

Climate Change Adaptation & Decision Making – A Look at Government Programmes

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Introduction

Finding effective and long-term solutions for climate change is one of the most important tasks facing the world today. How we respond now will determine New Zealand's future – our economy, our environment and our community.

Much media focus has been on climate change mitigation, particularly with the recent policy review and announcement of the discontinuation of the carbon tax in 2005. Mitigation carries with it a deadline with which to focus on, that is to take into account New Zealand's excess emissions (of 1990 levels) come 2012. The other not so tangible deadline with which we can not escape is the impact of climate change, and this is where adaptation strategies are key.

New Zealand's emissions profile

The NZ profile is small in international terms - emissions represent just 0.2 percent of the world's greenhouse gas emissions. Even though this is a small proportion of the global emissions there are several reasons why we should act:

- To influence the large global emitters, through international agreements and action
- To be on the same footing as our trading partners
- To take advantage of new opportunities for business growth and new ideas
- There will also be other added co-benefits, including improved energy security, cost savings and land-use practices, supporting biodiversity and water quality objectives
- New Zealand is 11th in the world for per capita emissions.
- New Zealand has an opportunity to be a world leader in addressing climate change responsibly.

Here in New Zealand, our biologically-based economy and our national interests could be significantly threatened by a changing climate.

As well as action to address climate change, there are opportunities for New Zealand to show leadership in developing low-emissions technologies, using them at home and exporting them. The agricultural sector, for example, is looking at innovative ways to reduce methane emissions from ruminant animals, and new crops which suit a changing climate.

Initiatives under way

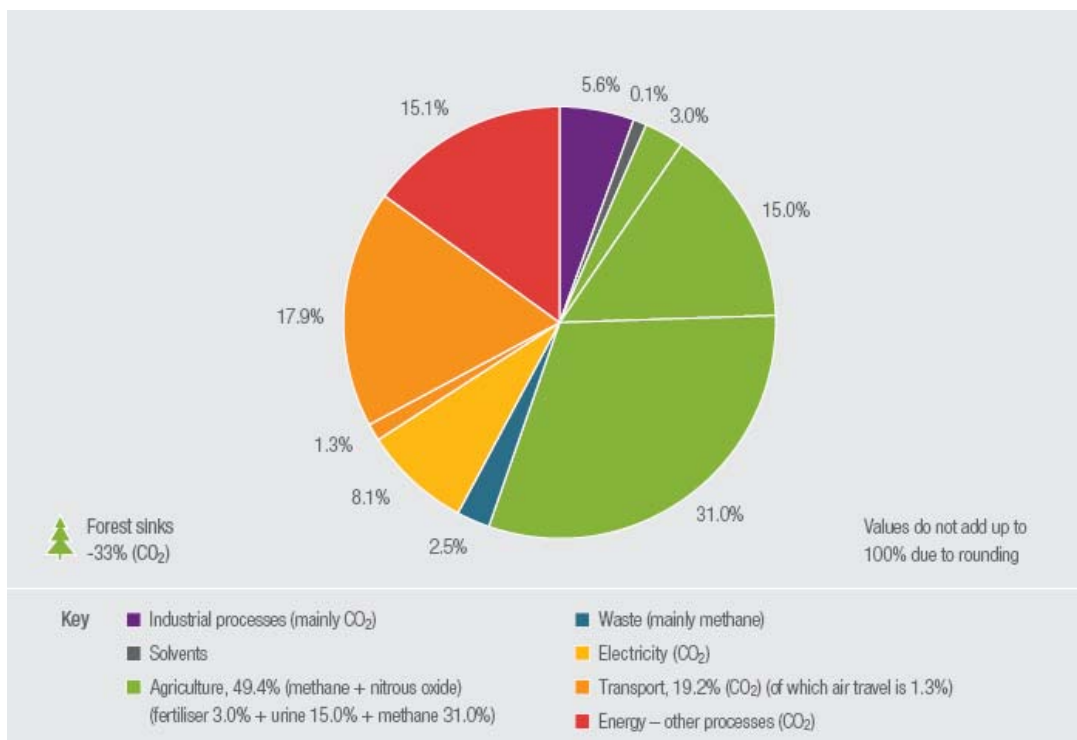
A number of proposals and initiatives are under way to address climate change and help New Zealand become more sustainable. They include:

