

NATIONAL CLIMATE CHANGE STRATEGY IRELAND

October 2000



MINISTER'S FOREWORD

In recent years, extreme weather events around the world have focused our minds on the potentially devastating impacts of climate change. Scientists have concluded that human activity is now influencing the global climate. Ireland could experience higher winter rainfall with more severe flooding, lower summer rainfall and water shortages, rising sea levels, accelerated coastal erosion, loss of bogland, and threats to agriculture due to additional pests and diseases.

We are living with the consequences of actions and decisions over the last 100 to 200 years, and future generations must live with the consequences of ours. Addressing climate change now is our responsibility. The developed world has made a start, agreeing under the Kyoto Protocol to cut greenhouse gas emissions by some 5% by the end of the decade, but recognising that much more substantial cuts must be made over the course of the century. We are working with our EU partners to ratify the Protocol by 2002, and the Government is embarking on a challenging programme to limit the growth in emissions in the short to medium term, so that we can increase our ambition into the future.

Some climate change impacts are already unavoidable. Averting the worst effects means acting now to place global and national development on a more sustainable path.

Business as usual is no longer an option for Ireland. Our record economic growth means that, even with flexibility to complete our development against a low baseline in 1990, our strategy must be radically different in the coming decade. We have already reached our Kyoto 13% growth limitation target. Now, we have to achieve the difficult task of dramatically reducing greenhouse gas emissions over this decade. We intend to do so in a manner that protects our economy, that is equitable, and that will place a premium on efficiency and on technical innovation.

This Strategy provides a framework for the radical action that is necessary to meet Ireland's climate change commitment.

Key initiatives will include: -

- 4 Carbon energy taxation,
- 4 Use of emissions trading,
- 4 Measures supportive of ending coal-firing at Moneypoint,
- 4 Fuel switching to low and zero carbon fuels,
- 4 Livestock reductions and lower fertiliser use,
- 4 Fuel efficiency, demand management and modal shift in transport,
- 4 Energy efficiency in construction,
- 4 Adjustment of the new house grant.

We need to make changes right across the economy and society: to the way we work and in attitudes and awareness. This Strategy will now place that process firmly on track, with fundamental and large-scale changes, and with smaller actions which also illustrate how easy it is to make a difference.

In partnership with EU Member States and the wider international community, and more particularly, with economic sectors and the Irish public, the Government is determined that we will successfully tackle climate change for the benefit of present and future generations.

EXECUTIVE SUMMARY

International Context

Climate change is identified as the most significant and threatening global environmental problem facing humanity today. Global consensus has recognised that cuts of up to 70% in global emissions are needed over the next century in order to stabilise concentrations in the atmosphere at twice the pre-industrial level. The impacts of climate change on Ireland will be significant, but will be more damaging on many countries which are least able to afford to take action or adapt.

As a first step towards tackling this threat, the United Nations Framework Convention on Climate Change (UNFCCC) required developed countries to put in place policies and measures with the objective of returning emissions of greenhouse gases to 1990 levels by the end of the decade. However, in recognition of the need to take more substantial action, developed countries agreed legally binding targets in Kyoto in 1997, to reduce global emissions of six greenhouse gases by 5.2% in the period from 1990 to 2012. The EU will reduce emissions by 8% overall.

Irish Target

As part of the EU target, Ireland has agreed to limit the growth in greenhouse gas emissions by 13% above 1990 levels. Without the action set out in this Strategy, it is projected that net annual emissions would increase by 37.3%. Reductions of emissions of 13.1 million tonnes (Mt) CO₂ equivalent on this projected figure will be required to meet the national target.

Sources of Irish Emissions

The main greenhouse gas in Ireland is carbon dioxide (CO₂), mainly arising from the burning of fossil fuel in transport, heating and electricity generation. Irish emissions of other greenhouse gases, including methane (CH₄) and nitrous oxide (N₂O) are proportionately higher than other countries, and emissions from the agriculture sector were 35% of all greenhouse gas emissions in 1990, the highest of all sectors. Emissions from the transport sector are forecast to have the largest increase (by 180%) by 2010.

Strategic Framework for Action

This Strategy provides a framework for achieving greenhouse gas emissions reductions in the most efficient and equitable manner while continuing to support economic growth and to prepare Ireland for the more ambitious commitments that will be required after 2012. It requires action to be taken in all sectors, as early as

possible and in a sustainable manner. The Strategy is based on the fundamental principles of sustainable development which are set out in *Sustainable Development: A Strategy for Ireland*, and takes account of the need to protect economic development and competitiveness.

