

### 3. Transition Hallmarks from an agri-food perspective

Taking the Principles a step further, Climate Bonds has created a framework dedicated to **defining and guiding the creation of credible and ambitious transition plans at the entity level**. It aims to encourage companies to plan and deliver a transition that is rapid and robust enough to align with the Paris Agreement climate goal, as set out above in Principle 1, and to enable investors to identify these companies. This framework comprises **five Hallmarks for credible transition**.<sup>13</sup>

**Hallmark 1 Paris aligned targets**

- Select externally established sector-specific transition pathway aligned with 1.5 degree goal
- Set company-specific performance targets (PTs) that align as early as possible with that pathway
- In line with the Transition Principles above, the pathway and PTs must be science based, address all material emissions (scopes 1, 2 and 3) in the short, medium and long term, and restrict offsets to the 'last mile' of residual emissions

The performance targets (PTs) selected by the company reflect the commitment, willingness and ability of that company to decarbonise. Given the collective need to halve emissions by 2030, decarbonisation should be rapid and front-loaded. Companies should pivot their activities away from stranded and interim activities towards near-zero or pathway to zero activities and decarbonise those pathway to zero activities as soon as possible to align with relevant agri-food green transition pathways. E.g. a food manufacturer's performance targets for 2030: 50% of ingredients are

<sup>13</sup> Climate Bonds, (2022), [Transition finance for transforming companies](#)

sourced from holdings practicing regenerative agriculture, reaching 100% by 2040; food loss and waste are reduced by 50% by 2030; 100% of commodity X shall be certified as sourced from land use conversion-free production by 2030.

Entity transition is strengthened by including PTs that address the aforementioned agri-food system goals, covering land use change, biodiversity, water use and quality, food loss and waste, and just transition (see Table 2 below).

#### **Hallmark 2 Robust plans**

- Set the strategy and plan to deliver on those performance targets
- Prepare associated financing plan detailed cost estimates and expected sources of funding
- Put in place necessary governance frameworks to enact change.

For agri-food companies, the transition plan details how they will deliver the performance targets established through Hallmark 1. It should clearly state their current position, demonstrating an understanding of the sources of GHG emissions and the levers that can and will be pulled to address those, alongside other salient sustainability impacts of their operations.

#### **Hallmark 3 Implementation action**

- The sourcing, use and impact of capital expenditure and operating expenditure.
- Cover and explain the other actions detailed in the strategy.

Lags can occur between establishment of Transition Plan and delivery on the performance targets. Time is needed to raise and deploy finance and 'bed in' activities. E.g. it would take time to adopt precision agriculture technologies and methods into the company's operations and the time to train and/or redeploy staff to be able to operate it. Interim performance indicators should be set out to enable assessment of progress and commitment. These might include establishing traceability of agri-food goods along the value chain, roll-out of CapEx, changes to OpEx, phasing out of unsustainable activities, changes to supplier relationships and training of (potentially) large numbers of producers.

#### **Hallmark 4 Internal monitoring**

- Track performance against selected performance targets.
- Re-evaluate and recalibrate performance targets as needed

Companies should have processes in place to track performance against performance targets, including delivery of the underlying actions. Appropriate tracking and estimation tools are needed, including but not limited to GHG performance. This acts as feedback to Hallmarks 2 and 3.

This is particularly relevant to firms investing in emerging technologies to continually examine the latest climate impact innovations and regularly monitor whether they can increase the ambition of the performance targets in line with technological feasibility offered in the sector. E.g. a food distribution company may include a re-evaluation of technological developments in low-carbon transport used in their logistics, including adoption of hydrogen powered shipping and/or the use of electric powertrains for supply chain transportation.

#### **Hallmark 5 External reporting**

- External reporting and independent verification on the KPIs and strategy to deliver (per Hallmarks 1 and 2)
- Annual reporting of independently verified progress in terms of action taken and performance against targets (per Hallmarks 3 and 4).

Agri-food firms should publicly disclose their performance targets, their rationale, method of calculation and tools for performance tracking, as well as a narrative transition strategy, detailing changes that will be undertaken to deliver those targets. Up-to-date reporting is needed, at least annually, covering factors driving performance. This is pertinent in agri-food due to production seasonality.

Disclosures should be supported by a verification assurance report from an independent, external verifier with relevant expertise, such as an auditor or environmental consultant. In the case of certification from Climate Bonds, approved verifiers will fill this role.

