

# Ireland's daunting climate change challenge: how to respond?

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# Overview

- International negotiations: a short primer
- The EU framework
- Power generation
- Buildings
- Agriculture
- Transport
- Divestment
- Conclusions

## Scientific Consensus

1992: IPCC 1

Top  
Down

mitigation

1995: IPCC 2

**2001: IPCC 3**  
(adaption)

Bottom  
Up

2007: IPCC 4

Broader  
Issues?

2014: IPCC 5

## International Negotiations: COP

1992: Framework Convention

1997: Kyoto Protocol

2001: Marrakesh Accords

2005: Kyoto Protocol enters into force

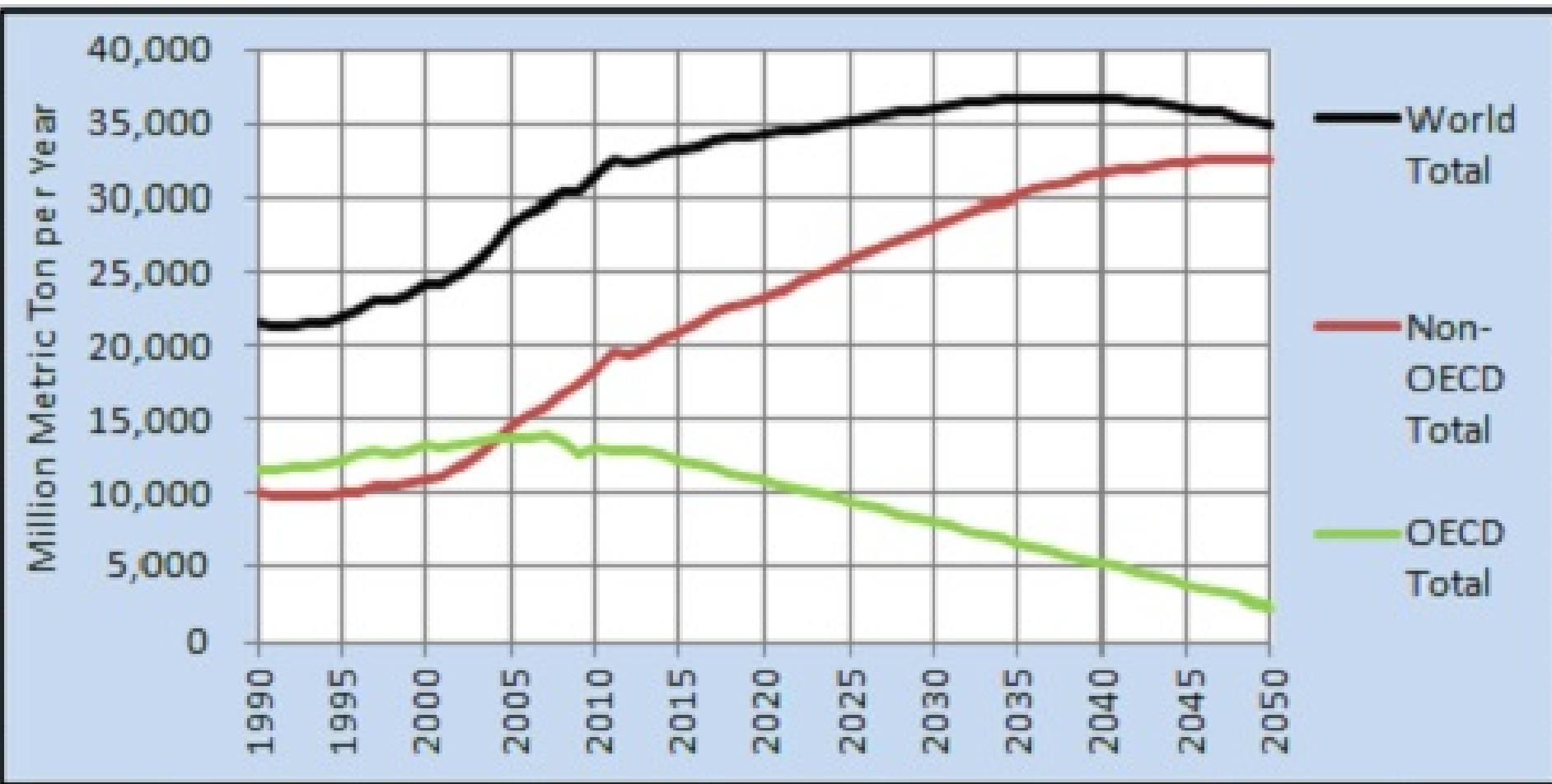
2007: Bali Road Map

2009: COP-15 Copenhagen

2014: Lima

2015: Paris

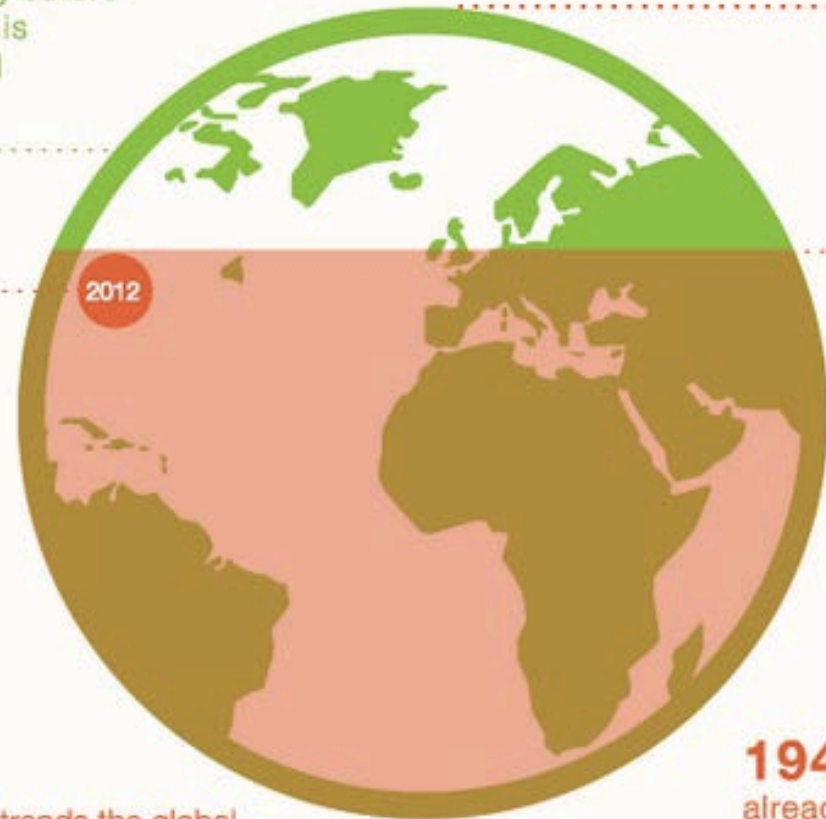
# OECD & non-OECD CO<sub>2</sub> Emissions 1990 - 2050



# 2012 Emissions and Global Carbon Budget IPCC 5

**987.23 Gt**

remaining before  
**2°** target is  
breached



**1948.77 Gt**

already used

On current trends the global budget will be fully exhausted in approximately 25 years, meaning that exceeding the **2°** target becomes increasingly inevitable. Only dramatically reducing emissions can change this reality.

# Copenhagen 2009: a successor to Kyoto?



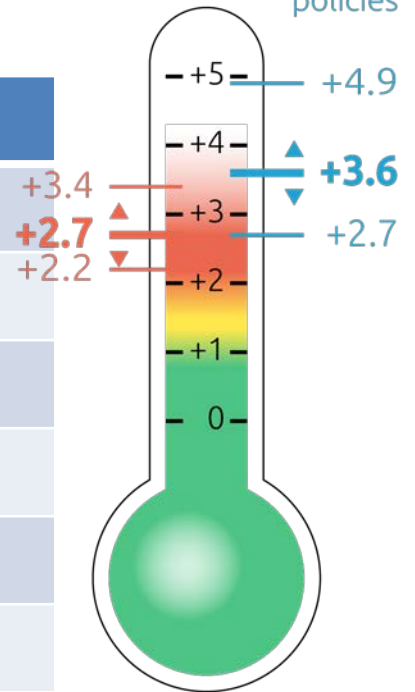
# Top-Down to bottom up?

