Meeting climate targets in livestock farming systems – the Irish approach

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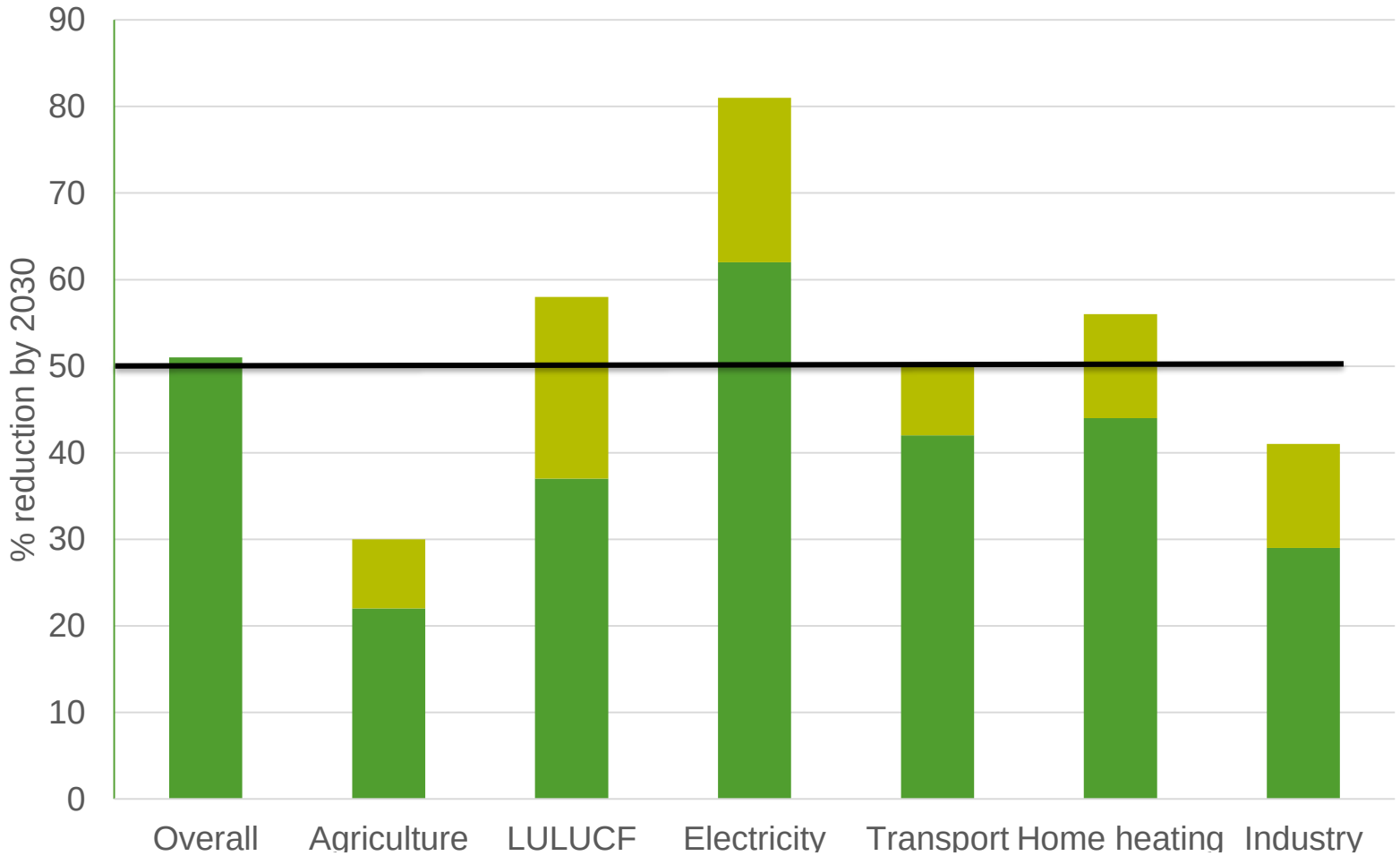
Teagasc
Agriculture and Food Development Authority

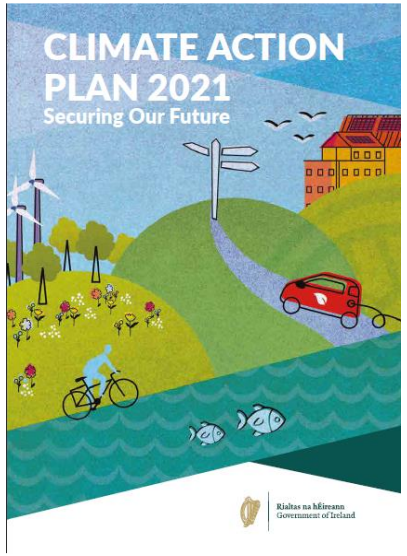
Overview

- What are the Irish climate targets for Agriculture
- Supporting farmers to transition
  - Regulatory and strategy approach
  - Incentives
  - Research and advisory
- Putting it all together – the Teagasc Signpost Programme as an example

