Deep Demonstration

Sustainable food systems in Ireland

Environmental Defense Fund

eit Climate-KIC

Co-funded by the European Union

An Roinn Talmhaíochta, Bia agus Mara
Department of Agriculture, Food and the Marine

The New Normal for Sustainable Dairy - Ireland

Ireland Land Agri-Food Deep Demonstration Flagship 6

MjBConsulting Deliverables

29 February 2024

michael@mjbconsulting.ie

climate-kic.org/SustainableFoodIreland

Introduction

In 2022 the Department of Agriculture, Food, and the Marine (DAFM) partnered with EIT Climate-KIC – Europe's largest climate innovation partnership - to work with public and private stakeholders in the Irish agri-food sector to support delivery of accelerated pathways for climate action.

Since then, EIT Climate-KIC have engaged extensively with a range of Irish stakeholders, mapped the system, produced several reports covering policy insights, innovation opportunities and the funding and financing landscape. The culmination of this engagement is a portfolio of seven Flagships that stakeholders believe will deliver the systems change required to achieve Ireland's ambitious climate targets.

The ethos underpinning the Flagships is to amplify and build on the great work already underway in Ireland. The aim is to scale and accelerate the shift needed to achieve the 2030 and 2050 targets, with the ultimate goal to support Ireland in its ambition to become a global leader in Sustainable Food systems.

Flagship 6 addresses the dairy value chain and specifically on collaborations to accelerate emissions reductions and improve sustainability on farms. It is comprised of 4 work packages, of which Work Package (WP) 3 is led by MjBConsulting.

The objective of WP3 is to develop a value chain-based partnership supporting the dairy chain transition towards a new normal for sustainable dairy, with a focus on reducing GHG emissions and realise the 2030 ambitions as set by the government. It will include significantly increasing the pace and scale of innovation and initiative adoption in key areas including methane reduction. It is subdivided into four deliverables.

D3.1 Selection of cooperatives for potential deep engagement

D3.2 Overview of possibilities and boundaries for cooperative engagement

D3.3 Baseline report of selected cooperatives, and farmers based on the definition of the new normal in sustainable dairying.

D3.4 Farming Typologies to support policy targeting of incentives and disincentives and communications.

Flagship Objectives

Overall Objective of the Flagship

"To facilitate the transition towards a 'new normal' for sustainable dairy using a systems innovation approach that supports existing and new efforts to identify, test, validate and scale different combinations of actions (across multiple value chain actors) to overcome barriers to action, ultimately contributing to absolute emission reduction at scale,

increased carbon capture and co-benefits for the environment (water, soil and biodiversity) and communities".

Activation Phase Objectives

1. Identify, involve and commit partners for the implementation phase;
2. Provide a draft definition for the 'new normal' for sustainable dairy in Ireland (which may also apply in the EU);
3. Profile farmers and businesses from both predominant and 'alternative' production and processing systems to test reality against 'new normal';
4. Define an Implementation Phase that can deliver outcomes at scale. The implementation phase will include identification, testing and validating combinations of levers & (dis)incentives;
5. Obtain funding for the Implementation Phase.

Context

Dairy Industry in Ireland

Ireland's dairy industry is an export-oriented industry, utilising a grass-based, seasonal production model and comprised of family farm enterprises and a cooperative owned processing sector. Ireland became a member of the EU in 1973, with Europe's Common Agricultural Policy (CAP) shaping the sector into the export oriented industry of today. The CAP enabled growth and expansion in Ireland's dairy sector, benefiting from market protection and export support, with farm expansion continuing despite 30 years of supply management through the EU's milk quota regime. The trade off to this growth was a reduction in overall farm numbers as scale driven efficiency became the economic response to the phased reduction in market supports.

In the final year of supply management in 2015, Irelands domestic milk output was 6,395 million litres produced from 1,295,800 dairy cows[1]. Since the abolition of milk quota's and despite the global upheaval resulting from Covid 19, Ireland's domestic milk output has grown to 8,819.7 million litres produced from 1,627,300 dairy cows. This is produced by approximately 17,000 family-owned dairy farmers with an average farm size of 32.4 hectares.

There are nine primary dairy processors in Ireland as outlined below. These enterprises are farmer owned cooperatives, but some are aligned with global plc's that operate in the nutritional's and branded dairy product markets.

In addition to the processors listed, there exists a cooperative owned by the dairy cooperatives, Ornua which is Ireland's largest exporter of dairy products manufactured by

[1] CSO

its member cooperatives. Exporter Co-op is responsible for a range of consumer brands including Kerrygold, Dubliner, Pilgrims Choice, Forto and BEO.

An important part of Ireland's dairy sector has also been its development of high value dairy ingredients used in the manufacture of specialised nutritional products. The availability of these ingredients has attracted the development of global secondary dairy processors in Ireland including Nestle, Abbott, Danone. Mondelez and Diageo.

