



AGRICULTURE AND FOOD DEVELOPMENT AUTHORITY

The Irish Agriculture and Food Development Authority



3 Scenarios For Agricultural GHGs

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Agriculture Emission Reduction Scenarios

- Agriculture in Ireland
- Bovine Agriculture in Ireland
- Scenario outcomes
- Economic Impact
- Conclusions

Structure of Farming in Ireland 2016

Total Number of Farms 137,500

Average Farm Size
32.4 hectares



Livestock Numbers

Poultry
11.1m



Pigs
1.6m



Sheep
5.1m



Cattle
7.2m



Total Agricultural Area 4,455,800 hectares

Land Usage:



Grassland
4,104,300 hectares



Other
62,100 hectares



Cereals
280,400 hectares



Potatoes
9,000 hectares

Farm Labour

Total Number of Family Farms **137,100**

Male Holder
121,100
88%

Female Holder
16,000
12%



Age of Farmholder

Under 35
7,400
5%

65 and over
41,200
30%

Economic importance to Ireland by numbers

78,000 Specialist Beef Farmers



16,100 Specialist Dairy Farmers



27,000 employed in meat and dairy processing



Output Value of €8.4 bn

Gross Value Added of €3.3 bn

Dairy Output €2.7 bn

Cattle Output €2.5 bn



Agri-Food Exports - €14.1 bn

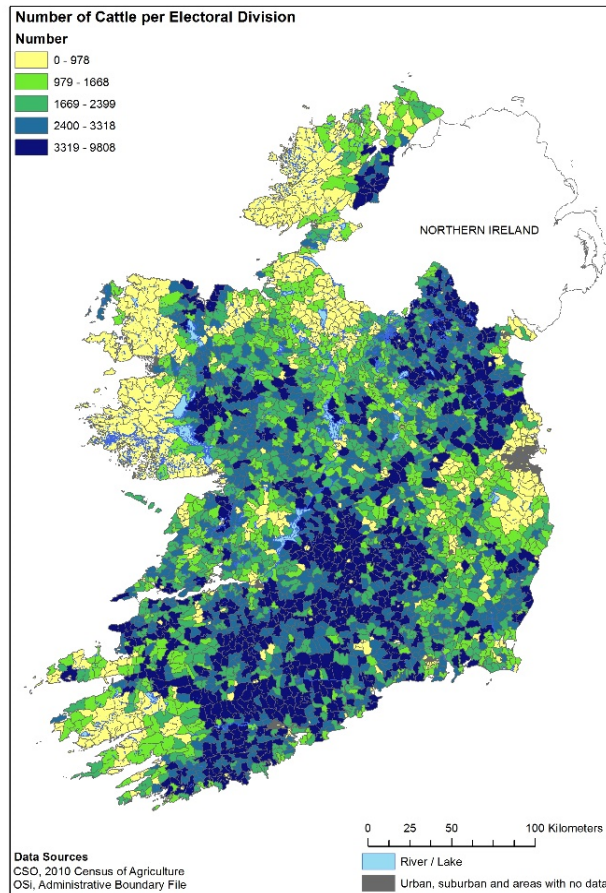


Food Processing 1,843 enterprises, employing 48,000 persons, Production value of €23 bn, GVA of €7 bn

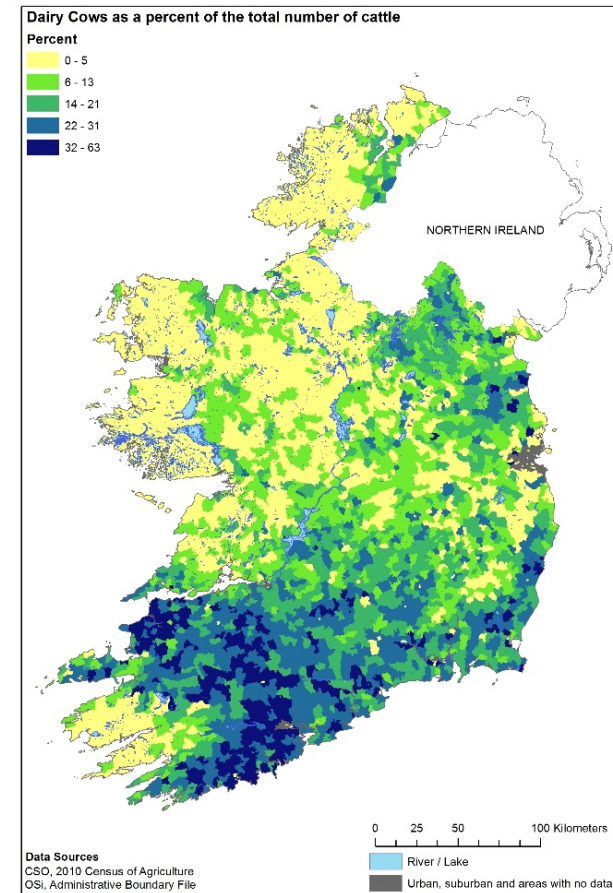


Spatial Concentration of Bovines

All
Bovines



Dairy
Cows
Only



Note: Maps created by David Meredith, Teagasc using Census of Agriculture Data 2010

Cattle and Dairy Farm Concentration

Specialised
Beef

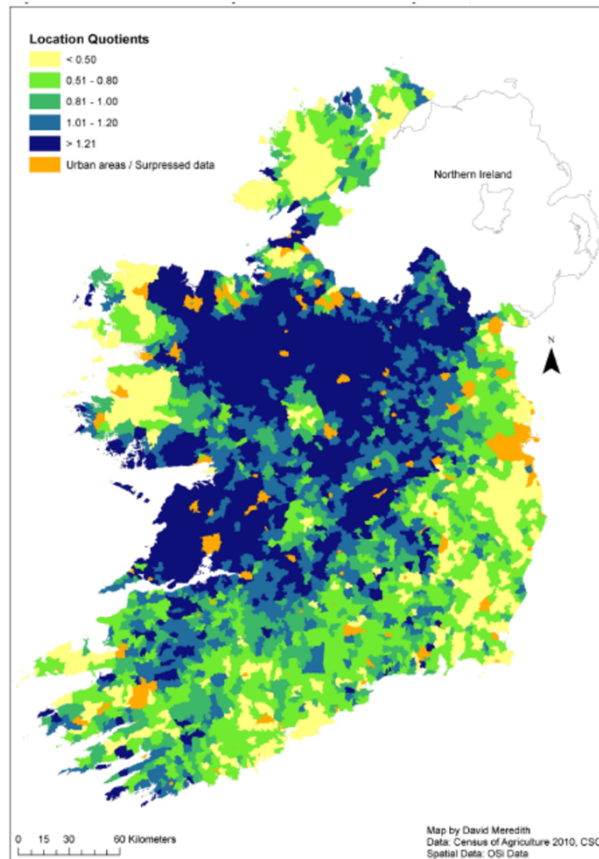


Figure 7: Distribution of Specialist Beef Enterprises (2010)

