

Ireland's Greenhouse Gas Emission Projections

2010-2020

Gemma O'Reilly

Eimear Cotter and Bernard Hyde

Environmental Protection Agency,
Ireland

Overview

- Introduction
- Key assumptions
- Kyoto Protocol
- The future
- Conclusions

Introduction

- EPA produce GHG projections on an annual basis as set out in Ireland's National Climate Change Strategy (2007)
- Projections are used to meet reporting requirements at National, EU and International (UNFCCC) levels
- Projections developed consistent with UNFCCC guidelines and national greenhouse gas inventory

Sectoral Emissions Projections

■ Energy-related sectors

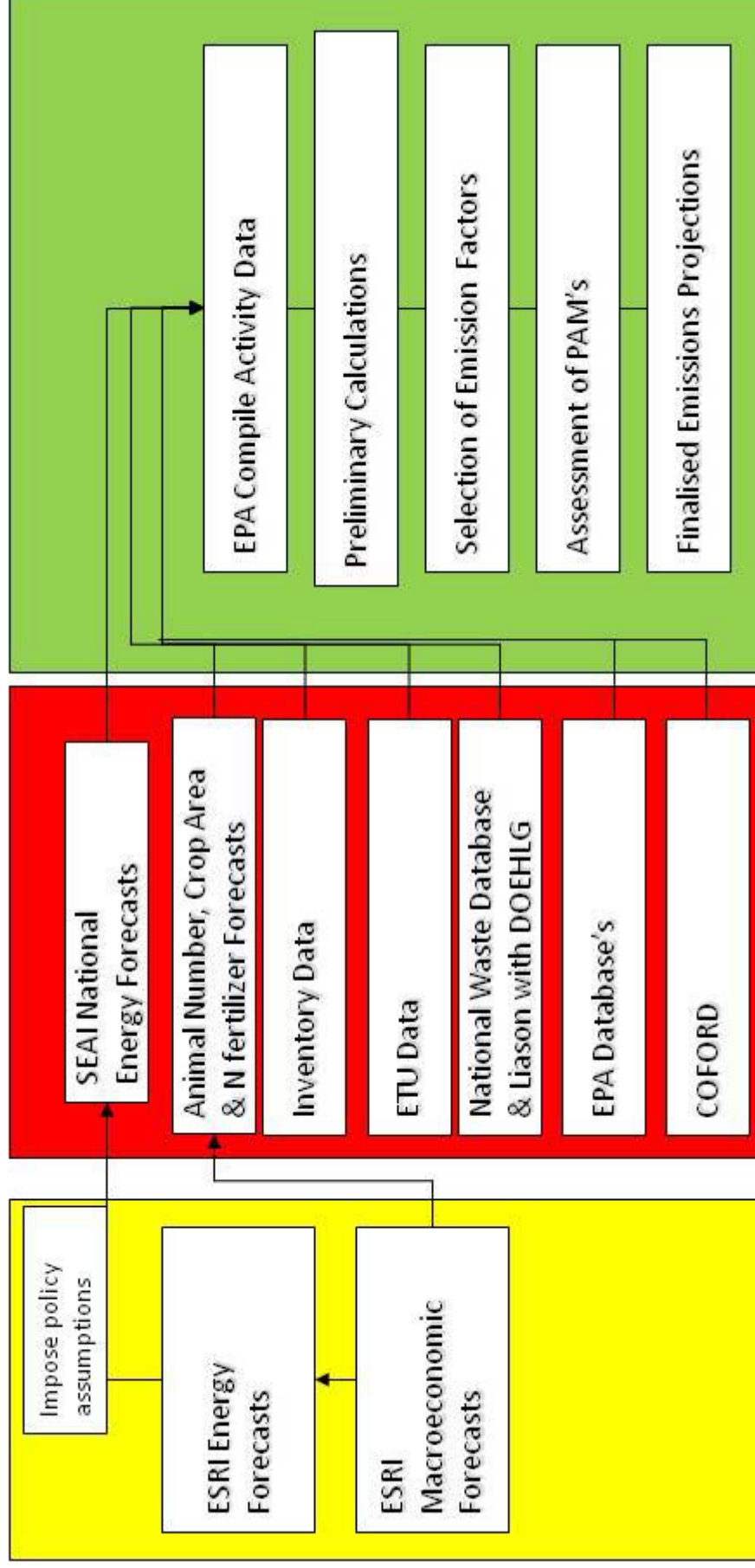
- Power Generation
- Transport
- Residential
- Commercial Services
- Industry