- a sales obligation, starting in April 2008, that will require 3.4 percent of the total fuel sold by oil companies to be biofuel by 2012
- a commitment for all 34 core public service agencies to be on a path to carbon neutrality by 2012
- using the government's purchasing power to grow the market for environmentally-friendly products, including paper, cleaners, plastics and fuel-efficient vehicles
- a strong drive to cut down on waste

- the Permanent Forest Sinks Initiative (PFSI), which creates an incentive for new forests (carbon sinks) to be planted, particularly on erosion-prone land
- a commitment to increase solar water heating in homes
- additional measures to improve energy efficiency in buildings by improving insulation standards in new homes, lighting, heating and ventilation of commercial buildings, and through energy efficiency standards for water heating
- showing international leadership by finding ways to reduce agricultural emissions (both nitrous oxide from fertiliser and livestock waste, and methane emissions from livestock)
- consideration of measures (such as standards, labelling, economic incentives and import restrictions) to improve the fuel efficiency of our vehicle fleet and encourage consumers to make more fuel-efficient purchasing choices.

New Zealand's greenhouse gas emissions in 2004 – by sector

(Percentage of carbon dioxide equivalent)



Almost half our emissions come from pastoral agriculture, the backbone of our food exporting economy, and this presents a major challenge for New Zealand because the technology currently available will achieve only limited reductions. Substantial research and technology development is essential. Another hurdle to overcome is our high per capita car ownership with an ageing fleet and limited public transport outside city centres.

Responding to these challenges, with new technologies for instance, offers opportunities. A high proportion of New Zealand's electricity is generated from renewable energy resources, and there is potential for more.

We have large areas of planted forests which, while growing, absorb carbon dioxide and act as carbon sinks. Planting more, while cutting emissions, will aid our transition towards carbon neutrality over the long term.

A long-term, durable strategy

Government's approach to climate change is guided by eight principles:

1. The costs of inaction are too high

Faced with sufficient consensus on climate change science, a responsible government must act to address risks to New Zealand. While action to reduce greenhouse gas emissions over the long term will have a moderate cost, the predicted costs and risks of inaction are expected to be unacceptably high.

2. We need to play our part internationally

Effective international action is essential to reduce global greenhouse gas emissions. To support and encourage international action, New Zealand must play its part in reducing emissions as well as encouraging other countries to act, especially the major emitters.

3. Maximising economic opportunities

New Zealand's response should maximise the economic advantages of using energy and resources more efficiently. New technologies play a crucial role. Policy should facilitate New Zealand involvement in the development or adaptation of low-emissions technologies relevant to our needs.

4. Finding efficient solutions

Our policy response should start with the most achievable options and seek least-cost solutions. A combination of sectoral and economy-wide measures, including voluntary, price-based and regulatory measures, is likely. Short-term measures must be consistent with long-term solutions and should, at the very least, curb increases in emissions.

5. Everyone has a role to play

All sectors of our economy and society should play an equitable part in the national response to climate change, reflecting the fact that some sectors will be able to reduce emissions more easily than others. An important policy consideration is the competitiveness of sectors in which there are no low-emissions technologies available at moderate cost.

6. Maximising co-benefits

Policy should maximise the wider benefits of climate change action in relation to economic transformation, improved sustainable land and water management, enhanced public health, reduced energy wastage, greater energy security, improved air quality and enhanced biodiversity.

7. Adapting to climate change

Any response to climate change must include policies to help New Zealand adapt effectively to the impacts of climate change.

8. Aligning our response with our national interests

The pace and stringency of New Zealand's response must align with our national interests. In particular, it should be in step with what major emitters (including our major trading partners) are doing. This is in line with the long-term position taken by other developed countries. Acknowledging this is important in building consensus among key sectors for an enduring domestic response to climate change.

The climate change work programmes

A series of climate change work programmes, announced in July 2006, is under way across a number of government departments. The work programmes will produce short-term measures to reduce emissions and the potential impact of climate change, and long-term, durable solutions which focus on the period after 2012.

Work programmes on the long-term, durable strategy:

- A strategic framework including long-term goals and milestones to track progress
- Options for reducing greenhouse gas emissions post-2012
- Research and technology transfer: identifying gaps and priorities in research and the development of initiatives to encourage early uptake of technology
- Communications and engagement: ensuring both the public and the different sectors are informed about climate change, what they can do, and how they can contribute effectively to climate change policy and implementation
- New Zealand's international interests: developing New Zealand's negotiating position on any post-2012 international climate change framework.