Specialised
Dairy

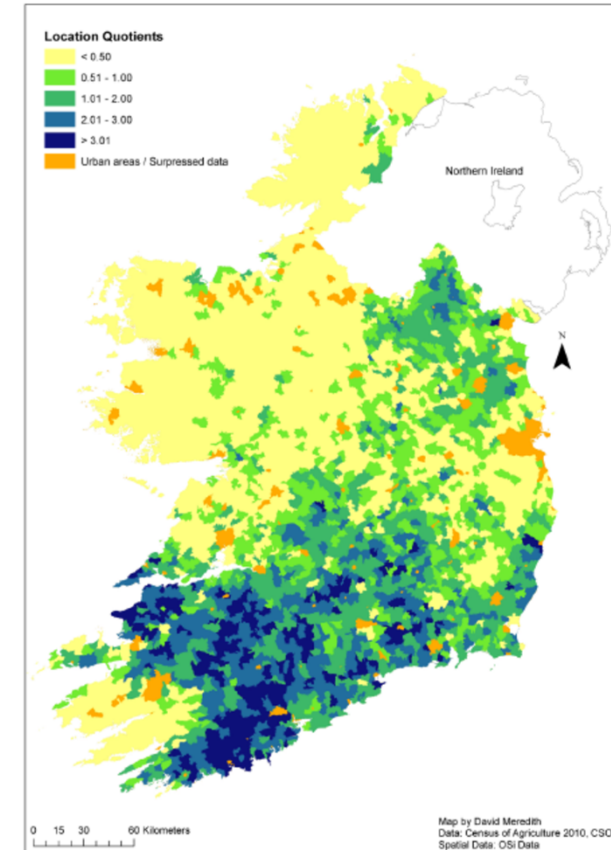


Figure 9: Distribution of Specialist Dairy Enterprises (2010)

Source: Meredith & Crowley "Continuity and Change: The Geo-demographic Structure of Ireland's Population of Farmers"
Irish Geography <http://dx.doi.org/10.2014/igj.v50i2.1318>

For more about Irish farming and its spatial distribution and Econ statistics on food manufacturing

- For summary information on the Ag Census go [here](#) for more recent (sample) based information available from the Farm Structures Survey 2016 run by the CSO go [here](#)
- For detailed micro-economic, environmental and other socio-economic and socio demographic indicators relating to the principal Irish economic farm types please see the latest Teagasc Sustainability ([here](#)) report based on information collected in the Teagasc NFS
- For the latest Teagasc NFS results go [here](#)
- For information on the Food Processing industry (employment, output, GVA) see [EStat](#) dataset [sbs na ind r2](#) and look for NACE C10 and C11 (Food and Beverage Manufacturing)

Other information

- Public Teagasc Research Insights Seminar Series on Agricultural Land Use “Making the most of our land”
- <https://www.teagasc.ie/about/research--innovation/teagasc-research-insights-webinars/land-use-webinars/#land1>
- November 18 2020
 - <https://www.teagasc.ie/media/website/publications/2020/Taking-the-Long-View---Irish-Agricultural-Land-Use-and-Economics.pdf>
 - <https://www.teagasc.ie/media/website/publications/2020/High-Level-Economic-Perspective-on-Land-Use-in-Ireland.pdf>
 - <https://www.teagasc.ie/media/website/publications/2020/Demands-on-land.pdf>