■ Non-Energy related sectors

- Agriculture
- Waste
- F-gases and industrial processes
- NMVOCs
- Forest sinks

Requires co-ordination of large amounts of data and the cooperation of a large number of organisations

Institutional & Procedural Arrangements



Energy Forecasts

- Top down macroeconomic model - HERMES (ESRI)
 - Key variables relate to parameters such as price, GDP, population, household growth and occupancy

- Form the basis for the
 - *With Measures* scenario - all existing policies and measures
 - *With Additional Measures* scenario - all existing and planned policies and measures

Agriculture Activity Data

- Projected animal numbers, crop areas and fertiliser use are provided by Teagasc using the FAPRI Ireland model
 - Assumptions include:
 - Removal of milk quota in 2015
 - Developments in agricultural markets - cereal & animal feed prices, fertilizer prices and commodity markets
 - Farm efficiency improvements
- The FAPRI-Ireland model is linked with the University of Missouri FAPRI model of world agricultural commodity markets
- The model has an agricultural commodity coverage that extends to markets for
 - grains
 - other field crops (potatoes, sugar beet),
 - Livestock
 - Milk and dairy products

Emission Factors

- In general CO_2 , CH_4 and N_2O emission factors based on emission inventories (1990-2008)
 - Plant specific
 - Country specific
 - Default IPCC emission factors

- CO_2 from combustion of biogenic carbon not included, CH_4 and N_2O estimated using IPCC defaults

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Energy Related emissions -key assumptions

- GDP growth rate: recession in 2008-2010 reflected with growth assumed again for 2011
- Population growth rate, no. of households
- Personal consumption growth rates
- CO₂ €/tonne taken from EU Allowances futures market prices (09-12) & Dept of Finance
- Fuel prices taken from EU Commission (DG)- Transport and Energy (TREN) largely from the PRIMES model

With Measures and With Additional Measures (PAMs) scenarios

With Measures

Includes the anticipated impact of PAM's in place (and legislatively provided for) by the end 2008

- Renewables Penetration
- 2008 Building Regulations
- Efficient Boiler Standard
- SEAI Small Business Support
- Improved fuel economy
- 2010 Building Regulations

With Additional Measures

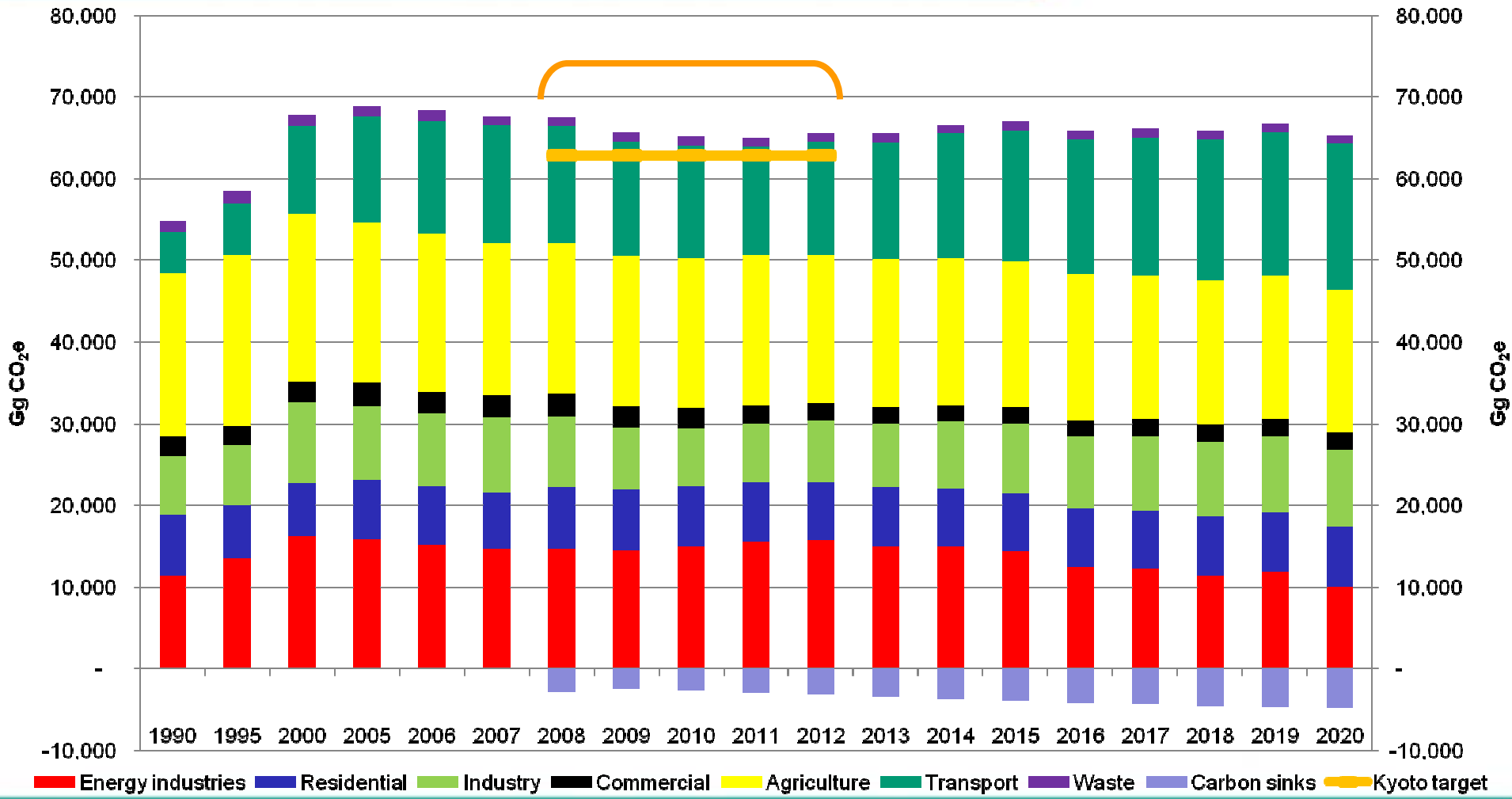
Includes both existing and planned policies and measures