Guiding Principles

The Strategy recognises that the burden for the Kyoto commitment period and beyond must be borne equitably within the economy. The criteria to achieve this include: -

- 4 the requirement to promote sustainable development,
- 4 maximisation of economic efficiency, including a preference for the use of "no regret" and least cost measures,
- 4 achievement of sectoral equity (relative costs and effort, achievement of reductions across the economy),
- 4 protection of economic development and competitiveness (market based instruments, exploitation of new markets and opportunities),
- 4 generating an impetus for early action.

Reductions of emissions will be achieved through an integrated approach, using the full range of instruments and policy options. These include: -

- 4 the use of economic instruments (including taxation and emissions trading) with broad sectoral and/or cross-sectoral application,
- 4 a broad range of policies and measures tailored specifically to relevant sectors,
- 4 a vigorous and appropriate pursuit of common and coordinated policies and measures implemented at EU and wider international levels, and,
- 4 participation in international emissions trading.

Summary of the measures

The key measures in the Strategy are: -

cross-sectoral market based instruments, including: -

- 4 **taxation** – Appropriate tax measures, prioritising CO₂ emissions, will be introduced from 2002 on a phased, incremental basis across a broad range of sectors in a manner that takes account of national economic, social and environmental objectives.
- 4 Ireland will participate in the pilot EU **emissions trading** scheme and in **international emissions trading**.

In the **energy** sector: -

- 4 Measures supportive of ceasing of coal use at Moneypoint by 2008 and fuel switching towards less carbon intensive fuels.
- 4 An expansion of renewable energy.
- 4 Maximisation of CHP.
- 4 An enhanced demand side management programme under the Irish Energy Centre.

In the **transport** sector: -

- 4 Fuel Efficiency Measures
 - 4 further rebalancing of VRT and annual motor tax to favour more fuel-efficient cars,
 - 4 fuel economy labelling for all new cars,
 - 4 fuel switching and efficiency for the public transport and State vehicles.
- 4 Modal Shift Measures
 - 4 increased use of public transport through additional investment in public transport to improve existing suburban bus and rail facilities and to develop new facilities.
- 4 Demand Management
 - 4 setting fuel taxes at appropriate levels to limit the rate of increase in overall fuel consumption and to progressively reduce the incentive for purchase of fuel for foreign vehicles in the State,
 - 4 development of integrated traffic management,
 - 4 achieving higher residential densities; restrictions on out of town retail units.

In the **industrial, commercial and services** sector: -

- 4 Market instruments, including targeted taxation measures and emissions trading.
- 4 Negotiated agreements with industry, with the option for firms complying with agreements to reduce their tax burden.
- 4 The examination of investment support from the perspective of greenhouse gas emissions.
- 4 Expansion of Irish Energy Centre programmes.
- 4 Specific measures to tackle industrial gases e.g. agreement on the use of alternatives.

In the **agriculture** sector: -

- 4 A reduction in CH₄ from the national herd, equivalent to a reduction in livestock numbers by 10% below 2010 projected levels; an appropriate balance will be maintained between direct reductions in stock numbers and intensification of other measures, including a prioritised research programme (including feeding programmes, additives, probiotics, engineering and finishing cattle at a younger age) to identify means of reducing emissions per animal.
- 4 Strengthened relationship between agriculture and forestry policy in REPS, to promote additional forestry plantation at farm level.
- 4 Development of short-rotation biomass and anaerobic digestion of animal wastes for energy generation.
- 4 Use of nitrogenous fertiliser will be reduced by 10% below expected 2010 levels, supplemented by other measures (including use of slow release inhibitors, efficient management of slurry and dirty water) to reduce N₂O emissions from soils.
- 4 Best practice guidelines will be developed to encourage changing farming practices.

In the **forestry** sector, measures to enhance carbon sinks will be supported by: -

- 4 Review of the forestry programme to ensure full achievement of planting target and the intensification of the programme.
- 4 Research programme to maximise sequestration potential of forestry.