Sectoral targets (Climate Action Plan)

% reduction required by 2030, compared to 2018 as a baseline





Agriculture emissions
2018: 23 MT CO_2e
2030: 16-18 MT CO_2e

Reduce by 5-7 MT CO_2e

Will be fixed as a point, not a range

[3]LULUCF: Land use, land use change and forestry

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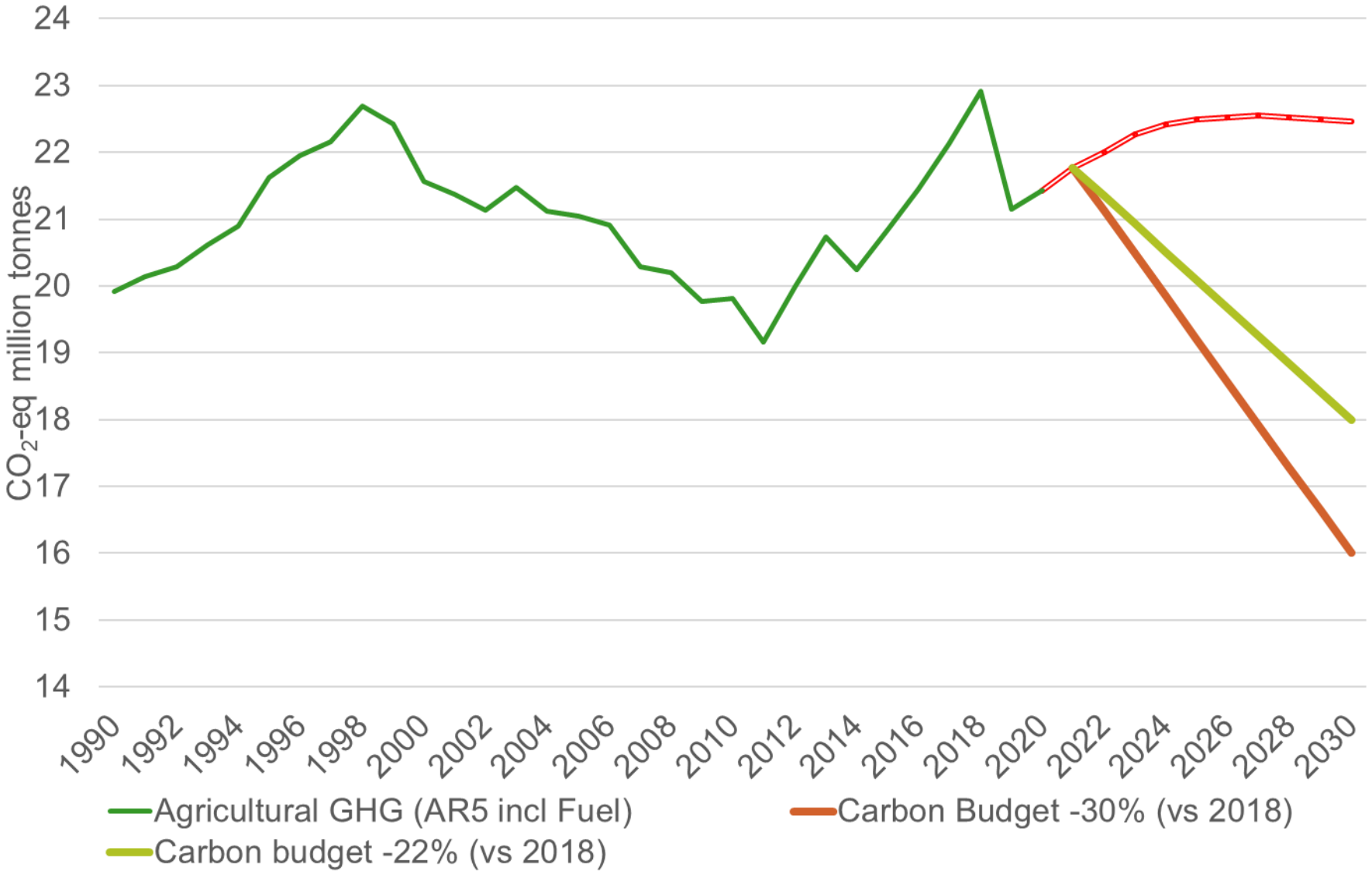
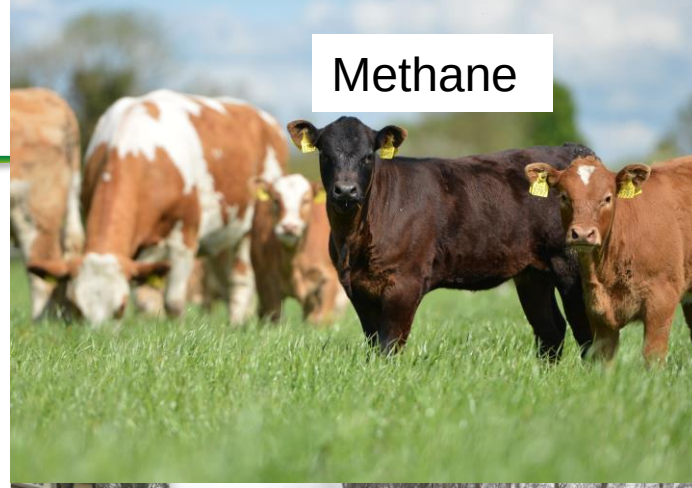
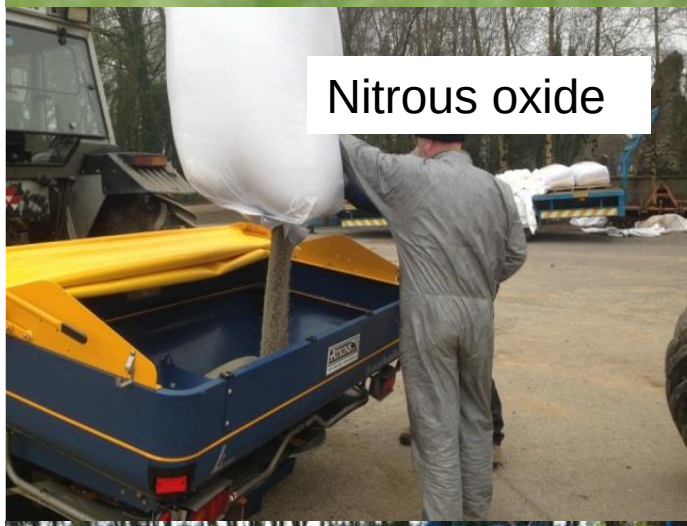
Business as Usual projections of GHG emissions from Agriculture and linear projections required to achieve NCAP 2021 targets







