



**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**



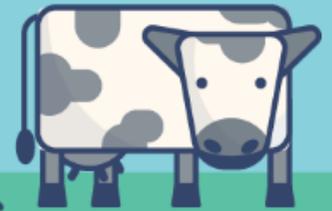
Pigs  
**1.6m**



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



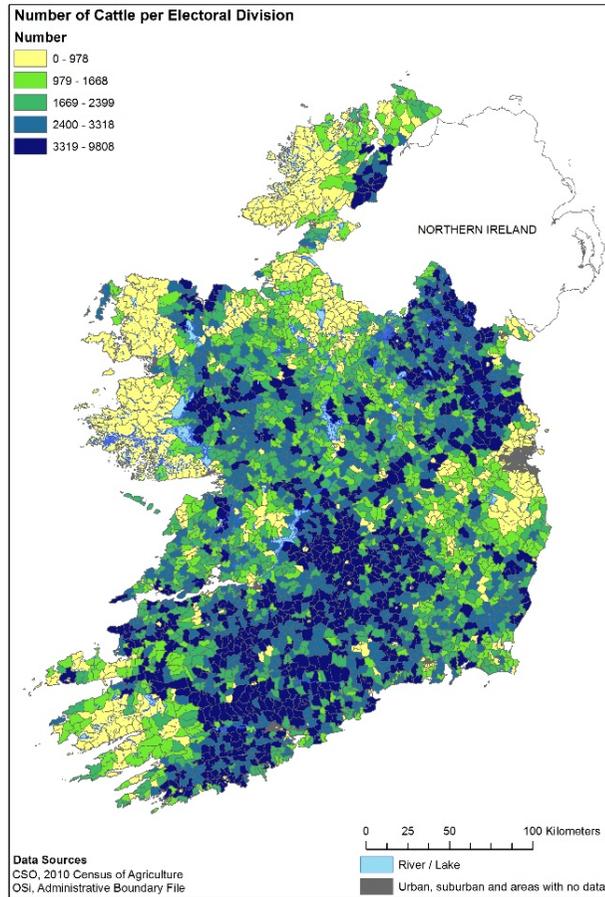
Food Processing 1,843 enterprises, employing 48,000 persons, Production value of €23 bn,

GVA of €7 bn

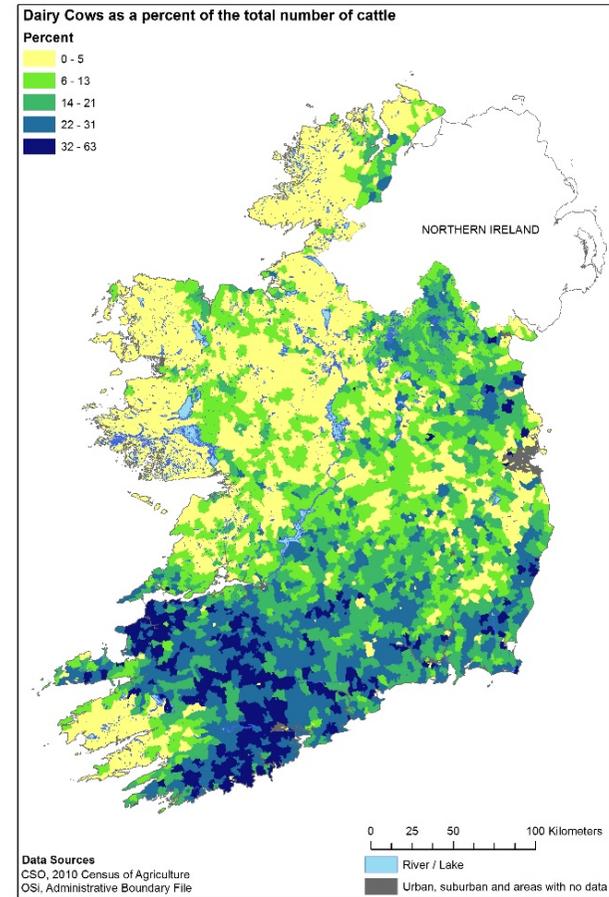


# Spatial Concentration of Bovines

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

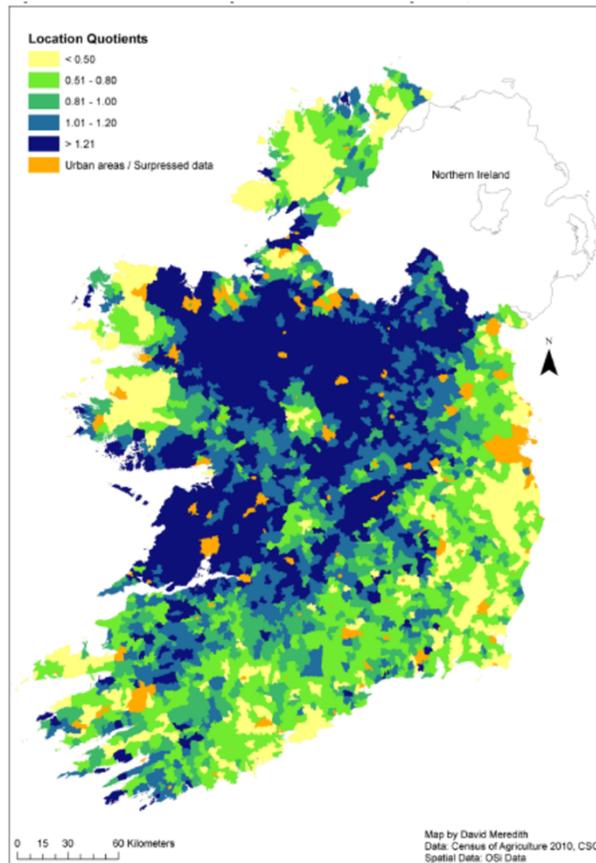


Figure 7: Distribution of Specialist Beef Enterprises (2010)