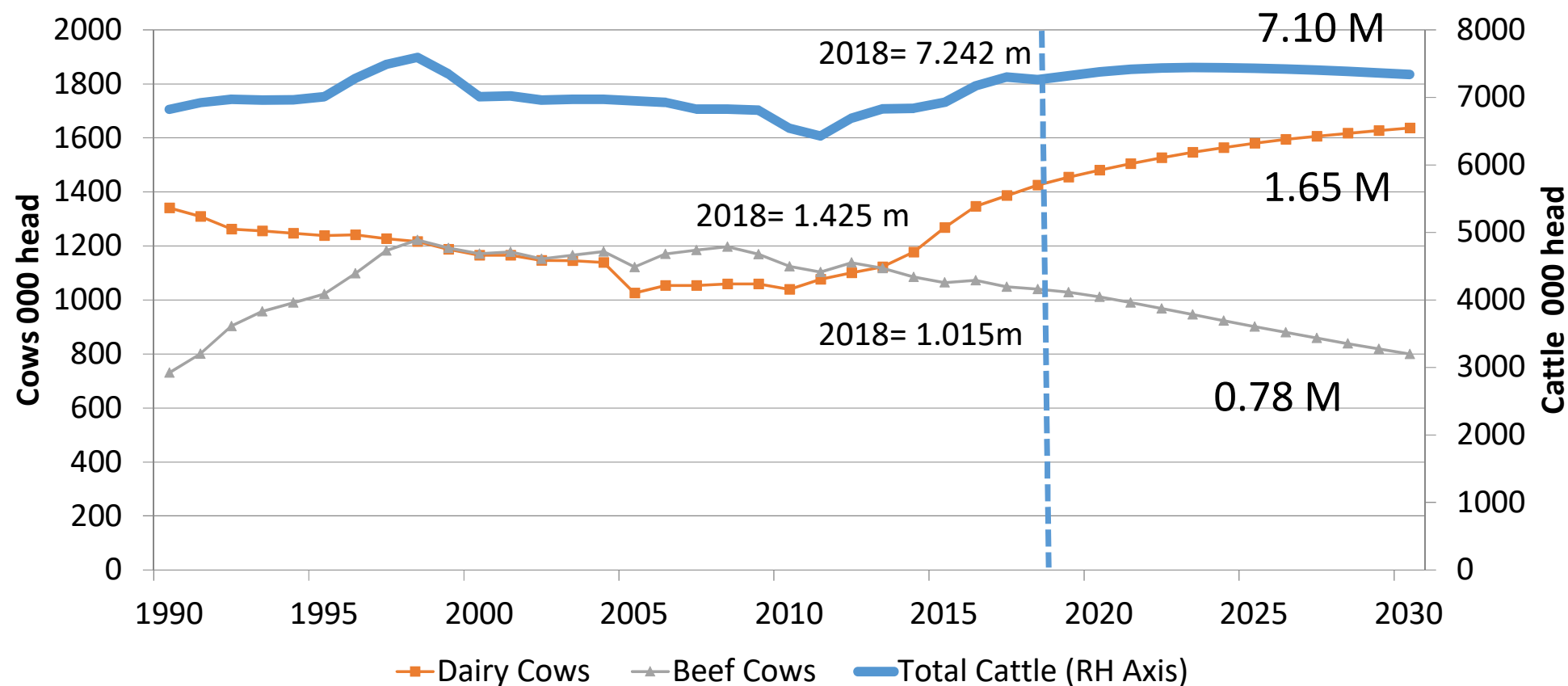
Scenarios

- Three scenarios requested by the CCAC secretariat vs Agricultural Emissions levels in 2018
 - -33%, -40% -55%
- GHG emissions from agriculture are those with the measures as set out in the Teagasc MACC report and the DAFM Ag Climatise Strategy
 - Projections by gas and by mitigation measure under each of the scenarios will be available
- Impact by scenarios on the Economic Accounts for Agriculture (relative to BAU scenario)

Things to note

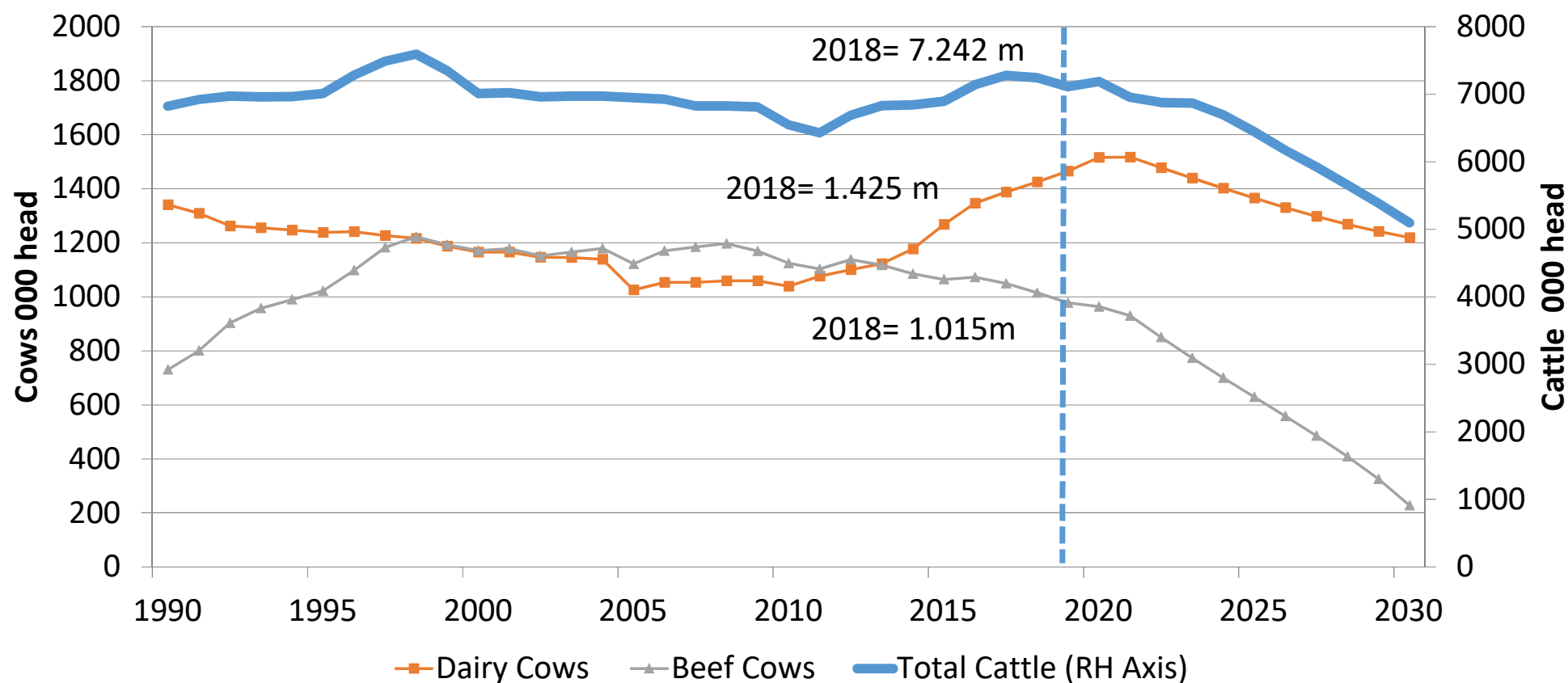
- EU and World agricultural commodity prices are assumed unchanged
- No one else is assumed to be reducing AG emissions by 33/40/55 %
- Consensus (OECD/FAO, EC, FAPRI, IFPRI, USDA, Ag Canada, JIRCAS, ABARES) global outlook for meat and dairy consumption is for stable to increasing levels of consumption per capita
- No demand side drivers for dramatic reduction in global agricultural prices to 2030

Business as Usual & Scenario A.



