

Biodiversity in Dairy

How to measure and reward biodiversity in dairy?

Summary Report

Wilco Brouwer de Koning | Nuffield Scholar 2025

NUFFIELD THE NETHERLANDS FARMING SCHOLARS

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1. Introduction

Dairy farmers hold something close to gold in their hands: they can produce milk and meat while nurturing the biodiversity on the land they manage. Healthy soils, clean water, pollinators, diverse grasslands and functioning nutrient cycles make farms productive and resilient, and help feed a growing population from the land we already farm. Biodiversity is not a competing goal to production, but something dairy farming is uniquely placed to nurture alongside it.

The urgency is clear. Monitored wildlife populations have declined by 73% since 1970, driven mainly by the global food system (WWF Living Planet Report 2024). The Kunming-Montreal Global Biodiversity Framework (GBF), adopted by close to 200 countries in 2022, sets 23 targets for 2030. At COP17[1] in Yerevan in October 2026, the first global review showed that action has grown, but is not yet enough. Farmers can be a large part of the solution, if their contribution is measured and rewarded.

Yet important questions remain. What should we measure, and how can it be verified? How can farmers be rewarded fairly for the ecosystem services they provide? And what role should the dairy and beef value chains, governments and financial institutions play? This report sets out how biodiversity can be measured, strengthened and rewarded, so that it becomes as integral to dairy farming as the milk itself.

Why I Wrote This Report

This report is personal. For one and a half years, as a Nuffield Scholar, I travelled to twelve countries and spoke with more than 100 farmers, researchers, policymakers, processors, bankers and conservationists. At the same time, I faced the same questions on our own farm: 125 hectares of land, next to 27,000 neighbours who see every choice we make. From the sector and from society, new themes keep coming our way: nitrogen and water quality, data requests from our dairy company and our bank, and rising expectations from consumers. They are usually seen as risks or threats. This research showed me that they can also strengthen the farm, if we measure what we do and are rewarded for it. That is the gold in our hands. I wrote this report for everyone who has a part in this: farmers, dairy companies and other chain partners, retailers, banks, investors and insurers, policymakers, researchers and nature organisations. None of us can do it alone.

My journey does not end with this report. I will keep working on this theme and I am open to future projects and collaborations. If you would like to know more, or want to explore what measuring and rewarding biodiversity could mean for your organisation, please get in touch.

About the Author: Wilco Brouwer de Koning

- Third-generation dairy farmer at Boerderij Ter Coulster in Heiloo, the Netherlands.
- Runs the farm together with his brother, family and staff, across two locations in the heart of Heiloo.
- 180 dairy cows on 125 hectares in total, of which 45 hectares are dedicated nature land for biodiversity.
- A family farm, situated in a densely populated area with around 27,000 neighbours.
- Board member of LTO Nederland (the Dutch Farmers' Organisation) and LTO Melkveehouderij.
- Dairy farmer representative on the Science & Programme Coordination Committee (SPCC) of the International Dairy Federation (IDF).
- Member of the Council of Agrifirm.
- Nuffield Scholar 2025.

[1] COP17: the 17th meeting of the Conference of the Parties to the UN Convention on Biological Diversity (CBD), Yerevan, Armenia, 19 to 30 October 2026. WWF = World Wide Fund for Nature.

2. The Nuffield Scholarship 2025–2026

Research Question

"How to measure and reward biodiversity in dairy."

Objectives

- Learn from global best practices in biodiversity measurement.
- Understand different reward mechanisms across countries.
- Identify scalable solutions for Dutch, European and global dairy farming.
- Tell the story of sustainable dairy farming.

Global Research Journey

Between 2025 and 2026, Wilco travelled the world to learn from farmers, researchers, policymakers, environmental organisations and dairy companies. Countries visited as part of the scholarship were:

- New Zealand – pasture-based systems and environmental frameworks
- Australia – extensive grazing and biodiversity integration
- United States – technology and big scale dairy systems
- Brazil – tropical biodiversity and sustainable intensification
- Chile – South American perspective
- Japan – quality focus and community integration
- Denmark – Nordic approaches to nature-inclusive farming
- United Kingdom – regenerative supply chains and Biodiversity Net Gain
- Italy – Biodiversity in combination with direct selling to consumers
- Canada – North American dairy and biodiversity approaches
- Armenia – Biodiversity COP17 and international frameworks
- Worldwide – FAO, WFO and company engagement[2]

3. Key Findings from the Global Research

- Biodiversity is a competitive advantage: every dairy system, from large grazing farms to smallholders and landless farmers, can gain market value and social license when it shows how it nurtures nature, whether on its own land, in the wider landscape or through the feed it sources.
- Measurement drives action: countries with standardised biodiversity monitoring tools see faster farmer adoption and clearer progress toward environmental goals, as in the Netherlands with the Biodiversity Monitor.
- Multiple reward pathways: the most successful farmers combine supply chain premiums, government payments and market access benefits, because no single programme pays enough on its own.
- Transition risk sits with the farmer: switching to nature-positive practices can take three to seven years of lower yields and higher investment (a range named by several speakers in the finance sessions at COP17), and today the farmer carries almost all of that risk. Rewards only work at scale when that risk is shared across the chain. Chapter 11 shows how this risk can be shared.
- Community connection matters: farmers who engage with their communities about biodiversity gain social license and long-term sustainability.
- Everything starts with data: a data system that is trusted by farmers, connects automatically with different systems, and is certified and transparent, underpins every successful approach.

[2] FAO = Food and Agriculture Organization of the United Nations; WFO = World Farmers' Organisation.