## 4. Towards an agri-food transition framework

The Principles and Hallmarks provide a solid foundation for agri-food transition, centred on decarbonisation. However, the sector is deeply intertwined with the wider natural and social space and highly dependent on functioning ecosystems and regular weather patterns; it also provides incomes and livelihoods to billions of people.

As such, the decarbonisation framework will be expanded to address agri food's other key environmental and social challenges identified above: **land use change, biodiversity, water use and quality, food loss and waste, circularity and just transition**. This will help to shape a dedicated assessment tool for agri-business transition plans and criteria to assess procurement strategies; additionally, four sets of criteria with transition pathways will be developed, focusing on key subsectors where transition finance can have a crucial impact on agri-food transition.

As we have seen above, the Climate Bonds papers on Transition Principles and Hallmarks for Transitioning Companies set out key components of transition finance and company transition, respectively. Other initiatives have similar aims, relating to climate change, as well as other agri-food systems goals. In Table 2, below, we identify these other frameworks<sup>14</sup> and consider commonalities, to maximise alignment across them, using these components as the basis.

## 5. Conclusion

Agri-food plays a pivotal role in the transition to net zero, both in terms of climate change mitigation and adaptation. Sustainable finance can help facilitate the measures that need to be taken, but action is needed to ensure that investments are credible and avoid 'greenwashing'.

Climate Bonds has developed a set of **Principles** and **Hallmarks**, which provides a robust framework for an ambitious and inclusive approach to transition. This is fully applicable to agri-food activities, whatever their position on the pathway to net zero, and it offers sound guidance for corporate transition planning.

Moreover, agri-food carries several other vitally important environmental and social goals and so, a dedicated framework will be adapted during 2022/23, to provide comprehensive coverage.

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1. Ceres [Investor Guide to Climate Transition Plans in the U.S. Food Sector](#);
  2. Food, Agriculture, Biodiversity, Land-Use, and Energy (FABLE) [Consortium Pathways to Sustainable Land-Use and Food System](#);
  3. Science Based Targets Initiative (SBTi) [Guidance for Forestry, Land and Agriculture](#);
  4. EU Platform on Sustainable Finance [Recommendations for Significant Contribution to Biodiversity](#);
  5. International Capital Markets Association (ICMA) [Principles for Sustainability Linked Bonds](#);
  6. Accountability Framework Initiative (AFI) [Core Principles](#);
  7. Agro-biodiversity Index (ABI) [Mainstreaming Agrobiodiversity in Sustainable Food Systems](#);
  8. Global GAP [Standards](#);
  9. International Standards Organisation (ISO) [ISO and Agriculture](#), [ISO and Water](#) ;
  10. Food Loss and Waste Standard (FLW) [FLW Standard](#); and
  11. Sustainability in Packaging Holistic Evaluation for Decision-Making (SPHERE) [the packaging sustainability framework](#)
  12. Just Rural Transition (JRT) [Framework](#).

Table 2 – Preliminary assessment of how existing frameworks cover transition principles, hallmarks and agri-food system goals (CB internal analysis, 2022)

Criteria		Ceres	FABL	SBTi	EU	ICMA	AFI	ABI	GAP	ISO	FLW	SPH	JRT	CBI
Principles	In line with 1.5°C trajectory- short/med/long-term targets	●	●	●		○								●
	Established by science	●	●	●	○	●								●
	Offsets don't count	○		●	●									●
	Technological viability trumps economic competitiveness	○			○									●
	Action, not pledges	●			●	○	●							●
Hallmarks	Paris-aligned targets	●	●	●		●	○							●
	Robust plans	●				●	○							●
	Implementation action	●				●	●							●
	Internal monitoring			●		●	●							●
	External verification and reporting			●		●	●							●
Other agrifood system goals	Land Use Change (LUC) Emissions included within scope	●	○	●										*
	Zero deforestation across whole supply chain	●	●	●	●		●							*
	Zero peatland conversion across whole supply chain	●	●	○	●		●							*
	Zero natural land conversion across whole supply chain	●	○	○			●							*
	Biodiversity		●	●	●			●	●					*
	Water (use, quality)		●	●	●			○	●	●	○			*
	Food loss and waste	●	●		●							●		*
	Circularity in packaging									●			●	*
	Just transition						●						●	*

● explicitly incorporated into the framework; ○ partially or implicitly referenced in the framework (e.g. AFI targets zero deforestation across supply chains without mentioning 1.5°C alignment); \* under review in the Climate Bonds Agrifood Transition Programme.