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# Landscape of Climate Finance for Agrifood Systems

## Report Annexes

July 2023



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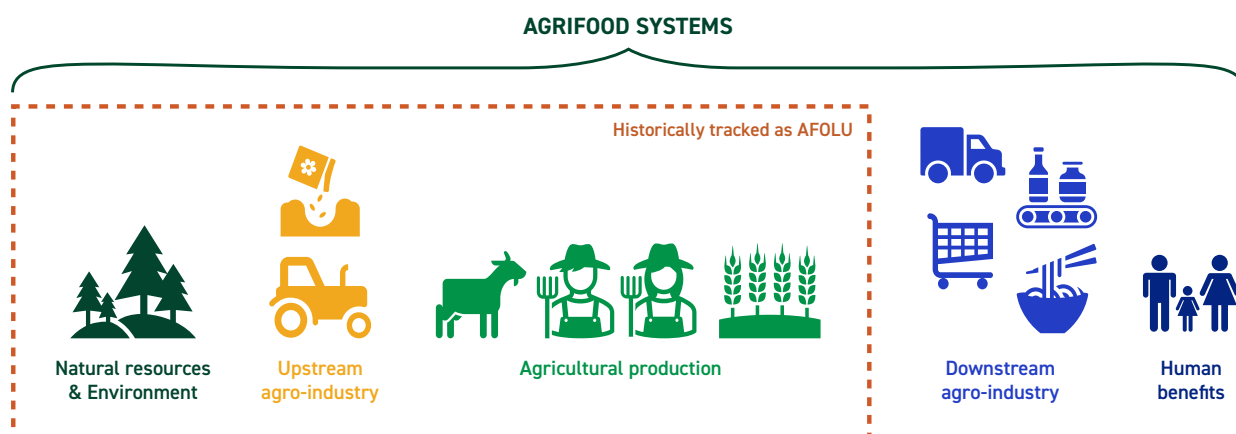
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# ANNEX 1: DEFINITION AND TRACKING FRAMEWORK

## DEFINITION

The concept of “agrifood systems” (Campanhola and Pandey, 2019; FAO, 2021c; HLPE, 2020) encompasses the processes and actors that convert natural resources and the environment into benefits and costs for humans through agricultural production and agro-industries (Campanhola and Pandey, 2019), as shown in Figure A.1.

Figure A.1. Agrifood systems concept: segments & interactions



Source: Campanhola and Pandey, 2019, adapted

**Agricultural production** is placed at the center of agrifood systems, with the other components revolving around it. According to this definition and throughout our analysis, agricultural production covers both food and non-food products (i.e., biofuel, fibres, or timber) (Campanhola and Pandey, 2019). Both food and non-food production and relevant industries are included based on the recognition that both types of value chain compete for fertile land within themselves, between each other and with natural ecosystems (FOLU, 2019). They are also driven and rely on the same farmers, especially in developing and emerging markets (FAO, 2022c). Reflecting this, many projects tracked in our data combine aspects of crop, livestock, fisheries, and forestry. From this perspective, excluding non-food value chains from agrifood systems would be an artificial operation and reduce the value of the systemic approach adopted.

In terms of **natural resources**, agrifood systems encompass land-based systems with the sub-sectors of crop cultivation, livestock raising, hunting, gathering of products from and harvesting of forests as well as water-based systems including fisheries and aquaculture.

Upstream agro-industry includes provision of agricultural inputs like seeds, breeding stocks, fertilizers, pesticides, farm machinery, feed processing, as well as the wider enabling environment providing extension and financial services, the governmental administrations and regulatory bodies, and agricultural research (Campanhola and Pandey, 2019).

**Downstream agro-industry** entails “handling, processing, preserving, transporting, and marketing agricultural products” (Campanhola and Pandey, 2019), as well as disposal through loss or waste (von Braun, 2020).

Of particular interest for this study are the agrifood **benefits and costs to humankind** that have an impact on climate or are impacted by it. Those include consumption patterns and low-carbon diets, rural livelihoods, and bio-energy. Our analysis does not cover financial flows directed towards general social protection, security, culture, or healthcare systems, which are not currently covered by climate finance data.<sup>1</sup>

These actors and segments of agrifood systems are in constant movement, creating complex interactions and feedback loops (FAO, 2018). For example, changes to downstream consumption patterns affect the benefits and costs for humans, and influence production at farm level through downstream industries. Agricultural production in turn influences demand for agricultural inputs, such as seeds and fertilizers, provided by upstream industries. Furthermore, agricultural practices, technologies, and inputs affect the natural environment such as land, water, vegetation. In return, water availability and soil quality have direct impacts on agricultural yields and livestock health.

## TRACKING FRAMEWORK

To apply this definition to climate finance data, the analysis of climate financial flows in this report is based on a sectoral classification. This maps out for each sector and solution the activities and sub-activities that are deemed to contribute to climate change mitigation and adaptation in agrifood systems. Data analyzed are for projects with activities that fit this classification. The same classification was used to identify new data relevant for the analysis, even when the respective data was not labelled as climate finance by reporting entities. The structure of this framework, at sector and solution levels, is based on the sectoral framework used for CPI’s flagship Global Landscape of Climate Finance (GLCF) report (CPI, 2021b), allowing us to ensure consistency in data management and comparability across periods.

We built the agrifood system universe using three main categories of sectors:

1. **Agriculture, Forestry, Other Land Uses and Fisheries (AFOLU)**, as derived from the IPCC emissions categories. The identification of eligible activities and sub-activities for the sectors that are part of AFOLU builds on CPI’s 2020 publication on climate finance to small-scale agriculture (CPI, 2020) and is based on the review of taxonomies used by some of the main climate finance reporting bodies (MDBs & IDFC 2021; EIB, 2022a; CBI, 2018a, 2018b, 2021a, 2021b). Financial flows channeled to these sectors are composed of projects that primarily target upstream agro-industries, agricultural production, and its relationship with the natural environment. The complete classification of AFOLU sectors and activities is included in Annex 2. As such, these interventions have been historically reported by funders and investors and included in CPI’s climate finance tracking research in the past 10 years as AFOLU.

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<sup>1</sup> We note that a wider range of human benefits and costs are encompassed by the FAO definition, which includes stability, security, culture, and heritage, in addition to food, nutrition, health, employment, livelihoods, energy, materials, and economic growth. Costs include diseases related to unhealthy diets and overconsumption, zoonotic diseases, antimicrobial resistance, and hazards to which agricultural workers are exposed.

2. **Food loss/waste and diets** is a newly added sector to CPI's classification, introduced for the 2021 edition of the GLCF (CPI, 2021a). The creation of a stand-alone category for food loss/waste and diets was a first step towards a more systemic framework and aims to reflect the importance of downstream agro-industries as well as the benefits and costs to humans. Data for this sector has been bundled historically under AFOLU, and scarcely reported by institutions tracked by CPI. In this report, we reinforce the importance of this stand-alone sector as a part of the agrifood systems to help draw attention to its importance in contrast to the financing and data gaps. To this end, we made efforts to collect company-level data to complement the existing project-level data traditionally collected by CPI.

**Table A.1.** Sectors and activities historically referred to as AFOLU with their corresponding agrifood systems segments

| Sectors  | Solutions and examples  | Most relevant agrifood systems segment   |
|--|---|--|
| Agriculture  | <b>Production and conservation</b><br><i>Agricultural soil restoration</i><br><i>Resilient crops</i><br><i>Animal husbandry and manure management</i><br><i>Farm-level irrigation efficiency</i>  | Agricultural production<br>Natural Resources & Environment<br>Upstream agro-industry |
|  | <b>Supply chain management (commercialization, primary processing, and storage)</b><br><i>Improving carbon footprint of agro- industries</i><br><i>Promoting local and resilient commercialization routes</i>   | Downstream agro-industry   |
|  | <b>Financial services for production, commercialization, storage, and processing</b><br><i>Crop insurance to protect farmers against financial risks posed by adverse weather events</i><br><i>On-lending programs providing credit lines to local commercial banks for disbursement to agri-SMEs</i>     | Upstream agro-industry<br>Downstream agro-industry                                   |
| Forestry & other natural habitats  | <b>Production and conservation</b><br><i>Re/afforestation projects</i><br><i>Forest, mangrove, or peatland conservation</i><br><i>Sustainable forestry (selective logging)</i>  | Agricultural production<br>Natural Resources & Environment                           |
|  | <b>Supply chain management (commercialization, primary processing &amp; storage)</b><br><i>Improving carbon footprint of forestry-related businesses and industries</i><br><i>Promoting local and resilient commercialization routes</i>  | Downstream agro-industry   |
| Fisheries  | <b>Fishing and aquaculture</b><br><i>Sustainable management of fisheries (quotas, etc.)</i><br><i>Energy efficiency and fuel switches in fishing boats</i>  | Agricultural production<br>Natural Resources & Environment<br>Upstream agro-industry |
|  | <b>Supply chain management (commercialization, primary processing &amp; storage)</b><br><i>Energy-efficient refrigeration technologies to improve fish storage and transportation</i><br><i>Implementing digital technologies like blockchain for better traceability, efficiency, and sustainability</i> | Downstream agro-industry   |
| <b>Food loss/waste &amp; diets</b><br><br>(Historically bundled with one of the above sectors or the Other/ Multiple category) | <b>Reduced food loss/waste</b><br><i>Changes in consumption habits</i><br><i>City-level composting projects</i><br><i>Food waste diversion</i>  | Downstream agro-industry<br>Human costs and benefits                                 |
|  | <b>Low-carbon diets</b><br><i>Production of alternative proteins</i><br><i>Promotion of low-meat diets</i><br><i>Consumption of local food</i>  | Human costs and benefits   |

