Considerations and Possible Approaches to implementing Teagasc Climate MACC Curve

Joe Crockett,
Dairy Sustainability Ireland Working Group
2017 Export Performance & Prospects

- **€4bn**
  - **↑ 19%**
  - The value of dairy products & ingredients, an increase of 19 percent

- **€850m**
  - **↑ 20%**
  - Cheese export rose to almost 20 percent to over €850m

- **↑ 44%**
  - Exports to EU26 markets have expanded by 44 percent to €1.2bn

- **↑ 19%**
  - Exports have increased by 19 percent since 2016

- **↑ 60%**
  - Butter reached a remarkable growth rate of 60 percent in 2017

- **€730m**
  - **↑ 10%**
  - Dairy based enriched powders export rose 10 percent to some €730m

The top 5 markets are the UK, China, the Netherlands, Germany & the United States.
At least €2.6 billion yearly direct Milk Cheque payments To Farmers in the 26 Counties by DII members in 2019. (Figure in NI under study)
Industry Employment in RoI Dairy:

- 18,322 active Dairy Heard Numbers each with at least 1 full time worker.
- 11,000 in Irish Dairy processors & Milk Collecting Co-ops.
- 3,000 in 7 Specialised Nutrition Factories who buy off the primary industry.
- 24,000 employed by the industry outside of Ireland.

**Total: Approx. 32,000 in Ireland & 24,000 abroad.**

This in turn Brings in **€4.7 billion of Dairy export revenue** according to Bord Bia’s 2017/18 Export performance report- our best performing sector across food and drink.

Indirect jobs-

- Services to the industry like vets, advisors, contractors, dairy equipment sellers- economic studies from CIT/UCC would say that **another 30,000** people dependent on Irish dairy.

- **Vast bulk of this employment in Rural Ireland.**
Food Wise 2025 – Market Growth

• Strong focus on Sustainability in Food Wise 2025, recognition of significant challenges of agri-expansion in meeting national and international targets for air quality, bio-diversity and water quality.

• Strategies outlined to address and surpass significant challenges for air quality, bio-diversity and water quality, if economic gains to be achieved.

• Identification of need for significant effort – recognition that environmental sustainability and economic sustainability are complementary – scientific evidence based data to underpin Origin Green

• Ambition for Ireland to be world leader in sustainable agriculture as a differentiating market growth strategy
Bord Bia Origin Green Promise – Market Growth

- Verified Commitment to Sustainability all along the supply chain
- The only sustainability programme in the world uniting all sectors to achieve measurable sustainability targets – reducing environmental impact, serving communities and protecting rich natural resource
- The Green Charter – development of more stringent ways of working where 100% of Ireland's exporters on the road to sustainability in 2016
- Proven and independently verified commitment to sustainability across all raw natural sources, manufacturing processes and social sustainability – five year plan for sustainability improvements
- Origin Green a major international marketing success, business impact and growth, Bord Bia Sustainability Report 2015 - evolution and development
Market growth - sustainability requirement/social licence

On-farm productivity improvement

Regulatory risk/requirements
Five Sustainability Pillars – Interdependencies

- Greenhouse Gas Emissions
- Ammonia
- Water & Soil Quality
- Biodiversity
- Farm Incomes
17 Nov. 2019
Citizens Assembly, Govt Policy on Climate/Minister Bruton, NESC Report, Press and Media coverage, DAFM Ag-Climatise - launched 17 Nov 2019

10 Jan. 2020
DAFM Draft National Climate & Air Roadmap for the Agriculture Sector to 2030 and Beyond Public Consultation – CLOSE 10 Jan 2020
Ireland ranked among ‘the bad and the ugly’ in EU for climate change action

Ryan Nugent

IRELAND is among the worst countries in the EU for taking action on climate change, a new report has claimed.

The ‘Off Target’ report conducted by Climate Action Network (CAN) Europe, ranked Ireland only below Poland and Greece in the EU.

The findings indicate this poor position comes from Ireland’s lack of progress on renewable energy and on climate change targets.

CAN looked at the role that member states played in setting EU climate and energy targets, and how far they were off course on their own country targets, along with the progress they were making in achieving these targets.

Jennifer Horgan of the Irish charity Change, said the findings of the report were “extremely concerning”.

“Unfortunately the bad news is that Ireland is not only off course in terms of its climate action plans,” she said.

“Ireland is the third highest producer of emissions per person in the EU.

The report states: "The report by Climate Action Network highlights the urgent need for Ireland to implement the recent Citizens’ Assembly proposals and increase its ambitions in line with Paris Agreement commitments," Mr. Kowarzyk said.

Within the report’s summary, Ireland is listed under the headings ‘The Bad’ and ‘The Ugly’.

Of the 20 EU countries ranked in the report, Ireland ranked third worst in the EU, after Poland and Greece.

