FORECAST 2030

Analysis of the Irish dairy sector to 2030

Increase in production expected if processing capacity and environment constraints allow it

Dairy 4 future

WORK PACKAGE 4
DAIRY SECTOR ANALYSIS

Overview of outlook to 2030:

- Dairy cow numbers projected to increase by 10.5% to 1.67 million
- Average milk yield per cow is projected to increase by 7% and milk solids by 18%
- The % of grass in dairy cows diet is projected to increase by 8% (83% to 91%) while the volume of concentrates is to decline by 53% (1,144 kg to 602 kg per cow).
- Milk deliveries are expected to increase by 18% (from 8.5 billion to 10 billion kg) and may require additional processing capacity
- Average dairy farm size is projected to increase by 10% (59 to 65 hectares) and average dairy herd size is expected to increase by 18% (79 to 93 cows)
- Labour input per cow is to reduce by 35% from 26 to 40 hours/cow/per annum
- Carbon footprint of milk production to reduce by 22% (1.14 to 0.89 kg CO2 per kg FPCM)

- **Projections are subject to no trade disruption on foot of Brexit, CAP reform or future free trade agreements.**
- **Projections subject to no major environmental policy changes associated with climate change, water quality or biodiversity.**

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Analysis of key performance indicators for Ireland

DAIRY COW NUMBERS

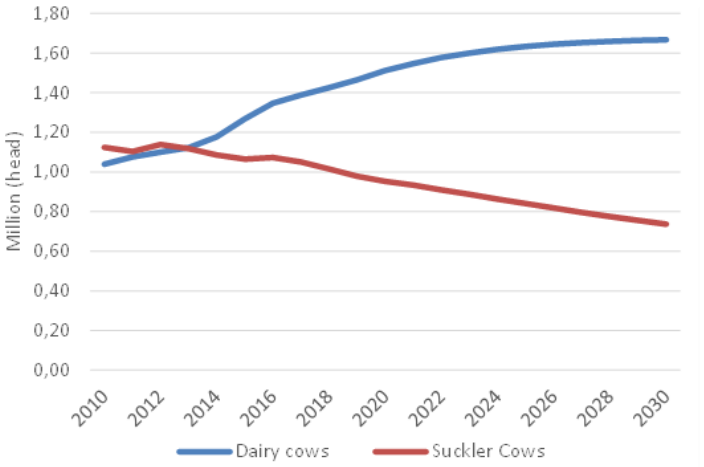
In a business-as-usual scenario outlook, dairy cow numbers across the Republic of Ireland are expected to increase year on year to 2030. It is projected that dairy cows numbers could increase by 10.5% from 1.51 million in 2019 to around 1.67 in 2030 (Donnellan & Hanrahan 2019). This increase in dairy cow numbers is expected to lead to a decline in the number of suckler cows over the period as there is substitution of land use from one to the other. The overall number of bovine animals are projected to remain stable are there is a movement away from beef production towards dairying. However, this expansion is subject to the prevailing policy environment which will be discussed in greater detail below.

PRODUCTIVITY

Projected growth in milk output in Ireland is not only predicted on the back of increased dairy cow numbers but also from increased productivity per cow. This will be particularly relevant if policy is to in some way constrain dairy cow numbers. Average milk yield per cow is projected to increase by 7% over the 2019 to 2030 period (circa 5,800 to 6,200 kg per cow) with milk solids per cow expected to increase by 18% over the same period from 420 kg to 494 kg per cow (O'Dwyer and French 2020). This is to be achieved while increasing the share of grass in dairy cows diet from 83% (2019) to 91% in (2030).