3. **Other non-AFOLU economic sectors intersect with AFOLU to create the dynamics of agrifood systems and service their various segments.** These sectors help shape agrifood systems and are analyzed in this study for the first time (these are shown in Table A.2). They are typically interventions that take place in upstream and downstream agro-industries, support agricultural production activities, or are complementary to them. Historically, these have been analyzed in CPI's GLCF as uniquely contributing to their primary sector (e. g., energy systems, or solid waste sectors). Connecting them to agrifood systems creates a more complete picture of the dynamics between the different components, especially as pre- and post-production processes, including energy, transport, and waste which account for over one third of the GHG emissions from agrifood systems (Tubiello et al., 2021). For ease of identification, we tagged each multi-sectoral project with the AFOLU, or the "Food loss/waste and low-carbon diets" sector it benefits. For example, a project on solar panels for irrigation comes under Agriculture – Production.

Table A.2. Sectors and activities historically tracked under sectors other than AFOLU

| Non-AFOLU sectors    | Measures that support or interact with agrifood systems, and examples   | Possible intersections with:                        |
|----------------------|---|---|
| Energy systems       | <b>Utility-scale bioenergy</b><br><i>Biofuel plants that use agricultural residues or energy crops</i><br><i>Biogas/Biomethane plants that use agricultural or forestry residues, energy crops, or food waste</i> | Agriculture<br>Forestry<br>Fisheries<br>Food & Diet |
|                      | <b>Farm-level renewable energy generation</b><br><i>Farm-level biodigesters</i><br><i>On-site solar power (hangar roofs, fish farms, etc...)</i>  | Agriculture<br>Forestry<br>Fisheries                |
| Water and wastewater | <b>Water supply &amp; planning</b><br><i>Water supply &amp; watershed management programs that support AFOLU uses</i>   | Agriculture<br>Forestry<br>Fisheries                |
|                      | <b>Treatment of agricultural wastewater</b><br><i>Dedicated treatment of agricultural wastewater and manure lagoons</i>   | Agriculture<br>Forestry<br>Fisheries                |
| Solid waste          | <b>Food and organic waste treatment</b><br><i>Landfill gas plants</i><br><i>Solid waste plants with food waste diversion units</i>  | Food and Diet                                       |
| Industry             | <b>Reduced carbon footprint of agri-related industries</b><br><i>Energy efficiency gain and fuel switch</i>   | Agriculture<br>Forestry<br>Fisheries                |
| Transport            | <b>Resilient transport infrastructure</b><br><i>Development projects to maintain and enhance agriculture and forestry commercialization routes</i>  | Agriculture<br>Forestry                             |

## ANNEX 2: CPI CLASSIFICATION OF AFOLU SECTORS

Table A.3. CPI classification of AFOLU sectors

| Solution   | Activity   | Sub-activity  |
|--|--|---|
| <b>Sector: Agriculture</b>   |  |   |
| Sustainable Crops, Agro-forestry, Livestock production   | Management of soil for net carbon sequestration    | Increase in above-ground biomass (cover crops, agroforestry) and residue retention  |
|  | Improve existing carbon pools                      | Sowing of cover/catch crops using a locally appropriate species mixture with at least 1 legume and reducing bare soil to the point of having a living plant coverage index of at least 75% at farm level per year |
|  |  | Reduced tillage techniques that increase carbon content of soil   |
|  |  | Undertake a GHG assessment of sources of emissions and sinks on the farm  |
|  |  | For non-perennial crops, apply crop rotation, including at least one legume   |
|  |  | Increase in above-ground biomass (grassland/pasture productivity, cover crops, agroforestry) by at least 20%  |
|  |  | Prevent soil compaction by avoiding traffic on wet soil; avoiding or strongly reducing tillage operation on wet soils; reducing stock density   |
|  | Management of biomass for net carbon sequestration | Management of crop residues like collection and use of bagasse, rice husks or other agricultural waste  |
|  | Biofuels   | Production of biofuels, including biodiesel and bioethanol  |
|  | Rehabilitation of degraded lands                   | Peatland restoration  |
|  | Soil health and erosion management                 | Mulching with cover crops (green manure), such as forage grass and leguminous forage, in tea and tea-oil plantations to conserve soil moisture and control soil erosion   |
|  |  | Enhancement of soil water retention (e. g., through use of cover crops, organic fertilizers, minimum tillage)   |
|  |  | Organic matter amendments to the soil (compost)   |
|  | Reduction in energy use in agricultural processes  | Energy efficient traction (e.g., efficient tillage)   |
|  |  | Energy efficient irrigation   |
|  | Use of renewable energy                            | Solar energy use for irrigation   |
|  |  | Solar energy use for groundwater pumping  |
| Renewable energy use in greenhouses  |  |   |
| Solar panels or wind turbines on agricultural land/buildings to power the farm or sell to the grid |  |   |



| Solution                   | Activity  | Sub-activity   |
|----------------------------|---|--|
|                            |   | Energy-efficient traction, irrigation, and storage (i.e., within top 25% of energy efficiency rates for equipment available in country)<br>OR uses of only renewable energy  |
|                            | Reduction of non-CO2 emissions from agricultural practices and technologies | Paddy rice management – shallow flooding, mid-season drying event, off-season straw  |
|                            |   | Reduction in fertilizer use; identify right source of fertilizer, right timing, and right placement.<br>Biological N-fixation as the source of nitrogen inputs   |
|                            |   | Nutrient management to reduce N2O emissions, including recording of nutrient applications and use of low emission N-application technology   |
|                            | Crop diversification and resilience   | Provision of information on crop diversification options to farmers  |
|                            |   | Use of improved strains and varieties of crops, which are adapted to the local soil and climate conditions (particularly to droughts and floods)   |
|                            |   | Controlled agriculture (vertical farming, hydroponics)   |
|                            | Nutrient and pest control management  | Integrated pest control measures (chemical and biological)   |
|                            | Water management  | Promotion of adoption of climate resilience technologies to save water (e.g., water recycling)   |
|                            |   | Significant on-farm water-storage capacity as a buffer against the effects of seasonal drought   |
|                            |   | Use of water efficient irrigation technologies, including sprinkle and drip irrigation<br>Lining of canals, changes to flow velocity, new building codes for dams and canals   |
|                            | Weather forecasting   | Forecasting tools and systems  |
|                            | Supporting Infrastructure   | Machinery and equipment to manage and cultivate eligible land or livestock   |
|                            |   | Rehabilitation and protection of climate-exposed roads and buildings   |
|                            |   | Associated management, information systems and other technologies  |
|                            |   | Farm facilities: Modified designs, siting and construction materials, deeper foundations, protective walls, vegetated contour bunding  |
|                            | Livestock practices that reduce methane or other GHG emissions              | Improved feeding practices: use of feed additives that reduce enteric methane emission of ruminants; precision and multi-phase feeding techniques to reduce N2O emissions from manure; use feed sourced responsibly and not produced in deforested areas |
|                            |   | Development of sheep and cattle feed that contains dried seaweed or other ingredients which in turn cut methane emissions significantly  |
|                            |   | Agroforestry, silvo pastoralism or grassland/pasture management that offsets CH4 emissions by at least 20%   |
|                            |   | Better health planning and management – breed selection for improving methane and ammonia emission efficiency  |
| Resilient livestock breeds | Using species and breeds adapted to changes in CO2 and climate              |  |

