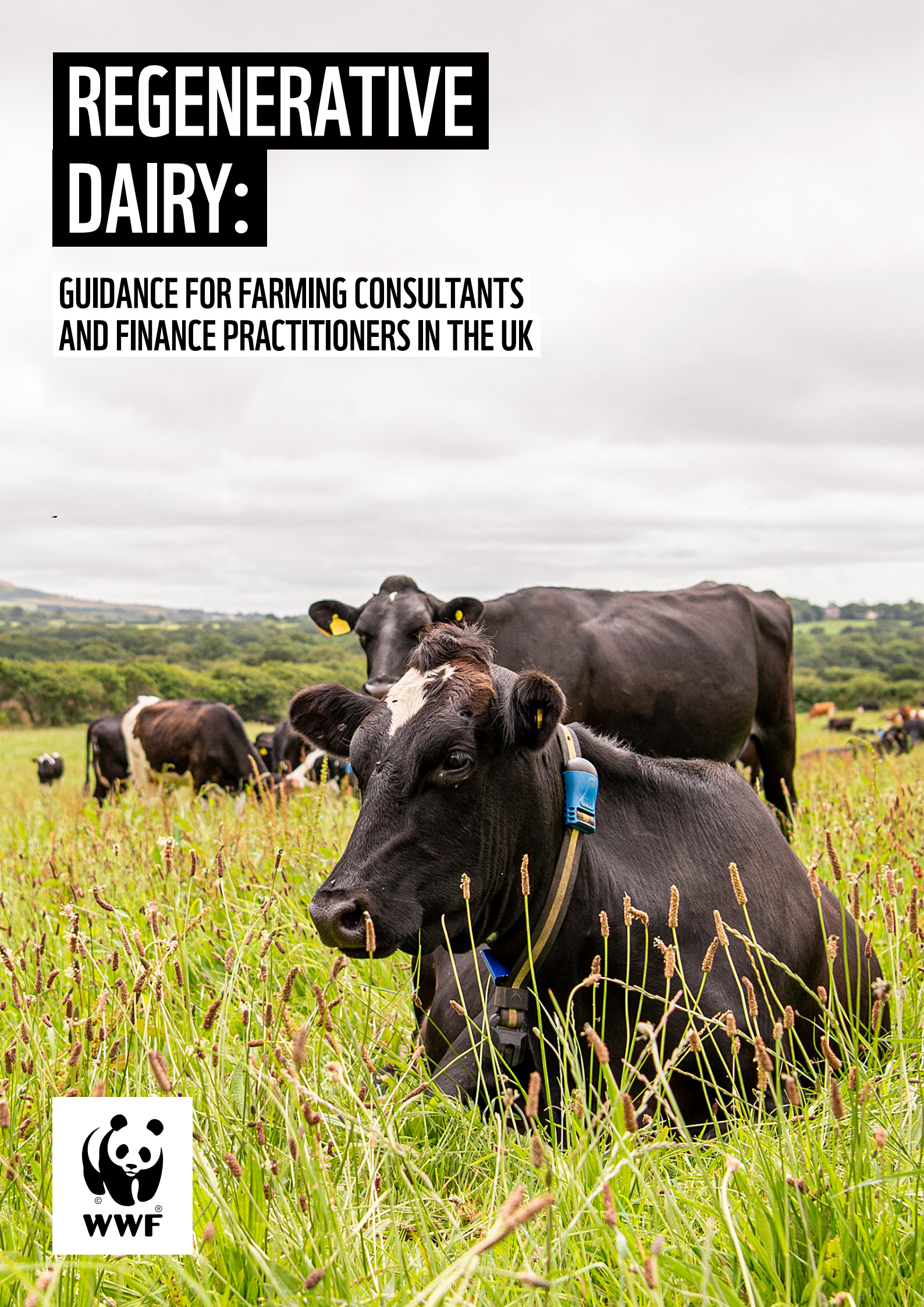
REGENERATIVE DAIRY:

GUIDANCE FOR FARMING CONSULTANTS AND FINANCE PRACTITIONERS IN THE UK



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EXECUTIVE SUMMARY

Transitioning to regenerative agriculture presents a transformative opportunity for UK dairy farmers, promising benefits across business, carbon, nature, and wellbeing dimensions. This guidance aims to equip finance practitioners and farming consultants, with the necessary knowledge to support UK dairy farmers in navigating this transition effectively.

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We are grateful for the valuable insights and inputs provided by WWF-UK – María Casal, Sofia Parente, Stuart McCallum, and Tom Stuart – and NatWest Group – Ian Burrow, Maria Carvalho, Judit Hada-Shaw, Jodie Swain and Roddy McLean.

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WWF-UK. 2025. *Regenerative Dairy: Modelling the Transition Costs for Farmers in the UK*. WWF-UK, Woking.

WWF-UK. 2025. *Regenerative Dairy: Case studies*. WWF-UK, Woking.

Farm Carbon Toolkit, 2025. *The impacts on carbon and nature associated with transitioning to regenerative dairy farming practices*.

ABOUT WWF

We're WWF, the leading global environmental charity and we're bringing our world back to life. We're tackling the causes of nature loss. And we're finding solutions so future generations inherit a world where nature is thriving and the climate is stable.

INTRODUCTION TO REGENERATIVE AGRICULTURE

WHAT IS REGENERATIVE FARMING?

- **Regenerative agriculture means farming in a way that fosters healthy and resilient ecosystems whilst reducing reliance on external inputs.**
- Practices include **minimising soil disturbance, crop diversification, efficient nutrient management, and livestock integration**.
- The World Economic Forum estimates that global **business opportunities** in productive and regenerative agriculture **could reach $1.14trn by 2030.**
- To improve the resilience and sustainability of farming in the UK, as well as to meet environmental targets for nature and climate, farmers need to be supported to transition towards a nature-positive systems. By transitioning to a system that integrates food production, ecosystem rehabilitation and carbon sequestration, **the sector can develop systems that may be more viable and profitable, while supporting national efforts to address biodiversity loss and climate change.**

BENEFITS OF REGENERATIVE AGRICULTURE – MORE CONTROL FOR THE FARMER THROUGH:

- **Significantly reduced reliance on volatile costs of external artificial fertilisers and other inputs (fuel, animal feed),** which have exponentially increased following the Russian invasion of Ukraine and the ensuing energy crisis (more details on recent evolution of chemical and energy costs in Annex).
- **Lower heavy machinery dependence.**
- **Higher quality of farming outputs**, by increasing the nutrient density of foods (e.g. higher protein contained in milk from regenerative farming).
- Increased **business resilience** to severe weather events and climate change[1] (e.g. healthy soils are deemed to better absorb excess water during floods than soils degraded by heavy chemical inputs).
- **Positive impacts on nature**: **reduced runoff pollution to water**, soil health, biodiversity, greenhouse gas emissions reduction and carbon sequestration.
- **Positive impact on farmers' wellbeing:** Regenerative practices typically mean reduced and rearranged working hours, improving farmers' wellbeing.

[1] University of Cambridge Institute for Sustainability Leadership (CISL) and NatWest Group, 2022. Nature-related financial risk: use case. Land degradation, UK farmers and indicative financial risk

GOVERNMENT AND MARKET SUPPORT AVAILABLE FOR REGENERATIVE FARMING IN THE UK

A range of governmental agri-environmental schemes in the UK support productive and sustainable farming and food production alongside environmental, climate and animal welfare outcomes:

- In England, the Environmental Land Management schemes include:
  - Sustainable Farming Incentive[2] (SFI), focusing on reducing negative environmental impacts of land management through 3-year agreements that pay farmers to adopt and maintain sustainable farming practices. Farmers can be paid for a range of SFI actions (various payment rates).
  - Countryside Stewardship for actions that support local nature recovery and delivering local environmental outcomes.
  - Landscape Recovery funds bespoke agreements to deliver landscape and ecosystem recovery through long-term, land use change projects, across a minimum area of 500ha.
- Scotland's Agri-Environment Climate Scheme and Wales's Glastir Scheme and proposed Sustainable Farming Scheme provide payments for land management practices which protect and enhance nature, improve water quality, manage flood risk, and support climate change adaptation.
- **Multiple capital and grant schemes** to encourage nature-friendly farming practices, such as the Farming Investment Fund (grants up to £500,000), the Slurry Infrastructure Grant, and the Rural England Prosperity Fund in England, the Knowledge Transfer and Innovation Fund in Scotland, and the Nutrient Management Investment Scheme in Wales.
- **In England, Biodiversity Net Gain (BNG) and Nutrient Neutrality obligations** for new developments could offer an opportunity for regenerative farmers to generate new income streams from their land through regulated natural capital markets.

Supply chain stakeholders are also starting to support the transition to regenerative agriculture, as a way to reduce risks of climate and nature-related supply chain disruptions, and meet their own carbon and nature targets.

- Indication for direction of travel: In England, the Government set a target of £500m per year of private finance into nature's recovery by 2027 and more than £1bn by 2030.
- Food processors, including companies such as Yeo Valley, Cranswick or McCain, are exploring various alternative pricing models related to on-farm regenerative actions and outcomes.
- Manufacturers are setting timebound targets for their transition to regenerative agriculture outputs – for instance, Carlsberg, PepsiCo and Nestle are providing support to help farmers transition, with a focus on the UK. Other majors companies in the agriculture value chain, such as Unilever and Kering, have set up investment funds with a global scope to help farmers transition to regenerative agriculture.

[2] The Sustainable Farming Incentive was paused by the UK Government on March 12th 2025, promising a new scheme in 2026

FOCUS ON REGENERATIVE DAIRY FARMING

THE CASE FOR A DIFFERENT TYPE OF DAIRY FARMING:

- A **major increase in inputs prices**, including feed, energy and fertilisers, is leading to an exit of a high number of UK dairy farmers.
- **Volatile milk prices and input costs significantly affect the profitability of farms year-on-year, hampering long-term investments and growth opportunities.**
- The dairy sector is one of the **most exposed to impacts of climate change**:
  - In an extreme weather scenario, high input, high output dairy farms in Scotland would **see their profit fall by 19%,** compared to only 12% for farms using regenerative practices.
- High outputs dairy farming models have a significant impact on **farmers' wellbeing and their family life.**
- The resilience of the UK dairy supply chain depends on supporting farmers to transition to practices that reduce dependence on volatile inputs, help mitigate the impacts of climate change on profitability, and increase their wellbeing.

KEY REGENERATIVE DAIRY FARM SYSTEM AND MANAGEMENT PRACTICES:

- **Rotational and increased grazing**, which can increase in milk fat percentage and milk production, as well as lower levels of diseases and vet costs, compared to continuously housed cows.
- **Reduction of imported feed, fertilisers, and overheads** through (i) less intensive milking regimes, (ii) change to cow breeds that require less feed dry matter to produce equivalent quantities of milk such as Jersey cows, (iii) reduced applications of artificial fertilisers, and (iv) focus on home-produced feed, especially forage.
- **Improved soil health** through (i) efficient use of slurries and manures, (ii) diverse swards used, including legumes and herbal leys, (iii) reduced cultivations and minimised re-seeding of pasture.
- **Lower stocking rates** to prevent overgrazing, which leads to poor forage, wildlife habitat loss, soil erosion, weed problems and eventually lower profitability.
- **Trees and hedges** to diversify the soil cover and habitat and improve productivity and resilience against severe weather events.