Energy work programmes:

- New Zealand Energy Strategy
- New Zealand Energy Efficiency Conservation Strategy
- Transitional measures: options for reducing emissions from electricity and stationary energy supply before 2012
- Cross-sector initiatives examining the value of incentive programmes and the types of programme that may be appropriate across different sectors.

Transport work programmes:

- Implementing a sales obligation for biofuels
- Investment in public transport and promotion of alternative transport modes
- Consulting on options for improving the quality of vehicle imports, including tighter emission standards
- Investigating options for encouraging uptake of fuel-efficient cars and mandatory labelling of vehicles at point-of-sale and a sales-weighted fuel economy standard
- Accelerating sustainable transport practices, including procurement, fleet check audits and travel planning
- Improving fuel quality.

Sustainable land management and climate change work programmes, including agriculture and forestry:

This work focuses on developing a plan of action on sustainable land management and climate change. It includes:

- Engaging with the land management sector on the importance of preparing and planning for climate change
- Identifying options for reducing emissions from agriculture and deforestation and encouraging establishment of new forests
- Working with the land management sector to capitalise on business opportunities.

Other work programmes:

- Adaptation work programme: helping New Zealand prepare for and adapt to the impacts of climate change. A priority is engaging with business, local government and the community on the importance of preparing and planning for the impacts of a more variable climate
- Providing advice to the government on the costs and benefits of the Kyoto Protocol Flexibility Mechanisms, as well as possible approaches to purchasing/obtaining Kyoto-compliant units
- Other relevant work programmes include exploring opportunities to address climate change under the Resource Management Act; the Communities for Climate Protection programme, which partners with local government; the Energy Intensive Business programme; and the Sustainable Development Water Programme of Action.

The Ministry for the Environment is leading these work programmes. Agencies responsible for implementing individual work programmes are the Ministry for the Environment, the Ministry of Economic Development, the Ministry of Agriculture and Forestry, the Ministry of Foreign Affairs and Trade, the Ministry of Transport, the Ministry of Research, Science and Technology, the Department of Building and Housing, and the Energy Efficiency and Conservation Authority.

Public consultation

The government has been consulting with the community on options for the longer term and transitional policies.

This consultation is informed by the following documents:

- Discussion Paper on Measures to Reduce Greenhouse Gas Emissions in New Zealand Post-2012
- Powering Our Future – Draft New Zealand Energy Strategy to 2050
- Transitional Measures: Options to Move Towards Low Emissions Electricity and Stationary Energy Supply and to Facilitate a Transition to Greenhouse Gas Pricing in the Future
- Draft New Zealand Energy Efficiency and Conservation Strategy
- Sustainable Land Management and Climate Change.



More information about the consultation documents can be found at <http://www.climatechange.govt.nz/consultation/index.html>

Post-2012

The design of New Zealand's climate change policy for the period after 2012 (the end of the first commitment period of the Kyoto Protocol), will take into account the evolving international context, including the need for the world's major emitters to take effective action.

It is likely a mix of sectoral and economy-wide measures will be needed to tackle climate change effectively and improve New Zealand's sustainability. As much as possible, these measures should align with what our major trading partners are doing.

New Zealand is already active internationally, both by supporting the Kyoto Protocol and other initiatives to reduce emissions. The government also recognises that we need to be realistic about our level of influence - durable global solutions must come ultimately from the major emitters.

Adaptation

While there is a need to reduce greenhouse gases emissions the amount of carbon dioxide already released into the atmosphere means our climate will change. Therefore we need to prepare for and adapt to the expected impacts this change could bring. All areas of New Zealand life will be affected by changes in our climate. New Zealand's response to climate change impacts is in its early stages, but is gaining momentum and we are not far behind the international leaders in this field.

To enhance existing efforts to prepare New Zealand for the impacts of climate change, the work programme aims to:

- Ensure better coordination of central government agencies,
- Form new partnerships with local government, the agriculture sector, insurers, and engineers;

- Engage with a wider range of other stakeholders (including non-governmental organisations) to raise awareness of climate change impacts and adaptation, and to influence decision making; and
- Make information about climate change impacts for New Zealand easily available, to raise awareness and support improved decision-making.

