



Ireland's National Greenhouse Gas Emissions Projections to 2020

Includes comparison with

Ireland's Kyoto Limit for 2008-2012

and with

Proposed EU Target for 2020

25 September 2008



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September 25th 2008

IRELAND'S GREENHOUSE GAS EMISSION PROJECTIONS 2007-2020

Summary

The National Climate Change Strategy (NCCS 2007) designated EPA with responsibility for developing annual national emission projections for greenhouse gases (GHG) for all key sectors of the economy, in collaboration with relevant State and other bodies. Emission projections serve to inform national policy initiatives, such as the annual Carbon Budget, and allow Ireland to comply with EU reporting obligations on projections (e.g. Council Decision 280/2004).

The EPA intends to produce GHG emission projections annually as this will allow the most recent environmental and other policy developments to be taken into account as well as updates to key assumptions (such as revisions to anticipated economic growth). The projections presented here update the most recent set of national emissions projections which were published in the NCCS (DEHLG, 2007).

Greenhouse gas emission projections have been produced, under three scenarios, for each key emission sector up to 2020. The three scenarios show three potential outlooks for emissions to 2020 depending on policy development and implementation. The scenarios are:

- (i) the ***Baseline*** scenario which is based on current policies and measures. However not all existing policies and measures from the NCCS are included in this scenario.
- (ii) the ***With Measures*** scenario which adjusts the ***Baseline*** scenario to account for all existing policies and measures from the NCCS.
- (iii) the ***With Additional Measures*** scenario adjusts the ***Baseline*** scenario to account for all existing *and* planned policies and measures. Planned policies and measures include the renewable energy targets set out in the Energy White Paper and energy efficiency targets set out in the draft Energy Efficiency Action Plan.

Greenhouse Gas Emissions Targets

Ireland is currently faced with meeting two targets with respect to greenhouse gas emissions. The first of these is the Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC) which limits Ireland's total national emissions to an average of

62.8 Mtonnes of CO₂e per annum (13% above the baseline estimate) in the period 2008 – 2012.

The Kyoto Protocol is, however, only a first step in addressing the serious global threat of climate change. The ultimate goal of the UNFCCC is to stabilise atmospheric concentrations of greenhouse gases at a level that prevents dangerous human interference with the climate system. Therefore, in January 2008 the EU Commission put forward a package of proposals that will deliver on the European Union's commitments to fight climate change and promote renewable energy up to 2020 and beyond. The package seeks to deliver a 20% reduction in total EU greenhouse gas emissions by 2020 (relative to 1990 levels) and at the same time to increase to 20% the share of renewable energies in energy consumption. The emissions reduction will be increased to 30% by 2020 when a new global climate change agreement is reached.

The total effort for greenhouse gas reductions by 2020 has been divided between the sectors covered by the EU Emissions Trading Scheme (ETS) and non-ETS sectors¹. For those sectors covered by the EU ETS, a single EU-wide cap has been proposed. Consequently, there are no specific national emissions targets for emissions from ETS sectors in 2020. For those sectors that are not covered by the EU ETS, the Commission has proposed individual targets for Member States which average out at a total of 10% reduction in 2020 (compared to 2005). The proposed target for Ireland for non-ETS sector emissions is to reduce emissions by 20% by 2020 relative to 2005 levels; the proposed limit has been calculated by the EU Commission as 37.9 Mtonnes of CO₂e.

Comparison with Kyoto Protocol Target (2008 – 2012)

The projections indicate the level of total national emissions in Ireland over the Kyoto period 2008 – 2012 and, therefore, indicate our distance to the Kyoto Protocol target under the three scenarios. The impact of forest sinks is included in each scenario as allowed for under Article 3.3 of the Kyoto Protocol.

- Under the **Baseline** scenario, emissions, over the period 2008 – 2012, are projected to be 9.0 Mtonnes of CO₂e per annum higher than our Kyoto Protocol target. When account is taken of the contribution from the EU ETS, the distance to target reduces to 6.7 Mtonnes of CO₂e per annum.
- Projections under the **With Measures** scenario are similar to those under the **Baseline** scenario. Emissions are projected to be 8.7 Mtonnes of CO₂e per annum higher than our Kyoto Protocol target. When account is taken of the contribution from the EU ETS, the distance to target reduces to 6.5 Mtonnes of CO₂e per annum.
- Under the **With Additional Measures** scenario, emissions are projected to be 7.0 Mtonnes of CO₂e per annum higher than our Kyoto Protocol target. When account is taken of the contribution from the EU ETS, the distance to target reduces to 5.0 Mtonnes of CO₂e per annum.

¹ Non-ETS sector emissions refer to emissions from sources that are not included in the emissions trading scheme such as transport, households, services, smaller industrial installations, agriculture and waste.

- The NCCS envisaged Ireland over-achieving on its Kyoto Protocol target through (i) the use all existing and additional policies and measures and (ii) the purchase of Kyoto mechanisms equivalent to 3.607 Mtonnes of CO₂e per annum. The projections presented here now imply a further distance to target of 1.4 Mtonnes per annum after all existing and additional policies and measures, forest sinks and the purchase of Kyoto mechanisms, as envisaged in the NCCS, are taken into account.

Comparison with proposed EU 2020 Targets for non-ETS sector emissions

The projections have been disaggregated into EU ETS and the non-ETS sectors to allow a comparison to be made with the proposed 2020 target for non-ETS sector emissions.