Specialised  
Dairy

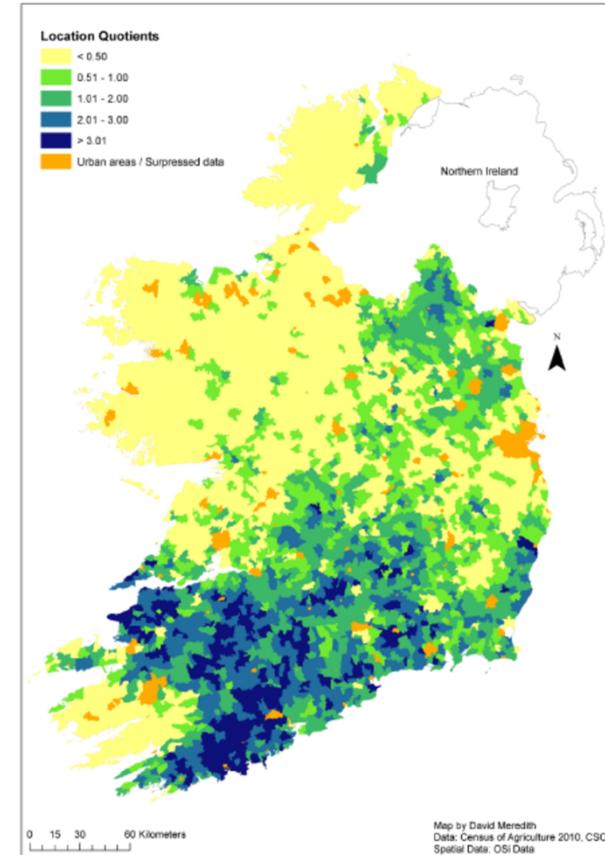


Figure 9: Distribution of Specialist Dairy Enterprises (2010)