Roadmap to 2030 +

Need to reduce by 5-7 Mt CO_2e

2030: 16-18 Mt CO_2e

2050
climate neutral
agriculture

MACC +

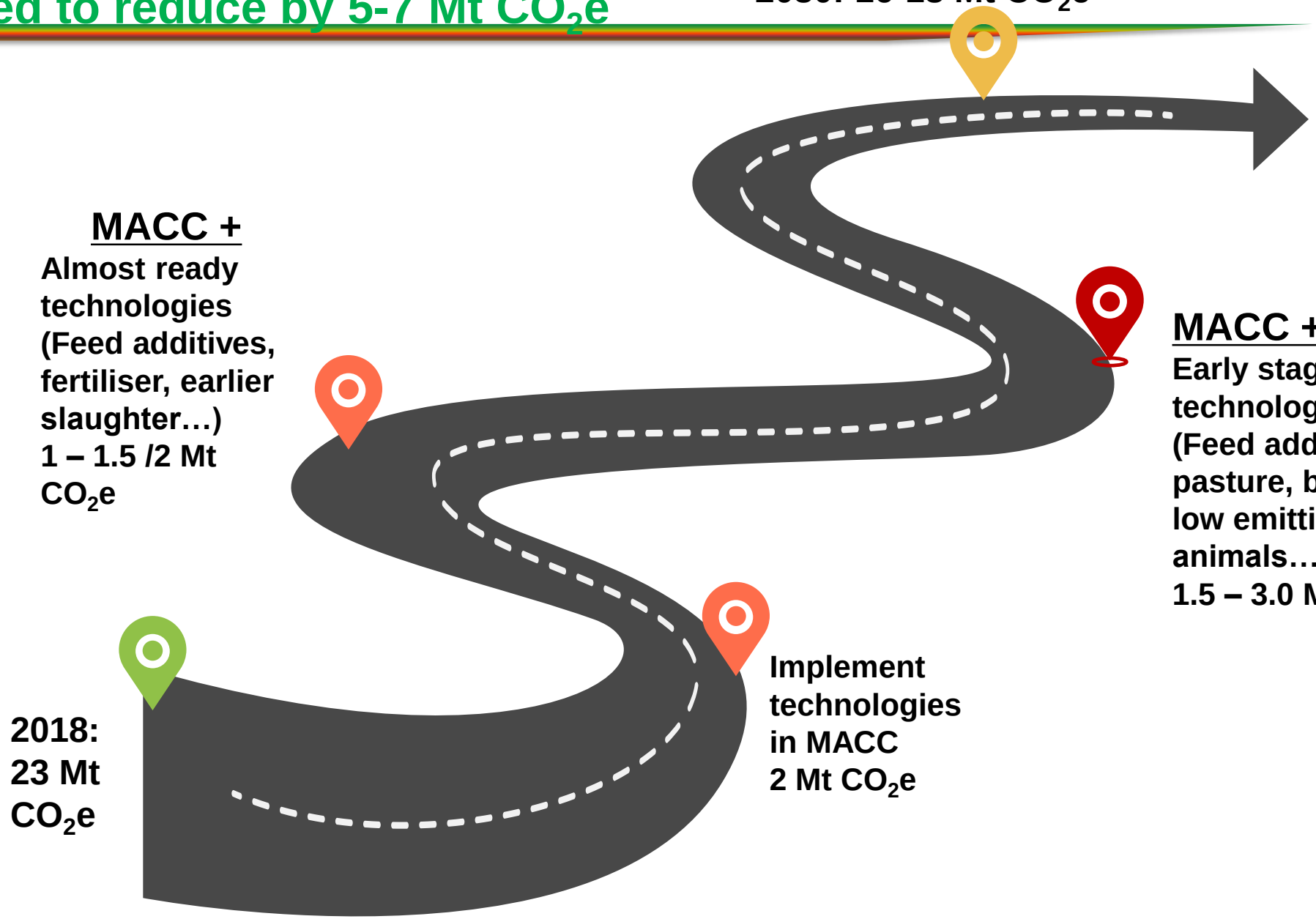
Almost ready technologies (Feed additives, fertiliser, earlier slaughter…)
1 – 1.5 /2 Mt CO_2e

MACC ++

Early stage technologies (Feed additives at pasture, breeding low emitting animals…)
1.5 – 3.0 Mt

2018: 23 Mt CO_2e

Implement technologies in MACC
2 Mt CO_2e



How will farmers be encouraged to transition?