- Ireland's non-ETS sector emissions in 2020 are projected to be 15.0 Mtonnes of CO₂e higher than the proposed EU Commission 2020 target under the *Baseline* scenario. The impact of forest sinks is still under negotiation at Member State level and therefore projections are reported here without forest sinks.
- Under the *With Measures* scenario, non-ETS sector emissions are projected to be 14.0 Mtonnes of CO₂e higher in 2020 than the proposed EU Commission 2020 target.
- Under the *With Additional Measures* scenario, national emissions are projected to be 7.0 Mtonnes of CO₂e higher in 2020 than the proposed 2020 target. A significant reduction in the distance to the 2020 target is projected in this scenario relative to the *Baseline* and the *With Measures* scenario. This is attributable to the projected impact of all policies and measures outlined primarily in the Energy White Paper and the draft Energy Efficiency Action Plan. The impact of these measures will be realised primarily in the period 2012 and 2020. The *With Additional Measures* scenario assumes that (i) all the relevant policies and measures outlined in these Government policy documents will be adopted and fully implemented on time and (ii) all relevant measures will achieve the full emissions reductions anticipated. Failure to deliver these measures or a reduction in their environmental effectiveness will result in higher emissions levels than projected. The difficulties associated with meeting these criteria should not be underestimated.

Background

The National Climate Change Strategy (NCCS 2007)² designated EPA with responsibility for developing annual national emission projections for greenhouse gases (GHG) for all key sectors of the economy, in collaboration with relevant State and other bodies. Emissions projections serve to inform national policy initiatives, such as the annual Carbon Budget, and allow Ireland to comply with EU reporting obligations on projections (e.g. Council Decision 280/2004).

The EPA intends to produce GHG emission projections annually as this will allow the most recent environmental and other policy developments to be taken into account as well as updates to key assumptions (such as revisions to anticipated economic growth). The projections presented here update the most recent set of national emissions projections which were published in the NCCS (2007).

The latest projections are given below with a discussion of the key trends and a commentary on the significance of the figures in relation to Ireland's commitments for the 2008 – 2012 period and in relation to proposed EU 2020 emission targets for non-ETS sector emissions.

These projections are underpinned by data provided by a range of other State agencies and organisations, most notably Sustainable Energy Ireland (SEI) for energy forecasts and Teagasc for forecast animal numbers. A key assumption underpinning the energy forecasts and hence emissions projections is a low-growth economic outlook for the period 2007³ – 2020⁴. It is assumed that GDP growth will be on average 4.2% between 2005 and 2010, 3.1% between 2010 and 2015 and 3.2% between 2015 and 2020. These growth rates are generally similar to the ESRI's *Benchmark* forecast published in their 2008 – 2015 Medium-Term Review (MTR)⁵ (which was published after these projections were prepared). The MTR forecasts average GDP growth of 4.0% between 2005 and 2010, 3.6% between 2010 and 2015 and 3.3% between 2015 and 2020.

Ireland's Greenhouse Gas Emission Projections

Three scenarios were produced which show three potential outlooks to 2020 depending on policy development and implementation. The scenarios are called

- (i) *Baseline*
- (ii) *With Measures*
- (iii) *With Additional Measures*

A description of the three scenarios is provided in Table 1.

² National Climate Change Strategy 2007 - 2012. Department of Environment, Heritage and Local Government. (2007)

³ As the most recent national greenhouse gas inventory is for 2006 (finalised in 2008 by the EPA), projections are made for each year from 2007 up to 2020.

⁴ National energy forecasts underpin the energy-related emission projections reported here. These are produced by ESRI for Sustainable Energy Ireland and are published annually. See "Energy in Ireland 1990-2006", Sustainable Energy Ireland (2007) for the key assumptions underpinning the 2007 energy forecasts.

⁵ Medium-Term Review 2008 – 2015. ESRI. (2008).

Table 1. Description of Projection Scenarios

Scenario	Basis for Projection
Baseline Scenario	<p>Energy-related emissions projections⁶</p> <ul style="list-style-type: none"> Based on SEI <i>Baseline</i> energy forecast⁷. <p>Agriculture emission projections</p> <ul style="list-style-type: none"> Based on forecast animal numbers produced by Teagasc in April 2008. <p>Waste</p> <ul style="list-style-type: none"> Assumes a continuation of current trends in waste generation with the same share of biodegradable waste going to landfill as in 2006. <p>Forestry</p> <ul style="list-style-type: none"> Projections of the future impact of forest sinks were provided by COFORD. In this scenario, it is assumed that afforestation levels average 3,000 hectares per annum up to 2020. Afforestation levels in 2006 were 8,000 hectares and anticipated levels for 2007 are 7,000 hectares.
With Measures Scenario	<p>Energy-related emissions projections</p> <ul style="list-style-type: none"> Based on SEI <i>Baseline</i> energy forecast⁷. Existing measures that are not included in the <i>Baseline</i> energy forecasts are included in the <i>With Measures</i> scenario. These include CHP targets, modal shift through Transport 21 and SEI Energy Agreement Programmes. <p>Agriculture emission projections</p> <ul style="list-style-type: none"> Based on forecast animal numbers produced by Teagasc in April 2008. Same as <i>Baseline</i> scenario. <p>Waste</p> <ul style="list-style-type: none"> Assumes that the Landfill Directive (Directive 1999/31/EC) targets will be reached in 2010, 2013 and 2016. <p>Forestry</p> <ul style="list-style-type: none"> In this scenario, it is assumed that afforestation levels average 8,000 hectares per annum.
With Additional Measures Scenario	<p>Energy-related emissions projections</p> <ul style="list-style-type: none"> Based on SEI White Paper energy forecast. The White Paper energy forecast builds on the <i>Baseline</i> energy forecast with additional assumptions introduced to incorporate the measures and targets in the Energy White Paper⁸ and the draft Energy Efficiency Action Plan⁹. <p>Agriculture emission projections</p> <ul style="list-style-type: none"> Based on forecast animal numbers produced by Teagasc in April 2008. Same as <i>Baseline</i> scenario. <p>Waste</p> <ul style="list-style-type: none"> Assumes that the Landfill Directive targets will be reached in 2010, 2013 and 2016. Same as <i>With Measures</i> scenario. <p>Forestry</p> <ul style="list-style-type: none"> In this scenario, it is assumed that afforestation levels average 15,000 hectares per annum.

⁶ Covers power generation, road transport, industrial energy use, residential, commercial and institutional services and fuel use in the agricultural sector.

⁷ Published in "Energy in Ireland 1990 – 2006". Sustainable Energy Ireland. (2007).