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>

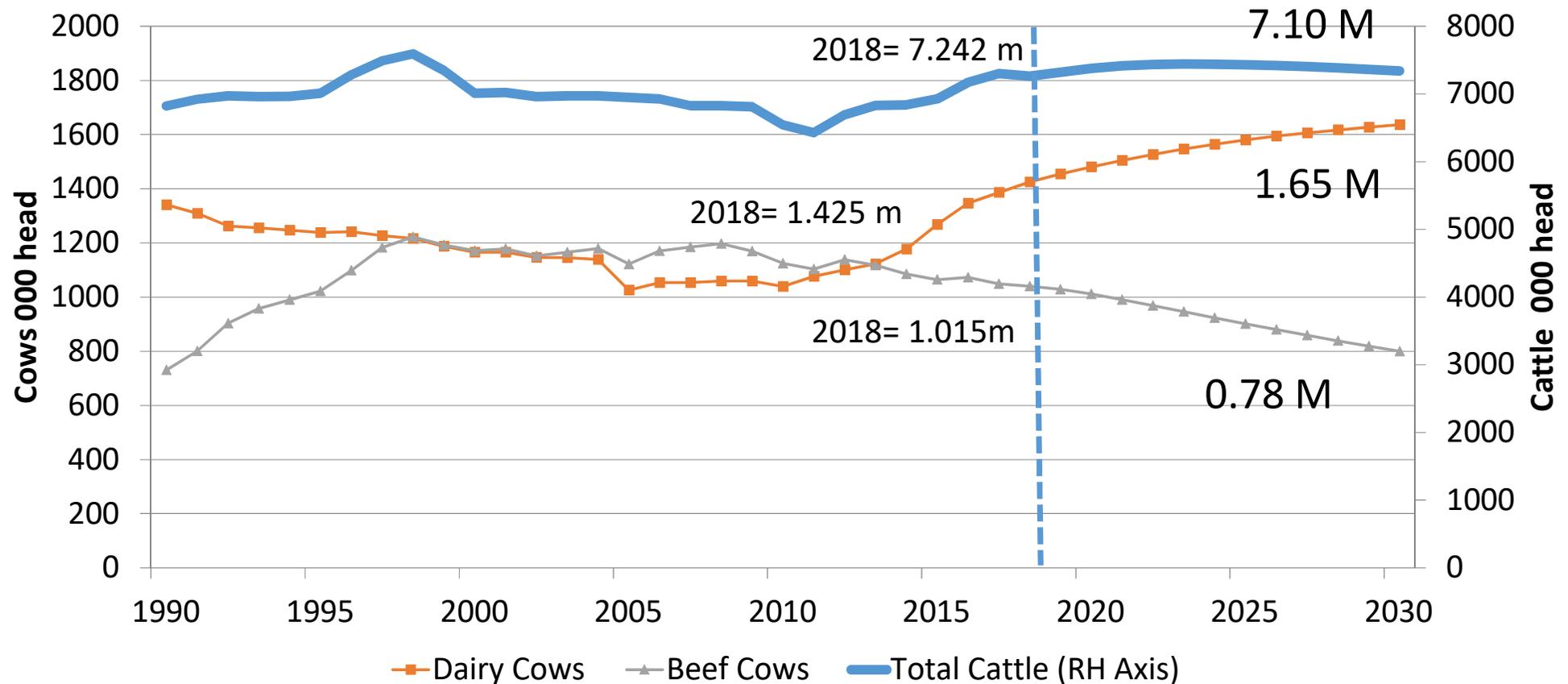
# Scenarios

- 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

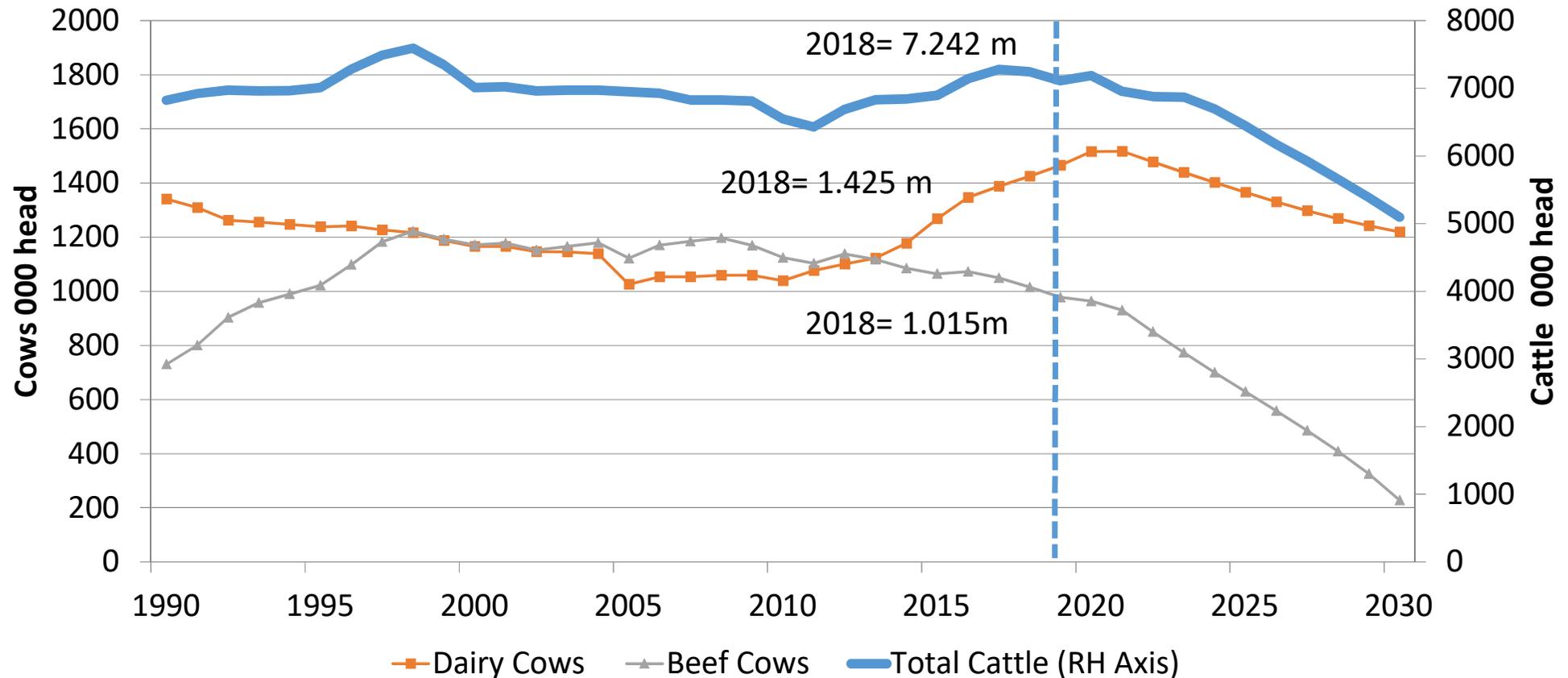
- EU and World agricultural commodity prices are assumed unchanged
- No one else is assumed to be reducing AG emissions by 33/40/55 %
- Consensus (OECD/FAO, EC, FAPRI, IFPRI, USDA, Ag Canada, JIRCAS, ABARES) global outlook for meat and dairy consumption is for stable to increasing levels of consumption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

