

The relationship between climate change and agriculture is a contentious, complex and important one. In this series of twelve blogs, UCD Adjunct Professor Frank Convery will explore the context, challenges and potential solutions for dairy, beef and sheep farming in Ireland. Each blog presents key evidence to underpin informed debate and the series seeks to help plot a sustainable future for the sector.

Responses are invited via earth.institute@ucd.ie and the UCD Earth Institute will host a workshop in association with the UCD School of Agriculture and Food Science and the National Economic and Social Council at the end of the series to discuss the evidence and its implications.

Professor Tasman Crowe, Director, UCD Earth Institute



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6. Climate Performance by Irish Ruminant Farming: Complacents vs. Worriers

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*"Ireland will become a **world leader** in Sustainable Food Systems (SFS) over the next decade. This will deliver significant benefits...and will also provide the basis for the future competitive advantage of the sector".*

Food Vision 2030 [1]

"Only the paranoid survive."

Andy Grove, former CEO and chair of the board, Intel

Some Key Points

There are some important positive developments ('green shoots') emerging. Actions at farm level to address climate change are manifest, which is epitomized by adoption of [Low Emissions Slurry Spreading \(LESS\)](#) amounting in 2021 to 67% of volume generated by dairy farmers, and much more ambition is evident by individuals, including Jimmy Cotter,^[2] Gillian and Neil O'Sullivan,^[3] and Peter and Paula Hynes.^[4] We also see some limited improvement in carbon footprint for dairy – 6.6% from 2016 to 2021 – but none for beef and sheep.

However, we also observe that both aggregate emissions and emissions per farm continue to rise, and that there is some dissonance in the public messaging that farmers have been receiving.

In the public discourse about Irish ruminant farming's current and prospective climate footprint (Kgs of CO₂e emissions per Kg of product) vis a vis its competition in key export markets, we observe two voices: The first of these (the 'complacents') has been the case making in public on Ireland's climate policy by the [Irish Farmers' Association](#) (IFA), [Irish Creamery Milk Suppliers Association](#) (ICMSA) and Michael O'Leary and their supporters in the [Irish Farmers' Journal](#); this may in part be strategizing for increased funding for farmers to address the climate agenda, but, taking their public pronouncements at face value, they seem to be convinced that: first, Ireland's past and current performance (Kgs of CO₂e per Kg of product) is already world class, and (by implication) will continue to be so in the future; second, if, as a result of a stringent Irish climate policy, Irish food output falls, it will be replaced by product that has a larger carbon footprint.^[5]

The second (the 'worriers') are those who aspire to be world leaders in future sustainability performance – including carbon footprint – but have concerns that the steps needed to achieve this may not be delivered and this would have negative consequences in their key markets; this is a view held by many of those directly selling our food into fiercely competitive global markets. It is clear from [Blogs 3 \(EU\)](#), [4 \(UK\)](#) and [5 \(US\)](#) which in 2021 consumed 69.2% of our ruminant farm sales, that farmers in these jurisdictions will provide the main competition to Irish output, and that these farmers are likely to reduce their carbon footprint significantly in the future. It is also worrying that carbon complacency seems to rest in part on evidence that is 18 years old and confined to the EU, and it ignores that there has been very limited improvement – 6.6% in dairy, none in beef and sheep – over the 2015–2021 period. A key issue is whether we will end up with a large sub-set of farmers who are delivering a globally competitive carbon footprint, but the rest are not, or if the national average footprint is competitive such that we can market Irish farming as a global leader.

Introduction

I lived in New York City (Manhattan) from 2014–2018, working as chief economist at the Environmental Defence Fund. Whilst there, I was appointed to the Irish government's Climate Change Advisory Council (2016–2021) chaired by John FitzGerald. On my return to Ireland, I served on the government's AgriFood 2030 committee (2019–2021) chaired by Tom Arnold.

Very few products with an Irish lineage and brand capture the imagination of US consumers at scale, and three that do are food/beverage specific – Bailey's Irish Cream^[6], Guinness, Kerrygold.

Whilst in New York, about every two weeks, I would buy Ornuá's Kerrygold butter, sometimes at Whole Foods – known locally as 'whole pay-check' because of its high prices – but the product was available in most grocery stores. When I travelled, I was pleased to find Kerrygold in the dairy section of every Walmart store I visited; it is the largest grocer in the world. I also noted that on no real or virtual shelf did I see product from Brazil competing with Ornuá's.

It did encourage reflections around how well its products will fare when carbon footprint competition in this key market became serious, so in a sense my bi-weekly shopping was an impetus to undertake [this blog series](#).