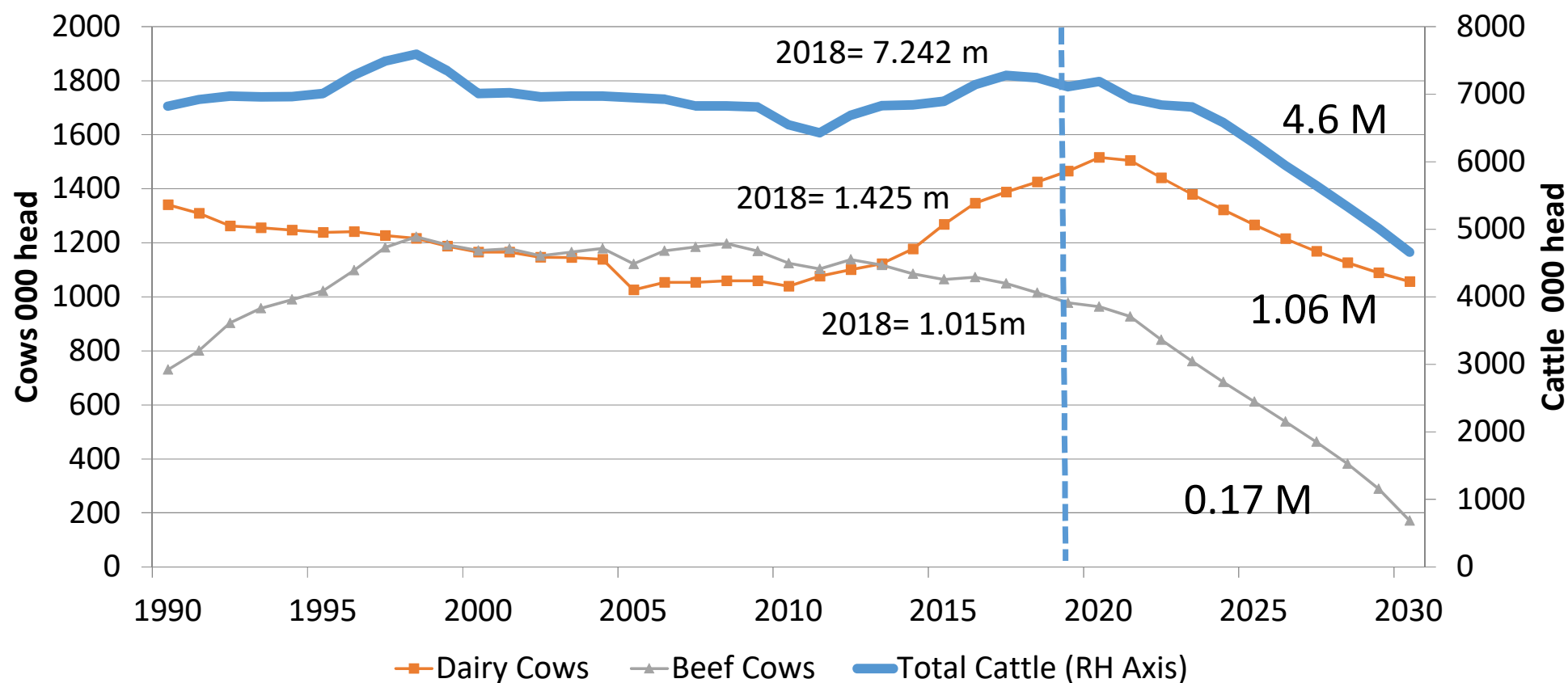
Source: FAPRI-Ireland Model

Scenario -35% (GHG with measures)



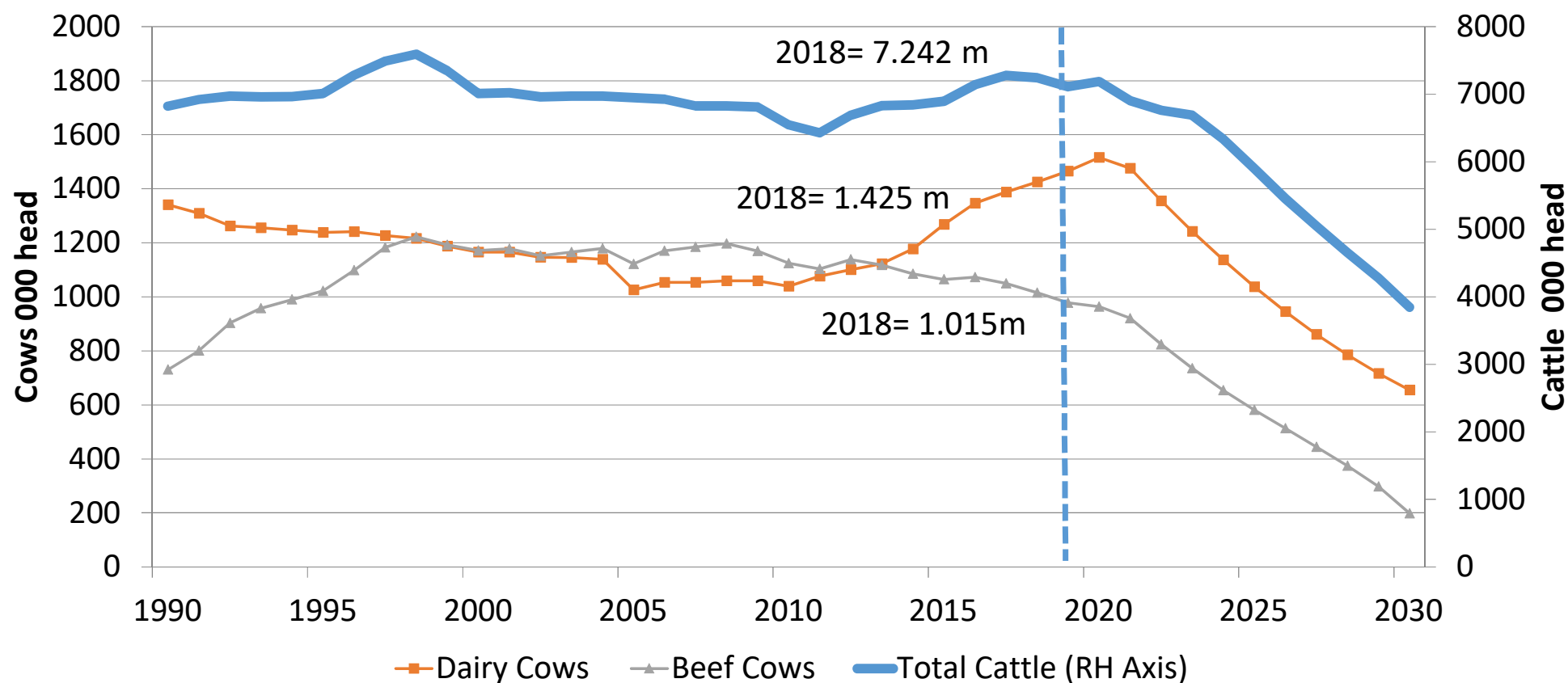
Source: FAPRI-Ireland Model

Scenario E (-40% GHG with measures)