- Regulation and strategy development
- Incentives
- Advisory support and research

Food Vision Dairy Group

- Established to make recommendations to Minister on measures to ‘initially stabilise and then reduce emissions’ from the dairy herd
- Dairy herd responsible for approx. 40% of agricultural emission
- Overall herd and CH_4 emissions expected to stabilise in a BAU scenario

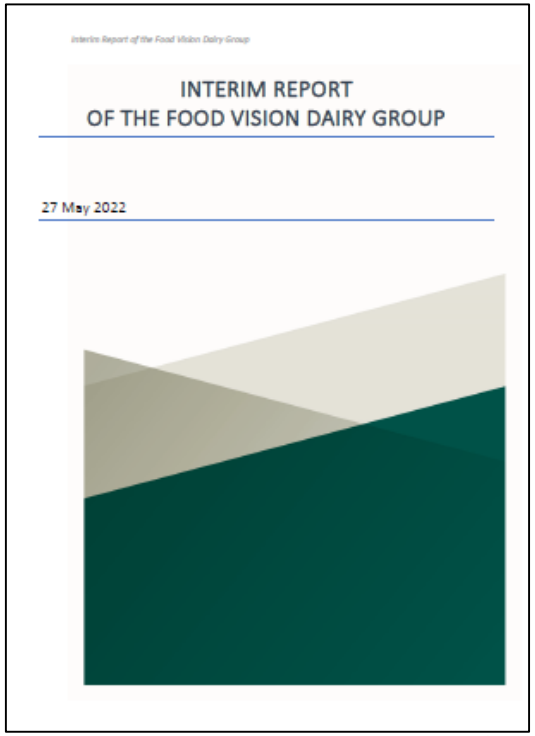
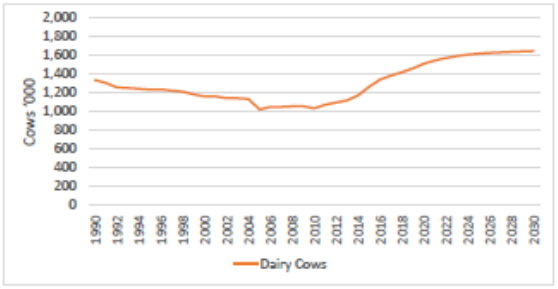
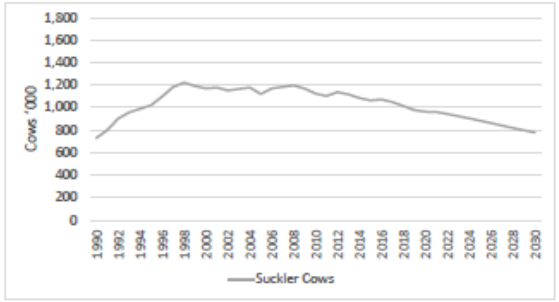