4. Summary at a Glance: Biodiversity+ Flow Chart

This Biodiversity+ Flow Chart summarises the report on one page. It combines the four pillars of biodiversity (Chapter 6) and the mitigation hierarchy (Chapter 7) into farm measures, and shows how measuring, reporting and rewarding (Chapters 9–11) turn them into farm income.[3]

HOW TO MEASURE AND REWARD BIODIVERSITY IN DAIRY

Biodiversity+ Flow Chart | Nuffield report of Wilco Brouwer de Koning | lessons from the Dutch dairy sector, with examples from twelve countries

How to get a Net Positive Impact on Biodiversity?

START HERE · Know your starting point

Grazing, housed, smallholder or landless: locate where your farm touches nature, on your own land, through your feed and in the region (LEAP, Ch. 10).

Reduce Negative Impact
(Emissions, nutrients & resource use)

AVOID REDUCE

PILLAR 1 · Functional Agrobiodiversity

- Reduce chemical fertiliser and crop protection use
- Improve nutrient-cycle efficiency and reduce water pollution
- Lower farm nitrogen balance and ammonia emissions
- Lower greenhouse gas emissions
- Grow more protein on own land, buy less feed
- Source feed responsibly (deforestation-free, local)
- Monitor and restore soil health
- Adopt precision farming techniques
- Prevent pollution from plastic and farm waste

GBF 7 · 10

Recommendations

- *Start with a data mindset: build a common, certified data system owned by farmers*
- *Adopt a standardised measurement framework*
- *Share knowledge between farmers and with science*

Create Positive Impact
(Habitat, species & landscape)

COMBINE RESTORE

PILLAR 2 · Diversity of Landscape

- Increase permanent grassland
- Plant hedges and field margins
- Create herb-rich grassland borders
- Install ponds and wildlife corridors

GBF 10

Recommendations

- *Start small on test fields*
- *Simple, scalable monitoring*

PILLAR 3 · Diversity of Species

- Postpone the first mowing date
- Graze cows outdoors, incl. meadow grazing
- Overseed clover and herbs in grassland
- Stimulate herb-rich species in temporary grassland

GBF 10

Recommendations

- *Connect with society*
- *Research the economic case*

PILLAR 4 · Regional Biodiversity

- Join agri-environment schemes
- Plan the landscape collectively
- Work together with neighbours and nature organisations
- Exchange feed and manure with arable neighbours
- Convert land to nature, restore wetlands

GBF 2 · 10

Recommendations

- *Combine reward pathways*
- *Tailor to local context*
- *Build trust around data*

From farm action to farm income

1 · MEASURE *(Ch. 6, 8, 9, 10)*

Data mindset: use what is available, generate what is missing; collect it once in a common system owned by farmers

KPIs: clear, comparable indicators for each of the four pillars

Measures: record what the farmer does (actions) next to what it delivers (results)

Monitoring: from low-cost (satellite, smartphone photos, field records) to bioacoustics, eDNA and sensors

Methods: LEAP (TNFD), State of Nature metrics (NPI) and FAO LEAP livestock guidelines

GBF 21

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2 · REPORT *(Ch. 10)*

Global: TNFD, ISSB Practice Statement, GRI 101

Asia: direct TNFD reporting by dairy companies (e.g. Mengniu, Morinaga)

EU: CSRD / ESRS E4 – farm data capped at the Voluntary Standard

Sector: Dairy Sustainability Framework, SAI Platform

Finance: PBAF for banks and investors

GBF 15

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3 · REWARD *(Ch. 8, 11)*

Processors: milk price premiums (e.g. FrieslandCampina Foqus planet, Arla FarmAhead, First Milk)

Banks, investors & insurers: interest discounts (e.g. Rabobank), sustainability-linked loans, insurance discounts

Government: agri-environment payments (e.g. EU eco-scheme, ANLb, Pantanal fund, Danish land to nature)

Society: cooperative premiums (Japan), direct sales (Italy), awards (New Zealand)

Markets: biodiversity credits (Australia) and units (England), lease discounts

Farm economics: lower costs, higher yields (US)

GBF 18 · 19

Cross-Cutting Enabling Conditions — apply to both pathways

Take an integrated approach: improving one theme must never come at the expense of another • Make rewards economically meaningful • Stack public and private rewards • Measure once, use many times • Co-design programmes with farmers • Share the transition risk • Tailor to local context • Build social license with the community

[3] Abbreviations in the Biodiversity+ Flow Chart: ANLb = Dutch agri-environment scheme; CAP = EU Common Agricultural Policy; CSRD = EU Corporate Sustainability Reporting Directive; DSF = Dairy Sustainability Framework; ESRS = European Sustainability Reporting Standards; GBF = Kunming-Montreal Global Biodiversity Framework; GRI = Global Reporting Initiative; ISSB = International Sustainability Standards Board; KPI = key performance indicator; LEAP = Locate, Evaluate, Assess, Prepare (TNFD) or Livestock Environmental Assessment and Performance Partnership (FAO); NPI = Nature Positive Initiative; PBAF = Partnership for Biodiversity Accounting Financials; SAI = Sustainable Agriculture Initiative; TNFD = Taskforce on Nature-related Financial Disclosures.