⁸ "Delivering a Sustainable Energy Future for Ireland 2007 – 2020". Department of Communications, Marine and Natural Resources. (2007).

⁹ Consultation on a 1st National Energy Efficiency Action Plan for Ireland 2007 – 2020. Department of Communication, Energy and Natural Resources (2007).

BASELINE SCENARIO

- The trend in emissions from 1990 to 2006, with the projected trend for the *Baseline* scenario is shown in Figure 1.

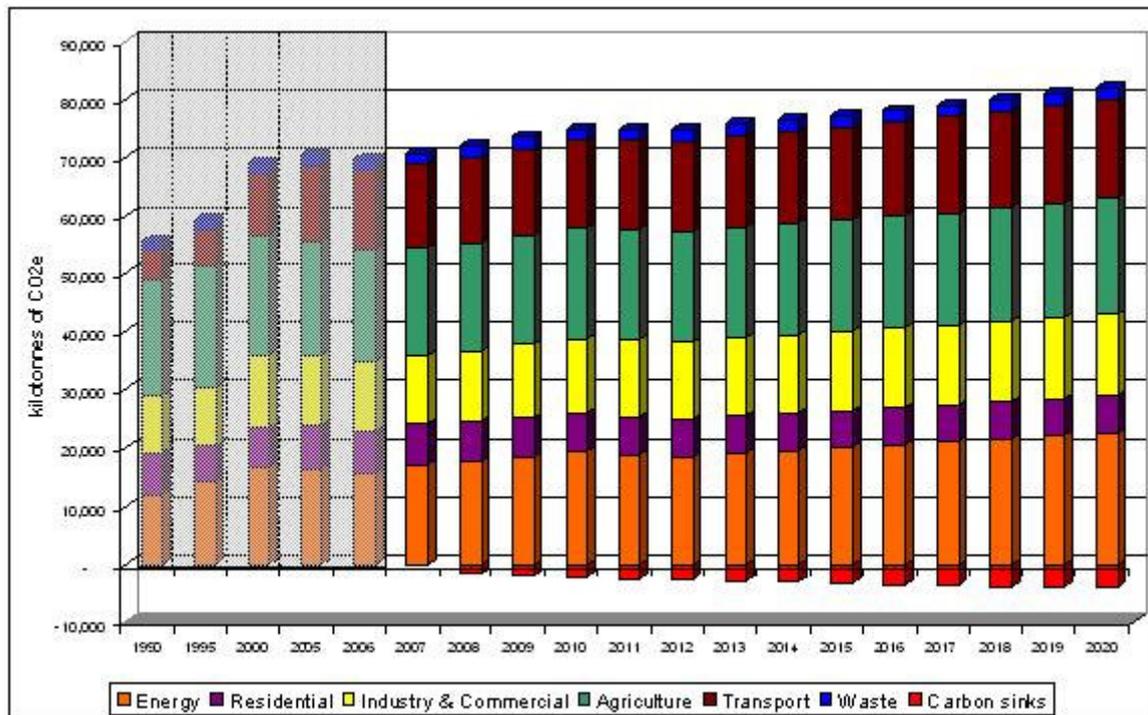


Figure 1. Historical and projected trends in GHG Emissions for the *Baseline* scenario 1990-2020

- The *Baseline* scenario is largely based on a Baseline energy forecast produced by Sustainable Energy Ireland (SEI). It includes policies and measures that were agreed and legislatively provided for up to the end of 2006 that could readily be included in the underlying energy model. Under the *Baseline* scenario, GHG emissions in Ireland are projected to increase by 18% between 2006 and 2020, implying an average annual growth rate of 1.2%. Including forest sinks (assuming afforestation levels of 3,000 hectares per annum) slows the growth to 12% between 2006 and 2020, implying an annual average growth rate of 0.8%.

WITH MEASURES SCENARIO

- The trend in emissions from 1990 to 2006, with projected trends for the *With Measures* scenario is shown in Figure 2. The trends in emissions are largely the same as in the *Baseline* scenario.

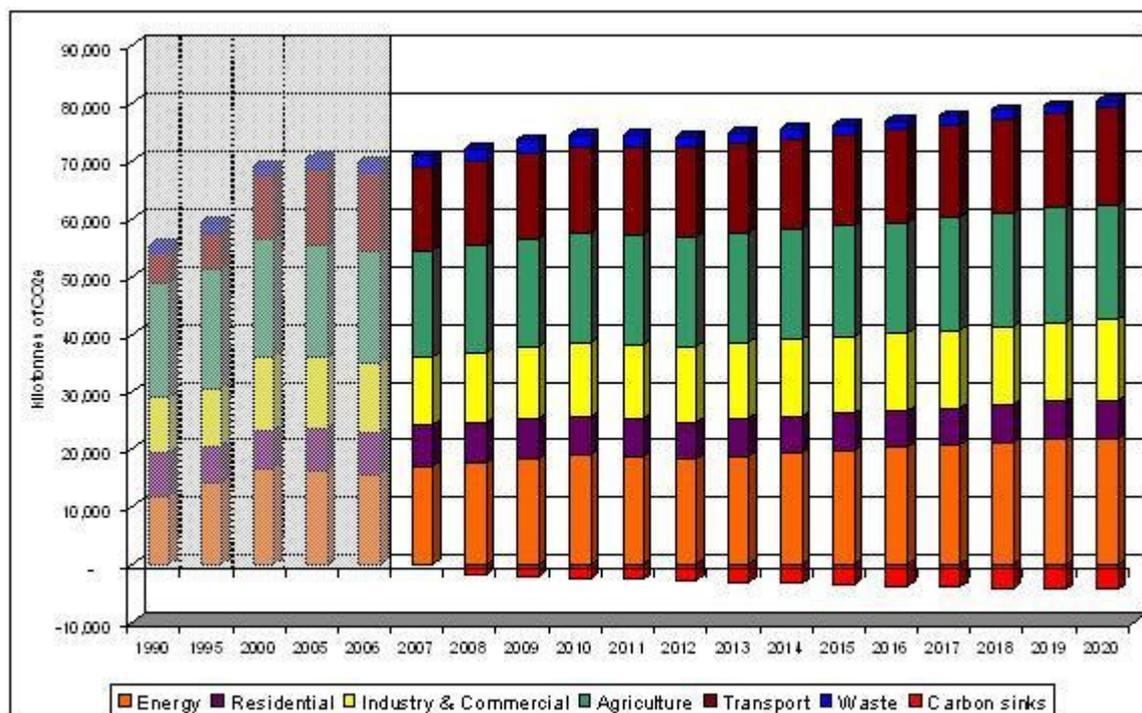


Figure 2. Historical and projected trends in GHG Emissions for the With Measures scenario 1990-2020