180 Countries Covering Almost 95% of Global  
Emissions Submit Plans to UN!

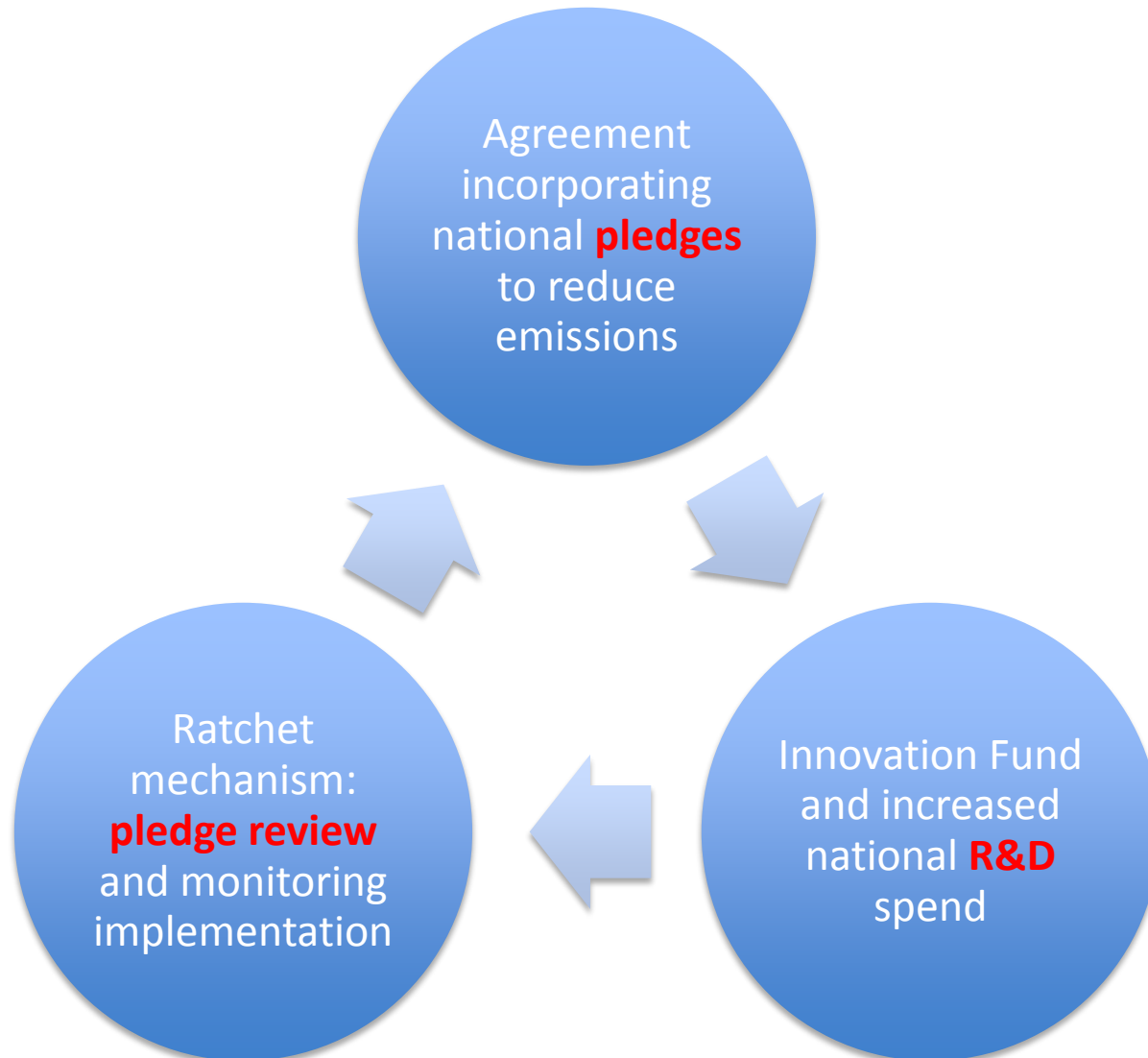
Pledges °C Current policies

## Of variable ambition, quality and limited comparability

|             |            |
|-------------|------------|
| EU          | Medium     |
| US          | Medium     |
| China       | Medium*    |
| Canada      | Inadequate |
| Japan       | Inadequate |
| New Zealand | Inadequate |
| Australia   | Inadequate |
| Canada      | Inadequate |
| Russia      | Inadequate |



# All aboard at Paris?



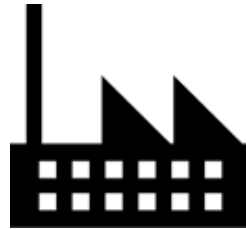


# The EU 2030 Framework

“at least” 40% by 2030 on 1990

=

– EU ETS sector: 43% reduction on 2005 by 2030



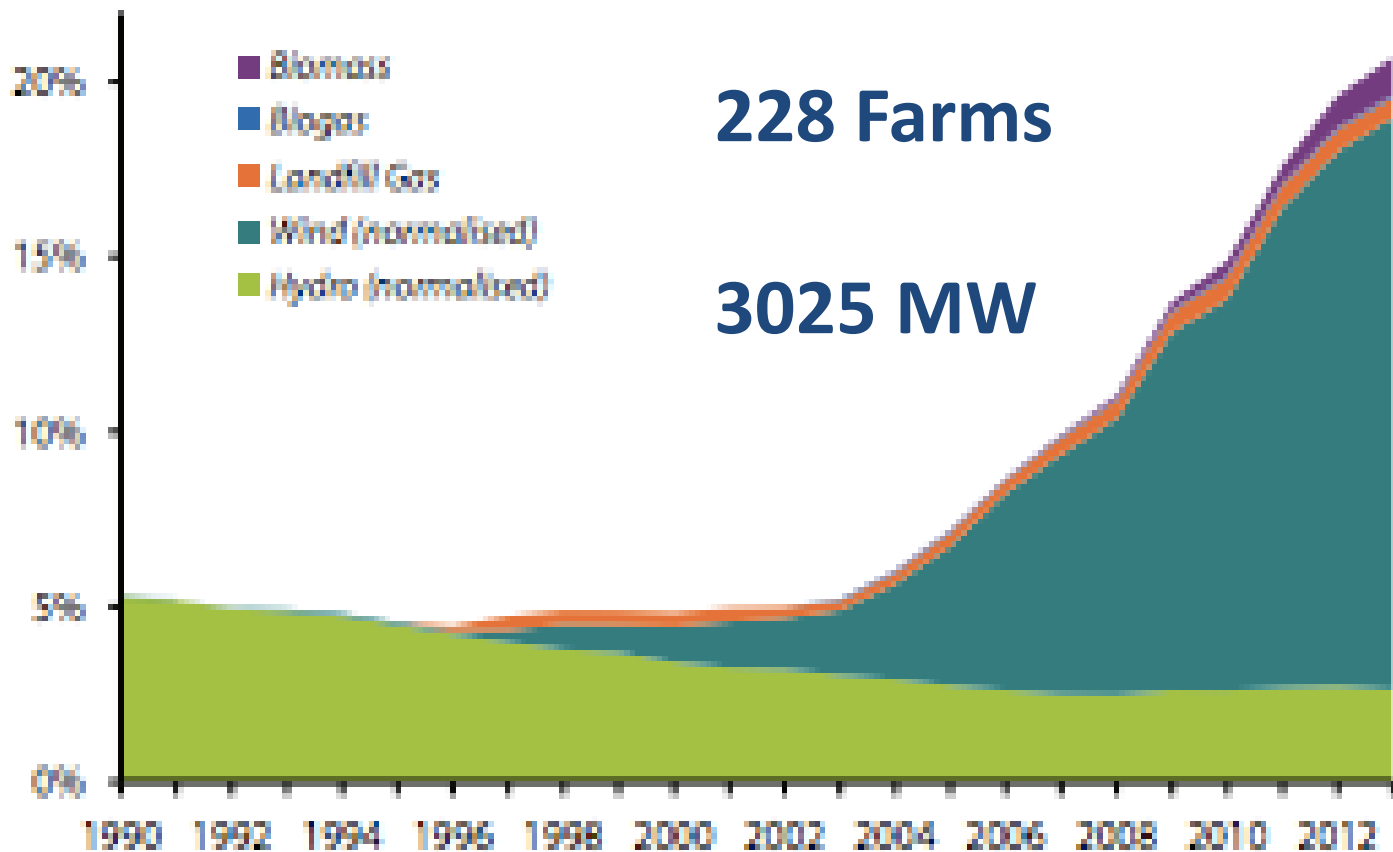
– Non-ETS sector: 30% reduction on 2005 by 2030