Source: FAPRI-Ireland Model

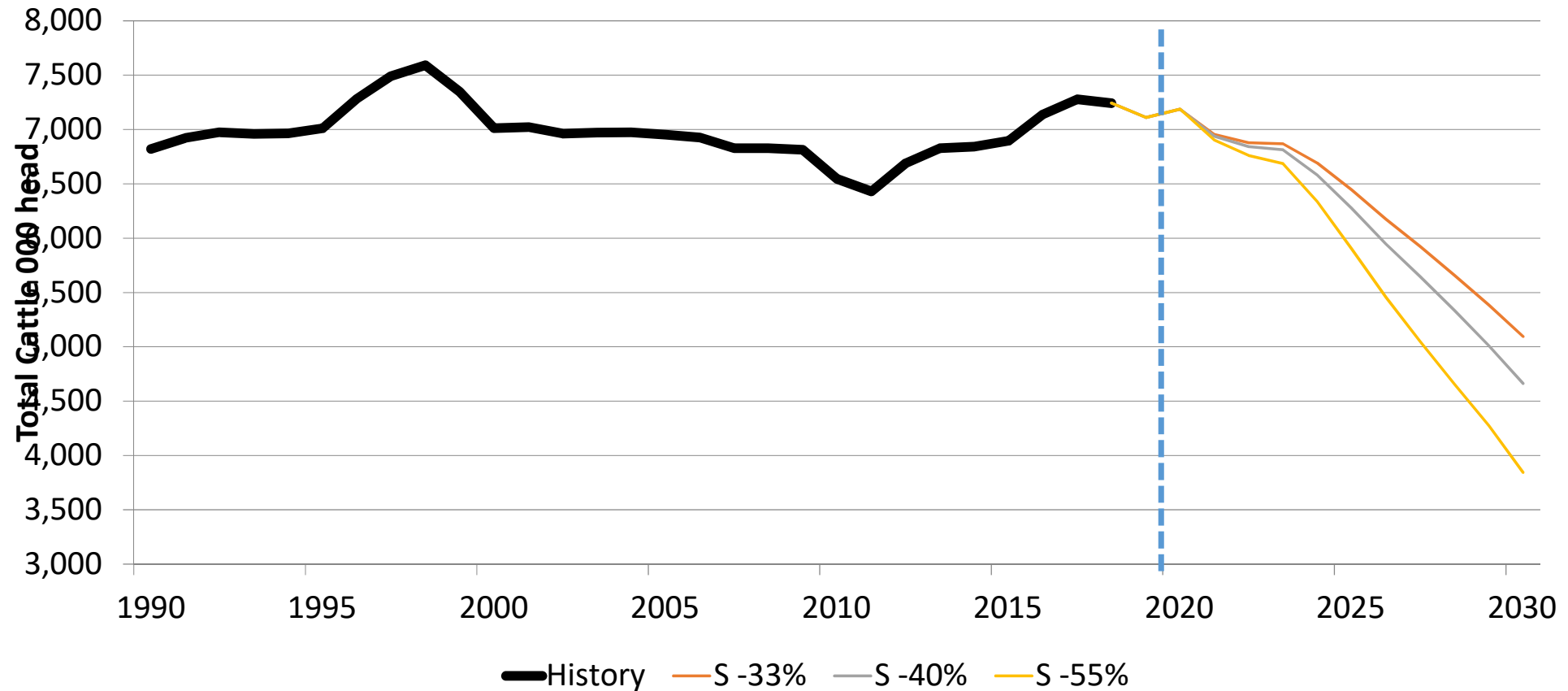
Scenario -55% GHG (with measures)