In the **built environment and residential** sector: -

- 4 Improved spatial and energy use planning – (Residential Density Guidelines, the National Spatial Strategy, Strategic Planning Guidelines).
- 4 More efficient new buildings – Building Regulations will be reviewed to reduce energy use in new housing by up to 20% in 2002 with further reductions in 2005.
- 4 Sustainable building will be encouraged through adjustment of the New House Grant to require that standards of energy efficiency are met, and support for low energy projects in all categories of housing.
- 4 Improved efficiency of existing building through education and awareness programmes to promote domestic energy efficiency, changing the fuel mix in households, energy efficiency rating for housing.
- 4 For pre-1991 building stock, energy rating will be introduced: in the case of local authority housing, schemes to upgrade the stock will address energy efficiency and have a focus on alleviating fuel poverty where appropriate.

Local Authorities are identified as having an important cross-sectoral role at local level, including in partnership with Local Energy Agencies. Local authorities will be encouraged to adopt best international practice as developed through international networks, and will develop appropriate performance indicators of their progress in reducing emissions. Measures in the **waste sector** will be in accordance with the national policy framework set out in *Changing Our Ways*. Waste generators will pay the full cost of waste collection, treatment and disposal, including the development of charges for household and commercial waste. The implementation of Waste Management Plans by local authorities will be vigorously pursued.

Implementation of Strategy

Government and relevant State Agencies will immediately undertake the necessary work to implement the measures, overseen by a high level inter-Departmental group. Comhar has been asked to support implementation by identifying means of securing necessary changes in behaviour. Progress will be assessed regularly by the Minister for the Environment and Local Government, and the Strategy will be subject to biennial review.

Quantified Indicative Reductions Proposed in Strategy

ENERGY

Fuel Switching to Gas	4.15 Mt CO ₂
<i>Moneypoint</i>	3.4 Mt CO ₂
<i>Oil</i>	0.75 Mt CO ₂
CHP	0.25 Mt CO ₂
Renewables	1.0 Mt CO ₂
Efficiencies	0.1 Mt CO ₂
DSM	0.15 Mt CO ₂
Total	5.65 Mt CO₂

TRANSPORT

Vehicle Efficiency Improvements	0.77 Mt CO ₂
Fuel Measures (displace bunkering)	0.9 Mt CO ₂
VRT, Taxes	0.5 Mt CO ₂
Labelling	0.1 Mt CO ₂
Public Transport Measures	0.15 Mt CO ₂
Traffic Management	0.2 Mt CO ₂
Freight	0.05 Mt CO ₂
Total	2.67 Mt CO₂

BUILT ENVIRONMENT & RESIDENTIAL

Building Regulation Standards	0.25 Mt CO ₂
Existing Buildings	0.4 Mt CO ₂
Fuel Mix	0.25 Mt CO ₂
Total	0.9 Mt CO₂

INDUSTRY, COMMERCIAL, SERVICES

"No regrets"/low cost energy efficiency gains	0.75 Mt CO ₂
Up to £75 tonne CO ₂ efficiency measures	0.25 Mt CO ₂
Process Substitution for Cement	0.5 Mt CO ₂
Industrial Gases	0.5 Mt CO ₂ equivalent
Commercial and Services	0.175 Mt CO ₂
Total	2.175 Mt CO₂ equivalent

AGRICULTURE

Reduction of CH ₄ from national herd <i>of which Feeding Regimes</i>	1.2 Mt CO ₂ equivalent 0.5 Mt CO ₂ equivalent
Fertiliser Use	0.9 Mt CO ₂ equivalent
On-Farm Forestry Sequestration	0.25 Mt CO ₂
Manure Management	0.06 Mt CO ₂ equivalent
Total	2.41 Mt CO₂ equivalent

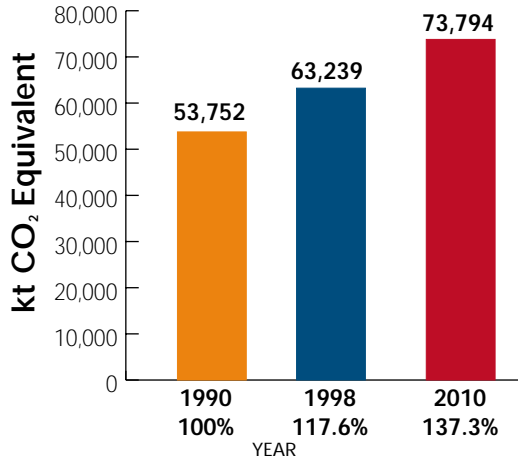
SINKS (Additional Sequestration) 0.76 Mt CO₂ equivalent