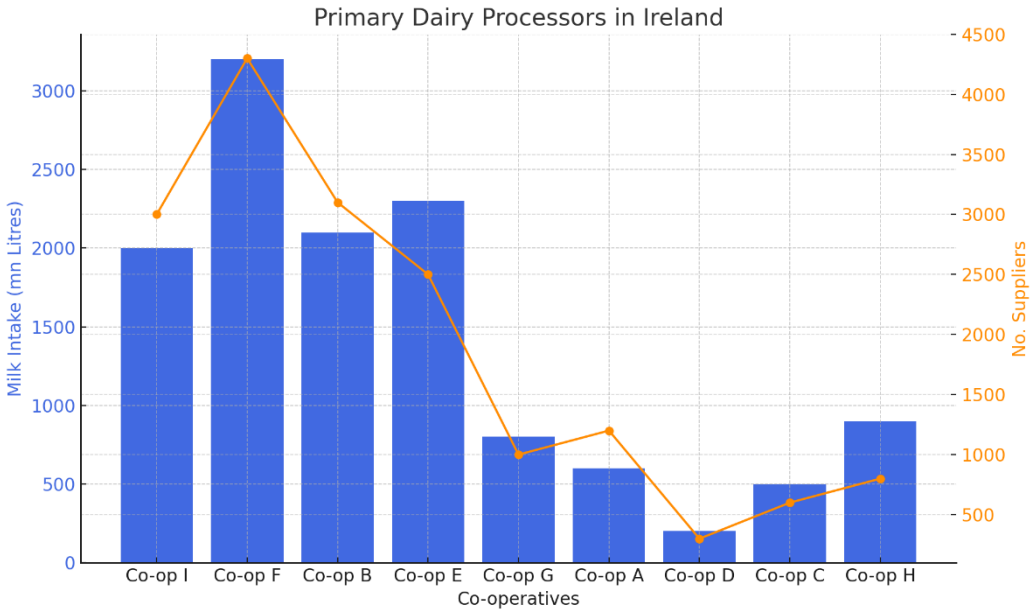


Figure 1: The main dairy cooperatives in Ireland illustrated by volume of milk intake and number of farmer suppliers. This chart illustrates the differences in supplier base with some having less farms, but greater volumes of milk (larger farms and others having greater numbers of smaller farms.

Current Sustainability initiatives

The Sustainable Dairy Assurance Scheme (SDAS) is an independently accredited quality and sustainability scheme developed in conjunction with suppliers, processors and competent authorities that certifies that milk is produced to the highest standards of animal welfare, traceability, food safety and environmental sustainability. The scheme, administered by Bord Bia, and accredited to ISO 17065, involves an audit of dairy farms every 18 months against 170 requirements with repeat audits undertaken where audit scores fall below 60% or a critical nonconformance has been identified.

Origin Green is the industry level sustainability programme administered by Bord Bia, in which Ireland's food processors have their sustainability plans independently verified by international auditors and encompasses their producer specific schemes including SDAS. The Origin Green scheme is continually evolving in line with external factors with a focus now on

how the scheme can encompass the principles of the EU Green Deal and Ireland's Climate Action Plan and the specific target to reduce agricultural Green House Gas emissions by 25% by 2030. The focus of Origin Green now is to develop a Nature Positive Pathway encompassing a climate neutral pathway, enhanced biodiversity practices, integrated circular economy approaches with deeper farmer involvement.

In addition to their participation in Origin Green, a number of Ireland's dairy processors have initiated additional sustainability programmes to incentivise additional sustainability actions at farm level. Some of the activities incentivised within these schemes are within the scope of Origin Green while others are beyond its scope. These are outlined in Annex 1 to this report.

D3.1 Selection of cooperatives for potential deep engagement

Given the participation of all dairy cooperatives in the Sustainable Dairy Assurance Scheme (SDAS) administered by Bord Bia, the selection of cooperatives for potential deep engagement was based on an initial assessment of the likelihood of engagement by respective co-operatives which sought to establish the following:

1. Is there a progressive supplier sustainability scheme in place within the co-operative?
    a. If the scheme is comprehensive will farmers and processor representatives have the capacity to consider the Deep Demonstration?
    b. If a scheme is in place it suggests that Sustainability is a priority for the management team and consideration may be given to participating in the Deep Demonstration.
    c. If there is not a scheme in place does participation in the Deep Demonstration provide an opportunity to "catch up"?
2. How long is it established?
    a. If the scheme is new or recently launched, will participation in the Deep Demonstration serve to undermine or distract farmers from participating in their new scheme?
    b. If the scheme is well established does it present an opportunity to support a new iteration of the existing scheme through participation in the Deep Demonstration?
3. Is there a demand from secondary processors for dairy with higher sustainability credentials?
    a. How are secondary dairy processors reframing their sustainability credentials? Who does this impact?

b. How are consumer foods companies realigning their product portfolio's in response to changing consumer demands?

4. Can co-op leadership be engaged in the work of the Deep Demonstration?
    a. Can the output of initial work by a group of co-op suppliers be elevated to decision makers?

In parallel, all dairy cooperatives were e-mailed with the details of the proposal for engaging in dialogue on defining the New Normal for dairy. All were followed up with calls and e-mails.

6 co-ops expressed interest in exploring the initiative further and details of engagement with them is outlined in section D
3.2 of this report.

