

Joe Crockett,

Dairy Sustainability Ireland Working Group

Considerations and Possible
Approaches to implementing
Teagasc Climate MACC Curve



Dairy
Sustainability
Ireland

Overview



AGRI-FOOD AND DAIRY
SECTOR BUSINESS
OVERVIEW



NATIONAL POLICIES FOOD
HARVEST AND ORIGIN
GREEN



PUBLIC CALL FOR ACTION
CLIMATE CHANGE



DAFM AG CLIMATISE
PROPOSALS



OPTIONS AND APPROACHES
CLIMATE CHANGE STRATEGY



ASSAP AND DSI
PROGRAMMES



FORESTRY AND RENEWABLE
GAS



NESC ON DAIRY
STRUCTURES AND
ADDRESSING CLIMATE
CHANGE

2017
2018

Export Performance & Prospects

Irish Food, Drink
& Horticulture

Bord Bia
Irish Food Board



€4bn

↑19% The value of dairy products & ingredients, an increase of 19 percent



↑44%

Exports to EU26 markets have expanded by 44 percent to €1.2bn

↑19%

Exports have increased by 19 percent since 2016



€850m

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



↑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

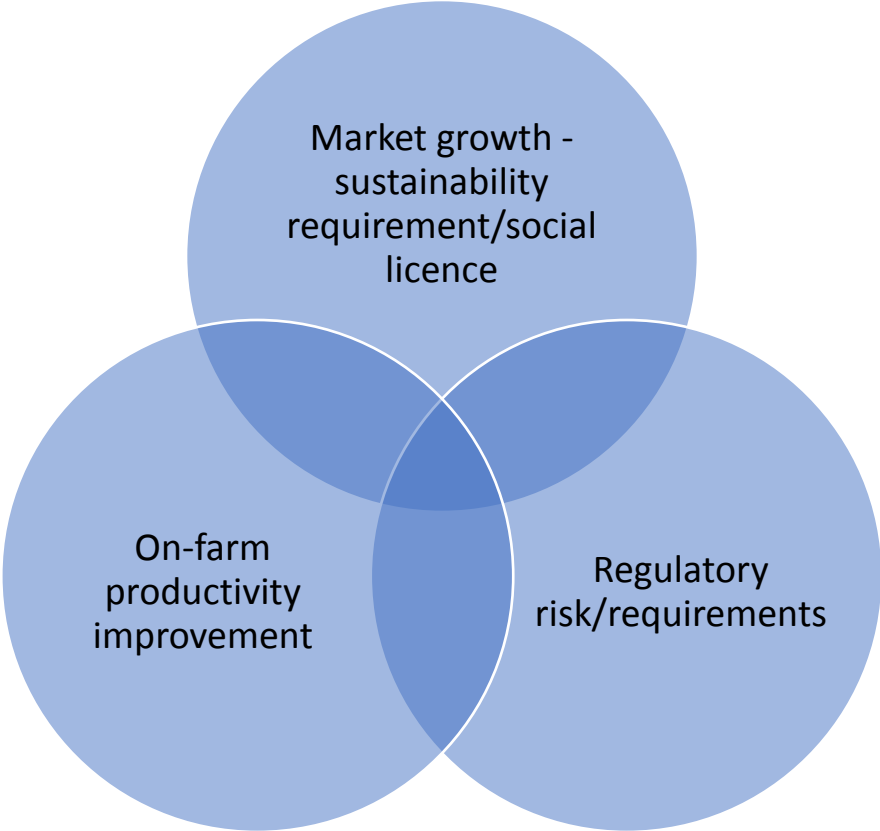
- Strong focus on Sustainability in Food Wise 2025, recognition of significant challenges of agri-expansion in meeting national and international targets for air quality, bio-diversity and water quality.
- Strategies outlined to address and surpass significant challenges for air quality, bio-diversity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

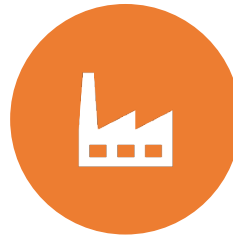
- Verified Commitment to Sustainability all along the supply chain
- The only sustainability programme in the world uniting all sectors to achieve measurable sustainability targets – reducing environmental impact, serving communities and protecting rich natural resource
- The Green Charter – development of more stringent ways of working where 100% of Irelands 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

