Circular Economy
Finance Guidelines

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Agriculture Sector

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Abbreviations and acronyms

ACEA	African Circular Economy Alliance
ANPD	Autoridade Nacional de Proteção de Dados (Brazil)
ANVISA	Agência Nacional de Vigilância Sanitária (Brazil)
ASEAN	Association of Southeast Asian Nations
ASTM	American Society for Testing and Materials
BSI	British Standards Institution
CAC	Cyberspace Administration of China
CAP	Common Agricultural Policy (European Union)
CDC	Código de Defesa do Consumidor (Brazil)
CDDM	Circular Economy Data and Metadata
CELC	Circular Economy Leadership Canada
CELEX	Common European Legal Information System
CEN	European Committee for Standardization
CONAMA	Conselho Nacional do Meio Ambiente (Brazil)
CPCB	Central Pollution Control Board (India)
CSA	Community-Supported Agriculture
CSDIS	Circular Sustainable Development Indicator System (China)
CTI	Circular Transition Indicators (WBCSD)
DFI	Development finance institutions
DNSH	Do no significant harm
DPDP	Digital Personal Data Protection (India)
ECN-QAS	European Compost Network Quality Assurance Scheme
EFRAG	European Financial Reporting Advisory Group
EFSA	European Food Safety Authority
EN	European Norm (CEN standards)
EPA	Environmental Protection Agency (United States)
ESRS	European Sustainability Reporting Standards, adopted by the European Commission
FAO	Food and Agriculture Organization (United Nations)
FLAG	Forest, Land and Agriculture (Science Based Targets initiative)
FPIC	Free, prior, and informed consent
FSA	Farm Sustainability Assessment (SAI Platform)
GB	Chinese National Standards

GB/T	Chinese Recommended National Standards
GDPR	General Data Protection Regulation (European Union)
GFC	Global Framework on Chemicals
GFIT	Green Finance Industry Taskforce (Singapore)
GHG	Greenhouse gas
GLOBALG.A.P.	Global Good Agricultural Practices
HHP	Highly hazardous pesticides
ICCM5	Fifth International Conference on Chemicals Management
ICMA	International Capital Market Association
ICT	Information and communications technology
IEC	International Electrotechnical Commission
IFOAM	International Federation of Organic Agriculture Movements
ILO	International Labour Organization
IPBES	Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
IPCC	Intergovernmental Panel on Climate Change
ISIC	International Standard Industrial Classification (UN)
ISO	International Organization for Standardization
ITPGRFA	International Treaty on Plant Genetic Resources for Food and Agriculture
KPI	Key performance indicator
LCA	Life cycle assessment
LEAP	Locate, Evaluate, Assess, Prepare (TNFD framework)
LGPD	Lei Geral de Proteção de Dados (Brazil)
LMA	Loan Market Association
MAS	Monetary Authority of Singapore
MEA	Multilateral Environmental Agreement
MeitY	Ministry of Electronics and Information Technology (India)
MOECC	Ministry of Environment, Forest and Climate Change (India)
MRV	Monitoring, reporting and verification
MSME	Micro-, small and medium enterprise
MSS	Minimum social safeguards
NACE	Nomenclature statistique des activités économiques dans la Communauté européenne
NCEF	National Circular Economy Framework (India)
NDC	Nationally Determined Contributions
NITI Aayog	National Institution for Transforming India
NMPA	National Medical Products Administration (China)
OECD	Organisation for Economic Co-operation and Development
OJK	Otoritas Jasa Keuangan (Indonesia)
PAS	Publicly Available Specification (BSI)

PCRA	Physical climate risk assessment
POPs	Persistent organic pollutants
PPP	Purchasing power parity
PRB	Principles for Responsible Banking (UNEP FI)
SAFA	Sustainability Assessment of Food and Agriculture Systems (FAO)
SAI	Sustainable Agriculture Initiative Platform
SAMR	State Administration for Market Regulation (China)
SBTi	Science Based Targets initiative
SBTN	Science Based Targets Network
SDGs	Sustainable Development Goals (United Nations)
SLB	Sustainability-linked bonds
SLL	sustainability-linked loans
SPT	Sustainability performance target
TNFD	Taskforce on Nature-related Financial Disclosures
TSB	Taxonomia Sustentável Brasileira (Brazil Sustainable Taxonomy)
UNCCD	United Nations Convention to Combat Desertification
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
UNEP FI	United Nations Environment Programme Finance Initiative
VGGT	Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security
WBCSD	World Business Council for Sustainable Development
WHO	World Health Organization
WRI	World Resources Institute

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Executive summary

Global agrifood systems generate US$ 12.7 trillion in quantified hidden environmental and social costs annually, while the agriculture sector accounts for approximately 70% of the global freshwater withdrawals, occupies 37% of global land area and contributes roughly one third of greenhouse gas emissions across the full agrifood value chain. For financial institutions, supporting circular economy integration in agriculture is a strategic imperative—addressing resource depletion, pollution, compliance and supply chain risks while channelling capital into regenerative systems, nutrient cycling infrastructure, agricultural waste valorization and circular business models that can increase farm profitability compared to conventional practices. These guidelines prioritize activities that shift system behaviour by closing nutrient loops, restoring soil health, and recovering biomass at high value.

These sectoral guidelines provide financial institutions with an assessment methodology for classifying agricultural circular economy activities. They operationalize at sectoral level the screening approach described in UNEP FI *Guidance on Resource Efficiency and Circular Economy Target Setting* (UNEP FI, 2023a) and on *Circular Economy to Achieve Climate Targets in the Agrifood Sector* (UNEP FI, 2024c) and complement UNEP FI *Guidance for Reduction and Management of Pollution in Agriculture* (UNEP FI, 2025b). These guidance documents support financial institutions to identify circular solutions—activities meeting all circularity criteria—and circular opportunities—activities with circular potential—across the agriculture value chain and inform their financing decision and client engagement strategies.

The assessment methodology applies a consistent three-step approach. Step 1 identifies the primary circular economy category—circular design and production, circular use, circular value recovery, or circular support. Step 2 assesses whether an activity makes a substantial contribution to circularity by using indicators that are proportionate to each intervention's scale and context. Step 3 assesses interlinkages through three components: (a) do no significant harm (DNSH) screening across environmental objectives—climate change mitigation and adaptation, water and marine resources, biodiversity and ecosystems (including soil health, sustainable land use, and deforestation and land-use change), and pollution prevention and control; (b) social objectives assessment, confirming alignment with minimum social safeguards across four social dimensions—reflecting the rights and principles enshrined in the ILO Declaration on Fundamental Principles and Rights at Work (as amended 2022), the UN Guiding Principles on Business and Human Rights, the OECD Guidelines for Multinational Enterprises, and the International Bill of Human Rights: decent work and occupational health and safety; adequate standard of living and well-being; inclusive and sustainable communities; food security and nutrition; and (c) co-benefits identification across environmental and social objectives. Assessment outcomes (identification of circular solutions and

circular opportunities) support multiple institutional applications: target setting, client engagement, climate action planning, nature-related strategies, pollution reduction initiatives, social impact management, transaction structuring and portfolio reporting.

The guidelines are designed for commercial banks and development finance institutions and can also be used by institutional investors, asset managers and insurers, to support consistent classification of agricultural circular economy activities. Agricultural corporates and cooperatives may also draw on the same framework to prepare documentation packages for financing discussions. At each assessment step, financial institutions can identify opportunities to engage clients on circular economy potential, whether supporting clients with circular solutions ready for financing or guiding clients with circular opportunities toward enhanced performance through transition plans.

The sectoral guidelines approach is designed for interoperability with leading global and regional frameworks that support classification, disclosure and impact assessment. Regulatory alignment is supported through compatibility with diverse national sustainable finance frameworks. This enables users to adapt the applied criteria to diverse regulatory contexts, levels of market readiness and place-based conditions, including variations in agricultural practices, water availability, land tenure systems and integration of traditional and Indigenous knowledge. Safeguards and integrity underpin the approach, integrating verification of nutrient cycling, soil health, chemical safety (particularly highly hazardous pesticide exclusion per FAO/WHO guidance), traceability and water stewardship. These guidelines support institutions to direct capital to circular solutions and engage clients with circular opportunities through transition plans. UNEP FI intends to engage with financial institutions and other interested stakeholders during 2026 to validate the applicability of these sectoral guidelines, collect feedback on implementation challenges and refine the methodology.

1. Introduction

The agriculture sector is one of the world's most resource-intensive industries, with profound environmental and social implications that highlight the need for systemic transformation. Global agrifood "true costs", including hidden environmental and social externalities, are estimated at US$ 12.7 trillion (FAO, 2023b), exceeding the sector's direct market value, with US$ 10 trillion in environmental, social and health-related costs attributable to current agricultural practices (FAO, 2023b; UNEP FI, 2025d). Agriculture accounts for around 70% of global freshwater withdrawals (FAO, 2024c), occupies approximately 37% of global land area and contributes 13 to 21% of direct greenhouse gas (GHG) emissions, rising to 31% across the full agrifood system when land-use change and supply chains are included (IPCC, 2023; FAO, 2023b). The sector's predominantly linear "take-make-waste" model—driven by virgin resource extraction, single-use applications and heavy reliance on synthetic fertilizers and pesticides, including those which are highly hazardous—accelerates environmental degradation, contributing to soil erosion (now affecting 24% of global land), nutrient pollution, eutrophication and biodiversity loss (IPBES, 2019). Substantial waste persists: roughly 1.3 billion tonnes of food are lost or wasted annually—one-third of all food produced—while agricultural residues, manure and processing by-products remain underutilized despite their potential for composting, anaerobic digestion, bio-based materials and nutrient recovery (FAO, 2011).

Circular economy opportunities and challenges in the agriculture sector

Transitioning to circular agricultural systems offers a pathway to mitigate these risks by reducing dependence on synthetic inputs and highly hazardous pesticides, closing nutrient loops and fixing nitrogen in the soil, extending asset life cycles, recovering and valorizing agricultural waste and by-products and enhancing soil health and ecosystem resilience across agricultural value chains (Tabler *et al.*, 2025). At the same time, circularity in agriculture presents significant investment opportunities. Recent analysis estimates a US$ 310 billion investment opportunity in regenerative landscape transitions alone, with investors funding such transitions expecting internal rates of return of 15 to 30%, driven by lower input costs and higher productivity (Boston Consulting Group, 2023).

However, scaling circularity in agriculture faces persistent challenges. Complex and fragmented value chains—from smallholder farms to global commodity traders—limit traceability. Nutrient recovery infrastructure remains underdeveloped in most regions. Agricultural waste streams are seasonal, dispersed and heterogeneous. Contamination

from pesticide residues, heavy metals and microplastics in compost and digestate can undermine secondary material quality. Market demand for circular agricultural inputs (e.g. recovered nutrients, bio-based materials) is nascent. Land tenure fragmentation and informality constrain investment in long-term soil health (UNEP, 2023b).

The impact profile of the agriculture sector

The agriculture sector's environmental and social impacts span multiple dimensions across its value chain. Figure 1 presents the United Nations Environment Programme Finance Initiative (UNEP FI) Impact Radar for agriculture, illustrating the relative significance of impacts across environmental, social and economic objectives. On the positive side, agriculture contributes to health and safety through nutritious food production, supports employment across its global value chain, enables food access and fosters flourishing micro- and small-medium enterprizes (MSMEs). On the negative side, the sector is associated with material adverse impacts including modern slavery and forced labour, child labour, natural disasters exacerbated by degraded land and water systems, health and safety hazards, water stress, below-living-wage compensation, gaps in social protection, gender and ethnic and racial inequality, risks to other vulnerable groups (particularly migrant and seasonal agricultural workers), climate instability through greenhouse gas emissions, biodiversity loss and resource-intensive linear production patterns.



Figure 1: UNEP FI *Impact Radar*[1] for the agriculture sector. Source: UNEP FI *Impact Radar*, adapted for agriculture sector (UNEP FI, 2022).

Circular economy strategies can directly address many of the sector's most significant negative impacts by acting on two key impact drivers: resource intensity and waste. By reducing resource intensity—through nutrient cycling, regenerative practices, input substitution and closed-loop production—agriculture can simultaneously alleviate pressures on climate stability, waterbodies, soil quality, air quality, biodiversity and energy consumption. By reducing waste, through food loss prevention, agricultural residue valorization, composting and anaerobic digestion, the sector can address impacts on climate stability, water quality, food security, healthcare and sanitation and resource depletion. The interconnected nature of these pathways demonstrates that circular economy in agriculture is a systemic approach that can generate co-benefits across the full spectrum of the sector's negative impacts.

1 The UNEP FI Impact Radar for the agriculture sector will be updated following the launch of the revised Impact Radar in Q4 2026. The updated version will be reflected in subsequent editions of these guidelines.

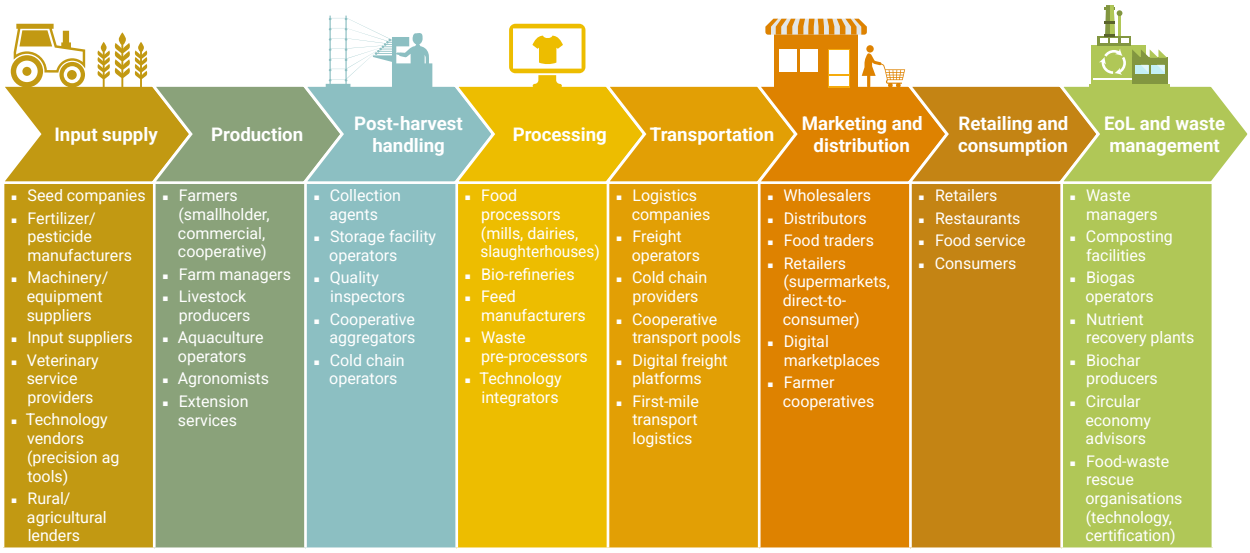


Figure 2: Agriculture value chain mapping illustrating actors and stages across the life cycle from input supply through end-of-life and waste management.

These guidelines focus on circular economy finance assessment for the agriculture sector as defined by NACE Section A/ISIC Section A (crop and animal production, forestry, fishing and aquaculture), consistent with how sustainable finance taxonomies classify the sector. Where circular economy interventions involve downstream activities—such as agricultural waste valorization, by-product recovery, or food loss prevention—these are included to the extent that they are directly linked to agricultural production systems and financed through agriculture sector lending. The companion *Circular Solutions to Achieve Climate Targets in the Agrifood Sector* (UNEP FI, 2024c) provides broader agrifood value chain guidance. Both ambition and feasibility are shaped by variations in regulatory frameworks, agricultural practices (smallholder versus industrial farming systems; crop cultivation versus livestock farming), infrastructure development (collection and processing capacity for agricultural waste), market readiness for circular economy solutions, water resource availability (irrigation-dependent versus rain-fed systems), land tenure systems (communal versus private ownership) and social contexts (cooperative structures, food security priorities, integration of traditional and Indigenous knowledge). Context-sensitive implementation that reflects local realities and evolving policy frameworks remains an imperative. By applying such specialized approaches, users can address agriculture's distinct circular economy opportunities and challenges (see Box 1) while upholding fundamental circular economy principles.

Box 1: Key characteristics shaping circular economy approaches in agriculture

Biological systems and regenerative capacity: Unlike manufactured goods that depreciate with use, agricultural biological systems possess unique regenerative capacity. Soil organic matter can be restored and enhanced through circular practices; livestock manure regenerates as a continuous nutrient source, reducing dependence on synthetic fertilizers; and perennial crops rebuild root systems seasonally. This biological regeneration distinguishes agricultural circularity from industrial circular models, enabling systems that simultaneously produce outputs while regenerating natural capital, a characteristic unique to agriculture (UNEP, 2023c; FAO, 2025).

Seasonal and biological cycle timing: Agricultural production follows seasonal cycles and biological processes that affect resource flows, waste generation patterns and operational planning. Harvest timing concentrates waste generation; livestock breeding cycles influence manure availability; and weather patterns determine irrigation demands. Circular economy solutions are recommended to account for these temporal variations in design and implementation, with financing structures reflecting agricultural seasonality and biological cycle timing in cash flow projections and performance schedules (IFC, 2025).

Regional variation and place-based solutions: Agricultural systems vary significantly by climate zone, soil type, crop mix, livestock integration, water availability and local markets. Circular economy solutions are recommended to be adapted to local contexts while maintaining consistent assessment criteria. For example, nutrient cycling approaches differ between rain-fed smallholder mixed farming systems in sub-Saharan Africa and irrigation-intensive industrial cropping systems in North America, yet both can demonstrate genuine circularity through documented closed-loop nutrient flows appropriate to their context (SAI Platform FSA 3.1, 2025; TNFD LEAP Food and Agriculture, 2024).

Food security integration and system resilience: Circular economy agriculture solutions are recommended to maintain or enhance food production capacity while improving resource efficiency and reducing environmental impact. This requires a careful balance between circularity goals and food system resilience. Regenerative systems that build soil organic matter can enhance both productivity and circularity; equipment sharing cooperatives can improve resource efficiency while maintaining smallholder access; and nutrient recovery from waste streams can reduce fertilizer dependence without compromising crop nutrition (Rockefeller Foundation, 2024; WBCSD, 2023).

Implications for financial institutions

For financial institutions, these impacts translate into heightened portfolio exposure to tightening environmental regulations, climate-related physical risks (drought, flooding, extreme weather) leading to supply chain disruptions and volatile commodity prices, transition risks from changing consumer preferences and policy frameworks and reputational risks associated with unsustainable or environmentally damaging practices.

While financial institutions increasingly recognize the relevance of circular economy principles for agricultural risk management and value creation (FAO, 2020), they often lack standardized, sector-specific criteria to evaluate the circularity of agricultural activities and translate these assessments into actionable financing decisions.

A harmonized assessment methodology also helps reduce transaction costs and coordination friction in blended finance structures, giving public and private capital providers a shared basis for evaluating circular agriculture activities.

What these guidelines provide

Developed with input from UNEP FI member banks, development finance institutions (DFIs) and sector experts, these guidelines address this gap by providing a structured methodology for the agriculture sector to determine whether activities, projects, clients and investment components align with circular economy principles and therefore qualify for circular economy financing. This not only helps financial institutions classify circular economy-aligned assets within existing portfolios but also identify new opportunities they can actively engage in to scale circular economy investments in the agriculture sector.

While primarily intended for commercial banks, and development finance institutions, other financial stakeholders such as asset managers may also wish to use these guidelines, and non-financial stakeholders such as agricultural corporates and cooperatives may also draw on the same methodology to prepare supporting information, align internal controls and understand the criteria and requirements needed to qualify for circular economy financing.

The circular economy finance assessment follows a three-step methodology further detailed in chapter 2, enabling users to operationalize circularity through structured approaches that align with the UN Principles for Responsible Banking (PRB) and UNEP FI *Impact Protocol*. The methodology can be applied at various levels: across portfolios (to map exposures, inform strategy and client engagement, and track progress), for individual transactions (to screen and structure deals with circularity-linked terms) and in product development (by embedding circularity KPIs into lending policies and sustainability-linked financing instruments). In doing so, the methodology can support teams across functions, including origination and sector coverage (to screen and structure transactions), risk and compliance to document safeguards, monitor environmental DNSH screening and social objectives assessment, portfolio strategy and stewardship (to map exposures) and treasury/product teams (to align use-of-proceeds and sustainability-linked structures with illustrative circular economy indicators). Safeguards and integrity underpin the approach,

integrating verification of nutrient cycling, soil health, chemical safety (particularly highly hazardous pesticide exclusion per FAO/WHO guidance), traceability and water stewardship. Transition plans encourage innovation, allowing early-stage solutions to progress toward full alignment as performance matures.