On the country’s position on climate change last month, Environment Minister Denis Naughten said: “There are difficult days ahead. We’re playing catch-up on our obligations on climate change.”
There are 5 key things that we need to do while maintaining viable farm incomes in the sector.

1. Reduce GHG emissions from the sector

2. Increase the carbon sequestration potential of our land and forests

3. Meet our ammonia ceilings targets

4. Build resilient food production and land use systems that meet these climate and air obligations, while also meeting market expectations

5. Transparently communicate our progress
A greater role for producers, farm advisors and processors

New partnerships, at both a technical and financial level, between producers and processors and processors and customers, with state involvement where necessary, will be required.

Recent initiatives such as the Dairygold Milk Supplier Sustainability Bonus, or the Glanbia Ireland-Kepak Calf to Beef Club which includes a requirement for a reduction in the average carbon footprint of participating farms (among other things) are commendable.

There is an urgent need for similar type programmes and schemes to be developed. This would further demonstrate to customers and markets of Irish food the seriousness with which it takes the climate and air challenge and its willingness to be proactive in pursuing a transition to an even more sustainable system of food production.

Use current partnerships in the livestock breeding domain e.g. ICBF to discuss the future-proofing of the environmental aspects of breeding policy and suggest ways of ensuring these indexes are used by all farmers. These discussions will inform farm advisory programmes in that regard.
ClimateWise
Part 1: Implementing Changes Now

I. Reduce agriculture emissions to 19 Mt CO2eq or lower by 2030

II. Enhance the development of sustainable land management practices so that 26.8 Mt CO2eq in in abatement can be delivered through Land Use, Land Use Change and Forestry actions over the period 2021 to 2030

III. Contribute to sustainable energy and decarbonisation of energy systems
Ag Climatise – Proposed Actions

**Action 1: Enhance soil fertility and nutrient efficiency to reduce nutrient loss to the environment.**

- Adopt Online nutrient management planning – lime use & fertiliser use efficiency (linked to action 6)
- Achieve a target of 60% of all slurry spread by low emissions slurry spreading by 2022; 75% by 2025; and a longer-term ambition of 90%.
- Require Slurry/Farm Yard Manure applied to arable land to be incorporated within 12 hours by 2022
- Require all newly constructed external slurry stores to be covered by 2022 and all recently constructed external slurry stores (i.e. within the last 5 years) by 2025
- Promote the use of an approved software package as a decision support tool for the majority of dairy farmers by 2022. Furthermore, promote beef and sheep farmers to use Grass10 as a model for improving grass utilisation.
- Require incorporation of clover (and mixed species) in all grass reseeds by 2022
- Develop a blueprint for zero/near zero nitrogen use and carbon neutral production suitable to all productivity levels and support its implementation
- Develop an electronic fertiliser and manure data base to support best practice and evidence of optimum nutrient management and soil fertility
Ag Climatise – Proposed Actions

**Action 2:** Promote the use of protected nitrogen products

- **Aim to have 50% of CAN sales as protected urea by 2022.**

- **Prohibit the use of urea (replacing with protected urea), in particular on grassland by 2025**

- **Create an information portal on protected N products that will:**
  - Ensure the widespread dissemination of information on the different types of nitrogen protection inhibitors including specifications for their use
  - Increase awareness around the use and benefits of protected nitrogen products
Action 3. Develop enhanced dairy and beef breeding programs, that; (i) increase our rate of genetic gain for key indicators linked to profitability, sustainability and climate efficiency, (ii) promote greater herd and animal performance recording and (iii) help achieve a reduction in our overall GHG output at a national level, by 2025.

- Increase rate of national genetic gain in Dairy Economic Breeding Index (EBI) from current €10/cow/year to €15/cow/year, bearing in mind the need to take calf welfare considerations into account.
- Increase rate of national genetic gain in Dairy Beef Index (DBI) from current €0/calf/year to €5/calf/year to address the current declining beef quality in calves from the dairy herd.
- Increase rate of national genetic gain in Euro-Star Replacement Index from current €5/cow/year, to €10/cow/year.
- Increase number of dairy herds in milk recording from current 50% to 75% and suckler beef herds in beef weight recording from current 30% to 60%, respectively.
- Increase number of dairy herds in genomic programs from current 1% to 75% and suckler beef herds in genomic programs from current 40% to 75%, respectively.
- Achieve targeted improvements in key metrics relating to age at slaughter and age at first calving for our national dairy and beef herds.
- Incorporate new breeding indexes for climate/environment into EBI, DBI and Euro-Star Replacement Index respectively and ensure alignment of these new breeding indexes, including relevant animal-based support tools, into GHG MACC and Bord Bia Origin Green programs.
Action 4: Develop a charter with animal feed manufacturers on crude protein content of livestock feeding stuffs to minimise ammonia loss.