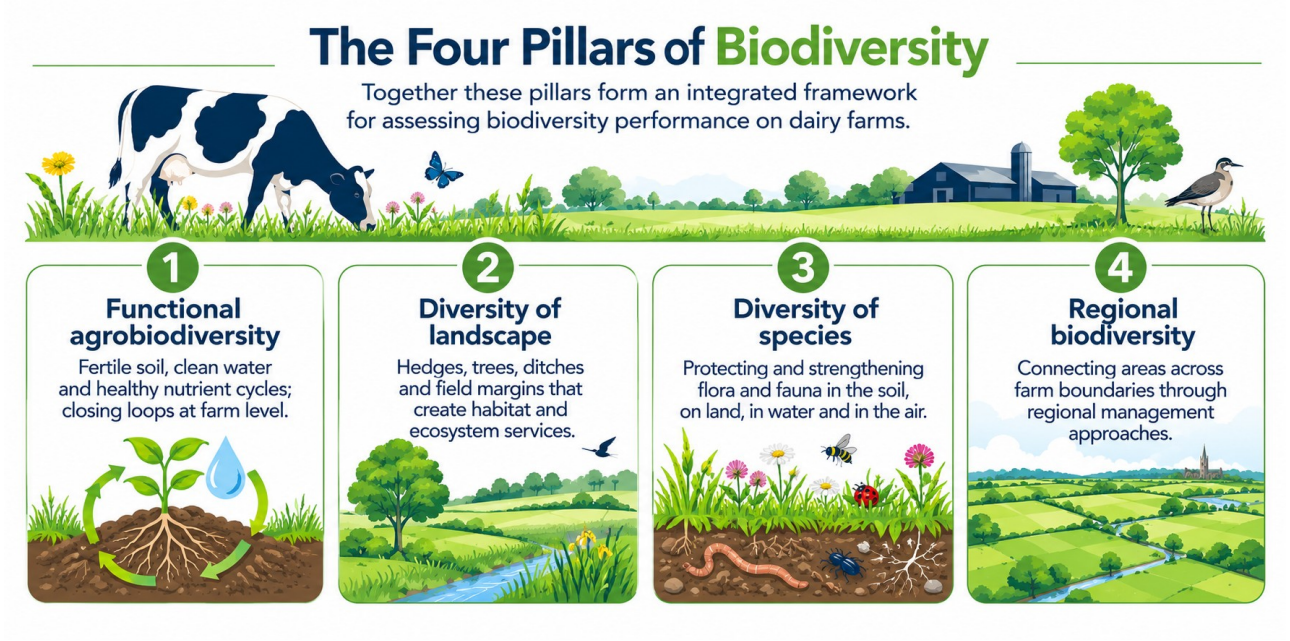
5. What is biodiversity?

Biodiversity is every living organism that exists both above and below the ground on and around a farm. Below the surface lies an extraordinary hidden world: soil life is one of the richest, and least visible, forms of biodiversity on Earth. *"In one teaspoon of healthy soil there is more life than there are people on the entire planet"*. Billions of bacteria, fungi, earthworms and other soil organisms live there and build soil structure, cycle nutrients and keep land productive and resilient.

Above the ground, biodiversity is just as rich and varied: the plants, insects, birds and mammals that live in and around fields, hedges and grasslands. It also includes the life that exists in water in ditches, ponds and streams on and around the farm and in the air above it, from pollinating insects to the birds that nest in hedgerows and forage over pasture. Soil, water and air together form one connected web of life on which dairy farming depends, and which dairy farming, in turn, shapes.

Crucially, this impact does not stop at the boundary of the farm. A positive impact such as restored habitat, cleaner water or healthier soil spreads beyond the farm gate, just as a negative impact, such as emissions, nutrient run-off, plastic and other waste or habitat loss, does. Biodiversity is one shared, global system, and every farm is a single node within it, connected to neighbouring land, to water systems, and ultimately to biodiversity worldwide. This is why measuring and rewarding biodiversity cannot be treated as a purely local or individual-farm issue – it is part of a much broader, global responsibility.

6. The Four Pillars of Biodiversity



7. Making a Positive Impact

The Mitigation Hierarchy

The goal is to achieve a net gain in biodiversity at a global level, following four steps:

1. Avoid – prevent impacts where possible.
2. Reduce – minimise unavoidable impacts.
3. Combine – combine farm practices with nature.
4. Restore – compensate to achieve a net gain.

Reward Mechanisms

New revenue models are emerging across the supply chain to reward farmers for biodiversity performance:

- Supply chain partners : premium milk prices, performance bonuses, long-term contracts, technical support and lower interest rates.
- Government and policy : agri-environment payments, tax incentives, subsidies for nature management and regulatory compliance credits.
- Investors and insurers : sustainability-linked loans with interest tied to environmental KPIs[4], blended finance funds, investments whose returns depend on biodiversity or soil outcomes, and insurance premium discounts for resilient practices.
- Society : license to produce, connection with consumers, and direct payment for ecosystem services.

Benefits of Rewarding Biodiversity

For Farmers	For the Supply Chain	For Investors and Insurers	For Society
Clear action perspective for improvement	Quantifiable sustainability metrics	Lower credit and portfolio risk from nature loss	Restoration of agricultural biodiversity
Financial rewards for biodiversity efforts	Risk mitigation in sourcing	Lower claims risk on resilient farms	Protection of meadow birds and species
Reduced environmental compliance risks	Brand value and market differentiation	Reliable data for TNFD and ISSB reporting	Improved water and air quality
Enhanced farm resilience and soil health	Alignment with ESG commitments[5]	New investment opportunities in nature-positive farming	Preservation of cultural landscapes



[4] KPI = key performance indicator.

[5] ESG = environmental, social and governance; TNFD and ISSB: see Chapter 10.

8. From Measure to Reward

The Biodiversity+ Flow Chart (Chapter 4) lists the farm measures per pillar. This chapter shows how the most common measures are measured and who rewards them today, so a farmer can see what a measure delivers for nature and for the farm. Examples come from the countries in this research[6]; Chapter 11 gives the details.