SUSTAINABILITY
REPORT 2015





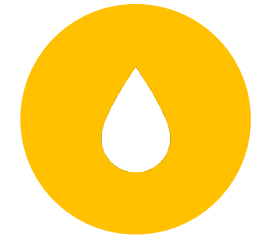
Five Sustainability Pillars – Interdependencies



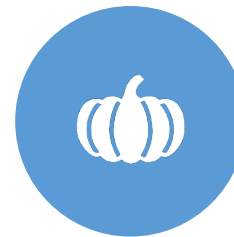
GREENHOUSE
GAS EMISSIONS



AMMONIA



WATER & SOIL
QUALITY



BIO-DIVERSITY



FARM
INCOMES

Call to Action



17 Nov. 2019

Citizens Assembly, Govt Policy on Climate/Minister Bruton, NESC Report, Press and Media coverage, DAFM Ag-Climatise - launched 17 Nov 2019



DAFM Draft National Climate & Air Roadmap for the Agriculture Sector to 2030 and Beyond Public Consultation –

CLOSE 10 Jan 2020



10 Jan. 2020

Ireland second last in EU on climate action targets

NGO report critical of lack of action and warns of €500m non-compliance fines

Emissions from transport and agriculture sectors are increasing significantly

KEVINO'SULLIVAN
Environment & Science Editor

Ireland is the second-worst performing EU member state in tackling climate change, both in terms of national action and support for greater ambition, according to Europe's largest NGO coalition working on climate and energy issues.

The 2018 *Off Target* report published today by Climate Action Network (Can) Europe, which is supported by the European Commission, concludes all EU member states are falling short in adopting the Paris Agreement on Climate Change and in pursuing efforts to limit global temperature rise to 1.5 degrees.

Can, however, reserves most criticism for Ireland, along with many central and eastern European countries, because of "stiff opposition" to climate actions. Without new, immediate and substantive efforts to cut emissions, it warns Ireland "faces annual non-compliance costs of around €500 million".

It assessed and rated the role member states play in setting ambitious EU climate and energy targets and policies, and their progress in reducing emissions and promoting renewable energy and energy

efficiency at home.

It rates Ireland second last to Poland. "Ireland is set to miss its 2020 climate and renewable energy targets and is also off-course for its unambitious 2030 emissions target," it warns.

Emissions from the transport and agriculture sectors are increasing significantly, while the Government "has failed to prepare effective policies to align near-term climate action with EU and Paris Agreement commitments".

At EU level, it says Ireland "failed to join the group of progressive EU member states calling for increased EU climate ambition and played a negative role in the negotiations of the EU 2030 climate and energy legislation, pushing for loopholes to dilute the laws".

The report acknowledges "the Irish electricity grid has an impressive potential of integrating high levels of renewable energy, especially wind power".

The Government needs to radically revise its National Mitigation Plan to reduce carbon emissions – currently subject to legal challenge – and immediately put in place measures in the transport and agriculture sectors, it recom-

mends. All use of peat in electricity generation needs to end by 2019 and coal use by 2025, the report adds – a tighter schedule than envisaged.

Ireland needs to join the group of progressive EU member states calling for increased EU climate ambition and deliver urgent, near-term emissions reductions, Can concludes.

The report welcomes the innovative deliberative process of the Citizens' Assembly and recommends the Government "now radically revise its climate action plan (the mitigation plan) on the basis of the assembly proposals on climate change".

The 2015 Paris Agreement, and committing to pursue efforts to limit temperature rise to 1.5 degrees, "was a major step forward in safeguarding our planet's future", the report says. "Yet the contributions proposed at the Paris talks are nowhere close enough to keep temperature rise below this threshold. Hence the EU, like all other countries in the world, needs to urgently and substantially increase its action, well beyond the currently agreed targets."