Figure 4 - Total Dairy Cows



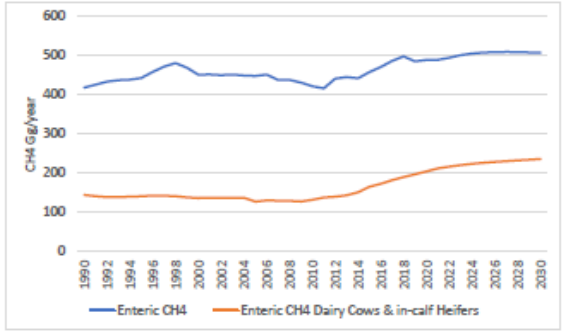
Source: CSO and FAPRI-Ireland model (2021)

Figure 5 - Total Suckler Cows



Source: CSO and FAPRI-Ireland model (2021)

Figure 7 - Enteric Methane Emissions



Source: FAPRI-Ireland model (2021)

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Recommendations of Food Vision Dairy Group

- **Voluntary exit/reduction scheme**
  - Any scheme must prevent the reduced number of breeding ruminants being replaced directly on the same holding with breeding ruminants
  - the farmer would be able to diversify into other areas of farming activity not associated with breeding ruminants
- Proposal for consideration
  -

Recommendations of Food Vision Dairy Group

- **Reduce chemical Nitrogen use in the dairy sector by 30% by 2030, with a reduction of 22% – 25% in the short term (2025)**
  - About 50% of chemical N use in Ireland is on dairy farms
  - Farmers can replace chemical N with legume fixed N, increased NUE, achieve good soil pH and P and K status, better use of organic manures
- Not clear how it will be implemented yet, but it will be supported by a new Fertiliser Register
  -

Recommendations of Food Vision Dairy Group

- **Target a 100% replacement rate of CAN with Protected Urea by the end of 2025 for grass based dairy production systems**
  - Good acceptance among farmers, but availability of product is an issue
- Not clear how it will be implemented yet, but it will be supported by a new Fertiliser Register
  -

Recommendations of Food Vision Dairy Group

- **Several other recommendations**
  - Explore the potential of Cap-and-Trade emissions model
  - Explore the possibility of measuring and monitoring carbon production at individual farm level
  - Develop methane-mitigating feed technologies
  - Develop methane mitigating Breeding Strategies
  - Develop Energy Diversification Opportunities
  - Strengthen all Co-op Sustainability Programmes to support the Teagasc MACC and the recommendations of this Group

Other drivers towards reduced intensity

- Nitrates Action Programme and Nitrogen derogation
- 10% cut in max N fertiliser rates at all stocking rates, could be increased to 15% in mid-term review
- Banding of cows based on milk yield
- Possible reduction from max 250kg organic N/ha to 220kg in mid-term review, depends on water quality

Annual max N fertiliser levels for grassland		
Grassland SR	**Available N (kg/ha)**	
Kg org N/ha	**Old**	**New**
< 130	127	114
131-170	205	185
171 – 210	282	254
211 - 250	250	225

Banding
Based on milk yield, ~ 17% of herds will move from 89kg org N excretion/cow to next band at 106 kg org N excretion/cow Will force at least some to reduce SR