Below, I show some evidence as regards: the annual trends (2015–2021) in the average carbon footprint of Irish ruminant farming output and emissions per hectare by farming system; two contrasting perspectives as to how this performance is viewed; developments at corporate level (which are addressed in detail in Blog 8); the carbon leakage issue. I conclude with my assessment as to what the evidence implies.

Evidence

Some Green Shoots but...

There is such a thing as first mover disadvantage, namely, the costs that those brave souls incur as they act to take on a new challenge where few have gone before. But such individuals are crucial to the well-being of us all because they learn by doing, and we learn from their mistakes and successes. Via traditional media, I have encountered three such:[7]

Gillian O’Sullivan, a dairy farmer (with husband Neil) in County Waterford (a ‘derogated’ dairy farmer with 100 cows): She is undertaking changes to address the climate and environmental challenges, much of it around reducing fertilizer use, getting nitrogen trapping clover into her swards (25%), finding a clover-safe spray, investing in low emissions slurry spreading, changing her roadway to reduce run off.

Jimmy Cotter, a dairy farmer, Coachford, County Cork has: made his herd and therefore his milk output (Kg of milk solids) more CO₂e efficient by cross breeding with Jersey cows (smaller animals, eat less, emit less methane, produce more milk); fertilized with protected urea; reduced fertilizer application by introducing clover into his swards – now 27% and this will increase; installed solar panels

Peter and Paula Hynes from Aherla, Co Cork: They are the first commercial farmers on the island to use Bovaer and additive developed by a Dutch company (DSM) to reduce enteric methane emissions. They note that “At the moment, there are 30,000 cows in Europe being fed this – and we’re just a small Cork farm trying to do our bit.” Starting with a batch of 20 high-yielding cows, the supplement will be fed as part of a grass-silage based diet formulated by a ruminant nutritionist, at a rate of 165g at 0.8% based on 24kg of dry matter intake a day, at a cost of to them of €7 a cow per month.

At macro level, there is progress:

Table 1. Application of Low Emissions Slurry Spreading (LESS) and Use of Protected Urea Fertiliser, by Ruminant Farm System, 2016–2021 Ireland

MEASURES	Unit	2016	2017	2018	2019	2020	2021
1. Low Emissions Slurry Spreading	% of total farm slurry applied						
DAIRY		4	5	5	32	52	67
CATTLE		1	2	3	12	18	25
SHEEP		-	-	-	-	2	2
2. Apply protected Urea							
DAIRY		-	-	-	3	5	7
CATTLE		-	-	-	1	1	2
SHEEP		-	-	-	-	2	2

Source: BUCKLEY AND DONNELLAN 2022. 2021-Sustainability-Report Teagasc October.pdf, pp79-83

We can see that both of these measures have gone from virtually zero to significant in the case of LESS applied by dairy farms (67% in 2021), and non-trivial also by cattle farmers (25% in 2021). It seems likely that the current regulations which provide for the compulsory usage of Low Emission Slurry Spreading (LESS) equipment for all farmers operating above 170kg N/ha and Derogation farmers has been the key to this change. The increase in the use of protected urea fertilizer is real but modest.

Less positively, key evidence from the past that informs this discussion comes from Teagasc’s recent Sustainability Report.[8] Table 2 tells us that, over the past 6 years: greenhouse gas emissions per average Irish farm have increased from 518.8 to 614.1 tonnes of CO₂e, with nearly all of the increase attributable to dairy – up from 359.0 to 454.3 tonnes of CO₂e per average farm; average CO₂ intensity of milk production (Kgs of CO₂e per Kg of Milk) has fallen from 0.91 to 0.85 – a 6.6% improvement over the 6 year period – while the carbon intensity of both beef and sheep meat show no improvement (and may have increased) over the same period.

Table 2 Trends in Emissions per Average Farm, by System, and Carbon Footprint (Kgs CO₂e/Kg Product) Dairy, Beef, Sheep) 2016–2021

Activity	Unit	2016	2017	2018	2019	2020	2021
EMISSIONS/AVG. FARM	Tonnes CO ₂ e						
Dairy	518.8	545.0	572.5	576.5	598.1	614.1	
Cattle		147.0	152.3	161.1	150.0	147.4	156.6
Sheep		154.6	161.5	158.6	153.0	153.4	166.0
CO ₂ INTENSITY	Kg CO ₂ e/Kg product						
Cow milk	Kg Milk FPCM (LCA)	0.91	0.96	0.92	0.89	0.86	0.85
Beef	Kg liveweight	11.9	12.0	12.6	11.7	11.7	12.0
Sheep	Kg liveweight	10.5	10.5	11.3	10.2	11.8	11.4

Source: [BUCKLEY AND DONNELLAN 2022. 2021–Sustainability–Report Teagasc October.pdf pp78–83](#)

Table 3 shows increasing average emissions per hectare on the average dairy farm – rising from 8.8 in 2014–2016 to 9.4 tonnes of CO₂e in 2019–2021, and little change in beef and sheep.