EU Paris Agreement compliance

1	Sweden	77%
2	Portugal	66%
3	France	65%
4	Netherlands	58%
5	Luxembourg	56%
6	Denmark	49%
7	Germany	45%
8	Croatia	43%
9	Finland	42%
9	Lithuania	42%
11	Latvia	41%
11	Italy	41%
13	UK	37%
13	Austria	37%
15	Spain	35%
15	Belgium	35%
17	Slovenia	34%
17	Slovakia	34%
19	Czech Republic	33%
19	Romania	33%
21	Hungary	32%
21	Greece	32%
23	Cyprus	30%
23	Malta	30%
25	Bulgaria	26%
26	Estonia	24%
27	Ireland	21%
28	Poland	16%

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) ranked only Poland below Ireland across the EU.

The findings indicate this poor position comes from Ireland's lack of progress on renewable energy and on 2020 climate targets.

CAN looked at the role that member states played in setting EU climate and energy targets, along with the progress they were making in their own country on issues such as pollution, renewable energy and energy efficiency.

Phil Kearney, of the climate change committee at An Taisce, said the findings of the report were "extremely concerning".

He said it was disappointing for Ireland to be "labelled as a laggard" when it comes to climate action.

"The report by Climate Action Network highlights the urgent need for Ireland to implement the recent Citizens' Assembly proposals and increase ambition in accordance with Paris Agreement commitments," Mr Kearney said.

Last year, the Citizens' Assembly made recommendations to greatly enhance Ireland's climate ambition, the report said. Within the report's result summary, Ireland is listed under the headings 'The Bad' and 'The Ugly'.

Of the 29 EU countries ranked from very good to very poor, Ireland stood at 28.

Sweden, Portugal, France and the Netherlands occupied the top four positions.

The UK was ranked in 14th, with Estonia, Bulgaria, Malta,

Cyprus and Greece all ranked immediately above Ireland.

The report recommended that all use of peat as an electricity generators should cease by 2019, with coal ending by 2025.

It added that Ireland needs to join the group of progressive EU member states which calls for increased climate ambition.

Jennifer Higgins, of Irish charity Christian Aid, described the ranking as dismal.

"Despite the welcome recognition by the Taoiseach in January of Ireland's position as a climate 'laggard', and commitments to change this, six months on it appears Ireland's reputation when it comes to climate action is stagnating, not improving," she said.

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

Measures

As part of the recommendations by the Citizens' Assembly, 80pc of those involved said they would be willing to pay higher taxes on measures that directly aid the transition to a low carbon and climate resilient Ireland.

This included flood defence, retrofitting of homes and businesses, and making solar panels cheaper and more easily available.

Speaking on the country's position on climate change last month, Environment Minister Denis Naughten said it is a "moral necessity" for the country to catch up.

"There are difficult days and challenges ahead. We are, as a country, playing catch-up on our obligations in relation to

climate change," Mr Naughten said.

"This is as much our opportunity as our obligation. In any event it is a moral necessity and a vital national interest.