A set of five annexes supports implementation of these guidelines. Annex 1 provides an illustrative, non-exhaustive list of circular economy activities in the agriculture sector, organized by circular economy category, to assist with Step 1 category assignment. Annex 2 provides portfolio screening guidelines mapping agriculture activities to NACE Rev.2 and ISIC Rev.4 codes, supporting portfolio-level circularity review. Annex 3 sets out the environmental and social material impacts for the agricultural sector, informing the Step 3 interlinkages assessment. Annex 4 presents an illustrative assessment example demonstrating how a financial institution might apply the three-step methodology in practice.

Development and framework interoperability

These sectoral guidelines operationalize the screening methodology described in UNEP FI *Guidance on Resource Efficiency and Circular Economy Target Setting* (UNEP FI, 2023a) and *Circular Solutions to Achieve Climate Targets in the Agrifood Sector* (UNEP FI, 2024c), enabling activity-level classification that feeds into portfolio-level baseline, target-setting processes and action plans. The guidelines are designed for consistency with the IFC *Harmonized Circular Economy Finance Guidelines* (IFC, 2025). For financial institutions that have or wish to set circular economy targets, UNEP FI *Guidance on Resource Efficiency and Circular Economy Target Setting* (UNEP FI, 2023a) provides the portfolio-level methodology. For institutions that have set climate targets, UNEP FI *Circular Solutions to Achieve Climate Targets in the Agrifood Sector* (UNEP FI, 2024c) offers a complementary entry point. In both cases, these sectoral guidelines provide the activity-level circularity screening that underpins portfolio assessment.

The methodology is designed to be interoperable with leading global and regional frameworks that support classification, disclosure and impact assessment in the agricultural context. Regulatory alignment is supported through compatibility with diverse national sustainable finance frameworks. Additional alignment with disclosure and reporting standards (e.g. GRI, ESRS) can be applied by the user, enabling integration into existing governance and reporting structures. An overview of relevant frameworks and standards (non-exhaustive) is provided in Box 2. This enables the user to adapt the applied criteria to diverse regulatory contexts, levels of market readiness and place-based conditions, including agricultural practices, water availability, land tenure systems and integration of traditional and Indigenous knowledge.

Box 2: Frameworks and standards examples for circularity and safeguards in the agriculture sector (illustrative, non-exhaustive)

Global and industry examples: Global and industry frameworks provide operational anchors for documenting circularity and its interlinkages in agricultural value-chain activities. Financial institutions are encouraged to reference FAO SAFA Guidelines v3.0 for holistic sustainability assessment across four dimensions (good governance, environmental integrity, economic resilience, social well-being) (FAO, 2025). For farm-level performance and regenerative agriculture integration, SAI Platform's Farm Sustainability Assessment 3.1, released in March 2025, provides comprehensive indicators (SAI Platform, 2025). The Science Based Targets Initiative's Food, Land and Agriculture (FLAG) framework v1.1 establishes emissions reduction pathways requiring a 72% reduction by 2050 aligned with 1.5°C pathways (SBTi, 2025a). For nature-related risks, TNFD's location-based nature-related risks and opportunities guidance for Food and Agriculture (LEAP) provides sector-specific assessment methodologies (TNFD, 2024). WBCSD's Circular Transition Indicators v4.0 offer business-level circularity metrics applicable across agricultural enterprizes (WBCSD, 2025). CTI is leveraged in the Global Circularity Protocol for Business (GCP), launched by WBCSD and UNEP, which is being advanced through stakeholder consultations and can be a reference point for circular performance assessment (WBCSD and One Planet Network, 2025). For chemical safety, FAO/WHO guidance on highly hazardous pesticides (HHPs) and WHO hazard classification systems provide reference standards (FAO and WHO, 2024). These resources may inform classification and are recommended to be paired with regionally relevant instruments where applicable.

Regional examples of taxonomies and other frameworks and standards
European Union: The EU Taxonomy Regulation (EU 2020/852) includes technical screening criteria for agricultural activities under climate and circular economy objectives (European Union, 2020). The European Sustainability Reporting Standards (ESRS) E5 on Resource Use and Circular Economy, adopted by the European Commission in 2023 (European Commission, 2023) and developed with the advisory support of EFRAG, currently subject to review and potential updates, requires disclosure on material flows, waste and circularity performance. The Common Agricultural Policy (CAP) 2023–2027 emphasizes eco-schemes rewarding sustainable practices including nutrient management, cover cropping and organic farming (European Commission, 2023a).

Asia-Pacific: The ASEAN Taxonomy for Sustainable Finance Version 3 (effective December 2024) includes agricultural sector guidance with specific criteria for sustainable land use, integrated farming systems and organic waste management (ASEAN Taxonomy Board, 2024). Singapore-Asia Taxonomy provides activity-level guidance incorporating agriculture under Plus Standard safeguards (MAS, 2023). China's Circular Sustainable Development Indicator System (CSDIS) emphasizes resource efficiency and waste reduction in agricultural contexts (Ministry of Ecology and Environment, 2024). India's National Circular Economy Framework (NCEF), Edition 3 released in 2025, integrates traditional agricultural practices with circularity principles and establishes targets for agricultural waste valorization (CII, 2025).

Americas: Brazil's Sustainable Taxonomy (Taxonomia Sustentável Brasileira, TSB) provides specific classification for land use, agriculture and livestock activities with criteria addressing deforestation prevention, regenerative practices and nutrient management (Ministry of Finance of Brazil, 2025). The Guidance for Canadian financial institutions on Financing the Circular Economy includes a categorization system which emphasizes regenerative agriculture and nature-based solutions, with frameworks developed through collaboration between CELC and UNEP FI with local banks (CELC, 2024).

Africa and Middle East: The African Circular Economy Alliance has identified agriculture as one of five priority areas ("Five Big Bets"), with emphasis on integrated food systems and agricultural waste valorization (ACEA, 2021). The African Union Continental Circular Economy Action Plan (2024–2034) outlines strategic objectives for Member States including circular agriculture development (ACEA, 2021).

2. Overview of the circular economy finance assessment

This chapter provides an overview of the three-step assessment methodology enabling financial institutions to systematically identify, classify and align financing for agricultural sector activities that deliver circular economy benefits while maintaining environmental integrity and social safeguards.

Selecting the assessment pathway

Before beginning the assessment, users can determine which pathway matches the intended purpose. For individual transaction assessment or client origination, users can start with the client assessment pathway, beginning at Step 1 in chapter 3. For portfolio-level circularity mapping, target setting or systematic reviews, users can proceed directly to the portfolio review pathway in Annex 2.

In developing an assessment approach that fits the institution's strategy, a distinction can be made between large corporate clients and small- and medium-sized enterprizes (SMEs). While large corporates typically support granular analysis through extensive reporting, a lighter assessment path may be chosen for SMEs. SMEs often have fewer formal policies and practices yet contribute significantly to the circular economy in the agricultural sector. For smallholder farmers, assessment may rely on aggregated data via cooperatives or aggregators rather than farm-level documentation. Adjusting documentation proportionately ensures these key actors are not excluded from circular finance while maintaining assessment integrity.

Regardless of client size, the same three-step methodology applies. Institutions are encouraged to integrate this circular economy assessment into existing internal processes, such as SME risk scoring, sustainability scoring frameworks, or corporate due-diligence workflows, so that circularity classification builds on, rather than duplicates, current assessment practices. This assessment methodology is designed to operationalize Principle 3 (Clients and Customers) of the Principles for Responsible Banking framework, complementing UNEP FI *Guidance on Client Engagement* (UNEP FI, 2024a), which outlines the broader engagement cycle for supporting client transitions to sustainable business models.

Both the client assessment and portfolio review approaches apply the same rigorous circularity assessment logic. However, they offer different entry points and supporting resources once the initial pathway is selected—comprising environmental DNSH screening, social objective assessment (aligned with minimum safeguards) and co-benefits identification—to determine whether activities qualify as circular solutions or circular opportunities.

Three-step methodology overview

Figure 3 sets out the three-step assessment methodology financial institutions can use to classify circular-economy-aligned agriculture activities.

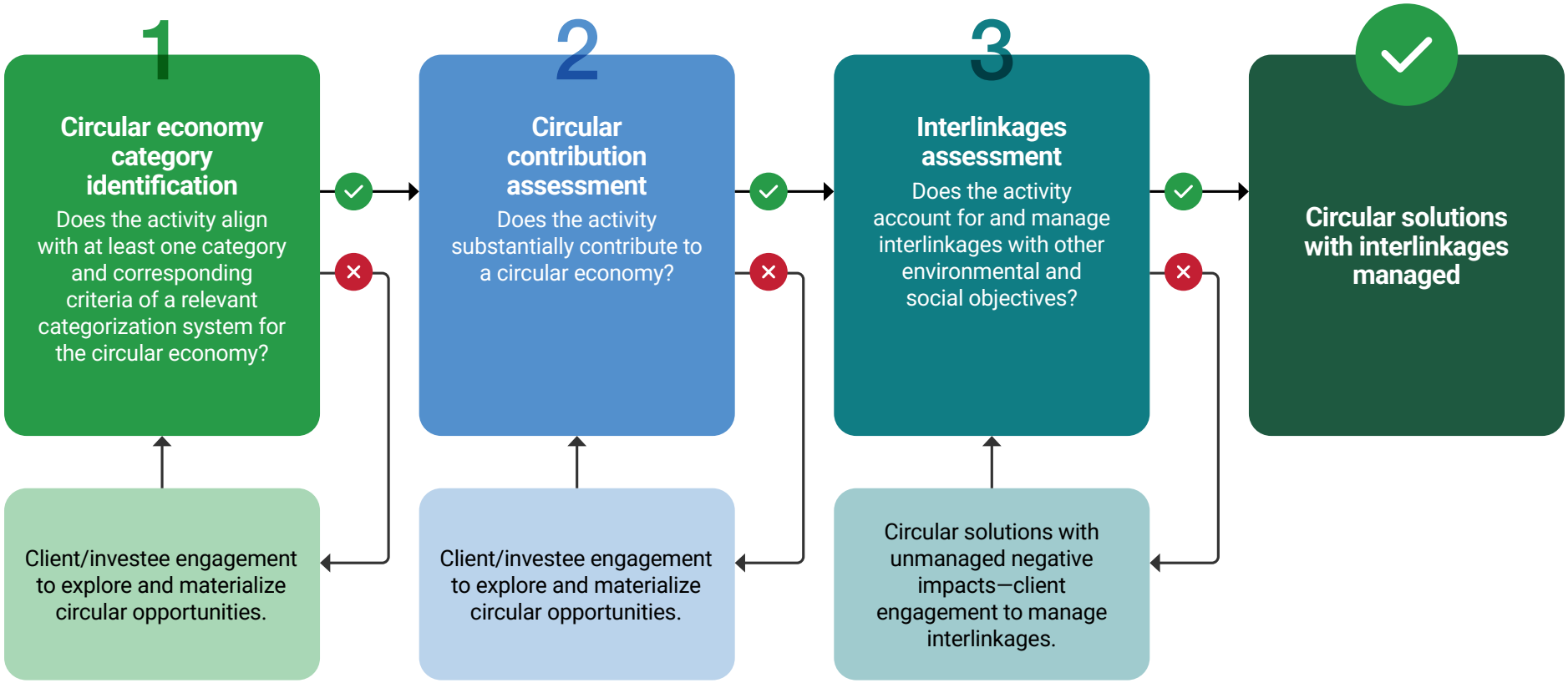


Figure 3: Three-step assessment methodology.

Circular economy finance decision tree steps

1

Circular economy category identification

Does the activity align with at least one category and corresponding criteria of a relevant categorization system for the circular economy?

In Step 1—Circular economy category identification—users determine whether an activity qualifies as circular and, if so, assign the primary circular economy category for the activity: circular design and production, circular use, circular value recovery, or circular support (see Box 3 for definitions). These categories, adapted to the agriculture sector's specific context, are consistent with recognized circular economy categorization systems (see examples in Box 2). In Table 1, a rapid screening allows for a quick assessment of whether an activity demonstrates circular characteristics and to which circular economy category it corresponds.

Outcomes of Step 1: Activities demonstrating circular characteristics are assigned a primary circular economy category (circular design and production, circular use, circular value recovery, or circular support) and proceed to Step 2. For activities without clear circular alignment, financial institutions are encouraged to engage with their client to explore circular opportunities.

2

Circular contribution assessment

Does the activity substantially contribute to a circular economy?

In Step 2—Circular contribution assessment—users assess whether an activity makes a substantial contribution to circularity by applying sector-relevant indicators and recognized frameworks and disclosure standards. Depending on the context and ambition of the activity, supporting information can range from basic documentation (such as internal policies, pilot results or early metrics), through third-party certifications, to comprehensive, externally assured records including audit reports, longitudinal performance data and transition plan reporting. Financial institutions are encouraged to calibrate assessment and documentation proportionately to the activity's context and scale, supporting credible classification, informing financing structure and establishing a foundation for long-term monitoring and performance tracking.

Outcomes of Step 2: Activities are classified as either circular solutions (meeting all circularity criteria stipulated by the financier) or circular opportunities (not meeting all circularity criteria but demonstrating circular potential). Circular solutions proceed to Step 3; circular opportunities are directed to targeted client engagement.

3

Interlinkages assessment

Does the activity account for and manage interlinkages with other environmental and social objectives?

In Step 3—Interlinkages assessment—users assess interlinkages between circular activities and other environmental and social objectives. The assessment comprises: (a) DNSH screening across environmental objectives; (b) social objectives assessment, confirming alignment with minimum social safeguards; and (c) co-benefits identification across environmental and social objectives.

Screening is place-based and proportionate to the activity and geography, building on established environmental and social frameworks adapted to the agricultural context (e.g. agricultural chemical safety frameworks, basin-aware water stewardship, soil health protection and biodiversity safeguards). The UNEP FI *Impact Protocol* supports holistic impact assessment and interlinkages management to avoid negative externalities and foster positive impacts (UNEP FI, 2025g).

Outcomes of Step 3: Activities initially classified as circular solutions in Step 2 are assigned one of two outcomes based on interlinkages assessment.

- **Circular solutions with interlinkages managed:** Activities with potential co-benefits identified across climate, nature, pollution, or social dimensions, and/or with negative impacts in other impact areas appropriately managed/mitigated. No unmanaged significant negative impacts across environmental DNSH criteria and social objectives.
- **Circular solutions with unmanaged negative impacts:** Activities meeting all circularity criteria but with identified negative impacts on other environmental or social objectives that are not yet managed/mitigated, for which client engagement is encouraged to manage interlinkages.

Using the assessment outcomes

Upon completion of the three-step assessment, financial institutions will have classified activities as either circular solutions or circular opportunities—activities demonstrating circular potential but not yet meeting all criteria, requiring further client engagement support, mitigation measures or transition plans. Among circular solutions, the interlinkages assessment (Step 3) will further distinguish those interlinkages managed—where co-benefits are identified and/or negative impacts in other impact areas are appropriately managed/mitigated—from those with unmanaged negative impacts for which client engagement and ongoing monitoring are encouraged.

These classification results support multiple applications across institutional functions—including transaction structuring, client engagement and portfolio monitoring—and connect to UNEP FI's broader circular economy guidance suite.

These guidelines operationalize the activity-level screening methodology described in UNEP FI's *Guidance on Resource Efficiency and Circular Economy Target Setting* (UNEP FI, 2023a), enabling institutions to classify individual activities that feed into portfolio baselines and target-setting processes. For institutions that have set climate targets, UNEP FI's *Circular Economy to Achieve Climate Targets in the Agrifood Sector* (UNEP FI, 2024c) offers a complementary entry point, supporting institutions to integrate circular economy contributions into climate transition planning. In both cases, these sectoral guidelines provide the activity-level circularity screening that underpins portfolio assessment.

These outcomes can be applied at two levels: (1) structuring transactions and engaging clients and (2) aggregating exposures for portfolio management, target setting and reporting. For detailed guidance on operationalizing these outcomes, see chapter 3, Using the assessment outcomes.

Box 3: Circular economy category definitions under the European Commission circular economy business models categorization system (European Union, 2020)

Circular design and production: Activities contributing to circular design and production aim at increasing resource efficiency through (i) design innovation, (ii) process innovation and re-engineering or (iii) material innovation and substitution.

Circular use: Activities contributing to circular use aim at increasing resource efficiency through (i) product and asset life-cycle extension based on reuse, repair, repurposing, refurbishment or remanufacturing strategies or (ii) product- and asset-use-optimizing leasing and sharing models.

Circular value recovery: Activities contributing to circular value recovery aim at increasing resource efficiency through the recovery of wastes in preparation for reuse and recycling or other circular economy strategies.

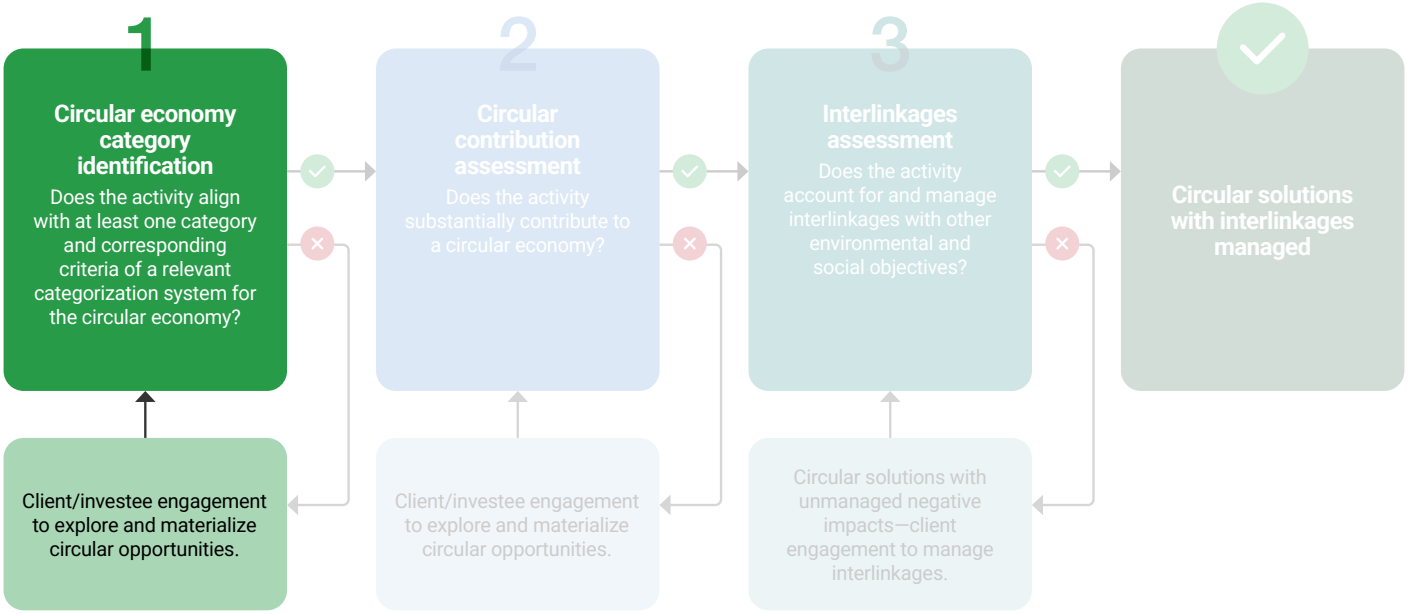
Circular support: Activities in the circular support category aim at enabling other circular activities/projects and thus indirectly contribute to increasing resource efficiency.

These categories are consistent with existing circular economy categorization systems such as the *Harmonized Circular Economy Finance Guidelines* developed by IFC (2025), the ***Circular Economy Finance Guidelines*** issued jointly by ABN AMRO, ING and Rabobank (2018), the methodology developed by Inter-American Development Bank (IDB), IDB Invest, BASE together with local banks in Colombia (IDB and BASE, 2022) and in Peru (IDB Invest, 2024), the methodology developed by Circular Economy Leadership Canada (CELC), UNEP FI and local banks for Canada (CELC and UNEP FI, 2024) and the categorization systems developed by UNEP FI, BASE and local banks in Chile, Costa Rica, Uruguay and Dominican Republic (UNEP FI, 2025a).

3. Application of the circular economy finance assessment methodology to the agriculture sector

Robust classification is essential to ensure that financial flows directed toward circular economy activities in the agriculture sector achieve genuine impact. This chapter provides a detailed overview of each step of the decision tree, enabling financial institutions to systematically screen, classify and assess whether agricultural activities qualify for circular economy financing. Where examples in this document reference specific jurisdictions, users are encouraged to substitute relevant regional equivalents in line with their local context and frameworks.

Step 1: Circular economy category identification



Purpose: Identify which of the four circular economy categories the agricultural activity falls under: circular design and production, circular use, circular value recovery, or circular support (see Box 3). This categorization forms the foundation for all subsequent assessment steps and ensures consistent classification across portfolio and transaction applications.

