

Helping New Zealand Prepare for and Adapt to Climate Change

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Proposal

1. This paper proposes measures to improve New Zealand's preparedness for climate change and its capacity to adapt. It seeks agreement on priorities for an enhanced impacts and adaptation work programme and proposes new partnerships with local government, engineers, the insurance industry and the agricultural sector.

Executive summary

2. For policy purposes we have moved beyond a debate about whether climate change is occurring to what must be done. 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.

3. While there is a need to reduce global emissions of the greenhouse gases that cause climate change, including New Zealand's emissions, the amount of carbon dioxide already released into the atmosphere means our climate will change over the next 30 to 40 years. We therefore need to prepare for and adapt to the expected impacts.

4. International experience on adaptation shows a preference for an approach led by central government. Successful programmes partner with decision makers and their key advisers in government and business to ensure that climate change risk is effectively factored into decision making.

5. I propose to enhance existing efforts to prepare New Zealand for the impacts of climate change by:

- Ensuring better coordination of central government agencies,
- Forming new partnerships with local government, the agriculture sector, insurers, and engineers;
- Engaging with a wider range of other parties (including non-governmental organisations) to raise awareness of climate change impacts and adaptation, and influence decision making; and
- Making information about climate scenarios for New Zealand easily available, to raise awareness and support improved decision-making.

6. I propose that the immediate focus of the climate change impacts and adaptation work programme should be on water and coastal issues, infrastructure and primary production (agriculture).

7. A range of helpful work on climate change adaptation has been produced and publicly disseminated since Cabinet last considered a paper on the issue, in 2002. Updating existing scientific and risk management information will help to re-engage decision makers and the general public. Guidance on expected future impacts is especially useful for local government.

8. I propose that Cabinet direct officials to incorporate climate change risk into relevant work programmes across central government and that officials report back to Cabinet in due course on progress.

9. I also propose to report back to Cabinet on progress with establishing partnerships with local government, professional bodies, and the insurance industry.

[withheld under s.9(2)(f)(iv)].

Background

10. The majority of climate scientists in the world agree that our climate is changing due to human activity. It is now a matter of how quickly it changes.

11. A recent report from the United Nations Intergovernmental Panel on Climate Change [The IPCC's 4th Assessment Report is due to be released in April 2007. The current draft of this report is consistent with previous findings of the IPCC. I hold high confidence in the IPCC's findings particularly given the robust process which precedes findings being made available to the public. Review of the IPCC's 4th Assessment Report is a two step process; the first stage is a global scientific/technical review (the draft from which the above conclusions were taken was the result of this first round); the second stage is a combined government and scientific/technical review, which has just concluded.] (IPCC) 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). We must act if we are to maintain our competitive advantage and protect our agricultural base and our communities.

12. 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.

13. 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.

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

- New Zealanders accept the need to adapt to climate change impacts that will occur as a result of carbon dioxide already released into the atmosphere;
- We have more detail on the expected impacts for New Zealand as scientific information evolves;
- Individuals and organisations understand the implications of increased climate variability that are relevant to them and incorporate these risks into their decisions; and
- Individuals and organisations have increased capacity to manage the risks associated with future climate variability.

15. Work on adaptation will build on and refine the existing programme of work. Action will need to be ongoing to build capacity to adapt to climate change.

What has been done?

16. Cabinet last considered a work programme on adapting to climate change in April 2002 [CAB Min (02) 13/12 refers]. Its focus was on economic impacts, the provision of guidance and assistance to local government on adaptation, and increasing understanding and awareness of the business opportunities and risks arising from climate change. This work continues and my proposals in this paper are designed to complement and enhance it.

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

- Guidance brochures (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 droughts, 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 some consideration to expected climate change impacts (see [Appendix 1](#)).

18. An effective adaptation work programme should build on the actions to date, but will also need to:

- Assist with filling any gaps in knowledge on climate change impacts;

- Disseminate information in a form that is useful to its audience; and
- Engage with decision makers to raise awareness, encourage action and enhance the capacity to adapt.