DONE WELL, THESE PRACTICES CAN:

- **Lower fixed costs and operational costs (feed, fuel, fertiliser, labour),** which offset the decrease in milk yields driven by a less intensive milking regime.
- **Improve animal welfare.**
- **Improve farmers' wellbeing** through reduced working hours.
- **Increase soil health.**
- **Lower negative impacts on water and air quality.**
- **Lower greenhouse gas emissions.**

4.8% **of UK dairy farmers ceased production in 2023 alone**

10% **of dairy producers stated they are likely to cease production by 2025**

23% **of dairy producers were unsure if they will remain operational after 2025**

Source: AHDB; NFU survey

MARKET DRIVERS AND FINANCIAL MECHANISMS FOR REGENERATIVE DAIRY

In recent years, there has been a growing effort from the UK Government, supply chain stakeholders, and banks to look for ways to support dairy farmers' adoption of regenerative practices. This effort is based to the recognition that farming is operating in a system vulnerable to shocks, stresses, and price pressures, many of which are directly caused or made worse by climate change and the loss of nature, all of which threaten the stability of dairy supply chains.

Supply chain stakeholders *(for more information, see 'Library of levers' section page 15)*

- Farm gate milk prices are not homogeneous, with different price premiums paid for milk based on fat and/or protein content above a minimum level, hygiene levels, and for organic milk. Processors/ retailers are showing an increased focus on sustainability and tend to pay milk price premiums which have a direct positive effect on regenerative farmers' incomes. First Milk's Regenerative Farming Programme, which was built in partnership with Nestle, provides a price premium of 0.5p/l to farmers using regenerative practices and is due to increase to 1p/t this year to encourage further ambition[3].
- Supply chain initiatives such as Arla 360, Yeo Valley, and Nestle are focusing on improving animal welfare and reducing negative environmental impacts through increased funding and research and development.
- First Milk and Yeo Valley have also established the Naturally Better Dairy scheme, which incentivises farmers to adopt sustainable farming practices and has developed a regenerative farming score for its members.

Banks: Banks increasingly support farmers' transition to regenerative agriculture to (i) decrease the risk of severe weather events impacting farmers' repayment capacity, (ii) accompany the transition to a model that can be more profitable for farmers, and (iii) decrease climate and nature impacts.

- The transition period is expected to follow a 'J-curve' in farm business profits, where profits dip and gradually recover *(for more information, see 'Financial modelling' section page 7*). Therefore, green capex loans, overdrafts and working capital loans at preferential rates seem better suited to support the transition to regenerative agriculture, ideally combined with other supply chain, governmental or philanthropic support.

Government support: Various agri-environment scheme payments are available in the UK to support practices used in regenerative farming *(for more information, see 'Library of levers' section page 15).* No specific dairy package is available, and the choice of options will be based on the needs and ambitions of each farm. For instance:

- Latest agri-environmental support options and payment rates (e.g. herbal leys £382/ha, low/no input grassland up to £215/ha) are available to dairy farmers in England. Scotland and Wales are yet to announce details of relevant new options and payment rates.
- Grants available for housing and slurry equipment/facilities for ammonia emissions reduction to support farmers meet the regulatory requirements, particularly in Nitrate Vulnerable Zones.

[3] By comparison, in 2023, AHDB 5-year rolling average UK farmgate 'all-milk' price was £0.341 per litre

DAIRY SECTOR TRANSITION FINANCIAL MODELLING

This section presents the financial implications of the transition from conventional (or high inputs, high outputs agriculture) agriculture to regenerative agriculture for 3 theoretical UK dairy farms:

- 'Housed intensive' (high-yielding but with high costs)
- Partly housed and grazed' (most typical in the UK)
- 'Extensively grazed' (lower-yielding but with lower costs)

CONVENTIONAL DAIRY FARM TYPE	REGENERATIVE FARM TYPE
Housed intensive (AYR)	
Partly housed and grazed (AYR)	Regenerative housed and grazed (AYR)
Extensive grazing (BC)	Regenerative grazed dairy (BC)

AYR = All year round calving BC = Block calving

The 3 theoretical UK dairy farms and the financial modelling of their transition to regenerative agriculture are based on national datasets, existing literature and scientific evidence. They have been prepared by Cumulus and Andersons, and commissioned by WWF, with the aim to identify **the implications in terms of revenue, costs and financing needs of the implementation of the key regenerative dairy farming practices (as listed on page 5), and** to give a sense of size and timing of the "fallow" year transitions (early years where output is low, investment costs high, and learning curves steep) for a typical farm that would fit this "archetype" for transitions. The model is based on **conservative financial assumptions**, including current levels of available support and recognising that more support is needed.

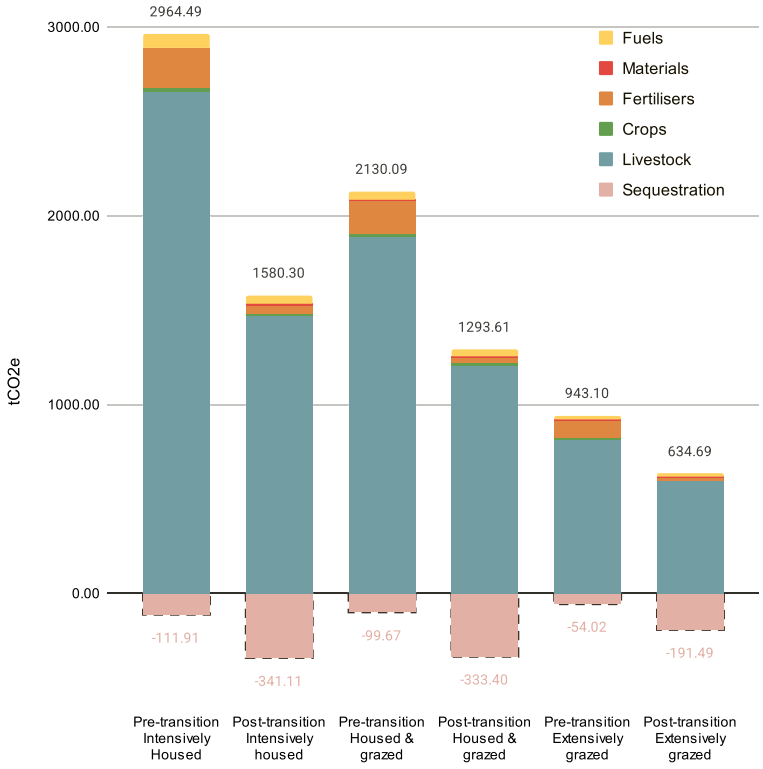
For more information on the 3 theoretical farms and the assumptions behind the financial model, please refer to the annex and WWF's report "Regenerative Dairy: Modelling the Transition Costs for Farmers in the UK"

A NOTE ON THE CARBON AND NATURE IMPLICATIONS

Using the 3 modelled dairy farm scenarios, Farm Carbon Toolkit calculated carbon emissions pre- and post-transitioning and assessed the current knowledge around the selected regenerative farming practices' impacts on nature:

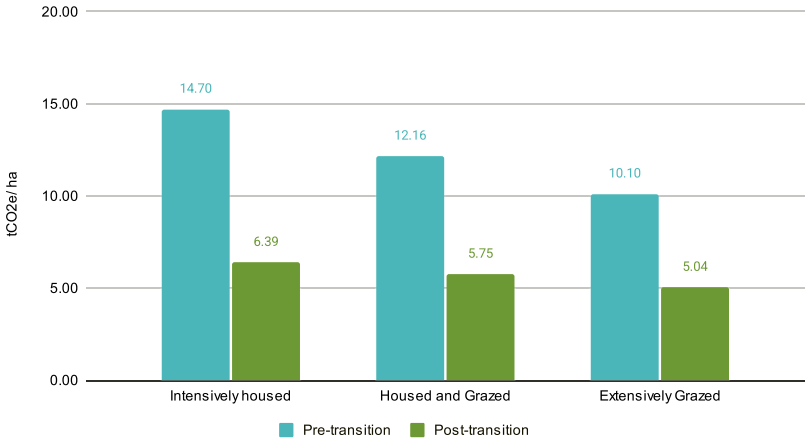
- **Carbon benefits**: As shown in Figures 1 and 2, by transitioning to more regenerative farming practices, the 3 modelled farms would reduce their carbon footprints: Total tCO2e (including sequestration) for the whole farm and on a per hectare basis would reduce by 56% (removing 1613.39 tCO2e), 53% (removing 1070.21 tCO2e) and 50% (removing 445.87 tCO2e) for the intensively housed, housed and grazed and extensively grazed farms, respectively. These results highlight the combined potential for large reductions in carbon footprints when implementing multiple different regenerative practices across different production systems.

FIGURE 1: TOTAL tCO2e BY CATEGORY FOR WHOLE FARM FOOTPRINT



- **The nature benefits** are numerous and include:
  - Lower nutrient pollution of water and soil through lower stocking rate and reduced fertilisers application
  - Enhanced water retention and regulation and soil formation, through plant diversity and rotational grazing
  - Higher pollinator abundance and diversity through diverse grasslands leys.

FIGURE 2: CARBON BALANCE PER HECTARE (INCLUDING SEQUESTRATION)



Source: Farm Carbon Toolkit

For more information on the carbon and nature implications, see 'Library of levers' section page 15 or Farm Carbon Toolkit's report 'The impacts on carbon and nature of transitioning to regenerative dairy farming practices'.

DAIRY FARM TRANSITION:

FROM HOUSED INTENSIVE TO PARTLY HOUSED AND GRAZED FARM

KEY ASSUMPTIONS

Pre-transition farm type:
Housed intensive

- Large farm (194 ha) with land used for silage, feed crop and cash crop production.
- Cows housed inside all year round and fed silage and concentrates.

Post-transition farm type:
Partly housed and grazed farm

- Cattle moved to be rotationally grazed, 4 days in summer and off pasture in winter.
- Farm split into paddocks for grazing & land for feed crops & forage production.
- Housing focused on circularity, improved slurry storage and usage, use of low-input home-grown feed and bedding.

MODELLING ASSUMPTIONS DRIVING CAPITAL AND OPERATIONAL COSTS

Infrastructure: cow tracks, fencing, water pipes and troughs for grazing. Upside: housing and dairy parlour used less intensively than before transition.

Machinery: electric fencing and direct drills to help rotations.

Feed: whilst feed use remains high during transition as cows bred for intensive management are still retained within the herd in the early years and the farm is still shifting to greater forage production. Drops by ~40% in year 7.