Other government interventions

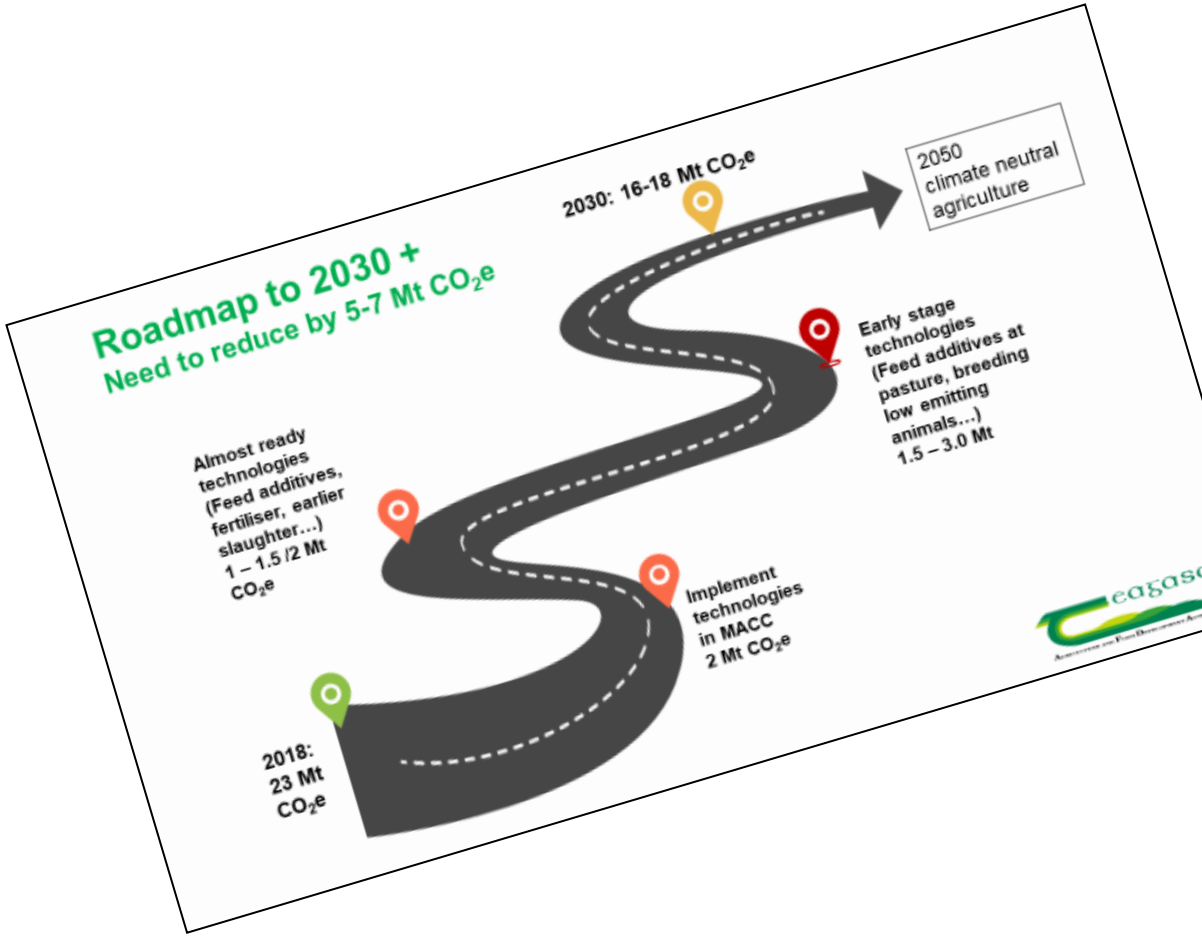
- New environment scheme in new CAP
- Govt policy to achieve a big increase in area under organics
  - Target of 7.5%, vs < 2% at present
  - Significant funding available in new CAP
- Likely to see a pilot programme for anaerobic digestion rolled out soon
- Some supports for tillage sector to increase production of grain and fodder crops in response to Ukraine war disruption

2. Incentives

- Several co-ops have introduced sustainability bonus schemes – small payment to incentivise farmers to adopt measures in Teagasc MACC

3. Advisory support and research

- Phase 1: implement existing known measures, mainly around nitrous oxide – Signpost Advisory Programme
- Phase 2: additional measures such as reducing age at slaughter of beef cattle, use of feed additives with housed bovines
- Phase 3: develop early stage technologies such as feed additive in grazing situation, breeding low emitting animals



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Feed additives

- 3-NOP is the only additive so far with a well-proven, consistent and long term effect
- ~ 30% reduction in enteric methane, but must be fed continuously
- Industry does not want to move away from current system, heavily based on grass
- Big interest in developing a system for grazing cows
- Cost will be an issue