Source: FAPRI-Ireland Model

Total Cattle Population: Summary

Scenarios -33% -40% -55% Ag Emissions vs 2018



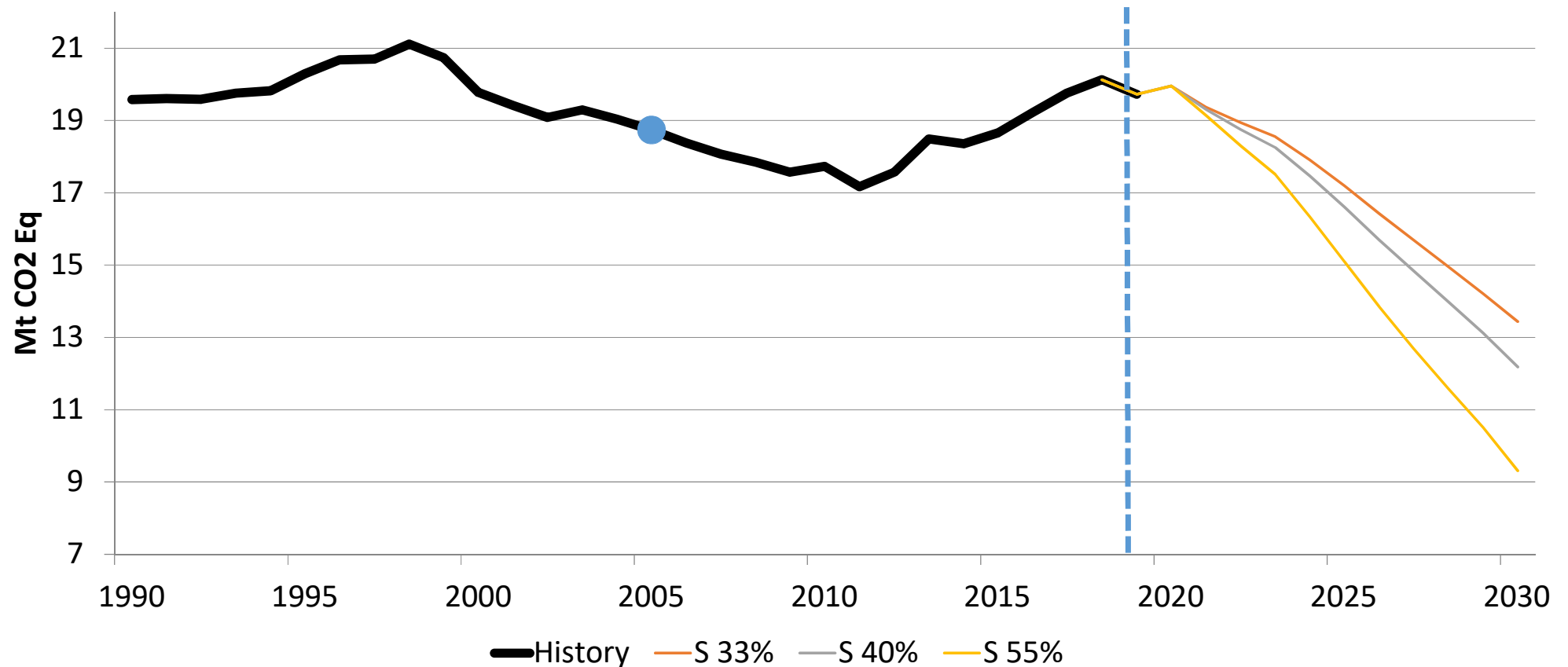
Source: FAPRI-Ireland Model

MACC measures mitigation of emissions

- Mitigation of GHG emissions across the three scenarios reported today based on mitigation under the 40% scenario – not enough time since Tuesday to run numbers for the activity levels under the -33% and -55% Scenarios
 - will be done next week.
- Use of 40% scenario mitigation:
 - Understate the mitigated GHG in the 33% scenario
 - Overstate the mitigated GHG in the 55% scenario