19. Officials' preliminary consultation with government and external stakeholders, listed in [Appendix 2](#), has led to the following conclusions:

- The basic research and science behind climate change predictions are in good shape (this will require ongoing investment to ensure that the information is kept up to date);
- Better information needs to be provided about climate scenarios for New Zealand, in an easily accessible format, to raise awareness and support improved decision-making;
- Major effort is required to translate this information into technical performance requirements, design standards, planning information and financial/asset management tools;
- Information needs to be promoted to professional advisers (e.g. engineers, architects, planners, insurers, and accountants), and decision makers such as councillors and boards of directors, through training, professional development and best practice codes/guidance;
- Better information needs to be provided about the likely spread of plant and animal pests and the arrival of new pests (including in freshwaters);
- There is a need for better co-ordination and information sharing among central government agencies.

20. Stakeholder engagement over coming months, including the development of the partnerships proposed in this paper, will further clarify what additional information and tools are needed, by whom and for what purposes.

Research and international experiences

21. 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).

22. The IPCC also indicates that climate change is likely to have some beneficial effects for particular sub-regions and sectors, e.g. the growth rates of *Pinus radiata*

are likely to increase in the South and West, and hydro lakes are, on average, likely to have more water over winter.

23. I propose that the principal focus of the work programme on preparing and adapting to climate change should be to work with stakeholders in the four areas identified above.

24. Climate change research underpins an adaptation strategy. We will need to give priority to the following specific areas to better inform our adaptation response over time:

- Water: Drought frequency and intensity, implications for water security (already part of the Sustainable Water Programme of Action), forage crops, and impacts arising from storm events;
- Coastal communities: Adaptation options to improve coastal planning and hazard management (some of this is part of the review of the New Zealand Coastal Policy Statement);
- Infrastructure: Risks to buildings, transport, water, sewerage and communication systems from more extreme weather, such as storms and droughts;
- Natural ecosystems: Species survival thresholds, and ways human intervention can assist (possibly part of the biodiversity strategy, sustainable land management);
- Climate beyond 2100: Current mid-range climate projections indicate risks of abrupt climate change, faster sea-level rise and changes in ocean circulation, although little is known of the impacts and vulnerability for New Zealand;
- Costs and benefits for the range of adaptation options to reduce vulnerability: To consider implications of various options for social equity and fairness, different discount rates, incentives, delayed effects and inter-generational equity;
- Global interactions (trade and immigration): The impact of climate change on New Zealand's competitiveness and export mix (based on what is happening in competitor countries and how they are seeking to adapt), and implications for immigration; and
- Natural and farmed ecosystems: Monitoring and modelling the likely spread of plant and animal pests, including the arrival of new pests (including in freshwaters).

25. A recent OECD report [**OECD (2006) "Progress on adaptation to climate change in developed countries: an analysis of broad trends."**] suggests that of the 30 OECD members, New Zealand is in the top five for its implementation effort on adaptation (United Kingdom, United States, Australia, New Zealand and the Netherlands). I believe that we should look to these other leading countries, and others, and learn from strategies and tools they have developed.

26. The United Kingdom experience is particularly relevant to New Zealand, given the maturity and funding of their programme. Its key objective is to provide stakeholders with a range of tools and data to help them assess climate change risk and develop adaptation strategies. A vital component of the programme is partnership with willing and influential stakeholders to provide the necessary information.

27. I propose that New Zealand adopt the same partnership approach; better co-ordinate the activities of government departments, agencies and utilities; and facilitate greater efforts 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.

Engagement partners

28. I propose that officials:

- a. as an immediate priority, identify partners who have a strategic role in decision making, influence decision making about natural and physical resources and are willing participants; and
- b. as a second priority, continue to consult with other key agencies and organisations to raise general awareness and identify future strategic partners, especially in the private sector.

29. Immediate priority partnerships will be developed and implemented collaboratively from early 2007 onwards. Consultation with other key agencies and organisations will continue from October 2006, with further partnerships to be developed from late 2007 onwards.

30. Based on the areas where the IPCC identified that New Zealand is vulnerable, I propose that the Government should seek to work with the following partners as immediate priorities:

- Local government, (including via Local Government New Zealand, and perhaps the Communities for Climate Protection - New Zealand programmes) and Regional Civil Defence and Emergency Management groups – to be led by MfE;
- Professional bodies (Institute of Professional Engineers NZ) – to be led by MfE;
- Insurance industry (e.g. Insurance Council of New Zealand , IAG New Zealand [**IAG New Zealand is a subsidiary of Insurance Australia Group (IAG), Australasia's largest general insurer. In New Zealand, the company trades under the State and NZI insurance brands and underwrites general insurance business for leading financial institutions.**]) – to be led by MfE; and
- Agriculture sector – to be led by MAF.