Measure	Pillar	How it is measured	Who rewards it (examples)
Increase permanent grassland	2 Landscape	Share of permanent grassland (Biodiversity Monitor KPI)	EU-wide baseline: CAP conditionality (GAEC 1) protects the share of permanent grassland. Rewarded by Rabobank interest discount and eco-scheme (NL); Arla points for semi-natural grassland (7 countries)
Graze cows outdoors	3 Species	Grazing days and hours	FrieslandCampina Foqus planet grazing premium (NL); Farm Environment Awards (New Zealand)
Grow more protein on own land	1 Functional	Protein from own land (Biodiversity Monitor KPI)	Foqus planet biodiversity premium; Rabobank interest discount (NL)
Reduce emissions to air and water: ammonia, nitrogen and phosphate	1 Functional	Nutrient tools: KringloopWijzer, completed by almost all Dutch dairy farmers (many organic farms do not take part); OVERSEER (New Zealand)	Foqus planet; Rabobank (NL); lower fertiliser costs everywhere
Reduce greenhouse gas emissions (feed, manure, energy)	1 Functional	Carbon footprint per kg milk: KringloopWijzer climate module (16,000+ farmers), Arla FarmAhead Check (about 95% of Arla farmers), Cool Farm Tool (food companies worldwide)	Foqus planet climate premium (NL); Arla FarmAhead Incentive (7 countries)
Restore soil health with regenerative practices	1 Functional	Soil organic matter, soil sensors, Cool Farm Tool	Lower insurance premiums (Michigan pilot, US; Austrian Hail Insurance); lower costs and higher yields (US)
Sow herb-rich grassland, postpone first mowing	3 Species	Species per field, bird song (Chirrup.ai at Wyke Farms, UK), satellite images	ANLb (NL); Arla multi-species swards; First Milk regenerative premium (UK)
Plant hedges and field margins, dig ponds	2 Landscape	Area of nature and landscape elements; satellite and LiDAR mapping (Prism, NZ)	ANLb and eco-scheme (NL); First Milk biodiversity actions (UK); LEAF Marque: at least 5% habitat (UK, 50+ countries)
Protect or convert land to nature, restore wetlands	4 Regional	Area, recorded in a public register	Pantanal Climate Fund (Brazil); land-to-nature compensation (Denmark); biodiversity units (England, BNG); biodiversity credits (Australia)
Work together and connect with society	4 Regional	Collective plans; consumer and community contacts	ANLb farmer collectives (NL); consumer cooperative premium (Seikatsu Club, Japan); direct sales (Italy)

Lessons from Practice

- **Start small:** try a new practice on a few fields first, and scale up once it works on your farm.
- **Some measures pay for themselves:** grazing optimisation and hedgerows can pay back within five years.
- **Measure once, use many times:** nutrient tools such as the KringloopWijzer already collect farm data every year, the natural starting point for biodiversity too.
- **The first step is the biggest hurdle:** more expensive seed for herb-rich grassland, for example. Crowdfunding or a start-up subsidy can help.

[6] NL = the Netherlands; UK = United Kingdom; US = United States; CAP = EU Common Agricultural Policy; GAEC 1 = CAP conditionality standard for maintaining permanent grassland; KPI = key performance indicator; ANLb = Dutch agri-environment scheme; BNG = Biodiversity Net Gain (see Chapter 11); NZ = New Zealand; LEAF = Linking Environment And Farming (UK); LiDAR = laser-based remote sensing.

9. Emerging Technologies for Measuring Biodiversity

New sensor, AI and satellite technologies are making biodiversity monitoring cheaper, faster and more objective than traditional field surveys – critical for scaling reward mechanisms. Some examples:

Chirrup.ai – AI Bird Bioacoustics

Chirrup.ai turns birdsong into an ongoing, low-cost indicator of ecosystem health, using simple recorders and AI. Already used by some dairy producers.

Satellite Monitoring

Satellite imagery combined with AI tracks vegetation, grassland diversity and hedgerows at almost no marginal cost. In New Zealand, **Prism** adds aerial and LiDAR images and data from the farmer to map trees, vegetation, erosion and weeds per farm. Fonterra uses it to count the carbon in on-farm trees and hedges: a first step for both CO_2 and biodiversity.

Environmental DNA (eDNA)

eDNA analysis from a single soil or water sample reveals which species are present through their DNA traces – capturing hard-to-survey species such as soil organisms and aquatic life.

Sensibee – AI Pollinator Monitoring

Sensibee's solar-powered field sensors photograph and AI-identify pollinators 365 days a year, turning labour-intensive pollinator counts into a continuous data stream.

Soil Biodiversity Sensors

AI-supported soil monitoring tools use image recognition to assess soil organisms – earthworms, springtails, mites and microbes – far faster than lab-based soil-biology assessments.

10. Reporting Frameworks: TNFD, ISSB, CSRD and LEAP

TNFD – Taskforce on Nature-related Financial Disclosures · ISSB – International Sustainability Standards Board · CSRD – Corporate Sustainability Reporting Directive · LEAP – Locate, Evaluate, Assess, Prepare (TNFD)

Biodiversity reporting works in four layers, all resting on the Kunming-Montreal Global Biodiversity Framework (GBF). The top two are tightly linked; the farm is connected only through the dairy companies, which operate in all four at once. **Every framework organises measuring – none of them arranges rewarding.**[7]

Layer	Frameworks	Question it answers	Status
1. Disclosure	ISSB Practice Statement (global); CSRD / ESRS E4 (EU); GRI 101 Biodiversity	What do you report on nature risks and impacts?	ISSB draft (comments until Feb 2027); CSRD mandatory for large companies; GRI 101 voluntary
2. Method	TNFD with LEAP; SBTN for targets; NPI metrics; PBAF for finance	How do you assess risks, impacts and targets per location?	Voluntary; TNFD is the basis for the ISSB
3. Sector	Dairy Sustainability Framework (DSF); SAI Platform (FSA, Regenerating Together)	What does the sector expect from farmers?	Voluntary; no formal link to TNFD or ISSB
4. Farm	Biodiversity Monitor; Foqus planet; Arla FarmAhead; Rabobank interest discount	What does this farm do, and what does it earn?	Voluntary; the only layer that links measuring to paying

[7] ESRS = European Sustainability Reporting Standards; SAI Platform = Sustainable Agriculture Initiative Platform; FSA = Farm Sustainability Assessment; GRI = Global Reporting Initiative; SBTN = Science Based Targets Network; NPI = Nature Positive Initiative; PBAF = Partnership for Biodiversity Accounting Financials.