# Business as Usual & Scenario A.



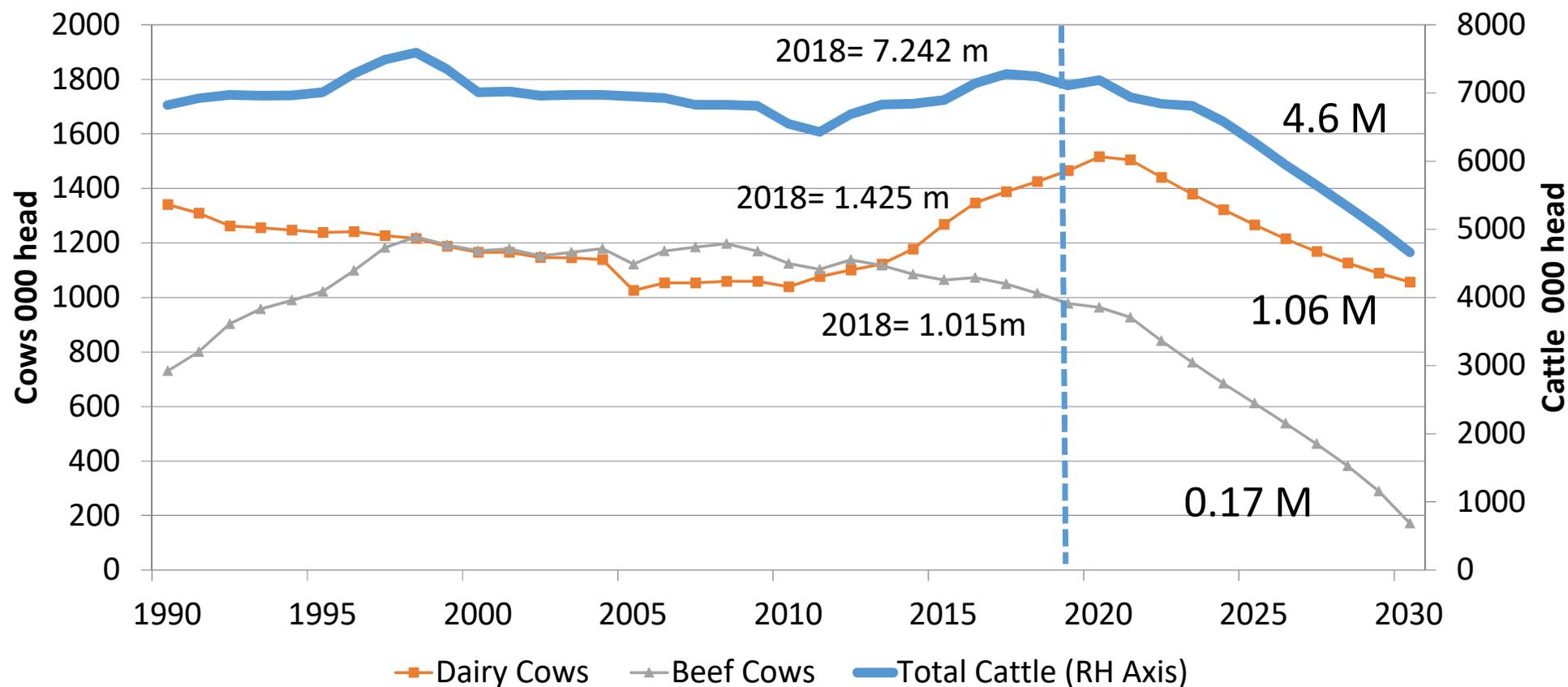
Source: FAPRI-Ireland Model

# Scenario -35% (GHG with measures)



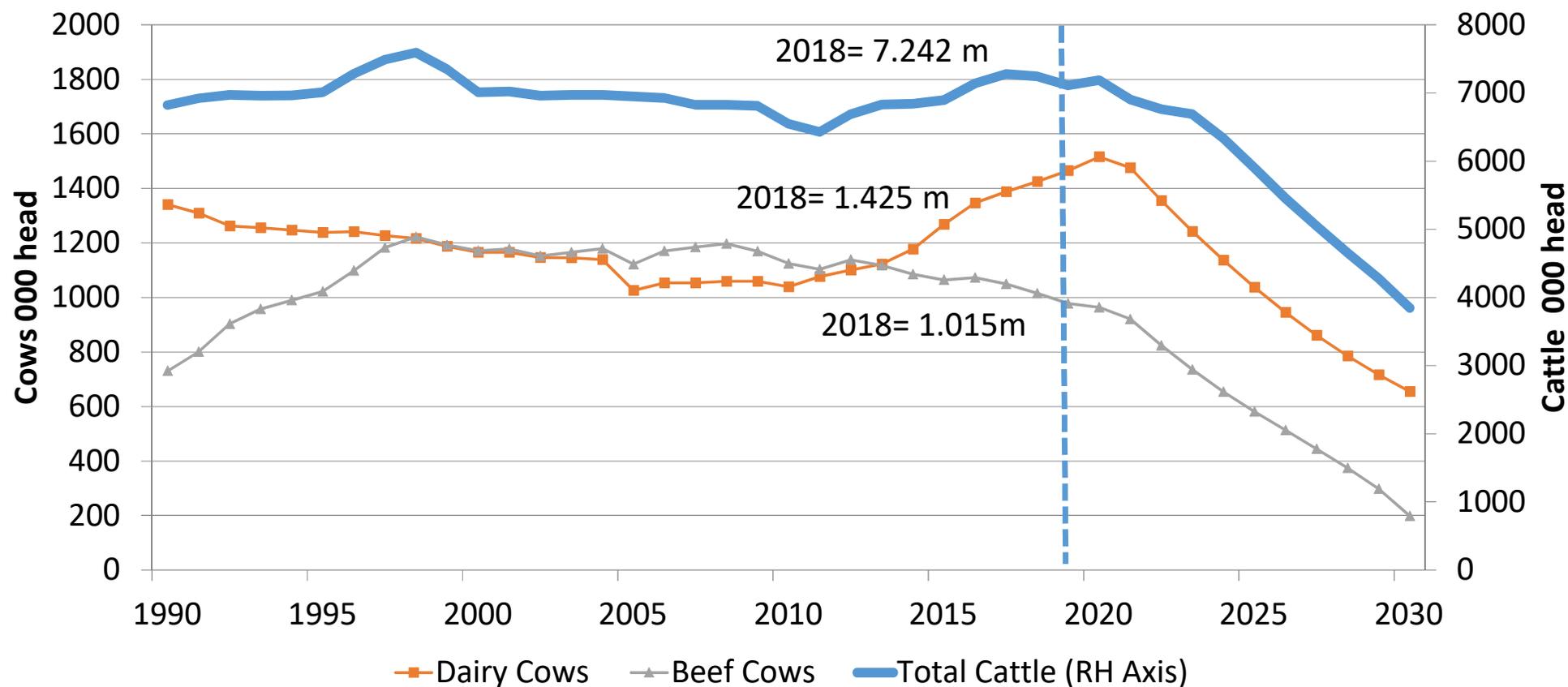