WASTE 0.85 Mt CO₂ equivalent

OVERALL TOTAL 15.415 Mt CO₂ equivalent

GRAPH 1

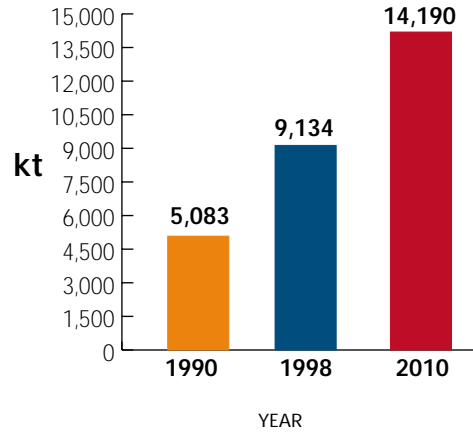
GREENHOUSE GAS EMISSIONS 1990, 1998 AND 2010 PROJECTION



Total Net Emissions (Before Measures)

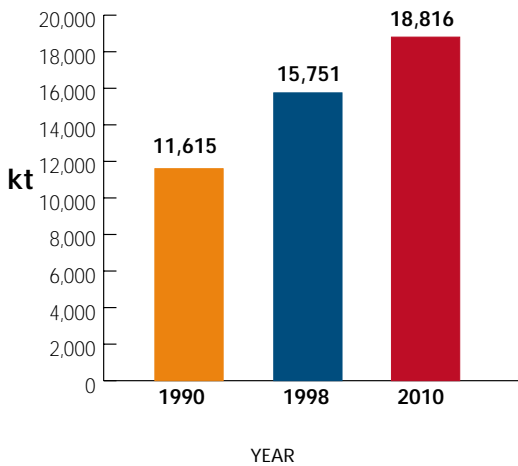
GRAPH 3

GREENHOUSE GAS EMISSIONS FROM TRANSPORT FOR 1990, 1998 AND 2010 PROJECTIONS



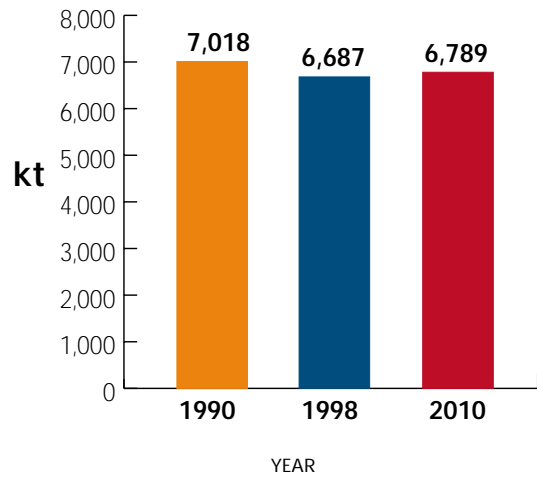
GRAPH 2

GREENHOUSE GAS EMISSIONS FROM ENERGY FOR 1990, 1998 AND 2010 PROJECTION



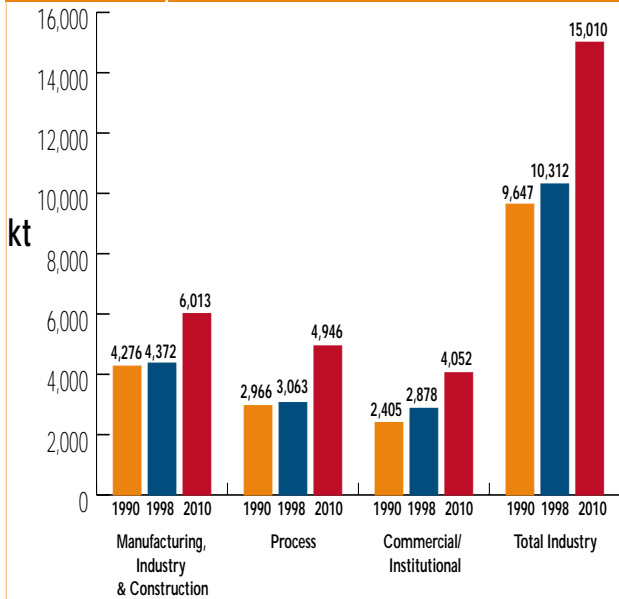
GRAPH 4

GREENHOUSE GAS EMISSIONS FROM BUILT ENVIRONMENT AND RESIDENTIAL SECTOR FOR 1990, 1998 AND 2010 PROJECTIONS



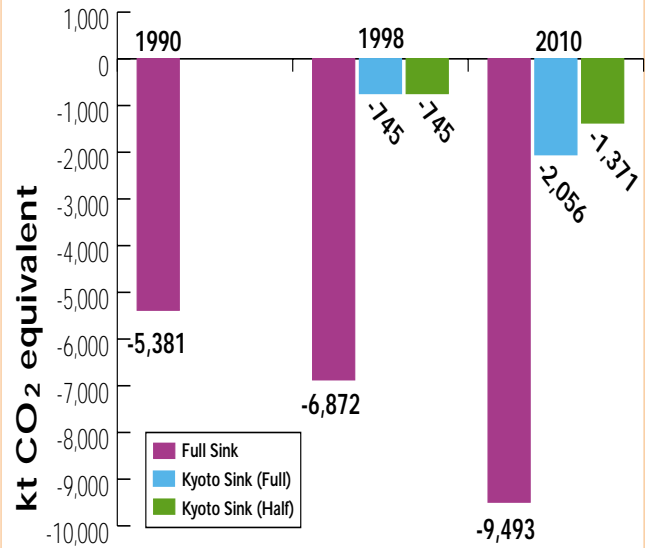
GRAPH 5

GREENHOUSE GAS EMISSIONS FOR INDUSTRY, COMMERCIAL AND SERVICES SECTOR FOR 1990, 1998 AND 2010 PROJECTIONS



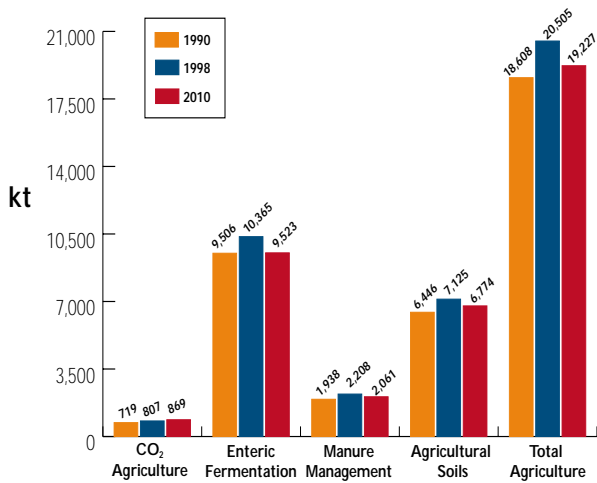
GRAPH 7

FORESTRY SEQUESTRATION (TOTAL SEQUESTRATION, AND UNDER KYOTO PROTOCOL) FOR 1990, 1998 AND 2010 PROJECTIONS