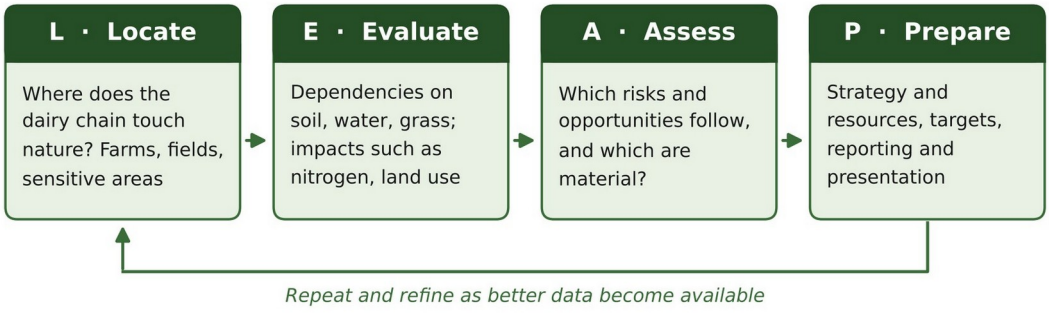
Anchored in the Global Biodiversity Framework

The GBF, agreed by close to 200 countries in 2022 (see Chapter 1), sets 23 targets for 2030. Measuring and rewarding biodiversity on farms contributes to at least seven of them.

GBF target	What it asks (by 2030)	Link to measuring and rewarding
7 – Pollution	Reduce pollution, including halving excess nutrients lost to the environment and reducing plastic pollution	KPIs[8] on nitrogen balance and ammonia measure exactly this, and Foqus planet rewards a low farm nitrogen balance. Collecting and recycling farm plastics and other waste matters too, especially in countries without good waste systems
10 – Agriculture	Manage agricultural areas sustainably, through biodiversity-friendly practices	The core of on-farm measuring: practices such as permanent and herb-rich grassland become visible and rewardable, for example through biodiversity premiums and result-based payments
14 – Mainstreaming	Integrate biodiversity into policies, planning and decision-making	Farm KPIs let governments steer on results and on targets such as CO_2, ammonia and water quality, as in the eco-scheme and ANLb
15 – Business disclosure	Large companies and financial institutions assess and disclose their risks, dependencies and impacts on nature	The basis of TNFD, ISSB and CSRD; farm data is the input for their supply-chain reporting
18 – Incentives	Reduce harmful incentives by at least US$500 billion a year and scale up positive incentives	Agricultural subsidies are the main lever: in the EU, the Common Agricultural Policy (CAP, in Dutch GLB) can pay for biodiversity results through eco-schemes and agri-environment payments such as ANLb
19 – Finance	Mobilise US$200 billion a year from all sources, including private finance, payments for ecosystem services and biodiversity credits	Bank interest discounts, private farmland funds and nature credit markets channel private money to farmers, alongside biodiversity premiums paid by dairy companies
21 – Data and knowledge	Make data, information and knowledge available to guide biodiversity action	A common, farmer-owned data system turns farm data into shared knowledge

LEAP – the Bridge Between Farm and Report

LEAP (Locate, Evaluate, Assess, Prepare) is the TNFD assessment method that the ISSB builds on. A WBCSD (World Business Council for Sustainable Development) study applied it to dairy in Friesland: impacts come mainly from land use and nitrate and phosphate losses, the key dependency is soil quality, biodiversity risk is medium-high – and the study named the Biodiversity Monitor as the tool to act on it. In October 2026 the TNFD released LEAP v2.0, which adds state of nature measurement and landscape approaches.



Other Key Frameworks

- **GRI 101 Biodiversity (Global Reporting Initiative, 2024):** Voluntary, in effect from January 2026. It asks for impacts across the whole supply chain, per country and location, including drivers such as land use and pollution, and is aligned with TNFD, SBTN and ESRS E4.

[8] KPI = key performance indicator; ANLb = Dutch agri-environment scheme.

- **SBTN (Science Based Targets Network):** sets science-based targets for land, freshwater and ocean. The first companies adopted validated targets in October 2024. In food, only Waitrose Own Brand and two Danish seafood companies have published validated targets so far. Among dairy companies, Arla, Nestlé and Bel have completed the first SBTN steps, but none has validated targets yet. Arla joined the 2026 freshwater pilot together with Danone. Version 2.0 (October 2026) adds supplier engagement targets for companies without full traceability, a working land target on soil quality, and pesticides in freshwater targets.
- **State of Nature metrics (Nature Positive Initiative, NPI, October 2026):** four core indicators (ecosystem extent, ecosystem condition, species extinction risk and species populations), now used by TNFD and SBTN. For farmland, the framework favours species and pressure and response metrics over condition metrics, and counts natural and semi-natural habitat on farms. Farm KPIs such as nitrogen balance and permanent grassland fit this approach.
- **PBAF (Partnership for Biodiversity Accounting Financials):** a standard for banks and investors to measure the biodiversity impact of their loans and investments, used by 76 financial institutions in 22 countries (2025). It gives banks a way to screen their agricultural portfolios.
- **FAO LEAP:** not to be confused with the TNFD's LEAP, the FAO's Livestock Environmental Assessment and Performance Partnership develops measurement methods for the livestock sector. Its 2020 guidelines give a step-by-step method to quantify how livestock production affects biodiversity – a practical, sector-specific basis for the Locate and Evaluate phases.

What Is Required?