Table 3. Greenhouse Gas Emissions per Hectare, tonnes of CO₂e, Rolling Average 2014–2021

	2014–2016	2015–2017	2016–2018	2017–2019	2018–2020	2019–2021
Dairy	8.8	9.0	9.2	9.3	9.4	9.4
Cattle	4.3	4.5	4.7	4.6	4.6	4.5
Sheep	3.9	4.0	4.2	4.1	3.9	3.9
All Farms	4.9	5.1	5.3	5.2	5.2	5.2

Source: [BUCKLEY AND DONNELLAN 2022. 2021–Sustainability–Report Teagasc October.pdf, p. 63](#)

Worriers

The essence of the worriers' case is a paraphrase of Bill Clinton's famous observation: "It's the market, stupid."

The 'day job' of seven of the 33 members of the Stakeholder 'Vision 2030' Committee^[9], chaired by Tom Arnold was selling food into hugely competitive global markets. The intensity of their concern varied, but they could all be classified as 'worriers'. They accepted that sustainability metrics generally and climate performance in particular would be an important consideration for some key consumers in the future, and that we had to compete or risk losing their affection and support. This view is reflected in the core recommendation of the committee, namely, that becoming a global leader in the delivery of a sustainability agenda would: 'provide the basis for the future competitive advantage of the sector' (see above). It also reflected by the fact that the recommendations of the Food Vision Dairy Group were welcomed by Dairy Industry Ireland^[10], saying 'it allows Irish dairy to further enhance its competitive advantage' but not yet embraced by some of the farm organizations.^[11] More on this in Blog 10 (CAP 2023–2027).

Views from the Market Place

Ireland's current standing in key markets is very high. This is captured by Elizabeth G Dunn, writing in Bloomberg News, October 10, 2019 (8 months after justice Marilyn Huff's judgement in favour of Ornu's grass-fed claims): Dunn notes that while Ireland's annual

milk production (8 billion litres) is 8.3% that of the US (96 billion litres) Kerrygold is America's second-best-selling brand of butter ([Land O'Lakes](#), the domestic brand that's dominated shelves since 1921, holds the top spot), commenting as follows:[\[12\]](#).

"It's often displayed alongside [Pluigrá](#), a European-style butter produced in the U.S. by the [Dairy Farmers of America Inc.](#); [Lurpak](#), imported from Denmark; and [Président](#), a French offering—all of which come in half-pound slabs, priced at a premium to Land O'Lakes and other mainstream domestic brands".

She goes on to name check big name endorsers (which include Sarah Jessica Parker, Kourtney Kardashian, and celebrity chefs) and flags attributes, such as lack of additives, grass fed, texture and taste, family farms, that appeal to consumers. She makes no reference to the product's climate performance. It would be a huge blow if, in the future, performance on this critical front were to undermine its status.

This concern is reflected by Róisín Hennerty, Managing Director of Ornuia Foods quoted in an interview with Eoin Burke-Kennedy *Irish Times* May 11, 2019:[\[13\]](#).

"Ireland's food industry trades on the idea of Ireland as a pristine pasture, unspoilt by heavy industry, something that plays particularly well with the Germans. But the State's record on climate change and sustainability is completely at odds with this... We have a responsibility. We're Ireland's most visible dairy brand. It's critically important to us that we embrace the change that needs to happen. We need to be part of the action-driven initiatives to reduce emissions."

Some of the positive developments underway since 2019 are addressed in later blogs, i.e. Blog 10 (CAP 2023-2027) and 12 (Innovation).

The strategic question facing Ornuia and other Irish food exporters is this: If, in the future, their products rank below competing products as regards climate impact, how will this influence the decisions of consumers and of trend setters? A second, internal issue for Ornuia could be posed by the relative carbon efficiency performance of its suppliers, which at present include Aurivo, Arrabawn, Carbery, Dairygold, Tirlán (formerly Glanbia Ireland), Lakeland Dairies, North Cork Creameries and Tipperary Cooperative. If, say, Ornuia decided that, to ensure its standing with key consumers, it needed to reduce its Kg CO₂e emissions per Kg of milk (Life Cycle Assessment) by 30%, i.e., from the average emissions in 2021 of 0.85Kgs (see Table 1 above) to 0.595 Kgs, it presumably will have to ensure that the carbon efficiency of all of its 8 suppliers is sufficient to deliver this target.