| Solution   | Activity  | Sub-activity  |
|--|---|---|
|  | Manure management   | Manure management with biodigesters producing biogas for heating or cooking   |
|  |   | Practices that reduce or offset CH <sub>4</sub> and N <sub>2</sub> O by 20%: cooling of liquid manure, sealing manure storage, composting                 |
|  | Permanent grassland management  | Pasture renovation<br>Reducing compaction by removing animals from very wet fields<br>Maintain permanent grassland<br>No ploughing of permanent grassland |
| Supply chain management (commercialisation, primary processing and storage)  | Alternative meat and dairy products   | On-site storage at facilities or projects 100% dedicated to production of selected alternative meat and dairy products                                    |
|  | Supply chain  | Input supply systems for seed production, distribution, and access  |
|  |   | Energy efficient primary processing and storage facilities for agricultural produce   |
|  |   | Minimization of post-harvest loss (i.e., through cold chains)   |
| Measures in existing supply chains dedicated to improving in energy/resource efficiency upstream or downstream, leading to an overall reduction in GHG emissions |   |   |
| Financial services for sustainable production, commercialisation, storage, and processing  | Climate risk-based insurance  |   |
|  | Financial services targeting climate vulnerable beneficiaries   |   |
| Research and Development   | Climate focused R&D in crops & livestock  |   |
|  | Testing climate-friendly practices, inputs, adaptive crop varieties or technologies<br>Research relating to climatic trends                     |   |
| Extension Services   | Improving agronomic practices and access to technology and infrastructure   |   |
| Training, and monitoring   | Advisory services on transitioning a farm to climate friendly practices   |   |
|  | Capacity-building, e.g., for improved climate risk management<br>Training in locally appropriate climate-smart/-friendly agricultural practices |   |

| Solution  | Activity   | Sub-activity  |  |
|---|--|---|--|
| <b>Sector: Forestry</b>   |  |   |  |
| Afforestation, Reforestation, Forest Conservation, Sustainable management of existing forest, including extraction of non-timber products | Afforestation on non-forested land   | Conversion of low productivity land (e.g., along field edges) into woodland to increase C sequestration and protect against soil erosion  |  |
|   | Reforestation on previously forested land  |   |  |
|   | Sustainable forest management and conservation of forests to reduce emissions from deforestation and degradation   | Sustainable forest management activities to increase carbon stocks or reduce the impact of forestry activities on soil quality, soil carbon and biodiversity (e.g., harvesting methods, continuous cover, maintaining adequate deadwood)<br>Non-intervention forest management approaches (e.g., reduced harvest)   |  |
|   |  | Ecological diversification, including shifting land use from monoculture to polyculture or other diversified production   |  |
|   |  | Management of seedling stand and timely thinning (to reduce damage from increased wind)   |  |
|   |  | Use of early warning systems or wildfire control measures (in case of heatwaves)  |  |
|   | Production of non-timber forest products   | Commercial cultivation/extraction of goods derived from forests that are of biological origin other than wood (e.g., timber, bamboo, resin, nuts, mushrooms, fruits, herbs, game, fibres, medicinal, cosmetic, or cultural produce). Practised in plantations or sustainably managed forests.   |  |
|   | Forest conservation  | Non-commercial forestry activities designed to maintain the area and quality of existing forest habitat. Activities range from minimal interventions to active management (e.g., protection from deforestation, voluntary and mandatory set-aside and active conservation efforts, geographic information system (GIS) analysis, satellite data collection and analysis). |  |
|   | Forest restoration and rehabilitation  | Non-commercial forestry activities designed to increase the area or improve the quality of existing forest habitat or to establish new forest stands. Activities range from minimal interventions to active restoration including facilitating regeneration and restoration via natural or artificial means.  |  |
|   | Conservation of non-forested land  | Conservation of non-commercially productive land to maintain existing habitat area and quality (e.g., establishment of protected land or national parks, voluntary or mandatory set aside)  |  |
| Restoration or rehabilitation of non-forested land  | Restoration/rehabilitation of non-commercially productive land to improve quality or increase the area of existing habitats, or to establish new habitats  |   |  |
| Reduction of emissions from deforestation or ecosystem degradation  | Payments for ecosystem services  |   |  |
| Supporting and supply chain infrastructure  | Infrastructure associated with the forestry sector (e.g., storage, manufacture of monitoring and assessing equipment and plant nurseries) and initial processing of timber (e.g., into wood products, paper or pulp) |   |  |
| Supply chain management (commercialisation, primary processing and storage)   | Supply chain   | Associated management, information systems and other technologies   |  |

| Solution   | Activity  | Sub-activity  |
|--|---|---|
| <b>Sector: Fisheries</b>   |   |   |
| <b>Sustainable fish production</b>   | Supporting Infrastructure   | Energy efficient machinery and equipment to manage and harvest in fisheries and fish farms (e.g., fishing vessels)                                      |
|  |   | On- and off-shore fish processing and storage facilities connected to eligible fisheries and fish farms   |
|  |   | Associated management, information systems and other technologies   |
|  | Aquaculture   | Adoption of sustainable aquaculture techniques to address changes in fish stocks resulting from climate change and supplement local fish supplies, etc. |
|  | Energy  | Reduction in energy use or resource efficiency  |
| Supply chain   | Energy efficient primary processing facilities and storage for eligible fisheries and aquaculture activities  |   |
|  | Measures in existing supply chains to improve energy efficiency or resource efficiency upstream or downstream, leading to an overall reduction in GHG emissions |   |
| <b>Supply chain management (commercialisation, primary processing &amp; storage)</b> |   |   |
| <b>Sector: Food Loss/Waste &amp; Diets</b>   |   |   |
| <b>Food waste and low-carbon diets</b>   | Sustainable consumption patterns  | Healthy diets (diversified protein sources, plant-based diets)  |
|  |   | Reducing food loss/waste  |
|  |   | Local loops/links between urban consumers and farmers   |
| <b>Sub-sector: Policy &amp; National Budget Support &amp; Capacity Building</b>      |   |   |
| <b>Policy &amp; National Budget Support &amp; Capacity Building</b>                  |   |   |

## **ANNEX 3: APPROACH USED TO DETERMINE CLIMATE RELEVANCE OF COMPANY-LEVEL DATA**

The climate relevance of the data provided by AgFunder on company-level VC investments was determined based on each company's target market, technology or services provided, and alignment of those with the sectoral classification presented in Annex 2. The analysis is based on data representing the full amount of the investment deal in the respective companies announced in 2019 and 2020. This is based on the assumption that since these companies are startups, they offer a clear and narrow range of services and solutions. This limits (but does not eliminate completely) the risk of attributing climate relevance to companies that provide both climate and non-climate solutions.

## ANNEX 4: SOURCES OF DATA

Table A.4. Breakdown of the data types and sources used

| Data Type          | Scope            | Granularity  | %   | Sources historically used in CPI's GLCF  | Sources used for the current study only   |
|--------------------|------------------|--------------|-----|--|---|
| Project-level data | AFOLU only       | High         | 86% | OECD-DAC, BNEF, CBI, Climate Funds CFU, IATI, and biannual surveys of DFIs, conducted by CPI | The USDA's Natural Resource Conservation Service (NRCS, 2022) and Conservation Reserve Program (CRP, 2020 & 2022); California Department for Agriculture programs (CDFA, 2022); the US Environmental Protection Agency's AgSTAR (AgSTAR, 2022); Environment and Climate Change Canada funding programs (ECCC, 2022); the EU's European Structural Investment Funds (European Commission, 2022a); China's National Forestry and Grassland Administration (NFGA, 2019 & 2020) |
|                    | Agrifood systems | High         |     |  |   |
| Company-level data | Agrifood systems | Medium - Low | 14% | -  | AgFunder  |

## ANNEX 5: APPROACH USED TO IDENTIFY AGRIFOOD SYSTEMS INVESTMENTS IN NON-AFOLU SECTORS

Table A.5 presents the list of keywords used to identify investments outside of AFOLU sectors that support agrifood systems. A manual review covering 95% of the volume of finance extracted with this technique was conducted. An additional review of the largest non-AFOLU financial flows which were not picked up through this keyword search was also conducted. All of the projects that ended up being included from non-AFOLU projects in this study dataset were manually reviewed.

In addition to this approach, bioenergy projects, categorized by feedstock and use (biogas, biofuel, etc.), were extracted from a previous CPI research (CPI, 2022b) and added to this dataset.