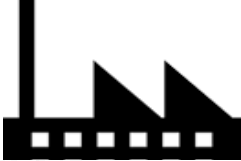


# A short history of Ireland's Energy transition (wind)

## Renewable Energy Contribution to Gross Electricity Consumption



A short history of Ireland's Energy transition



# Rural campaigners aim to unseat three Cabinet Ministers

Alex White, Alan Kelly, Charlie Flanagan targeted by group over wind farm stance





# Ireland's transition to a low carbon economy?





# Diagnosing the patient

## Low carbon transition: success factors

|                |   |
|----------------|---|
| Capital        | ✓ |
| Citizen buy in | ✗ |

**“Societal acceptance” identified as key barrier but also an enabler of success for low carbon transition”**



# Benefits of local co-ownership

- Generate local income and regional economic development
- Result in more locally appropriate developments, more likely to receive planning approval
- Contribute to understanding of climate and energy security issues
- Create “niches” & “pilots” which positively interact with the wider regime in various ways
- Dispose citizens to making future low-carbon investments
- **But: Communities and individuals will not be mobilised as owners/investors with out incentivisation & support**



# The Ontario FiT combined with up-front grants

- **Description:** Ontario's FiT scheme, 2009
- Tariffs set using estimated cost + financial return (10%+) model, i.e.: financially attractive



# The Ontario FiT combined with up-front grants

## Community Adder: 13.5 c/Kwh +

|           | Aboriginal Groups | Other Community Groups |
|-----------|-------------------|------------------------|
| Wind      | 1.5               | 1                      |
| Solar PV  | 1.5               | 1                      |
| Hydro     | .9                | .6                     |
| Biogas    | .6                | .4                     |
| Biomass   | .6                | .4                     |
| Land Fill | .6                | .4                     |

- Energy Partnership Programme (EPP) provided up front funding to cover the “legal, technical, financial and due diligence” and “soft costs”
- 2012: a minimum reserve of 10 per cent of the remaining FiT contract capacity for community projects (50% equity)