The climate change impacts and adaptation work programme should position New Zealand for a future where:

- New Zealanders recognise the need to adapt to climate change impacts that are expected to occur as a result of our greenhouse gas emissions;
- We have greater understanding of the expected impacts for New Zealand as scientific information for this region evolves;
- Individuals and organisations understand how increased climate variability could affect them and incorporate climate change risk assessments into their planning and decision making; and
- Individuals and organisations have increased capacity to manage the risks associated with future climate variability and reduce their vulnerability.

Impacts expected

The Intergovernmental Panel on Climate Change (IPCC) is releasing their 4th Assessment Report in stages throughout 2007. This Fourth Assessment is being released in three parts:

- “The Science of Climate Change” (released in February).
- “Impacts, Adaptation, and Vulnerability” (released in April, and including a chapter on Australia & New Zealand).
- “Mitigation of Climate Change” (to be released in May, including chapters on forestry & agriculture).

The report states that changes in New Zealand’s climate are expected to result in more extreme weather events (both in terms of magnitude and frequency) and changes to temperature and rainfall that will have far-reaching consequences. New Zealand’s biologically-based economy is particularly vulnerable to an unstable climate - drought costs in 1997/98, for example, were estimated at \$1 billion.

While there is some inevitable uncertainty about the timing and exact nature of climate change impacts, many of the costs can be avoided or reduced with proper planning. Infrastructure networks such as roads, sewerage, electricity transmission, water reticulation, and telecommunications have useful lives measured in decades. Costs can be avoided or reduced by taking sensible steps when this infrastructure is routinely replaced or upgraded.

The IPCC indicates that New Zealand is already experiencing impacts from climate change. It suggests that, without further adaptation, the impacts of climate change are likely to be substantial. New Zealand is particularly vulnerable in the following areas:

- Water and coastal - Water availability problems are likely to be exacerbated in eastern areas by droughts or storms and flooding in other areas. Coastal

settlements could be seriously affected by slips as well as being more flood prone in low-lying areas (including many large urban areas) due to rising sea levels;

- Infrastructure - More frequent extreme weather poses risks to major infrastructure (e.g. from land slips, flooding, high winds);
- Primary production - Substantial shifts in agriculture and forestry are likely as average temperatures rise and extreme rainfall becomes more frequent;
- Biodiversity and bio-security - Many natural and modified ecosystems are likely to alter in structure, function and species composition, while bio-security threats are likely to increase as rising average temperatures expand the range of existing threats and enable the introduction of new threats).

Planning for the impacts of climate change can also:

- Avoid foreclosing future options and identify the co-benefits of prudent action;
- Reduce vulnerability, e.g. by screening infrastructure proposals for climate risk;
- Improve disaster preparedness and recovery through greater resilience in coping with more extreme weather;
- Improve information about likely impacts and make it more widely available;
- Motivate action that is cheaper to do now rather than later, e.g. modifying the design of long-lived structures;
- Avoid irreversible damage, such as the loss of unique ecosystems.

Mainstreaming

In order to mainstream the idea of climate change adaptation, a partnership approach has been adopted following successful overseas models leading to: better co-ordinated activities of government departments, agencies and utilities; and greater co-ordination at the local government and business levels. These groups are the key decision makers and planners and therefore the leaders in climate change impacts assessment and adaptation.

As an immediate priority, partners who have a strategic role in decision making, influence decision making about natural and physical resources and are willing participants have been identified. Based on the areas where the IPCC identified that New Zealand is vulnerable, the Government is working with the following partners as immediate priorities:

- Local government, (including Local Government New Zealand));
- Professional bodies (Institution of Professional Engineers NZ and Engineering Lifelines) – to be led by MfE;
- Insurance industry (e.g. Insurance Council of New Zealand and other insurers such as IAG New Zealand and Vero) – to be led by MfE; and
- Agriculture sector – to be led by Ministry of Agriculture and Forestry (MAF).

As a second priority, the Government will continue to consult with other key agencies and organisations to raise general awareness and identify future strategic partners, especially in the private sector.