**Table A.5.** Keywords used to identify agrifood-relevant investments in data tagged as non-AFOLU sectors

| Matched AFOLU sector                           | Keyword   |
|--|---|
| Agriculture                                    | agriculture/farmer/agricultural   |
|  | agro-forestry/agroforestry  |
|  | soil/crop + cover   |
|  | no/zero/minimum/low till/tilling/tillage/overturn/overturning           |
|  | regenerative agriculture/practice                                       |
|  | crop rotation   |
|  | crop/agri/agricultural/rice/wheat residue/waste                         |
|  | rice/cereal/wheat + husk/hull/straw                                     |
|  | energy crop   |
|  | crop-to-energy  |
|  | crop to energy  |
|  | biofuel/biodiesel/bioethanol  |
|  | peatland  |
|  | cover crop  |
|  | mulch/mulching  |
|  | forage + grass/legume/leguminous  |
|  | soil/land + health/sequestration/erosion/moisture/conserve/conservation |
|  | soil + water  |
|  | organic + fertilizer/input  |
|  | compost   |
|  | energy efficiency + irrigation/irrigate/irrigating                      |
|  | energy efficient + irrigation/irrigate/irrigating                       |
| energy use + irrigation/irrigate/irrigating    |   |
| energy demand + irrigation/irrigate/irrigating |   |

| Matched AFOLU sector  | Keyword  |
|---|--|
|   | renewable energy + greenhouse (gas)  |
|   | solar + greenhouse (gas)   |
|   | passive + greenhouse (gas)   |
|   | thermal + greenhouse (gas)   |
|   | renewable/solar/wind/panel/turbine + agricultural/agriculture  |
|   | rice   |
|   | nitrous oxide  |
|   | n2o  |
|   | crop diversification/rotation  |
|   | intercrop/intercropping/intercropped   |
|   | polyculture  |
|   | agriculture/crop + resilience/flood/flooding/drought/drought-resistant/drought-resilient/flood-resistant |
|   | drought-resistant/resistant/resilience/resilient + seed  |
|   | agriculture/crop/farm/agricultural + water   |
|   | pest control   |
|   | hydroponic   |
|   | water storage + agriculture/crop/farm/agricultural   |
|   | sprinkle/drip/micro-jet + irrigation   |
|   | weather forecasting/monitoring/services  |
|   | soil + analysis  |
|   | satellite + farm/farming/agriculture/agricultural  |
|   | remote sensing + farm/farming/agriculture/agricultural   |
|   | road + rehabilitation/maintenance/work/refurbishment + farm/farming/agriculture/agricultural             |
|   | silvopasture/silvopastoralism  |
| grassland/pasture + restoration/conservation/restore/conservate |  |
| harvest + loss  |  |
| Forestry  | afforestation/forestry/forest/reforestation/tree/reforestation/deforestation                             |
|   | carbon + sequestration   |
|   | forest + management  |
|   | selective felling/cutting/logging  |
|   | wildfire   |
|   | thinning + forest  |
|   | forest/fire/wildfire/deforestation + satellite   |
|   | forest/ecosystem/biosphere + restoration/rehabilitation/conservation/regeneration                        |
|   | ecosystem service  |
|   | forest + road  |
| Fisheries   | fishery/aquaculture/fishing/fish/fisher/fishes   |

To make keyword listing more compact and efficient, we use a simple syntax in this table. A “/” means that the words on both sides of the separator were used interchangeably. A “+” means that the two words, or combination of words had to be found in the same text for the tagging to operate. Finally, a simple space (“ ”) means the two terms had to be next to each other in order to be picked up. The plural form of each word was systematically used interchangeably.



## ANNEX 6: METHODOLOGY USED TO ESTIMATE NEEDED LEVELS OF CLIMATE FINANCE

In this section, we present the methodology used to calculate the level of climate finance needed for agrifood systems globally. Our calculation draws on three distinct studies: FOLU, 2019; UNEP, 2022; Thornton et al., 2023, each of which employs a unique approach to calculate the necessary finance estimates. In an effort to ensure consistency with our conceptual understanding of climate finance and agrifood systems, we have selected subsets of investment figures from these studies to include in our analysis. These investments best align with the definitions of climate finance used by CPI in the Global Landscape of Climate Finance (CPI, 2022a), on which this study draws, as well as with the definition of agrifood systems and the tracking framework used in this study.

The figures presented are estimates of the annual investment required up to 2030 to bridge the financial gap between current and desired outcomes for agrifood systems globally, based on information currently available. Data and knowledge on climate finance needs are constantly evolving and their assessment will change with the course of actions taken by public and private actors and with more data becoming available.

For a more in-depth understanding of the methodology and assumptions used in each of these studies, we recommend exploring the referenced publications, which are summarized below.

### **FOOD AND LAND USE COALITION (FOLU), 2019. GROWING BETTER: TEN CRITICAL TRANSITIONS TO TRANSFORM FOOD AND LAND USE.**

**Total figure included in the current study: USD 212bn**

This study presents an extensive blueprint for transitioning our current food and land use systems to ones that are more sustainable, equitable, and resilient. Central to this report is the “Better Futures” scenario, a forward-looking projection which relies on the successful implementation of ten critical transitions. This scenario envisions a future of net carbon neutrality, biodiversity conservation, improved health outcomes, enhanced rural income growth, increased job creation, and heightened food security.

To achieve this by 2050, the study presents a comprehensive breakdown of annual investment requirements (in 2018 prices) for the period 2018 to 2030, across each of the ten critical transitions. These estimates are based on additional capital investment expenditure (CAPEX) and long-term operating expenses (OPEX) and include both public and private investments. The estimates provided cover the key transformation areas and critical transitions.

For the purpose of the current analysis, we excluded the estimates for activities that are not aligned with our definition of climate finance or agrifood systems. In some cases, the alignment between the activities covered by the FOLU estimates and our definition and

framework is partial, so by eliminating those solutions, we obtained the low-end of the total estimates for agrifood systems. When including both the fully and the partially aligned estimates, we obtained the high-end of the total needs estimates for agrifood systems. To limit overcounting and/or undercounting, we used the average of these two figures.

Table A.6 outlines the specific investment figures incorporated into our aggregated USD 212 billion estimation, which is the midpoint between the low-end average (USD 149 billion) and high-end average (USD 275 billion), as well as those intentionally excluded.

**Table A.6.** Estimated annual investment required (USDbn) between 2018 and 2030 under the 'Better Futures' Scenario (2018 prices) (FOLU, 2019) and categories included in the current study

| Critical Transition                   | Relevant tracking sector | Activities                                       | Climate relevant | Annual investment (low) | Annual investment (high) | Annual investment (average) |
|---------------------------------------|--------------------------|--|------------------|-------------------------|--------------------------|-----------------------------|
| Healthy Diets                         | -                        | Product Reformulation                            | No               | 17.0                    | 17.0                     | 17.0                        |
|                                       | -                        | Global Nutrition Targets                         | No               | 7.0                     | 7.0                      | 7.0                         |
|                                       | -                        | Targeted School Feeding Programmes               | No               | 5.2                     | 5.2                      | 5.2                         |
|                                       | -                        | R&D  | No               | 1.6                     | 1.6                      | 1.6                         |
| Productive & Regenerative Agriculture | Agriculture              | Implementation of Regenerative Farming Practices | Yes              | 4.5                     | 5.5                      | 5.0                         |
|                                       | Multiple                 | Closing the Productivity Gap                     | Partial          | 13.5                    | 15.5                     | 14.5                        |
|                                       | Agriculture              | Irrigation Efficiency                            | Yes              | 4.3                     | 4.3                      | 4.3                         |
|                                       | Agriculture              | Organic and Biofertiliser Production             | Yes              | 6.7                     | 6.7                      | 6.7                         |
|                                       | Agriculture              | Organic and Biopesticide Production              | Yes              | 3.1                     | 3.1                      | 3.1                         |
|                                       | Agriculture              | R&D  | Yes              | 3.3                     | 3.3                      | 3.3                         |
| Protecting & Restoring Nature         | Forestry                 | Forest Restoration (incl. Peatlands)             | Yes              | 29.0                    | 49.0                     | 39.0                        |
|                                       | Forestry                 | REDD+ Programme for Forest Conservation          | Yes              | 14.0                    | 14.0                     | 14.0                        |
|                                       | Forestry                 | Forest Management                                | Yes              | 0.9                     | 1.3                      | 1.1                         |

| Critical Transition          | Relevant tracking sector | Activities                                       | Climate relevant | Annual investment (low) | Annual investment (high) | Annual investment (average) |
|------------------------------|--------------------------|--|------------------|-------------------------|--------------------------|-----------------------------|
| A Healthy & Productive Ocean | Fisheries                | Sustainable Fisheries                            | Yes              | 4.2                     | 4.2                      | 4.2                         |
|                              | Fisheries                | Bivalve Production                               | Yes              | 0.8                     | 0.8                      | 0.8                         |
|                              | Fisheries                | Finfish Aquaculture Expansion                    | Yes              | 2.5                     | 2.5                      | 2.5                         |
|                              | Fisheries                | Aquaculture Sustainable Intensification Training | Yes              | 0.4                     | 0.4                      | 0.4                         |
|                              | Forestry                 | Mangrove Restoration                             | Yes              | 1.2                     | 1.2                      | 1.2                         |
|                              | Fisheries                | R&D  | Yes              | 3.3                     | 3.3                      | 3.3                         |
| Diversifying Protein Supply  | Food loss & diets        | Plant-Based Meat                                 | Yes              | 1.8                     | 7.5                      | 4.7                         |
|                              | Food loss & diets        | Plant-Based Dairy                                | Yes              | 11.5                    | 14.5                     | 13.0                        |
|                              | Food loss & diets        | Edible Insect Protein                            | Yes              | 0.3                     | 0.3                      | 0.3                         |
|                              | Food loss & diets        | R&D  | Yes              | 3.3                     | 3.3                      | 3.3                         |
| Reducing Food Loss           | Food loss & diets        | Demand Management in Developed Countries         | Yes              | 0.7                     | 0.7                      | 0.7                         |
|                              | Food loss & diets        | Postharvest Waste in Developing Countries        | Yes              | 8.5                     | 8.5                      | 8.5                         |
|                              | Food loss & diets        | Supply Chain Waste                               | Yes              | 19.6                    | 19.6                     | 19.6                        |
| Local loops & Linkages       | Agriculture              | Urban Farming                                    | Yes              | 5.6                     | 5.6                      | 5.6                         |
|                              | Multiple                 | Composting of Inedible Foods                     | Yes              | 2.9                     | 2.9                      | 2.9                         |
|                              | Agriculture              | R&D  | Yes              | 1.7                     | 1.7                      | 1.7                         |
| Digital Revolution           | Agriculture              | Precision Agricultural Machinery                 | Partial          | 1.4                     | 2.4                      | 1.9                         |
|                              | Agriculture              | AgTech Investment                                | Partial          | 9.2                     | 9.2                      | 9.2                         |
|                              | Agriculture              | R&D  | Partial          | 3.3                     | 3.3                      | 3.3                         |