D3.2 Overview of possibilities and boundaries for cooperative engagement

Possibilities for cooperative engagement

Following initial interviews with co-op leaders, a process for selecting co-ops for participation in the Deep Demonstration was developed based on a series of questions. These are set out in Annex 2 to this report.

Engagement with processors is summarised below[1]

Co-op A

A physical meeting with a group of 14 dairy farmers and Co-op A Agribusiness Farm Advisors was held on 28th November 2023. The documentation from this meeting is set out in Annex 3 to this report.

There was strong feedback from farmers on the topic of addressing GHG reductions from their activities, with a dominant theme being a lack of policy clarity on what a sustainable dairy farm actually means. Many participants are participating in co-op led schemes in addition to Bord Bia's "Sustainable Dairy Assurance Scheme (SDAS) but these do not seem to have addressed what is now deemed as the priority area, namely reducing emissions at farm level.

Participants asked if it were possible to get a better idea of what would be expected of them in transitioning to a sustainable dairy model, and how that would interact with policy and related issues such as the Nitrates Directive. It is worth noting that within this small group, there were markedly different perspectives on the outlook for dairy farming. Roughly half of

[1] Names of individual companies have been removed.

the group were exacerbated by the red tape, the constantly shifting goal posts, the portrayal of farming as bad for the environment and did not necessarily see a long term future, or at least not a happy one, in dairy farming. By contrast, the other half of the group felt that dairy farming offered them financial security and independence and felt it was a good reward on their labour, with a much more positive outlook on the future. This discussion drove home the importance of not assuming all dairy farmers are the same and the need to develop different strategies for targeting different types of farmers. Some key insights on what sustainable dairy farming might look like included:

- Dairy farming must be **profitable** to retain farmers and **attract new entrants**.
- Dairy farming is a **life-style choice** which must retain elements of **job satisfaction, pride, inspiration and motivation**.
- Green dairying could have **increased biodiversity**, reduced emissions and increased carbon storage (Farm Balance Sheet)
- Should dairying revert to a **lower input** / **lower output** model based on extensive grazing systems.
- **Carbon Balance** sheet
- **Enterprise or farm system focus** over dairy cow focus when assessing environmental impacts

The notes from this discussion group are set out in Annex 4 to this report.

Co-op B

A series of meetings were held with the Sustainability Team in Co-op B. In September, Co-op E had just announced a new Sustainability scheme for their processing activities and were in the process of launching a new processor scheme which would provide a financial incentive to their farmers for adopting defined sustainability initiatives. The Co-op Bs team were supportive of participating by facilitating a meeting with their suppliers to discuss the New Normal subject to approval by their Board. However, participation was not approved as the timing would conflict with the Co-op Bs launch and roll out of their new farmer sustainability incentive scheme.

Communications have continued with the Co-op B's Sustainability Team as they are keen to follow the progress of the initiative.

Co-op C

A series of calls were organised with the CEO of Co-op C who expressed strong interest in the Deep Demonstration partnership. However following Board discussion, where there was a strong farmer focus on managing the fall-out from the reduction in the Nitrates Derogation it was decided not to initiate a new dialogue in the area of the environment at this time. However, communications with the CEO continue and engagement with their suppliers may be possible.

Co-op D

Following a series of calls and a physical meeting with Co-op D in the Autumn, a discussion with a Farmer Group (15) was organised by Co-op D on 2nd February. Details of the discussion outcome are set out in Annex 6 to this report.

Participants expressed a strong view that there is a need to realign policy with emissions reduction targets for agriculture. The CAP in its current format does include environmental measures, but these are not fully aligned with the Government's agri-climate ambitions. This means that even where all current CAP environmental measures are adopted, the largest source of emissions from dairy activities (methane) are not addressed.

An enterprise level approach is needed to account for the positive impact of on-farm investments in initiatives including solar panels, wind turbines, forestry plantation, and other biodiversity schemes. There is a frustration that despite continued investment in environmental schemes, there remains the challenge of addressing emissions from dairy cattle.

Recent experience with the reduction in the Nitrates derogation as part of the Water Framework Directive, provided a clear example of the consequences of non-aligned actions. An enterprise level approach provides for a holistic approach to implementing environmental measures at farm level that address the priority issues impacting agriculture. This approach is compatible with the intent to develop a framework for Carbon Farming and a possible voluntary Carbon Trading scheme that can be used in primary agriculture.

Co-op E

A series of exchanges with the CEO took place where they expressed interest in the initiative. Co-op E manages a demonstration farm where its involvement in this initiative would be of interest. They have asked to re-engage in the initiative in Spring as their level of farmer interactions reduce over the winter months.

Co-op F

Discussions with the Co-op F CEO took place in early Spring. Co-op F operates a mature environmental scheme with its suppliers and is supportive of initiatives that can add value to their current series of initiatives.

Other Dairy Processors

A series of calls, and e-mail exchanges with other dairy processors took place over the October – December period where details of the Deep Demonstration partnership were discussed. They did not express an interest in participating at that time due to their promotion of their own processor initiatives to their farmers.

Two further Co-operatives did not follow up on invitations for discussion in this phase.