This worry on the demand side is complemented by evidence I presented on the supply side addressing developments in [metrics \(Blog 2\)](#) and current and/or potential future emissions reductions and/or carbon removals by farmers in our three biggest markets - [EU \(Blog 3\)](#), [UK \(Blog 4\)](#) and the [US \(Blog 5\)](#).

From 2025 the New Zealand government proposes to apply a levy on greenhouse gas emissions with the following features: if enacted, **participation** will be obligatory for all farms with 50 or more dairy cattle, or >550 stock units (deer, sheep, cattle) or who apply 40 tonnes or more of synthetic nitrogen. Emissions must be **reported** to the Emissions Trading Register. **Levy payable** [(Kg methane emissions x levy rate) + Kg long lived gasses (N₂O, CO₂) x long lived levy rate]. **Incentive payments** for approved mitigation technologies and on-farm vegetation. **Levy rate** for: long lived gasses will be linked to the unit prices in NZ ETS; methane – Climate Change Commission to advise ministers. **Use of levy revenues** developed with Māori/sector advisory body/bodies – fund incentive payments, administration and research and development.[\[14\]](#)

Corporate Developments

Another consideration is development at corporate level. These are happening at different levels. One level is decisions by retail companies to reduce the carbon footprint in their supply chain, epitomized in the US by Walmart, the world's largest grocer.[\[15\]](#) Under Project Gigaton, it is working with suppliers to avoid 1 billion metric tons of greenhouse gases from its global value chain by 2030 (Scope 3). A second is decisions by some investors and financial institutions to favour companies and projects that reduce emissions at scale. Mark Carney, an Irish passport holder who served as former governor of the Bank of England and is co-chair of the Glasgow Financial Alliance for Net Zero is heavily involved in advancing this agenda.[\[16\]](#) For those companies who want to be sure of space on Walmart's shelves, and to secure preferential access to investors and lenders who prioritize companies who deliver high carbon performance, it is important to pay attention.

The Complacents

Based on their public pronouncements, such worries did not afflict the complacents.

[17] On the contrary they are publicly confident that Ireland is already ahead of the competition and (by implication) will remain so, and that actions to reduce emissions in Ireland would result in loss of production which would be replaced by output from other countries that was more carbon intensive (carbon leakage) and this would result an increase in global emissions.

Farm Organizations

The Irish Farmers Association (IFA) has over 70,000 members. In its submission to the Agri-Food 2030 Committee, it argued as follows:[18]

“Irish dairy and beef output is extremely efficient from a carbon footprint perspective. Irish milk has the lowest carbon footprint in the EU while Irish beef has the fifth lowest. Despite what many would lead us to believe, the carbon-efficient expansion of milk production in Ireland has helped displace approx. 4 million tonnes of carbon which would have been emitted had the equivalent dairy product been produced outside of Ireland.” (p. 8)

“While agriculture has a responsibility to protect the environment, the imposition of a target without accounting for global carbon leakage arising from food production is ill-informed and more likely to lead to a rise in global GHG emissions. Food production must be encouraged in areas where it is most carbon efficient to do so” (p. 13)

Another view to the effect that we are already doing very well in terms of carbon footprint is expressed by Pat McCormack, President of the Irish Creamery Milk Suppliers Association (ICMSA):[19]

“Irish dairy and beef have reduced their emissions per kg of production significantly, I would say by 20-25 per cent over the past 5-6 years..... If we want to feed the globe in the most efficient way possible, we need to maximize production on this island.”

Michael O’Leary, Group CEO Ryanair

He is a paradox: There is no reason why Ireland should be hosting the largest airline in Europe. It does so because O’Leary had: the sense to learn from the experience of SouthWest Airlines, led by Herb Kelleher, who used the opportunity provided by President Carter’s de-regulation of airline travel in 1978 to expand beyond Texas and create a hugely successful low-cost airline in the US; and the courage and talent to use the opportunity provided by the deregulation of air travel in the EU over a decade later to do likewise in Europe.

In recent interviews conducted by Damien O’Reilly[20] and Margaret Donnelly[21], O’Leary demonstrated modesty and great command of data as regards the airline industry and commercial aspects of his Gigginstown farm. However, when he turned to climate change and agriculture, to put it mildly, his acuity and command of evidence deserted him: Two examples:

Example 1: “The real challenge for the world is can we stop the Chinese and the Indians building coal burning power stations. Really what the Irish do will have no impact on climate change in the next number of years.”