Understanding the four circular economy categories

The four categories below serve as the primary classification for this methodology (see Box 3 for definitions). They are designed to capture the full life cycle of circularity in agriculture, from production system design and input choices that enable regeneration, through business models that maximize productive use of assets and products, to the recovery systems that return nutrients, water and biomass to the value chain. While interconnected, each category has sector-specific considerations and eligibility criteria tailored to agriculture's biological and place-based characteristics.

- **Circular design and production** initiatives re-engineer agricultural production systems and landscapes. Effective approaches address agriculture specific challenges such as restoring soil organic matter, closing nutrient loops at farm and landscape level, reducing dependence on highly hazardous pesticides and synthetic fertilizers, integrating crop—livestock systems and diversifying crops and habitats to enhance resilience. Design and production choices may include regenerative tillage and crop rotations, agroforestry and silvopasture, perennial or deep-rooted species, on-farm nutrient recovery and compost use, water smart irrigation practices, and seed or livestock breeding that supports circular traits such as nitrogen efficiency or multipurpose biomass use.
- **Circular use** activities are characterized by demonstrated extension or optimization of asset and infrastructure use in the agrifood system. This includes machinery sharing cooperatives and equipment-as-a-service models, shared processing and storage facilities, reusable and pooled packaging systems and infrastructure leasing for irrigation, cooling or renewable energy. Agriculture-specific considerations include seasonal utilization patterns, geographic dispersion of farms and access constraints for smallholders. Evidence of circularity typically involves higher utilization rates compared to individual ownership, documented life cycle extension, reduced demand for new equipment or facilities and improved access for smaller producers.
- **Circular value recovery** activities are defined by the ability to return agricultural residues, manure, food loss and waste and processing byproducts to productive use at high value. Priority is given to systems that recover nutrients, organic matter, energy or materials in ways that support soil health and reduce reliance on synthetic inputs. Examples include composting and co-composting of crop residues and manure, anaerobic digestion with responsible digestate management, biochar production with agronomic application, nutrient recovery from livestock waste and valorization of processing byproducts into feed, biobased materials, or soil amendments. Quality control and contamination management are central, including limits on heavy metals, pesticide residues, pathogens, microplastics and salinity, as well as traceability to end-use on agricultural land.
- **Circular support** covers crosscutting enablers that make the other categories workable at scale. Priorities include soil health monitoring and testing services, nutrient management planning and digital advisory tools, traceability and data platforms that track material and nutrient flows, circular agriculture certification schemes, risk sharing and blended finance mechanisms, training and extension services and cooperative or platform governance that enables inclusive participation. Effective support activities provide reliable data, interoperable systems and governance structures that help farmers, processors and financial institutions adopt and sustain circular agriculture practices over time.

The quick screening pathway

Annex 1 includes an indicative list of 49 circular economy activities in the agriculture sector and maps them into the four circular economy categories. Users may use the list in Annex 1 to ease determination of the circular economy category. Where a direct match exists, the user assigns the corresponding category and proceeds to Step 2 or for multi-component assessment, if applicable. If the activity is not on the indicative list (e.g. early-stage innovations as illustrated in Box 4), users can document the rationale for category assignment on the basis of the quick screening questions in Table 1 (see the illustrative example in Annex 4).

Table 1 sets out quick screening questions to determine the circular economy category. To use the screening table, first identify which circular economy category best describes the activity based on the italic descriptors in the left column. Answer the four screening questions for that category. If all answers are "Yes", the activity demonstrates circular characteristics. If any answer is "No", enhanced client engagement is recommended to explore circular economy opportunities.

Table 1: Circular economy category quick screening guide

Circular economy category	Quick screening questions
Circular design and production Select this category if the activity redesigns agricultural systems, processes, or inputs to enable circularity. **Common agricultural circular economy aligned activities:** Regenerative crop production systems, integrated crop-livestock systems, bio-based fertilizer production, seed breeding for circularity traits, silvopasture systems, closed-loop aquaculture.	▪ Does the activity redesign agricultural production systems or processes for circularity (e.g. integrated crop-livestock systems, regenerative agriculture, nutrient-efficient livestock design)? ▪ Does it substitute virgin or synthetic inputs with bio-based, recycled, or regeneratively produced alternatives (e.g. bio-based fertilizers, circular feed from by-products)? ▪ Is there a documented process for closing nutrient loops or building soil organic matter at scale? ▪ Does it demonstrate verified performance thresholds (e.g. soil organic carbon improvement, synthetic input displacement, nutrient cycling rates)?
Circular use Select this category if the activity extends asset life through sharing, leasing, refurbishment or optimization. **Common agricultural circular economy aligned activities:** Agricultural machinery sharing and pooling, equipment-as-a-service for farming, shared processing and storage facilities, farm infrastructure leasing, reusable packaging for agricultural products, maintenance and refurbishment of farm equipment.	▪ Does the activity extend agricultural asset or equipment life through sharing, leasing or refurbishment? ▪ Is there a mechanism to track and optimize asset utilization (e.g. machinery sharing logs, facility booking systems, equipment life cycle data)? ▪ Are restoration, maintenance or refurbishment services integral to the business model? ▪ Does it demonstrate measurable extension of service life, utilization rates or verified displacement of new asset purchases?

Circular economy category	Quick screening questions
Circular value recovery Select this category if the activity converts agricultural waste streams into valuable inputs. **Common agricultural circular economy aligned activities:** Composting of organic agricultural waste, anaerobic digestion of crop residues and manure, recovery of nutrients from livestock waste, biochar production from agricultural residues, processing of food processing by-products, biomass pellet production, recovery of protein from agricultural by-products.	▪ Does the activity recover value from post-harvest waste, crop residues, livestock waste or processing by-products? ▪ Are recovered outputs validated for agricultural reuse or input substitution (e.g. compost quality per ECN-QAS/BSI PAS 100, recovered nutrient certifications)? ▪ Is there a documented process for converting agricultural waste streams into marketable inputs with verified quality standards? ▪ Does it include end-market transparency demonstrating that recovered materials enter productive agricultural use?
Circular support Select this category if the activity provides services, tools or platforms enabling other circular agricultural activities. **Common agricultural circular economy aligned activities:** Soil health monitoring and testing services, nutrient management planning services, digital platforms for resource sharing, agricultural waste mapping and logistics, circular agriculture certification services, precision agriculture platforms, life cycle assessment services, training and education on circular practices.	▪ Does the activity provide services, tools or infrastructure enabling other agricultural circular activities? ▪ Are there digital platforms, certification systems, soil monitoring protocols or traceability tools integral to the model? ▪ Does it include monitoring, traceability or documentation services that can support circular agriculture (e.g. soil health testing, nutrient management advisory, blockchain traceability)? ▪ Is there supporting documentation that the service or tool measurably accelerates agricultural circular transition at scale (e.g. documented circular outcomes facilitated for other value chain participants)?

Assessing circularity: Key considerations

While the circular activities in Annex 1 represent promising interventions, users are encouraged to consider potential unintended effects when assessing specific business models. As policies around nutrient management, soil health and producer responsibility for food waste evolve, a critical lens is essential.

Initiatives that move agricultural residues or by-products across regions are recommended to demonstrate that this does not compromize local soil health or nutrient cycles. For example, large-scale biomass removal from a nutrient-poor area for bioenergy production elsewhere may undermine local regenerative capacity. Similarly, the application of compost or digestate from mixed municipal waste streams warrants reliable supporting documentation that the material meets stringent quality standards (e.g. ECN-QAS or BSI PAS 100) to avoid soil contamination with heavy metals or plastics. Activities that do not clearly align with the screening questions in Table 1 may be suited to alternative

sustainable finance frameworks or may represent early-stage innovations (see Box 4 for illustrative examples).

Regenerative agriculture transitions require multiyear assessment periods to demonstrate genuine soil health improvements and nutrient cycling benefits. Claims based on practice adoption alone (e.g. cover cropping, notill) without measured soil organic carbon improvement or synthetic input displacement are recommended to be classified as circular opportunities until outcomes are documented through soil testing and farm performance data. Financial institutions are encouraged to distinguish genuine nutrient cycling systems from conventional efficiency measures that simply reduce input intensity without creating closed loops.

Nutrient recovery claims may improve waste management, but do not in themselves constitute circular agricultural systems if recovered nutrients are not actually returned to agricultural production. For instance, composting operations that export finished compost without documented agricultural application may represent waste diversion rather than circular nutrient flows. Financial institutions are encouraged to assess traceability, recovered nutrients and that compost reaches agricultural end users and displaces synthetic fertilizers. Claims based on biogas production are recommended to be assessed carefully, with preference given to projects that demonstrate closed-loop nutrient cycling where digestate returns to crop production. Managing seasonal waste generation patterns, biosafety in organic waste processing and creating stable markets for recovered materials are central to credible classification in this category.

Food redistribution platforms that "rescue" surplus food can reduce waste when well-designed. However, without appropriate safeguards, they may create unintended logistical inefficiencies. For instance, long-distance transport of low-value, perishable goods can result in higher GHG emissions than the food loss it prevents. Moreover, such schemes could be designed to complement, not undermine, efforts higher up the food waste hierarchy, such as optimizing production and developing local, higher-value markets for surplus.

Machinery-sharing platforms can significantly improve asset utilization; yet the full circular benefit depends on the displacement of new equipment purchases and a net reduction in resource use, rather than simply enabling more intensive land use. Net circular benefits depend on displacement of new equipment purchases rather than supplementary investment. Financial institutions are encouraged to assess utilization rates, member cost savings and demonstrable equipment life extension before classifying these models as circular solutions. Financial institutions are therefore encouraged to assess a project's system-level impact, including changes in total energy consumption, soil compaction from increased field traffic and actual displacement rates for new machinery, as rebound effects remain plausible.

Robust governance for precision agriculture and digital enablers is important; users are recommended to look for interoperability, inclusivity and independent assessment, since reliance on proprietary systems or unverified claims may be insufficient.

Box 4: Illustrative early-stage activities (Illustrative, non-exhaustive)

Life cycle performance validation for early-stage circular innovations: Early-stage circular solutions are encouraged to be supported by life cycle assessments (LCAs) to determine whether innovations deliver environmental benefits beyond technical feasibility. LCAs using recognized methods (ISO 14040/44, 2006 or FAO SAFA v3.0) help confirm reductions across water, nutrient, chemical and climate impact categories while identifying potential burden-shifting.

Advanced nutrient recovery from livestock waste: Positive signals include pilot demonstrations of phosphorus recovery or nitrogen concentration technologies, product quality meeting fertilizer specifications and preliminary offtake agreements with agricultural users. Transition plans can include demonstration of verified nutrient displacement when reaching stable commercial operation.

Agricultural waste biorefinery platforms: For emerging technologies converting crop residues into multiple value streams (biofuels, biochemicals, bio-based materials), positive signals include pilot trials demonstrating viable conversion rates, product quality meeting industrial specifications and integrated business models with documented end markets. Transition plans can include commercial partnership development and documentation of environmental performance versus conventional alternatives.

Blockchain-based agricultural traceability platforms: Positive signals for digital platforms include interoperability with existing farm management systems, coverage across multiple value chain participants and verified integration with certification schemes or regulatory compliance frameworks. Progression can be tied to user adoption rates, data quality and measurable enablement of circular activities (e.g. organic waste collection optimization, nutrient cycling documentation).

Regenerative agriculture carbon credit programmes: Programmes are expected to demonstrate rigorous soil carbon measurement protocols (e.g. soil sampling at appropriate depths and frequencies), evidence of additionality demonstrating improvements beyond baseline practices and transparent carbon accounting methodologies. Transition plans may include established carbon credit market integration and documented financial returns to participating farmers.

Classifying multi-component transactions

Agricultural transactions often combine production system redesign, shared infrastructure investment and nutrient recovery capacity in one project. In such cases, financial institutions can determine the primary category mechanism through which the investment most directly and materially advances circular agriculture. In cases where a transaction spans several circular economy activities or categories, determine the primary category mechanism through which the investment contributes to agricultural circularity, while documenting proportional exposure if relevant for internal tracking. The following questions can be asked to help determine the primary category with documented rationale:

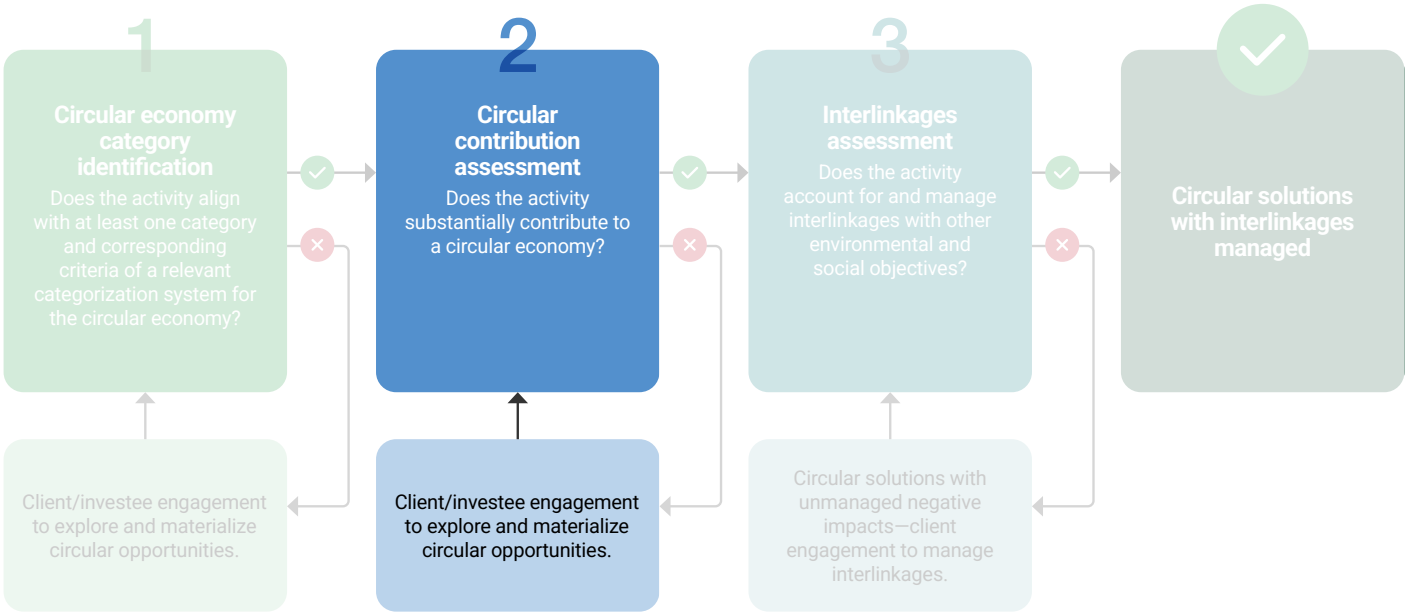
- **Capital allocation:** Which component accounts for the majority funding?
- **Circular impact:** Which activity most directly enables resource recirculation or extended use?
- **System catalysis:** Which component is most catalytic or foundational to future circularity?

Proportional allocation is appropriate only when financing lines are clearly segregated, each component maps to distinct categories and governance processes maintain auditable records. This prevents double counting and ensures interoperability with emerging regulatory frameworks (IFC, 2025).

Outcomes of Step 1

Upon completion of Step 1, users will have assigned a primary circular economy category (circular design and production, circular use, circular value recovery, or circular support) and determined the classification outcome. Activities falling into one of the four circular economy categories proceed to Step 2 for circular contribution assessment. Activities not clearly aligned with one of the four circular economy categories but demonstrating circular potential are directed to enhanced client engagement.

Step 2: Circular contribution assessment



Purpose: Step 2 assesses whether the activity demonstrates a substantial contribution to circular outcomes through documented performance, whether quantitative or qualitative. Financial institutions are encouraged to select screening circularity criteria proportionate to the activity's context and scale, drawing on recognized frameworks. The criteria and KPIs presented in this section serve as informative reference points, not prescriptive requirements. Table 2 presents examples of illustrative resources and non-exhaustive application examples for circular agriculture screening under Step 2.

Table 2: Example indicators and documentation sources for Step 2 and Step 3 (non-exhaustive)

Resource type	Description/Illustrative examples	Potential Step 2 uses
Regulatory and certification	**FAO SAFA v3.0:** Holistic sustainability assessment across four dimensions (governance, environmental integrity, economic resilience, social well-being) **SAI Platform FSA 3.1:** Farm-level performance assessment (regenerative modules). **IFOAM/GLOBALG.A.P.:** Organic and Good Agricultural Practices certification. **Regenerative Organic Certified:** Soil health and animal welfare criteria. **Regional classification taxonomies and standards:** Brazil TSB, EU Taxonomy, CSRD/ESRS E5, ASEAN Taxonomy V3, Singapore-Asia Taxonomy, China CSDIS, India NCEF.	Attach SAFA v3.0 assessment results for holistic screening. Use FSA 3.1 indicators for farm-level performance. For organic/ regenerative systems, provide IFOAM or GLOBALG.A.P. certificates. Reference regional taxonomy standards (Brazil TSB, EU Taxonomy) where applicable.
Performance data and metrics	**WBCSD CTI v4.0:** Business-level circularity metrics (nutrient flows, water use, land productivity). **ISO 59020:2024:** Measuring circularity performance (mass balance, circular flow) **UNECE-OECD:** Physical accounting guidelines for agricultural resource flows. **Regional accounting frameworks:** China CSDIS resource efficiency indicators, India NCEF traditional practice integration metrics. **ESRS E5:** Resource use and circular economy metrics. **SBTi FLAG v1.1:** Land-based emissions and removals guidance (agriculture-specific pathways).	Build activity-level KPIs: nutrient cycling rates, soil organic carbon improvement, synthetic input displacement, resource utilization rates. Cite the method (CTI/ISO/ UNECE/ESRS) in the assessment. Use SBTi FLAG to align land-based climate targets with 1.5°C pathways.
Sectoral reports and implementation guides	**Rockefeller Foundation:** Reports on regenerative agriculture profitability. **FAO/UNEP:** Circular agrifood systems and nutrient recycling cases. **WBCSD:** Food and agriculture transformation reports. **UNEP FI:** *Circular Solutions to Achieve Climate Targets in the Agrifood Sector* **Technical guides:** For composting, anaerobic digestion and bio-based inputs **ASEAN/Singapore-Asia:** Regional circular agriculture implementation guides.	Reference Rockefeller and FAO reports to validate business model assumptions (e.g. yield stability, profitability). Use technical guides to assess design parameters for composting or anaerobic digestion systems. Consult regional implementation guides (ASEAN, SingaporeAsia) to benchmark adoption rates.

Resource type	Description/Illustrative examples	Potential Step 2 uses
Environmental and safety assessment	**FAO/WHO:** Guidance on highly hazardous pesticides (HHPs) and pesticide registration. **ISO 14067:2025:** Carbon footprint of agricultural products (life cycle approach) **ECN-QAS/BSI PAS 100:** Quality assurance for compost and digestate (contaminant limits). **UNEP FI Guidance (2025):** Reduction and management of pollution in agriculture. **Regional safety standards:** China CSDIS pollution prevention, India NCEF waste quality criteria. **WHO classifications:** Pesticide hazard classes (Ia/Ib exclusion).	Attach lab reports (ISO/IEC 17025 accredited) for compost quality, soil health, or biofertilizer safety. Provide WHO/FAO documentation for pesticide exclusion (HHP-free). Use ECN-QAS or PAS 100 certificates for recovered nutrients. Reference UNEP FI pollution guidance for Step 3.
Safeguards and risk-based assessment	**OECD due diligence:** Guidance for responsible supply chains in agriculture. **TNFD LEAP:** Nature-related risk and opportunity assessment (Food and Agriculture). **SBTi FLAG:** Science-based targets for land sector. **FAO:** Environmental and social safeguards. **UNEP FI Interlinkages Mapping (2024e):** Portfolio-level impact management and interlinkages assessment. **ASEAN and EU Taxonomy:** Regional safeguard principles for sustainable land use.	Use OECD guidance as the primary risk screening tool (Step 3). Apply TNFD LEAP framework to identify material nature-related dependencies and impacts. Use SBTi FLAG to ensure climate targets do not drive negative land-use change. Use UNEP FI *Interlinkages Mapping* for holistic impact assessment and interlinkages management to avoid negative externalities.
Operational and process documentation	**ISO/IEC 17025:2017:** Lab competence for soil, water, plant tissue testing. **ISAE 3000 (Revised):** External assurance for non-financial KPIs (circularity metrics). **ISO 59004/59010:** Circular economy vocabulary and business model guidance. **Farm records:** Nutrient management plans, crop rotations, livestock records. **Cooperative governance:** Membership agreements, benefit-sharing protocols. **Regional operational standards:** India NCEF digital agriculture protocols, China CSDIS system efficiency metrics.	These resources support both Step 2 and Step 3. File farm management records and soil test results. Cite test methods and lab competence (ISO/IEC 17025). If KPIs underpin financing terms, consider ISAE 3000 assurance. Use ISO 59010 to validate circular business model definitions.