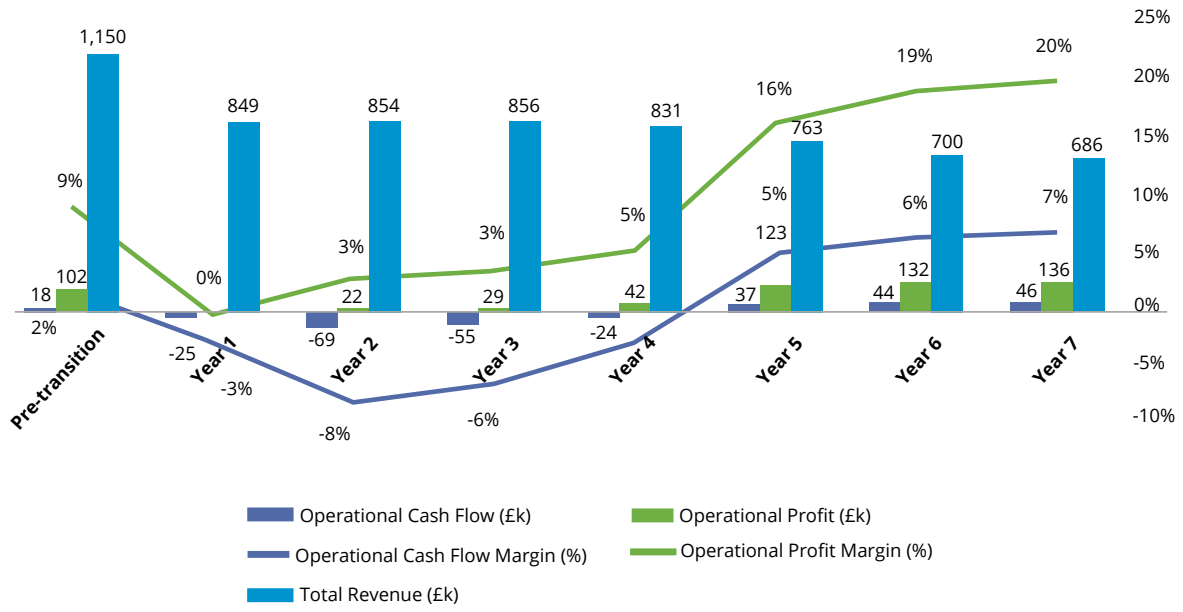
Debt: No additional "transition" debt has been modelled. But it is likely that farmers will expect financial support from their banks in the form of transition loans.

Change herds: it would take 7-years of breeding to calf and rear enough heifers to replace the entire herd with cross-bred cows that are better suited to grazing for longer proportions of the year. Herd size reduced by 25%

Land management: All woodland and hedgerows would be planted in the first year. Reseeding temporary grassland with herbal sward take 5 years for 25% of sward to seeded every year.

Labour: continue to rely on labour for farm changes, but after 4 years, less labour intensive with less cows.

FINANCIAL IMPACTS OF THE TRANSITION



Time period: minimum of 7 years, i.e. time to change the breeding within the dairy herd and seed pasture.

Capital investments: over the first four years the transition would cost ~£800/ha, to pay for investment in land use, breed shifts, infrastructure and equipment, partly financed by cow sales and grants.

Profit implications:

- Revenues decrease owing to the less intense milking regime and the reduction in herd size, partly offset by the milk premium for regenerative milk
- After a dip in profits in cash flow and operational profit in the first 4 years driven by the change in farming system, operational profit and cash on an absolute and margin basis increase above pre-transition levels (reaching £136k and 20% in Year 7, respectively). This is driven by (i) a significant decrease in operational expenditures due to a lower use of fertilisers, fuel and animal feed, partly offset by (ii) a decrease in revenue due to a less intensive use of land and milking regimes.

Looking ahead: Although not modelled we also expect profit and cash flow to increase relative to pre-transition due to greater resilience to severe weather.

Sensitivity analysis: The sensitivity analysis shows that, post transition, operational profit is more resilient to negative shocks to milk prices or fertiliser and feed costs into the future.

OPERATIONAL PROFIT (K£)	PRE-TRANSITION	Δ VS BASE CASE	POST-TRANSITION	Δ VS BASE CASE
Base Case	**102**	-	**136**	-
-10% milk prices	-0	-100%	79	-48%
+10% fertiliser prices	97	-30%	135	-11%
+10% feed price	71	-49%	125	-18%

See 'Library of levers' section page 15 for **more information on the financial implications of the implementation of different regenerative farming practices**, including government and market support mechanisms available to finance them.

DAIRY FARM TRANSITION 2:

PARTLY HOUSED FARM ADOPTS REGENERATIVE PRACTICES

KEY ASSUMPTIONS

Pre-transition farm type:
Partly housed and grazed

- Representative of typical dairy farm in UK that is mixed (~167 ha).
- All year round calving dairy herd with cows being grazed for part of the year and housed for the winter.

Post-transition farm type:
Partly housed and grazed farm

- Cattle grazed on low-input pasture for most of the year and housed during the winter months.
- Housing focused on circularity, improved slurry storage and usage, and use of low-input home-grown feed and bedding.

MODELLING ASSUMPTIONS DRIVING CAPITAL AND OPERATIONAL COSTS

Infrastructure and machinery: No drastic change, given farm already set up for part housing/ grazing. Gradual decline over transition as intensity and stocking reduce. intensively than before transition.

Feed: A gradual reduction in feed use over the 7 years.

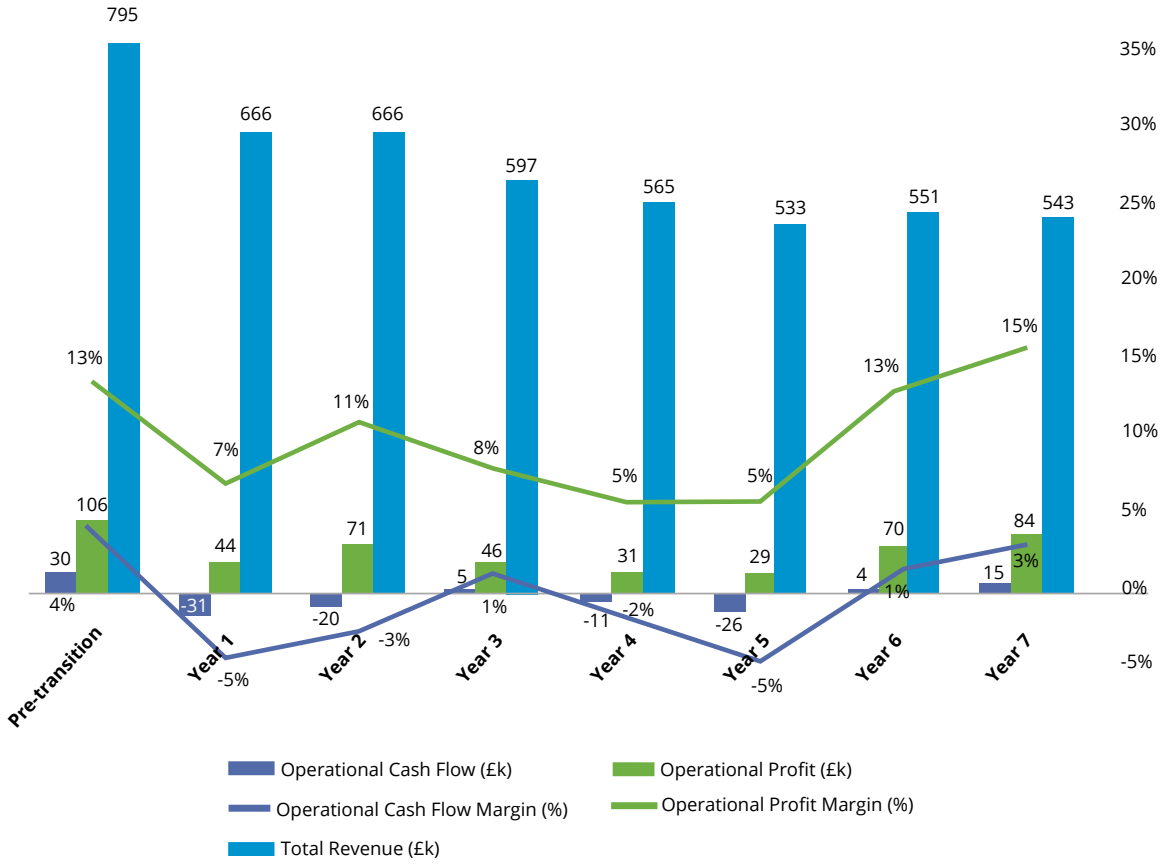
Debt: No additional "transition" debt has been modelled. But it is likely that farmers will expect financial support from their banks in the form of transition loans.

Change herds: Reduce cow numbers. It would take 7-years of breeding to calf and rear enough heifers to replace the entire herd with cross-bred cows that are better suited to grazing for longer proportions of the year. The replacement rate reduces incrementally over the transition due to lower stocking. Herd size reduced by 23%.

Land management: All woodland and hedgerows would be planted in the first year. Cropland converted to temporary grassland, with reseeding taking 5 years allowing for 25% of sward to be reseeded. Additional area put into permanent pasture.

Labour: decrease by small amounts over transition, given pre-transition labour is for managing this type of DF. Training to do sustainable practices.

FINANCIAL IMPACTS OF THE TRANSITION



Time period: minimum of 7 years, i.e. time to change the breeding within the dairy herd and seed pasture.

Capital investments: over the first four years the transition would cost ~£800/ha, to pay for investment in land use, breed shifts, infrastructure and equipment, partly financed by cow sales and grants.

Profit implications:

- Revenues decrease owing to the less intense milking regime and the reduction in herd size, partly offset by the milk premium for regenerative milk.
- Costs incurred 'up-front' whilst savings are slower to materialise. Profit remains positive but drops in Years 1 & 5, due to upfront costs of establishing leys plus drop in milk with fewer cows, before cost-savings from lower external inputs is fully seen. By Year 7, absolute operational profit is on an upward trajectory but remains lower than before the transition, though operational margin is supposed to be higher than pre-transition, meaning that for each £ of revenues, profit generated is higher.

Looking ahead: Although not modelled we also expect profit and cash flow to increase relative to pre-transition due to greater resilience to severe weather.

Sensitivity analysis: The sensitivity analysis shows that, post transition, operational profit is more resilient to negative shocks to milk prices or fertiliser and feed costs into the future.

OPERATIONAL PROFIT (K£)	PRE-TRANSITION	Δ VS BASE CASE	POST-TRANSITION	Δ VS BASE CASE
Base Case	**106**	-	**84**	-
-10% milk prices	34	-73%	37	-63%
+10% fertiliser prices	102	-17%	82	-18%
+10% feed price	83	-33%	75	-25%

See 'Library of levers' section page 15 for **more information on the financial implications of the implementation of different regenerative farming practices**, including government and market support mechanisms available to finance them.

DAIRY FARM TRANSITION 3:

FULLY GRAZED FARM ADOPTS REGENERATIVE PRACTICES

KEY ASSUMPTIONS

Pre-transition farm type:
Fully grazed farm

- Smaller dairy farm (~88 ha), maximising output
- High fertiliser use & silage production
- Farm relying on bought in concentrates
- Livestock grazed for longer than average
- All year round calving dairy herd

Post-transition farm type:
Fully grazed farm

- Mob-grazed with daily moves in the summer and less frequent (~every 4 days) in the winter
- Flexible milking regime
- Herbal leys are grown on the temporary pasture
- Feed imports are kept low and no or low inputs are used on the farm

MODELLING ASSUMPTIONS DRIVING CAPITAL AND OPERATIONAL COSTS

Infrastructure and machinery: reduce incrementally as the farmer reduces the need for contractors, fuel, electricity and machinery. Reduction stabilises in year 5.

Feed: Feed use halves per head from year 5 onwards, as pasture is reseeded and forage production stabilises.