- The *With Measures* scenario is based on the *Baseline* scenario and also includes existing policies and measures from the National Climate Change Strategy (2007) that could not be included in the energy model that produced the baseline energy forecast. Under the *With Measures* scenario, GHG emissions in Ireland are projected to increase by 15% between 2006 and 2020, implying an average annual growth rate of 1%. Including forest sinks (assuming afforestation levels of 8,000 hectares per annum) slows the growth to 9% between 2006 and 2020, implying an annual average growth rate of 0.6%.

WITH ADDITIONAL MEASURES SCENARIO

The trend in emissions from 1990 to 2006, with projected trends for the *With Additional Measures* scenario is shown in Figure 3.

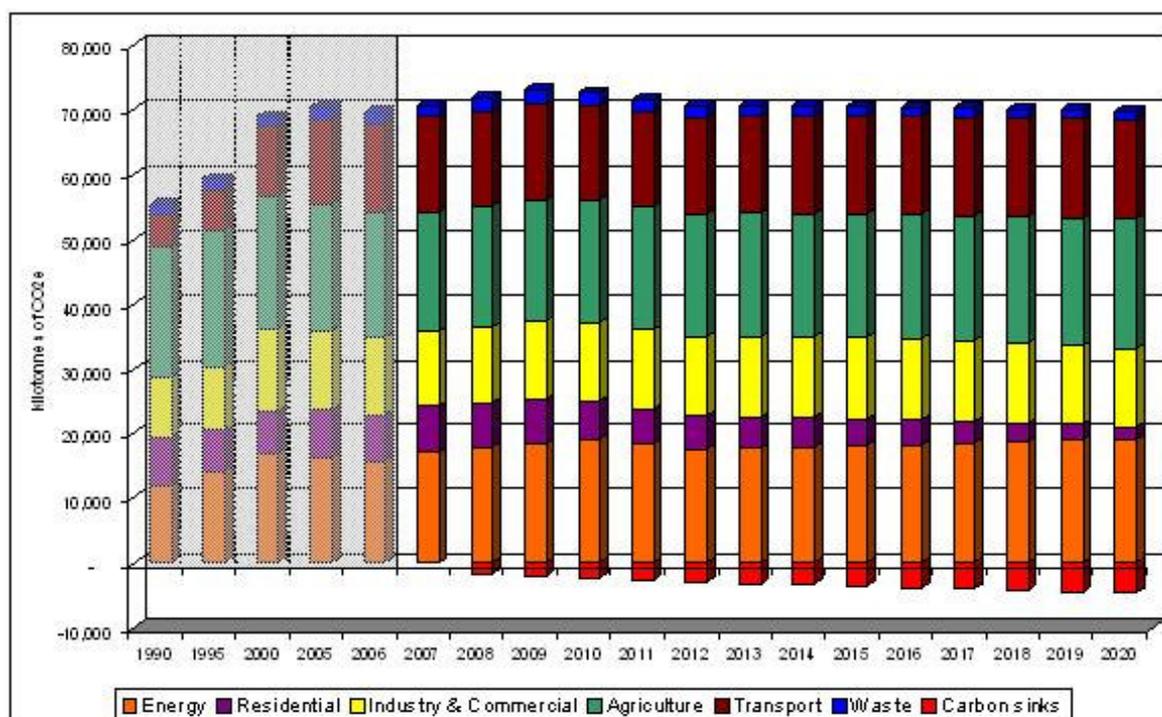


Figure 3. Historical and projected trends in GHG Emissions for the With Additional Measures scenario 1990-2020

- This scenario is largely underpinned by the White Paper energy forecast produced by Sustainable Energy Ireland (SEI)¹⁰. The White Paper energy forecast builds on the Baseline energy forecasts and includes additional assumptions to incorporate the measures and targets contained in the Energy White Paper and the Energy Efficiency Action Plan, namely
 - (i) Energy efficiency will be improved by 9% by 2016 to comply with the Energy Services Directive (Directive 2006/32/EC).
 - (ii) Energy efficiency will be improved by 20% by 2020 to meet the Energy White Paper target.
 - (iii) Renewable energy will contribute 33% of gross electricity consumption by 2020.
 - (iv) Renewable sources will contribute 12% of thermal energy by 2020.
 - (v) Biofuels penetration in the transport sector will reach 10% by 2020.

The *With Additional Measures* scenario, therefore, includes existing policies and measures and, in addition, policies and measures that are under discussion and with a realistic chance of being adopted and achieved.

- Under this scenario, GHG emissions in Ireland are projected to return to 2006 levels by 2020. Including forest sinks (assuming afforestation levels of 15,000 hectares per annum) shows emissions decreasing by 7% in 2020 relative to 2006 levels, implying an annual average reduction of 0.5%.

¹⁰ Published in “Energy in Ireland 1990 – 2006”. Sustainable Energy Ireland. (2007).

The overall results are summarised in Table 2.