# The Ontario FiT combined with up-front grants

- By 2014 community projects 17.5% of total

**Conclusion:** persistence and political commitment





## The non-ETS

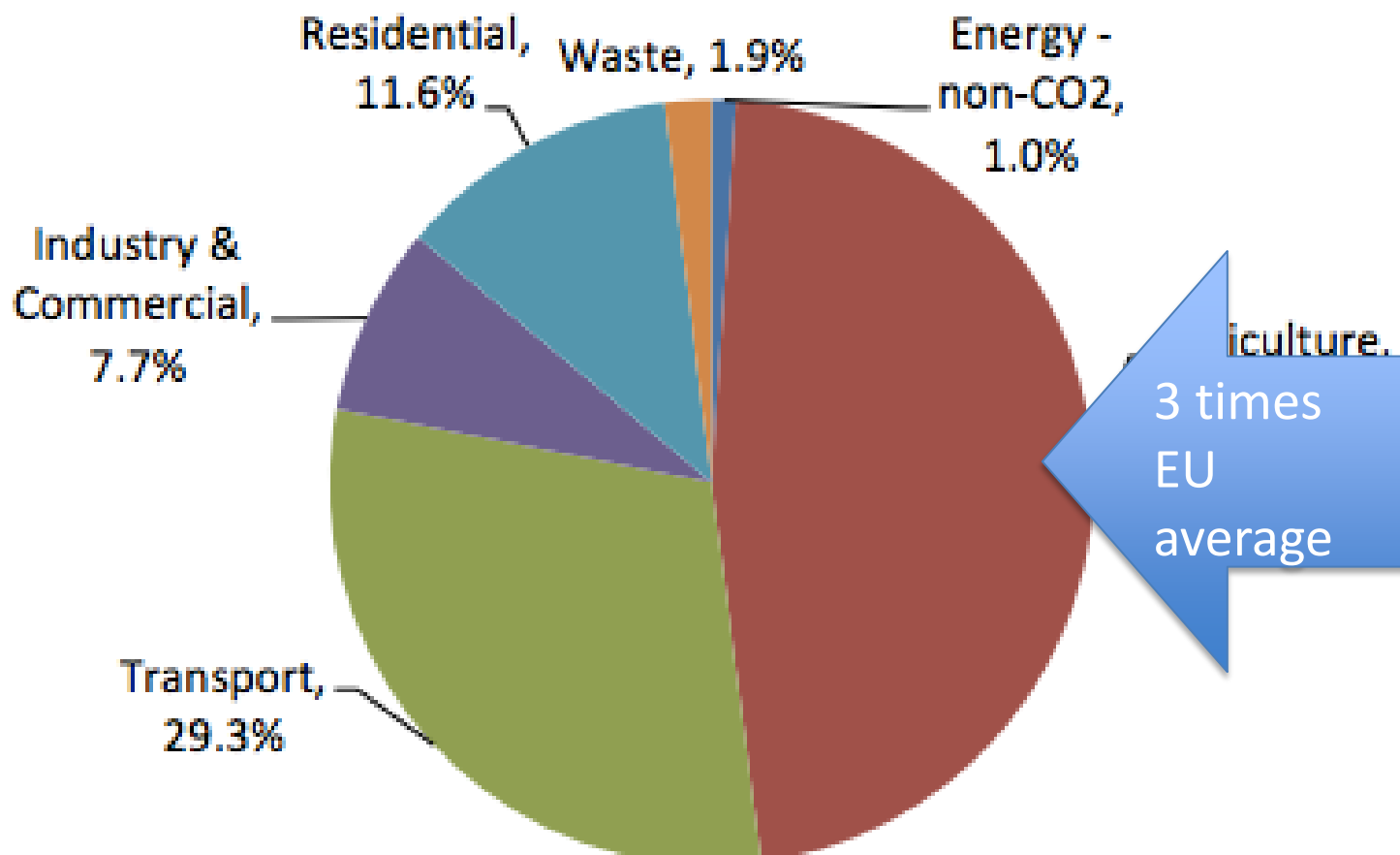


- 30% reduction for non ETS by 2030 on 2005 level
- EU-Wide
- Ireland's target...not in Paris, 2016?



