

Climate Change

Think Piece 2: May 2007



Wendy McGuinness

Wendy is the Chief Executive of the McGuinness Institute.

Summary

New Zealand has recently submitted its Greenhouse Gas Inventory 1990–2005 to the United Nations Framework on Climate Change Convention (UNFCCC). The Inventory reveals that New Zealand's carbon dioxide equivalent (CO₂-e) emissions have increased by 24.7% during this period, with the majority of the increase coming from the energy sector. It appears likely that New Zealand will not meet its Kyoto targets, which will potentially cost taxpayers between \$500 million and \$2 billion in 2012.

A recent publication by the Intergovernmental Panel on Climate Change (IPCC) indicates that there is affordable technology available to slow the growth of greenhouse gas emissions, which highlights New Zealand's poor performance in this regard.

New Zealand does not currently have a comprehensive, integrated and measurable strategy to mitigate climate change, although we are awaiting the outcome of a public consultation process following the release of five discussion documents on energy and climate change.

New Zealand's Greenhouse Gas Inventory 1990–2005 was submitted on 4 May 2007 to the United Nations Framework on Climate Change Convention (UNFCCC). The inventory is compiled annually by the Ministry for the Environment, with input from relevant agencies, as a requirement of the UNFCCC and the Kyoto Protocol. The inventory collects information on man-made (anthropogenic) greenhouse gas emissions to provide a snapshot of New Zealand's emissions by sector, as well as the removal of greenhouse gases by sinks (e.g. forests). Key findings include:

- Total greenhouse gas emissions in 2005 were 77.2 million tonnes of carbon dioxide equivalents (Mt CO₂-e). Total emissions have increased 15.3 Mt CO₂-e (24.7%) over the 1990 level of 61.9 Mt CO₂-e. The increase between 2004 and 2005 was 2.1 Mt CO₂-e (2.8%).
- The principal growth in New Zealand's emissions comes from increased carbon dioxide, primarily from the energy sector, which has grown by almost 42% relative to its emissions in 1990. Most of this increase has come from transport (a 65% increase in emissions) and electricity generation (a 135% increase in emissions). About two-thirds of New Zealand's electricity production comes from hydro power stations,

but there has been an increasing proportion of fossil-fuelled electricity generation, initially from Maui gas and increasingly from coal. This means that electricity sector emissions are growing at a rapid rate.

- 37.4 Mt or 48.5% per cent of New Zealand's greenhouse gas emissions are produced by the agriculture sector (methane and nitrous oxide) and 33.5 Mt (43.4%) from the energy (electricity and transport) sector (carbon dioxide, nitrous oxide and methane). Details are available in the following table.

The government has admitted that it is unlikely to meet its Kyoto targets – a failure that was estimated in 2006 would cost taxpayers about \$500 million in 2012, the deadline for making up the shortfall. However, National Party Climate Change spokesman Nick Smith has said, as reported in *The Dominion Post* (4 May 2007), that the likely cost was closer to \$2 billion, as emissions keep rising.

The McGuinness Institute considers that the results are particularly disappointing in light of the recent publication of the Working Group III Report *Mitigation of Climate Change*, which is part of the IPCC's Fourth Assessment. The report states that fighting global warming is affordable, and that technology is available to slow the growth in greenhouse gas emissions. The technology includes nuclear, solar and wind power, and more energy-efficient buildings and lighting. Capturing and storing carbon dioxide emitted from coal-fired power stations and oil and gas rigs is also feasible. The report is the third to be released this year by the UN panel, which draws on the work of 2500 scientists. The previous reports painted a grim future of human-induced global warming causing more hunger, droughts, heatwaves and rising sea levels.

Given our rising emissions and the affordability and availability of mitigation, it is our view that New Zealand urgently requires a comprehensive, integrated and measurable strategy to mitigate carbon emissions, signed off by a Minister.

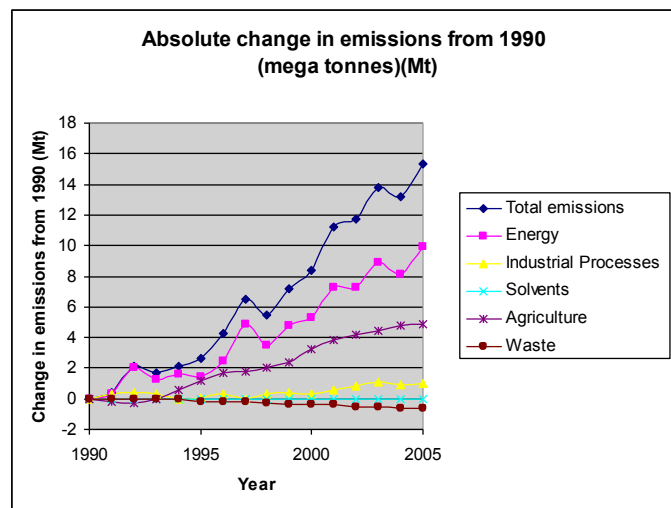
In our work on *Project 2058*, we have only been able to identify a June 2006 report, *Climate Change Solutions*, as providing a potential central government strategy. We consider that this is not a major government strategy, as it does not contain a foreword signed by a minister or associate minister of the Crown, nor is it comprehensive, integrated or measurable.