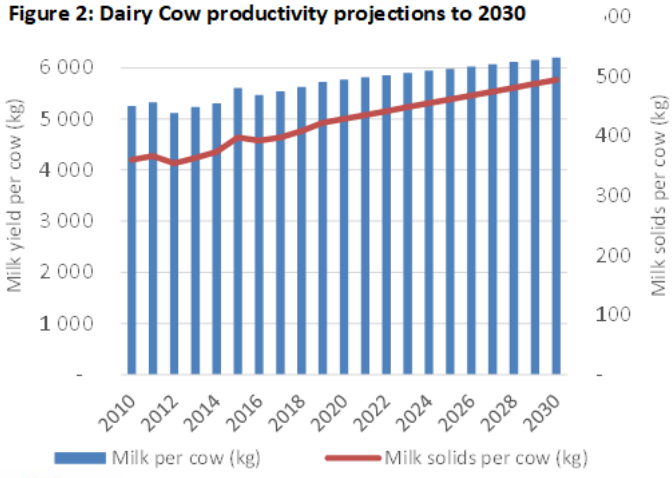
	Year		
	2019	2025	2030
Milk production (1 000 t)	8 225 786	9 173 947	9 964 080
Number of dairy cows (1 000 heads)	1 504	1 643	1 758
Number of dairy farms	16 500	16 500	16 500
Average farm size (ha)	59	62	65
Average herd size	79	87	93
% farms > 100 cows	24,1%	27%	30%
% farms 50 – 100 cows	47,8%	47%	46%
% farms < 20 cows	4%	3%	3%
Milk yield (l/ cow/ year)	5 776	5 989	6 173
Milk solids (kg/ cow/ year)	420	460	494
Stocking rate (LU/ ha)	2,04	2,15	2,20
Average chemical nitrogen fertiliser applied (kg N/ ha/ year)	175	163	150
Concentrate (kg/ cow/ year)	1 144	849	602
Share of grass in dairy cows feed intake (%)	83%	87%	91%
Share of purchased feed in dairy cows feed intake (%)	17%	13%	9%
Labour input (hour/ cow/ year)	40	33	26
Carbon footprint (kg CO2e/ kg FPC milk)	1,14	1,01	0,89

Figure 1: Dairy & Suckler cow projections to 2030



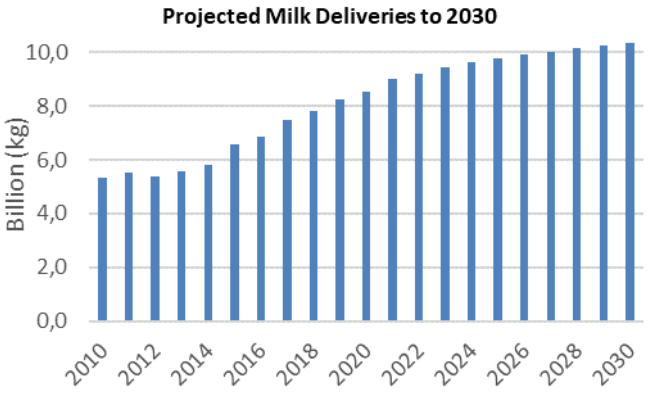
Conversely, the volume of concentrates is to reduce by 53% over the same period from 1,144 kg per cow in 2019 to 602 kg per cow in 2030. The increased herd size will place additional requirement of labour input. Productivity gains and economies of scale are projected to see a 35% reduction in per cow labour input from 40 hours/cow/per year in 2019 to 26 hours/cow/per year in 2030.

Figure 2: Dairy Cow productivity projections to 2030



MILK DELIVERIES & PROCESSING CAPACITY

On the back of the increased cows numbers and productivity per cow, milk deliveries across the Republic of Ireland are expected to increase by 18% from 8.5 billion kg in 2019 to 10 billion kg in 2030 (O'Dwyer and French 2020). However, the processing capacity for this increased milk may constrain this level of milk production. Additional processing capacity is required for this additional milk and objections on to planning application by environmental NGOs have recently delayed such infrastructure from commencing.



No major consolidation is expected in the Irish dairy industry at processor level in the medium term. The structure of the industry is expected to remain co-operative orientated. However, some of the larger milk processors have initiated measures to restrict milk supply during the peak spring production period due to a deceit in processing capacity. This has implications for the low-cost spring calving model of milk production, which pre-dominates across Ireland.

DAIRY FARM STRUCTURES

There is circa 16,500 farms which are classified as specialist dairy farms across the Republic of Ireland and a further 1,100 that are classified as mixed systems with a dairy enterprise in 2019 (Moran, 2021). In the lead up to and post abolition of EU milk quota regime there has been some movement into dairying from farmers in the dry stock sector. This is not expected to continue, and it is expected that numbers will stabilizes around these levels to 2030.