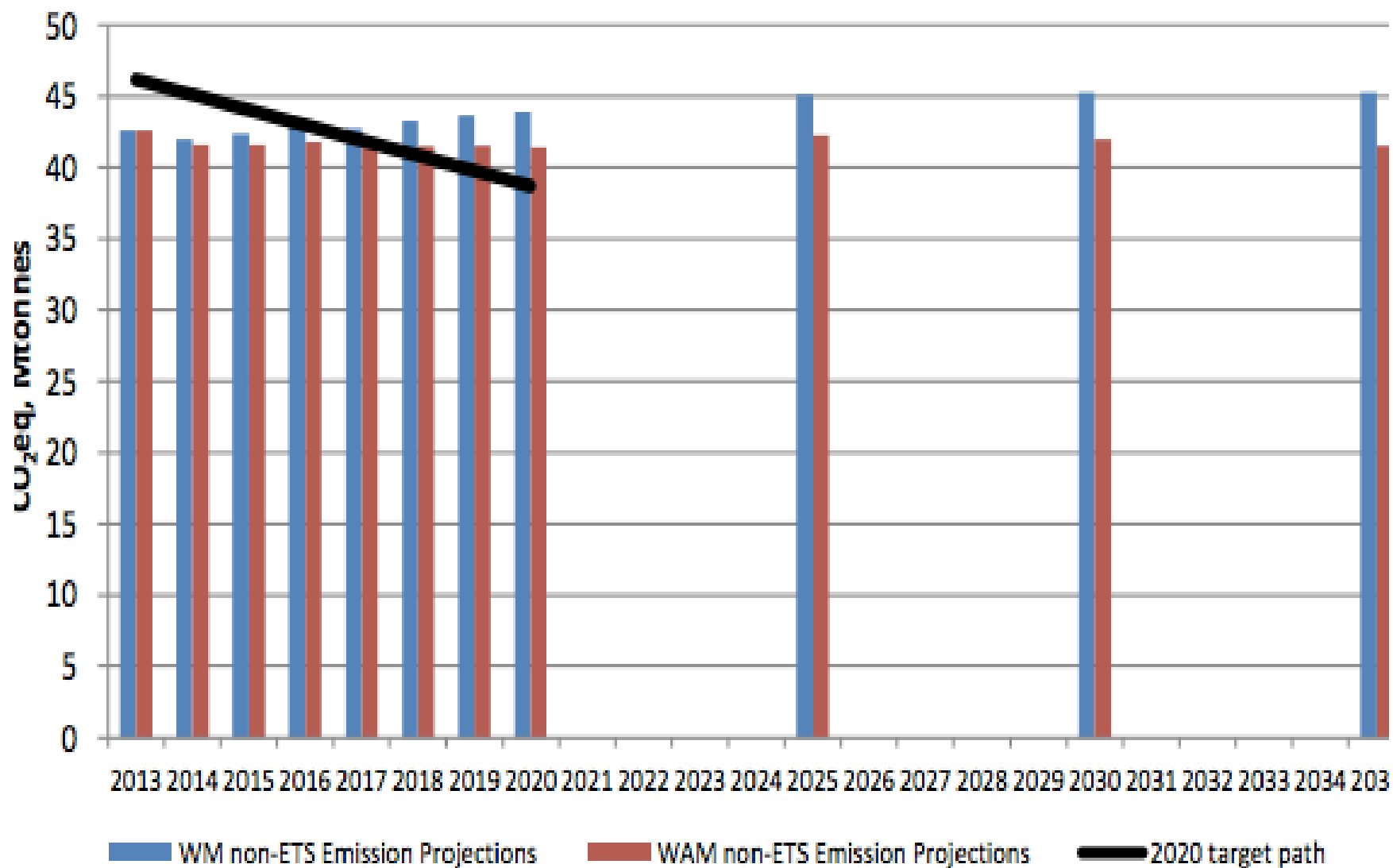


## Non-ETS (2020)





# 2020 & 2030





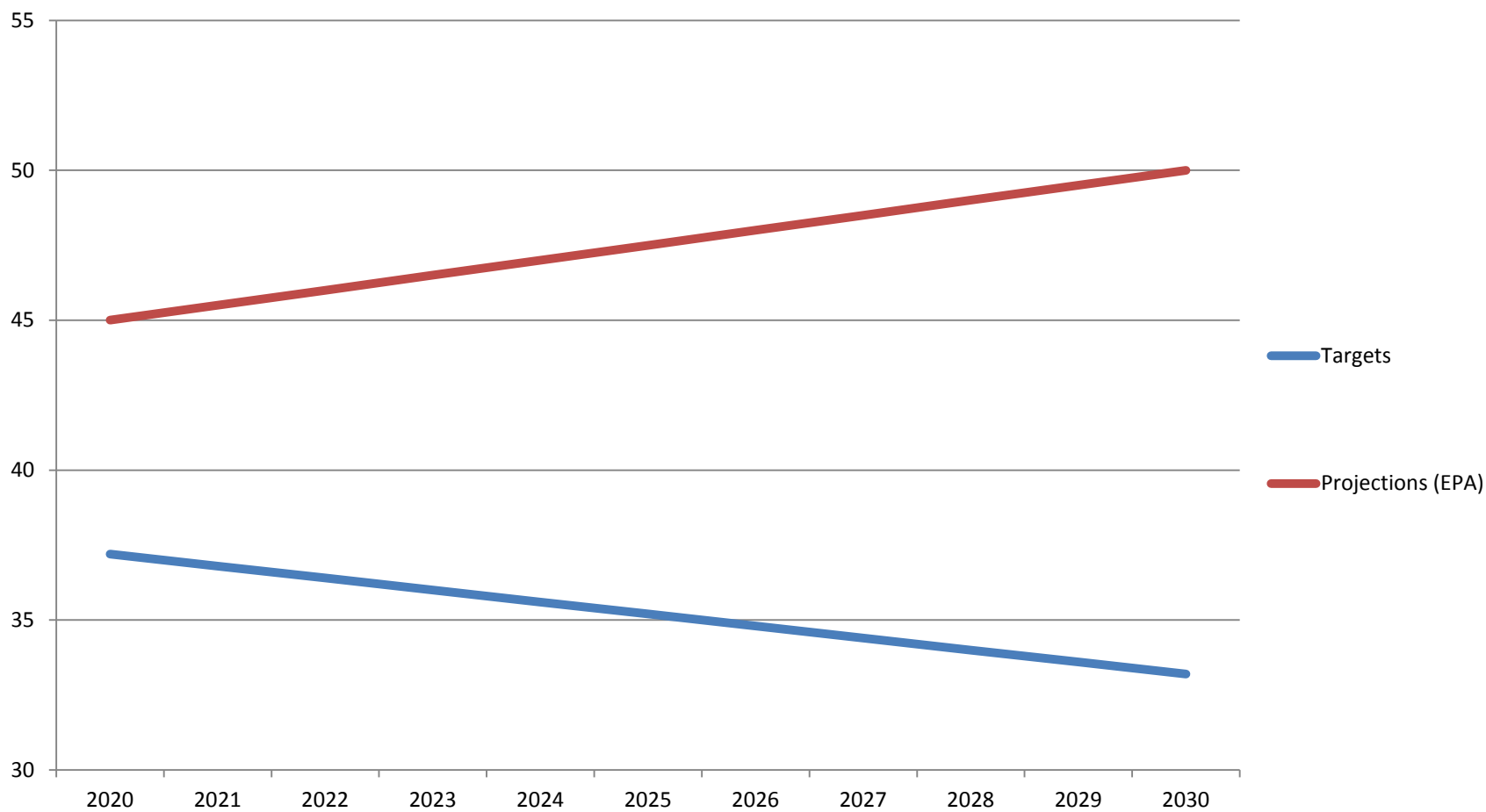
# Cost of Inaction



- Assume:
  - €30 per tonne of carbon
  - Ireland gets credit for all afforestation
  - EPA projections for transport and agriculture
  - Pro rata allocation of ETS target (30% reduction on 2005 by 2030)
  - No FW 2025



# Inaction Scenario





# Inaction Cost



| Year | Distance <small>(MT)</small> | €       |
|------|------------------------------|---------|
| 2020 | 7.8                          |         |
| 2021 | 8.765                        |         |
| 2022 | 9.73                         |         |
| 2023 | 10.695                       |         |
| 2024 | 11.66                        |         |
| 2025 | 12.625                       |         |
| 2026 | 13.59                        |         |
| 2027 | 14.555                       |         |
| 2028 | 15.52                        |         |
| 2029 | 16.485                       |         |
| 2030 | 17.45                        | 2618.25 |

x3 ?