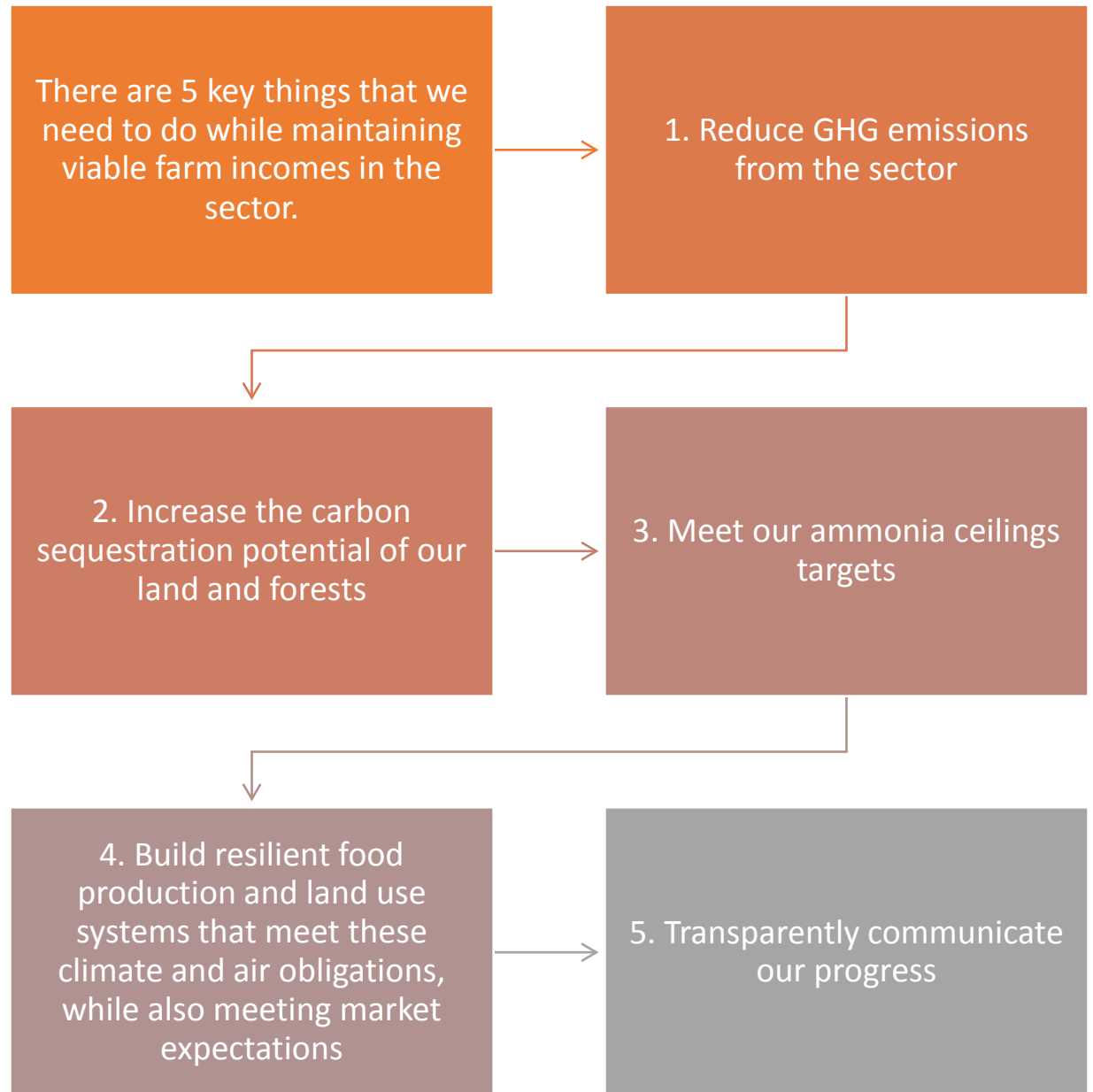
"I must enable people to take action themselves."

Mr Naughten said that among plans is a commitment by the Government to no new non-zero emission cars from 2030, along with no diesel-only buses to be purchased after July 1 next year.



"There are difficult days ahead. We're playing catch-up on our obligations on climate change"

DAFM DRAFT POLICY AG CLIMATISE



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 19Mt 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 On line 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:
o Ensure the widespread dissemination of information on the different types of nitrogen protection inhibitors including specifications for their use



o 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.

Ag Climatise – Proposed Actions



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 18.6million 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.

Climate Change Projections



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?

Sustainability - Climate Change Ag Mitigation Options and Possibilities

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

Dairy Sustainability Ireland



Companies



Associations



Governmental Agencies

Dairy Sustainability Ireland

Whole of sector
/Whole of
government-
Collaborative
Agreement of a
common plan of
objectives



Discussion of new
ideas and issues-
Drive Win Wins



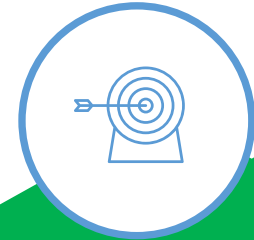
Stakeholders
consultation



Bringing in outside
experts to inform DSI
members of
developments



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-dependant 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!



Dairy  Sustainability
Ireland