31. Central government coordination is required for this. I have outlined in [Appendix 1](#) the adaptation-related work programmes led by central government. In addition to these work programmes there are many existing forums created by departments for information exchange. We must strive to co-ordinate and co-brand these efforts as part of the climate change work. Specifically, I want to be assured that climate change impacts and adaptation information is incorporated into those programmes. Central government also needs to lead by example and include climate change adaptation in all its planning (for schools, hospitals, protection of conservation areas and the like). I propose to report back on progress.

32. Local government has already begun to address climate change, with initiatives resulting in part from amendments to the Local Government Act in 2004 and the Resource Management Act in 2004 and 2005, and through the Communities for Climate Protection – New Zealand programme. Local government is a natural partner because of its hazard and resource management operational and regulatory functions. We can assist local government by looking into ways to develop existing (and possibly new) technical performance requirements, design standards, best practice codes/guidance, planning information and financial/asset management tools. Central government can also assist with training and professional development for officials and councillors.

33. I also propose partnership with the Institute of Professional Engineers New Zealand (IPENZ) as a strategic initiative because of the role engineers play in decision-making at the local level. Their role complements the resource management decision-making function of local government. We can support IPENZ in a similar manner to local government, especially in the area of engineering performance requirements and engineering design standards (eg bridge design and flood event probability). A series of workshops on incorporating climate change impacts into engineering design has recently occurred with IPENZ members throughout the country, and ways to address these technical issues are being considered.

34. Insurers worldwide have been affected by adverse climatic events and the Insurance Council of New Zealand has recently called upon New Zealanders to respond to significant changes in weather patterns. Failure to respond could mean some properties become uninsurable in the longer term. I propose a partnership with the New Zealand Insurance Council, within which the insurer IAG New Zealand will take a leading role. Government can help by looking into current technical information (described above for local government and IPENZ), collaborating with the industry in developing best practice codes, and helping develop insurance packages.

[withheld under OIA s.9(2)(b)(ii)]

35. Finally, Cabinet is considering climate change policies with respect to the agriculture sector.

[withheld under s.9(2)(f)(iv)].

Numerous projects in the Sustainable Farming Fund already address issues related to adaptation i.e. water enhancement, dry land management, and new plant species.

Broader engagement

36. Another important part of the adaptation work programme will be continuing work with organisations, including non-governmental organisations, involved in other decision making on climate change impacts. My officials have identified these organisations and listed them in [Appendix 2](#), and I intend that my officials continue to engage with these organisations while establishing the priority partnerships identified above.

37. As well as raising awareness, engagement with organisations in these fields will help inform stakeholders about how climate change impacts will affect them, identify what work is already happening, and assess what assistance is required by the Government through its adaptation work programme.

38. Officials will use forums such as the Ministry for the Environment's Talk Environment Roadshow to target the general public and local government officials. The Roadshow (which travels through 17 centres nationwide and last year had over 2,500 people attend) will specifically include a focus on climate change impacts and adaptation. My officials will also organise targeted workshops on adaptation over the coming months.

Reporting back

39. I propose to report back to Cabinet in December 2006 on funding requirements for the impacts and adaptation work programme and on progress with establishing the priority partnerships and broader engagement.

40. Between now and the end of the year, officials will advance priority partnerships and continue to engage with those stakeholders identified in [Appendix 2](#). This work will assess the needs of various parties who play a key role with natural and physical resources on the complex array of related work programmes both within and outside central government.

Consultation

41. The following departments have been consulted on this paper: Ministry for Economic Development, Ministry of Agriculture and Forestry, Ministry of Civil Defence and Emergency Management, Ministry of Foreign Affairs and Trade, Department of Conservation, Ministry of Transport, Treasury, Ministry of Research, Science and Technology, Department of the Prime Minister and Cabinet and Department of Internal Affairs.

Financial implications

42. This paper has no financial implications. Any funding sought is likely to be considered as a call against the climate change contingency that was set aside in Budget 2006. It is anticipated that such a call on the climate change contingency would be made in December 2006.

Publicity

43. Officials are developing information material and will use forums such as the Ministry for the Environment's Talk Environment Roadshow in November 2006 to target the general public and local government officials.