Source: FAPRI-Ireland Model

# Scenario E (-40% GHG with measures)



Source: FAPRI-Ireland Model

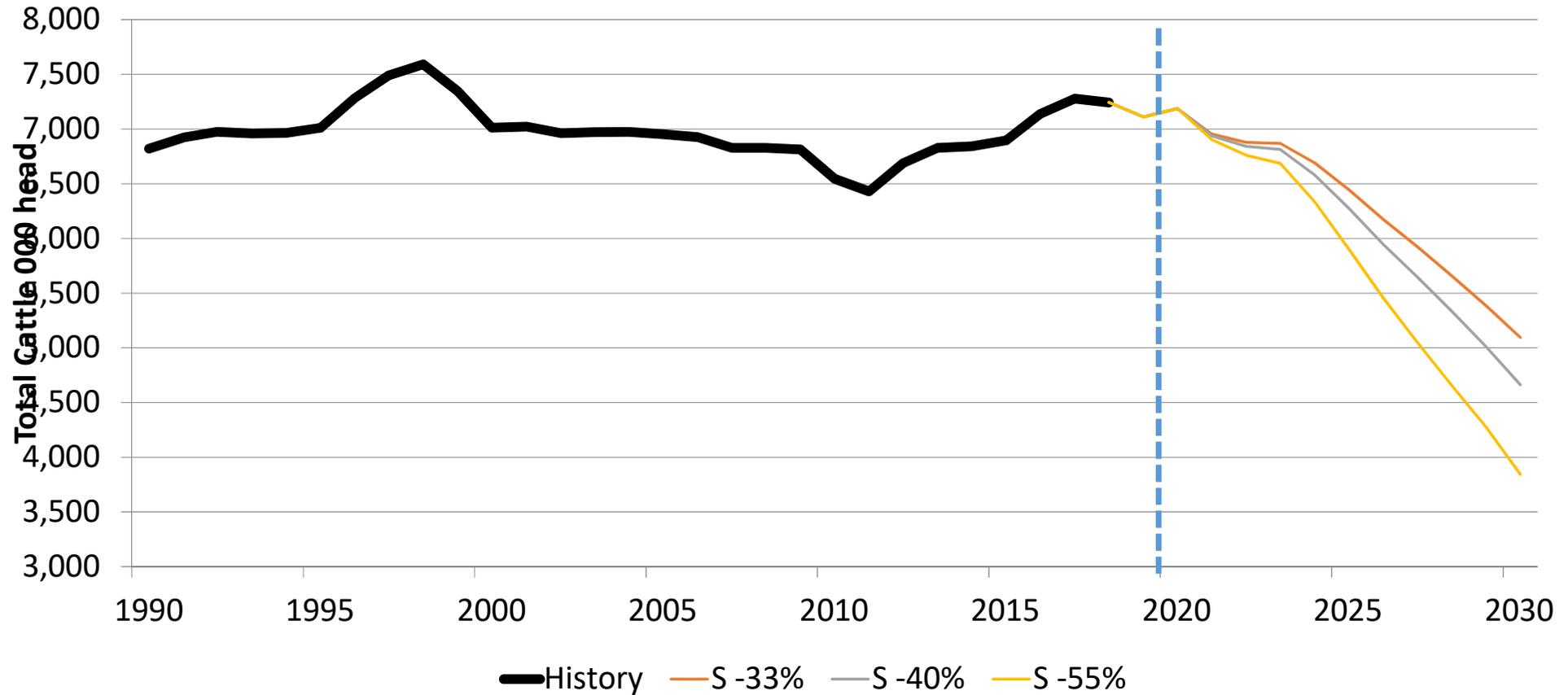
# Scenario -55% GHG (with measures)