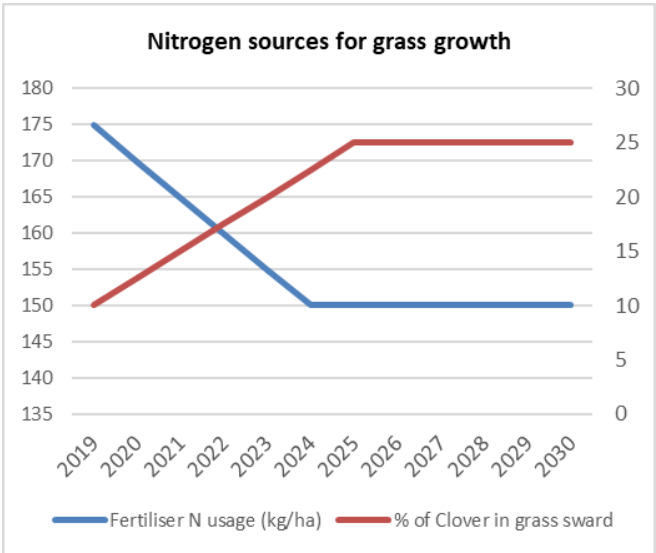
Based on historic trends the average dairy farm size is expected to increase year on year by 10% from 59 hectares in 2019 to 65 hectares in 2030.

The average dairy herd size in the Republic of Ireland is expected to increase by 18% from 79 cows in 2019 to 93 cows in 2030. This is expected to precipitate an upward movement in the herd size distribution where 24% of the dairy herds had more than 100 cows in 2019 to a situation where 30% of dairy herds are above this 100 cows threshold in 2030.

Environmental footprint

The dairy industry in Ireland is acutely aware that the environmental footprint of the sector is coming under increased scrutiny both from a policy and consumer acceptable perspective. Reductions in chemical fertilizer use are explicitly set down under the European Green Deal, EU Farm to fork and EU biodiversity strategies.

In this context, the average chemical nitrogen fertilizer applied (kg/ha) is projected to decrease by 16% from 175 kg/ha in 2019 to 150 kg/ha in 2030. This is to be achieved by a move towards move grass clover and multi-species swards where nitrogen fixation from the atmosphere replaces chemical nitrogen fertilizer. The form of chemical nitrogen applied is also expect to change, with a move away from straight urea and calcium ammonium nitrogen-based fertilizers towards protected urea fertilizers. This aims to reduce ammonia and GHG emissions from agriculture.



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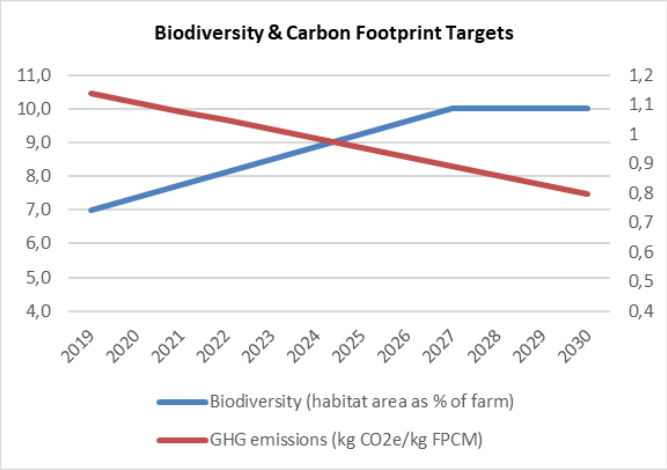
With the adoption of a suite of climate friendly farm level practices on dairy farms across the Republic of Ireland, the aim is to reduce the carbon footprint of milk production by 22% from 1.14 per kg CO2 per kg Fat and protein corrected milk (FPCM) in 2019 to 0.89 in 2027 (O'Dwyer and French 2020).

In terms of biodiversity the habitat area on the average dairy farm is projected to increase from under 7% in 2019 to over 10% in 2030 (O'Dwyer and French 2020).



Environmental challenges

The projections produced heretofore are premised on a business-as-usual policy environment. There are a number of environment and macro environment factors which could influence the structure of the Irish Dairy sector to 2030.

Nearly all of Irish ammonia emissions (99.2%) originate from agricultural activities, 89.4% from manures and the remaining 10.6 % from synthetic fertilizers and transport. Approximately 25% of ammonia emissions from agriculture in the Republic of Ireland are generated from the dairy sector. The Republic of Ireland has exceeded its EU based National Emissions Ceiling Directive (NECD) limits since 2016. As agriculture is almost exclusively the source of ammonia in Ireland, significant mitigation will be required to as the NECD threshold is set to reduce stepwise to 2030.