Table 2. Summary of Emissions Projections

Scenario		% change between 2006 and 2020	Annual average growth between 2006 and 2020
Baseline	Without forest sinks	18%	1.2%
	With forest sinks	12%	0.8%
With Measures	Without forest sinks	15%	1.0%
	With forest sinks	9%	0.6%
With Additional Measures	Without forest sinks	0%	0.0%
	With forest sinks	-7.0%	-0.5%

Note forest sinks = additional afforestation

BY SECTOR

Figure 4 shows the projected contributions from each of the sectors to total national emissions for each scenario averaged over the 2008 – 2012 period. Agriculture and transport sector emissions account for 45 – 47% of emissions under all three scenarios.

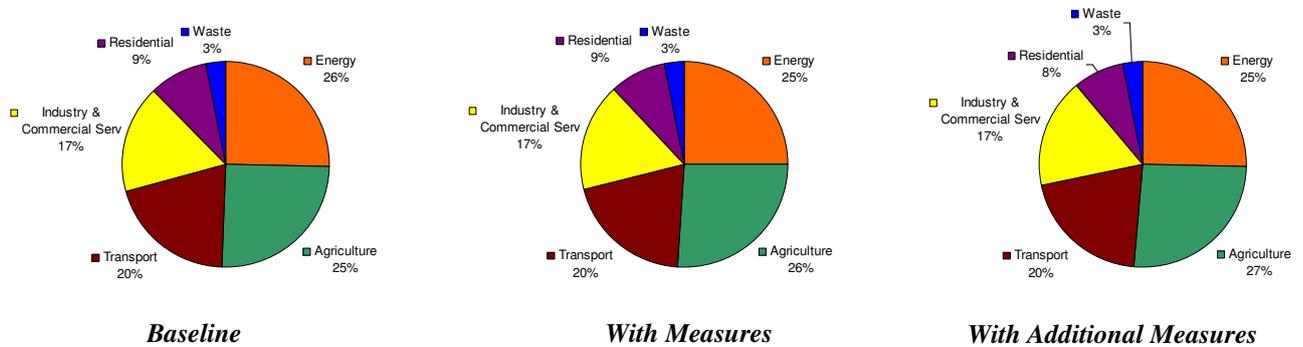


Figure 4. Projected share of total greenhouse gas emissions by sector averaged over the period 2008 – 2012

Figure 5 shows the projected contributions from each of the non-ETS sectors to total non-ETS sectors emissions in 2020. Under all three scenarios, agriculture and transport sector emissions account for 70-78% of total non-ETS emissions.

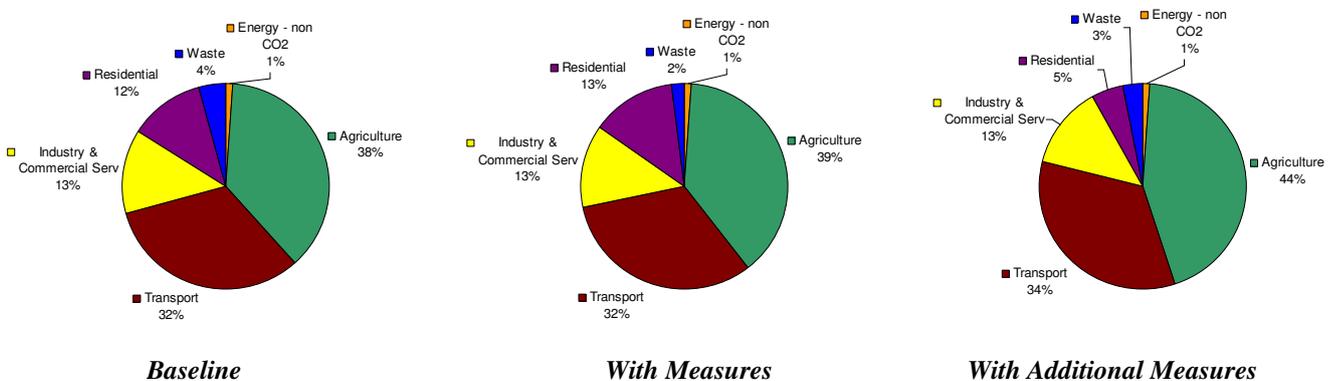


Figure 5. Projected share of non-ETS greenhouse gas emissions by sector in 2020

Transport

- Under the *Baseline* scenario, transport emissions are projected to increase by 23% over the period 2006 – 2020 to 16.9 Mtonnes of CO₂e. It is assumed in this scenario that the use of biofuels will increase to 2% of road transport fuel in 2008 and stay constant thereafter to 2020.
- Under the *With Measures* scenario, transport emissions are projected to increase by 22% over the period 2006 – 2020 to 16.7 Mtonnes of CO₂e. This scenario builds on the *Baseline* scenario and also includes an estimate of the impact of Transport 21 and closer alignment of spatial planning and transport investment.
- Under the *With Additional Measures* scenario, transport emissions are projected to increase by 12% over the period 2006 – 2020 to 15.3 Mtonnes of CO₂e. In this scenario, it is assumed that the use of biofuels increases to 10% of all road transport fuel use by 2020 which will have a significant impact on CO₂ emissions from this sector. As well as measures included in the *With Measures* scenario, savings anticipated to be delivered through motor tax and VRT rebalancing and an energy efficient driving campaign are included.
- The growth in transport is projected to slow significantly compared with the annual growth rate between 1990 and 2006. This is attributable to a projected slow-down in economic growth. Improving the quality and robustness of transport emission projections will be a key focus for future work. Transport sector emissions are highly dependent on key forecast variables including economic indicators such as GDP, vehicle technology and the future travel behaviour of individuals. A continual focus on these key underlying drivers and their impact on transport emission levels will be important. Since these projections were prepared progress has been made with projecting energy demand from transport which will impact projections from this sector. These improvements will be incorporated in the next round of projections.