GRAPH 6

BREAKDOWN OF GREENHOUSE GAS EMISSIONS FROM AGRICULTURE (fossil fuel combustion (CO₂ Agriculture) ruminants (Enteric Fermentation), manures, and soils (Agricultural Soils) FOR 1990, 1998 AND 2010 PROJECTIONS



Sources of Irish Carbon Dioxide Emissions

Sectoral Breakdown CO ₂	1990		1998		2010	
	Value	Percentage	Value	Percentage	Value	Percentage
Energy Industries	11,057	35.0%	15,047	37.6%	18,250	35.5%
Residential	6,752	21.4%	6,447	16.1%	6,470	12.6%
Transport	4,961	15.7%	8,768	21.9%	13,645	26.6%
Industry & Const	3,833	12.1%	3,917	9.8%	4,030	7.8%
Commercial/Instit	2,314	7.3%	2,775	6.9%	3,975	7.7%
Ammonia Production	989	3.1%	1,058	2.6%	1,058	2.1%
Cement	750	2.4%	1,000	2.5%	3,000	5.8%
Agri/Forestry/Fishing	660	2.1%	752	1.9%	835	1.6%
Lime Production	191	0.6%	192	0.5%	75	0.1%
Solvents	67	0.2%	71	0.2%	36	0.1%
Totals	31,575	100.0%	40,028	100.0%	51,373	100.0%

Source: EPA

Sources of Irish Methane Emissions ('000 tonnes CO₂ equivalent)