Resource type	Description/Illustrative examples	Potential Step 2 uses
System integration documentation	**GS1 Standards:** Traceability for agricultural products (barcodes, RFID, digital link). **UNECE Recommendation 46:** Traceability guidance for food and agriculture. **Offtake agreements:** Contracts for recovered nutrients, energy, or bio-based products. **Cooperative records:** Governance for machinery sharing, processing facilities. **Digital platforms:** API documentation, data exchange protocols. **Regional integration frameworks:** ASEAN traceability standards, SingaporeAsia digital platform requirements.	Supporting documentation that outcomes are embedded: traceability coverage (GS1/UNECE), offtake acceptance demonstrating recovered materials reach agricultural users, cooperative governance records. Map regulatory compliance where relevant to the market. These resources may support reporting under sustainable finance taxonomies where value chain traceability is relevant.
UNEP sector resources	**UNEP Agrifood Systems:** True cost of food reports (global hidden cost assessment). **UNEP FI Impact Protocol (2025g):** Portfolio-level impact analysis and governance. **UNEP FI Guidance on Client Engagement (2024a):** Supporting client transition pathways. **UNEP FI Guidance for Reduction and Management of Pollution in Agriculture (2025b):** Pollution mitigation strategies. **UNEP FI Circular Economy as an Enabler for Responsible Banking (2024b) and Circular Solutions to Achieve Climate Targets in the Agrifood Sector (2024c):** Linking circular solutions to climate transition plans.	Use UNEP True Cost framework to justify system-level materiality. Apply *Impact Protocol* and associated tools for indicator selection and governance. Reference *Client Engagement* guidance to structure transition plans. Use *Pollution* guidance for DNSH screening. Apply *Circular Economy as an Enabler for Responsible Banking* and associated supplement for the agrifood sector to integrate circular agriculture solutions into climate/nature strategies.

Note on documentation quality: Where certificates are referenced, documentation such as telemetry, mass balances, or accredited testing is encouraged. Certificates may support initial screening but do not necessarily constitute proof of outcomes.

Where there is no mandatory framework, financial institutions can select their own set of circularity criteria, consisting of material, context-specific KPIs that are aligned with recognized frameworks, to assess whether an activity makes a substantial contribution to the circular economy. The following sections outline non-exhaustive, illustrative examples of criteria to assess circularity under each circular economy category, as well as resources that can be used to identify and select circularity criteria.

Circular design and production: Product and process choices demonstrate circular outcomes at the system level. Documentation may include how agricultural systems are being reengineered to restore soil health, close nutrient loops and reduce dependence on synthetic inputs, consistent with recognized frameworks such as FAO SAFA v3.0, SAI Platform FSA 3.1 and SBTi FLAG. Supporting documentation can include multiyear trends in soil organic carbon and nutrient balances, features in design for nutrient cycling efficiency and regenerative capacity and conformance with agricultural standards on chemical safety and input management. For regenerative agriculture in particular, multi-year assessment periods are beneficial for establishing soil health improvements and nutrient cycling benefits, underpinned by soil testing, farm performance data and, where relevant, greenhouse gas measurements showing additionality over baseline practices.

Table 3: Example resources and indicators for circular design and production

Activity	Example KPI metrics	Additional information
Regenerative crop production systems	Soil organic carbon improvement (t/ha/yr), synthetic fertilizer displacement (%), nutrient cycling rates (kg N/ha/yr)	Multi-year farm data demonstrating closed-loop nutrient management vs. baseline. **Risk if absent:** Unsubstantiated circular benefit claims; continued linear nutrient flows. **Reference examples:** FAO SAFA v3.0 nutrient management indicators; SBTi FLAG nutrient efficiency metrics; WBCSD CTI nutrient flow tracking.
Bio-based fertilizer/soil amendment production	Bio-based content (%), ASTM D6866 testing results, contaminant limits (heavy metals, microplastics)	Third-party certification of feedstock origin and product quality specifications. **Risk if absent:** Continued dependence on virgin synthetic inputs; environmental contamination. **Reference examples:** EU Taxonomy circular economy criteria; China GB/T bio-based product standards; SAI Platform FSA input requirements.
Seed breeding for circularity traits	Nitrogen efficiency improvement (%), drought resistance scores, multi-purpose biomass yield (t/ha)	Field trials demonstrating trait performance under varied conditions. **Risk if absent:** Breeding claims without measured performance data. **Reference examples:** ISO 14067 life cycle assessment; FAO SAFA v3.0 crop productivity indicators.
Precision agriculture with nutrient cycling	Input use efficiency (%), nutrient use optimization index, soil health monitoring coverage (%)	Integration with farm management systems showing measurable input reductions (FAO, 2017). **Risk if absent:** Precision tools used only to optimize linear input use without system change. **Reference examples:** UNECE-OECD circular economy measurement guidelines; WBCSD CTI utilization metrics.

Activity	Example KPI metrics	Additional information
Silvopasture/ cover crop integration	Soil organic carbon sequestration (tCO_2e/ha/ yr), biodiversity co-benefits index, water retention capacity (mm)	Documented integration of trees/livestock/crops with measured ecosystem outcomes. **Risk if absent:** Practice adoption without documented soil health improvement. **Reference examples:** SBTi FLAG land management criteria; TNFD LEAP nature-related assessment.

Circular use: Activities extending agricultural asset life cycles and optimizing utilization deliver displacement of new equipment purchases and measurable efficiency gains for participating farmers. Documentation typically includes digital platform logs showing utilization rates and idle time reductions relative to typical individual ownership patterns, maintenance and service records indicating life cycle extension and analyzes that distinguish demand substitution from supplementary investment. For agricultural machinery sharing cooperatives, this may include data on utilization rates compared to standalone ownership, member cost savings and maintenance protocols that extend equipment life. For shared processing or storage facilities, pertinent information includes capacity utilization trends, adherence to documented quality standards and resource sharing agreements that cover maintenance, scheduling and quality control across participating users.

Table 4: Example resources and indicators for circular use

Activity	Example KPI metrics	Additional information
Agricultural machinery sharing pools	Utilization rate (%), idle time reduction (hrs/season), documented cost savings for members	Digital platform logs showing usage patterns exceeding individual ownership rates. **Risk if absent:** Low utilization rates undermining circular economy benefits. **Reference examples:** UNECE-OECD circular economy measurement guidelines; China CSDIS resource efficiency indicators; WBCSD CTI utilization metrics.
Farm infrastructure leasing models	Facility utilization (%), life cycle extension (years), number of farms served	Cooperative agreements with maintenance protocols and quality standards. **Risk if absent:** Shortened asset life cycles without systematic maintenance. **Reference examples:** ESRS E5 product durability requirements; EU Taxonomy product-as-service criteria; India NCEF traditional repair practices.
Equipment-as-a-service for farming	Displacement rate (%), subscription model uptake, service coverage area	Assessments showing reduced new equipment purchases. **Risk if absent:** Unsubstantiated claims without verified demand substitution. **Reference examples:** EU Taxonomy substantial contribution criteria; China CSDIS substitution metrics; WBCSD CTI impact indicators.

Activity	Example KPI metrics	Additional information
Shared processing and storage facilities	Throughput optimization (kg/hr), booking system utilization (%), member satisfaction scores	Governance documentation covering maintenance, scheduling and quality control. **Risk if absent:** Informal arrangements creating operational and liability risks. **Reference examples:** ESRS E5 product-as-service governance; EU Taxonomy minimum safeguards; China consumer protection regulations.
Reusable packaging systems	Return rate (%), cleaning cycle efficiency, displacement of single-use packaging (units/yr)	Quality assurance protocols and user terms for shared packaging platforms. **Risk if absent:** Poor user experience limiting adoption and scalability. **Reference examples:** ISO 9001 quality management systems; SAI Platform FSA service provider assessment.

Circular value recovery: Activities that recover value from agricultural waste streams through composting, anaerobic digestion, nutrient recovery, biochar production, or other material extraction routes, with high efficiency conversion rates and documented end markets for recovered materials. Documentation typically includes waste source contracts indicating agricultural waste content in line with ECNQAS and BSI PAS 100 feedstock specifications, laboratory analysis confirming that outputs meet recognized quality standards, offtake agreements covering substantial portions of production volume and environmental assessments addressing emissions and biosafety. Composting operations may demonstrate processing performance consistent with EN 13432 and, where applicable, ISO 17088 biodegradation standards, alongside nutrient analysis and traceability confirming that compost application displaces synthetic fertilizer use. Valorization of agricultural processing byproducts can be supported by evidence of high recovery rates into valuable products, documented markets for outputs and economic viability.

Table 5: Example resources and indicators for circular value recovery

Activity	Example KPI metrics	Additional information
Composting of organic agricultural waste	Feedstock composition (% agricultural waste), processing efficiency (tonnes/week), output quality (ECN-QAS/PAS 100 compliance)	Waste source contracts and traceability to agricultural end-users. **Risk if absent:** Unsustainable, inconsistent, or non-agricultural waste supply undermining circularity. **Reference examples:** UNECE-OECD physical supply tables; China CSDIS waste flow indicators; Brazil TSB waste classification system.

Activity	Example KPI metrics	Additional information
Anaerobic digestion with nutrient return	Biogas yield (m^3/tonne), digestate nutrient content (N-P-K%), agricultural application rate (%)	Laboratory analysis showing digestate meets specifications, offtake agreements with farms. **Risk if absent:** Poor quality outputs limiting agricultural applications and circular value. **Reference examples:** ESRS E5 waste management assessment; India CPCB guidelines; ECN-QAS compost quality standards.
Biochar production from residues	Carbon sequestration (tCO_2e/yr), soil amendment trials data, contaminant screening results	Demonstrated agronomic application displacing synthetic fertilizers. **Risk if absent:** Recovered materials not entering productive use, undermining circular economy contribution. **Reference examples:** WBCSD CTI material flow tracking; FAO SAFA v3.0 waste valorization indicators; EU Waste Framework Directive end-of-waste criteria.
Processing by-products valorization	Recovery rate (%), product quality specs, market acceptance documentation	Documented recovery of substantial waste stream proportions into valuable products. **Risk if absent:** Down-cycling to lower-value applications without high-value return. **Reference examples:** ISO 14067 life cycle assessment; China GB waste processing standards; Stockholm Convention POPs screening.
Nutrient recovery from livestock waste	Phosphorus recovery (%), nitrogen concentration (mg/L), biosafety compliance	Operating permits and environmental compliance certificates for waste processing. **Risk if absent:** Negative environmental impacts from processing operations. **Reference examples:** EU Taxonomy DNSH criteria; Brazil TSB environmental safeguards; ISO 14001 environmental management systems.

Circular support: Financial institutions are encouraged to assess whether digital platforms, certification schemes, advisory services and other enabling infrastructure facilitate circular economy outcomes for agricultural value chain actors. Relevant documentation typically includes API documentation and interoperability testing illustrating connectivity with major farm management or logistics systems; calibration records, validation studies and audit reports regarding data accuracy and reliability; and adoption metrics such as active user statistics, geographic coverage and usage intensity. Case studies or impact evaluations that document circular outcomes enabled for other value chain participants (for example, nutrient cycling improvements, waste valorization volumes, or utilization gains achieved through the platform) are particularly valuable. Precision agriculture and nutrient management platforms may demonstrate measurable reductions in input use and improvements in resource use efficiency across participating farms, underpinned by robust data governance and alignment with relevant frameworks such as ESRS E5 and UNECE circular economy measurement guidelines (FAO, 2022). Soil health monitoring and testing services can be supported by laboratory competence (e.g. ISO/IEC 17025

accreditation), meaningful service coverage, clear linkage between recommendations and improved agronomic outcomes and compliance with applicable cybersecurity and data protection requirements.

Table 6: Example resources and indicators for circular support

Activity	Example KPI metrics	Additional information
Soil health monitoring services	Service coverage (% of farm area), laboratory accreditation (ISO/IEC 17025), correlation with improved outcomes	Data-driven management decisions across participating operations at meaningful scale. **Risks if absent:** Unreliable or inaccurate data undermining circular economy decision-making. **Reference examples:** ESRS E5 data governance requirements; ISO/IEC 27001 information security; WBCSD CTI measurement protocols.
Digital platforms for resource sharing	API documentation, interoperability testing results, active user statistics	Integration with major agricultural management systems and data exchange standards. **Risks if absent:** Isolated systems creating data silos preventing circular value chain integration. **Reference examples:** UNECE *Guidelines for Measuring Circular Economy*; WBCSD CTI digital indicators; ISO 16259 interoperable terminology.
Nutrient management planning services	Adoption rate (% of clients), plan implementation compliance (%), nutrient use efficiency improvement (%)	Integration with relevant frameworks and accredited testing protocols. **Risk if absent:** Low adoption and limited user engagement reducing circular economy impact and scalability. **Reference examples:** WBCSD CTI adoption metrics; ESRS E5 platform performance indicators; SAI Platform FSA technology adoption requirements.
Circular agriculture certification services	Certification coverage (% of farms), audit compliance rate (%), market recognition	Stakeholder governance structures and dispute resolution mechanisms. **Risk if absent:** Inadequate governance creating operational and trust risks. **Reference examples:** OECD *Recommendation on Data Governance*; World Economic Forum Data Stewardship Framework; ESRS S1 data governance.
Agricultural waste mapping logistics	Geographic coverage (% of region), waste collection efficiency (tonnes/day), routing optimization	Real-time traceability and blockchain verification for waste flows. **Risk if absent:** Data security breaches and privacy violations creating operational risks. **Reference examples:** EU GDPR compliance; China Cybersecurity Law; India Personal Data Protection Act; ISO/IEC 27001 information security management.

Outcomes of Step 2

Based on the selected circularity criteria, financial institutions will be able to assess whether activities already make a substantial contribution to the circular economy or have the potential to do so, thereby classifying them into one of two outcomes:

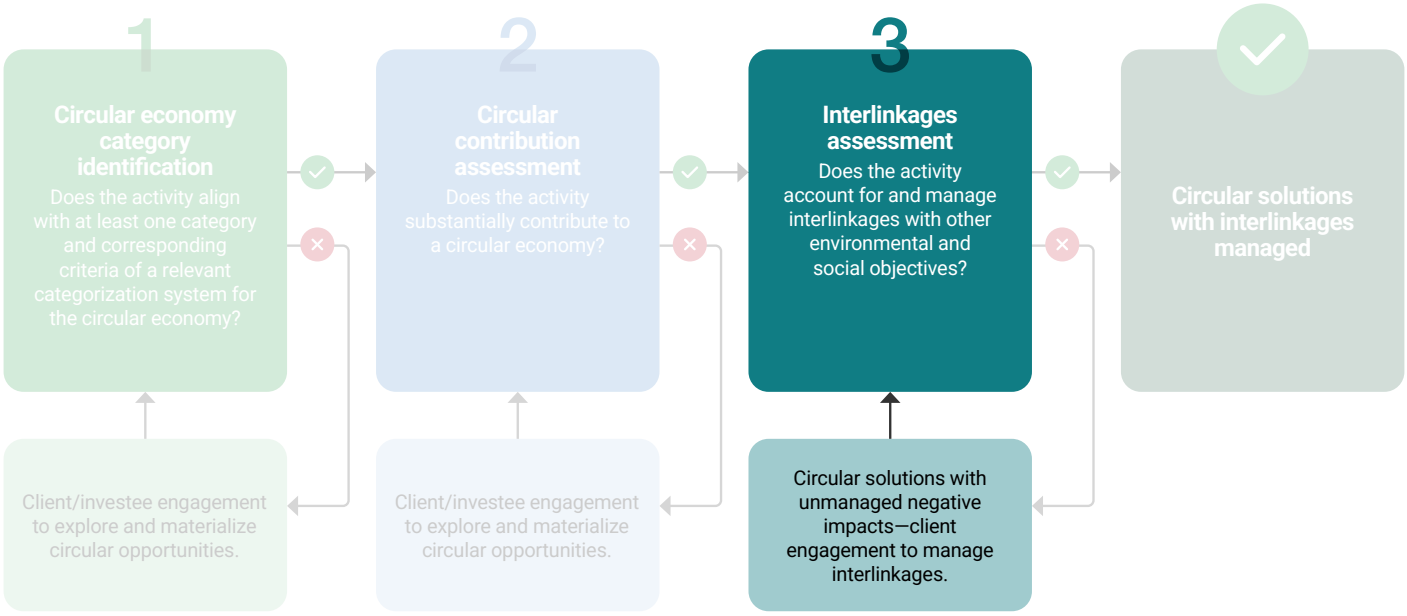
Circular solutions: Activities that meet all criteria defined for substantial contribution and demonstrate circular performance. These activities proceed directly to Step 3 for interlinkages assessment.

Circular opportunities: Activities that demonstrate circular potential but do not yet meet all circularity criteria required by the financial institutions may need client engagement pathways. This outcome may include innovation-stage solutions illustrating clear circular potential but awaiting commercial-scale validation. For such activities, financial institutions are encouraged to:

1. Develop comprehensive documentation packages for substantial contribution assessment.
2. Understand transition plans their clients could define, with quantified circularity targets.
3. Address identified documentation gaps, scale-up requirements or performance thresholds.
4. Implement monitoring and reporting systems to track progress toward circular solutions status.

This will help financial institutions to define how to best support their clients in increasing circularity of their activities. Financial institutions can support circular opportunities through technical assistance, blended finance mechanisms and tailored or phased financing, supporting the transition toward circular solution classification.

Step 3: Interlinkages assessment



Purpose: Step 3 assesses interlinkages between circular agricultural activities and other environmental and social objectives. The assessment comprises three components: (a) DNSH screening across environmental objectives; (b) social objectives assessment, confirming alignment with minimum social safeguards; and (c) co-benefits identification, capturing positive potential interlinkages across environmental and social objectives. Beyond avoiding negative impacts, circular solutions often generate substantial co-benefits across climate, nature, pollution and social dimensions, such as improved soil health, enhanced biodiversity, reduced nutrient pollution and positive social outcomes for farming communities.

Interlinkages assessment

Step 3 applies the established interlinkages assessment methodology, widely adopted by financial institutions globally and embedded in multiple sustainable finance taxonomies. The DNSH principle aims to ensure that activities advancing circular outcomes do not displace environmental harms to other objectives. Given the agricultural sector's material impact profile across environmental (climate, water, soil, biodiversity, pollution) and social (labour rights, smallholder livelihoods, food security, land tenure) dimensions, this assessment prioritizes interlinkages most relevant to agriculture-specific impacts (UNEP FI, 2024e).

Climate mitigation and adaptation: Financial institutions may reference Science-Based Targets (SBTi) frameworks to ensure circular agricultural interventions align with climate transition pathways. The SBTi forest, land and agriculture (FLAG) guidance recognizes that circular land management—regenerative agriculture, nutrient cycling, biomass recovery—is critical to achieving the 1.5°C pathway. Where corporate clients have committed to SBTi-validated targets (Scope 1, 2 and 3), financial institutions are encouraged to screen financed circular activities to confirm they support, rather than undermine, these commitments.

Circular economy activities can generate positive climate co-benefits (e.g. regenerative soil management sequestering carbon, nutrient cycling reducing synthetic fertilizer production emissions, biomass recovery displacing fossil fuel use) or potential negative impacts if not designed appropriately (e.g. energy-intensive composting operations, methane leakage from poorly managed anaerobic digestion). Table 7 proposes screening questions for climate change mitigation and adaptation.

Nature (biodiversity and ecosystems): For activities with material impacts on land use, freshwater, or biodiversity (such as agricultural expansion, irrigation projects, or biomass sourcing), financial institutions may additionally consider alignment with the Global Biodiversity Framework (GBF) and nature-based targets. The Taskforce on Nature-related Financial Disclosures (TNFD) LEAP approach and Science Based Targets Network (SBTn) framework provide methodologies for assessing dependencies and impacts on land, freshwater and biodiversity.

Circular economy activities can generate positive nature co-benefits (e.g. regenerative practices enhancing pollinator habitat and soil biodiversity, reduced chemical inputs protecting aquatic ecosystems) or potential negative impacts (e.g. large-scale biomass removal reducing habitat complexity, irrigation expansion affecting wetlands). Table 7 proposes screening questions for biodiversity and ecosystem protection.