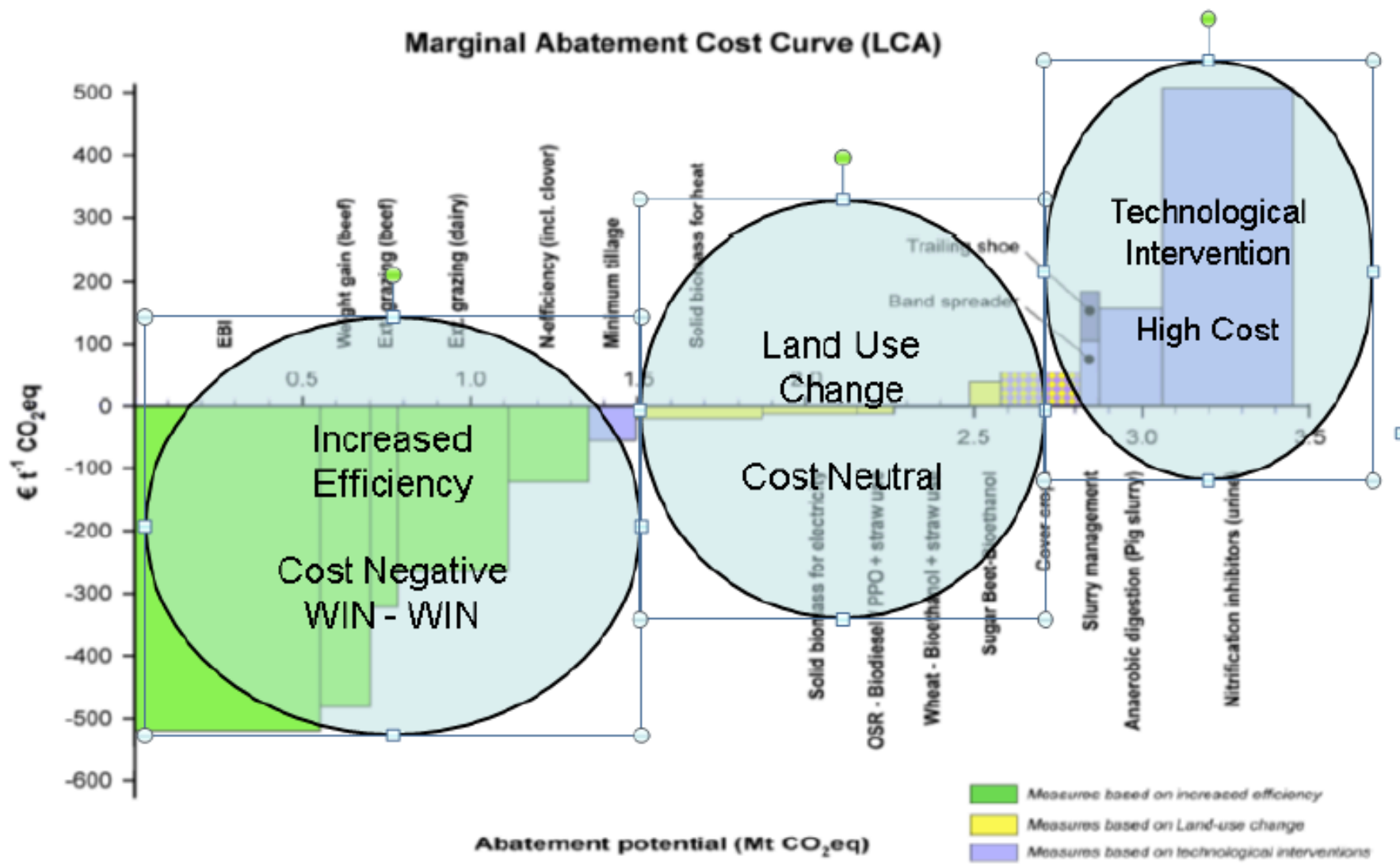
# “Cost” of action: homes

| Average Post-works BER                                | C3      | C2        | C1        | B3        |
|-------------------------------------------------------|---------|-----------|-----------|-----------|
| Total number of houses                                | 851,948 | 1,027,547 | 1,181,480 | 1,320,031 |
| Average cost of works €                               | 4,300   | 7,600     | 13,600    | 21,500    |
| Average value of annual energy saving per dwellings € | 555     | 690       | 765       | 795       |
| Average simple payback                                | 7.8     | 11        | 17.7      | 27        |
| Total savings (GWh)                                   | 7,045   | 10,580    | 13,495    | 15,625    |
| Total CO <sub>2</sub> savings (Mt)                    | 1.7     | 2.6       | 3.3       | 3.8       |