Sectoral Breakdown CH ₄	1990		1998		2010	
	Value	Percentage	Value	Percentage	Value	Percentage
Enteric Fermentation	9,506	74.1%	10,365	76.0%	9,523	78.2%
Waste	1,780	13.9%	1,594	11.7%	1,131	9.3%
Manure Management	1,294	10.1%	1,478	10.8%	1,385	11.4%
Fugitive Emissions	127	1.0%	85	0.6%	39	0.3%
Residential	85	0.7%	55	0.4%	25	0.2%
Transport	37	0.3%	48	0.3%	76	0.6%
Commercial/Instit	4	0.0%	4	0.0%	4	0.0%
Industry & Const	3	0.0%	3	0.0%	2	0.0%
Agri/Forestry/Fishing	1	0.0%	1	0.0%	1	0.0%
Energy Industries	0	0.0%	0	0.0%	0	0.0%
Totals	12,836	100.0%	13,631	100.0%	12,185	100.0%

Source: EPA

Sources of Irish Nitrous Oxide Emissions ('000 tonnes CO₂ equivalent)

Sectoral Breakdown N ₂ O	1990		1998		2010	
	Value	%	Value	%	Value	%
Ag Soils	6,446	71.0%	7,125	70.8%	6,774	69.7%
Nitric Acid	1,036	11.4%	812	8.1%	812	8.4%
Manure Management	644	7.1%	731	7.3%	676	7.0%
Energy Industries	431	4.7%	620	6.2%	527	5.4%
Residential	182	2.0%	186	1.8%	294	3.0%
Industry & Const	117	1.3%	124	1.2%	60	0.6%
Commercial/Instit	86	1.0%	99	1.0%	73	0.8%
Transport	85	0.9%	318	3.2%	469	4.8%
Agri/Forestry/Fishing	58	0.6%	54	0.5%	34	0.3%
Totals	9,084	100.0%	10,068	100.0%	9,719	100.0%

Source: EPA

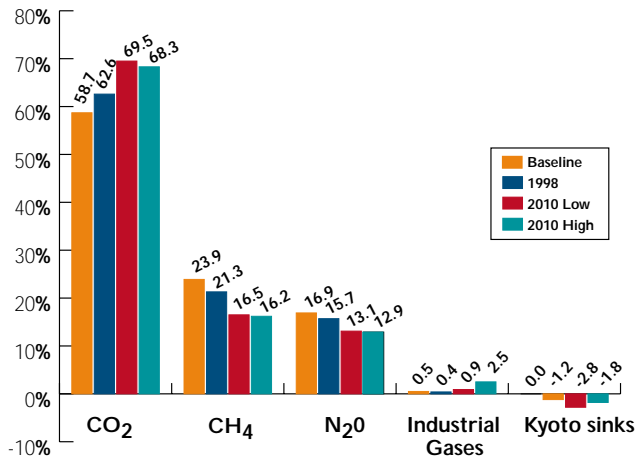
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Total National Emissions and Sequestration '000 tonnes CO₂ equivalent)

	CO ₂	CH ₄	N ₂ O	HFC PFC SF ₆	Total Emissions	<i>Emissions Index</i>	Sinks (Kyoto basis)	Net Total	<i>Net Index</i>
Base Year	31,575	12,836	9,085	256	53,752	100.0%	0	53,752	100.0%
1998	40,028	13,631	10,069	256	63,984	119.0%	-745	63,239	117.6%
2000	42,675	13,139	9,630	799	66,243	123.2%	-991	65,252	121.4%
2005	47,210	12,940	9,692	1,342	71,184	132.4%	-1,523	69,660	129.6%
2010 Low	51,373	12,185	9,720	672	73,950	137.6%	-2,056	71,894	133.8%
2010 High	51,373	12,185	9,720	1,885	75,163	139.8%	-1,369	73,794	137.3%