| Critical Transition        | Relevant tracking sector | Activities                             | Climate relevant | Annual investment (low) | Annual investment (high) | Annual investment (average) |
|----------------------------|--------------------------|--|------------------|-------------------------|--------------------------|-----------------------------|
| Stronger Rural Livelihoods | Multiple                 | Rural Infrastructure                   | Partial          | 32.0                    | 38.0                     | 35.0                        |
|                            | Multiple                 | Access to Clean Cooking                | Partial          | 3.7                     | 3.7                      | 3.7                         |
|                            | Agriculture              | Irrigation Expansion                   | Partial          | 6.5                     | 6.5                      | 6.5                         |
|                            | -                        | Connectivity                           | No               | 5.5                     | 5.5                      | 5.5                         |
|                            | Multiple                 | Training of Entrepreneurs              | Partial          | 8.3                     | 17.0                     | 12.7                        |
|                            | Agriculture              | Financing Needs of Smallholder Farmers | Partial          | 16.5                    | 18.3                     | 17.4                        |
|                            | Multiple                 | Safety Nets for Rural Resilience       | Partial          | 21.6                    | 21.6                     | 21.6                        |
| Gender & Demography        | -                        | Family Planning                        | No               | 3.0                     | 3.0                      | 3.0                         |
|                            | -                        | Girls' Education                       | No               | 14.0                    | 14.0                     | 14.0                        |

## UNITED NATIONS ENVIRONMENT PROGRAMME (UNEP), 2022. STATE OF FINANCE FOR NATURE 2022 - TIME TO ACT

**Total figure included in the current study: USD 381 billion**

The UNEP 2022 State of Finance for Nature publication analyzes financial flows to nature-based solutions (NbS) capable of addressing climate change, as well as biodiversity loss and land degradation. As part of this study, UNEP estimates the cumulative additional NbS investment required between 2022 and 2050 to align with the 1.5 °C target.

For the purpose of the current analysis, we have divided these cumulative figures equally across the relevant years to estimate annual investment requirements up to 2030. In some cases, the alignment of the NBS solution with the agrifood systems definition is not straightforward, so by eliminating those solutions we obtained the low end of the total estimates for agrifood systems. When including all categories, we obtained the high end of the estimates. To limit overcounting and/or undercounting, we used the average of these two figures.

Table A.7 outlines the specific investment figures incorporated into our aggregated USD 381 billion estimation, which is the average of the low-end estimate (USD 365 billion) and high-end estimate (USD 396 billion).

**Table A.7.** Estimated annual investment required (USDbn) between 2022 and 2050 under a 1.5°C scenario (2022 prices) (UNEP, 2022) and categories included in the current study.

| Activities                   | Relevant tracking sector | Climate relevant | Cumulative investment | Annual investment (low) | Annual investment (high) | Annual investment (average) |
|------------------------------|--------------------------|------------------|-----------------------|-------------------------|--------------------------|-----------------------------|
| Agroforestry                 | Agriculture              | Yes              | 3600                  | 128.6                   | 128.6                    | 128.6                       |
| Cover crops                  | Agriculture              | Yes              | 320                   | 11.4                    | 11.4                     | 11.4                        |
| Grazing-optimal intensity    | Agriculture              | Yes              | 180                   | 6.4                     | 6.4                      | 6.4                         |
| Re/afforestation             | Forestry                 | Yes              | 3400                  | 121.4                   | 121.4                    | 121.4                       |
| Protected areas              | Forestry                 | Yes              | 1300                  | 46.4                    | 46.4                     | 46.4                        |
| Restoration of peatlands     | Forestry                 | Yes              | 750                   | 26.8                    | 26.8                     | 26.8                        |
| Avoided deforestation        | Forestry                 | Yes              | 290                   | 10.4                    | 10.4                     | 10.4                        |
| Restoration of saltmarshes   | Forestry                 | Yes              | 250                   | 8.9                     | 8.9                      | 8.9                         |
| Avoided grassland conversion | Forestry                 | Yes              | 79                    | 2.8                     | 2.8                      | 2.8                         |
| Avoided peatland impact      | Forestry                 | Yes              | 38                    | 1.4                     | 1.4                      | 1.4                         |
| Restoration of mangroves     | Forestry                 | Yes              | 16                    | 0.6                     | 0.6                      | 0.6                         |
| Avoided mangrove impact      | Forestry                 | Yes              | 6                     | 0.2                     | 0.2                      | 0.2                         |
| Restoration of seagrass      | Multiple                 | Partial          | 840                   | 0.0                     | 30.0                     | 15.0                        |
| Avoided seagrass impact      | Multiple                 | Partial          | 6                     | 0.0                     | 0.2                      | 0.1                         |
| <b>Total</b>                 | -                        |                  | <b>11,075</b>         | <b>365.3</b>            | <b>395.5</b>             | <b>380.5</b>                |

Note: Investment figures do not add up to totals due to rounding.

## THORNTON, P., CHANG, Y., LOBOGUERRERO, A.M., CAMPBELL, B., 2023. PERSPECTIVE: WHAT MIGHT IT COST TO RECONFIGURE FOOD SYSTEMS?

**Total figure included in the current study: USD 1,267 bn**

This study builds on the foundation laid by Steiner et al. (2020), who identified four action areas and eleven actions required for food system transformation in light of climate change. These four action areas are:

1. Reroute farming and rural livelihoods to new trajectories
2. De-risk livelihoods, farms, and value chains
3. Reduce emissions from diets and value chains
4. Realign policies, finance, support to social movements and innovation

Thornton et al. (2022) expands on these by conducting a review of more than 2,000 sources, including peer-reviewed articles, governmental documents, private sector reports, and others, to estimate the annual cost of implementation for each action.

As with the aforementioned studies, where there was partial alignment between the activities covered by Thornton et al. (2023) and our definition and framework, we eliminated these to obtain the low-end of the total estimates for agrifood systems. When including both the fully and the partially aligned estimates, we obtained the high-end of the total needs estimates for agrifood systems. To limit overcounting and/or undercounting, we used the average of these two figures.

Table A.8 outlines the specific investment figures incorporated into our aggregated USD 1,267 billion estimation, which is the average of the low-end estimate (USD 1,196 bn) and high-end estimate (USD 1,338bn).

**Table A.8.** Estimated annual investment required (USDbn) to transform food systems by 2030 (Thornton et al., 2023) and categories included in the current study

| Action Area | Relevant tracking sector | Action  | Climate relevant | Annual investment (low) | Annual investment (high) | Annual investment (average) |
|-------------|--------------------------|---|------------------|-------------------------|--------------------------|-----------------------------|
| Reroute     | Forestry                 | Ensure zero agricultural land expansion in high-carbon landscapes (forests and peatlands)   | Yes              | 753.0                   | 753.0                    | 753.0                       |
|             | Agriculture              | Enable markets and public-sector actions to incentivise climate-resilient, low emission farming practices                           | Yes              | 181.0                   | 181.0                    | 181.0                       |
|             | Multiple                 | Support prosperity through mobility and rural reinvigoration (rural livelihoods and jobs)   | Partial          | 0.0                     | 116.0                    | 58.0                        |
| De-risk     | Multiple                 | Secure resilient rural livelihoods through early warning systems and adaptive safety nets   | Partial          | 0.0                     | 5.6                      | 2.8                         |
|             | Agriculture              | Help farmers make better choices: Climate services to farmers and agribusinesses  | Yes              | 2.4                     | 2.4                      | 2.4                         |
| Reduce      | Low-carbon Diets         | Shift to healthy, sustainable, climate-friendly diets: Substantial reduction in beef and dairy consumption in high-income countries | Yes              | 35.0                    | 35.0                     | 35.0                        |
|             | Food Loss & Diets        | Reduce food loss and waste  | Yes              | 12.6                    | 12.6                     | 12.6                        |

| Action Area  | Relevant tracking sector         | Action   | Climate relevant | Annual investment (low) | Annual investment (high) | Annual investment (average) |
|--------------|----------------------------------|--|------------------|-------------------------|--------------------------|-----------------------------|
| Realign      | Policy & National Budget Support | Implement policy and institutional changes that enable transformation by aligning subsidies to a climate change agenda | Yes              | 177.0                   | 177.0                    | 177.0                       |
|              | Agriculture                      | Unlock billions in sustainable finance   | Yes              | 20.0                    | 20.0                     | 20.0                        |
|              | Multiple                         | Drive social change for more sustainable decisions: Youth movements for climate action in food systems                 | Partial          | 0.0                     | 20.0                     | 10.0                        |
|              | Agriculture                      | Transform innovation systems to deliver impacts at scale: agricultural research to achieve SDGs related to food        | Partial          | 15.0                    | 15.0                     | 15.0                        |
| <b>Total</b> | -                                | -  |                  | <b>1,196</b>            | <b>1,338</b>             | <b>1,267</b>                |