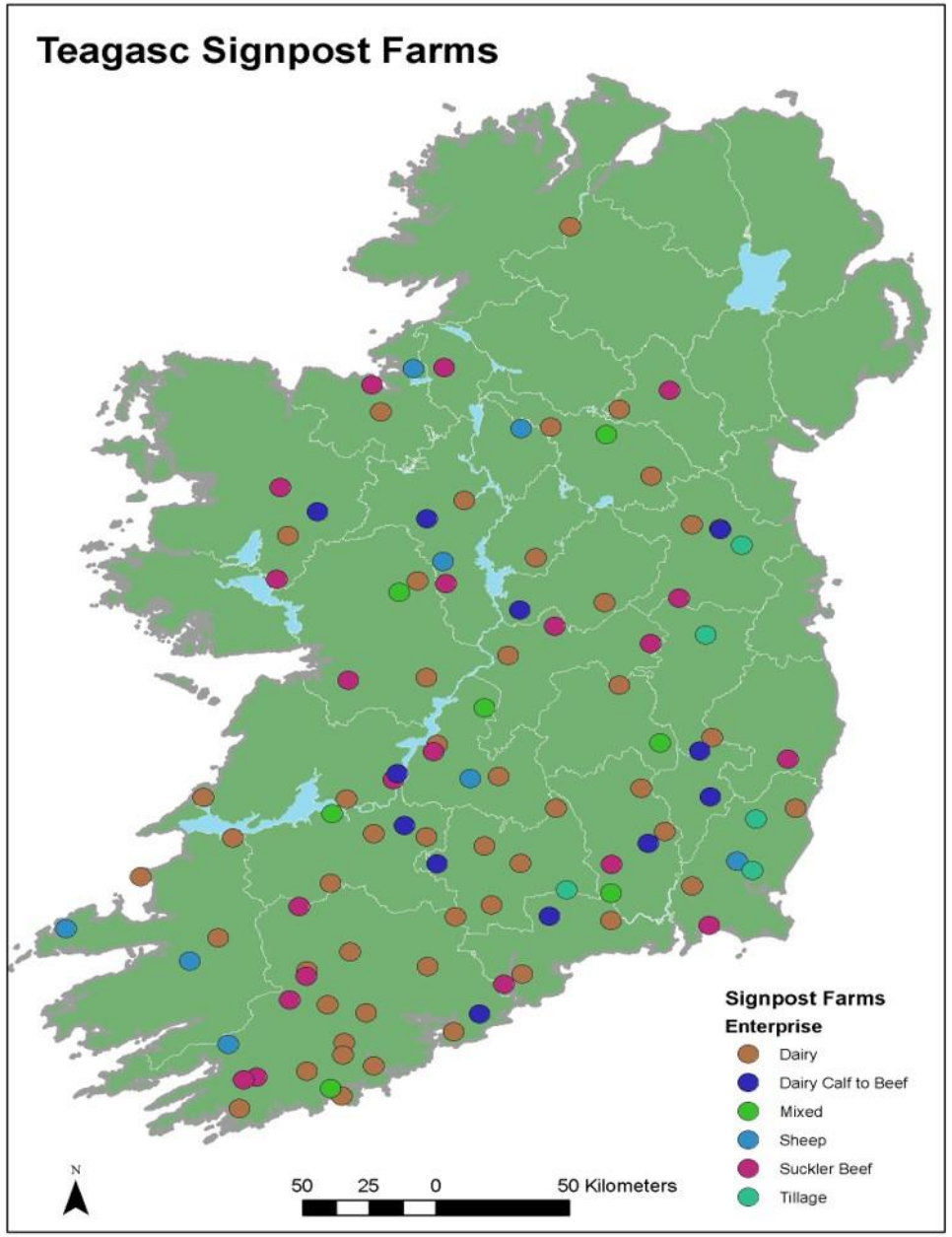
Year	2016	2017	2018	2019	2020
Grass, % DM diet of dairy cows (includes home grown grass, silage, hay as well as purchased silage & Hay)	80%	78%	72%	76%	77%

Source: National Farm Survey Sustainability Reports

The Signpost Programme

- A national campaign (€17m over 5 years)
- Three main elements:
  - A network of demo farmers
  - An advisory campaign
  - Carbon sequestration research programme
- Main objective is to enable farmers to reduce GHG emissions, while remaining profitable and sustainable

Signpost Farms and Partners



Objective: Lead and support the transition of Irish farming towards more sustainable farming systems

SIGNPOST
Farmers for Climate Action

Partners

Government, State Agencies and Sponsors

Supporters

Teagasc
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Signpost Programme messages