Sustainable Future has concerns about New Zealand's ability to formulate an overall strategy, particularly considering the lack of information, integration and completeness contained in the five energy and climate change discussion documents released recently by the government. We hope that the resulting public consultation process, which closed on 30 March 2007, will deliver a central government strategy on reducing emissions that is comprehensive, integrated and measurable.

NEW ZEALAND'S GREENHOUSE GAS INVENTORY 1990-2005

The following table, sourced from the MfE website, demonstrates the trend in CO₂ equivalent emissions reported in New Zealand's Greenhouse Inventory 1990-2005. The table indicates the trend in absolute emissions in terms of millions of tonnes relative to 1990 levels. The data is summarised in the accompanying graph.

Year	Absolute change in emissions from 1990 (mega tonnes) (Mt)					
	Total emissions	Energy	Industrial processes	Solvents	Agriculture	Waste
1990	0	0	0	0	0	0
1991	0.4	0.3	0.3	0	-0.2	0
1992	2.1	2	0.4	0	-0.3	0
1993	1.7	1.3	0.3	0	0	0
1994	2.1	1.6	0	0	0.6	0
1995	2.6	1.4	0.1	0	1.2	-0.2
1996	4.3	2.5	0.3	0	1.7	-0.2
1997	6.5	4.9	0	0	1.8	-0.2
1998	5.5	3.5	0.3	0	2	-0.3
1999	7.2	4.8	0.4	0	2.4	-0.4
2000	8.4	5.3	0.3	0	3.2	-0.4
2001	11.2	7.3	0.6	0	3.8	-0.4
2002	11.7	7.3	0.8	0	4.2	-0.5
2003	13.8	8.9	1.1	0	4.4	-0.5
2004	13.2	8.1	0.9	0	4.8	-0.6
2005	15.3	9.9	1	0	4.9	-0.6



The United Nations Working Group III IPCC Report, *Mitigation of Climate Change*, suggests a number of ways to reduce emissions in different sectors of the economy, using key technologies and practices that are commercially available:

- Energy Supply: efficiency; fuel switching; nuclear power; renewable (hydropower, solar, wind, geothermal and bioenergy); combined heat and power; Carbon Capture and Storage (e.g. storage of removed CO₂ from natural gas).
- Transport: More fuel-efficient vehicles; hybrid vehicles; biofuels; modal shifts from road transport to rail and public transport systems; cycling, walking; land-use planning.
- Buildings: Efficient lighting; efficient appliances and air-conditioning; improved insulation; solar heating and cooling; alternatives for fluorinated gases.
- Industry: More efficient electrical equipment; heat and power recovery; material recycling; control of non-CO₂ gas emissions.
- Agriculture: Increased soil carbon storage; restoration of degraded lands; improved rice cultivation techniques; improved nitrogen fertiliser application; dedicated energy crops.
- Forests: Afforestation; reforestation; forest management; reduced deforestation; use of forestry products for bioenergy.
- Waste: Landfill methane recovery; waste incineration with energy recovery; composting; recycling and waste minimisation.

The report outlines a number of policies to realise the mitigation of climate change: integrating climate policies in broader development policies, regulations and standards, taxes and charges, tradable permits, financial incentives, voluntary agreements, information instruments, research and development, government support through financial contributions, and tax credits. The report states that standard-setting and market creation is important for effective technology development, innovation and deployment. Making development more sustainable by changing development paths can make a major contribution to climate change mitigation, but implementation may require resources to overcome multiple barriers. Finally, the report notes the growing understanding of the possibilities to choose and implement mitigation options to realise synergies and avoid conflicts with other dimensions of sustainable development.

What is clear is that New Zealand must complete a significant amount of public policy work in order to deliver a transparent, accurate and measurable strategy towards greenhouse gas reduction.

For complete references and to find out more, visit our website: www.mcguinnessinstitute.org.

The New Zealand Greenhouse Gas Inventory 1990-2005 is available from the Ministry for the Environment's website at www.mfe.govt.nz/issues/climate/greenhouse-gas-emissions/greenhouse-gas-inventory.html.

The Working Group III report Mitigation of Climate Change is available at www.ipcc.ch.

The New Zealand Government's report Climate Change Solutions is available at www.mfe.govt.nz/publications/climate/climate-change-solutions-jun06/climate-change-solutions-jun06.pdf.



The McGuinness Institute is a non-partisan think tank working towards a sustainable future, contributing strategic foresight through evidence-based research and policy analysis.
 McGuinness Institute, Level 1A, 15 Allen Street, PO Box 24222, Wellington 6142
 Phone: (04) 499 8888 Email: enquiries@mcguinnessinstitute.org Website: www.mcguinnessinstitute.org