## ANNEX 7: CLIMATE FINANCE ACTIVITY OF AGRIFOOD CORPORATES

Table A.9. Examples of financing models used by multinational corporates (MNCs) in agrifood systems

| Model  | Example   | Climate investment (USDm)        | Estimated annual average (USDm) (a) | 2022 annual net income (USDm) (b)       | % climate investment of net income (a/b) |
|--|---|----------------------------------|-------------------------------------|---|--|
| Corporate – farmer association partnerships  | PepsiCo: Multi-year partnerships with Practical Farmers of Iowa, Soil and Water Outcomes Fund, and the IL Corn Growers Association (FoodBev Media, 2023).   | 216 (2023–30)                    | 27                                  | 8,910 (Macrotrends, 2023a)              | 0.30%                                    |
| Direct work with suppliers   | Nestle: more than 500,000 farmers and 150,000 suppliers (Nestle, 2021; FoodDive, 2021)  | ~1,320 (2021–25) <sup>3</sup>    | 264                                 | 9,714 (Macrotrends, 2023b)              | 2.7%                                     |
| Partnerships with farmers, research institution and NGOs for payment by results mechanisms | Kellogg Company: five-year program that will partner with Lower Mississippi River Basin rice farmers, GHG measurement firm Regrow, Kellogg supplier Kennedy Rice Mill LLC, and agribusiness firm Syngenta (PR Newswire, 2022). Part of Kellogg's Origins Program.                                       | 2 (2022–26)                      | 0.4                                 | 960 (Macrotrends, 2023c)                | 0.042%                                   |
| Public-private partnership & matching investment for research                              | Danone North America: initial investment in research + public funding from U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) (The Organic & Non-GMO Report, 2018; SustainableBrands, 2018).  | 6 (2018–22; 3 in public funding) | 1.2                                 | 1,010 (Macrotrends, 2023d)              | 0.12%                                    |
| Corporate – public bank partnership  | Cargill Brazil ESG Time Deposit: Time deposit that will be used to fund Environment, Social and Governance (ESG) projects in the South American food powerhouse (NASDAQ, 2023).   | 240 (over 5 years)               | 48                                  | 6,680 (2021–22; (Washington Post, 2022) | 0.72%                                    |
| Dedicated climate funds  | Unilever Climate & Nature Fund: Supports projects to help progress Unilever's net zero goal by 2039, and increase resilience. Aims to create an impact-led investment platform to drive collaboration with partners and co-financers to scale solutions beyond Unilever's value chain (Unilever, n.d.). | ~1,100 <sup>4</sup> (2020–30)    | 100                                 | 8,052 (Macrotrends, 2023e)              | 1.2%                                     |
|  | Paulig Unique Climate Fund: Aims to accelerate climate emission reductions in its wheat and coffee value chains, logistics and own operations (i.e. carbon neutrality of factories) (Paulig, 2023a).  | ~2.9 <sup>5</sup> (2023)         | 2.9                                 | -21.4 (Paulig, 2023b)                   | -  |
| <b>Total<sup>6</sup></b>   | -   | <b>2,784</b>                     | <b>440.6</b>                        | <b>35,326</b>                           | <b>1.25%</b>                             |

<sup>3</sup> CHF 1.2 billion

<sup>4</sup> EUR 1 billion

<sup>5</sup> EUR 2.7 million

<sup>6</sup> Excluding Paulig, due to outlier negative net income in 2022



## ANNEX 8: OVERVIEW OF TRACKED DATA

This annex presents an overview of our tracked data in tabular form.

Table A.10. Breakdown of 2019/20 project-level investments to AFOLU sub-sectors and activities

| AFOLU sub-sector                                     | Activities  | 2019/2020 average (USDbn) | %           |
|--|---|---------------------------|-------------|
| Agriculture  | Sustainable Crops, Agro-forestry, Livestock production  | 8.24                      | 35%         |
|  | Supply chain management (commercialization, primary processing & storage)   | 0.80                      | 3%          |
|  | Financial services for sustainable production, commercialization, storage, and processing   | 0.22                      | 1%          |
|  | Unspecified   | 0.66                      | 3%          |
| Forestry   | Afforestation, Reforestation, Forest Conservation, sustainable management of existing forest, including extraction of non-timber products | 8.64                      | 37%         |
|  | Supply chain management (commercialization, primary processing & storage)   | 0.05                      | 0%          |
|  | Unspecified   | 0.07                      | 0%          |
| Fisheries  | Sustainable fish production   | 0.08                      | 0%          |
|  | Supply chain management (commercialization, primary processing & storage)   | 0.00                      | 0%          |
|  | Unspecified   | 0.02                      | 0%          |
| Food loss/waste & diets                              | Food waste and low-carbon diets   | 0.13                      | 1%          |
| Policy & National Budget Support & Capacity Building | Unspecified   | 0.70                      | 3%          |
| Unspecified/Multiple                                 | Unspecified   | 3.62                      | 16%         |
| <b>Total</b>   | <b>-</b>  | <b>23.2</b>               | <b>100%</b> |

Table A.11. Breakdown of 2019/20 project-level investments in non-AFOLU sectors

| non-AFOLU sector   | Relevance for AFOLU sector                           | 2019/2020 average (USDbn) | %   |
|--------------------|--|---------------------------|-----|
| Energy Systems     | Forestry   | 2.4                       | 45% |
|                    | Agriculture  | 0.8                       | 15% |
|                    | Fisheries  | 0.02                      | 0%  |
| Water & Wastewater | Agriculture  | 0.4                       | 8%  |
|                    | Fisheries  | 0.002                     | 0%  |
|                    | Food Loss/Waste & Diets                              | 0.001                     | 0%  |
|                    | Policy & National Budget Support & Capacity Building | 0.001                     | 0%  |
|                    | Forestry   | 0.0001                    | 0%  |
| Transport          | Agriculture  | 0.03                      | 1%  |
|                    | Policy & National Budget Support & Capacity Building | 0.001                     | 0%  |

| non-AFOLU sector                          | Relevance for AFOLU sector                           | 2019/2020 average (USDbn) | %           |
|---|--|---------------------------|-------------|
| Industry                                  | Agriculture  | 0.002                     | 0%          |
| Waste                                     | Food Loss/Waste & Diets                              | 0.001                     | 0%          |
|   | Agriculture  | 0.0                       | 0%          |
| Information and Communications Technology | Agriculture  | 0.02                      | 0%          |
|   | Policy & National Budget Support & Capacity Building | 0.001                     | 0%          |
| Unspecified/Multiple                      | Unspecified  | 1.6                       | 30%         |
| <b>Total</b>                              | <b>-</b>   | <b>5.2</b>                | <b>100%</b> |

Table A.12. Breakdown of 2019/20 company-level investments to AFOLU sub-sectors

| AFOLU sector            | 2019/2020 average (USDbn) | %           |
|-------------------------|---------------------------|-------------|
| Food Loss/Waste & Diets | 2.2                       | 47%         |
| Agriculture             | 2.1                       | 44%         |
| Fisheries               | 0.1                       | 2%          |
| Forestry                | <0.1                      | 1%          |
| Unspecified / Multiple  | 0.3                       | 6%          |
| <b>Total</b>            | <b>4.8</b>                | <b>100%</b> |