Energy

- Under the *Baseline* scenario, emissions from the energy sector are projected to increase by 44% over the period 2006 – 2020 to 22.5 Mtonnes of CO₂e. In this scenario, it is assumed that renewable energy will account for 15% of Ireland's gross electricity consumption by 2010.
- Under the *With Measures* scenario, emissions are projected to increase by 41% over the period 2006 – 2020 to 22.0 Mtonnes of CO₂e. In addition to renewables penetration of 15% of gross electricity consumption by 2010, it is also assumed that the targets outlined in the Energy White Paper for Combined Heat and Power (CHP) will be achieved.
- Under the *With Additional Measures* scenario, emissions are projected to increase by 21% between 2006 and 2020 to 18.9 Mtonnes of CO₂e. It is assumed that renewable energy will contribute 33% of gross electricity consumption by 2020 (primarily *wind* but also *biomass* and *ocean energy*). In addition, indicative savings associated with energy efficiency improvements in line with targets set down in the Energy White Paper and the draft Energy Efficiency Action Plan are included in the underpinning

energy forecasts. Such energy efficiency measures will directly impact energy use and therefore emissions from the energy sector.

Agriculture

- There is only one scenario for agricultural emission projections. Emissions are projected to increase by 3% over the period 2006 – 2020 to 19.9 Mtonnes of CO₂e. These projections are based on unpublished forecast animal numbers produced by Teagasc in April 2008 and supplied to the EPA. The assumptions and assumed policy developments underpinning these forecasts include recent developments in agricultural markets which has seen significant increases in cereal, fertiliser and dairy prices, the gradual abolition of milk quota by 2015 and the introduction of a new suckler cow premium in Ireland.

Residential

- Under the *Baseline* and *With Measures* scenario, emissions from the residential sector are projected to decrease by 10% to 6.5 Mtonnes of CO₂e between 2006 and 2020. Factors such as increasingly efficient housing stock and a move away from solid fuels to renewables and gas are all projected to have a positive impact on emissions from this sector.
- Under the *With Additional Measures* scenario, emissions are projected to decrease by 71% between 2006 and 2020 to 2.1 Mtonnes of CO₂e. This significant decrease in projected emissions is predicated on the assumption that all of the relevant measures outlined in the draft Energy Efficiency Action Plan, which includes new building regulations, an insulation scheme and technologies for existing homes, will be adopted and implemented on time and, in addition, will deliver the emissions savings anticipated in the Action Plan.

Industry and Commercial Services

- Under the *Baseline* scenario, emissions from the industry and commercial service sector are projected to grow by 17% between 2006 and 2020.
- Under the *With Measures* scenario, emissions from the industry and commercial services sector are projected to grow by 16% between 2006 and 2020. As well as the measures included in the *Baseline* scenario, this scenario also includes an estimate of the impact of the 2005 Building Regulations and SEI Energy Agreements.
- Under the *With Additional Measures* scenario, emissions from the industry and commercial services sector are projected to grow by 2% between 2006 and 2020. In this scenario, energy demand from industrial and commercial services sectors decreases relative to the *Baseline* and *With Measures* scenarios as energy efficiency policies and measures (as outlined in the Energy White Paper and draft Energy Efficiency Action Plan) are assumed to be adopted and implemented. In addition, the RES-H target (i.e. 12% thermal heat to come from renewables by 2020) will have a significant impact on emissions from both the industrial and commercial services sector.

Waste

- Under the *Baseline* scenario, emissions from the waste sector, primarily methane gas released from landfills, is projected to increase by 19% between 2006 and 2020. It is assumed that current waste generation trends continue and the share of biodegradable waste going to landfill remains the same as in 2006. The share of landfill gas that is utilised and flared is also assumed to remain the same as in 2006.
- Under the *With Measures* and *With Additional Measures* scenarios, emissions from the waste sector are projected to decrease by 31% below 2006 levels in 2020. In these scenarios, it is assumed that the Landfill Directive targets (Directive 1999/31/EC) for the diversion of biodegradable waste from landfill are met progressively in 2010, 2013 and 2016.

Comparison with Kyoto Protocol Target

Ireland's target in relation to the Kyoto Protocol is to limit total national greenhouse gas emissions to 314.2 Mtonnes of CO₂e over the five year period 2008 – 2012 which is equivalent to 62.8 Mtonnes of CO₂e per annum. This is calculated as 13% above Ireland's 1990 baseline value which was established and fixed at 55.60 Mt CO₂e following an in-depth review of Ireland's 2006 greenhouse gas inventory submissions to the UNFCCC.

Table 5 shows the projected annual average emissions for the period 2008 – 2012 and the subsequent distance to the Kyoto Protocol target (62.8 Mtonnes of CO₂e). The impact of forest sinks is included in each scenario as allowed for under Article 3.3 of the Kyoto Protocol. The distance to target is disaggregated to show the contribution expected from EU ETS sectors and from non-ETS sectors.

Table 5. Projected annual average emissions for 2008-2012 and distance to Kyoto Protocol target

(Mtonnes of CO ₂ e)	Baseline Scenario		With Measures Scenario		With Additional Measures Scenario	
	Projected Emissions	Amount Over Target	Projected Emissions	Amount Over Target	Projected Emissions	Amount Over Target
2008-2012	71.9	9.0	71.5	8.7	69.7	7.0
Attributed to EU ETS	-	2.3	-	2.2	-	2.0
Attributed to Non-ETS	-	6.7	-	6.5	-	5.0

Figure 6 shows emissions for the period 1990 to 2020 for each scenario and compares with the Kyoto Protocol target for the 2008 – 2012 period.