Wrong: We are all special cases. A third of rural-based Indians (304 million) do not have electricity,[22] and both their per capita greenhouse gas emissions and their per capita GDP are a small fraction of ours. You can imagine how President Modi would respond if an Irish Taoiseach was foolish enough to buy into the O’Leary philosophy and say: ‘President Modi, we will not make any serious effort to reduce our greenhouse gas emissions until you stop building coal fired power plants’.[23]

Wrong again: Small countries can make a huge climate-difference when they chose to do so. From Denmark (population 5.8 million) Peder Hansen and his son Finn did for wind power globally what O’Leary did for low-cost air travel from Ireland. Denmark incubated the policy, and the Hansens mobilized the technology and created and implemented the business model (Vestas) that transformed the prospects of wind power globally. See Blog 12 (Innovation) for more detail. Denmark is also leading the charge within the EU to reduce greenhouse gas emissions from indoor containment farming systems and has just signed an agreement with California.[24]

Example 2: “There is far too much criticism of agriculture: agriculture is not the cause of global warming. Fossil fuels are”.

Wrong: The direct annual emissions from agriculture are 6 billion tons CO₂e (10.7% of global total); if you add land clearance for agriculture, emissions rise to 11.88 billion (21.3% of total).[25]

The Irish Farmers Journal

The apparent complacency of some farm organizations and O'Leary has been supported in the editorial pages of the *Irish Farmers Journal* (IFJ):[\[26\]](#)

"Reducing beef or dairy production in Ireland will not reduce global production of these products. As the Brazilian figures show, it merely moves production to more mission-intense regions of the world. This is admitted in the EU's JRC report on the impact of Farm to Fork recently[\[27\]](#)."

My critique of the Farmers Journal relates to the poor quality of its opinions on climate change, not to its reporting of facts, which are generally of a high order. For the latter reason, I am a subscriber: in the 72 pages of the Saturday November 2022 issue, I counted 17 contributors (listed alphabetically below)[\[28\]](#) who provided credible facts on developments relevant to climate policy, and were worth reading.

KPMG Assessment

The Irish Farmers Journal commissioned an assessment by KPMG of the impact on average farm income (dairy and beef) of 5 scenarios, representing increasing levels of emissions reduction. Its findings are shown in Table 4.

Table 4. Assessment of the Income/Cost Impacts of Meeting Emissions Targets by Agriculture in Ireland

Scenario	Emissions and (%↓from baseline)	Impact on Farm Incomes/Costs 000€		Key Assumptions
		Dairy	Beef	
Baseline (2018)	21.4 (0)	0	0	
1	18.5 (-13)	+5.1	+0.2	Full implementation of MACC measures
2	17.5 (-18)	+2.1	-0.3	Same as 1, but more uptake and additional measures
3X	16.9 (-21)	-4.3	-1.2	
3	15.0 (-30)	-17.5	-2.8	Same as 2, but also reduced livestock numbers
4	10.7 (-50)	-46.4	-5.6	Same as 3, but additional livestock number reductions

Source: KPMG, 2021. Ireland's 2030 Carbon Emissions Targets – an Economic Assessment for the Irish Agriculture Sector prepared for the Irish Farmers Journal, [Irish Farmers Journal – For the Latest Farming News in Ireland Pp 9, 11](#)

This analysis suggests that emissions from the baseline could be reduced by 18% (scenario 2) at zero cost, but that increasing reductions by an additional 12%, to 30%, would result in very large income reductions – €17,500 for the average dairy farm, and – €2,800 for the average beef producer.

The Carbon Leakage Issue

'Carbon leakage' is said to occur when: some farmers ('Group A') engage in efforts to reduce emissions and/or remove carbon which cost time and money, which in turns means that they have to increase the prices of their products and/or reduce output; they sell in markets where they are competing with the output of farmers that do not make comparable expenditures to reduce emissions and/or store carbon ('Group B'); this gives 'Group B' a competitive advantage, and they take market share from Group A, and so total emissions increase.

The most important determinant of estimated future carbon leakage is the assumption as regards the counterfactual – if Irish farmers engage in activities that reduce emissions, and reduce their deliveries to market, what producers will fill the gap, and what will their emissions profile (abatement and storage) be?

Shalloo and French^[29] made the assumption that the counterfactual for Irish dairy output could be producers with the average emissions intensity globally:

“A recent FAO report has highlighted that the average carbon footprint of global milk is 2.5 kg of CO₂e for each litre of fat and protein corrected milk produced. The corresponding figure for Ireland is ~1 kg of CO₂e per litre of fat and protein corrected milk when carbon sequestration is included....in reality, if Irish or EU policy prevents sustainable dairy expansion from grass, there will be a marked increase in global emissions. The expansion of the Irish dairy industry, producing additional low (1 kg CO₂e) emission intensity milk, has reduced the global footprint of milk production by circa 4.0 million tonnes of CO₂e based on the assumption that it displaced milk from the market that would have been produced with the average emission intensity globally.”(emphasis added)

Their statement is correct, in the sense that the conclusion follows from the assumption.