Table A.13. Breakdown of 2019/20 project-level investments, by climate objective

| AFOLU sector   | 2019/2020 average (USDbn) | %           |
|--|---------------------------|-------------|
| <b>Mitigation</b>                                    | <b>14.4</b>               | <b>100%</b> |
| Forestry   | 8.5                       | 59%         |
| Agriculture  | 3.8                       | 26%         |
| Food Loss/Waste & Diets                              | 0.1                       | 1%          |
| Policy & National Budget Support & Capacity Building | 0.1                       | 1%          |
| Fisheries  | 0.0                       | 0%          |
| Unspecified/Multiple                                 | 1.8                       | 13%         |
| <b>Adaptation</b>                                    | <b>7.3</b>                | <b>100%</b> |
| Agriculture  | 5.0                       | 68%         |
| Policy & National Budget Support & Capacity Building | 0.5                       | 6%          |
| Forestry   | 0.1                       | 2%          |
| Fisheries  | 0.1                       | 1%          |
| Food Loss/Waste & Diets                              | 0.0                       | 0%          |
| Unspecified/Multiple                                 | 1.7                       | 23%         |
| <b>Dual climate objectives</b>                       | <b>6.7</b>                | <b>100%</b> |
| Agriculture  | 3.1                       | 46%         |
| Forestry   | 3.0                       | 45%         |
| Policy & National Budget Support & Capacity Building | 0.2                       | 3%          |
| Fisheries  | 0.0                       | 0%          |
| Food Loss/Waste & Diets                              | 0.0                       | 0%          |
| Unspecified/Multiple                                 | 0.4                       | 5%          |
| <b>Total</b>   | <b>28.5</b>               | <b>-</b>    |

**Table A.14.** Breakdown of 2019/20 company-level investments, by climate objective

| AFOLU sector               | 2019/2020 average (USDbn) | %           |
|----------------------------|---------------------------|-------------|
| <b>Mitigation</b>          | <b>3.0</b>                | <b>100%</b> |
| Agriculture                | 0.7                       | 24%         |
| Food Loss/Waste & Diets    | 2.0                       | 68%         |
| Fisheries                  | <0.1                      | 1%          |
| Forestry                   | <0.1                      | <1%         |
| Unspecified/Multiple       | 0.2                       | 8%          |
| <b>Adaptation</b>          | <b>1.3</b>                | <b>100%</b> |
| Agriculture                | 1.0                       | 78%         |
| Food Loss/Waste & Diets    | 0.1                       | 12%         |
| Fisheries                  | 0.1                       | 5%          |
| Forestry                   | <0.1                      | 2%          |
| Unspecified/Multiple       | <0.1                      | 3%          |
| <b>Multiple Objectives</b> | <b>0.5</b>                | <b>100%</b> |
| Agriculture                | 0.4                       | 80%         |
| Food Loss/Waste & Diets    | <0.1                      | 9%          |
| Fisheries                  | <0.1                      | <1%         |
| Forestry                   | <0.1                      | 6%          |
| Unspecified/Multiple       | <0.1                      | 5%          |
| <b>Total</b>               | <b>4.8</b>                | <b>100%</b> |

**Table A.15.** Breakdown of 2019/20 project-level investments, by public and private actors

| Actor                      | 2019/2020 average (USDbn) | %           |
|----------------------------|---------------------------|-------------|
| <b>Public</b>              | <b>24.2</b>               | <b>100%</b> |
| Government                 | 9.5                       | 39%         |
| National DFI               | 5.3                       | 22%         |
| Multilateral DFI           | 5.7                       | 24%         |
| Multilateral Climate Funds | 1.7                       | 7%          |
| Bilateral DFI              | 1.5                       | 6%          |
| Public Fund                | 0.3                       | 1%          |
| State-owned FI             | 0.2                       | 1%          |
| SOE                        | 0.04                      | 0%          |
| Unknown                    | 0.001                     | 0%          |
| Export Credit Agency (ECA) | 0.0                       | 0%          |
| <b>Private</b>             | <b>3.3</b>                | <b>100%</b> |
| Commercial FI              | 1.6                       | 48%         |
| Corporation                | 0.9                       | 29%         |
| Institutional Investors    | 0.5                       | 15%         |
| Unknown                    | 0.2                       | 7%          |
| Funds                      | 0.03                      | 1%          |
| <b>Unknown</b>             | <b>1.0</b>                | <b>100%</b> |
| Unknown                    | 1.0                       | 100%        |
| <b>Total</b>               | <b>28.5</b>               | <b>-</b>    |

**Table A.16.** Breakdown of 2019/20 project-level investments, by instruments

| Instrument                               | 2019/2020 average (USDbn) | %           |
|--|---------------------------|-------------|
| Grant                                    | 10.8                      | 38%         |
| Project-level market rate debt           | 8.9                       | 31%         |
| Low-cost project debt                    | 3.8                       | 13%         |
| Unknown                                  | 3.1                       | 11%         |
| Project-level equity                     | 0.9                       | 3%          |
| Balance sheet financing (debt portion)   | 0.8                       | 3%          |
| Balance sheet financing (equity portion) | 0.3                       | 1%          |
| <b>Total</b>                             | <b>28.5</b>               | <b>100%</b> |

**Table A.17.** Breakdown of 2019/20 project-level investments, by OECD membership and region of destination

| OECD membership / Region of destination | 2019/2020 average (USDbn) | %           |
|---|---------------------------|-------------|
| <b>Non-OECD</b>                         | <b>18.3</b>               | <b>100%</b> |
| East Asia and Pacific                   | 8.6                       | 47%         |
| Sub-Saharan Africa                      | 4.4                       | 24%         |
| Latin America & Caribbean               | 1.8                       | 10%         |
| Central Asia and Eastern Europe         | 1.6                       | 8%          |
| South Asia                              | 1.5                       | 8%          |
| Middle East and North Africa            | 0.4                       | 2%          |
| <b>OECD</b>                             | <b>7.6</b>                | <b>100%</b> |
| US & Canada                             | 2.9                       | 38%         |
| Western Europe                          | 2.4                       | 32%         |
| East Asia and Pacific                   | 1.6                       | 22%         |
| Latin America & Caribbean               | 0.3                       | 4%          |
| Central Asia and Eastern Europe         | 0.3                       | 4%          |
| Middle East and North Africa            | 0.0                       | 0%          |
| <b>Transregional/Unknown</b>            | <b>2.6</b>                | <b>100%</b> |
| <b>Total</b>                            | <b>28.5</b>               | <b>-</b>    |

**Table A.18.** Breakdown of 2019/20 international and domestic project-level investments, by OECD membership

| OECD membership / Region of destination | 2019/2020 average (USDbn) | %           |
|---|---------------------------|-------------|
| <b>Domestic</b>                         | <b>13.3</b>               | <b>100%</b> |
| non-OECD                                | 7.9                       | 59%         |
| OECD                                    | 5.5                       | 41%         |
| <b>International</b>                    | <b>14.2</b>               | <b>100%</b> |
| non-OECD                                | 12.1                      | 85%         |
| OECD                                    | 2.1                       | 15%         |
| <b>Transregional/Unknown</b>            | <b>0.9</b>                | <b>100%</b> |
| <b>Total</b>                            | <b>28.5</b>               | <b>-</b>    |

## ANNEX 9: CORRENGIDUM

This report was updated in February 2024 to reflect changes to the initial analysis on venture capital investments published in July 2023. The revisions to the data have been listed below and the authors apologize for the error.

**Table A.19.** Data revisions to Landscape of Climate Finance for Agrifood Systems, February 2024 - Report Text

| Page No. | Section No.                       | Section   | Sub-Section                         | Redaction               | Revision            |                 |
|----------|-----------------------------------|---|-------------------------------------|-------------------------|---------------------|-----------------|
| 1        | -                                 | Executive Summary                               | Key Findings                        | USD 2.3 billion         | USD 4.8 billion     |                 |
| 2        |                                   |   | Climate Finance to Agrifood Sectors | USD 1.1 billion         | USD 2.2 billion     |                 |
|          |                                   |   |                                     | USD 1 billion           | USD 2.1 billion     |                 |
|          |                                   |   |                                     | USD 0.03 billion        | USD 0.06 billion    |                 |
|          |                                   |   |                                     | USD 1.1 billion         | USD 2.2 billion     |                 |
|          |                                   |   |                                     | USD 0.06 billion        | USD 0.1 billion     |                 |
| 3        |                                   |   | Climate Objectives                  | USD 1.5 billion         | USD 3.0 billion     |                 |
|          |                                   |   |                                     | 21%                     | 26%                 |                 |
|          |                                   |   |                                     | 0.48 billion            | 1.27 billion        |                 |
|          |                                   |   |                                     | USD 0.27 billion        | USD 0.5 billion     |                 |
|          |                                   |   |                                     | 12%                     | 11%                 |                 |
|          |                                   |   |                                     | Geographic Destinations | 75%                 | two-thirds      |
|          |                                   |   |                                     |                         | USD 2.3 billion     | USD 4.8 billion |
|          |                                   |   |                                     |                         | 17%                 | 15%             |
|          | 0.3%                              | 2%  |                                     |                         |                     |                 |
|          | Financial Instruments and Sources | USD 2.3 billion                                 |                                     | USD 4.8 billion         |                     |                 |
|          |                                   |   |                                     |                         |                     |                 |
| 14       | 3.                                | Overview of Climate Finance to Agrifood Systems | -                                   | one in ten dollars      | one in five dollars |                 |
|          |                                   |   |                                     | USD 2.3 billion         | USD 4.8 billion     |                 |