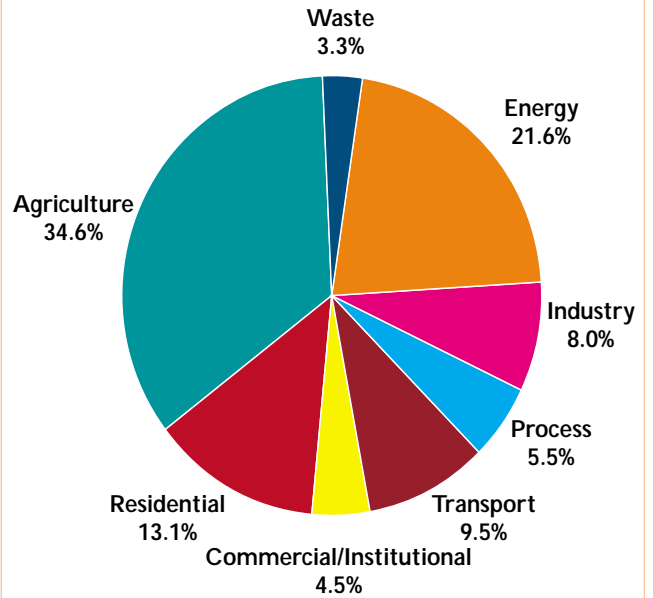
GRAPH 8

BREAKDOWN OF EMISSIONS BY GAS ON GWP BASIS, 1990, 1998 AND 2010 PROJECTIONS



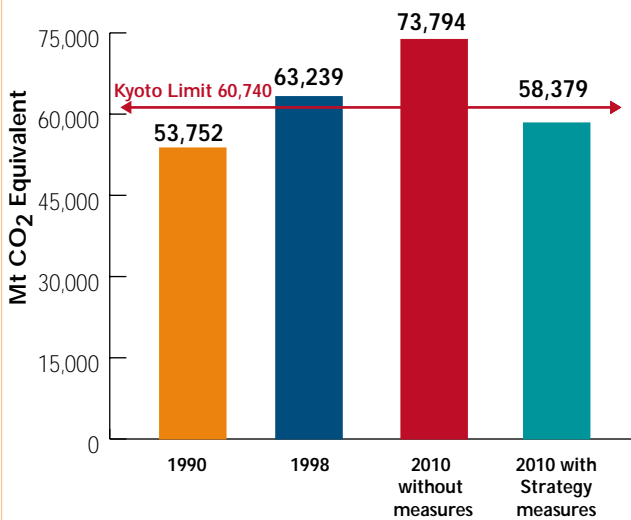
GRAPH 10

SECTORAL BREAKDOWNS OF EMISSIONS FOR 1990



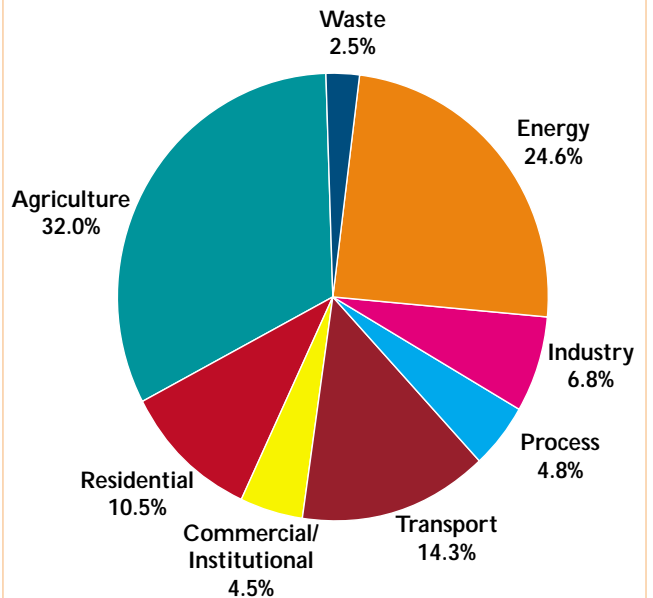
GRAPH 9

IMPACT OF STRATEGY ON ACHIEVEMENT OF KYOTO TARGET

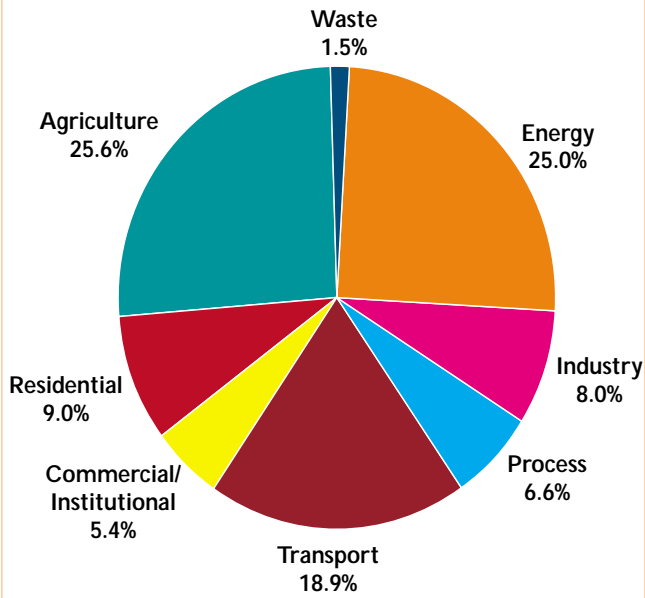


GRAPH 11

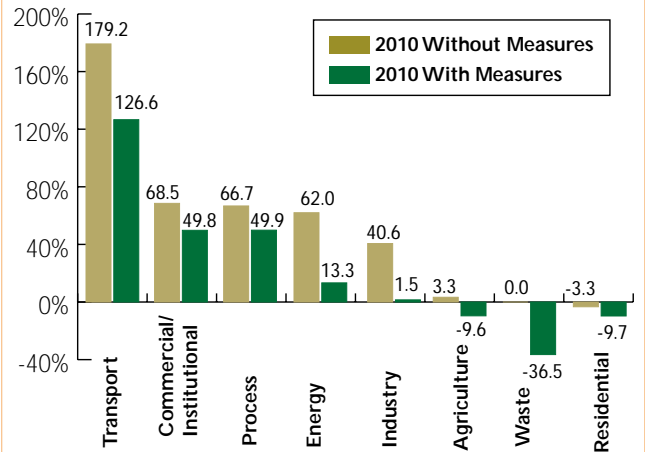
SECTORAL BREAKDOWNS OF EMISSIONS FOR 1998