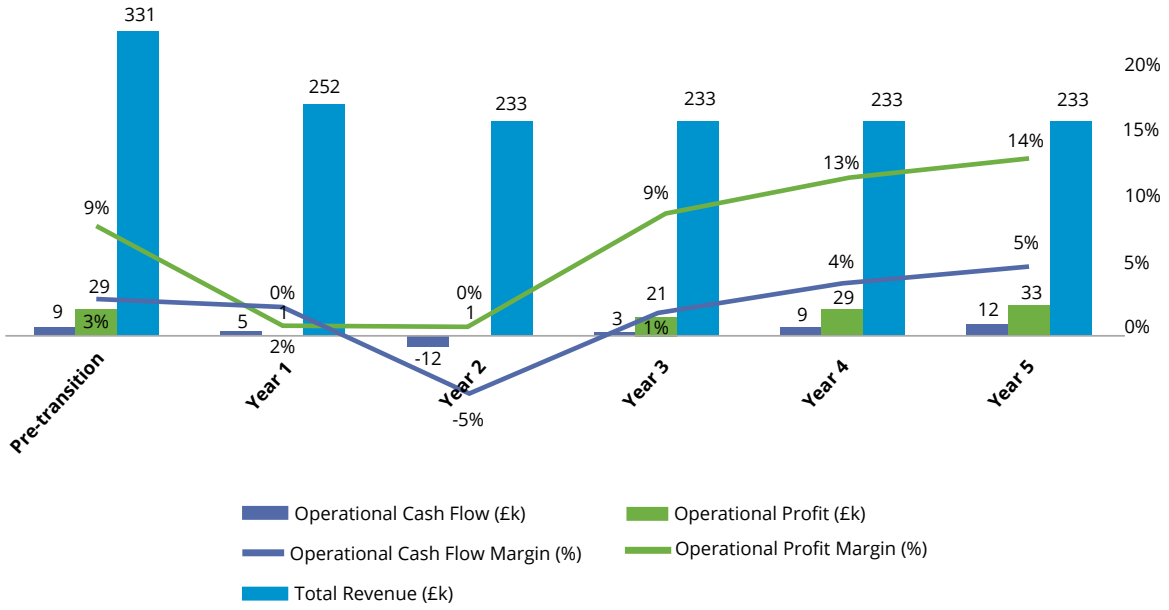
Debt: No additional "transition" debt has been modelled. But it is likely that farmers will expect financial support from their banks in the form of transition loans.

Change herds: Assumed cow type already on this farm would be well suited to a lower input system, though likely to use less cows (24% reduction in herd size). A grazing based Friesian or cross-bred of around 550kg of bodyweight. Replacement rates will be higher in the early years of the transitions as the farm replaces old stock with new cross-bred varieties.

Land management: All woodland would be planted in the first year and cropland transitioned to grassland. Reseeding the temporary grassland with herbal sward would take 5 years allowing for 25% of the sward to be seeded annually over this period.

Labour: immediate reduction due to fewer cows. May need to invest in training and change advisory.

FINANCIAL IMPACTS OF THE TRANSITION



Time period: minimum of 7 years, i.e. time to change the breeding within the dairy herd and seed pasture.

Capital investments: over the first four years the transition would cost ~£800/ha, to pay for investment in land use, breed shifts, infrastructure and equipment, partly financed by cow sales and grants.

Profit implications:

- Revenues decrease owing to the less intense milking regime and the reduction in herd size, partly offset by the milk premium for regenerative milk.
- Costs incurred 'up-front' whilst savings are slower to materialise. Profit remains positive but drops in Years 1 & 5, due to upfront costs of establishing leys plus drop in milk with fewer cows, before cost-savings from lower external inputs is fully seen. By Year 7, absolute operational profit is on an upward trajectory but remains lower than before the transition, though operational margin is supposed to be higher than pre-transition, meaning that for each £ of revenues, profit generated is higher.

Looking ahead: Although not modelled we also expect profit and cash flow to increase relative to pre-transition due to greater resilience to severe weather.

Sensitivity analysis: The sensitivity analysis shows that, post transition, operational profit is more resilient to negative shocks to milk prices or fertiliser and feed costs into the future.

OPERATIONAL PROFIT (K£)	PRE-TRANSITION	Δ VS BASE CASE	POST-TRANSITION	Δ VS BASE CASE
Base Case	**29**	-	**33**	-
-10% milk prices	-2	-106%	12	-69%
+10% fertiliser prices	27	-25%	32	-19%
+10% feed price	22	-39%	30	-24%

See 'Library of levers' section page 15 for **more information on the financial implications of the implementation of different regenerative farming practices**, including government and market support mechanisms available to finance them.

LIBRARY OF LEVERS

FINANCIAL, MARKET, CARBON AND NATURE IMPLICATIONS OF KEY REGENERATIVE DAIRY FARMING PRACTICES

The below tables aim to show the financial implications, the government and market support, and the carbon and nature impacts of each identified regenerative dairy farming practices, or "levers".

SECTION 1: FINANCIAL IMPLICATIONS AND GOVERNMENT AND MARKET SUPPORT

LEVER	CASH FLOW ITEM	FINANCIAL IMPLICATION	GOVERNMENT SUPPORT (AS OF FEBRUARY 2025)			MARKET SUPPORT (AS OF FEBRUARY 2025)
			ENGLAND	SCOTLAND	WALES	
Rotational and increased grazing	Capital expenditures ("Capex")	Investment in new infrastructure to support an increase in grazing of cows on farm. The aim is to produce 35 paddocks for a rotational grazing area. Capital Costs can include: • **Fencing** – perimeters 2 strand barbwire £7.50-10m, internals 1 strand electric or 2 strand if mixed with youngstock grazing £5-8.50m • **Tracks** dependent on construction can be £20-52/ running metre. • **Water System** Water troughs and pipe dependent on herd size expected 32-50mm water pipe in ring mains £2.50-£3.50/m. Troughs £450/£650 each. **Total** • Fencing £300-£450/ha done. • Tracks £400-850/ha done. • Water £200-250/ha. **Total Capex:** £900-1,550/ha of land fenced and tracked.	**Countryside Stewardship Capital Grants:** Fencing (£6.34/m) Pasture pumps and pipework (£295.90/pump) Livestock drinking troughs (£152.92/trough) Pipework for livestock troughs (£3.31/m) Limits to £25,000 per SBI number per year for water quality items. **Building, equipment, and technology grants** (in line with farm improvement grants) **Skills and training grants**	**Agri-environmental and Climate Scheme:** Stock Fence (£5.50/m) Gate (£170 each) Livestock Tracks (£11 per square metre) Livestock Crossing (£222 per small bridge, £880 per large bridge) Hard Standing for Troughs and Gateways (gate relocation £230, creation of hardstanding £12.50 per square metre) Alternative Watering (abstraction point £476, various solar powered pump system options, water-powered pump system £1,350, pipework £7.77/m, stock-powered pump £450)	**Small Grants – Environment:** E563 Piped water supply (£0.90/m) E574 Water troughs (£192 each) E594 Post and rail fencing (£11.29/m) **Habitat Wales Scheme**: Additional payment for stock management (£15/ha) Additional payment for mixed grazing (£12/ha)	Arla rewards Animal Robustness (healthy cows), which includes maintaining tracks and grazing areas to support good animal health. Arla Climate Check rewards up to 2ppl dependent out improvement of Co2 emissions against a baseline. CONO cheesemakers offers a premium of € 1 per 100 litre of milk (situation 2016), subject to outdoor-grazing of 120 days (at least 6 hours a day). John Lewis Partnership – Waitrose is supporting their farmers to farm sustainable through their Waitrose Agriculture Plan through the uptake of restorative land management practices. In addition, Waitrose has partnered with digital mapping tool Land App, to gather real-time data on the environmental health of its farm, measuring progress on over 60 key sustainability metrics. This will give Waitrose an indication of the current state of biodiversity in its supply chain. M&S Select Farm programme encourages and supports farmers to measure and improve animal health and welfare and environmental outcomes. First4Milk Regenerative Farming Programme, promoting grass-based dairy farming.

LEVER	CASH FLOW ITEM	FINANCIAL IMPLICATION	GOVERNMENT SUPPORT (AS OF FEBRUARY 2025)			MARKET SUPPORT (AS OF FEBRUARY 2025)
			ENGLAND	SCOTLAND	WALES	
Rotational and increased grazing *Continued*	Opex	**Management time** of grazing rotations at 2 hours per week. Some herding time to bring cows in and out could be up to 1 hour per day. **Management program** for grass management £100/year. **Corrective mowing** of pastures to correct grazing at times. Expected 1.5 times a year at £30/ha.	**Countryside Stewardship:** SP6 Cattle grazing supplement (£59/ha) New Cashflow item: Grants. Or add training under Opex	-	-	Tesco Sustainable Dairy Group addresses milk pricing by offering farmers an independently set price for their milk. Nestle Action and points matrix linked to minimum standard to be part of group and % of premium farm. Full farm soil carbon recorded at the start of the program.
	Revenue	Change in revenue very dependent on management pre and post change of operation. Standard figures moving from to rotational grazed would see grass grown increase by 15% and utilisation (less waste) increase by 50%. Net revenue at cost of forage £350-650/ha. A change in cow performance and feed rates could increase this. Change from housed cows to grazing sees overheads of silage making and slurry spreading £750/ha saved with a balance of drop in revenue due to lower yielding cows.	-	-	BP and Greening payment rates in 2023 and 2024: Net £120.20 and redistributed £111. Between 2025 and 2029 the BPS will be reduced, potentially by a linear reduction of 20% per year, with final payments in 2028. During this period, it is anticipated that Sustainable Farming Scheme payments will be stepped up.	

LEVER	CASH FLOW ITEM	FINANCIAL IMPLICATION	GOVERNMENT SUPPORT (AS OF FEBRUARY 2025)			MARKET SUPPORT (AS OF FEBRUARY 2025)
			ENGLAND	SCOTLAND	WALES	
Less intensive milking regimes	Opex	Options range from OAD ("Once a day"), TAD ("Twice a day"), Flexible Milking, rotations of OAD & TAD (FM). Three times a day ("TTAD"). TAD is standard in the UK dairy system. Less intensive milk regimes reduces the yield demand on a cow and means purchased feed can be reduced. Leads to lower vet & med, lower replacement rates. Expect lowering of variable costs of £700/cow. Overheads need to be lowered by £200/cow.	-	-	-	Milk Solids Contract will reward higher % B Fat and % Protein
	Revenue	OAD – 43% Reduction in milk yield litres, 35% reduction in milk solids yield. Expect 3000l-4000L/Cow. FM – Yield reduction ranges 10-20% dependent on how implemented and when in the lactation Going from (TTAD) back to (TAD) would expect a reduction in yield of 15%.				