| Page No.       | Section No.    | Section                                   | Sub-Section                      | Redaction        | Revision         |
|----------------|----------------|---|----------------------------------|------------------|------------------|
| 16             | 4.             | Distribution Across Sectors               | -                                | USD 1.1 billion  | USD 2.2 billion  |
|                | 4.1            |   | Agriculture                      | USD 1 billion    | USD 2.1 billion  |
| 11- to 17-fold |                |   |                                  | 10- to 16-fold   |                  |
| 80%            |                |   |                                  | 94%              |                  |
| USD 0.8bn      |                |   |                                  | USD 2bn          |                  |
| 17             | 4.2            |   | Forestry                         | USD 0.03 billion | USD 0.06 billion |
| 18             |                |   |                                  | 4.3              | Other Sectors    |
|                | two-thirds     |   | 40%                              |                  |                  |
|                | a quarter      |   | 27%                              |                  |                  |
|                | USD 60 million |   | USD 0.1 billion                  |                  |                  |
| 19             |                |   |                                  |                  |                  |
| 22             | 5.1            | Distribution across Climate Objectives    | Mitigation Finance               | USD 1.5 billion  | USD 3.0 billion  |
| 25             | 5.2            |   | Adaptation Finance               | USD 0.48 billion | USD 1.27 billion |
|                |                |   |                                  | 21%              | 26%              |
|                |                |   |                                  | 83%              | 47%              |
|                |                |   |                                  | 14%              | 11%              |
| 26             | 5.3            |   | Dual Objectives                  | 12%              | 11%              |
|                |                |   |                                  | 0.27 billion     | 0.5 billion      |
| 30             | 6.             | Geographic Destination of Financial Flows | -                                | three-quarters   | two-thirds       |
|                |                |   |                                  | USD 2.3 billion  | USD 4.8 billion  |
|                |                |   |                                  | 17%              | 15%              |
|                |                |   |                                  | one quarter      | one-fifth        |
|                |                |   |                                  | 0.3%             | 2%               |
| 32             | 7.             | Use of Financial Instruments              | -                                | 18%              | 26%              |
|                |                |   |                                  | 50%              | 34%              |
| 34             | 8.             | Sources of Finance                        | -                                | USD 2.26 billion | USD 4.8 billion  |
| 36             | 8.2.           |   | Private Sources, Venture Capital | USD 2.3 billion  | USD 4.8 billion  |
|                |                |   |                                  | one quarter      | one fifth        |
|                |                |   |                                  | three-quarters   | two-thirds       |

**Table A.20.** Data revisions to Landscape of Climate Finance for Agrifood Systems, February 2024  
- Report Figures

| Page No. | Section No. | Section   | Sub-Section      | Figure   | Redaction  | Revision             |            |
|----------|-------------|---|------------------|--|--|----------------------|------------|
| 13       | 2.3         | Methodology                                     | Data Limitations | Figure 2. Tracked climate finance for agrifood systems by source and data coverage (2019/20) | 1.2  | 2.5                  |            |
|          |             |   |                  |  | 1.1  | 2.3                  |            |
| 15       | 3.          | Overview of Climate Finance to Agrifood Systems | -                | Figure 4. Current tracked climate finance compared with needs in agrifood systems            | \$2.3  | \$4.8                |            |
| 20       | 4.1         | Distribution Across Sectors                     | Agriculture      | Figure 6. Tracked climate finance for agriculture compared with estimated annual needs       | 1 USD bn   | 2.1 USD bn           |            |
| 18       | 4.2         |   | Forestry         | Figure 7. Tracked climate finance for forestry compared with estimated annual needs          | 0.03 USD bn  | 0.06 USD bn          |            |
| 19       | 4.3         |   | Other Sectors    |  | Figure 8. Tracked investments in food loss/waste and low-carbon diets compared with estimated annual needs | 1.1 USD bn           | 2.2 USD bn |
|          | 4.3         |   |                  |  | Figure 9. Tracked climate finance for fisheries compared with estimated annual needs                       | 0.06 USD bn          | 0.1 USD bn |
| 34       | 8.          | Sources of Finance                              |                  | Figure 15. Sources of climate finance by geographic destination in 2019/20                   | \$2.3 bn   | \$4.8 bn             |            |
|          |             |   |                  |  | 1.7 (US & Canada)  | 3.1 (US & Canada)    |            |
|          |             |   |                  |  | 0.4 (Western Europe)   | 0.7 (Western Europe) |            |

**Table A.21.** Data revisions to Landscape of Climate Finance for Agrifood Systems - Report Annexes, February 2024

| Page No.                                      | Annex                             | Table  | Category   | Redaction | Revision  |
|---|-----------------------------------|--|--|-----------|-----------|
| 12  | Annex 4. Sources of Data          | Table A.4. Breakdown of the data types and sources used                          | Project-level data, AFOLU only                   | 93%       | 14%       |
|   |                                   |  | Company-level data, agrifood systems             | 7%        | 86%       |
| 24  | Annex 8. Overview of Tracked Data | Table A.12. Breakdown of 2019/20 company-level investments to AFOLU sub-sectors  | Food Loss/Waste & Diets                          | 1.1, 50%  | 2.2, 47%  |
|   |                                   |  | Agriculture                                      | 1.0, 44%  | 2.1, 44%  |
|   |                                   |  | Forestry   | 0.03, 1%  | 0.1, 2%   |
|   |                                   |  | Unspecified / Multiple                           | 0.04, 2%  | 0.03, 1%  |
|   |                                   |  | Total  | 2.3, 100% | 4.8, 100% |
| 25  |                                   | Table A.14. Breakdown of 2019/20 company-level investments, by climate objective | Mitigation, Total                                | 1.5, 100% | 3.0, 100% |
|   |                                   |  | Mitigation, Food Loss/Waste & Diets              | 1.0, 65%  | 2.0, 68%  |
|   |                                   |  | Mitigation, Agriculture                          | 0.4, 25%  | 0.7, 24%  |
|   |                                   |  | Mitigation, Fisheries                            | 0.04, 3%  | <0.1, 1%  |
|   |                                   |  | Mitigation, Unspecified/Multiple                 | 0.04, 3%  | 0.2, 8%   |
|   |                                   |  | Adaptation, Total                                | 0.5, 100% | 1.3, 100% |
|   |                                   |  | Adaptation, Agriculture                          | 0.4, 81%  | 1.0, 78%  |
|   |                                   |  | Adaptation, Food Loss/Waste & Diets              | 0.1, 16%  | 0.1, 12%  |
|   |                                   |  | Adaptation, Fisheries                            | 0.01, 3%  | 0.1, 5%   |
|   |                                   |  | Adaptation, Forestry                             | -         | <0.1, 2%  |
|   |                                   |  | Adaptation, Unspecified                          | 0.0, 0%   | <0.1, 3%  |
|   |                                   |  | Dual climate objectives, Agriculture             | 0.2, 87%  | 0.4, 80%  |
|   |                                   |  | Dual climate objectives, Food Loss/Waste & Diets | 0.02, 8%  | <0.1, 9%  |
|   |                                   |  | Dual climate objectives, Forestry                | 0.01, 5%  | <0.1, 6%  |
|   |                                   |  | Dual climate objectives, Fisheries               | 0.001     | <0.1, 1%  |
| Dual climate objectives, Unspecified/Multiple | -                                 | 0.1, 5%  |  |           |           |



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## LIST OF ACRONYMS

|                 |  |
|-----------------|--|
| <b>AFOLU</b>    | Agriculture, Forestry, Other Land Uses, and Fisheries        |
| <b>FOLU</b>     | Food and Land Use Coalition                                  |
| <b>BNEF</b>     | BloombergNEF   |
| <b>CBI</b>      | Climate Bonds Initiative                                     |
| <b>CDFA</b>     | California Department of Food and Agriculture                |
| <b>CFU</b>      | Climate Funds Update   |
| <b>CRP</b>      | Conservation Reserve Program                                 |
| <b>OCED DAC</b> | OECD Development Assistance Committee                        |
| <b>DFI</b>      | Development Finance Institution                              |
| <b>FAO</b>      | Food and Agriculture Organization                            |
| <b>GHG</b>      | Greenhouse gas   |
| <b>IATI</b>     | International Aid Transparency Initiative                    |
| <b>IDFC</b>     | International Development Finance Club                       |
| <b>IPCC</b>     | Intergovernmental Panel on Climate Change                    |
| <b>MDB</b>      | Multilateral Development Bank                                |
| <b>NRCS</b>     | Natural Resource Conservation Service                        |
| <b>OECD</b>     | Organisation for Economic Co-operation and Development       |
| <b>REDD+</b>    | Reducing Emissions from Deforestation and Forest Degradation |
| <b>SDG</b>      | Sustainable Development Goal                                 |
| <b>USDA</b>     | United States Department of Agriculture                      |
| <b>VC</b>       | Venture Capital  |
| <b>WWF</b>      | World Wildlife Fund  |

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