Pollution prevention and control: Environmental safeguards related to pollution encompass responsible chemicals management at both policy and operational levels: including alignment with the GBF target 7 on pollution, and the Global Framework on Chemicals (GFC) targets, alignment with the FAO/WHO guidance on highly hazardous pesticides (see Box 5) for life-cycle-based policy commitments and adherence to operational chemical restrictions in agricultural production. Additional safeguards include mitigation of nutrient pollution and eutrophication and basin-aware water stewardship to prevent exacerbation of local water scarcity or pollution.

Circular economy activities can generate positive pollution co-benefits (e.g. reduced synthetic fertilizer and pesticide use through nutrient cycling, elimination of chemical residues through organic waste processing) or potential negative impacts (e.g. heavy metal or microplastic contamination from low-quality compost, nutrient leaching from poorly managed digestate application, odour and emissions from composting facilities). Table 7 proposes screening questions for pollution prevention and control.

Box 5: The Global Framework on Chemicals and Highly Hazardous Pesticides

Adopted at the fifth International Conference on Chemicals Management (ICCM5) in Bonn, Germany (September 2023), the *Global Framework on Chemicals* (GFC) provides comprehensive guidance for preventing adverse impacts from chemicals and waste across their life cycle. Structured around five strategic objectives and twenty-eight targets, the GFC establishes a global reference point for chemical safety and life cycle stewardship. Notably, Target D3 calls on the private sector (including financial institutions) to integrate sound chemicals and waste management into finance approaches, thereby reinforcing the role of capital flows in mitigating chemical risks (UNEP, 2023a).

Anchored by the Bonn Declaration, the GFC articulates a shared vision of "a planet free of harm from chemicals and waste" and sets out principles for safe chemical use across key value chains, including agriculture. While non-binding, it encourages national implementation through enabling legislation by 2030 and supports transitions to circular economy models that reduce chemical pollution across product life cycles. The GFC thus offers a strategic reference for financial institutions seeking to align with emerging norms on chemical safety, life cycle accountability and circularity.

For the agricultural sector, the most material chemical risk concerns highly hazardous pesticides (HHPs). The FAO/WHO Joint Meeting on Pesticide Management provides internationally recognized guidance on the identification, assessment and progressive phase-out of HHPs, pesticides that present particularly high levels of acute or chronic hazard to human health or the environment based on internationally accepted classification systems (FAO and WHO, 2024). HHPs include substances classified under WHO Recommended Classification of Pesticides by Hazard (Class Ia and Ib), those listed under the Stockholm Convention on Persistent Organic Pollutants and pesticides that have shown high incidence of severe or irreversible adverse effects on human health or the environment under conditions of use. The FAO International Code of Conduct on Pesticide Management establishes that HHPs should not be used where effective and less hazardous alternatives are available and that national regulatory authorities should progressively restrict and ultimately eliminate HHPs from agricultural use.

Financial institutions are encouraged to screen agricultural activities for HHP use as a core pollution safeguard, requiring documented exclusion of HHPs or time-bound phase-out plans aligned with FAO/WHO guidance as a condition for circular economy classification. Circular economy activities that close nutrient loops and reduce reliance on synthetic chemical inputs (including integrated pest management, biological pest control, crop diversification and organic nutrient cycling) directly support HHP phase-out by addressing the root causes of pesticide dependency.

Social objectives assessment: Financial institutions are encouraged to assess whether agriculture-related activities are aligned with social objectives, demonstrating conformance with international labour and human rights standards including gender equality, safe working conditions for farm workers, reasonable working hours, living wages and effective grievance mechanisms across all supply chain tiers. For smallholder farmers, relevant safeguards also address fair benefit-sharing, protection against exploitative practices and preservation of food security and nutrition outcomes for local communities. Financial institutions are encouraged to integrate circularity screening with human rights and labour due diligence using frameworks such as the OECD *Due Diligence Guidance for Responsible Supply Chains in the Agriculture Sector* and the UN *Guiding Principles on Business and Human Rights*. The UNEP FI *Human Rights Toolkit* (UNEP FI, 2025e), which includes a sector profile for agriculture, provides guidance on identifying and addressing human rights risks in agricultural value chains.

Circular economy activities can generate positive social co-benefits (e.g. machinery-sharing cooperatives reducing capital barriers for smallholders, nutrient recovery creating local employment, inclusive governance structures empowering farming communities) or potential negative impacts (e.g. technology-intensive precision agriculture excluding smallholders, biomass sourcing displacing subsistence farming, unsafe working conditions in waste processing). Table 7 proposes screening questions for labour rights, community rights and food security.

Assessment process

Step 3 assesses interlinkages by applying structured illustrative screening questions from Table 7 across environmental and social objectives. For environmental objectives, the assessment applies DNSH principles to avoid burden shifting. For social objectives, the assessment confirms alignment with minimum social safeguards. Sector-specific resources for each objective are detailed in Table 7. Responses to screening questions can be supported by permits, audit reports, environmental impact assessments, soil health records and third-party certifications.

Financial institutions are encouraged to evaluate the magnitude and likelihood of identified impacts using a two-dimensional assessment, considering both the potential magnitude of harm (e.g. irreversible soil degradation, critical habitat loss) or benefit and probability of occurrence. Impact classification can be aligned with taxonomy frameworks. Documenting the impact rating rationale with quantitative data (such as soil erosion rates, water withdrawal volumes, or chemical application records) where available is encouraged.

Given the particular materiality of soil health and land-use change in the agriculture sector, the biodiversity and ecosystems objective in these guidelines is assessed across three dimensions: biodiversity and habitat protection, soil health and sustainable land use, and deforestation and land-use change. Table 7 presents an illustrative interlinkages screening matrix enabling financial institutions to systematically assess whether agricultural activities: (a) cause significant harm to other environmental objectives (DNSH screening); (b) meet minimum social safeguards (social objectives assessment); or (c) generate positive co-benefits across environmental and social objectives. Financial institutions can use the screening questions and supporting documentation to inform their assessment. Detailed agriculture-specific material impact topics are provided in Annex 3.

Table 7: Interlinkages assessment with other environmental and social objectives for circular economy activities in the agriculture sector (non-exhaustive)

Environmental objective	Illustrative screening criteria questions and examples	Examples of source frameworks
Climate mitigation	**Question:** Does the activity maintain and strengthen land-based carbon stocks and sinks, avoiding conversion of high-carbon ecosystems? **Illustrative examples:** Land-use change prevention plans; monitoring of soil carbon and biomass stocks over time using recognized methodologies; proof of integrated crop-livestock systems and sustainable land management practices that enhance soil organic carbon (e.g. cover cropping, reduced tillage).	SBTi FLAG guidance; ASEAN Taxonomy V3 Section 3.1 maintenance and strengthening of land-based carbon stock and sinks (ASEAN Taxonomy Board, 2024); Malaysia SRI carbon depletion assessment (Securities Commission Malaysia, 2022); EU Taxonomy DNSH climate criteria (European Union, 2020).
Climate adaptation	**Question:** Has the activity implemented physical climate risk assessment and adaptation measures appropriate to the agricultural context? **Illustrative examples:** Physical climate risk assessment (PCRA) documentation; crop diversification strategies for climate resilience; water harvesting and drought management plans; insurance and risk transfer mechanisms; documented adaptation of farming practices to changing climate conditions (see Box 6).	UNEP FI *PRB Adaptation Resilience Guidance* (2025c); TNFD LEAP methodology; ASEAN Taxonomy adaptation criteria; SBTi FLAG climate adaptation guidance.
Water and marine resources	**Question:** Are water quality protection and conservation management plans developed and implemented to prevent over abstraction and pollution? **Illustrative examples:** Environmental and social impact assessment (ESIA) per national or internationally recognized standards; water use efficiency monitoring; discharge quality testing reports; water balance assessments showing no depletion of local basins; buffer strip implementation records to prevent run off.	AWS International Water Stewardship Standard; ASEAN Taxonomy V3 Annex 2 Section 4.3 Water and marine resources (ASEAN Taxonomy Board, 2024); IFC Performance Standard 3 Resource Efficiency (IFC, 2012); EU Taxonomy water criteria (European Union, 2020).

Environmental objective	Illustrative screening criteria questions and examples	Examples of source frameworks
Biodiversity and ecosystems	**Question:** Have biodiversity management plans been developed and implemented for potentially affected areas with stakeholder consultation? **Illustrative examples:** Biodiversity management action plans (BMAP); habitat assessment for protected species; implementation of wildlife corridors or pollinator strips; integrated pest management (IPM) plans reducing chemical risks to non-target species; stakeholder consultation records demonstrating FPIC where applicable; geospatial land-use history demonstrating no conversion; wetland delineation and hydrology impact assessment for activities near wetlands; no-drainage commitment documentation for peatland areas.	ASEAN Taxonomy V3 Annex 2 Section 4.7 Biodiversity management plans (ASEAN Taxonomy Board, 2024); Malaysia SRI deforestation/land-carbon DNSH questions (Securities Commission Malaysia, 2022); EU Taxonomy biodiversity and ecosystems criteria (European Union, 2020); TNFD LEAP approach; Ramsar Convention on Wetlands principles (Ramsar Convention Secretariat, 2018).
Biodiversity and ecosystems (Soil health)	**Question:** Are soil erosion and sediment control plans developed and implemented with best management practices? **Illustrative examples:** Soil erosion and sediment control plan (SESCP); documented adoption of conservation agriculture practices (cover cropping, contour farming, buffer strips, minimal tillage); soil testing protocols illustrating stable or improving soil organic matter trends.	ASEAN Taxonomy V3 Annex 2 Section 4.6 Soil erosion and sediment control (ASEAN Taxonomy Board, 2024); FAO SAFA v3.0 soil management indicators (FAO, 2025); UNCCD Land Degradation Neutrality target; SBTi FLAG land management criteria (SBTi, 2025a)
Biodiversity and ecosystems (Deforestation)	**Questions:** Does the activity avoid deforestation or conversion of high-carbon ecosystems such as forests, wetlands, or peatlands? Does the activity maintain or enhance land-based carbon stocks through sustainable land management or conservation practices? **Illustrative examples:** Land-use maps, geospatial (GIS/satellite) imagery showing intactness of ecosystems (e.g. forests, wetlands, peatlands); high conservation value (HCV) assessments; high carbon stock (HCS) assessments; third-party reports confirming no deforestation or conversion of high-carbon ecosystems; monitoring and compliance records tracking land-use changes.	Malaysia SRI Appendix II DNSH deforestation questions (Securities Commission Malaysia, 2022); ASEAN Taxonomy V3 Annex 2 Section 4.7 Biodiversity (ASEAN Taxonomy Board, 2024); EU Deforestation Regulation (EUDR); Accountability Framework Initiative (AFi)

Environmental objective	Illustrative screening criteria questions and examples	Examples of source frameworks
Pollution prevention and control	**Question:** Can the activity demonstrate that the operation does not cause significant harm through pollutants emissions to air, water, soil? **Illustrative examples:** Nutrient management plans preventing runoff; pesticide application records demonstrating exclusion of HHP; odour and emissions management plans for composting/biogas facilities; leachate control systems.	ASEAN Taxonomy V3 Annex 2 Section 4.5 (ASEAN Taxonomy Board, 2024); FAO *Code of Conduct on Pesticide Management*; EU Taxonomy pollution criteria (European Union, 2020); WHO *Global Air Quality Guidelines* (2021).
Social objectives assessment		
Decent work and occupational health	**Questions:** Are occupational health and safety management systems implemented? Have workers received role-specific safety training appropriate to agricultural and circular economy operations? **Illustrative examples:** Health and safety management system documentation aligned with GRI 403 or national standards; training records on chemical safety and machinery operation, incident logs, corrective action documentation and investigation protocols; worker consultation and representation mechanisms, freedom of association policies.	GRI 403:2018 Occupational Health and Safety (GRI, 2018); ILO Occupational Safety and Health Conventions 184 Safety and Health in Agriculture (ILO, 2001); EU Taxonomy minimum social safeguards, Art. 18 (European Union, 2020).
Adequate living standards and well-being	**Questions:** Do circular economy activities maintain or improve participant income levels compared to baseline? Are support mechanisms in place for transitioning to circular practices? **Illustrative examples:** Living income gap assessments; supplier contracts showing fair pricing/payment terms; transitional support program documentation (technical assistance, access to finance); participant satisfaction surveys.	FAO Voluntary Guidelines on the Right to Adequate Food (FAO, 2005); ILO Decent Work framework (ILO, 1999); ISEAL Living Income benchmarks; ESRS S1 workforce well-being (European Commission, 2023b).
Inclusive and sustainable communities	**Questions:** Are community consultation and free, prior and informed consent (FPIC) processes documented per UN *Guiding Principles on Business and Human Rights*? Are marginalized groups included in decision-making and governance structures? **Illustrative examples:** Community consultation records demonstrating meaningful engagement, FPIC agreements with Indigenous or local communities; formal grievance mechanism logs; benefit-sharing agreements for community-based resource management.	UN *Guiding Principles on Business and Human Rights* (UN, 2011); IFC Performance Standard 7 Indigenous Peoples (IFC, 2012); ILO Convention 169 Indigenous and Tribal Peoples (ILO, 1989); ESRS S3 affected communities (European Commission, 2023b); FAO VGGT (Tenure Guidelines) (FAO, 2012).

Environmental objective	Illustrative screening criteria questions and examples	Examples of source frameworks
Food security and nutrition	**Questions:** Does the activity avoid displacing food production for non-food uses in food-insecure regions? Are food safety and quality standards maintained? **Illustrative examples:** Food security impact assessments for bioenergy/biomaterials projects; food safety testing reports for crops grown with recovered nutrients; market analysis showing no negative impact on local food availability.	FAO Food Security and Nutrition Framework (FAO, 2019); Codex Alimentarius food safety standards (Codex, 2024); WHO food safety guidelines (WHO, 2022); RSB Food Security Guidelines; ESRS S4 consumers well-being (European Commission, 2023b).

Box 6: Cross-cutting climate adaptation and resilience

Circular economy activities in agriculture can generate material climate adaptation and resilience co-benefits by reducing exposure and vulnerability to physical climate risks. Agriculture absorbs 82% of economic drought impact globally and under pessimistic climate scenarios, yields of major staple crops (maize, soybean, rice) could decline by up to 24% by 2100 (UNEP FI, 2025c). The physical climate risk equation (Hazard × Exposure × Vulnerability) provides the analytical framework for understanding how circular interventions reduce each component:

Supply chain resilience through reduced synthetic input dependency: Closed-loop nutrient cycling systems (composting, anaerobic digestion with digestate return, integrated crop-livestock nutrient flows) reduce exposure to climate-vulnerable synthetic fertilizer supply chains—including natural-gas-dependent ammonia production subject to energy price volatility and phosphate rock sourcing from geopolitically concentrated and depleting reserves. Diversified nutrient sourcing through local and regional organic nutrient networks reduces vulnerability to single-source supply disruptions, trade restrictions, or energy price shocks that intensify during climate-related geopolitical stress.

Operational resilience through soil health and water stewardship: Regenerative soil management practices (cover cropping, reduced tillage, organic matter incorporation and agroforestry) build soil organic carbon, improving water-holding capacity and reducing vulnerability to drought, the most economically damaging climate hazard for the sector. Healthy soils with higher organic matter content can retain significantly more water per hectare, reducing both irrigation dependency and crop failure risk during dry spells. Basin-aware water stewardship and closed-loop irrigation systems (such as climate-adaptive water management documented across flood-prone rice-producing deltas in South-East Asia) further reduce exposure to water scarcity and emerging water access regulations. These practices also reduce vulnerability to flooding by improving soil infiltration and reducing surface run-off, a critical co-benefit given that flooding reduces feed grain and forage quality and exposes crops to contaminants.

Asset and landscape resilience: Climate-resilient design of circular agricultural infrastructure (composting facilities, biogas plants, shared machinery cooperatives, upgraded seed and crop storage, nutrient recovery systems) protects asset value and operational continuity under physical climate stress, including extreme heat disrupting crop growth and livestock productivity, flooding damaging infrastructure and contaminating soils and drought-driven power and water constraints (FarmPath, 2012; de Toro and Hansson, 2004). Diversified farming systems integrating crop rotations, agroforestry and integrated crop-livestock models reduce vulnerability to correlated "breadbasket" production failures that create systemic portfolio risks for financial institutions. Landscape-level circular approaches (e.g. watershed-scale nutrient cycling, regional biomass exchange networks) distribute climate risk across multiple actors and geographies, enhancing system-level resilience. Circular approaches can also reduce post-harvest loss rates—a significant vulnerability in climate-stressed agricultural systems—through improved storage, processing and value recovery infrastructure.

Nature-related resilience: Circular economy practices that maintain or restore biodiversity (integrated pest management reducing chemical dependence, pollinator habitat restoration through diversified rotations, agroforestry systems creating habitat corridors) build nature-based adaptive capacity. This addresses the interconnection between nature-related and climate-related risks identified in the *Principles for Responsible Banking Adaptation and Resilience Guidance* (UNEP FI, 2025c), including expanding pest and disease ranges (with global invasive species costs estimated at US$ 70 billion), pollination decline and soil biological degradation that compounds climate vulnerability.

Measuring climate adaptation and resilience outcomes of circular agricultural activities can be structured using the UNEP FI *Adaptation and Resilience Impact Measurement Toolkit* (2025f), which provides practice indicators (institutional capabilities) and results indicators (real-economy outcomes) across the impact pathway (output to outcome and impact). For agricultural activities, illustrative indicators include: outputs such as hectares under climate-adaptive practices and percentage of infrastructure upgraded to climate-resilient specifications; outcomes such as production downtime days during climate events, post-harvest loss rates and yield stability during drought or flood seasons; and impacts such as households maintaining food security despite production shocks and livelihoods sustained during climate events.

Financial institutions are encouraged to reference the UNEP FI *PRB Adaptation and Resilience Guidance* (2025c) for comprehensive methodologies on physical climate risk assessment using the Hazard × Exposure × Vulnerability framework, resilience-outcome measurement and design of adaptation-and-resilience-linked financial products. The guidance provides agriculture-specific hazard profiles (covering drought, flooding, extreme heat, storms, wildfires and nature-related risks), worked examples of agriculture-client adaptation engagement and portfolio-level resilience strategies including resilience-adjusted loan-to-value approaches for agricultural lending.

Outcomes of Step 3

Following interlinkages assessment, circular solutions from Step 2 are classified into one of two outcomes:

Circular solutions with interlinkages managed: Activities with potential co-benefits identified across climate, nature, pollution, or social dimensions, and/or with negative impacts in other impact areas appropriately managed/mitigated. Where co-benefits are identified, financial institutions are encouraged to document them to support impact reporting and portfolio strategy.

Circular solutions with unmanaged negative impacts: Activities meeting all circularity criteria but with identified negative impacts on other environmental or social objectives that are not yet managed/mitigated. For these activities, financial institutions are encouraged to engage clients to develop transition plans and pathways to address negative impacts, which may include time-bound transition plans by clients, enhanced covenants and monitoring protocols and regular progress reporting against clients' commitments.

This graduated approach ensures financing decisions align with circular economy objectives, broader environmental objectives and social objectives, while capturing co-benefits to maximize positive impacts and supporting clients in managing interlinkages effectively.

Using the assessment outcomes

Upon completion of the three-step assessment, financial institutions will have determined two key outputs: i) circular solutions with interlinkages managed—where co-benefits are identified and/or negative impacts in other impact areas are appropriately managed/mitigated, or ii) circular solutions with unmanaged negative impacts, for which client engagement support is encouraged to address and mitigate those impacts. These outputs support multiple applications across institutional functions, from transaction structuring to portfolio-level integration complementing UNEP FI's broader circular economy guidance suite.

The present guidelines can help operationalize the activity-level screening methodology described in the UNEP FI *Guidance on Resource Efficiency and Circular Economy Target*

Setting (UNEP FI, 2023a), enabling institutions to classify individual activities that feed into portfolio baselines, target-setting processes and action plans. For institutions implementing *Circular Economy as an Enabler for Responsible Banking* guidance (UNEP FI, 2024b), these outcomes provide the detailed activity-level analysis that informs broader circular economy integration into sustainability strategies and action plans for climate or other impact areas.

The sections below illustrate how to use assessment outcomes at two levels: (1) structuring transactions and engaging clients and (2) aggregating exposures for portfolio management, target-setting and reporting aligned with UNEP FI guidance and regional sustainable finance frameworks.

1. Transaction and client-level applications

Assessment outcomes can enable financial institutions to engage clients and structure financing based on classification status and circular potential.