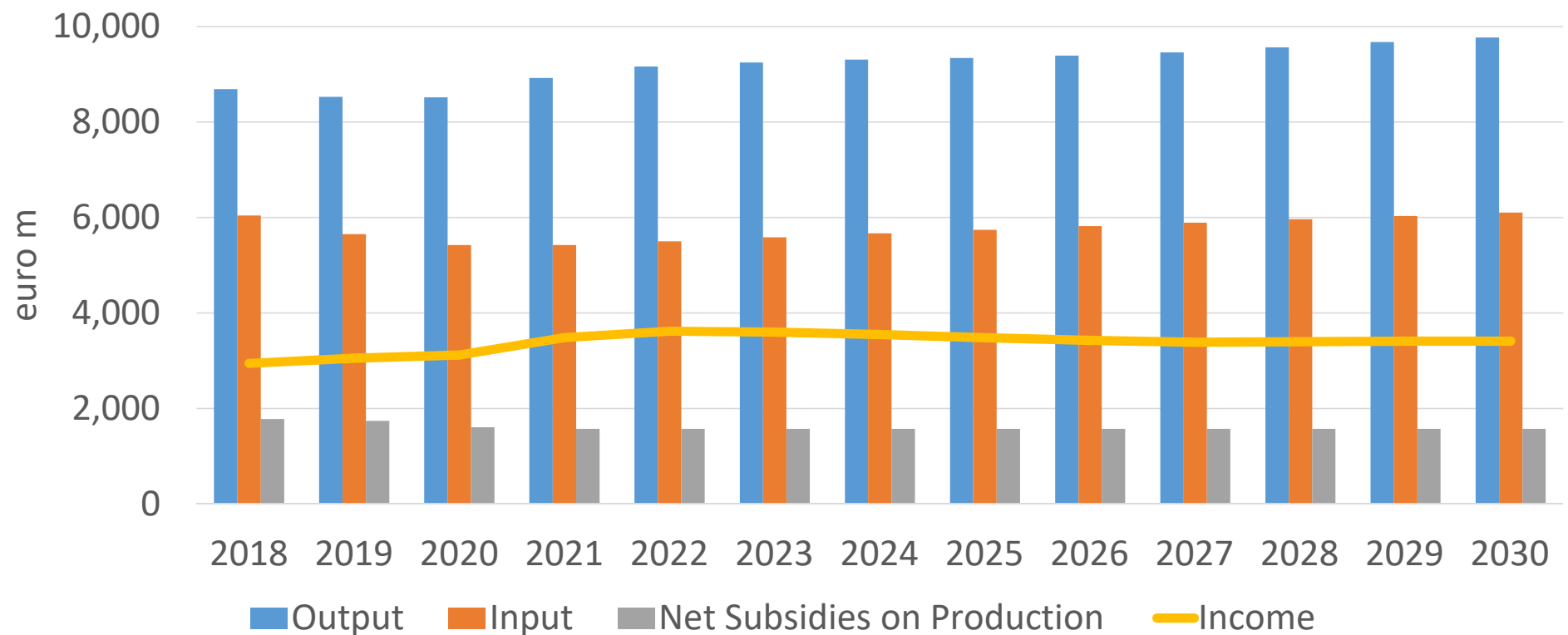
Summary: GHG emissions

NB: All Scenarios include mitigation actions

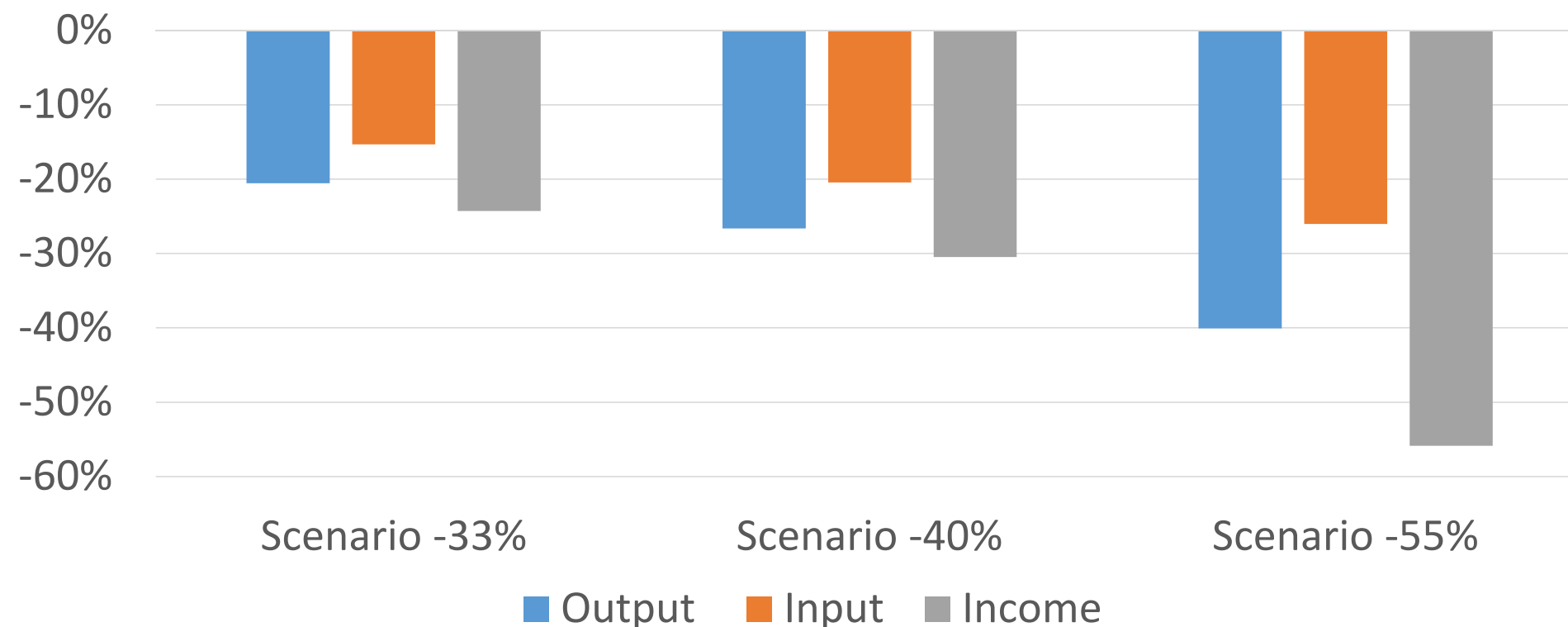


Source: FAPRI-Ireland Model

Economic Impact: Output, Input and Income: Scenario A (BAU)



Economic Impact: % change vs BAU Baseline (2030)



Output = Agricultural Output at Basic Prices; Input = Intermediate Consumption; Income = Operating Surplus

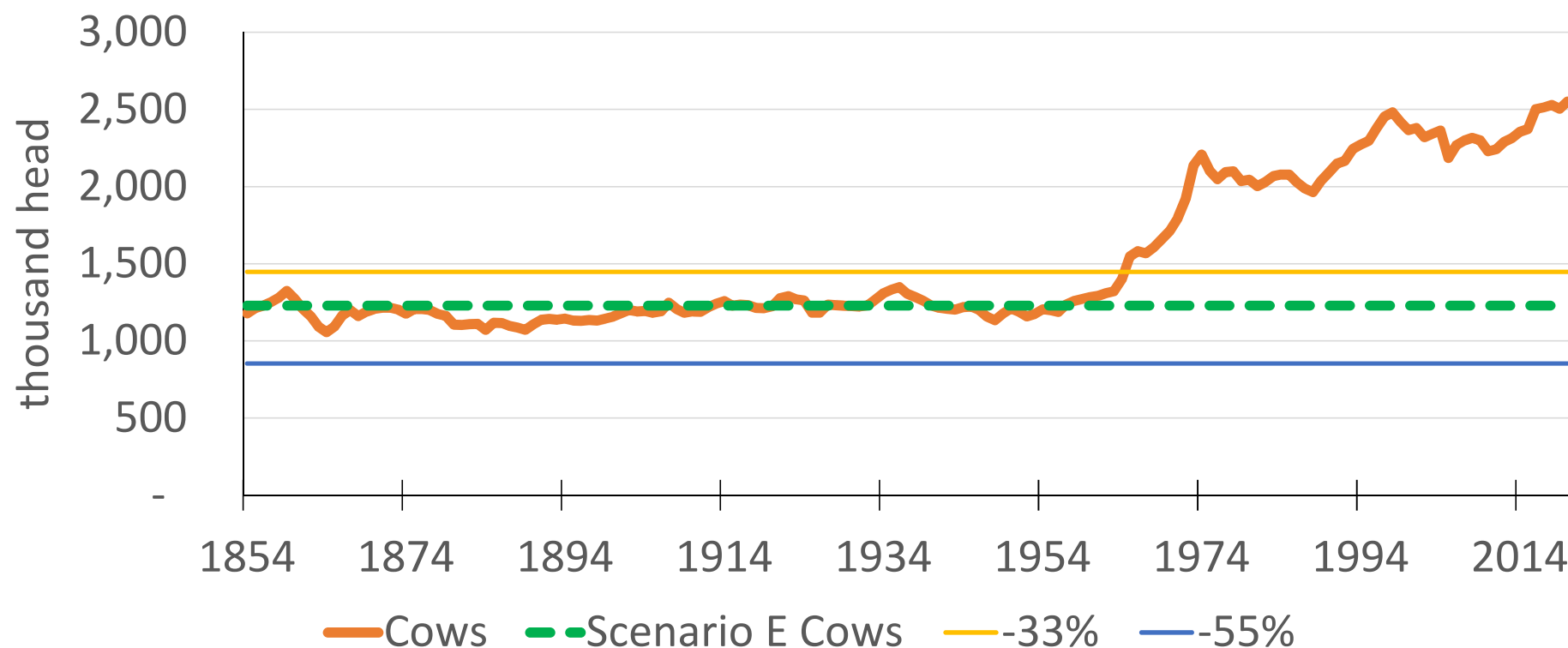
Conclusions: 1

- **Three Ag Emissions Scenarios** modelled: **-33%, -40% & -55%** (2030 vs 2018)
- Moving towards -55% reductions in Agricultural emissions requires not only
 - the **removal of the majority of beef cow population**
 - but also the **majority of the dairy cow population**
- Economic cost escalates dramatically as GHG reduction requirement increases
 - most profitable land use in Irish agriculture (dairying) is suppressed
- For the **-55% GHG scenario**
 - the loss in output **€3.7 bn per annum** by 2030(@ producer prices)
 - the loss in GVA **€2.1 bn per annum** by 2030 (@ basic prices)
 - Operating surplus of Ag is projected to be €1.9 bn lower than under BAU in 2030