Source: FAPRI-Ireland Model

# Total Cattle Population: Summary

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



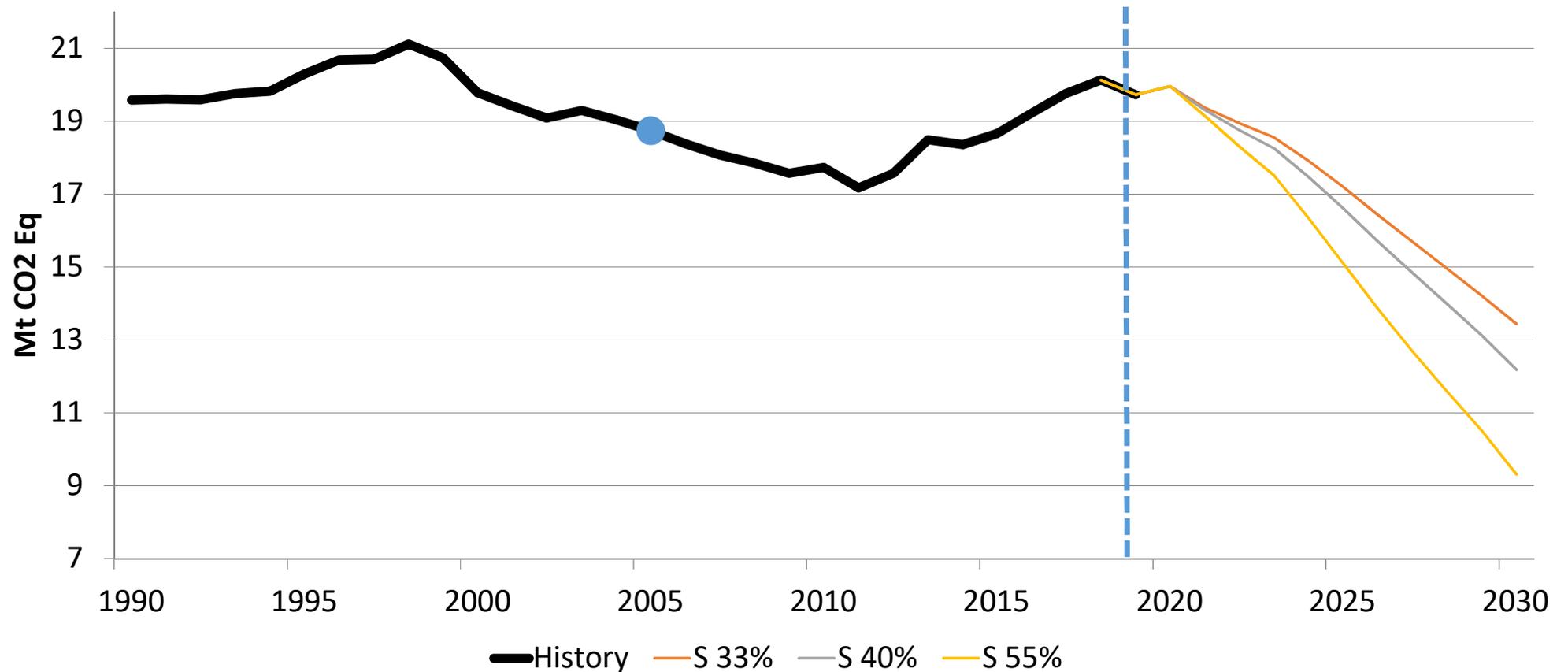
Source: FAPRI-Ireland Model

# 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

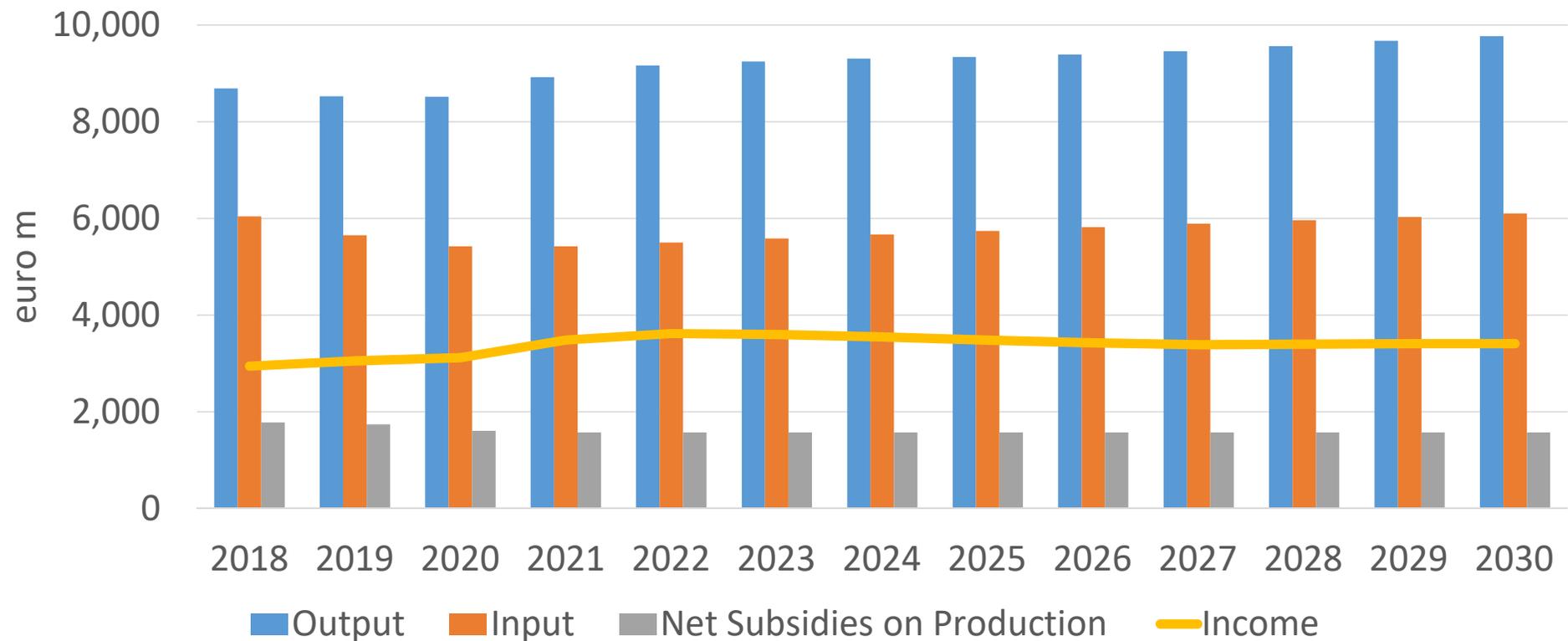
# Summary: GHG emissions

NB: All Scenarios include mitigation actions