- Reduce levels of crude protein in pig and ruminant feed taking account of the latest science and decision support tools in order to reduce excess protein in animal’s diets.
Enhance the development of sustainable land management practices by delivering 26.8 Mt CO2eq abatement through LULUCF actions over the period 2021 to 2030.

**Actions required to meet this ambition:**

**Action 5:** Review the National Forestry programme with the aim of delivering 8,000 ha of newly planted forestry, including agroforestry per annum.

- Planting of 18.6 million trees a year
Action 6: To deliver the balance of agriculture commitments under carbon sequestration and through the better management of peatlands and soils.

- Target 40,000ha of peat based agricultural soils for reduced management intensity.
- Target 450,000 ha with optimised soil pH for soil fertility (linked to action1).
- 50% of arable spring production to grow cover crops.
Ag Climatise re Herd Size and re all possible Actions

• The Teagasc GHG MACC suggests that achievement of our target is possible whilst maintaining a stable herd.

• In practice this means taking all possible actions whilst stabilising overall methane emissions.

• If the actions are not adopted quickly and effectively, then it will not be possible to deliver our commitment without more radical action, especially from the sectors which are experiencing growth.
At present circa 20 million tonnes GHG ag emissions of which beef is estimated at 11m and dairy estimated at 9m, Dairy cow herd size about 1.54m

Six growth scenarios – Teagasc MACC curve

Brexit impact on beef numbers is an unknown but potentially very significant variable,

Beef markets/prices - livelihoods a major issue,

Moving to national herd size stabilisation?
Core possibilities:

- An ag wide general promotion and mitigation strategy based on N use on farm, Nutrient Mgt Planning, widespread use of clover, LESS, EBI – breeding, additions/amendments to slurry (acidification), change of fertiliser type from CAN to protected UREA, reduced protein in feed, etc

- On farm/rural woodland planting programme—sitka and deciduous—non commercial—carbon, bio-diversity, and water benefits,

- Rethink/repositioning of commercial forestry to achieve national targets—new approaches needed,

- Energy reductions programme on farm—use of on farm renewables solar, and energy reductions Dairymaster etc, battery technologies, Anaerobic Digestion to produce renewable gas

- Bio-economy – 10BN EU programme,

- Precision/Smart agriculture,

- Whole of Govt – whole of Agri Sector – whole of Dairy Sector – strategies and mechanisms to be developed on a collaborative basis all stakeholders inc CAP eco schemes,

- Integrated and agreed messaging – all agencies, sectors, stakeholders

- Developmental, positive and progressive – build on ASSAP and DSI programmes
Agricultural Sustainability Support and Advisory Programme - ASSAP

- Dairy Processors/Co-ops part of ASSAP programme.
- Focus is water quality – over 800 water bodies affected by diffuse ag pollution - largest sectoral pollution impact,
- 30 Sustainability Advisors – 10 Co-op sector, 20 Teagasc.
- 30 Scientists – LAWSAT providing science data.
- All trained together to same standard
- Commitments being delivered with good progress and good buy-in farmers and other stakeholders
- This should be built on to address Climate challenges
Whole of sector / Whole of government - Collaborative Agreement of a common plan of objectives

Discussion of new ideas and issues - Drive Win Wins

Bringing in outside experts to inform DSI members of developments

Stakeholders consultation

Consistent, results based implementation
Renewable Gas

- Recent reports re need for the development of new Renewable Gas Industry to replace fossil derived gases,
- Potential of Agri feedstocks to be examined, and food and other waste streams,
- Anaerobic Digestion Pilots – Dairygold
- Renewable Energy Targets,
- Scaleability and Reliability,
- Research and new approaches needed.
Commercial Forestry

Agri and Commercial Forestry inter-dependent re achievement of climate change targets – in same box/category/bucket re land use change (LULUCF) in Govt Policies,

4,000 HA to 8,000 HA target,

Major review underway re licences,

New approaches needed re commercial forestry sitka and native species, and new narrative.
Self Organization under Deliberate Direction - Irish Dairy and the Possibilities of a New Climate Change Regime – NESC Paper 2019

• Charles Sabel Professor, Columbia Law School, Rory O’Donnell Director, National Economic and Social Council, Senior Economist, National Economic and Social Council.

• Reviewed Teagasc programmes inc MACC, Bord Bia Origin Green, SDAS, Catchment Management/EPA/DAFM/ASSAP/Dairy Sustainability Initiative/Smart Farming.

• “In this essay we use the example of the Irish dairy industry to show how, even in the absence of any overarching design, mutually reinforcing developments in methods of regulation and production can generate expansive regimes that encourage efficient production of higher quality and safer goods while improving protection of the environment.

• Shaped by political will—the determination to protect the environment—yet formed in detail by prudent responses to a thousand constraints, without plan or master builder, its very existence invites us to consider an improbably hopeful possibility:

• Might it be that, in the moment of our need, we happened to create the novel organizational resources with which to learn, by deliberate self organization, to solve the environmental problems we face?”
Thank You!