- **CSRD (Corporate Sustainability Reporting Directive, EU):** after the Omnibus (in force March 2026) only companies with more than 1,000 employees and €450 million turnover report, using simplified ESRS from financial year 2027. Biodiversity (ESRS E4, the European standard on biodiversity and ecosystems) applies only if material, with site-level data near sensitive areas.
- **Value-chain cap:** from 2027, reporting companies may not demand more than the EU Voluntary Standard from partners with up to 1,000 employees – which covers virtually every dairy farm. Extra farm data can only be asked for, not required.
- **ISSB:** the Practice Statement is voluntary unless a country makes it mandatory, but IFRS S1 (the ISSB's general standard for sustainability disclosures) already requires material nature information.
- **DSF (Dairy Sustainability Framework):** members report how many farms have a biodiversity plan; each member defines what a plan contains.

How Dairy Companies and Banks Use Them

- **Asia – direct TNFD reporting:** Mengniu published the first TNFD-based dairy report (2024); Morinaga Milk also publishes one.
- **Europe – CSRD plus own reward schemes:** FrieslandCampina uses the 11 DSF criteria in its materiality analysis and pays a Foqus planet premium; Arla added nature and biodiversity points to FarmAhead in January 2026. Both follow the CSRD route rather than TNFD.
- **Banks – Rabobank:** sat on the TNFD taskforce and rewards farmers through the Biodiversity Monitor: a 0.2% interest discount for an A-score (structural since 2022; 3,683 dairy customers assessed in 2025), Impact Loans backed by the European Investment Bank, and €3 billion transition financing for Dutch farmers until 2030. A pilot with 30 arable farmers shows the approach spreading beyond dairy.

Implications

- **Measure once, use many times:** farm-level KPIs can feed DSF, CSRD and TNFD/ISSB reporting at the same time, and since October 2026, TNFD, SBTN and GRI share one set of state of nature indicators.
- **The value-chain cap makes reward essential:** what cannot be demanded from farmers has to be rewarded.
- **Align the sector:** move DSF from counting plans to location-specific KPIs that fit LEAP, and respond to the ISSB consultation before 19 February 2027.

11. Rewarding Biodiversity in Practice

Chapter 7 described the types of reward. This chapter shows who actually pays today. Four parties reward biodiversity: processors, banks, governments and – still marginally – the market. Investors and insurers are starting to follow (see below). **Of the countries in this research, the Netherlands is the only one where processors, banks and government all reward biodiversity.**

Who pays	Example	Basis for payment	Scale
Processor	FrieslandCampina – Foqus planet (NL)	Results-based premium of up to €4.00 per 100 kg (2026): climate/CO_2 €1.50, grazing €1.30 (partial grazing €0.40), biodiversity €1.00 (protein from own land, farm nitrogen balance, nature and landscape) and animal health €0.20; members contribute €0.60	€173 million in 2025 (2024 results); €228 million incl. special milk streams
Processor	Arla – FarmAhead Incentive (7 countries)	Points per action: 0.03 euro cent per kg milk per point, rising to 0.04 in 2027, capped at 3.0 cents per kg. Nature and biodiversity points (semi-natural grassland, multi-species swards) since January 2026	€354 million in 2025, of which €19.8 million for biodiversity and carbon farming
Processor	First Milk – Regenerative Farm Plans (UK)	Annual regenerative plan per member covering carbon, water, nature, animals and people; 0.5 pence per litre premium since 2022; biodiversity monitored with the UK Centre for Ecology & Hydrology	About 700 members, over 96% with a plan; 342,613 biodiversity actions on 99,206 ha (2025)
Bank	Rabobank (NL)	0.2% interest discount for an A-score on the Biodiversity Monitor; Impact Loans backed by the European Investment Bank	3,683 dairy customers assessed (2025); €3 billion transition financing for Dutch farmers until 2030
Government (EU CAP)[9]	Eco-scheme (NL)	Points per hectare on five goals incl. biodiversity: €60, €100 or €200 per ha (bronze, silver, gold). From 2027 the medals go; farmers receive the average value of their activities	€197 million budget (2026)
Government (provinces)	Agri-environment management, ANLb (NL)[10]	Payment per management package via 40 farmer collectives, mainly for meadow-bird habitat such as herb-rich grassland and shallow pools	Extra €83 million from 2026
Government	Denmark – land to nature	Compensation for farmers converting land to nature, as protected nature grows from 4% to 20% of land	DKK 50 billion (€6.7 billion)
Government	Brazil – Pantanal Climate Fund	Payments to landowners in the Pantanal who protect nature	R$40 million at launch (2025)
Market (by law)	England – Biodiversity Net Gain	Since February 2024, developers must leave 10% more biodiversity than before, measured with a statutory metric. If they cannot do this on site, they buy biodiversity units from landowners, who create and maintain habitat for at least 30 years	Over 200 habitat banks (2026); grassland units about £17,000 to £30,000 each (2025)
Processor	Fonterra (New Zealand)	No biodiversity premium; carbon in on-farm trees and hedges, mapped by Prism, counts in the farm footprint	Not yet paid
Market (consumers)	Seikatsu Club (Japan)	Consumer cooperative pays an annual premium on the milk price; large processors pay none	One cooperative
Industry levy	Checkoff (US)	Levy on milk sales funds research and stewardship; farmers adopt practices that lower costs	Not biodiversity-specific
Market	Credits (Australia)	Credits for protecting or restoring nature	Emerging

[9] NL = the Netherlands; UK = United Kingdom; US = United States; CAP = Common Agricultural Policy of the European Union.
[10] ANLb = Agrarisch Natuur- en Landschapsbeheer, the Dutch agri-environment scheme delivered through farmer collectives.