LEVER	CASH FLOW ITEM	FINANCIAL IMPLICATION	GOVERNMENT SUPPORT (AS OF FEBRUARY 2025)			MARKET SUPPORT (AS OF FEBRUARY 2025)
			ENGLAND	SCOTLAND	WALES	
Change in cow breeds	Capex	Options to change herd breed range from 'buy and sell' or breed change over time. Cows are the working capital of a dairy farm. It would be seen as a big decision to change the herd on a dairy farm. It does come with costs and risks listed out below. Buy and Sell options expect 3-5% commission on sale and £30 haulage and sale fees, so £105 cost per cow. Expect 15-20% of cows to be non-saleable and cull price. This is just a cost of swapping a herd at any point. Dependent on breed choices it is possible to trade down e.g. Pedigree Holstein £1.8k to Jersey Cross £1.3k and keep or increase numbers with same amount of capital after costs. TB, opportunity, and Bio Security will impact decision and timing. Breeding to change breed is more long winded. From point of decision to change breeding full herd change will take 7 years. Some mix of selling youngstock or some cows could speed up the process.	**Countryside Stewardship:** SP6 Cattle grazing supplement (£59/ha)	-	-	-

LEVER	CASH FLOW ITEM	FINANCIAL IMPLICATION	GOVERNMENT SUPPORT (AS OF FEBRUARY 2025)			MARKET SUPPORT (AS OF FEBRUARY 2025)
			ENGLAND	SCOTLAND	WALES	
Change in cow breeds *Continued*	Opex	Challenges of breed change over time come from different management practices needed for different types of cows. This can compromise/ add complication to established system. Expect to see higher cow replacement rates of cows suited for more intensive systems. Lower yielding cows can be overfed, over-serviced with costs as part of a herd of higher yielding cows. Time taken to correct the system and lower overheads to suit the new cow type. Extra youngstock carried can speed up transition but add rearing costs in the short term. The financial model shows a decrease in livestock gross margin per cow of up to £200 in the first couple of years, returning to previous gross margin levels from Year 5.	-	-	-	-
	Revenue	Some revenue lost during change of breed with buy and sell. Suggest 1 month turn round. Some output loss expected linked to above with changing breed.				

LEVER	CASH FLOW ITEM	FINANCIAL IMPLICATION	GOVERNMENT SUPPORT (AS OF FEBRUARY 2025)			MARKET SUPPORT (AS OF FEBRUARY 2025)
			ENGLAND	SCOTLAND	WALES	
Reduced application of artificial nitrogen fertilisers	Opex	Standard Nitrogen ("N") recommendations for rye grass swards at 230kg/N/Ha. At current prices that's £195/ha. Depend on clover cover in the sward, use of own slurries/FYM it is possible to reduce this to 150kg/N/ha with limited impact. N levels below 150kg/N, especially at periods like spring, will reduce output of the sward.	**Countryside Stewardship:** GS4 Legume and herb-rich swards (£382/ha) SW6 Winter cover crop (£129/ha) **Sustainable Farming Incentive[4]:** CLIG3 Management with very low nutrient inputs (£151/ha/year) CNUM1 Assess nutrient management and produce review report (£652/year) CNUM2 Legume on improved grassland (£102/ha/year)	Agri-environmental Climate Scheme: Creation of green manure (£278.16/ha) Knowledge Transfer and Innovation Fund	-	-
	Revenue	With less fertiliser the land will produce less food. This can be quantified with normal Grass production = 12.5t/DM. So value of replacing lost production with brought in feed ranges from £120-£150t. 10tDM/ha would be a good production level with 0kgN/ha applied.			-	-

[4] The Sustainable Farming Incentive was paused by the UK Government on March 12th 2025, promising a new scheme in 2026

LEVER	CASH FLOW ITEM	FINANCIAL IMPLICATION	GOVERNMENT SUPPORT (AS OF FEBRUARY 2025)			MARKET SUPPORT (AS OF FEBRUARY 2025)
			ENGLAND	SCOTLAND	WALES	
Lower stocking rates	Capex	If decision is taken to reduce stocking rates but keep the same land area then capital can be released from cows/livestock not needed. If more land was needed to keep the same livestock area then land purchases range from £6k-£20k/acre. This would need to be viewed from a long term strategic decision.	**Sustainable Farming Incentive[4]:** CLIG3 Management with very low nutrient inputs (£151/ha/year) CNUM1 Assess nutrient management and produce review report (£652/year) CNUM2 Legume on improved grassland (£102/ha/year)	-	Habitat Wales Scheme: Additional payment for stock management (£15/ha) and reduced stocking (£259/LU)	-
	Opex	Linked to lower fertiliser rates and Diverse Swards. Dependent on strategic decision of either keep livestock enterprise the same size but over larger land area then options to make this work are rent/purchase more land. Land rents could range from £100-£250/acre dependent on area and demand.				-
	Revenue	Standard stocking rates of dairy farms range from 2 to 2.5 Cows/Ha. A move to 'organic' stocking rates with no artificial N would see 25% reduction to 1.5 Cows/ha to 1.85 Cows/ha. Reduction in stocking rates with a fixed land base will see less cows on the farm. If the dairy system is not changed to decrease costs and increase profit margin then it is sensible to assume less cows will equal less profit. This could be exaggerated if gross margin is lost and overheads ("OHeads") not reduced. Model showed i. Partly housed/partly grazed farms at £3,000/cow GM. Heads £1300/Cow. ii. Fully grazed farms £2,600 GM Oheads £1,100. iii. Fully housed farms £2,000 GM, Oheads £1650/Cow. These figures can be used for simple partial budgets or use current farming system actuals to calculate lost revenue.				-

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LEVER	CASH FLOW ITEM	FINANCIAL IMPLICATION	GOVERNMENT SUPPORT (AS OF FEBRUARY 2025)			MARKET SUPPORT (AS OF FEBRUARY 2025)
			ENGLAND	SCOTLAND	WALES	
Diverse swards used	Opex	Cost of re-seeding a filed are; • **Full Re-Seed Establishment.** Seed £75/acre. Assume cultivation and seed and spray off £95/acre. 95% chance of establishment. • **Slot seeding** into existing leys Seed at lower rate £35/acre 2 direction slot seed and light roll £50/acre. Establishment assume 50% success rate. Very dependent on timing, strength of existing ley and time of year.	**Countryside Stewardship:** GS6 Management of species-rich grassland (£646/ha) GS7 Restoration towards species-rich grassland (£646/ha) GS8 Creation of species-rich grassland (£646/ha) **Sustainable Farming Incentive[4]:** CSAM3 Herbal leys (£382/ha/year) 40kgN/ha/year limit.	**Agri-environmental and Climate Scheme:** Creation of Species-rich Grassland (£754.42/ha) Restoration of Species-rich Grassland (£514.15/ha) Species-rich Grassland Management (£109.56/ha/year for management, £284.80/ha/year to support restoration/ creation)	-	Biodiversity Net Gain credits (England only) YeoValley is working with 25 of its organic dairy supply farms, the Farm Carbon Toolkit will measure the soil carbon stocks on the farms and deliver a mentoring programme on soil health and increasing soil carbon sequestration. First Milk and Nestlé are working with 30 dairy farmers across Wales to reduce soil compaction and improve water infiltration on their land, through regenerative practices such as rotational grazing of dairy herds, increasing sward grassland diversity and rooting depth, which combine to improve soil structure allowing for more water infiltration.
	Revenue	Little impact with slot seeding. Full re-seeding takes 8 weeks of productive growth out of that current year of forage production. Assume 3t/DM lost per ha re-seed in that year. Cost £360/ha. 10% of area of farm re-seeding would be expected in a farming system anyway but if doing greater amounts impact on forage production in that year will be noticeable at that cost.			-	
Reduced cultivation	Capex	Some change in machinery policy may be needed could result in net capital sales. Linked to change in farming plan, expect to see reduction in maize and traditional cereal rotations alongside dairy units. Likely to not need plough, power harrow and drill. Could need or use contractor for surface cultivations and direct drill.	**Farming Equipment and Technology Fund:** £1000 – £25,000. Can apply for up to a total £50,000 during the lifetime of the scheme. This fund was closed on 10/1/2025. But expected to relaunch in the spring of 2025 likely to be the last round.	**Knowledge Transfer and Innovation Fund**	-	Landscape Enterprise Networks ("LENs") create local trading networks where multiple private buyers with a common interest in a landscape and in maintaining the ecosystem services it delivers are matched with groups of land managers (farmers) who can deliver these ecosystem outcomes through land management practices ("measures"). E.g. Practice no-till: £75-600/ha
	Opex	Reduced overheads linked to change in farming plan. Change in crop type considered alongside cultivation strategy.				
	Revenue	To be considered alongside wholesale change in farming system, stocking rates, crops grown and livestock enterprise size.				

[4] The Sustainable Farming Incentive was paused by the UK Government on March 12th 2025, promising a new scheme in 2026

LEVER	CASH FLOW ITEM	FINANCIAL IMPLICATION	GOVERNMENT SUPPORT (AS OF FEBRUARY 2025)			MARKET SUPPORT (AS OF FEBRUARY 2025)
			ENGLAND	SCOTLAND	WALES	
Trees and hedges	Capex	Woodland Establishment ranges from £6.5k to £8.7k ha including all site prep, sprays, planting, guards. Fencing perimeter would be on top at £8.50/m.	**Sustainable Farming Incentive[4]:** CHRW1: Assess and record hedgerow condition (£5 per 100m) CHRW2: Manage hedgerows (£13 per 100m) CHRW3: Maintain or establish hedgerow trees (£10 per 100m)	**Agri-environmental and Climate Scheme:** Management or Restoration of Hedgerows (£0.11/m/year) Laying of Hedges (£12.50/m) Planting or Replanting of Hedges (£5.40/m) Small-scale Tree and Scrub Planting (£3.00/tree or scrub) Scare and Temporary Electric Fencing (£2.46/m scare fencing, £1.69/m temporary electric fencing) Stock Fence (£5.50/m)	**Woodland creation grant schemes:** Payment range of £1,600 to £6,170 dependent on planting location. Includes payment for fencing (£8.32 per m) and management (between £70/ha and £400/ha dependent on the management year)	Landscape Enterprise Networks ("LENs") create local trading networks where multiple private buyers with a common interest in a landscape and in maintaining the ecosystem services it delivers are matched with groups of land managers (farmers) who can deliver these ecosystem outcomes through land management practices ("measures"). E.g. Plant or maintain species-rich hedgerows: £10-20/metre. Plant woodland: £11-22,000/ha. Woodland Carbon Code, voluntary but regulated scheme in England, Scotland, and Wales. Project length is up to 100 years. £10 – £20/tCO2e for Pending Issuance Units(PIU), £25-£30/tCO2e for Woodland Carbon Unit ("WCU"). Agreena carbon certificate, UK-wide 10-year scheme (€36 per certificate). Soil capital, 15-year scheme, minimum of €27.50 per certificate. Biodiversity Net Gain credits (England only)
	Opex	Within the first 5 years expect costs of £1.4k per ha over 5 years to beat up, weed spray etc.				
	Revenue	With felling for commercial 40+ years away and the presumption it is a carbon capture exercise revenue will be £0 apart from potential grants, commercial carbon credits, BNG or milk buyer premium. Lost margin from farming to be assumed on a net per ha basis. Could range from £1000/ha to £300/ha dependent on farm performance. Likely to be area of farm that will not be 100% productive as the average.				