Conclusions: 2

- Economic impact relates to Ag Sector only
- No assessment of the upstream and downstream economic consequences
 - employment, output and GVA in food processing industry or
 - industries supplying inputs to agriculture
- Economic costs exclude mothballing of
 - **milk and meat processing plants** or
 - **other manufacturing plants** producing good such as **specialised nutrition products** (NACE C1086)
- No account of concentrated spatial incidence of the economic costs
 - at either farm or food processing level
 - would be correlated with location of current activities (see earlier maps)

Historical Irish cow* numbers (June 1854-2020)

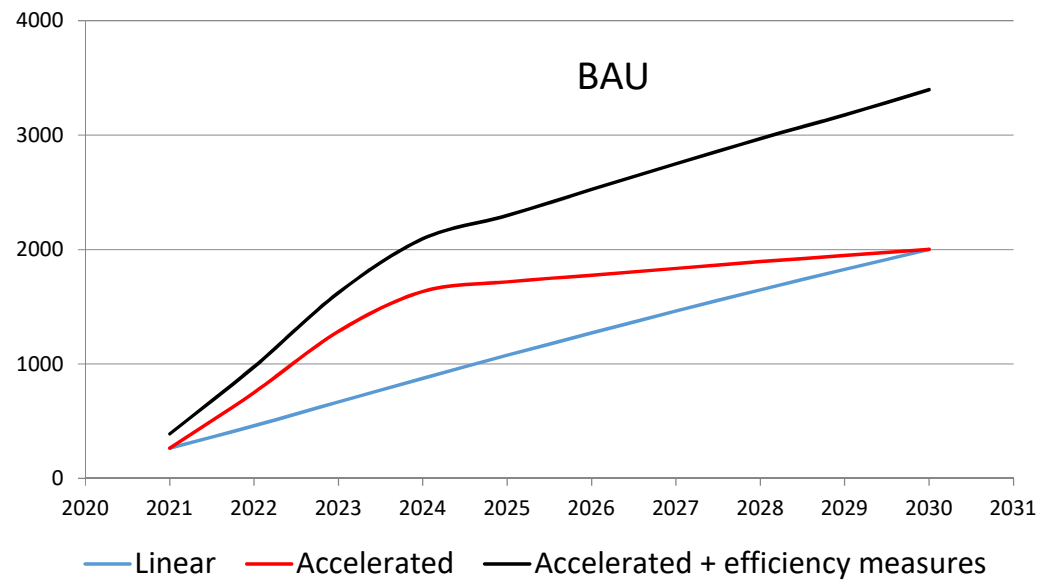


* Data includes cows only, data on other activities available from CSO "Farming Since the Famine 1847 - 1996" and CSO databases. Cows = sum of Dairy and Other (beef/suckler) Cows

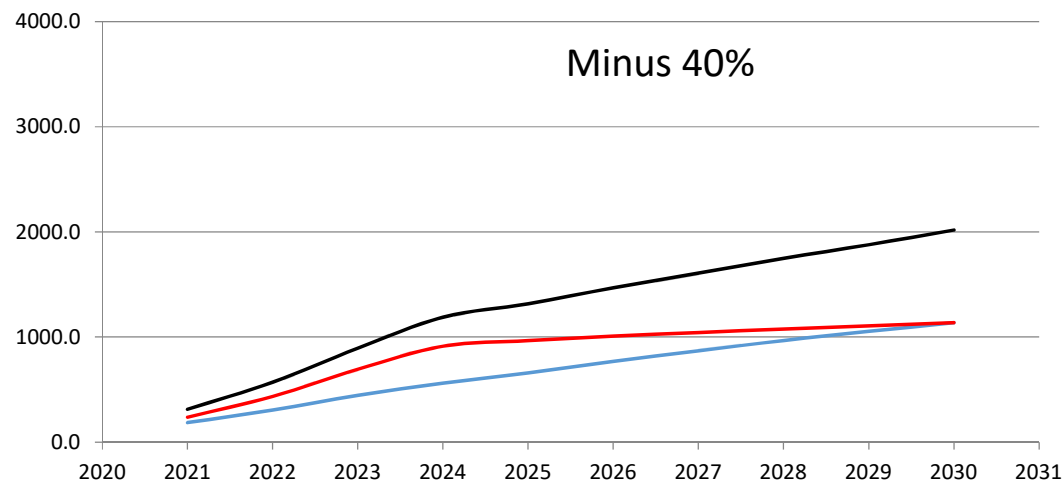
Supplementary slide

- Impact under -40% and BAU scenarios of accelerated uptake of Fertiliser and Manure measures
 - Accelerated and early uptake will lead to greater cumulative abatement over period to 2030

Impact of accelerated uptake of N and manure measures



Cumulative abatement increases from 10.64 Mt to 20.01 MT CO2e. & 33.97 with efficiencies



Cumulative abatement increases from 6.95 Mt to 8 MT CO2e.

Summary Table: First round of scenario analyses presented to Committee 27/04/2021

	2030	2030/2018		2030	2030/2018		2030	2030/2018
	Cattle (m head)			Cows (m head)			GHG (Mega t)	
BAU	7.10	-2%		2.43			20.61	
Scenario A	7.10	-2%		2.43	0%		17.29	-14%
Scenario A+	7.63	+5%		2.67	+10%		18.73	-8%
Scenario B	6.87	-5%		2.32	-5%		16.72	-17%
Scenario C	6.43	-11%		2.11	-13%		16.10	-20%
Scenario D	5.88	-19%		1.84	-24%		14.97	-25%
Scenario E	4.66	-36%		1.23	-50%		12.18	-40%

For all Scenarios Agricultural GHG are emissions form agriculture “with measures” as set out in Ag Climatise