Emerging: Investors and Insurers

Beyond processors, banks and governments, a new group is starting to move. Investor networks such as FAIRR and the PRI[11] see four routes for private money to reach farmers:

- **Sustainability-linked loans:** refinancing farm debt with interest rates tied to environmental KPIs. The global market reached €650 billion in 2024, but only a small share goes to agriculture. Rabobank's interest discount on the Biodiversity Monitor is an early example of exactly this model.
- **Blended finance:** funds that combine public and private capital to lower the risk for each, such as the AGRI3 Fund that Rabobank co-founded.
- **Outcome-linked investment:** equity or debt in farmland where returns depend on outcomes such as biodiversity or soil health over five to ten years.
- **Insurance:** premium discounts and investment grants for resilience-building practices, as offered by Austrian Hail Insurance. In Michigan, a joint public and private pilot offers lower premiums to regenerative farmers, based on actuarial data showing a lower claims risk.

Corporate support is still small: of 78 large listed food companies, 40% support farmers financially, but this equals only 0.01 to 0.05% of revenue (FAIRR, 2026). Investors name measurement as the missing link.

Who Carries the Risk?

At COP17 in Yerevan, one message returned in almost every session on finance: the farmer carries nearly all the risk of the transition, while banks prefer to finance a tractor over an ecosystem because a tractor is easier to sell. The switch takes three to seven years of lower yields and higher investment. Sharing that risk needs every party:

- **Government takes the first loss:** guarantee funds, transition grants and tax relief, so that banks and investors dare to step in.
- **The supply chain shares the margin:** and rewards progress on shared KPIs, as the Biodiversity Monitor and Arla FarmAhead already do.
- **Banks, investors and insurers follow once measurement is reliable:** with longer loan terms, lower premiums and, in time, natural capital accepted as collateral.

Lessons Learnt from the Global Research

- **Rewards must be stackable:** farmers must be able to combine rewards from the chain, the bank and the government. One Dutch farm already combines Foqus planet, a Rabobank discount, the eco-scheme and ANLb. On Ter Coulster, Foqus planet alone yields a net €2.22 per 100 kg (€2.82 bonus minus the €0.60 contribution).
- **Climate still earns the most per theme:** this is driven mainly by the supply chain. Companies further up the chain, such as retailers and food brands, focus mostly on climate targets and much less on biodiversity. FrieslandCampina pays its highest premium for climate, and Arla's new 2027 action areas are mostly climate measures. Of the €354 million Arla paid out in 2025, less than 6% went to biodiversity and carbon farming.
- **An integrated approach is crucial:** rewarding one theme in isolation can push farmers in a direction nobody wants, for example cutting emissions at the expense of grazing, soil or biodiversity. Rewards should cover climate, biodiversity, water and animal welfare together.
- **Nature-based measures pay back, but capital flows elsewhere:** grazing optimisation and hedgerows can deliver a net return within five years, yet two-thirds of venture and philanthropic capital for on-farm livestock solutions in the US goes to technology such as digesters and feed additives.
- **Regulation can create a private market:** Biodiversity Net Gain in England makes developers pay landowners for measured biodiversity units under 30-year agreements: a standard metric, a public register and a long contract, the same building blocks this report proposes for dairy.
- **Government pays per measure, the chain per result:** the eco-scheme and ANLb pay per hectare, processors and banks per KPI score. Together: a stable base and an incentive to improve.
- **A label can be the reward:** Jersey Dairy's 11 farms are LEAF Marque certified – market access, no premium.
- **Outside Europe, specific biodiversity payments are rare:** the largest gap in this research, where a common measurement framework can help most.

[11] FAIRR = Farm Animal Investment Risk & Return, an investor network; PRI = Principles for Responsible Investment, a UN-supported investor network. KPI = key performance indicator; LEAF = Linking Environment And Farming, the UK organisation behind the LEAF Marque standard.

12. Recommendations

Based on the findings from this global research journey, the following recommendations are put forward to farmers, supply chain partners, policymakers and researchers:

For farmers and their organisations

1. **Start with a data mindset.** Use what is available and generate what is missing. Build one common data system, owned by farmers, that is certified, transparent and interoperable across the supply chain.
2. **Read data in automatically.** Let farm data flow into the calculations as much as possible, straight from the source: animal registrations, land use and parcel records, soil samples, purchased feed and fertiliser, and delivered milk and meat. This saves farmers time and makes the results more reliable.
3. **Start small.** Use a few fields as a testing ground for new biodiversity and soil practices before wider roll-out.
4. **Invest in simple, scalable monitoring.** Start with practical, low-cost methods that farmers can apply themselves, combined with satellite data, as Prism does for Fonterra farmers in New Zealand.
5. **Strengthen the connection with society.** Keep telling the story of sustainable dairy farming to secure the sector's long-term social license.
6. **Share knowledge.** Between farmers, through study groups, demonstration farms and farm visits, and between farmers and science.
7. **Use the power of working together.** No farm can restore biodiversity alone. Working with neighbours, farmer collectives, the supply chain, nature organisations and science makes measuring easier, rewards larger and the impact on the landscape much greater.

For supply chain partners and financial institutions

1. **Combine reward pathways and make them meaningful.** No single actor can fund biodiversity alone. Combine supply chain premiums, lower interest rates, government payments and market access, linked to tangible results for farmers.
2. **Share the transition risk.** Offer longer loan terms, sustainability-linked loans tied to existing farm KPIs such as the Biodiversity Monitor, and insurance discounts.
3. **Co-design programmes with farmers,** so they can be delivered at farm level, at scale and at pace, and deliver the impact the data show.
4. **Build governance and trust around data.** Independent, farmer-trusted governance ensures that farm data is used fairly and consistently.

For policymakers

1. **Adopt a standardised measurement framework.** Use consistent KPIs built around the four pillars of biodiversity, so that performance can be compared over time and across farms, regions and countries.
2. **Tailor approaches to local context.** Farm scale, markets and policy differ between countries, so measuring and rewarding must be adapted rather than copied wholesale.
3. **Take the first loss.** Use guarantee funds and transition grants to lower the risk for private finance, and redirect harmful subsidies towards nature-positive practices (GBF[12] Target 18).