- 40% renewables by 2020 (RES-E)
- Energy efficiency measures
- 12% renewables in thermal heat by 2020 (RES-H)
- 10% renewables in road transport by 2020 (RES-T)
- Further Potential Measures
- F-gas Regulation & MAC Directive

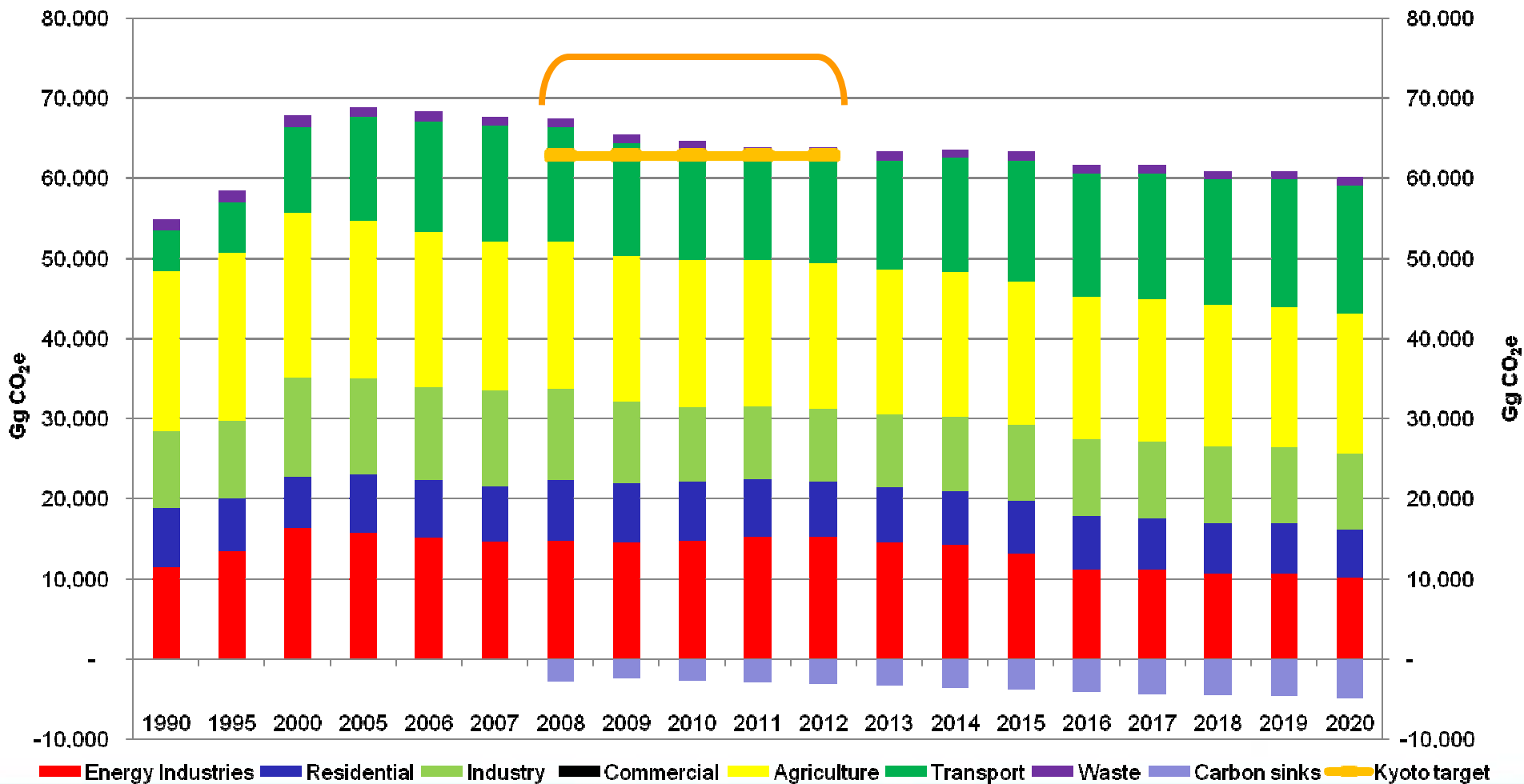
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With Measures (GgCO₂e)