Assessment

Most of us hear what we want to hear, not what we need to hear.^[30]

It is hard to convince most farmers to roll up their sleeves and reduce emissions and/or store carbon at scale when key influencers are arguing publicly that to do so will result in carbon leakage and is therefore by implication pointless. We need most farmers to follow the lead of [Signpost farmers](#) (See Footnote 3 below) if Ireland is to become a ‘world leader in Sustainable Food Systems (SFS) over the next decade’.

The national (Food Vision) aim is to achieve global leadership for Ireland Inc., which means that most farmers will have to take effective action. Another scenario is that a large subset of farmers take on the challenge with vigour and succeed, but others do not, in which case we will have a binary ruminant farming supply chain – one cluster with a carbon footprint that is globally competitive in key markets, and another that is not.

In Blog 10 (CAP-2023-2027) I focus on what the new CAP is likely to deliver in terms of outcomes; a preliminary conclusion is that it is likely to deliver the second outcome, i.e. a large subset of farmers will succeed, but Ireland Inc will fail to provide global leadership. I devote Blogs 11 (Other Instruments) and 12 (Innovation) to exploring what additional policies are likely to be needed if we are to fulfil Food Vision’s 2030 ambition of Ireland as a global leader.

Worriers vs Complacents

I am firmly in the worriers’ camp, for a few reasons:

- Generic: ‘We’re grand’ is never a successful strategy; it would not survive for a millisecond in Andy Grove’s Intel (Incidentally, his father was a dairyman in Hungary). Grove’s model was to be paranoid about what his competition was up to, devote huge time and talent towards being abreast of the underlying forces emerging in technology and the marketplace and then act accordingly.
- There is probably much more happening behind the scenes, but I see no *publicly available* evidence that the farm organizations, Michael O’Leary and the Irish Farmers Journal are following Grove’s lead, i.e. interrogating what Ireland’s competitors in key markets are up to on the climate front, and how this might shape emissions measurement,^[31] producer carbon footprint competition, consumer outcomes and climate policy actions in our top three markets [more on this in [Blogs 3\(EU\)](#), [4\(UK\)](#) and [5\(US\)](#)] and there is limited evidence that they have prioritized driving Irish policy to find ways that work to reduce enteric methane emissions at scale. And my sense is that what is emerging on the food additives front will give a competitive advantage to indoor containment systems – more on this in Blog 12 (‘Innovation’).
- I would not like to be in Marilyn Huff’s court making the case for the excellence of Ireland’s climate performance credentials if a key anchor is 18-year-old data, and emissions performance per kg has been static or increasing for the past 6 years in the case of beef and lamb, and only very slightly declined in the case of milk

KPMG Assessment

This study is useful, but:

- It understates the costs of the first abatement steps (up to -18% in Scenario 2),^[32] and it seriously overstates the costs of further abatement because it assumes that:
- It shows no consequences in the marketplace that depend on emissions performance, i.e., the price secured per kg of product in key markets would be the same under emissions reduction scenario 1 as scenario 3^[33].
- It does not consider: what a well-designed, funded and delivered climate policies (including an innovation strategy) that reward emissions reduction and carbon storage (See Blogs 9 through 12 thereon) could achieve

Carbon Leakage

- I disagree with the proposition that if consumers in Berlin, Birmingham and Boston switch from Irish ruminant products either because they are unhappy with the carbon footprint or Irish product or supplies have been reduced, they will transfer their custom to suppliers “whose carbon footprint is the average emission intensity globally”. In the first round, most are likely to replace their Irish-originating purchases from other suppliers to their grocery, most of whom are local and whose footprint will be nothing close to the average emission intensity globally. One potential exception is the China beef market assuming that we get access thereto. Brazil is a very large supplier to this market, and its national average carbon footprint is much larger than Irish producers (although this gap is being narrowed).
- Similarly, the Irish Farmers Journal’s interpretation of the implications of JRC’s technical assessment of the EU’s proposed Farm to Fork strategy for global emissions is wide of the mark. What the JRC report says is that there is leakage, but it is ~50% of the total, i.e., for every 100 tons abated within the EU, global emissions will be reduced by ~ 50 tons: Specifically: “The Farm to Fork (F2F), Biodiversity Strategy (BDS) and targets & CAP LP scenario shows that the CAP reform can help to deliver a 28.4% reduction in GHG emissions (including both non-CO2 and CO2) from the agricultural sector by 2030 compared to the baseline... However, more than half is ‘leaked’ to the rest of the world (i.e., emissions increase in non-EU regions). By including the potential impact of the additional budget under NGEU (F2F and BDS targets & CAP LP + NGEU scenario), this mitigation rises to 28.9%. The leakage rate of the non-CO2 agricultural emissions mitigated is also reduced to 47%.” ^[34].