Boundaries to cooperative engagement

Based on stakeholder dialogue, there is clear interest from all parties in participating in practical initiatives that can address the environmental challenges facing food production in Ireland. However, at this stage, few consider actions related to the environment as opportunities, with most perceiving environmental actions as currently framed, posing business risk.

This should not be interpreted as a sentiment of opposition by food producers towards adopting better environmental practices. It should however be considered more of their perception of current environmental proposals as reactionary and framed without sufficient consultation with all stakeholders. What is clear is that most feel that the current top-down approach in designing environmental policies is impractical, fragmented and not aligned with what farmers can and want to achieve in their enterprises. In discussions with farmers, it was clear that farmers wanted to be consulted not just at the end of the process but at the earlier "design" stage of sustainability initiatives and were positive in wanting to engage in designing the "New Normal" for dairying.

Ireland's grass based production system has created a "halo-effect" whereby its environmental footprint has not been sufficiently characterised. The traditional approach of frequent fertiliser application to support the grass based system, has conflicted with the requirements of the EU's water framework directive to the extent that despite its "natural production system" Ireland has sought derogation from the regulatory limits within the Water Framework Directive. Recent reductions in the derogation (250kg/ha to 220kgs/ha) have undermined the economic model of intensive grass based farms and a possible further reduction in the derogation to 170kgs/ha, will render some farms uneconomic. While this affects a relatively small number of farms, the impact on these farms will be very significant.

In the context of addressing GHG emissions from dairy production, the grass based system, is perhaps the most efficient means of producing milk, however it does produce emissions. The current approach of evaluating emissions intensity per unit of milk solids has supported efficiencies at farm level to reduce emission levels, however as production continues to increase so too do the overall emissions from dairy.

Since the introduction of Origin Green in 2012, Irish farmers have been encouraged to modify their production systems to transition to a more sustainable production model. However, despite most farmers now participating in the scheme, the challenge of excessive nitrates use and that of increased GHG emissions have not been addressed. There is frustration amongst farmers who, despite participating in this national sustainability scheme since 2012, are now faced with new environmental limits which have not been addressed within this scheme.

Despite the constraints outlined, Irelands grass based production system does provide a strong starting point in defining a new normal for dairying. Similarly the existence of an ISO17065 accredited farmer audit scheme provides a huge resource for evaluating actions at farm level.

The main boundaries for cooperative engagement in the New Normal for Dairying initiative are:

1. High levels of Participation in the Bord Bia Sustainability Dairy Assurance Scheme
2. Processor Specific Sustainability Schemes
3. Response to loss of Nitrates Derogation
4. Disconnect from CAP Sustainability Measures
5. In depth consultation

1. High levels of Participation in the Bord Bia Sustainability Dairy Assurance Scheme

Most dairy farmers have bought into the Bord Bia Sustainability programme (SDAS) since its launch in 2012 and participate in its 18 month farm audits. Cooperatives have made participation in the scheme an important element of their supplier relationship with some linking it to their milk payment structure.

The scheme has evolved since its inception with a gradual increased scope accepted by farmers as a response to increased market demands. It is currently under review again. This has resulted in a sense that the SDAS is evolving in line with market requirements and that there should not be a need for additional schemes.

Participation in a Deep Demonstration initiative by co-operatives will be dependent on their value assessment of the programme and on what it potentially adds to the SDAS. There is a risk that the Deep Demonstration is considered duplication of SDAS while for others there is a belief that measures considered within the Deep Demonstration should be incorporated into the revised SDAS.

It is clear that any metrics developed through the 'New Normal' must be harmonised with any revisions in SDAS, but they must also deliver real and tangible environmental outcomes for farmers and industry.

2. Processor Specific Sustainability Schemes

Some processors have introduced specific sustainability schemes in response to client and market demand. These are based on international standards including the SAI Platform and Science Based Target Initiative (SBTI) where environmental metrics are more specific than those within the Board Bia SDAS. Many of these schemes have been introduced in 2022/23 and are linked to a sustainability bonus payment per litre of milk to participants.

Where such schemes have been rolled out, processors have expressed a concern that engaging in the New Normal for Sustainable Dairy at this stage will detract from their suppliers participating in their own, relatively new, sustainability schemes.

The key consideration will be their assessment of what the New Normal adds to their existing schemes at farm level. Farmers must see tangible value in it and it has to be acceptable to them if cooperatives are to introduce it.

3. Response to loss of Nitrates Derogation

Farmer response to the loss of the recent nitrates derogation was one of shock. Many were working on the assumption that the derogation would be continued, as Ireland's high participation in schemes such as SDAS would have meant recognition of Ireland's strong sustainability credentials. The loss of the derogation and impact on dairy farmers has resulted in many farmers questioning the value of participating in voluntary schemes. Farmers were clear in the discussion groups that the scope of sustainability scheme should encompass all sustainability related factors that impact their businesses. They want something that is comprehensive, that actually delivers environmental outcomes alongside economic and social returns.