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LEVER	CASH FLOW ITEM	FINANCIAL IMPLICATION	GOVERNMENT SUPPORT (AS OF FEBRUARY 2025)			MARKET SUPPORT (AS OF FEBRUARY 2025)
			ENGLAND	SCOTLAND	WALES	
Trees and hedges *Continued*	-	-	**Countryside Stewardship Capital Grants:** BN5: Hedgerow laying (£13.52/m) BE3: Management of hedgerows (£13/100m) TE1: Planting standard hedgerow tree (£19.06 per tree) TE2: Planting standard parkland tree (£123.94 per tree) TE4: Supply and plant tree (£1.72 per tree) TE6: Tree guard (tube and mesh) (£3.95 per guard) TE7: Tree guard (wood post and rail) (£109.64 per guard) WD6: Creation of lowland wood pasture (£544/ha) WD12: Creation of upland wood pasture (£544/ha) England Woodland Creation Offer ("EWCO") (up to £10,200 per ha)	**Forestry Grant Scheme:** Agroforestry (150-200 trees/ ha, initial payment £2,790/ha, annual maintenance £72/ha/year) (300-400 trees/ ha, initial payment £5,400/ha, annual maintenance £126/ha/year) Woodland Creation (payment rates dependent on woodland type) Sustainable Management of Forest options – Low Impact Silvicultural Systems (£30/ha/year) Sustainable Management of Forest options – Livestock Exclusion (£43/ha/year) Sustainable Management of Forest options – Woodland Grazing (£100/ha/year)	**Small Grants – Environment, Hedgerow Creation:** E900 Planting New Hedges for Pollinators (£4.50/m) E931 Post and Wire Fencing with Stock Netting (£5.56/m) E608 Tree Shelter (60cm with stake) (£1.24 each) E610 Tree Standards (no fencing) (£11.25 each)	-

SECTION 2: CARBON AND NATURE IMPLICATIONS

The carbon implications have been calculated by Farm Carbon Toolkit based on the 3 theoretical dairy farms introduced on page 9 of this guidance. The nature implications are based on a literature review carried out by Farm Carbon Toolkit. For more information on the carbon and nature implications of dairy regenerative farming, please refer to 'Farm Carbon Toolkit, 2025. *The impacts on carbon and nature associated with transitioning to regenerative dairy farming practices*'

LEVER	LEVER IN FINANCIAL MODEL	CARBON IMPLICATIONS, BASED ON A WHOLE SYSTEM CHANGE OF THE 3 THEORETICAL FARMS[5]	NATURE IMPACTS (BASED ON LITERATURE)
Rotational and increased grazing	• Introduction of rotational grazing on permanent pasture areas resulting in a 0.1% increase in soil organic matter over 5 years	**Carbon sequestration** – removals of: • IH: -125.5 tCO2e for 75.66 ha; 36.8% of total post-transition sequestration • HG: -134.4 tCO2e for 81 ha; 40.3% of total post-transition sequestration • EG: -89 tCO2e for 53.68 ha; 46.5% of total post-transition sequestration Additional associated investment in fencing materials for rotational grazing replacements and emissions associated with material production: • IH: 5km fencing materials = +10.2 tCO2e • HG: 1.25km fencing materials = +2.6 tCO2e • EG: N/A – assumption is farm already has extensive fencing materials	• **Nutrient leaching reduction**: Rotational grazing supports higher stocking rates and longer grazing periods, reducing nutrient leaching per kg of liveweight produced. • **Increased earthworm abundance**: Rotational grazing significantly boosts earthworm populations, which improve soil structure and nutrient cycling. • **Enhanced dung beetle populations**: More manure in fields supports dung beetles, which help decompose dung, control pests, and reduce greenhouse gas emissions. • **Weed control**: Rotational grazing reduces weed species and increases the cover of beneficial grasses like perennial ryegrass.
Less intensive milking regimes	See "**Change in cow breeds"**	See "**Change in cow breeds"**	No impact on nature found
Change in cow breeds	• IH: Reduction of 31% in stocking rate and 30% in milk yield • HG: Reduction of 30% stocking rate and 17% in milk yield • EG: Reduction of 22% stocking rate and 17% in milk yield • All: Reduced concentrate feeding (more milk produced from forage)	Savings of: • IH: 1183.53 tCO2e; -44% reduction of emissions associated with animals, feed and bedding. 85.5% of total emissions reduction • HG: 683.62 tCO2e; -36% reduction of emissions associated with animals, feed and bedding; 81.7% of total emissions reduction • EG: 222.17 tCO2e; -27% reduction of emissions associated with animals, feed and bedding; 72% of total emissions reduction	No impact on nature found

[5] It is important to note that, although the carbon implications are here broken down by lever, these models were created on a whole enterprise basis, incorporating multiple practices at once to model the transitions in order to align with the financial model. Therefore, certain emissions reductions could be associated with multiple practices or a reduction in emissions in one category and an increase in emissions in another category. Hence, it is important to recognise that not all consequences of the practice changes may be reflected in the emissions values.

LEVER	LEVER IN FINANCIAL MODEL	CARBON IMPLICATIONS, BASED ON A WHOLE SYSTEM CHANGE OF THE 3 THEORETICAL FARMS[5]	NATURE IMPACTS (BASED ON LITERATURE)
Reduced application of nitrogen fertilisers	• Reduced N application rates on crop areas (-45.5%) • Reduced N on temporary (-100%) and permanent pastures (-66.7%)	**Carbon sequestration** – removals of: • Intensively Housed ("IH"): -125.5 tCO2e for 75.66 ha; or 36.8% of total post-transition sequestration • Half Housed Half Grazed ("HG"): -134.4 tCO2e for 81 ha; or 40.3% of total post-transition sequestration • Extensively Grazed ("EG"): -89 tCO2e for 53.68 ha, or 46.5% of total post-transition sequestration	• **Lower diffuse water pollution**: Excess Nitrogen fertiliser leads to nitrogen leaching losses (NO3-, NH4+, and NO2-), which can contaminate water bodies. • **Greenhouse gas emissions**: High N fertiliser use contributes to direct and indirect emissions of nitrous oxide (N2O) and ammonia (NH3), both potent greenhouse gases. • **Phosphorus losses**: Reducing N fertiliser rates can also decrease soluble phosphorus losses, which helps in lowering water pollution. • **Carbon dioxide ("CO2") emissions**: Lower fertiliser use reduces CO2 emissions associated with fertiliser production and application.
Lower stocking rates	See "**Change in cow breeds"**	See "**Change in cow breeds"**	Lowering stocking rates on farms can have several positive environmental impacts: • **Reduced nutrient leaching and water pollution**: Lower stocking rates decrease the amount of excreta and manure, leading to reduced nitrogen (NO3-, NH4+, and NO2-) leaching losses. • **Lower greenhouse gas emissions**: This reduction also results in decreased direct and indirect emissions of nitrous oxide (N2O) and ammonia (NH3), methane (CH4) and CO2. • **Decreased phosphorus and sediment losses**: Particulate and soluble phosphorus losses, along with associated sediment losses, can be reduced by up to 30%. • **Improved water quality**: Faecal indicator organisms (FIO) and biological oxygen demand (BOD) in water can be reduced by up to 20%, indicating lower organic matter pollution.

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LEVER	LEVER IN FINANCIAL MODEL	CARBON IMPLICATIONS, BASED ON A WHOLE SYSTEM CHANGE OF THE 3 THEORETICAL FARMS[5]	NATURE IMPACTS (BASED ON LITERATURE)
Diverse swards used	• Planting herb rich swards in temporary pasture areas using modelled data from countryside stewardship option (GS4) • Planting legume and herb rich swards also contributes to the ability to reduce N on temporary pasture areas (reducing N fertilisers without this action would result in reduced production on temporary pasture areas with consequent higher requirement for supplementary feeds or a further reduction in stocking rate).	**Carbon sequestration** – Additional removals of: • IH: -68.6 tCO2e for 50.44 ha; 20.1% of total post-transition sequestration • HG: -72.5 tCO2e for 53.3 ha; 21.7% of total post-transition sequestration • EG: -34.7 tCO2e for 25.52 ha; 18.1% of total post-transition sequestration	Increasing plant diversity in grasslands offers numerous environmental benefits: • **Improved nitrogen efficiency**: Multispecies leys enhance nitrogen use and provide legacy effects for subsequent crops. • **Minimize nutrient losses**: Reduce nitrate leaching and nutrient runoff. Studies have shown that multi-species pastures yield higher biomass and biological nitrogen fixation compared to traditional ryegrass-white clover pastures, especially under irrigation. • **Weed suppression**: Diverse plant species help suppress weeds naturally. • **Enhanced forage quality**: Diverse forage improves the nutritive value for grazing livestock. • **Ecosystem multi-functionality**: A greater number of species support multiple ecosystem functions like nutrient cycling, carbon sequestration, pollination, soil formation, water regulation, and biodiversity support.
Reduced cultivation	• Change from ploughing and drilling to direct drill for crop areas • HG and EG had reduced crop areas associated with an increase in grassland and woodland.	Savings of: • IH: 5.58 tCO2e; -37% reduction of emissions from fuels used on crop areas = 0.4% of total emissions reduction • HG: 3.09 tCO2e; -35% of fuels used on crop areas = 0.4% of total emissions reduction • EG: 2.73 tCO2e – Crop areas were removed from the EG transition; 100% reduction of fuels on crop area = 0.9% of total emissions reduction	Reduced tillage systems can significantly improve biodiversity and soil health on farms: • **Enhanced biodiversity**: Reduced soil disturbances improve the survival and functional diversity of ground beetles and spiders, supporting predatory arthropod communities that provide natural pest control. • **Improved soil nutrients and structure**: Reduced tillage increases nutrients in the topsoil, including phosphorus, potassium, and fungal biomass. Preserving good soil structure improves water infiltration rates, reducing particulate phosphorus and sediment loss. • **Reduced nitrogen leaching**: Nitrogen leaching losses can be reduced by up to 20%, with higher reductions where manures are applied.

[5] It is important to note that, although the carbon implications are here broken down by lever, these models were created on a whole enterprise basis, incorporating multiple practices at once to model the transitions in order to align with the financial model. Therefore, certain emissions reductions could be associated with multiple practices or a reduction in emissions in one category and an increase in emissions in another category. Hence, it is important to recognise that not all consequences of the practice changes may be reflected in the emissions values.

LEVER	LEVER IN FINANCIAL MODEL	CARBON IMPLICATIONS, BASED ON A WHOLE SYSTEM CHANGE OF THE 3 THEORETICAL FARMS[5]	NATURE IMPACTS (BASED ON LITERATURE)
Trees and hedges	• Woodland area increase in size for the 3 farms • An increase in woodland areas was associated with: IH: A reduction in temporary pasture area; HG: A reduction in cropland area and a slight increase in temporary pasture area; EG: A reduction in cropland area and a slight increase in permanent pasture area • This has knock on impacts for silage and crop production for the three dairy enterprises.	-	Increasing the extent and proper management of trees and hedgerows on farms can have several significant environmental benefits: • **Habitat for wildlife and pollinator support**: Trees and hedgerows provide essential habitats for both functionally important and threatened species, enhancing biodiversity. Reduced cutting intensity of hedgerows increases flower and berry production, benefiting pollinators and overwintering wildlife. • **Carbon storage**: They contribute to carbon sequestration, helping mitigate climate change. • **Soil protection**: Hedgerows reduce sediment and nutrient losses by trapping surface runoff and protecting soils from wind erosion.

[5] It is important to note that, although the carbon implications are here broken down by lever, these models were created on a whole enterprise basis, incorporating multiple practices at once to model the transitions in order to align with the financial model. Therefore, certain emissions reductions could be associated with multiple practices or a reduction in emissions in one category and an increase in emissions in another category. Hence, it is important to recognise that not all consequences of the practice changes may be reflected in the emissions values.