Agricultural greenhouse gas (GHG) emissions are currently at the forefront of climate change policy in Ireland. The agricultural sector in Ireland generates a much larger proportion of GHG emissions (35%) compared to the EU average (9%). The dairy sector is responsible for circa 40% of agriculture based GHG emissions in Ireland.

Under the European Union Climate and Energy Framework and subsequent Effort Sharing Proposals the target for the period up to 2020 (20% below 2005 levels) has not been met. The target for the current decade is to reduce emissions further (30% below 2005 by 2030) and emissions in Ireland are rising rather than falling.

In 2021, the Climate Action and Low Carbon Development Bill proposed by the Irish Government plans for a 51% cut in economy wide GHG emissions by 2030, and agriculture will be subject to a sectoral target under this framework (Government of Ireland, 2021). While sectoral targets and a series of five-year carbon budgets are to be set during 2021, GHG reduction targets will dictate the direction of the agriculture sector to 2030. This could put significant constraints on the dairy sector's ability to produce at or beyond current levels of production.

Ireland has secured a derogation under the EU Nitrates Directive to farm at a higher intensity (250 kg of organic N – nearly 3 dairy cows per ha) compared to the norm (170 kg of organic N – nearly dairy 2 cows per ha). Approximately 8,000 dairy farmers in Ireland avail of this derogation. The continuation of derogation is reviewed by the European Commission every 4 years and is subject to national and regional water quality trends. A recent Environmental Protection Agency (EPA) report indicated that many rivers, groundwaters and estuaries in the south, southeast and east of Ireland are under pressure from excess nitrogen from agricultural activities. Almost half the rivers (47%), a quarter of groundwaters (24%) and one fifth of estuarine and coastal water bodies (21%) have nitrogen levels that are too above optimal levels (Environmental Protection Agency, 2021)

In a wider policy sense, the European Green Deal (Farm to Fork and Biodiversity strategies) have proposed cutting fertiliser use by 20 %, reducing the use of antimicrobials in farmed animals by 50%, reducing pesticide use by 50%, while ensuring that 10% of agricultural area is under high-diversity landscape features and 25% of farmed land is under organic production.

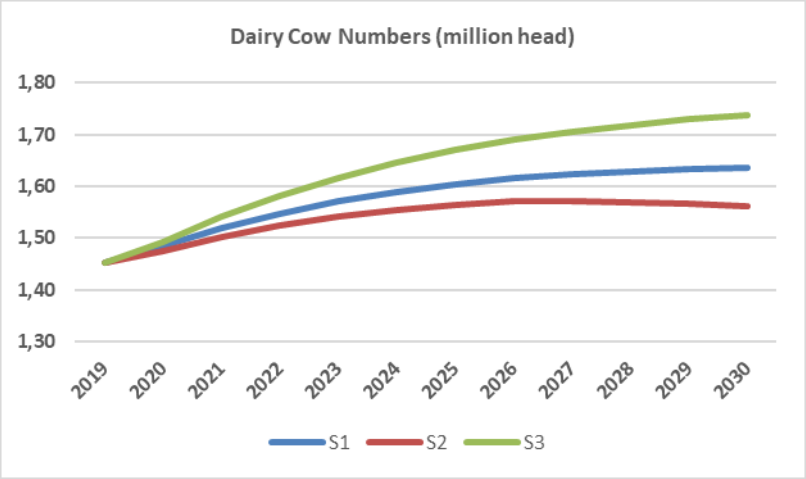
In summary, there are significant environmental constraints in realising some of the projections outlined under a business-as-usual scenario to 2030.

Macro environment

Because of the uncertainty concerning future economic and policy variables such as agricultural prices, rates of subsidy and trade tariffs, it is not possible to project agricultural activities from agriculture with any high degree of certainty.

The key uncertainties currently facing Irish agriculture relate to the continuing impact of Brexit and ongoing uncertainty around future trade relations, reform of the Common Agricultural Policy and the impact of any potential future free trade agreements.

For example, Donnellan & Hanrahan (2019) examined the effects on the dairy cow population under different policy assumptions. The scenarios different in terms of a soft (S1, S3) or hard (S2) Brexit, a stable (S1, S2) or favorable (S3) CAP reform and not changes in free-trade agreements. The difference between the dairy cow population in the S2 and S3 scenarios is 180,000 dairy cows. This has significant implications for aggregate milk production project to 2030.



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