4. Disconnect from CAP Sustainability Measures

Many farmers are now signed up to the new CAP, which has a much greater emphasis on sustainability measures. These are linked to payments for their delivery of environmental goods. Some are challenging whether the CAP is sufficiently aligned with national environmental policies and legislative requirements including a reduction in emissions and compliance with the water framework directive (Nitrates Directive).

The 'new normal' will need to build on the eco schemes in CAP as well as the European Innovation Projects (EIPs), especially those focused on water, while adding in specific elements to deliver overall emissions reductions.

5. In Depth Consultation

The cooperatives and their member suppliers that engaged in this process want to be involved in the design of the 'new normal'. The concept note shared with them and the discussions already facilitated have highlighted that each cooperative is slightly different and that while many are keen to participate, that participation will need to be contextualised to reflect the specificities of each cooperative. The level of their participation and potential funding for their participation will be fully dependent on their value assessment of this scheme. In depth consultation is required up front, but also throughout any implementation phase to ensure the feasibility and implications of a 'new normal' are understood and that feedback and learning are incorporated.

D3.3 Baseline report of selected cooperatives, and farmers based on the definition of the new normal in sustainable dairying.

The following provides a brief overview of selected cooperatives.

Co-op A

Co-op A is a global company owned by dairy farmers, manufacturing nutritional ingredients, flavours and natural cheeses marketed to over 50 countries around the world.

Suppliers	1,220
Milk Intake	598,000 million litres
Turnover	€700,000,000

Sustainability at Co-op A

Co-op A suppliers are members of the Bord Bia SDAS and actively brand their "Grass Fed" credentials on its product portfolio. Its farmers also participate in its "Greener Dairy Farms™" programme which provides support to help its farmer suppliers to reduce energy use and carbon emissions. Co-op A's demonstration farm is a collaboration between Co-op A and others to create a climate-neutral, economically viable dairy farm provides the research output that also guides the "Greener Dairy Farms" programme. This demonstration farm takes a holistic approach, combining a range of technologies and practices to reduce greenhouse gas emissions and increase the productivity and resilience of the farm.

Co-op B

Co-op B manufacturing facility processes milk into a range of dairy products; cheese, butter, milk powders and other dairy products for export and home markets. The Co-op manufactures sixty thousand tonnes of product annually. Cheese production is a key activity.

Suppliers	400
Milk Intake	400,000 million litres
Turnover	€300,000,000

Sustainability at Co-op B

Co-op B suppliers are members of the Bord Bia SDAS. Its Research Farm is used by Teagasc for dairy systems research specific to Co-op B's suppliers.

Co-op C

Co-op C is a farmer owned co-operative with a food ingredients and retail products division. Dairy ingredients produce a range of milk powders and Casein. Retail products has grown with a recently launched branded butter range.

Suppliers 250

Milk Intake 91,000 million litres

Turnover €155,000,000

Sustainability at Co-op C

Co-op C's suppliers are members of the Bord Bia SDAS.

Co-op D

Co-op D is a farmer owned cooperative with 4 business divisions Agribusiness, Food Ingredients, Foodservice and Consumer Foods. Food ingredients is the largest division with revenue of €1.19 bn generated from dairy and fat filed milk powders and butter. Its Foodservice division supporting catering and hospitality with dairy products generated €310 m. Consumer foods had a revenue of €272m generated from a large number of consumer branded dairy products. Agribusiness generated €125m revenue from its animal feed manufacturing activities and delivery of farm services.

Suppliers 3,200

Milk Intake 1,800,000 million litres

Turnover €1,900,000,000

Sustainability at Co-op D

Co-op D's suppliers are members of the Bord Bia SDAS. Co-op D recently launched a new enterprise level Sustainability Scheme "Pathway to a Better Future" which focuses on Climate Action, Sustainable Farms, Supply Chains, People & Communities, Sustainable Operations, and Responsible Business. This brings the business into the reporting framework of the Science Based Targets Initiative (SBTI). The Sustainable Farms programme is linked to a sustainability bonus payable to farmers based on a target to implement regenerative agriculture practices, to achieve a 30% reduction in the carbon

footprint of its milk production by 2030. There are 5 elements in this: Carbon Footprint, Water Quality, Biodiversity, Soil Health and Animal Welfare.

Co-op E

Co-op E is the largest dairy cooperative in Ireland, operating as 3 distinct business units, Agribusiness, Ingredients and Consumer Foods. Agribusiness has a revenue of €644m driven by its grain intake, feed mills and farm services operations. Revenue at its consumer foods division was €365m in 2022. Ingredients is the largest division with a turnover of €2.1 bn with a wide range of dairy functional and commodity powders. It is also developing a range of plant based ingredients.

Suppliers	4,327
Milk Intake	3,200,000 million litres
Turnover	€3,000,000,000

Sustainability at Co-op E

Co-op E suppliers are members of the Bord Bia SDAS. It is a member of the Science Based Target Initiative (SBTI) with a commitment to achieve a 30% reduction in Carbon Intensity of Milk Production by 2030. Its farmer facing programme is based on the regenerative agriculture model and sets out the following targets. 100% of farms with a Nutrient Management Plan, Soil Testing and Fertiliser Programme by 2025. 100% of farms in Priority Areas for Action with water quality plans by 2025. 100% of farms certified to A Greener World Animal Welfare Approved Standard by 2025. It has worked with farmers to deliver 100,000 native trees and hedgerows by December 2021 as part of Operation Biodiversity.