For circular solutions, financial institutions can structure financing with direct circularity linkages:

- **Sustainability-linked instruments (SLLs, SLBs):** Financial institutions can use Step 2 KPIs (e.g. soil organic carbon improvement rates, nutrient cycling efficiency, synthetic input displacement percentages, machinery utilization rates) as sustainability performance targets (SPTs) with pricing adjustments, covenant structures, or reporting obligations tied to achievement. The Loan Market Association *Sustainability-Linked Loan Principles* (LMA, 2023b) and ICMA's *Sustainability-Linked Bond Principles* (ICMA, 2024) provide structuring guidance.
- **Use-of-proceeds financing:** Ring-fence proceeds for specific circular activities (e.g. composting and nutrient recovery infrastructure, precision agriculture platforms for nutrient cycling, shared machinery cooperatives, regenerative transition programmes) with traceability documentation and periodic reporting. The Loan Market Association *Green Loan Principles* (LMA, 2023a) and ICMA *Green Bond Principles* (ICMA, 2025) support documentation standards.
- **Product development:** Financial institutions can embed circularity KPIs into lending policies, investment mandates, stewardship frameworks and client engagement strategies. Examples include requiring Step 3 interlinkages assessment outcomes in agricultural sector portfolios, using Step 2 metrics for ESG ratings, or structuring revolving facilities conditional on maintaining circular classification.

For circular opportunities, financial institutions can support client progression toward circular solutions through structured pathways:

- **Transition financing:** Financial institutions can structure tranches, or facility increases on achieving specific targets (e.g. reaching documented soil organic carbon thresholds, implementing nutrient management plans, obtaining third-party certification for compost quality). Time-bound transition plans (e.g. 12–24 months) can enable clients to transition from circular opportunities to circular solutions status with clear performance expectations.
- **Technical assistance:** Financial institutions can pair financing with capacity-building support to address documentation gaps, performance improvements, or safeguards

strengthening. Examples include funding for ISO/IEC 17025 laboratory accreditation for soil testing, ECN-QAS compliance support, supply chain traceability implementation, or soil health monitoring methodology development.

- **Blended finance structures:** Commercial terms for initial circular opportunities tranches can be combined with concessional or catalytic capital for early-stage innovations, de-risking progression to circular solutions. Examples include grants for regenerative transition research, subordinated debt for scaling nutrient recovery infrastructure, or credit enhancement through guarantees.
- **Client engagement:** Clear pathways can be established to support clients in realizing circular opportunities across their activities and value chains, with the goal of upgrading to circular solutions status upon documented achievement of transition plan. Financial institutions can use Step 1–3 assessment results to identify specific circularity gaps and co-develop improvement strategies with clients.

2. Portfolio and institutional applications

Assessment outcomes can enable aggregation of activity-level classifications into portfolio-level insights for target-setting, climate, nature, pollution and social action integration and regulatory reporting.

2.1 For target setting and portfolio management

Financial institutions using UNEP FI's *Guidance on Resource Efficiency and Circular Economy Target Setting* (UNEP FI, 2023a) can aggregate circular economy finance percentages (see Box 7) across portfolios to:

- **Establish baselines:** Determine the proportion of portfolio exposure classified as circular versus screened negatively or with circular potential. This baseline reflects the distribution of exposures across circular solutions and circular opportunities to inform client engagement.
- **Set targets:** Define SMART targets for increasing circular economy exposure (e.g. "Increase agricultural circular economy financing from X% to Y% by 2030") or for transitioning circular opportunities to circular solutions status.
- **Track progress:** Monitor portfolio composition over time and report against commitments to stakeholders, investors and regulators. Financial institutions can use Step 2 and Step 3 outcome data to monitor both volume and quality of circular exposure, including interlinkages assessment outcomes.

2.2 For climate, nature, pollution and social integration

The classification outcomes can help integrate circular economy metrics into financial institutions' climate, nature, pollution and social strategies and action plans. For climate-related integration, Step 3 outcomes on climate mitigation and adaptation co-benefits and risks can inform TCFD and climate transition planning. For pollution and social dimensions, interlinkages outcomes can support implementation of the UNEP FI *Guidance for Reduction and Management of Pollution in Agriculture* (UNEP FI, 2025b) to support alignment with e.g. the Global Framework on Chemicals targets and with social objectives. For nature-related disclosures and target-setting, financial institutions can use Step 3 interlinkages outcomes to support TNFD disclosure requirements, nature-related

target-setting to align with the Global Biodiversity Framework and integration into nature action plans.

2.3 For reporting and disclosure

The assessment outcomes can support reporting under ESRS E5 (Resource Use and Circular Economy), GRI 301 (Materials), Circular Transition Indicators (CTI) and other disclosure standards and enable consistent documentation across institutional functions:

- **Regulatory disclosure:** Report circular economy exposure under sustainable finance taxonomies with activity-level detail supporting classification and reporting.
- **Risk and compliance:** Evaluate environmental DNSH screening and social objectives assessment outcomes (Step 3) to support due diligence processes, risk assessment, regulatory compliance and responsible banking commitments.
- **Portfolio strategy:** Use aggregated circular economy finance percentages to inform sectoral allocation decisions, client engagement prioritization and strategies. Track transitions from circular opportunities to circular solutions to monitor portfolio quality improvement.
- **Investor and stakeholder reporting:** Disclose circular economy exposure volumes, composition by circular economy category and activity type, performance against targets and safeguards outcomes through annual impact reports, sustainability disclosures (ESRS, GRI, ISSB) and investor communications.

Box 7: Determining the circular economy finance percentage

The circular economy finance percentage quantifies the proportion of financing directly supporting circular outcomes. Financial institutions can determine this percentage using the following approaches, consistent with the IFC *Harmonized Circular Economy Finance Guidelines* (IFC, 2025):

- **Project finance and earmarked facilities:** Financial institutions may allocate 100% of proceeds if all are dedicated to circular solutions. Where proceeds finance multiple activities, proportional allocation based on capital distribution is recommended.
- **General corporate purpose financing:** Financial institutions may calculate the percentage of total revenues or total assets derived from or dedicated to circular solutions. The chosen methodology is recommended to be applied consistently across the loan tenor.
- **Multi-component transactions:** Financial institutions are encouraged to apply the proportional allocation determined in Step 1, documenting which components qualify as circular solutions.

Documentation may include the allocation methodology (project, revenue, or asset-based), calculation basis (numerator/denominator) and monitoring approach for verifying continued alignment over the life of the financing. For activities classified as circular solutions with negative interlinkages, the circular economy finance percentage may be subject to adjustment or achievement of agreed transition plan.

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Annexes



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Annex 1: Illustrative list of circular economy activities for the agriculture sector

This annex provides an illustrative, non-exhaustive list of activities eligible for circular economy financing in the agriculture sector. The activities are organized according to the four circular economy categories defined in Step 1: circular design and production, circular use, circular value recovery and circular support.

Financial institutions can use this list to identify potential circular opportunities during origination or portfolio screening. While these examples represent common circular interventions, other activities may also qualify if they demonstrably contribute to circular outcomes in line with the methodology provided in chapter 3.

Note on NACE and ISIC codes

The activities listed in this annex often represent agronomic practices, integrated systems, or emerging business models that may not correspond to a single, distinct industrial classification code. Where a unique NACE or ISIC code does not exist, activities are mapped to the closest available industrial classification (e.g. crop production, manufacturing, or services). Some activities may legitimately span multiple codes (e.g. anaerobic digestion may be classified under waste treatment, energy generation, or both). Financial institutions are encouraged to select the classification code(s) that most accurately reflect the primary economic activity and revenue stream of the financed entity, consistent with their internal portfolio tagging and regulatory reporting requirements. The codes provided are illustrative and intended to support interoperability with existing taxonomies and data systems.

Table 8: Indicative list of circular economy activities by category—Agriculture sector. | Source: Compiled from UNEP (2023a), FAO SAFA v3.0 (2024a), SAI Platform FSA 3.1 (2025), WBCSD CTI v4.0 (2024) and IFC (2025). Traceability and digital agriculture activities informed by UNECE Recommendation 46 and GS1 standards.

This table can serve as the primary reference for financial institutions to identify and categorize agricultural sector investments according to their circular economy contribution.

Circular category	Aligned activity	NACE Rev.2	ISIC Rev.4
Circular design and production	Regenerative crop production systems	01.11 *et al.*	0111 *et al.*
	Bio-based fertilizer and soil amendment production	20.15	2012
	Seed breeding for circularity traits	01.64	0164
	Integrated crop-livestock systems	01.50	0150
	Research and development for material substitution and process innovation	72.19	7210
	Silvopasture systems	01.50	0150
	Cover crop and green manure integration	01.11 *et al.*	0111 *et al.*
	Precision agriculture with nutrient cycling	01.61	0161
	No-till and conservation agriculture	01.11 *et al.*	0111 *et al.*
	Closed-loop aquaculture systems	03.21	0321
	Circular feed production from by-products	10.91	1080
	Design for nutrient-efficient livestock systems	01.49	0149
	Multi-use crop rotation systems	01.11 *et al.*	0111 *et al.*
Circular use	Agricultural machinery sharing and pooling	77.31	7730
	Farm infrastructure leasing models	77.39	7730
	Equipment-as-a-service for farming	77.31	7730
	Shared processing and storage facilities	52.10	5210
	Reusable packaging for agricultural products	77.29	7730
	Livestock grazing optimization services	01.62	0162
	Agricultural water system sharing	36.00	3600
	Maintenance and refurbishment of farm equipment	33.12	3312
	Contract farming with resource optimization	01.61	0161
	Community-supported agriculture models	01.11 *et al.*	0111 *et al.*
	Seasonal facility sharing and optimization	52.10	5210

Circular category	Aligned activity	NACE Rev.2	ISIC Rev.4
Circular value recovery	Processing of food processing by-products	10.89 / 38.21	1079 / 3821
	Biomass pellet production from agricultural waste	16.29	1629
	Recovery of protein from agricultural by-products	10.89	1079
	Composting of organic agricultural waste	38.21	3821
	Anaerobic digestion of crop residues and manure	38.21 / 35.21	3821 / 3520
	Recovery of nutrients from livestock waste	38.32	3830
	Biochar production from agricultural residues	20.14	2011
	Recovery of water from agricultural processes	36.00	3600
	Upcycling of crop residues into building materials	16.29	1629
	Recovery of oils from agricultural processing waste	10.41	1040
	Conversion of manure to high-value bioproducts	20.14	2011
	Recovery of fibres from agricultural waste streams	13.10	1311
	Valorization of fruit and vegetable processing waste	10.39	1030
Circular support	Soil health monitoring and testing services	71.20	7120
	Nutrient management planning services	74.90	7490
	Digital platforms for resource sharing	62.01 / 63.11	6201 / 6311
	Agricultural waste mapping and logistics	49.41	4923
	Circular agriculture certification services	71.20	7120
	Training and education on circular practices	85.59	8549
	Research and development and technical advisory services	72.19	7210
	Digital marketplaces for agricultural by-products	46.21 / 63.11	4610 / 6311
	Life cycle assessment services for agriculture	74.90	7490
	Financial services for circular agriculture	64.99	6499
	Policy advocacy and standards development	94.12	9412
	Infrastructure development for circular systems	42.99	4290

Annex 2: Portfolio screening guidelines for circular agriculture activities (NACE Rev.2, ISIC Rev.4)

This portfolio screening guide supports financial institutions in systematically identifying, mapping and monitoring agriculture sector exposures aligned with the circular economy. The purpose is to enable a systematic identification of circular economy exposures across existing loan books using standard industry classification codes.

Where to use this annex

- Mapping and assessing existing portfolios
- Setting institutional circularity targets
- Portfolio strategy and stewardship activities
- Risk and compliance screening (at scale)
- Pre-screening for activities that warrant a more detailed case-by-case exposure

Portfolio screening

Phase 1: Extract NACE or ISIC codes from the loan book

Most financial institutions maintain NACE, ISIC, or equivalent industry classification codes (e.g. NAICS, ANZSIC) in their core banking systems as part of standard client data fields. Extract clients with primary NACE or ISIC codes aligned with the table headings. Extract NACE/ISIC codes for activities highlighted with high-risk flags.

Implementation: For EU users, map to official NACE using the statistical correspondence tables. For Pan-American/Asia-Pacific users, map to official ISIC and ASEAN equivalents.

Phase 2: Match codes to circular activities using the activity matrix

Cross-reference extracted codes against the portfolio screening tables to identify likely circular economy activities.

Phase 3: Assign activities to one of the four circular economy categories

Identify the appropriate primary circular economy categories:

- Circular design and production
- Circular use
- Circular value recovery
- Circular support

Clear mapping helps in activity (NACE code) to activity (tables A2–A4) to category.

Phase 4: Estimate exposure and coverage

Calculate aggregate portfolio/sub-portfolio category. Apply proportional exposure calculation for multi-activity entities where feasible based upon auditable data or catalogue. Use revenue data or capex investment for general corporate purpose facilities.

Phase 5: Flag exposures for detailed review

Code-based screening identifies potential exposures but requires transaction-level validation for use-of-proceeds structuring or substantial contribution verification. Where further data is needed, refer flagged activities to the client assessment pathway (chapter 3, Step 1) for detailed assessment.

Additional classification subtleties for portfolio users

- **Required primary producer:** Entities primarily engaged in raw material production for agriculture, such as crop and livestock production (NACE 01.1-01.5), aquaculture (NACE 03.2), or fertilizer manufacturing (NACE 20.15) with an additional "sustainability" keyword/sub-code addendum can be mapped.
- **Limitations of portfolio screening:**
  - Code-based screening identifies potential exposures but does not replace transaction-level circular economy contribution assessment.
  - Multi-activity entities require supplemental revenue data for accurate proportional allocation.
  - Industry codes capture primary economic activity but may not reflect all circular and finite work undertaken by an entity.
  - For transactions that rely on sustainability verification or substantial contribution assessment, use client assessment pathway (chapter 3, Step 1).

Reference tables

The following tables provide non-exhaustive NACE Rev.2 and ISIC Rev.4 mappings for all 49 circular agriculture economy activities identified in the guidelines. Portfolio search keyword examples are included to support targeted screening.

Table 9: Circular design and production activities

Circular activity	NACE Rev.2	ISIC Rev.4	Portfolio search keywords
Regenerative crop production systems	01.11	0111	regenerative agriculture, soil health, organic farming, sustainable crop
Bio-based fertilizer and soil amendment production	20.15	2012	bio fertilizer, organic fertilizer, compost production, soil amendment
Seed breeding for circularity traits	01.64	0164	seed breeding, variety development, plant genetics, seed production
Integrated crop-livestock systems	01.50	0150	mixed farming, integrated systems, crop-livestock, rotational grazing
Material substitution and process innovation	72.19	7210	agricultural innovation, material substitution, process development, R&D
Silvopasture systems	01.50	0150	silvopasture, agroforestry, tree agriculture, forest farming
Cover crop and green manure integration	01.11	0111	cover crops, green manure, nitrogen fixing, soil improvement
Precision agriculture with nutrient cycling	01.61	0161	precision agriculture, GPS farming, variable rate, smart farming
No-till and conservation agriculture	01.11	0111	no-till, conservation agriculture, minimum tillage, direct seeding
Closed-loop aquaculture systems	03.21	0321	closed-loop aquaculture, recirculating aquaculture, sustainable fish farming
Circular feed production from by-products	10.91	1080	alternative feed, by-product feed, waste feed, feed conversion
Design for nutrient-efficient livestock systems	01.49	0149	efficient livestock, feed conversion, animal nutrition, livestock management

Table 10: Circular use activities

Circular activity	NACE Rev.2	ISIC Rev.4	Portfolio search keywords
Agricultural machinery sharing and pooling	77.31	7730	machinery sharing, equipment rental, farm equipment lease, machinery pool
Farm infrastructure leasing models	77.39	7730	farm lease, infrastructure rental, facility sharing, barn rental
Equipment-as-a-service for farming	77.31	7730	equipment service, farming as service, machinery lease, agricultural rental
Shared processing and storage facilities	52.10	5210	shared processing, storage rental, facility sharing, processing lease
Reusable packaging for agricultural products	77.29	7730	reusable packaging, returnable containers, packaging lease, container sharing
Livestock grazing optimization services	01.62	0162	grazing management, pasture optimization, livestock services, rotational grazing
Agricultural water system sharing	36.00	3600	water sharing, irrigation sharing, water cooperative, shared irrigation
Maintenance and refurbishment of farm equipment	33.12	3312	equipment repair, machinery maintenance, refurbishment, equipment restoration
Contract farming with resource optimization	01.61	0161	contract farming, resource optimization, farm services, agricultural contracting
Community-supported agriculture (CSA) models	01.11	0111	CSA, community agriculture, direct sales, subscription farming
Seasonal facility sharing and optimization	52.10	5210	seasonal rental, facility optimization, shared infrastructure, temporary lease
Multi-use crop rotation systems	01.11	0111	crop rotation, diverse cropping, polyculture, intercropping

Table 11: Circular value recovery activities

Circular activity	NACE Rev.2	ISIC Rev.4	Portfolio search keywords
Processing of food processing by-products	10.89 / 38.21	1079 / 3821	food waste processing, by-product processing, organic waste, food recovery
Composting of organic agricultural waste	38.21	3821	composting, organic composting, waste composting, agricultural composting
Anaerobic digestion of crop residues and manure	38.21 / 35.21	3821 / 3520	anaerobic digestion, biogas, methane production, organic waste energy

Circular activity	NACE Rev.2	ISIC Rev.4	Portfolio search keywords
Valorization of fruit and vegetable processing waste	10.39	1079	fruit waste processing, vegetable waste, food waste valorization
Recovery of protein from agricultural by-products	10.39	1079	protein recovery, alternative protein, by-product protein, waste protein
Recovery of nutrients from livestock waste	38.32	3832	nutrient recovery, phosphorus recovery, nitrogen recovery, waste nutrients
Biochar production from agricultural residues	20.14	2011	biochar, agricultural biochar, carbon sequestration, pyrolysis
Recovery of water from agricultural processes	36.00	3600	water recovery, water recycling, agricultural water, process water
Upcycling of crop residues into building materials	16.29	1629	crop residue materials, agricultural building materials, straw construction
Recovery of oils from agricultural processing waste	10.41	1040	waste oil recovery, agricultural oil, by-product oil, oil extraction
Conversion of manure to high-value bioproducts	20.14	2011	manure processing, bioproducts, manure conversion, livestock waste processing
Recovery of fibres from agricultural waste streams	13.10	1311	fibre recovery, agricultural fibre, waste fibre, natural fibre
Biomass pellet production from agricultural waste	16.29	1629	biomass pellets, agricultural pellets, waste pellets, biofuel pellets

Table 12: Circular support activities

Circular activity	NACE Rev.2	ISIC Rev.4	Portfolio search keywords
Soil health monitoring and testing services	71.20	7120	soil testing, soil analysis, agricultural testing, soil health
Nutrient management planning services	74.90	7490	nutrient planning, fertilizer management, agronomy services, crop consulting
Digital platforms for resource sharing	62.01 / 63.11	6201 / 6311	agricultural platform, resource sharing platform, farm sharing app
Agricultural waste mapping and logistics	49.41	4923	waste logistics, agricultural transport, waste collection, agricultural freight
Circular agriculture certification services	71.12	7120	agricultural certification, circular certification, sustainability certification

Circular activity	NACE Rev.2	ISIC Rev.4	Portfolio search keywords
Training and education on circular practices	85.59	8549	agricultural training, circular training, sustainability education, farming education
Research and development and technical advisory services	72.19	7210	agricultural R&D, farming research, agricultural consulting, technical advisory
Digital marketplaces for agricultural by-products	46.21 / 63.11	4620 / 6311	by-product marketplace, agricultural marketplace, waste marketplace
Life cycle assessment services for agriculture	74.90	7490	agricultural LCA, life cycle assessment, environmental assessment
Financial services for circular agriculture	64.99	6499	agricultural finance, sustainable finance, circular finance, green lending
Policy engagement and standards development	94.12	9412	agricultural policy, industry association, standards development, advocacy
Infrastructure development for circular systems	42.99	4290	Agricultural infrastructure, circular infrastructure, farm infrastructure

Annex 3: Environmental and social material impacts for the agricultural sector

The agriculture sector's environmental and social impact profile, as mapped in the UNEP FI Impact Radar (Figure 1), identifies prominent negative impacts across climate stability, biodiversity and healthy ecosystems, water, modern slavery, child labour, wages, gender equality, and circularity, alongside prominent positive impacts including health and safety, food, employment, and flourishing MSMEs. Circular economy interventions acting on two key impact drivers (resource intensity and waste) can help address the sector's prominent negative impacts across multiple environmental and social dimensions.

Table 13 provides a science-based mapping of two material environmental and social topics per activity for the agriculture sector circular economy activities identified in Step 1. For each of the 49 activities listed in Annex 1, the table identifies the two most material impact topics—drawn from environmental objectives (climate mitigation and adaptation, water, biodiversity and ecosystems, pollution) and social objectives (decent work and OHS, adequate standard of living, inclusive communities, food security)—that warrant priority screening during the Step 3 interlinkages assessment.