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Biography

Frank Convery has degrees [B. Ag and M.Ag (Forestry)] from UCD. Encouraged by the late Seamus Sheehy, he went to the US and took a PhD in Forestry Economics (State University of New York). After a distinguished academic career in the US (Duke University) he returned to Ireland as research professor at ESRI before being appointed as Heritage Trust Professor of Environmental Studies at UCD where he led the successful application for the funding of the UCD Earth Institute. He chaired the boards of the Sustainable Energy Authority of Ireland (SEAI) (2002-2007), Comhar Sustainable Development Council (2006-2010) and served on the Climate Change Committee (2016-2020) chaired by John FitzGerald, and the AgriFood 2030 Committee chaired by Tom Arnold. The latter produced *Food Vision 2030*. From 2014 to 2018, he was chief economist with the Environmental Defense Fund, New York. His passion is finding ways to bring the weight of learning down to where things are done; his ambition for the sector is the same as Food Vision 2030's: "Ireland will become a **world leader** in Sustainable Food Systems (SFS) over the next decade. This will deliver significant benefits...and will also provide the basis for the future competitive advantage of the sector".

Footnotes and references

[1] [gov.ie](http://www.gov.ie) - Food Vision 2030 – A World Leader in Sustainable Food Systems (www.gov.ie) p.9

[2] *Ear to the Ground*, RTE1 TV, Nov 25, 2021.

[3] interview with Damien O'Reilly, Country Wide April 24, 2021 [CountryWide \(rte.ie\)](http://CountryWide.rte.ie).

[4] *Cork Examiner* 26 October 2022 <https://www.irishexaminer.com/farming/arid-40992677.html>

[5] This is called 'carbon leakage'.

[6] In Blog 12 ('Innovation Strategy') I use the Bailey's story to make the case for an Irish mission focussed innovation strategy addressed in particular to enteric methane reduction.

[7] Teagasc is fostering these with its Signpost programme. [Signpost Programme - Teagasc | Agriculture and Food Development Authority](#)

[8] [BUCKLEY AND DONNELLAN 2022. 2021-Sustainability-Report Teagasc October.pdf](#). Note that these data for the years 2015–2020 differ from those shown in Table 8 of Blog 1 (Looking Back). The explanation is found in ‘Methodological Updates’ in Buckley and Donnellan, 2022, p. ix, which concludes: “Reflecting development of our scientific understanding of the global warming potential of different GHG and our understanding of the composition of the Irish farm population, the revised and updated set of historical sustainability indicators supersede previously published Teagasc Sustainability report data”. The main difference seems to be improvement in the estimated carbon efficiency of milk, while showing dis-improvement for both beef and sheep.

[9] Full membership listed in: [gov.ie - Food Vision 2030 – A World Leader in Sustainable Food Systems \(www.gov.ie\)](#), p. 6

[10] [Report of the Food Vision Dairy Group, October 25, – Search \(bing.com\)](#).

[11] See more in ‘Farm groups slam dairy report’s exit scheme and 30% nitrogen cut’ by Noel Bardon, *Irish Farmers Journal*, October 25 2022. [Farm groups slam dairy report's exit scheme and 30% nitrogen cut 25 October 2022 Free \(farmersjournal.ie\)](#)

[12] [Irish Butter Kerrygold Has Conquered America’s Kitchens – Productivity Hub](#)

[13] Eoin Burke-Kennedy, "Ornua advances from foreign markets to global concerns: Billion-euro Kerrygold brand changed the image of Irish food in the US," in *the Irish Times*, 11 May 2019. <https://www.irishtimes.com/business/agribusiness-and-food/ornua-advances-from-foreign-markets-to-global-concerns-1.3887923>

[14] Ministry for the Environment and Ministry for Primary Industries. 2022. *Pricing agricultural emissions: Consultation* document. Wellington: Ministry for the Environment, October. [Pricing-agricultural-emissions-consultation-document.pdf \(environment.govt.nz\)](#), p.19

[15] Details at: [2020 Walmart Environmental, Social & Governance Report and Sustainability \(walmart.com\)](#)

[16] Read more at [Governments must seize the chance to transform our unsustainable energy systems | Financial Times \(ft.com\)](#) Financial Times, August 12, 2022.

[17] Some reviewers of this blog in draft argued that it is unfair to characterise some as ‘complacents’ – that they are in fact worriers, but there are strategic reasons why their concerns are expressed privately. I do accept that this dichotomy may well exist

[18] Submission to the Public Consultation on the Environmental Assessment of the Draft Agri-Food Strategy to 2030 15th June 2021.