Opportunities for engagement

Of the 5 selected cooperatives, two (D & E) are heavily invested in supporting supplier specific sustainability schemes. As members of SBTI, their focus is to achieve a reduction in dairy farm emissions intensity of 30% by 2030. The New Normal can potentially support the attainment of these targets by supporting the holistic baselining of farms in 2025 and developing a plan where the goal of reduced emissions intensity could be linked with a target for a reduction in absolute emissions.

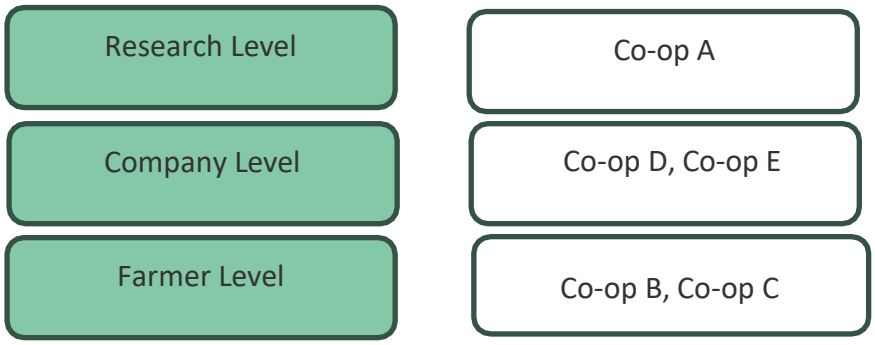
This approach would be based more in engagement with the cooperative strategy and sustainability teams, providing resources to their existing farm services infrastructure. This

could mean a higher level of engagement with coop teams and a reduced requirement for engagement at farmer level.

For Co-op B and Co-op C, there is an opportunity to engage by providing farmer level support and potentially an opportunity for the New Normal to become the farmer sustainability scheme within both co-ops. This approach, if adopted, could be resource heavy, for the Flagship, but could provide an invaluable framework for co-ops and the New Normal programme. Their research facilities provides a valuable opportunity for work in trialling new technologies. A part of this would require the training of farm service personnel from both co-ops.

Co-op A offers a unique opportunity to develop the models that can support the objectives of the New Normal framework. Engagement would form the basis of a collaboration with their existing team where there already exists a huge repository of knowledge and data. There are existing outputs, which are immediately applicable to dairy farmers and align with the objectives.

This 3 pronged approach can be achieved using the Dairy Concept as set out in Annex 7 to this report. The approach proposed is set out below



D 3.4 Farming Typologies to support policy targeting of incentives and disincentives and communications.

In considering dairy farming typologies, it is appropriate to consider Ireland's dairy farming system and how it has evolved primarily in response to the continual reforms of the EU's Common Agriculture Policy (CAP). A series of milestones in its evolution have materially changed the sector which may be summarised as follows:

Membership of the EU

Ireland's membership of the EU in 1973, brought Ireland's farmers into the scope of the CAP. At that time the CAP was based on target prices for milk, cheese and butter; the EU market was protected from imports through tariffs with domestic prices supported through intervention for products including milk powders.

This provided the background for investment in milk powder processing facilities in Ireland, which both initiated consolidation amongst co-ops and provided a market outlet for seasonal milk production in Ireland. This initiated a period of strong production growth in Irish dairy production.

Supply Management

The strong production response from the EU's farmers to the CAP subsidies triggered a policy move to limit the volume of milk produced heralding the introduction of milk quota's across the EU. The milk quota rapidly became a "license to produce" and quickly became a tradable license for farmers wishing to increase production.

The cost of quota became a cost of production for dairy farmers, which had to be offset by increasing on-farm competitiveness as subsidisation of the sector was being phased out and the sector had to maintain global competitiveness. This cost pressure resulted in the adoption of the low-cost grass-based dairy farming model by the majority of dairy farmers.

Post Quota Expansion

The abolition of milk quota's in 2015 presented opportunities for dairy expansion and removal of legacy milk quota costs. Even as global markets temporarily weakened over the 2015 – 2016 period, market process quickly recovered and dairy output in Ireland increased strongly from 6 million litres in 2015 to over 9 million litres in 2022.

Expansion was driven by increases in scale of existing dairy enterprises plus new entrants, many of which were entering at large scale. This period of expansion continued to be based

on Ireland's low-cost grass-based production system, producing to a seasonal production profile and continuing to supply milk powders for export markets.

Typologies of Ireland's Dairy Farms

Based on the evolution of Ireland's dairy farms as outlined, there is a commonality of system across all farms. It is the use of grass as the primary source of animal nutrition, with the resultant seasonality of production. In differentiating between these farms, it is appropriate to consider different applications of this grass based farming systems by groups of farmers which fall largely into 2 categories, namely conventional and organic.