Each cell provides: (1) the impact topic label, (2) a screening guidance statement describing what to assess and which tools, standards, or methods to reference, and (3) source references. This format is designed to support financial institutions in conducting consistent, evidence-based interlinkages screening.

The topics listed are illustrative and non-exhaustive. Financial institutions are encouraged to apply place-based screening proportionate to the activity and geography, and to consult the full Step 3 methodology in chapter 3, including the environmental objectives and social objectives listed in Table 7. The illustrative assessment example in Annex 4 illustrates how these material topics can apply in practice within the three-step assessment.

Table 13: Science-based mapping of primary material environmental and social topics for the agricultural circular economy activities identified in Step 1

Aligned activity	Material impact topic #1	Material impact topic #2
Circular design and production		
Regenerative crop production systems	**Climate:** Transition-period GHG flux from soil disturbance during system conversion and residual synthetic input use. Screen for scope 1 soil N_2O emissions inventory and documented soil organic carbon trajectory using recognized methodologies (e.g. FAO GSOC, Verra VCS). Assess alignment with SBTi FLAG guidance for land-management pathways (SBTi, 2025a; Lal, 2020).	**Social:** Worker exposure to pesticide residues during transition period before full input substitution is achieved. Screen for compliance with FAO/WHO guidance on highly hazardous pesticides (HHPs) and documented occupational health and safety (OHS) protocols for field workers (FAO/WHO, 2024; ILO, 2011).
Bio-based fertilizer and soil amendment production	**Pollution:** Heavy metal, pathogen, and microplastic contamination risk in bio-based fertilizer feedstock. Screen for compliance with recognized compost/digestate quality standards (e.g. ECN-QAS, BSI PAS 100) including contaminant limit testing and batch traceability to feedstock source (ECN, 2023; Smith *et al.*, 2017).	**Water:** Nutrient leaching and eutrophication risk from application of bio-based amendments to agricultural land. Screen for nutrient management plan with application rate limits based on soil testing and basin-level nutrient sensitivity (FAO, 2024c; SBTN, 2024).
Seed breeding for circularity traits	**Biodiversity:** Genetic diversity reduction and monoculture risk from narrow trait selection. Screen for documented seed diversity strategy and compliance with ITPGRFA and national biosafety frameworks. Assess alignment with TNFD LEAP biodiversity screening (TNFD, 2024; FAO, 2024a).	**Social:** Smallholder access to improved seed varieties; risk of IP restrictions limiting farmer seed-saving practices. Screen for documented benefit-sharing arrangements and inclusive licensing or open-source seed commitments (FAO, 2024a; OECD, 2024d).
Integrated crop-livestock systems	**Climate:** Enteric methane emissions from livestock component and manure-related N_2O. Screen for GHG inventory including scope 1 enteric fermentation, manure management, and scope 3 feed production emissions. Assess alignment with SBTi FLAG guidance for livestock pathways (SBTi, 2025a; Gerber *et al.*, 2018).	**Water:** Nutrient loading risk from livestock waste run-off into watercourses. Screen for documented manure management plan with storage, application timing, and buffer zone requirements aligned with basin-level water quality standards (FAO, 2024c; SBTN, 2024).

Aligned activity	Material impact topic #1	Material impact topic #2
Material substitution and process innovation	**Pollution:** Chemical safety risk from novel bio-based inputs or processes at pilot/pre-commercial stage. Screen for documented risk assessment of novel substances under applicable chemical safety frameworks (e.g. REACH, national equivalents) and alignment with Global Framework on Chemicals target D3 (UNEP, 2023a; European Commission, 2020).	**Climate:** Energy intensity of novel processing or manufacturing pathways. Screen for energy source documentation and comparative life cycle assessment against conventional alternatives (ISO 14040/44; SBTi, 2025a).
Silvopasture systems	**Biodiversity:** Risk of inappropriate tree species selection displacing native vegetation or reducing habitat quality. Screen for species selection aligned with local ecological assessments and TNFD LEAP land-use screening. Assess alignment with Global Biodiversity Framework targets (TNFD, 2024; CBD, 2022).	**Climate:** Carbon accounting complexity across above-ground biomass, soil carbon, and livestock emissions. Screen for integrated GHG inventory covering tree carbon sequestration, soil organic carbon change, and livestock emissions within SBTi FLAG boundary (SBTi, 2025a; IPCC, 2019b).
Cover crop and green manure integration	**Water:** Potential water competition between cover crops and cash crops in water-scarce regions. Screen for basin-level water-risk assessment (e.g. WRI Aqueduct, WWF Water Risk Filter) and documented irrigation management strategy (WRI, 2024; FAO, 2024c).	**Biodiversity:** Risk of invasive cover crop species introduction. Screen for species selection against national invasive species registers and documented ecological risk assessment (TNFD, 2024; IUCN, 2024).
Precision agriculture with nutrient cycling	**Pollution:** Technology-related electronic waste from sensors, GPS units, and IoT devices at end-of-life. Screen for documented e-waste management and circular procurement policy for precision agriculture hardware (UNEP, 2023; Evans *et al.*, 2023).	**Social:** Digital exclusion risk for smallholders lacking connectivity, literacy, or capital for technology adoption. Screen for documented inclusivity strategy addressing smallholder access, training and affordability (FAO, 2024a; OECD, 2024).
No-till and conservation agriculture	**Pollution:** Increased herbicide dependence for weed management in no-till systems. Screen for documented integrated pest management (IPM) plan and compliance with FAO/WHO HHP guidance. Assess chemical application records against MRSL-equivalent restricted substance lists (FAO/WHO, 2024; GLOBALG.A.P., 2024).	**Climate:** Soil carbon permanence uncertainty; risk of carbon stock reversal if practices are discontinued. Screen for multi-year soil organic carbon monitoring using standardized methodologies and permanence safeguards in financing terms (Lal, 2020; SBTi FLAG, 2025).

Aligned activity	Material impact topic #1	Material impact topic #2
Closed-loop aquaculture systems	**Water:** Effluent discharge risk from recirculating aquaculture systems (RAS) including nutrient-rich wastewater and residual pharmaceuticals. Screen for water discharge permits, effluent quality monitoring against basin-level standards, and documented water recirculation rates (FAO, 2024c; SBTN, 2024).	**Biodiversity:** Biosecurity risk from pathogen or invasive species escape. Screen for documented biosecurity protocols, containment infrastructure, and compliance with national aquaculture regulations (FAO, 2024a; TNFD, 2024).
Circular feed production from by-products	**Pollution:** Contaminant concentration risk (heavy metals, mycotoxins, pesticide residues) in feed produced from agricultural by-products. Screen for feed safety compliance with Codex Alimentarius standards and national feed regulations, including batch testing and traceability documentation (FAO/WHO Codex, 2024; EFSA, 2024).	**Social:** Food security trade-off if edible by-products are diverted from human consumption to animal feed. Screen for documented food-waste hierarchy compliance demonstrating that feedstock does not displace human food uses where food security needs remain unmet (FAO, 2021; UNEP, 2023).
Design for nutrient-efficient livestock systems	**Climate:** Enteric methane and manure N_2O emissions from livestock operations. Screen for GHG inventory aligned with SBTi FLAG livestock pathways and documented feed conversion efficiency improvements (SBTi, 2025a; Gerber *et al.*, 2018).	**Biodiversity:** Overgrazing and habitat degradation risk from intensified livestock systems. Screen for stocking density management aligned with carrying capacity assessments and documented grazing management plans (TNFD, 2024; FAO, 2025).
Multi-use crop rotation systems	**Climate:** Soil carbon variability across rotation cycles; emissions from different crop types and tillage practices. Screen for rotation-level GHG accounting and documented soil organic carbon trends over multi-year rotation periods (IPCC, 2019b; SBTi FLAG, 2025).	**Pollution:** Pesticide and nutrient carryover risk between rotation phases. Screen for integrated nutrient and pest management plan documenting input use per rotation phase and compliance with FAO/WHO HHP guidance (FAO/WHO, 2024; GLOBALG.A.P., 2024).
Circular use		
Agricultural machinery sharing and pooling	**Climate:** GHG emissions from machinery transport/repositioning logistics between farms. Screen for fleet fuel consumption records and documented logistics optimization strategy. Assess alignment with SBTi FLAG scope 3 transport emissions (SBTi, 2025a; Lucas and Gasselin, 2022).	**Social:** OHS risks from machinery operation by multiple operators with varying training levels. Screen for documented operator training requirements, safety certification, and incident tracking system (ILO, 2011); FAO, 2024a).

Aligned activity	Material impact topic #1	Material impact topic #2
Farm infrastructure leasing models	**Climate:** GHG emissions from infrastructure repositioning and delivery transport logistics. Screen for transport emission records and documented logistics efficiency measures (Lucas and Gasselin, 2022; SBTi, 2025a).	**Soil:** Soil compaction risk from increased machinery/vehicle traffic for infrastructure delivery and installation on agricultural land. Screen for documented access management protocols (e.g. designated access paths, seasonal scheduling) and soil compaction monitoring (FAO, 2024a; Lal, 2020).
Equipment-as-a-service for farming	**Climate:** GHG emissions from equipment transport and delivery logistics. Screen for fleet energy/fuel consumption data and comparative assessment against individual ownership baseline (Lucas and Gasselin, 2022; SBTi, 2025a).	**Social:** Risk of service model excluding smallholders through pricing, connectivity, or contract requirements. Screen for documented inclusive access strategy with tiered pricing and smallholder-appropriate service terms (FAO, 2024a; OECD, 2024).
Shared processing and storage facilities	**Pollution:** Waste generation and wastewater discharge from shared processing operations. Screen for effluent quality monitoring, waste management documentation, and compliance with applicable discharge permits and food safety standards (FAO, 2024b; CODEX, 2024).	**Social:** OHS risks in shared processing facilities (equipment hazards, temperature exposure in cold storage, chemical handling). Screen for documented OHS management system and incident reporting aligned with ILO standards (ILO, 2011).
Reusable packaging for agricultural products	**Pollution:** Chemical contamination risk from cleaning agents used in packaging wash/sanitization cycles and material degradation over multiple use cycles. Screen for cleaning agent safety documentation and material integrity testing over documented number of reuse cycles (ECN, 2023; EFSA, 2024).	**Climate:** GHG emissions from reverse logistics (collection, washing, redistribution of packaging). Screen for comparative LCA against single-use alternatives demonstrating net environmental benefit across documented reuse cycles (ISO 14040/44; UNEP, 2023).
Livestock grazing optimization services	**Biodiversity:** Overgrazing and habitat degradation risk from inappropriate stocking densities. Screen for carrying capacity assessments, rotational grazing documentation, and alignment with TNFD LEAP land-use screening (TNFD, 2024; FAO, 2025).	**Soil:** Soil compaction and erosion from concentrated livestock traffic. Screen for documented pasture management plan with rest/recovery periods and soil health monitoring (Lal, 2020; FAO, 2024b).

Aligned activity	Material impact topic #1	Material impact topic #2
Agricultural water system sharing	**Water:** Over-extraction risk from shared irrigation systems serving multiple farms in water-stressed basins. Screen for basin-level water allocation permits, metered abstraction records, and alignment with Alliance for Water Stewardship (AWS) standard or equivalent (AWS, 2024; WRI Aqueduct, 2024).	**Social:** Inequitable water allocation risk among participating farms, particularly affecting smallholders. Screen for documented governance structure with equitable allocation protocols and grievance mechanisms (FAO, 2024b; OECD, 2024).
Maintenance and refurbishment of farm equipment	**Pollution:** Hazardous waste generation from servicing (lubricants, solvents, batteries, refrigerants). Screen for documented hazardous waste management procedures, certified disposal partners, and compliance with applicable waste regulations (UNEP, 2023; ILO, 2011).	**Social:** OHS hazards from equipment servicing (solvent exposure, electrical risks, heavy machinery handling). Screen for documented OHS management system, worker training records, and PPE provision aligned with ILO standards (ILO, 2011).
Contract farming with resource optimization	**Social:** Fair pricing and contract terms for smallholders; risk of exploitative or asymmetric contractual arrangements. Screen for contract transparency, documented benefit-sharing mechanisms, and alignment with OECD guidance on responsible agricultural supply chains (OECD, 2024; FAO, 2024b).	**Pollution:** Pesticide and fertilizer overuse driven by yield-maximization contract terms. Screen for integrated nutrient and pest management requirements within contract terms and compliance with FAO/WHO HHP guidance (FAO and WHO, 2024; GLOBALG.A.P., 2024).
Community-supported agriculture models	**Social:** Food safety risks from direct-to-consumer distribution without commercial food safety infrastructure. Screen for documented food safety management aligned with Codex Alimentarius or national food safety regulations (FAO and WHO, 2024; EFSA, 2024).	**Climate:** Transport emissions from decentralized, small-scale distribution networks. Screen for delivery logistics documentation and comparative assessment of transport footprint (SBTi, 2025a; Lucas and Gasselin, 2022).
Seasonal facility sharing and optimization	**Climate:** Energy consumption from facility heating, cooling, and operation during seasonal peaks. Screen for energy source documentation and efficiency metrics for shared facility operations (SBTi, 2025a; FAO, 2024a).	**Social:** Seasonal worker safety risks from peak-period facility use under time pressure. Screen for documented OHS protocols covering seasonal operations, including working hour limits and worker training (ILO, 2011).

Aligned activity	Material impact topic #1	Material impact topic #2
Circular value recovery		
Processing of food processing by-products	**Pollution:** Contaminant concentration risk (heavy metals, pesticide residues, microplastics) in recovered by-products. Screen for output quality testing against recognized standards (e.g. ECN-QAS, BSI PAS 100, Codex Alimentarius) with batch traceability to feedstock source (ECN, 2023; FAO and WHO, 2024).	**Social:** OHS risks in processing operations (dust, bioaerosol, and chemical exposure). Screen for documented OHS management system, air quality monitoring, and PPE provision aligned with ILO standards (ILO, 2011; WHO, 2021).
Biomass pellet production from agricultural waste	**Climate:** Energy consumption in drying, densification, and transport of pellets. Screen for energy source documentation and comparative LCA against alternative biomass uses (e.g. direct soil return, composting). Assess alignment with cascading use principles (SBTi, 2025a; UNEP, 2023).	**Soil:** Nutrient depletion risk from large-scale biomass removal without nutrient return to agricultural land. Screen for documented nutrient balance assessment confirming that biomass offtake does not compromise soil health or organic matter levels (Lal, 2020; FAO, 2024b).
Recovery of protein from agricultural by-products	**Pollution:** Chemical solvent use in protein extraction processes and residual contamination in recovered product. Screen for process chemical safety documentation, solvent recovery rates, and output quality testing (EFSA, 2024; ECN, 2023).	**Social:** Food safety risk if recovered protein enters human food chain. Screen for compliance with applicable novel food regulations and Codex Alimentarius safety standards (FAO and WHO, 2024; EFSA, 2024).
Composting of organic agricultural waste	**Pollution:** Heavy metal, pathogen, and microplastic contamination in compost output. Screen for compliance with recognized compost quality standards (ECN-QAS, BSI PAS 100) including documented contaminant testing, feedstock screening, and end-use traceability (ECN, 2023; Smith *et al.*, 2017).	**Social:** OHS risks from bioaerosol, pathogen, and dust exposure for composting workers. Screen for documented workplace air quality monitoring, respiratory protection protocols, and health surveillance aligned with ILO/WHO standards (ILO, 2011; WHO, 2021).
Anaerobic digestion of crop residues and manure	**Climate:** Methane leakage risk from digester operations, storage, and digestate handling. Screen for documented gas-tightness testing, fugitive emission monitoring, and methane capture efficiency records. Assess alignment with SBTi FLAG (SBTi, 2025a; IPCC, 2019b).	**Social:** OHS risks from confined space entry, H_2S and CH_4 gas exposure, and pressurized vessel handling. Screen for documented confined space entry procedures, gas detection systems, emergency response protocols, and worker training records (ILO, 2011).

Aligned activity	Material impact topic #1	Material impact topic #2
Recovery of nutrients from livestock waste	**Water:** Nutrient leaching and eutrophication risk from improper application or storage of recovered nutrients. Screen for nutrient management plan with application rate limits, storage specifications, and basin-level sensitivity assessment (FAO, 2024c; SBTN, 2024).	**Pollution:** Heavy metal and pharmaceutical residue concentration in recovered nutrient products (e.g. struvite, ammonium sulphate). Screen for output quality testing against recognized soil amendment standards and contaminant limits (ECN-QAS; Smith *et al.*, 2017).
Biochar production from agricultural residues	**Climate:** Energy-intensive pyrolysis process; risk of net-negative climate outcome if fossil fuel powered. Screen for energy source documentation, process emission records, and comparative LCA demonstrating net carbon benefit including permanence assessment (SBTi, 2025a; Lal, 2020).	**Pollution:** Polycyclic aromatic hydrocarbon (PAH) contamination risk in biochar depending on feedstock and pyrolysis conditions. Screen for biochar quality testing against IBI (International Biochar Initiative) or EBC (European Biochar Certificate) standards (IBI, 2024; EBC, 2024).
Recovery of water from agricultural processes	**Pollution:** Chemical and biological contamination risk in recovered water (pesticide residues, pathogens, salinity). Screen for water quality testing against applicable irrigation water standards and documented treatment processes (FAO, 2024b; WHO, 2021).	**Social:** Health risk if recovered water is used for crops entering human food chain without adequate treatment. Screen for compliance with WHO guidelines for safe use of wastewater in agriculture and documented treatment verification (WHO, 2006; FAO, 2024b).
Upcycling of crop residues into building materials	**Soil:** Nutrient depletion and soil organic matter loss from large-scale residue removal. Screen for documented harvest-index and residue-offtake limits ensuring sufficient organic matter retention for soil health (Lal, 2020; FAO, 2025).	**Pollution:** Dust, particulate, and chemical binder emissions during processing. Screen for workplace air quality monitoring and compliance with applicable emission standards (ILO, 2011; UNEP, 2023).
Recovery of oils from agricultural processing waste	**Pollution:** Chemical solvent residues from oil extraction processes. Screen for solvent management documentation, recovery rates, and compliance with applicable chemical safety regulations (UNEP, 2023a; EFSA, 2024).	**Social:** OHS risks from solvent handling and high-temperature processing. Screen for documented OHS management system, ventilation standards, and worker training records (ILO, 2011).

Aligned activity	Material impact topic #1	Material impact topic #2
Conversion of manure to high-value bioproducts	**Pollution:** Pathogen, pharmaceutical residue, and heavy metal concentration in bioproduct outputs. Screen for output quality testing and compliance with applicable product safety standards. Ensure feedstock traceability documentation (ECN-QAS; Smith *et al.*, 2017).	**Climate:** Energy intensity of conversion processes (thermochemical, biochemical). Screen for energy source documentation and process emission records. Assess net GHG balance including avoided synthetic input production (SBTi, 2025a; IPCC, 2019b).
Valorization of fruit and vegetable processing waste	**Pollution:** Chemical residues (pesticides, preservatives) concentrated in processing waste streams. Screen for feedstock testing and output quality documentation against applicable food/feed safety standards (EFSA, 2024; FAO and WHO, 2024).	**Water:** Wastewater generation from washing and processing operations. Screen for effluent quality monitoring and compliance with applicable discharge permits and basin-level water quality standards (FAO, 2024c; SBTN, 2024).
Recovery of fibres from agricultural waste streams	**Pollution:** Dust and particulate emissions during fibre extraction and processing. Screen for workplace air quality monitoring, dust suppression measures, and compliance with applicable emission standards (ILO, 2011; UNEP, 2023).	**Social:** OHS risks from dust/particulate inhalation and repetitive-task injuries in fibre processing. Screen for documented respiratory protection programme and ergonomic risk assessment (ILO, 2011; WHO, 2021).
Circular support		
Soil health monitoring and testing services	**Pollution:** Technology-related electronic waste from field sensors, testing kits, and monitoring equipment at end-of-life. Screen for documented e-waste management policy and circular procurement strategy for monitoring hardware (UNEP, 2023; Evans *et al.*, 2023).	**Social:** Data privacy and ownership risks for farmer data collected through monitoring platforms. Screen for documented data governance framework addressing farmer consent, data ownership, and privacy protection aligned with applicable data protection regulations (FAO, 2024a; OECD, 2024).
Nutrient management planning services	**Pollution:** Risk of inappropriate nutrient recommendations leading to over-application and pollution. Screen for advisory service quality assurance including soil-test-based recommendations, compliance with national nutrient management regulations, and documented agronomist qualifications (FAO, 2024b; GLOBALG.A.P., 2024).	**Water:** Nutrient leaching risk from management plan recommendations. Screen for basin-level nutrient sensitivity assessment and integration with local water quality monitoring (SBTN, 2024; WRI Aqueduct, 2024).