44. The IPCC's 4th Assessment Report is due to be released in April 2007, and this will enable further opportunities to publicise the impacts of climate change.

45. I also propose that this paper be publicly released and that it be placed on the Ministry for the Environment's website.

Recommendations

46. It is recommended that the Cabinet Policy Committee:

a) **Note** that climate change is expected to result in more extreme weather events (both in terms of intensity and frequency) and broad changes to temperature and rainfall in New Zealand;

- b) **Note** that these changes are expected to have far-reaching consequences, and that without adapting to them, the impacts of climate change for New Zealand are likely to be significant;
- c) **Note** that work has already begun to assess the expected climate change impacts for New Zealand and to raise awareness of the need for adaptation;
- d) **Note** that some costs and risks of impacts arising from climate change can be minimised or even avoided with proper planning at an early stage;
- e) **Agree** that more effort will be required across the public and private sectors to prepare New Zealand for and adapt to the impacts of climate change;
- f) **Agree** that an effective adaptation work programme will need to:
- i. assist with filling any gaps in knowledge during the ongoing refinement of climate change science and climate change impacts, and
 - ii. disseminate existing and new information appropriate for end-users; and
 - iii. engage with decision makers to increase awareness and their capacity to adapt.
- g) **Agree** that the immediate focus of the climate change impacts and adaptation work programme should be on the following areas:
- i. Water and coastal (e.g. emergency and hazard management, such as Civil Defence and Emergency Management Group plans and Regional Council Plans, flood and storm surge preparedness, and coastal management);
 - ii. Infrastructure investment and maintenance (e.g. asset management, design and resilience);
 - iii. Primary industry (e.g. sustainable agriculture, drought, floods and snow preparedness, land use change) and
- h) **Note** that various key public and private sector agencies have both operational and regulatory functions with regard to water and the coast, infrastructure and primary industry, including local government, professional bodies of engineers, and the insurance sector, and they are willing partners;
- i) **Agree** that officials initiate impacts and adaptation partnerships with the following priority stakeholders:
- i. Local Government (including Local Government New Zealand) by looking into ways to develop existing (and possibly new) technical performance requirements, design standards, best practice codes/guidance, planning information and financial/asset management tools and by training and professional development for both officials and councillors;
 - ii. The Institute of Professional Engineers (IPENZ) by looking into ways to develop existing (and possibly new) engineering performance requirements and engineering design standards (e.g. bridge design and flood event probability);
 - iii. The insurance industry through Insurance Council of New Zealand and IAG New Zealand by looking into current technical information (described (i) and (ii) above), providing industry best practice codes, and helping develop insurance packages

[withheld under OIA s.9(2)(b)(ii)] ; and

iv. The agricultural sector.

[withheld under OIA s.9(2)(f)(iv)];

j) **Note** that the agricultural sector is also considered to be a priority stakeholder

[withheld under OIA s.9(2)(f)(iv)]

k) **Note** that Ministry for the Environment officials will engage with other stakeholders over coming months to raise awareness of climate change impacts and adaptation and to identify future information needs and partners;

l) **Note** that the themes 'adapting to climate change' and 'flood hazards' are part of the Ministry for the Environment's Talk Environment Roadshow which will take place in November 2006 in 16 regional centres nationwide;

m) **Direct** officials to include climate change risk management in existing work programmes (referred to in [Appendix 1](#)) and identify opportunities to co-brand their work as part of climate change work programmes;

n) **Direct** Ministry for the Environment officials to report back to Cabinet by December 2006 on:

i. Progress with coordinating adaptation-related programmes and policies across central government;

ii. Progress with central government agencies incorporating climate change risk management into relevant work programmes;

iii. Progress with establishing partnerships with priority stakeholders as listed in [Appendix 2](#);

iv. Progress with broader engagement with stakeholders as listed in [Appendix 2](#);

v. Further detail on the climate change impacts and adaptation work programme, informed by stakeholder engagement; and

vi. Any additional financial resource required to implement the work programme.