1. Organic Dairy Farms
    a. These follow the grass based dairy system, but at a less intensive level due to their lower fertiliser use, approach to animal remedies and use of feed. Feed additives for methane reduction have yet to be approved for use on organic farms with the result that emissions per animal could be considered higher than those of conventional animals where such additives are used. A different approach to emissions reduction will be required to protect the organic principles and specifically to ensure that they are not disadvantaged disproportionally due to their organic production system.
2. Large Scale Intensive Farms (+200 Cows)
    a. These tend to be intensively run grass based dairy farms, utilising technologies to automate processes to reduce labour requirements. These farms are rich sources of data due to their use of technologies and can provide the idea test bed for evaluating new technologies. They may be disproportionally impacted by the reduction in the Nitrates Derogation and may be more willing to partner in finding solutions to reducing emissions from their activities.
3. Traditional Family Dairy Farms
    a. These tend to be smaller in size and intensity, being managed mainly by family members. These are the farms promoted globally as Ireland's Family Farm and form the backbone of the industry due to their numbers. However they are potentially the higher risk farms due to lower profitability compared with the more intensive farms and more exposed to new costs or restrictions posed by new environmental initiatives.
4. Mixed Farm Enterprises
    a. These farms operate a number of different activities in addition to their dairy enterprises. These may have opportunities to offset or reduce their emissions due to their other farming activities and offer a potential model for collaborative initiatives between farmers seeking to reduce their respective environmental footprint.

Annexes

Annex 1 Processor Sustainability Initiatives

Available upon request.

Annex 2 Phase 1 Engagement with Co-ops

Following initial interviews with co-op leaders, a process for selecting co-ops for participation in the Deep Demonstration, was developed based on a series of questions.

1. Is there a progressive supplier sustainability scheme in place within the co-operative?
    a. If the scheme is comprehensive will farmers and processor representatives have the capacity to consider the Deep Demonstration?
    b. If a scheme is in place it suggests that Sustainability is a priority for the management team and consideration may be given to participating in the Deep Demonstration.
    c. If there is not a scheme in place does participation in the Deep Demonstration provide an opportunity to "catch up"?
2. How long is it established?
    a. If the scheme is new or recently launched, will participation in the Deep Demonstration serve to undermine or distract farmers from participating in their new scheme?
    b. If the scheme is well established does it present an opportunity to support a new iteration of the existing scheme through participation in the Deep Demonstration?
3. Is there a demand from secondary processors for dairy with higher sustainability credentials?
    a. How are secondary dairy processors reframing their sustainability

credentials? Who does this impact?

   b. How are consumer foods companies realigning their product portfolio's in response to changing consumer demands?

4. Can co-op leadership be engaged in the work of the Deep Demonstration?
   a. Can the output of initial work by a group of co-op suppliers be elevated to decision makers?

Annex 6 Findings from Second Round of Discussions with Farmers

What were the discussions about?

To discuss in practical terms what the transition towards a 'new normal' for sustainable dairy means for dairy farmers.

What can be realistically done to reduce Green House Gas emissions from a natural dairy production system?

To agree clear messages to policymakers on what is required to achieve the New Normal for Sustainable Dairy in Ireland.

What were the outcomes of the discussions?

Discussions were based on a number of assumptions sent to farmers prior to the discussion, which had been based on previous discussions with farmer groups.

Assumption 1 There will not be a return to EU Subsidization of Food

Assumption Presented

> Successive CAP Reform has created a dairy industry that competes on global markets without subsidy, or market support measures. CAP 2023 – 2027 has provision for market support measures at an equivalent milk price that is uneconomical for production. It is therefore assumed that additional environmental measures will not be undertaken unless they are economically justifiable.

Discussion outcome

> Its difficult to envisage support from EU taxpayers for a return to the agricultural subsidies of the past. The complexity of managing subsidies coupled with the cost of their administration relative to their payment levels, means they are of limited value or interest to farmers.
>
> However there is a policy conflict with the introduction of the EU Green Deal and its associated costs and measures, and that of the EU's trade policy in which it seems to grant EU market access for food produced without

equivalent environmental measures. This is creating a disincentive for the adoption of new technologies, and potentially renders EU dairy products uncompetitive relative to products produced without equivalent environmental conditions.

The CAP in its current format does include environmental measures but the accounting for these measures exist in a different inventory to that of methane emissions from dairy production and are not counted. This means that even where all current CAP environmental measures are adopted, the largest source of emissions from dairy activities are not addressed.

There is a need to realign policy with reduction targets for agriculture.

Assumption 2 There will be no price premiumization

Assumption Presented

As all EU countries move towards more sustainable food production, sustainability alone will not provide market differentiation for Irish dairy products. The EU's Farm to Fork ambition to move to 25% Organic will lead market premiumisation. On that basis it is assumed that sustainability will be a market prerequisite.

Discussion outcome

Previous environmental initiatives including Origin Green, were promoted to farmers on the basis of increasing premiumisation in the marketplace, but they did not materialise. The promotion of Ireland's grass based dairy system does not seem to have provided the premiumisation for ingredients nor is it proving effective in the debate about climate-friendly diets.