With Additional Measures (GgCO₂e)



Kyoto Protocol Limit

- Kyoto Protocol Limit
 - 314.2 Mtonnes of CO₂e for the period 2008 - 2012
 - 62.8 Mtonnes of CO₂e per annum

- This is calculated as 13% above Ireland's 1990 baseline value which was established and fixed at 55.61 Mtonnes of CO₂e

- For ETS sectors
 - 22.3 million allowances per annum
 - 111.4 million allowances to be allocated to ETS sectors for the period 2008-2012

- For non-ETS sectors
 - $62.84 - 22.28 = 40.56$ Mtonnes of CO₂e per annum

Kyoto Protocol Limit - *With Measures*

<i>Mtonnes of CO₂e</i>	Average Emission 2008 – 2012
With Measures (WM) includes carbon sinks	63.0
Attributed to ETS	19.5
Attributed to non-ETS	43.6
Government Purchases/Additional Domestic Action	3.0

* 62.8 (Kyoto Limit) – 22.3 (Annual Allowance Allocation for ETS) = 40.6 Mtonnes of CO₂e

43.6 – 40.6 = 3.0 Mtonnes of CO₂e

Kyoto Protocol Limit - *With Additional Measures*

<i>Mtonnes of CO₂e</i>	Average Emission 2008 – 2012
With Additional Measures (WAM) includes carbon sinks	62.3
Attributed to ETS	19.2
Attributed to non-ETS	43.1
Government Purchases/Additional Domestic Action	2.6

* 62.8 (Kyoto Limit) – 22.3 (Annual Allowance Allocation for ETS) = 40.6 Mtonnes of CO₂e

43.1 – 40.6 = 2.6 Mtonnes of CO₂e

Compliance under Kyoto Protocol

- WAM total projected gap 12.9 Mtonnes
- Total purchases to date (C&AG report 2009) 8.255 million credits
- Remaining required purchases ~ 4.6 million credits
- Possible New Entrant Set-Aside (NESA) Returns ~ 5.0 million credits

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Looking beyond emissions in 2012

- National annual emissions projections for 2020 European targets
- Climate Change Research Programme
 - Integrated assessment modelling of transboundary and GHG emissions (GAINS)
 - Developing energy modelling out to 2050
 - Improving emissions factors for inventory and projections
 - Exploring the vision of achievement of “Carbon Neutrality by 2050”
- Building and improving capacity for inventory and modelling across sectors through improved communication between research and government

Conclusions

- The projections were updated in 2010 to take account of recession and impact of Government policy
- Kyoto Protocol target will be met through combination of domestic action, Government purchases and use of allowances from the New Entrant Set Aside in ETS
- Emissions projections are a useful and essential tool for;
 - Developing sectoral and cross sectoral understanding
 - Informing stakeholders of issues and challenges
 - Coordination and development of actions across government
- Investment in research to improve projections is on-going

Contacts



- Eimear Cotter e.cotter@epa.ie
- Bernard Hyde b.hyde@epa.ie