CASE STUDY

SOPHIE GREGORY, HOME FARM, DORSET

FARM INTRODUCTION

- Size: 1,400 acres / 566 ha (300 acres / 121 ha arable).
- Herd: 400 mainly Irish Friesian cows.
- Type: Partially housed; Rented farm.
- Milk buyers: Arla, McDonalds, Tesco.
- 2021 Dairy Woman of the Year (Royal Association of British Dairy Farmers).
- As a first-generation farmer, started as organic farmer because of higher financial returns at the time and access to grants.

KEY REGENERATIVE FARMING LEVER

- Certified organic.
- Changing from the mixed breed herd initially purchased towards Irish Friesians.
- Trials of regenerative practices, including herbal leys and mob grazing.

"We all, as a group [of farmers], want to do the right thing. We want to open our doors and let others understand, but some of us don't know how to do that, and some of us need the confidence that it's going to be listened to."

HIGHLIGHTS FROM THE FARM'S ADOPTION OF REGENERATIVE PRACTICES

Transition to organic farming

- Started with no direct farming experience.
- Financed their venture through a share-farming plan, eventually buying out their partner: Initially acquired 20% of the business with own funds, increased to 50% within 5 years using farm's cash flow, and 100% thereafter.
- The farm became organic in 2015, just 18 months after they took over.
- The transition was costly, but they managed through grants and strategic investments.

Financial Management: As a first-generation farmer, Sophie funded the establishment and further development of the farm using creative financing including share farming, overdraft facilities, grants, off-farm employment and frugal living.

Animal Management: Initial challenges with cow breeds and fertility were addressed by focusing on suitable breeds and maintaining a productive herd.

Balancing regenerative agriculture with economic requirements and carbon sequestration can be difficult: Renewing old pasture can be problematic, as killing the old growth with herbicide is prohibited under organic rules, but ploughing releases soil carbon. While baseline carbon assessments are useful, Sophie believes that the carbon market should be better regulated, and farmers should enter it with care.

FUTURE GOALS AND ADVOCACY:

She emphasizes the need for education of children about food, farming and the environment, training in agriculture, and promoting it as a viable career path. Sophie is building a classroom on the farm to educate future farmers, supported by a grant.

Message to financial institutions: Allow more flexibility in dealing with farmers, and increase the number of local relationship managers with specific understanding of farming.

Message to policymakers: Think long-term and better assess the practicality of policies.

WATCH SOPHIE GREGORY'S TESTIMONY

CASE STUDY

ANDREW REES, MOOR FARM, WALWYNS CASTLE, PEMBROKESHIRE

FARM INTRODUCTION

- Size: 420 acres / 170 ha.
- Herd: 290 British Friesian cows, plus breeds pedigree bulls; spring block calving.
- Type: Partially housed.
- Milk buyer: First Milk.
- 2022 Soil Farmer of the Year runner-up (Farm Carbon Toolkit).
- Decided to transition after the **2018 drought exposed the financial risks (poor grass yield and cow contentment) related to a high nitrogen system.**

KEY REGENERATIVE FARMING LEVER

- Reduced nitrogen fertilizer use by 60% by adopting foliar feeding through the purchase of specific machinery, maintaining milk yield while cutting costs.
- Introduction of herbal leys to restore soil health and increase biodiversity.
- Flexible milking: Moving from twice-a-day to once-a-day during the lactation cycle.

"[Farmers should ask] 'are we farming in a way that's doing the least harm, whether that's to the environment, animal welfare, human welfare, society?'. Maybe doing something a bit different is worthwhile."

WATCH ANDREW REES'S TESTIMONY

HIGHLIGHTS FROM THE FARM'S ADOPTION OF REGENERATIVE PRACTICES

Financial management: Investments are assessed for affordability, healthy return on investment, and whether they enable the farm to withstand challenges like extreme weather and bovine TB disease. leading to decreased milk yields. The drop in sellable milk due to the introduction of flexible milking was offset with a significant decrease in costs, allowing the farm to retain the same level of profitability while working fewer hours.

Animal and human welfare to increase productivity: Transitioning to once-a-day milking improved cow welfare, reduced labour needs which eventually led to improved welfare for the farmer. With increased fertility rates, fewer cases of mastitis and generally more settled cows, there are financial, as well as welfare, benefits.

Focus on business resilience through the lens of climate and nature: Focused on reducing external inputs and enhancing farm resilience to climate change. The farm noted reducing synthetic chemical use requires planning but has many financial and nature benefits.

Importance of relationships with other stakeholders: Andrew's observations and online learning during Covid led to significant changes in farm practices. Trust in advisors and milk purchasers and seeing new methods in action were key to his decisions.

Concern with carbon measurement: Andrew is concerned that measuring carbon per litre of milk can be misleading. High-yield herds may appear better, while farms with lower production but better environmental practices may score poorly.

FUTURE GOALS AND ADVOCACY:

- Andrew aims for greater self-sufficiency and resilience to weather events.
- Emphasizes the importance of biodiversity and sustainable practices.
- Advocates for improved accuracy in farm carbon measurement and cautious approach to carbon credits.

Message to farmers: Try out ideas on a small area first, assess thoroughly and scale up with care.

CASE STUDY

ANDREW BREWER, ENNIS BARTON, FRADDON, CORNWALL

FARM INTRODUCTION

- Size: 1,100 acres / 445 ha.
- Herd: 450-500 Jersey-cross cows.
- Type: Partially housed, but outside for at least three hours when housed.
- Milk buyer: Arla; Other enterprises: fish and chip shop, wind turbine, self-catering accommodation, rent land out for vegetable growing.
- 2024 Carbon Farmer of the Year winner (Farm Carbon Toolkit).
- Decided to transition because of **issues related to high stocking rates and animal disease outbreaks.**

KKEY REGENERATIVE FARMING LEVER

- Grazing based system.
- No artificial fertiliser.
- Introduction of herbal leys.
- Switched to Jersey-crosses crows and introduced flexible milking: Moving between once-a-day and twice-a-day according to the lactation cycle.

"Farming in a low input, but rich biodiverse way – we're just trying to do what our grandfathers did better. They didn't have nitrogen 'til after the war, and the old saying is that sheep should never hear the church bells twice in the same field. Well, that's just rotational grazing, isn't it. We're just putting a bit of science to it to prove to a lot of people that actually we are the solution not the problem."

WATCH ANDREW BREWER'S TESTIMONY

HIGHLIGHTS FROM THE FARM'S ADOPTION OF REGENERATIVE PRACTICES

Financial resilience: As a result of the adoption of regenerative practices, the farm now produces as much milk as they would anyway, but without the expense of additional inputs.

Risk reduction and financial literacy are needed for business resilience: These include diversifying income streams, creating markets for all possible farm products, understanding how to resiliently mitigate the climate change-related risk to cattle management and undertaking training in finance and debt literacy. Strong focus on budget, cash flow, and maintaining bank relationships also allows to achieve financial and business resilience.

Decarbonisation, soil health and profitability are linked: All three are achieved through the careful use of manure from the partially housed animals, cessation of artificial fertiliser use, less ploughing and reductions in bought-in feed.

Climate change may mean altering cattle management: Although not the primary reason that the farm has changed to summer-autumn calving, changes to rainfall patterns, affecting grass growth, mean that cows now have better grass when they particularly need nutrition.

Enhanced animal welfare and staff wellbeing: New practices meant reduced and rearranged staff working hours, improving their wellbeing. This is essential for the farmer's own wellbeing, as well as encouraging the next generation that farming is a rewarding occupation.

FUTURE GOALS AND ADVOCACY:

Message to farmers: Good advice is essential, but each farmer must work out the right system for their individual farm, considering their aims, what works best and how it can be achieved.

Message to government, banks and other supply chain stakeholders: Longer-term thinking and support would help farm businesses find better routes to market for regenerative products, as would more understanding from banks when farm businesses are changing their whole system towards sustainable production. A better balance between accountability and the administrative burden on farmers is also needed.

CASE STUDY

JAMES ROBINSON, STRICKLEY FARM, KENDAL, CUMBRIA

FARM INTRODUCTION

- Size: 300 acres / 121 ha.
- Herd: 130 Dairy Shorthorn cows, plus 120 youngstock.
- Type: Partially housed, organic.
- Milk buyers: changing dairy company, plus on-farm processing for direct sales to local supermarket and hospitality outlets.
- 2022 Silver Lapwing Award winner (Farming and Wildlife Advisory Group); England Chair, Nature Friendly Farming Network.
- Decided to convert because of **higher financial returns** of organic farming at the time and **access to grants**, and **negative impacts** of high-inputs high-outputs practices **on grass and soil.**

KEY REGENERATIVE FARMING LEVER

- Rotational grazing, necessitating infrastructure development, e.g., provision of tracks, water.
- Reduced housed period by improved pasture management.
- Extensive wildlife habitat creation and protection.
- Decided to transition in early 2000s due to **higher organic milk prices and margins.**

"[T]hat field might be worth more in 2050 because it has that shelter in it, and it is somewhere where you can graze cows in the hottest of summers. [...] So, potentially, we might be adding value by planting trees."

WATCH JAMES ROBINSON'S TESTIMONY

HIGHLIGHTS FROM THE FARM'S ADOPTION OF REGENERATIVE PRACTICES

Financial impacts of the transition: The organic conversion grant and on-farm preparation helped with a dip in production for two years, but the system took up to seven years to return to previous yield levels as pasture took a long time to recover.

Financial measurements of success need a whole-farm view: Financially valuing the business should include all inputs and benefits, rather than simply milk output per cow and price per litre. For James, this includes savings from very low levels of disease, effective use of manure, and the measurement of the dry matter of grass rather than total yield.

Actions for climate change mitigation and wildlife financially benefit the farm: In addition to receiving payments from agri-environmental schemes, properly managing the wet areas from increased rainfalls can provide grazing opportunities, while woodland edges and tall hedgerows provide shelter and browse for livestock as well as helping wildlife.

FUTURE GOALS AND ADVOCACY:

Message to policymakers: Clarify and simplify support schemes: they help the most environmentally sustainable farms continue to provide essential services. Schemes and grants paid in arrears can cause cash flow issues, which are exacerbated if there are delays

Message to banks: Lenders must learn more about agriculture – it is not like other small businesses, and the definition of 'risk' needs to be redefined in this respect.

Message to farmers: Farmers are key to delivering good environmental outcomes and should feel empowered by this, while all contributing to some extent.

CASE STUDY

DAVID FINLAY, THE ETHICAL DAIRY, RAINTON FARM, GATEHOUSE OF FLEET, CASTLE DOUGLAS, DUMFRIES AND GALLOWAY

FARM INTRODUCTION

- Size: 850 acres / 344 ha (500 acres / 202 ha pasture, remainder woodland).
- Type: Rented upland dairy and sheep farm.
- Herd: 125 (Viking Red, Holstein, Monbeliard cows).
- Partially housed.
- Milk buyers: 80% milk – on-farm cheese production, sold directly to individual and food sector customers; 20% milk to wholesaler. Other revenue streams:
  On-farm visitors' centre, tours, cheesemaking courses, ice cream manufacture.
- Decided to transition driven by disillusion **with the environmental, animal health problems and financial costs associated with a high input, high output system and market drivers (milk premium and demand) for organic products.**

KEY REGENERATIVE FARMING LEVER

- Certified organic.
- Cow-with-calf: calves remain with mothers until weaning at 5-6 months. Calf health and growth rates are exemplary, cows are very content and productive.
- Certified pasture-fed: animals feed only on pasture and conserved grass.