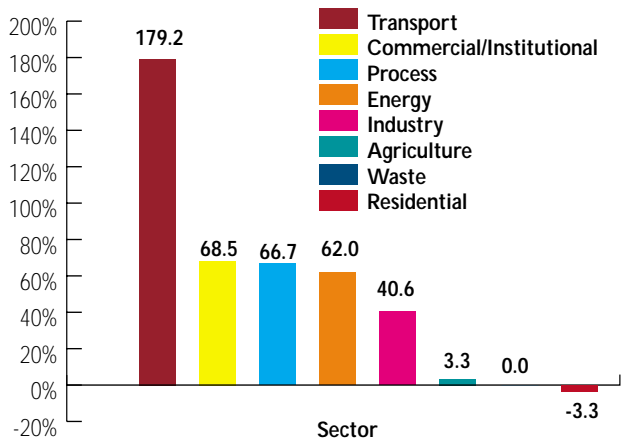
GRAPH 12 SECTORAL BREAKDOWNS OF EMISSIONS FOR 2010 PROJECTIONS (WITHOUT MEASURES)



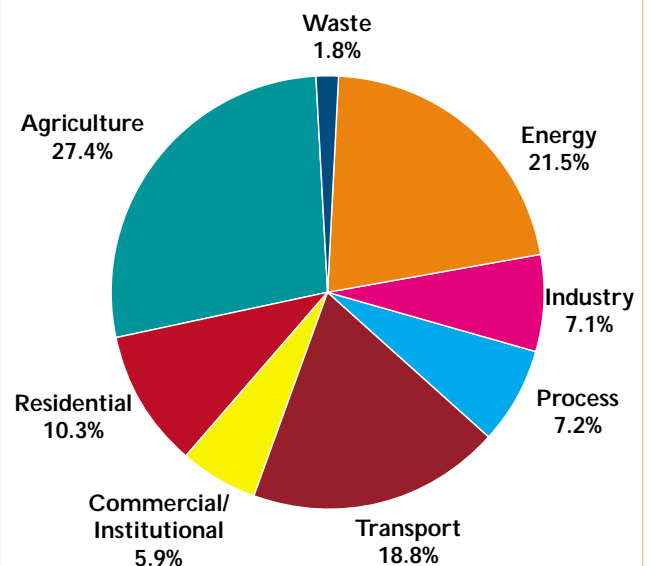
GRAPH 14 PERCENTAGE CHANGE IN EMISSIONS WITH AND WITHOUT MEASURES 1990 – 2010 FOR EACH SECTOR



GRAPH 13 PERCENTAGE INCREASE IN EMISSIONS BY SECTOR 1990 – 2010 (WITHOUT MEASURES)



GRAPH 15 SECTORAL BREAKDOWN OF EMISSIONS WITH THE STRATEGY MEASURES FOR 2010.



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