# Cost of action: Agriculture



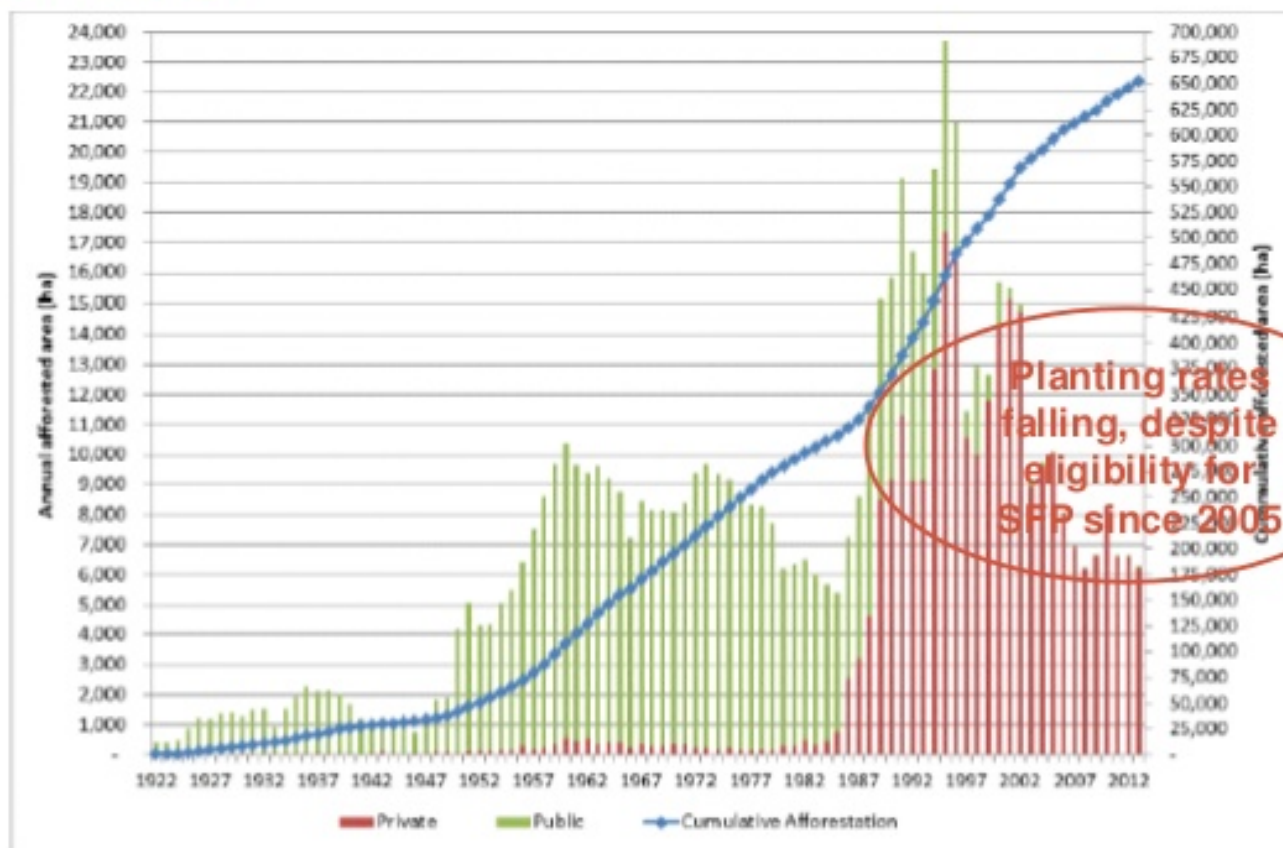


# “Cost” of Action: agriculture



40

## Annual state and private afforestation, 1922-2013



Source: Ireland's Forests, Annual Statistics 2014

- Boosting afforestation from 8 to 20K ha could deliver **7.5 MT CO<sub>2</sub> p/a**
- Accounting rules
- Cost? €30 t/CO<sub>2</sub>?
- Benefits?
- Impact on Beef?



# “Cost” of action: Agriculture



Sucker Beef enterprise (€ per ha)

|                  | <b>Most<br/>profitable</b> | <b>Average<br/>profitability</b> | <b>Least<br/>Profitable</b> | <b>Average</b> |
|------------------|----------------------------|----------------------------------|-----------------------------|----------------|
| <b>2013</b>      |                            |                                  |                             |                |
| Gross output     | 1,198                      | 756                              | 507                         | 819            |
| Direct costs     | 610                        | 501                              | 462                         | 524            |
| Overhead costs   | 481                        | 365                              | 289                         | 417            |
| Net margin       | 106                        | -111                             | -244                        | -122           |
| <i>Memo item</i> |                            |                                  |                             |                |
| Subsidies        | 413                        | 413                              | 413                         | 413            |

Forestry:

- Boosts farmer income and diversifies portfolio, and manages risk
- Builds resilience to flooding
- Creates supply of biomass
- Has an amenity value
- Reduces emissions from unprofitable beef



# Food Wise 2025



- Process?
- Carbon costs?



# Transport

- Highly correlated to economic growth
- Capital investment plan 2016 to 2020: 2/1 ratio roads/public transport?
- VRT instrument
- Freight a big concern: budget 2015 **VRT** changes an indication of where we are at
- Major analytical gap
- Behavioural aspect: more teenagers drive than cycle to school
- Spatial planning: would have started 30 years ago

# NTMA's investments



# Conclusions

- Globally direction of travel is becoming clearer
- C-B of action versus cost of inaction?
- Our analytical tools (MAV curves) are useful, but insufficient and misleading unless we understand what they can and can't tell us
- Buildings are do-able
- There are options in agriculture and transport, but sacred cows
- Energy White is opportunity to fix our model of energy transition by engaging citizens as owners
- Mainstreaming climate into government planning is necessary, not just an afterthought
- Need to focus on citizens and communities, not just technology and costs