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"The fact is that we do know – in ourselves anyway – that this system can deliver all these social, environmental, welfare and economic outcomes. All we need now is to get proof of concept."

HIGHLIGHTS FROM THE FARM'S ADOPTION OF REGENERATIVE PRACTICES

Increased Herd Size and Efficiency: The farm supports 25% more cows, with higher milk yields (over half the herd produces more than 6,000 litres per year), quicker calf growth and reduced disease. **The system is more resource-efficient and profitable**.

Financial sustainability: Faced difficulties in financing the transition (no initial appetite from banks; subsidies loss); used crowdfunding and loans from family, friends, and a trust. Ultimately though, the transition led to savings of £100k per year, driven by the low inputs and improved soil and animal health.

Market positioning: Most experiments on the farm were driven by customer demand and the thrive to offer a compelling and simple message for their products instead of competing on price.

Grants and incentives in effecting widespread change: David believes that wholescale change to the food and farming system is needed. Banks and financial institutions must shoulder more risk to enable farmers to introduce more sustainable practices.

Environment and biodiversity benefits can be huge: Over 25 years, soil organic content has gone from an already high 11% to 14%, while the farm is net zero in terms of carbon. Biodiversity increased by 50% between 2000 and 2023.

Enhanced staff wellbeing: New practices meant reduced and rearranged staff working hours, improving their wellbeing. This is essential for the farmer's own wellbeing.

FUTURE GOALS AND ADVOCACY:

Message to policymakers: The public sector must play its part by buying higher quality food at prices that allow farmers to produce these products, while ensuring additional outcomes, e.g., meaningful jobs, carbon sequestration, animal welfare and high biodiversity.

Message to farmers: Farming with nature is a better way of farming, and not that difficult once one's mindset changes away from conventional farming.

WATCH DAVID FINLAY'S TESTIMONY

ANNEX 1

FINANCIAL MODEL (ASSUMPTIONS)

The modelling of the adoption of regenerative practices for a typical UK dairy farm aims to quantify the expected financing needs and change in financial returns, depending on the type of conventional dairy farm types: : 'Housed intensive' (high-yielding but with high costs), 'Partly housed and grazed' (most typical in the UK) and 'Extensively grazed' (lower-yielding but with lower costs)

- Transition of a high inputs, high outputs farm to regenerative is estimated to **take between 5 and 7 years**, mostly driven by the time to change the breeding within the dairy herd and seed pasture.
- **Total farm area** is assumed to be constant during the transition (modelled size 194 hectares).
- The model is based on **conservative financial assumptions**, including current levels of available support and recognising that more support is needed. This includes:
    i. **prices and costs based on a 5-year average**,
    ii. considering **existing agri-environment support** across the UK, including additional progressive support from England's Environmental Land Management scheme,
    iii. **only price premium-based support currently provided** by the market to regenerative dairy farms.

Revenues exclude any potential additional supply chain funding, additional government support or diversified income from carbon and nature markets or other farm businesses.

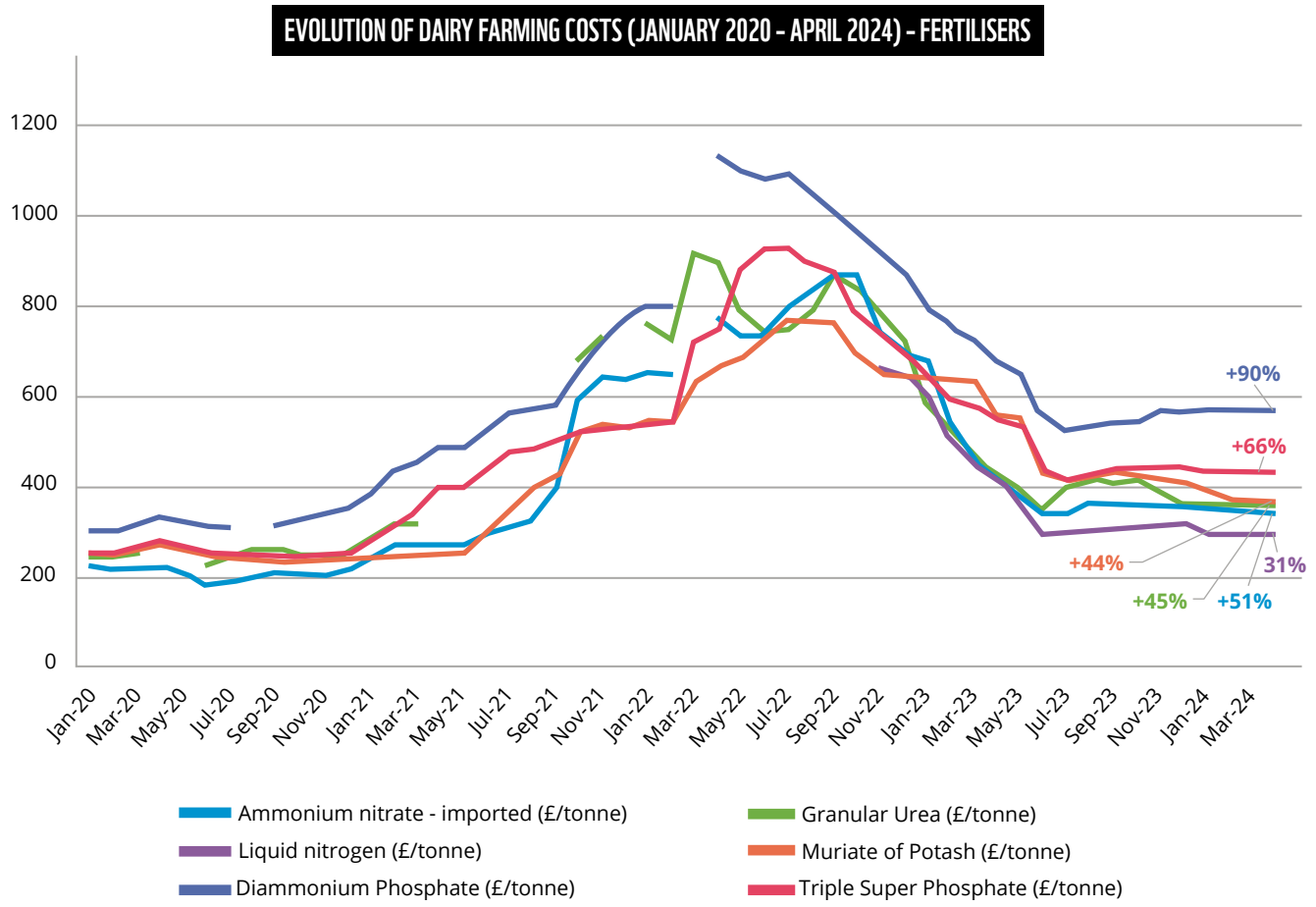
- **Transition Capex comprises a range of investments** in machinery and infrastructure such as:
- **Infrastructure,** including cow tracks, fencing, water pipes and troughs for the farm to support an increase in grazing. Housing and the dairy parlour may be used less intensively than before the transition, which will reduce depreciation.
- **Machinery/equipment**, which could include electric fencing and direct drills that help to establish crops.
- **Training/advice** needed for farmers to effectively transition to the new management style.

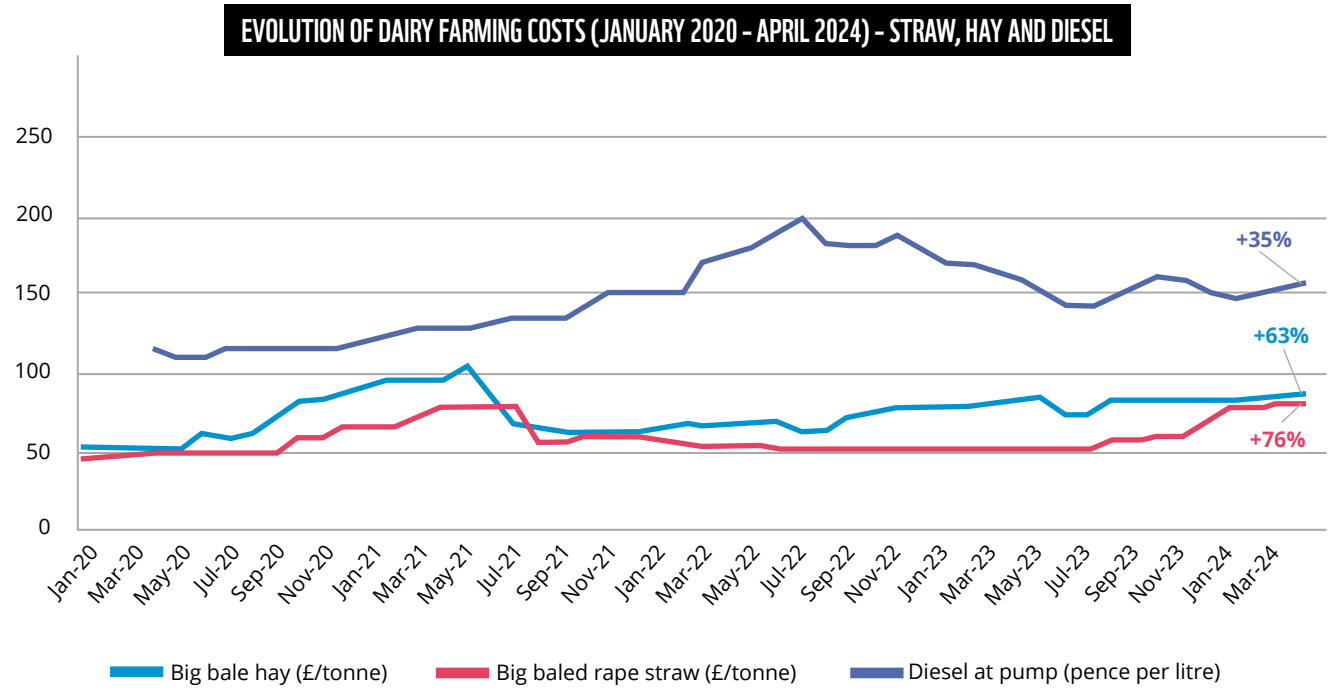
Transition Capex is expected to be partly **financed by cow sales** (resulting from the change in breed, with new cows being bred from calves during the transition period)**,** at a modelled price of £1,450 per head (based on recent average for dairy Holstein Friesians), and infrastructure and training **grants** currently available on the market.

- **Maintenance / ongoing capex is expected to decrease** after the transition due to the lower need for heavy machinery and equipment, especially in previously fully housed conventional farms.
- Existing debt before the transition has been rolled out and has been assumed constant to cover working capital needs.
- The model aims to give an estimate of the expected financing needs from dairy farms transitioning to regenerative agriculture, therefore no new debt to finance the transition has been included in the model.

ANNEX 2

EVOLUTION OF FARMING COSTS





Source: Graphs based on AHDB datasets