Hon David Parker

Minister Responsible for Climate Change Issues

Appendix 1 – Government work programmes related to climate change adaptation:

- [withheld under s.9(2)(f)(iv)];
- Sustainable Water Programme of Action (jointly led by Ministry for the Environment and Ministry of Agriculture and Forestry);
- Adverse Events Policy for Agriculture (led by the Ministry of Agriculture and Forestry);
- Water Enhancement policy (led by Ministry of Agriculture and Forestry);
- Flood Risk Management Review (led by Ministry for the Environment);

- Biodiversity guidance (led by Ministry for the Environment and the Department of Conservation);
- Review of the National Civil Defence Emergency Management Strategy, Plan and Guide (led by Department of Internal Affairs);
- Review of the New Zealand Coastal Policy Statement (led by the Department of Conservation);
- Sustainable Land Management Framework (led by Ministry of Agriculture and Forestry).

Appendix 2 – Stakeholder Engagement Matrix

Partnership candidate = *

Consultation candidate = #

Immediate engagement					
Stakeholder	Water & Coastal	Biodiversity/ Bio-security	Infrastructure	Primary Production & Land use	Engagement
Central Government					
Ministry for the Environment*	x	x	x	x	Partnership candidate – to ‘mainstream’ adaptation into policy advice. Preliminary consultation completed
Ministry of Agriculture and Forestry*	x	x		x	
Department of the Prime Minister and Cabinet*	x	x	x	x	
Department of Conservation*	x	x	x	x	
Ministry of Civil Defence and Emergency Management*	x		x		

Ministry of Transport*			x		
Ministry of Foreign Affairs and Trade*					
Ministry of Economic Development*	x		x		
Department of Internal Affairs*	x		x	x	
Transit NZ#			x		Preliminary consultation completed
Maritime NZ#	x	x	x		
External Stakeholders					
Local Government New Zealand (Partnership candidate representing Local Government)#	x		x		
NIWA and other Crown Research Institutes#	x	x	x	x	
Agricultural Consultants (working on adaptation)#	x	x		x	
New Zealand Business Council			x	x	

for Sustainable Development#					
Insurance Australia Group (IAG)*	x		x	x	Partnership candidate Workshop scheduled Sept 06
Local Government (with Local Government New Zealand)*	x	x	x	x	Partnership candidate Workshops held May 06 MfE Roadshow scheduled November 06
Professional Bodies					
Institute of Professional Engineers New Zealand (IPENZ)*	x		x		Partnership candidate Workshops: July/August 06
New Zealand Insurance Council*	x		x	x	Partnership candidate
New Zealand Water and Waste Association#			x		
Royal Society of New Zealand for all science bodies, specifically Climate Committee#	x	x	x	x	

New Zealand Bankers Association#	x		x	x	
Subsequent engagement					
Stakeholder	Water & Coastal	Biodiversity/ Bio-security	Infrastructure	Primary Production & Land use	Engagement
Non-governmental organisations	x	x		x	
NZ Planning Institute	x		x	x	
Association of Consulting Engineers	x		x		
Building Industry Authority			x		
INGENIUM – Local Government Engineers for Public Assets	x		x		
NZ Society for Sustainability Engineering and Science (part of IPENZ)	x		x		
Royal Society of New Zealand	x	x		x	Workshop: 26 August
New Zealand Institute of Architects	x	x	x		

Society of Local Government Managers	x	x	x	x	
Chambers of Commerce			x	x	
New Zealand Institute of Surveyors	x		x		
Federated Farmers of New Zealand	x	x		x	[withheld under OIA s.9(2)(f)(iv)]
New Zealand Institute of Agriculture & Horticultural Science		x		x	
New Zealand Forest Owners Association				x	
New Zealand Bio-security Institute	x	x			
Foundation for Arable Research				x	
Dairy Insight					
Meat and Wool New Zealand					
Grasslands Society					
New Zealand Institute of Agricultural Science					
New Zealand Agricultural Economics &				x	

Resource Management Association					
New Zealand Water Environment Research Foundation	x	x			
Centre for Advanced Engineering			x		
Environment Institute of Australia and New Zealand	x	x			
New Zealand Association for Impact Assessment	x	x	x	x	
New Zealand Association of Resource Management	x			x	
New Zealand Coastal Society	x				
New Zealand Ecological Society		x			
Institute of Refrigeration, Heating & Air Conditioning Engineers (IRHACE)			x		
New Zealand Hydrological Society	x	x			
New Zealand Landcare Trust	x	x		x	

Institute of Directors	x	x	x	x	
Institute of Chartered Accountants	x		x		
NZ Utilities Advisory Group (NZUAG)	x		x		
New Zealand Law Society	x		x	x	
Resource Management Law Association	x	x	x	x	