[19] [News At One Friday 8 April 2022 – News At One \(rte.ie\)](#)

[20] [CountryWide Saturday 9 April 2022 – CountryWide \(rte.ie\)](#)

[21] See details in article by Margaret Donnelly *Farming Independent* April 5, 2022 ([Michael O’Leary: ‘I hope all my children will become young farmers’ – Farming Independent](#))

[22] [number of indians without electricity 2021 – Search \(bing.com\)](#)

[23] For COP 26, I commissioned a series of baseline evidence papers (climate policy architecture, past and prospective policies, diplomacy) for each of China, EU, India and the US. They are available at [CLIMATE POLICY BASELINE CHINA EU INDIA US FOR COP 26.pdf](#)

[24] [California and Denmark Sign MOU on Climate Smart Dairy Collaboration | Dairy Business News](#)

[25] Global Agriculture GHG Emissions [IPCC_AR6_WGIII_FinalDraft_TechnicalSummary.pdf](#) page TS-85

[26] August 21, 2021, p. 2

[27] Barreiro-Hurle et al, 2021. [pubsy_jrc_technical_report_-_capri_environmental_and_climatic_ambition_2\(4\).pdf](#)

[28] Noel Bardon, News Correspondent: ‘EPA calls for council to ramp up farm inspections’; Gerry Boyle: ‘Food Vision Dairy Group recommendations need substantial investment’; Aidan Brennan: ‘Carbon sub-index added to the EBI’; Darren Cawley: ‘Up to 50% of scrub rock deemed eligible for payment in next CAP’; Andy Doyle: ‘Under the bonnet of the eco-scheme options’; Ellen Durkin: ‘Red Clover silage proving its worth on a Tullamore farm’; Amy Forde, Deputy News Editor: ‘Space for Nature values could change in the future’; Jack Kennedy, Interim editor: ‘Forestry – a new dawn for a stalled industry’; ‘Licensing timelines

and carbon ownership the challenges in forestry'; Donal Magnier: the BIG INTERVIEW with Pippa Hackett; Peter McCann: 'Fewer rushes and more nature'; Colm McCarthy: 'International Cohesion is short supply at COP27'; Tommy Moyles: 'Working out if ACRES is runner'; Barry Murphy, News Correspondent: 'Electric Car target to be scrapped as government prepares a new climate action plan for 2023'; 'Carbon targets increased for land use'; 'Ireland 37th in global climate ranking'; 'Airports and cement plants the top polluters in Ireland COP hears'; Eleanor Murphy (Origin Green) 'How to improve carbon footprint reporting'; Dale O'Brien: 'Warning over paying forestry premium to hedge funds'; Stephen Robb 'More support needed to kick start anaerobic digestion'; Tirlán to build AD plant in Ballyragget site'; Siobhán Walsh, Sustainability Specialist: 'Ban on burning bushes in 2023'.

[29] Shalloo, Laurence, and Pdraig French, 2019. [Taking-stock-of-sustainable-growth.pdf \(teagasc.ie\)](#), p. 21.

[30] I experienced this phenomenon at a presentation by Frank Mitloehner, Professor and Air Quality Specialist Department of Animal Science, UC Davis to a seminar organized by MSD and hosted by the Irish Farmers Journal in early summer of 2020. He made three points: pollution from Irish pastureland was not like industrial pollution; secondly "if herd size did not increase for 10 years, then additional methane is not added to the atmosphere"; finally (slides 17 and 18) 'Since 2015, California dairies have reduced 2.2 million metric tons of greenhouse gasses, a reduction of 25% in total emissions". The last point was ignored – selective hearing ('anchoring') in action.

[31] I was stuck by Peter and Paula's observation that 30,000 cows in the EU are already using Bovaer – the plates are moving.

[32] Consider the time and effort devoted by Jimmy Cotter, dairy farmer, Coachford, County Cork (one of Teagasc's 'Signpost Farmers') who ignored the 'you're grand' sentiment and reduced emissions by 15 per cent by: making his herd and therefore his milk output (Kg of milk solids) more CO₂e efficient by cross breeding with Jersey cows (smaller animals, eat less, emit less methane, produce more milk); fertilizing with protected urea; reducing fertilizer application by introducing clover into his swards; installing solar panels. From: *Ear to the Ground*, RTEI TV, Nov 25, 2021

[33] It also ignores the fact that prices will rise if output falls

[34] Barreiro-Hurle et al, 2021. *Modelling environmental and climate ambition in the agricultural sector with the CAPRI model* - exploring the potential effects of selected Farm to Fork and Biodiversity strategies targets in the framework of the 2030 Climate targets and the post 2020 Common Agricultural Policy, Joint Research Centre [KJNA30317ENN.en\(1\).pdf](#) pp 55,56