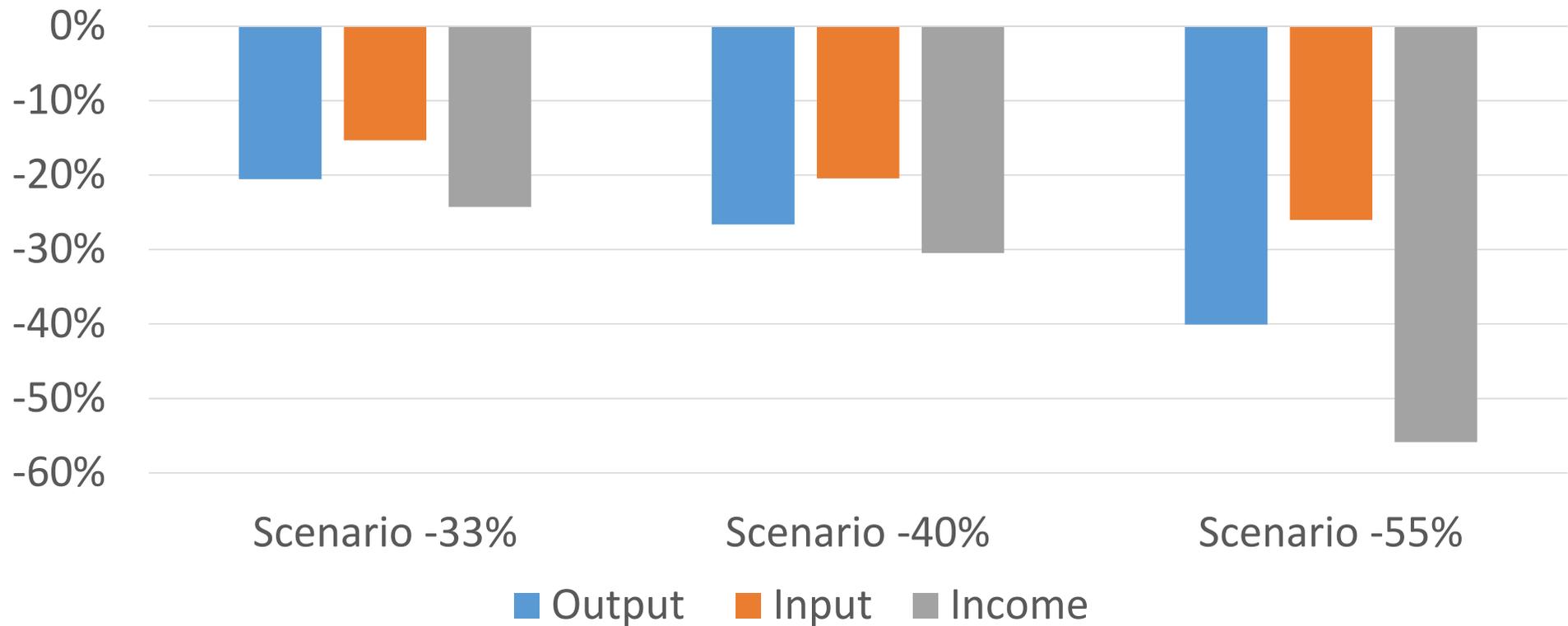


Source: FAPRI-Ireland Model

# 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

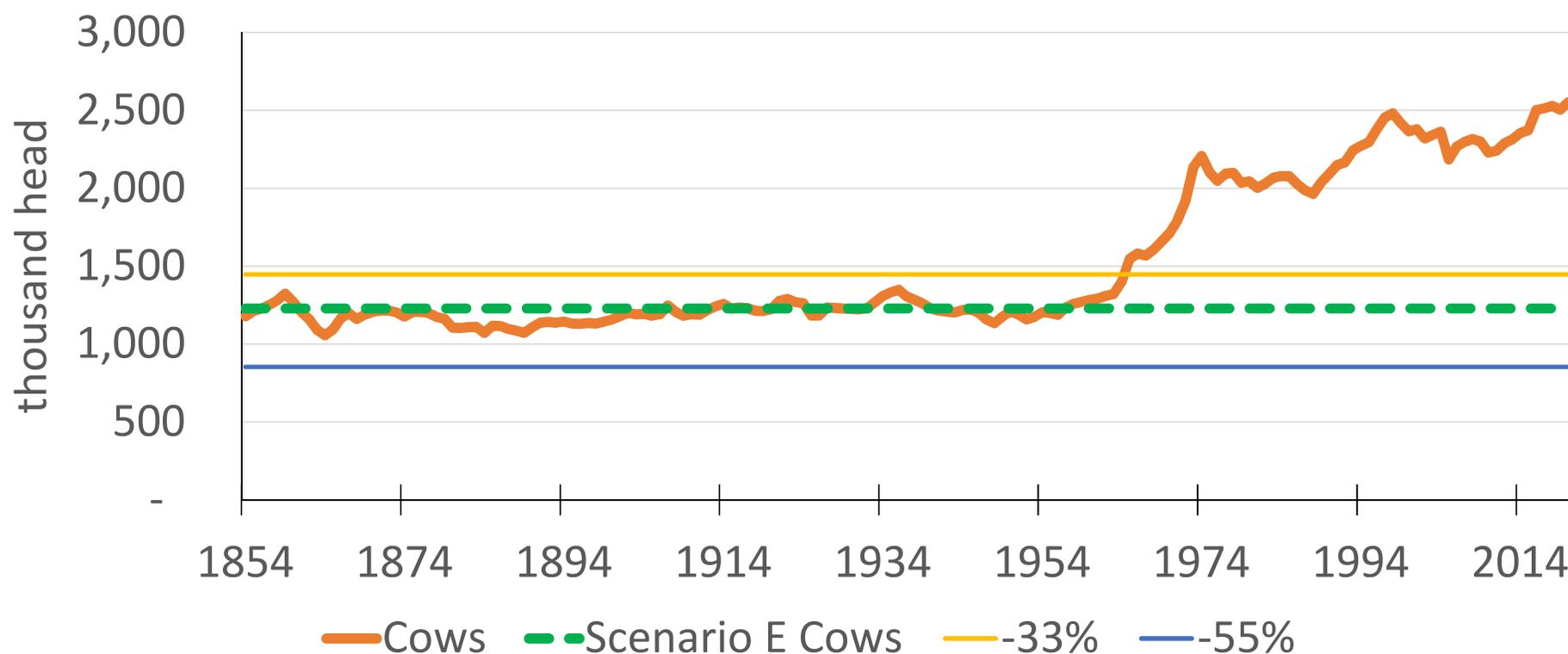
# Conclusions: 1

- **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)

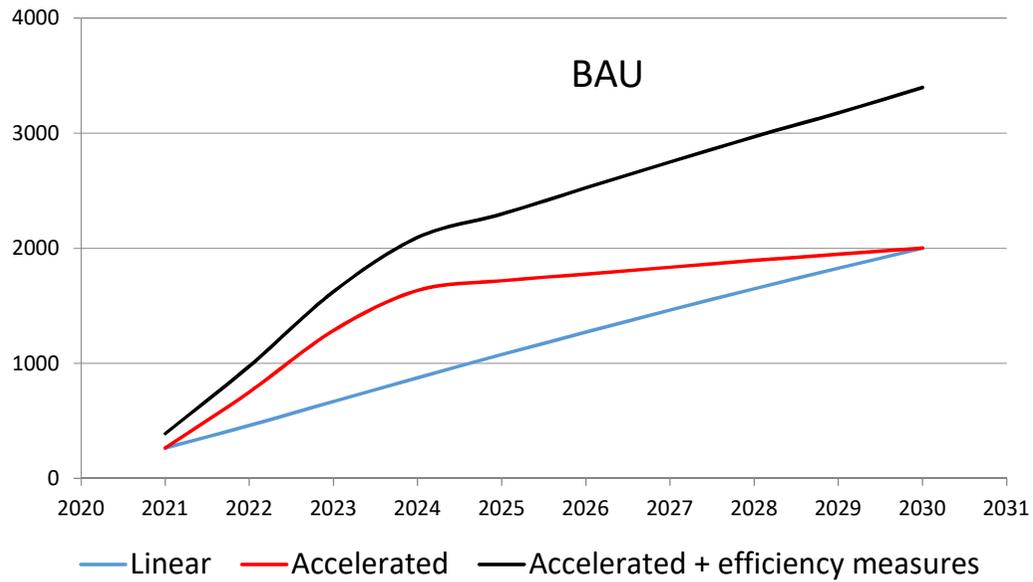


\* Data includes cows only, data on other activities available from CSO "Farming Since the Famine 