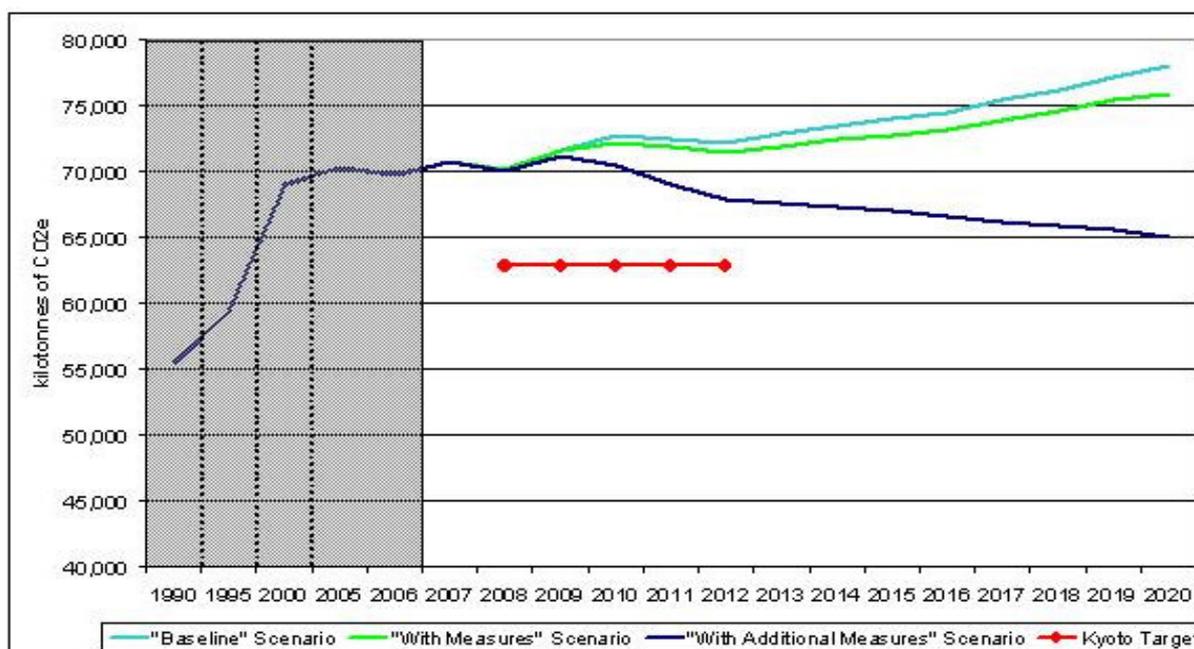


Figure 6. Historical and projected GHG Emissions for each scenario and the Kyoto Protocol target

The projections in the NCCS had shown Ireland over-achieving on its Kyoto Protocol limit under a *With Additional Measures* scenario. However, these current projections now show that even if all projected reductions from existing and planned policies and measures are delivered and forest sinks and Kyoto mechanisms purchases are used as envisaged, Ireland will still exceed its Kyoto Protocol limit by an average of 1.4 Mtonnes per annum of CO₂e for each of the five years over the period 2008 – 2012. Additional domestic policies and measures and additional Government purchases will be required to bridge this gap.

Comparison with Proposed EU 2020 Target for the Non-ETS Sector Emissions

The Kyoto Protocol is only a first step in addressing the serious global threat of climate change. The ultimate goal of the UNFCCC is to stabilise atmospheric concentrations of greenhouse gases at a level that prevents dangerous human interference with the climate system. Therefore, in January 2008 the EU Commission put forward a package of proposals that will deliver on the European Union's commitments to fight climate change and promote renewable energy up to 2020 and beyond. The package seeks to deliver a 20% reduction in total EU greenhouse gas emissions by 2020 (relative to 1990 levels) and at the same time increase to 20% the share of renewable energies in energy consumption. The emissions reduction will be increased to 30% by 2020 when a new global climate change agreement is reached.

The total effort for greenhouse gas reductions by 2020 has been divided between the EU ETS and non-ETS sectors. The following approach is proposed:

- (i) A single EU wide cap for all emissions covered by the EU ETS, ensuring a level playing field in the single European market for industrial installations, is proposed. A 21% reduction in EU ETS sector emissions by 2020 (compared to 2005) has been proposed. The annual cap will decrease along a linear trend line which will continue beyond the end of the third trading period (2013 – 2020). Consequently, there are no specific national emissions targets for emissions from ETS sectors in 2020.
- (ii) An EU-wide reduction of 10% in 2020 (compared to 2005) for the sectors that are not covered by the EU ETS. The Commission has proposed individual targets for Member States which average out at a total 10% reduction in 2020 (compared to 2005). GDP per capita was used as the main criterion when setting the targets for Member States. The proposed target for Ireland for non-ETS sectors is to reduce emissions by 20% in 2020 relative to 2005 levels; the proposed limit has been calculated by the EU Commission as 37.9 Mtonnes of CO₂e.

Taken together, the combined ETS and non-ETS EU wide reductions will result in an overall reduction of 14% compared to 2005, which is equivalent to a reduction of 20% compared to 1990.

The projections presented here were disaggregated into EU ETS and the non-ETS sectors to allow a comparison to be made with the proposed 2020 target for non-ETS sector emissions. Table 6 deals only with non-ETS sectors and shows the absolute level of emissions projected for 2020, percentage change for each scenario in 2020 relative to 2005 emission levels and the implied distance to the proposed 2020 target. The inclusion of the impact of forest sinks is still under negotiation at Member State level and therefore projected emissions for 2020 are presented both with and without forest sinks.

Table 6. Projected emissions for non-ETS sector emissions, percentage change relative to 2005 emissions and distance to proposed 2020 EU Commission Target

(Mtonnes of CO ₂ e)	Baseline Scenario	With Measures Scenario	With Additional Measures Scenario
	WITHOUT FOREST SINKS*		
2020	53.3	52.0	44.9
% change relative to 2005 levels	+12%	+10%	-5%
Distance to 20% 2020 target #	15.4	14.0	7.0
	WITH FOREST SINKS*		
2020	49.2	47.6	40.2
% change relative to 2005 levels	+4%	+0.4%	-15%
Distance to 20% 2020 target #	11.3	9.7	2.3

* Forest sinks = additional afforestation

Proposed EU Target for non-ETS emissions in 2020 is 37.9 Mtonnes of CO₂e

Figure 7 shows emissions for the period 1990 to 2020 for each scenario and the ‘straight line’ path from 2005 to Ireland’s proposed 2020 targets.