Aligned activity	Material impact topic #1	Material impact topic #2
Digital platforms for resource sharing	**Pollution:** E-waste from platform hardware infrastructure (servers, devices, IoT). Screen for documented e-waste management and energy efficiency of digital infrastructure (UNEP, 2023; Evans *et al.*, 2023).	**Social:** Digital exclusion risk for smallholders lacking connectivity, devices, or digital literacy. Screen for documented inclusivity strategy and offline/low-connectivity accessibility features (FAO, 2024a; OECD, 2024).
Agricultural waste mapping and logistics	**Climate:** GHG emissions from waste collection and transport logistics. Screen for fleet fuel consumption records and documented logistics optimization strategy (SBTi, 2025a; Lucas and Gasselin, 2022).	**Social:** OHS risks for waste collection and transport workers. Screen for documented safety protocols, vehicle safety standards, and worker training records (ILO, 2011).
Circular agriculture certification services	**Social:** Certification cost and complexity as barriers for smallholder participation. Screen for documented provisions for smallholder group certification, proportionate audit requirements, and fee structures (FAO, 2024a; IFOAM, 2024).	**Pollution:** Risk of greenwashing if certification standards lack rigorous verification. Screen for third-party accreditation of certification body and documented conformity assessment procedures (ISO 17065; ISEAL, 2024).
Training and education on circular practices	**Social:** Inclusivity risk if training programmes are not accessible to women, youth, Indigenous communities, and smallholders. Screen for documented inclusivity strategy addressing language, literacy, gender, and geographic accessibility barriers (FAO, 2024a; ILO, 2011).	**Climate:** Energy and transport emissions from training delivery (travel, facilities). Screen for documented use of digital/hybrid delivery models and carbon footprint assessment of training programmes (SBTi, 2025a).
Research and development and technical advisory services	**Pollution:** Chemical safety risks from novel inputs or processes under development. Screen for documented environmental and health risk assessment of novel substances (UNEP, 2023a; European Commission, 2020).	**Social:** Intellectual property restrictions limiting farmer and smallholder access to advisory outcomes. Screen for documented open-access or benefit-sharing provisions for publicly funded R&D outputs (FAO, 2024a; OECD, 2024).
Digital marketplaces for agricultural by-products	**Pollution:** E-waste from platform infrastructure and user devices. Screen for documented e-waste management policy (UNEP, 2023; Evans *et al.*, 2023).	**Social:** Data privacy and market manipulation risks for farmer users. Screen for documented data governance framework and fair-trading protocols (FAO, 2024a; OECD, 2024).

Aligned activity	Material impact topic #1	Material impact topic #2
Life cycle assessment services for agriculture	**Pollution:** E-waste from LCA modelling hardware and server infrastructure. Screen for documented e-waste management policy (UNEP, 2023; Evans *et al.*, 2023).	**Social:** Risk of LCA methodology bias against smallholder systems due to data availability gaps. Screen for documented methodological adaptations for data-limited contexts (ISO 14040/44; FAO, 2024a).
Financial services for circular agriculture	**Social:** Exclusion of smallholders and marginalized producers from financing products due to collateral, documentation, or credit history requirements. Screen for documented inclusive finance strategy with proportionate requirements and alternative collateral mechanisms (FAO, 2024a; OECD, 2024).	**Climate:** Rebound risk if financing enables expansion of operations that increase total resource use despite per-unit efficiency gains. Screen for documented assessment of absolute versus intensity-based environmental performance (SBTi, 2025a).
Policy advocacy and standards development	**Social:** Risk of policy capture by large industry actors at the expense of smallholder and community interests. Screen for documented multi-stakeholder governance including smallholder and civil society representation (FAO, 2024a; OECD, 2024).	**Pollution:** Risk of weakened environmental standards through industry lobbying. Screen for transparency of advocacy positions and alignment with science-based environmental targets (UNEP, 2023; SBTi, 2025a).
Infrastructure development for circular systems	**Biodiversity:** Habitat disruption and land-use change from construction of processing, storage, or logistics infrastructure. Screen for environmental impact assessment, siting away from sensitive habitats, and alignment with TNFD LEAP land-use screening (TNFD, 2024; CBD, 2022).	**Social:** Community displacement and land tenure disruption from infrastructure siting. Screen for free, prior, and informed consent (FPIC) documentation where Indigenous or communal lands are affected, and grievance mechanism availability (UN, 2011; OECD, 2024).

Annex 4: Illustrative assessment example: Farm infrastructure leasing models (circular use)

This annex presents a hypothetical illustrative example demonstrating how a financial institution might apply the three-step assessment methodology described in chapter 3. The example is intended to show how the steps connect in sequence and what types of information and considerations may arise at each stage. It does not prescribe specific outcomes, thresholds or documentation requirements. Financial institutions are encouraged to adapt the assessment to the specific circumstances of each activity, including the regulatory context, available documentation and proportionality considerations outlined in chapter 2.

Activity description

A regional development bank is evaluating a financing request from an agricultural services cooperative that operates a farm infrastructure leasing programme. The cooperative makes modular cold-storage units, solar-powered irrigation systems, greenhouse structures and small-scale processing sheds available to smallholder farmers through multi-year lease agreements rather than individual ownership. The cooperative retains ownership of all infrastructure, provides scheduled preventive maintenance, and has contractual obligations for take-back, refurbishment, or certified end-of-life recovery at lease expiry. The programme currently serves approximately 120 farming operations across a semi-arid region, with seasonal utilization management to accommodate harvest peaks. The cooperative has applied for a term loan to expand the programme by adding 40 modular cold-storage units and upgrading the existing irrigation fleet to more water-efficient systems.

Step 1—Circular economy category identification

The financial institution begins by applying the quick screening questions from Table 1 to determine whether the activity demonstrates circular characteristics and to identify the primary circular economy category. The activity is assessed against the circular use category, as it extends agricultural infrastructure life through shared access, leasing, professional maintenance and refurbishment rather than individual ownership and disposal.

The screening questions for this category are applied as follows.

Table 14: Circular economy category quick screening—illustrative application for farm infrastructure leasing

Table 1 quick screening question	Illustrative case answer
Question 1. Does the activity extend agricultural asset or equipment life through sharing, leasing, or refurbishment?	The cooperative retains ownership and leases infrastructure to multiple farming operations under multi-year service agreements that include scheduled maintenance, repair and upgrade pathways. The answer to this question is **yes**.
Question 2. Is there a mechanism to track and optimize asset utilization (e.g. machinery sharing logs, facility booking systems, equipment life cycle data)?	The cooperative operates a digital booking and telemetry system that records utilization hours per unit, seasonal demand patterns, maintenance interventions, and user allocation across the 120 participating farms. The answer to this question is **yes**.
Question 3. Are restoration, maintenance, or refurbishment services integral to the business model?	All lease agreements include preventive maintenance, with the cooperative employing a dedicated field maintenance team. At lease expiry, units are returned for condition assessment—serviceable units are refurbished and redeployed; non-recoverable components are directed to certified recycling. The answer to this question is **yes**.
Question 4. Does it demonstrate measurable extension of service life, utilization rates, or verified displacement of new asset purchases?	The cooperative provides utilization data showing that shared cold-storage units achieve higher annual utilization hours compared to individually owned equivalents, and documents that the leasing programme has reduced new equipment purchases among participating farmers. The answer to this question is **yes**.

All four screening questions are answered affirmatively. The activity is assigned to the **circular use** category and proceeds to Step 2.

Cross-reference with Annex 1. The activity corresponds to "Farm infrastructure leasing models" in the indicative list of circular economy activities (annex 1, circular use category). The corresponding NACE code is 77.39 (Renting and leasing of other machinery, equipment and tangible goods). The corresponding ISIC code is 7730. Note that fixed assets may also fall under NACE 68.20 (Renting and operating of own or leased real estate).

Step 2—Circular contribution assessment

In Step 2, the financial institution assesses whether the activity demonstrates a substantial contribution to circular outcomes. Drawing on the example indicators and documentation sources outlined in tables 2 and 5, the institution identifies relevant circularity criteria proportionate to the activity's context and scale. The following information is gathered during the assessment. The indicators selected below are illustrative; financial institutions are encouraged to select criteria proportionate to the activity's context.

Table 15: Circular contribution assessment—illustrative documentation for farm infrastructure leasing

Assessment area	Documentation reviewed	Illustrative findings
Asset utilization and shared access	Telemetry data, booking records and utilization reports from the cooperative's digital platform, covering the previous 12 months.	The financial institution reviews utilization records for the existing cold-storage and irrigation fleet. The cooperative provides metered utilization data (hours per unit per year) and documentation showing that each unit serves multiple farming operations through a seasonal scheduling system. The institution considers whether utilization rates indicate genuine shared access and notes available industry benchmarks from FAO and WBCSD CTI v4.0 for asset productivity comparison.
Life cycle extension and maintenance	Maintenance logs, asset condition assessments, refurbishment records, and spare-parts tracking.	The cooperative provides scheduled maintenance records demonstrating that preventive servicing extends infrastructure service life compared to typical owner-operated equivalents in the region. The institution reviews the cooperative's asset registry, which tracks mean time between failures, refurbishment cycles, and component replacement rates. End-of-life protocols for non-recoverable components are documented with certified waste management partners.
Displacement of new asset purchases	Member surveys, procurement records, and comparative analysis of equipment ownership patterns among participating and non-participating farms.	The financial institution reviews documentation from the cooperative showing that participating farmers have reduced individual purchases of cold-storage and irrigation equipment. The institution notes that displacement claims are supported by member procurement records rather than survey data alone and considers this proportionate to the cooperative's scale.

Assessment area	Documentation reviewed	Illustrative findings
Contract structure and circular service design	Sample lease agreements, service-level documentation, and end-of-life recovery obligations.	The institution reviews the cooperative's standard lease agreement, which includes performance-based clauses (maintenance obligations, upgrade pathways, take-back at expiry), and retains lessor ownership throughout. The institution considers whether the contract structure incentivizes durability and extended use over volume-based replacement. Pure financial leasing without circular service features would not meet the criteria for this category.
Smallholder access and inclusivity	Membership records, pricing structures, and cooperative governance documentation.	The cooperative provides evidence that the leasing programme is accessible to smallholder farmers through tiered pricing and seasonal payment structures aligned with harvest income cycles. The institution reviews cooperative governance records demonstrating inclusive membership and equitable allocation of infrastructure across participants.

Step 2—Assessment outcome

Based on the information gathered, the financial institution determines whether the activity meets the circularity criteria sufficient for classification as a circular solution, or whether it is classified as a circular opportunity requiring further client engagement.

In this illustrative example, the financial institution determines that the documented utilization data, life cycle extension through professional maintenance, demonstrated displacement of new asset purchases, circular contract structure with take-back obligations, and inclusive smallholder access are sufficient to classify the activity as a circular solution. The institution notes that the activity's circularity performance could be further quantified using established measurement frameworks such as the WBCSD Circular Transition Indicators (CTI) v4.0 or ISO 59020:2024, and records this as an area for potential future monitoring. The activity proceeds to Step 3.

Note: Had the financial institution identified gaps—for example, if utilization records were incomplete, if displacement of new purchases were undocumented, if lease agreements lacked take-back or maintenance obligations, or if the programme excluded smallholders—the activity might instead be classified as a circular opportunity. In that case, the institution would engage the client to establish a transition plan toward addressing the identified gaps before reclassification.

Step 3—Interlinkages assessment

In Step 3, the financial institution assesses interlinkages between the activity and other environmental and social objectives, comprising: (a) environmental DNSH screening, (b)

social objectives assessment (aligned with minimum safeguards), and (c) co-benefits identification. The assessment draws on the agriculture sector impact profile (chapter 1), Table 7, and the environmental and social material impact mapping for this activity in Annex 3.

Consistent with the agriculture sector impact profile presented in chapter 1 (Figure 1a), the financial institution notes that farm infrastructure leasing directly addresses two circular economy impact drivers identified in the Impact Radar: resource intensity (by maximizing utilization of existing infrastructure and reducing demand for new manufacturing) and waste (by enabling refurbishment and certified end-of-life recovery rather than abandonment or disposal). The Sankey diagram (Figure 1b) provides an overview of the sector's prominent negative impacts which can be addressed by the circular agricultural activity, guiding the institution's screening across environmental objectives (DNSH), social objectives (minimum safeguards) and co-benefits.

Annex 3 identifies the following material environmental topics for farm infrastructure leasing activities: greenhouse-gas emissions (repositioning and delivery transport logistics) and soil compaction (increased machinery traffic on shared fields) (Lucas and Gasselin, 2022; FAO, 2024a). The financial institution uses these as the starting point for screening, while also considering the remaining environmental objectives and social objectives.

Table 16: Interlinkages assessment—illustrative DNSH screening, social objectives assessment, and co-benefits identification for farm infrastructure leasing

Environmental and social objectives	Assessment
Climate mitigation	The financial institution reviews the cooperative's energy consumption data for infrastructure operations and logistics. The cooperative provides documentation on the energy sources used by cold-storage units (solar-powered systems in 60% of the fleet) and transport fuel consumption for infrastructure repositioning. The institution considers whether the shared use model, by reducing the total number of units manufactured and deployed compared to individual ownership, is likely to deliver a net reduction in embodied greenhouse gas emissions. The institution notes that a full comparative life cycle assessment has not been conducted and records this as a potential area for future documentation. No significant harm is identified.
Climate adaptation	The financial institution considers whether the leasing programme contributes to climate resilience for participating farms. The cooperative provides documentation showing that modular cold-storage reduces post-harvest losses during heat events, and that solar irrigation systems reduce dependence on rain-fed agriculture in a semi-arid region. In line with UNEP FI *Practical Guidance on Adaptation and Resilience for Banks* (UNEP FI, 2025c), the institution considers this infrastructure access as a climate adaptation co-benefit, noting that shared access to climate-resilient infrastructure can strengthen farm-level adaptive capacity. This is documented as part of the institution's wider climate risk and resilience analysis for the agriculture portfolio.

Environmental and social objectives	Assessment
Water and marine resources	The financial institution reviews documentation on water use by the irrigation systems included in the leasing programme. The cooperative operates under basin-level water allocation permits and provides water consumption monitoring data. The upgraded irrigation fleet uses drip and micro-sprinkler technology with documented water efficiency improvements over the flood irrigation systems they replace. No significant harm to water and marine resources is identified.
Biodiversity and ecosystems	The financial institution considers whether the cooperative's infrastructure operations or siting present risks to biodiversity. Given that infrastructure is deployed on existing farmland and the programme does not involve land conversion, the institution does not identify significant harm to biodiversity at this stage. The institution notes that reduced post-harvest waste through cold storage may alleviate pressure on land expansion for replacement production.
Biodiversity and ecosystems (Soil health)	The financial institution considers the material risk of soil compaction from increased machinery traffic associated with shared infrastructure delivery and installation. The cooperative provides documentation showing that modular infrastructure is designed for minimal ground disturbance (raised foundations, designated access paths) and that seasonal scheduling reduces the frequency of transport movements on cultivated land. The institution records this as an area for ongoing monitoring but does not identify significant harm at this stage.
Biodiversity and ecosystems (Deforestation)	The financial institution considers whether the leasing programme involves any conversion of forested land, peatlands, wetlands, or other high-carbon ecosystems. The cooperative provides geospatial records confirming that all infrastructure is deployed on land already under active agricultural use, with no site involving forest clearance, drainage of wetlands or peatlands, or conversion of natural ecosystems consistent with land-based carbon stock protection under the SBTi FLAG framework (SBTi, 2025a). The programme does not expand the agricultural frontier—rather, it improves the resource efficiency and productive capacity of existing cultivated land. The institution reviews land-use history records for the sites included in the cooperative's infrastructure deployment schedule, confirming established agricultural use consistent with applicable deforestation-free sourcing commitments (Accountability Framework Initiative, 2023) and relevant regulatory requirements (e.g. EU Deforestation Regulation). The institution notes that reduced post-harvest losses through cold-storage access may, over time, reduce pressure on participating farmers to expand cultivated area to compensate for spoilage-related income shortfalls, generating a potential positive co-benefit. No significant harm to deforestation and land use objectives is identified.

Environmental and social objectives	Assessment
Pollution prevention and control	Annex 3 flags greenhouse-gas emissions from logistics and resource consumption from spare-parts production as material risks for this activity. The financial institution reviews the cooperative's refrigerant management practices for cold-storage units, noting that the cooperative uses low-GWP refrigerants and has documented leak-prevention and end-of-life refrigerant recovery procedures. Spare-parts sourcing prioritizes refurbished components where available. The institution also reviews waste management documentation for non-recoverable components, confirming certified disposal. No significant harm is identified, though the institution notes that refrigerant management practices should be monitored as the fleet expands.
Social objectives assessment	
Decent work and occupational health and safety	The financial institution assesses alignment with social objectives (minimum safeguards). The cooperative provides documentation on its employment practices, including contracts for its maintenance team, health and safety training records for infrastructure installation and servicing, and working hour policies. The cooperative operates in a jurisdiction with established labour protections and is subject to regular inspections. The institution reviews alignment with the OECD *Guidelines for Multinational Enterprises* and the UN *Guiding Principles on Business and Human Rights*, noting that the cooperative has a documented grievance mechanism. No significant social safeguard concerns are identified.
Adequate standard of living and inclusive communities	The financial institution considers whether the leasing programme supports or undermines smallholder livelihoods. The cooperative provides evidence that tiered pricing and seasonal payment structures enable participation by lower-income farmers, and that governance structures include smallholder representation on the cooperative board. The institution notes this as a positive social co-benefit—inclusive access to infrastructure that would otherwise be unaffordable for individual smallholders.
Food security and nutrition	The financial institution considers whether the activity contributes to or detracts from food security. Cold-storage access directly reduces post-harvest food losses, and irrigation infrastructure extends the growing season, both contributing to improved food availability and stability for participating communities. The institution documents this as a positive food security co-benefit.

Identification of co-benefits

Beyond the DNSH screening, the financial institution documents the following co-benefits generated by the activity:

Climate adaptation and supply chain resilience: By providing shared access to cold-storage and irrigation infrastructure, the activity reduces participating farms' exposure to physical climate risks (including heat stress, drought, and rainfall variability) that can cause post-harvest losses and production shortfalls.

Resource intensity reduction: The shared use model directly reduces resource intensity by maximizing utilization of existing infrastructure, decreasing demand for new manufacturing, and reducing the total material footprint of agricultural infrastructure in the region.

Post-harvest loss reduction: Cold-storage access enables farmers to preserve perishable produce, contributing to waste reduction and food security objectives.

Smallholder inclusion and employment: The cooperative model provides formal employment in maintenance and logistics operations and enables inclusive access to infrastructure for smallholders who would otherwise be excluded from capital-intensive investments.

Step 3—Assessment outcome

Circular solution with interlinkages managed. No significant harm is identified across environmental objectives (DNSH) and social objectives are met (minimum safeguards verified); potential co-benefits are documented across climate adaptation, resource intensity reduction, post-harvest loss reduction, and smallholder inclusion.

The institution records the assessment in its internal systems and uses the classification outcome to inform its circular economy finance strategy for the agriculture portfolio. The activity is classified as circular economy finance aligned exposure. This classification contributes to the institution's objective of increasing financing directed toward circular solutions, identifying circular opportunities within its client base and progressively shifting its agriculture portfolio composition from linear to circular business models (UNEP FI, 2023a). The classification also supports the institution in engaging the client on potential enhancements, such as integrating nutrient management planning into the leasing model, expanding cooperative membership to include smallholder farmers, or linking equipment utilization data to soil health monitoring services, which could further strengthen the activity's co-benefits profile and circular performance over time. Documented co-benefits and interlinkages outcomes can additionally inform regulatory and voluntary reporting (for example under ESRS E5—Resource use and circular economy) and contribute to broader climate, nature and pollution strategies, including those aligned with UNEP FI's Circular Solutions to Achieve Climate Targets in the Agrifood Sector (UNEP FI, 2024c).

Summary of illustrative assessment

Step 1 outcome: Circular use—all four screening questions answered affirmatively.

Step 2 outcome: Circular solution—documented utilization rates, equipment life-cycle extension records, verified displacement of new asset purchases and cooperative governance agreements.

Step 3 outcome: Circular solution with interlinkages managed—no significant harm identified across environmental objectives and minimum social safeguards verified; co-benefits documented across resource efficiency, smallholder access, employment and food system resilience.

Note: This example is illustrative and does not represent a specific company or transaction. The information presented is hypothetical and intended solely to demonstrate the application of the assessment methodology. Financial institutions are encouraged to adapt the assessment to the specific circumstances of each activity, including the regulatory context, available documentation, and proportionality considerations outlined in chapter 2. Where this example records a positive finding (e.g. no significant harm identified), this reflects the hypothetical documentation provided in the scenario; actual assessments would depend on the evidence available in each case.

UN environment programme

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