Existing guidance

Efforts to raise awareness of climate change impacts and adaptation have principally been aimed at local government. To date this work includes:

- Guidance brochures and manuals (e.g. 'Preparing for climate change - A guide for local government in New Zealand', and 'Local Communities – planning for climate change');
- A Quality Planning Guidance Note 'The Effects of Climate Change under the Resource Management Act' – a web-based guide for local government published in 2005;
- A number of technical reports (including how climate change will impact on drought, fire risk, agriculture, coastal hazards, and flood risk);
- A number of workshops (e.g. International Adaptation Workshop (2004), numerous local government workshops on climate change impacts and adaptation (2002, 2004, 2006), and IPENZ seminars (2006)); and
- Engagement with stakeholders (e.g. research providers, the public and professional bodies).
- A range of government work programmes that give consideration to expected climate change impacts

Planned for 2007-08

Building on work already underway, the following is planned for this coming year:

- Update of guidance materials with the latest scientific information from the 4th Assessment Report:
 - Climate Change Effects & Impacts Assessment manual
 - Local Government Guidance manual (aka 'red book')
 - Coastal Hazards & Climate Change manual
- Case Studies on New Zealand examples of climate change adaptation initiatives
- New Quality Planning Guidance Notes – on coastal & natural hazards

Flood Risk Management Review

In New Zealand a number of factors influence flood risk, including catchment management, land use and development. The biggest factor, however, is the weather. Flood risk cannot be avoided entirely but it can be managed to minimise damage. Ideally, flood risk management is responsive to local conditions, based on good information and sound decision making by an informed community aware of the risks.

The Ministry for the Environment has been leading the Flood Risk Management Review since June 2005. The Review was set up following the large flood events in 2004 to identify any gaps and determine any additional elements needed for robust flood risk management.

The Review is concerned with the risk reduction and readiness aspects of risk management, rather than response or recovery after a flood. A suite of other government programmes, projects and reviews are underway to address related issues. Some examples are:

- The whole of government Climate Change Programme
- The Sustainable Water Programme of Action
- The Sustainable Land Management Project and Review of the On-Farm Related Adverse Event Framework, led MAF
- The Recovery Assistance Review and Special Policy Initiatives led by MCDEM.

The Flood Risk Management Review is focused on three key areas:

- Current flood risk management practices,
- Funding and affordability, and
- The roles of central government, local government and communities in ensuring good risk management practices are adopted.

The Review is taking a forward looking approach. Future climate change and variability will affect the nature of the hazard, as well as potential management options. The ability to meet the challenges this presents is one of the elements of robust flood risk management. Flood risk practitioners need the right tools, resources and support to be effective risk managers. Communities need to be better informed about any risks they may face and understand what this might mean in the future.

The Review is overseen by a Steering Group consisting of local government and a range of government departments and is coming to its conclusion; options for the future are being presented to Government in July. Expect to hear more on new initiatives later this year.

National Policy Statement

One initiative that has just commenced is the development of a National Policy Statement (NPS) on flood risk management under the Resource Management Act 1991. This development of the NPS is in its early stages, with the Ministry for the Environment currently seeking and considering the views of stakeholders on the policy's possible scope and content.

The Review indicates a need to formalise good practice and ensure flood risk management is an integral part of sustainable resource management. A NPS can strengthen the current policy framework by acknowledging the national significance of flood risk management and by providing clear direction for decision-makers. A NPS will give councils more certainty in adopting and maintaining a sound flood risk management approach.

A NPS could be focused on the following key issues identified by the Review:

- Flooding is the most frequent natural hazard experienced by people and communities need to be aware of the risk of flooding.
- Climate change is increasing future flood risk and action is required now to manage the changing risks.

- Effective flood risk management is essential to the sustainable and integrated management of water and land resources.
- Integrated flood risk management requires good working relationships between stakeholders to ensure flood risk is managed sustainably.

A NPS works in the following way:

The NPS states objectives and policies relevant to the purpose of the Resource Management Act 1991 (RMA). The NPS can amend regional policy statements and district plans to “give effect” to the NPS, or it must be given effect when the policy statement or plan is next reviewed. Either way decision-makers must “have regard to” the NPS when considering resource consents, notice of requirements or recognised customary activities. A NPS is only one part of ensuring food risk management is robust in the long term.

Finding out more

For more information please visit the following websites:

- Ministry for the Environment: www.mfe.govt.nz, www.climatechange.govt.nz, www.4million.org.nz
- Ministry of Economic Development: www.med.govt.nz
- Energy Efficiency Conservation Authority: www.eeca.govt.nz
- Ministry of Agriculture and Forestry: www.maf.govt.nz
- Ministry of Transport: www.mot.govt.nz