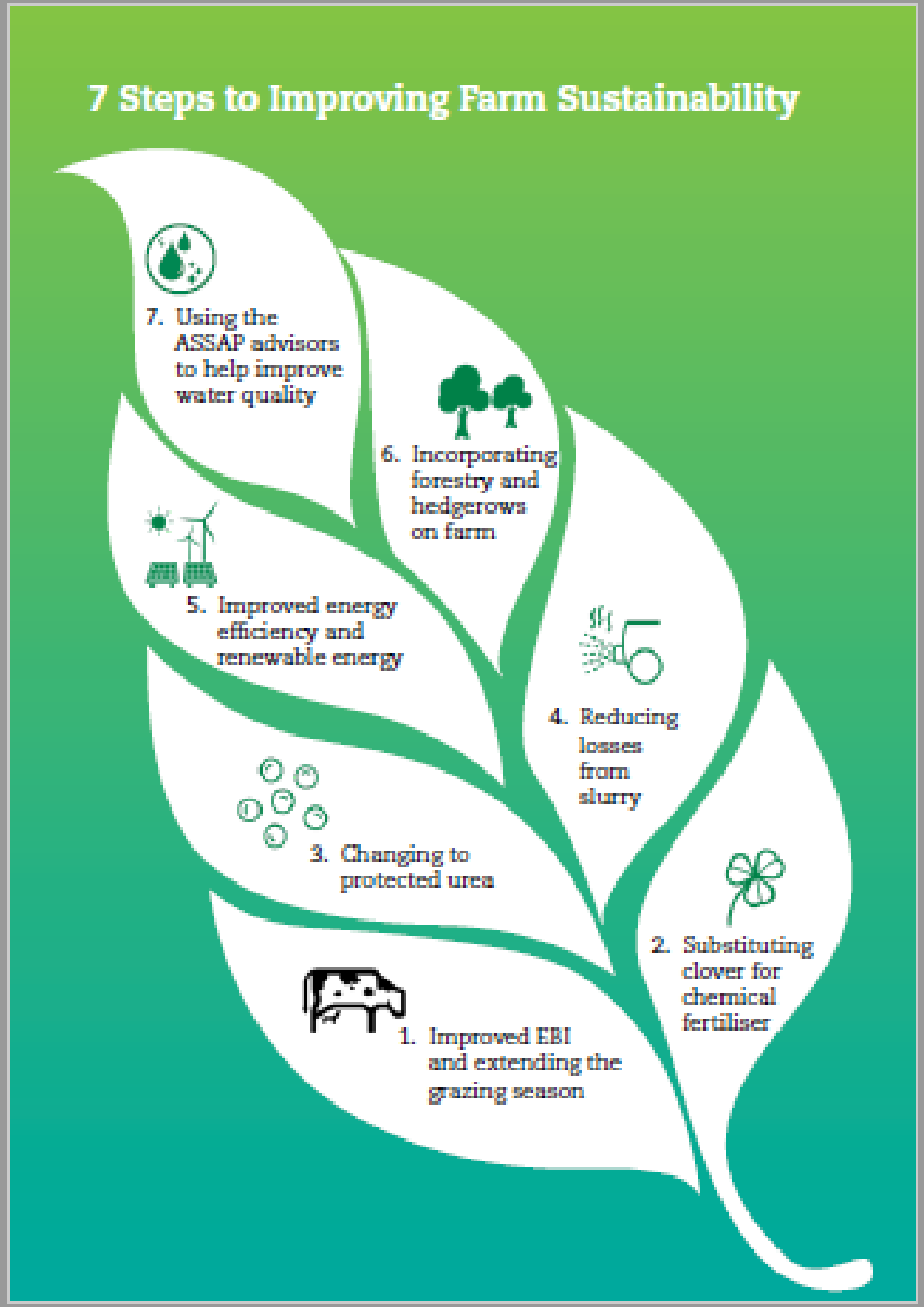
Signpost Programme is a new Teagasc advisory programme with over 50 partners to lead Climate action by Irish farmers

Messages address water, ammonia, biodiversity, as well as climate, and also positively affect farm incomes in general

Demo farms – peer to peer learning; discussion groups, events, training, farm sustainability plan and annual monitoring

EBI is Economic Breeding Index, the genetic selection index for dairy cows in Ireland

ASSAP is an advisory programme focussed on water quality (Agricultural Sustainability Suupport and Advisory Programme) deliever by Teagasc and dairy co-operatives



Summary and conclusions

- Climate targets will require a significant transition by Irish farmers to a more agro-ecological system
- Big focus on nitrous oxide emissions initially through cuts in fertiliser / change to protected urea (Fertiliser Register), with an acceptance that methane emissions will need to decrease
- No mandatory climate related reductions in cattle numbers, although Nitrates Directive putting downward pressure on SR
- Possible voluntary exit/reduction scheme, support for diversification, increased support for advisory services and research, industry incentives
- Teagasc Signpost Programme is a good example of a whole of industry, Living-lab type approach, with a particular focus on climate action