The criteria for price incentives by processors for climate related actions coupled with CAP payments for targeted environmental measures, are constantly changing and in some instances contradictory in nature. Recent discussions around issues with slurry spreading trailing shoes provides a good example of this. There is a sense that some schemes are introduced prematurely and being reversed at a later stage.

Notwithstanding the difficulty in obtaining market price returns for increased sustainability, most milk processors are paying price premia to drive change at farm level. Price premia of €0.005 to €0.01 are currently paid which amounts to a percentage incentive of 1.4% - 2.8% at todays milk price of

€0.35/litre. For a 6,000 litre dairy cow using the feed additive Bovaer at an estimated cost of €60 / cow, a price premium of €0.01 would be required to finance its use.

Assumption 3 Total GHG emissions will become a standard farm metric

Assumption Presented

The impact or benefit of adopting new sustainability technologies cannot be evaluated at farm level without more specific metrics. The working assumption is that measurement of absolute emissions will need to be at enterprise level, and be inclusive of all on-farm activities. Measurement of absolute emissions can utilise current emissions intensity metrics.

Discussion outcome

An enterprise level approach is needed to account for the positive impact of on-farm investments in initiatives including solar panels, wind turbines, forestry plantation, and other biodiversity schemes. There is a frustration that despite continued investment in environmental schemes, there remains the challenge of addressing emissions from dairy cattle.

Recent experience with the reduction in the Nitrates derogation as part of the Water Framework Directive, provided a clear example of the consequences of non-aligned actions. An enterprise level approach provides for a holistic approach to implementing environmental measures at farm level that address the priorities issues impacting agriculture. This approach is compatible with the intent to develop a framework for Carbon Farming and a possible voluntary Carbon Trading scheme that can be used in primary agriculture.

Assumption 4 There will be increased use of methane inhibitors

Assumption Presented

The availability of approved feed additives will provide options to reduce methane from enteric fermentation in addition to the use of methane inhibitors to reduce slurry will provide additional options. Use of Nitrogen inhibitors for slurry may reduce nitrogen losses when spread on land. It is assumed that the use of Methane Inhibitors will be dependent on cost /

benefit to individual farmers.

Discussion outcome

If their use was mandated by processor they would be used however at a reported cost of €60 / cow / annum their use would require a very compelling business case.

The use of the feed additive Bovaer in signpost farms is noted but its impact is difficult to assess as its use does not provide a tangible effect that can be determined at farm level. This is similar for slurry or nitrogen inhibitors. There is a question that if mandated for use, how could its use be verified? How could farmers complying with such a requirement be differentiated from non-compliant farmers?

There are mixed views on whether the use of chemical additives is compatible with a vision of more environmentally friendly dairy production and whether their use could undermine Ireland's reputation for its natural production system. There is agreement that additional work needs to be undertaken to develop the business case for their use and a wider safety assessment of their use on lower input grass based dairy production systems.

It may be premature to envisage the use of feed additives across the dairy sector until more is known about their prolonged use.

Assumption 5 Global demand for dairy will be maintained

Assumption Presented

Increased demand for dairy products in developing economies will offset increased demand for non-dairy in developed economies. Dairy exporting countries will seek to maintain current output levels.

Discussion outcome

The global market price will always be the signal of global demand, and despite volatility, the upward demand trend continues. Dairy production will continue to grow due to its relative profitability over other agricultural activities.

Acceptability of New and Alternative Technologies

Would you envisage using any of the following technologies? What would have to happen before you'd use them?

Non-nutrient Feed Additives

Scenario Proposed

Should the use of non-nutrient feed additives be considered in reducing emissions?

The recent opinion on the growth hormone Zilmax is that it is not of safety concern to consumers. The antibiotic, Rumensin is used in animal feed in the US to increase milk production efficiency.

Where scientific opinion does not highlight safety concerns, why would we not evaluate the potential of non-nutrient additives in food producing animals in reducing GHG emissions?

Discussion outcome

It seems contradictory to consider the increased use of hormones, antibiotic and other chemicals to improve the sustainability of dairy products. Ireland's reputation as a producer of natural and sustainable dairy products should not be undermined by the increased use of chemicals which are not necessary nor desirable for consumers.

Biotechnology

Scenario Proposed

Is there a role for the use of targeted Biotechnology in reducing GHG emissions?

The use of Biotechnology in feed and seed production could support reduced emissions from traditional agriculture.

Discussion outcome

The use of Biotechnologies including GMO's for seed production are unwelcome and unnecessary.

The use of Biotechnology in food or feed processing should be evaluated on a case by case basis by independent bodies like EFSA and subject to further analysis to establish consumer acceptability prior to being used.

Alternative Foods and Feeds

Scenario Proposed

How can alternative food and feed products improve the sustainability of dairy systems?

Is it realistic to expect that alternative proteins from novel sources and production processes can replace traditional dairy feed inputs?

Could the production of alternative proteins present new opportunities for the Irish Agri-food sector?

Discussion outcome

The use of alternative sources of protein for animal feed may reduce dependency on imported feeds from countries with lower environmental standards then the EU. Once assessed by independent bodies their use could present new opportunities for farmers.