For researchers

1. **Build the economic case.** Supply chain partners, banks and governments should jointly commission research that generates stronger evidence of the economic benefits of biodiversity and soil-health practices, to accelerate farmer adoption. Good monitoring on farms provides the data for this research.

[12] GBF = Kunming-Montreal Global Biodiversity Framework (see Chapter 1). KPI = key performance indicator.

13. Useful Links & Examples

Throughout this report, a number of organisations, platforms and technologies are named as examples of how biodiversity in dairy farming can be measured and rewarded in practice. The links below point to each of them directly, for readers who want to explore further.[13]

Measuring Farm Measures and Emissions (Chapter 8)

- KringloopWijzer (WUR): Dutch annual nutrient cycling assessment for dairy farms.
- Arla FarmAhead Check: how Arla farmers measure and reduce on-farm emissions.
- Cool Farm Tool: greenhouse gas, water and biodiversity calculator used by food companies.

Emerging Technologies & Monitoring Tools (Chapter 9)

- Chirrup.ai – AI bird bioacoustics for biodiversity monitoring.
- Prism – satellite, LiDAR and farm data combined; used by Fonterra (NZ).
- Sensibee – AI-powered, solar-based pollinator monitoring.
- Sensing Clues – AI camera-trap platform for wildlife monitoring.

Reporting Frameworks (Chapter 10)

- TNFD Recommendations – the framework for nature-related financial disclosures.
- TNFD LEAP approach – guidance on assessing nature-related issues.
- ISSB Nature-related Disclosures – project page, Exposure Draft and consultation.
- Revised ESRS and Voluntary Standard (EFRAG) – EU reporting rules and the value-chain cap.
- Dairy Sustainability Framework – the global dairy framework with 11 sustainability criteria.
- SAI Platform – Regenerating Together – outcome-based framework for regenerative agriculture.
- WBCSD – Dairy production in Friesland – LEAP applied to a dairy landscape.
- GRI 101 Biodiversity – the voluntary biodiversity reporting standard.
- Finance for Biodiversity / PBAF – biodiversity accounting for financial institutions.
- SBTN – Science-Based Targets for Nature 2.0: the updated target-setting methods (October 2026).
- Nature Positive Initiative – State of Nature Indicators and Metrics: the common measurement base for TNFD and SBTN.
- TNFD, SBTN and NPI aligned guidance (incl. LEAP v2.0): how assessing, target-setting, measuring and reporting fit together.

Reward & Measurement Platforms

- Biodiversiteitsmonitor Melkveehouderij (Biodiversity Monitor) – Dutch biodiversity monitor for dairy farmers.
- Rabobank – Biodiversity Monitor – how the bank rewards biodiversity performance.
- FrieslandCampina – Foqus planet – milk price system with sustainability premiums.
- Arla FarmAhead Incentive update (2026) – new point values from 2027.
- Biodiversity Net Gain (GOV.UK): how developers in England buy biodiversity units from landowners.
- LEAF Marque – environmental farm standard (LEAF, UK).
- Dutch eco-scheme (RVO) – CAP eco-scheme payments per hectare.
- ANLb – agri-environment management – extra budget for farmer collectives.

Investors & Finance (Chapter 11)

- FAIRR: Regenerative Agriculture: Moving from Ambition to Credibility: how 78 large food companies support and measure regenerative farming (June 2026).
- FAIRR & PRI: Mobilising Private Finance for Regenerative Agriculture: financing routes for investors, banks and insurers (July 2025).

[13] EFRAG = European Financial Reporting Advisory Group; RVO = Netherlands Enterprise Agency; WUR = Wageningen University & Research; WBCSD = World Business Council for Sustainable Development. Other abbreviations: see Chapters 4 and 10.

Farms & Case Studies

- Jersey Dairy – LEAF Marque on its milk.
- Jordans Farm Partnership – 10% of land for wildlife (UK).
- Wyke Farms – UK dairy producer using Chirrup.ai for biodiversity monitoring.

International Organisations

- Food and Agriculture Organization (FAO)
- International Dairy Federation (IDF)
- World Farmers' Organisation (WFO)

More from the Country Journeys

- NSW Biodiversity Offsets Scheme – Australia's market-based biodiversity credit system.
- Figured – farm financial and data management platform used in DairyNZ's farm data initiatives.
- Danish Agriculture & Food Council (DAFC)
- Fonterra – New Zealand dairy cooperative's climate and sustainability approach.
- DairyNZ
- Nestlé Dairy Plan – Nestlé's approach to sustainable dairy sourcing.
- Fundação MS – Brazilian agricultural research and technology foundation, Maracaju, Mato Grosso do Sul.
- Seikatsu Club – Japanese consumer cooperative engaged in dairy sustainability since 1965.
- Norinchukin Research Institute – research arm supporting Japanese agriculture, forestry and fisheries.

This Research

- Biodiversity in Dairy – the research website behind this report.
- Boerderij Ter Coulster – Wilco's family dairy farm.

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Armenia

- CBD COP17, Yerevan[14]
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[14] CBD COP17 = 17th meeting of the Conference of the Parties to the UN Convention on Biological Diversity.

United States

- Jesse Meerman – Green Pastures Dairy, Coopersville
- Paul Windemuller – Dream Winds Dairy / AgCulture Podcast, Coopersville
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- Martin Vanderstappen – Dutch Made Holsteins, Lake Geneva
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- The Koster Dairy Farm, Ontario
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This report is not the end of the journey. Measuring and rewarding biodiversity in dairy is still developing, and I would very much like to hear from you. If you have questions, comments or ideas, or would like to work together, please get in touch.

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