1847 - 1996" and CSO databases. Cows = sum of Dairy and Other (beef/suckler) Cows

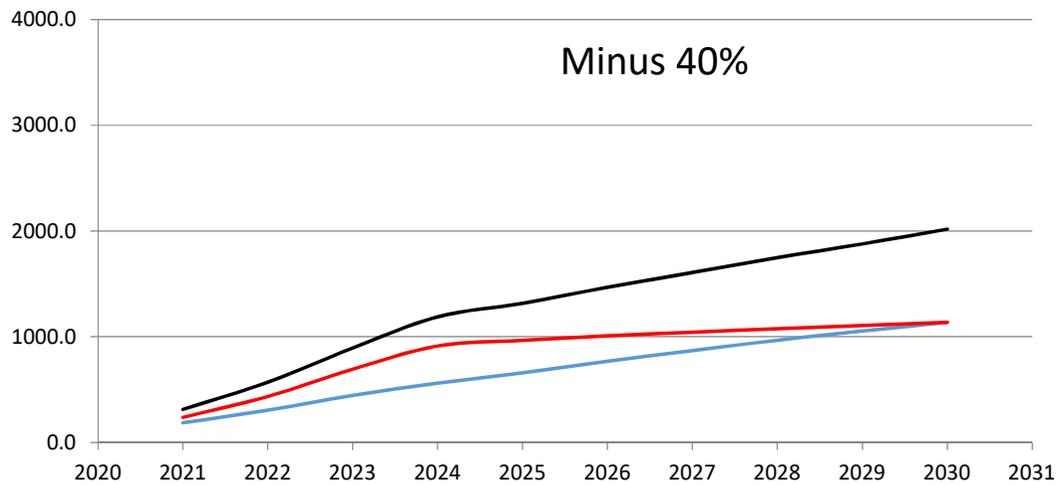
# Supplementary slide

- 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 CO<sub>2</sub>e. & 33.97 with efficiencies



Cumulative abatement increases from 6.95 Mt to 8 MT CO<sub>2</sub>e.

# 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