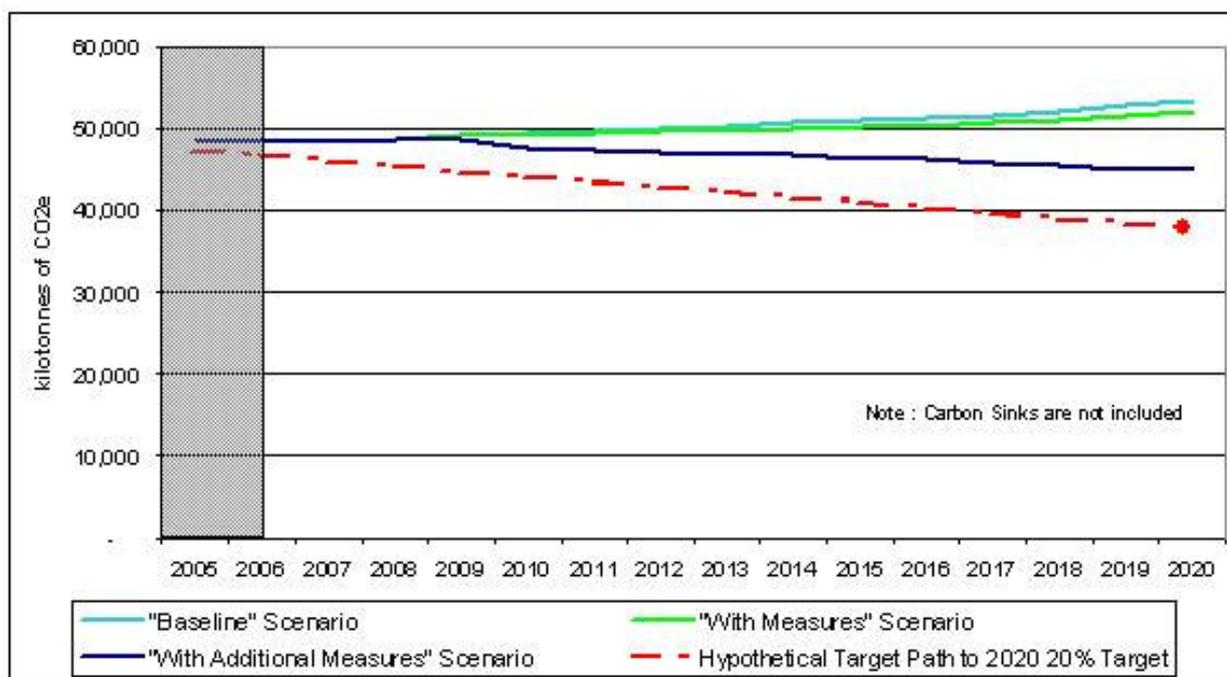


Figure 7. Total non-ETS sector GHG Emissions for each scenario, compared to hypothetical pathway for 20% reduction target

Appendix

Units: 1 Mt = 1,000 kilotonnes = 1,000,000 tonnes

CO₂e: total greenhouse gas emissions expressed as CO₂ equivalents. The CO₂ emission is added to the equivalent emission of methane, nitrous oxide and so-called F-gases which are converted to CO₂ equivalents using their global warming potentials.

F-gases: These gases comprise the following three families, HFCs (Hydrofluorocarbons), PFCs (Perfluorocarbons) and SF₆ (Sulphur Hexafluoride). They have very much higher global warming potentials than the naturally occurring GHGs (carbon dioxide, methane and nitrous oxide).

Table 1. Historical and projected emissions by sector (Mtonnes CO₂e)

		Energy	Residential	Industry & Commercial	Agriculture	Transport	Waste	Carbon Sinks	Total (Without Forest sinks)	Total (With Forest sinks)	
Historical	1990	11.85	7.35	9.78	19.92	5.17	1.46	-	55.5	-	
	1995	14.12	6.40	10.02	20.87	6.27	1.69	-	59.4	-	
	2000	16.81	6.55	12.77	20.50	10.76	1.64	-	69.0	-	
	2005	16.34	7.38	12.23	19.58	13.04	1.77	-	70.3	-	
	2006	15.59	7.29	12.02	19.31	13.72	1.83	-	69.8	-	
<i>Baseline Scenario</i>											
Projected	2010	19.32	6.65	12.88	18.95	15.19	1.97	- 2.22	74.96	72.73	
	2015	20.15	6.39	13.54	19.11	16.08	2.06	- 3.33	77.33	74.00	
	2020	22.48	6.54	14.12	19.94	16.92	2.17	- 4.09	82.17	78.08	
	<i>With Measures Scenario</i>										
	2010	19.08	6.62	12.85	18.95	15.07	1.93	-2.24	74.49	72.25	
	2015	19.79	6.36	13.50	19.11	15.85	1.64	-3.43	76.24	72.81	
	2020	22.00	6.51	13.94	19.94	16.68	1.27	-4.35	80.33	75.98	
	<i>With Additional Measures Scenario</i>										
2010	19.08	5.87	12.40	18.95	14.51	1.93	-2.27	72.73	70.46		
2015	18.03	4.20	12.70	19.11	14.91	1.64	-3.56	70.58	67.04		
2020	18.86	2.12	12.23	19.94	15.34	1.27	-4.72	69.74	65.03		

Numbers may not sum exactly due to rounding

Table 2. Historical and projected emissions for the non-ETS sector (Mtonnes CO₂e)

		Non-ETS Sector	Forest sinks	Total (With Forest sinks)	
Historical	2005	48.33	-	-	
	2006	48.48	-	-	
<i>Baseline Scenario</i>					
Projected	2010	49.51	- 2.22	47.29	
	2015	50.85	- 3.33	47.52	
	2020	53.27	- 4.09	49.18	
	<i>With Measures Scenario</i>				
	2010	49.29	-2.24	47.05	
	2015	50.13	-3.43	46.70	
	2020	51.95	-4.35	47.60	
	<i>With Additional Measures Scenario</i>				
2010	47.57	-2.27	45.30		
2015	46.38	-3.56	42.82		
2020	44.89	-4.72	40.17		