



New Zealand's climate change solutions:

Sustainable land management and climate change

Plan of action

A partnership approach

September 2007





Ministerial foreword

Much of the New Zealand economy is based on agriculture and forestry. Nearly half New Zealand's land area is used for primary production; with 39 percent of our total land area in pasture, 1.6 percent in horticulture and cropping, and 6.6 percent in planted production forest. These sectors are vulnerable to changes in the world's climate – environmentally and economically.

Forty nine percent of New Zealand's total greenhouse emissions come from agriculture, the result of methane from ruminant livestock and nitrous oxide from animal excrement and fertiliser. At the same time, our forest cover represents our largest potential carbon sink – a role that has been under threat, with new plantings at a historical low and a significant area of our harvested forests being converted to other uses.

People in the land-based sectors, Māori, and central and local government need to work together to manage New Zealand's response to climate change. We need to reduce the greenhouse gas emissions of our land-based sectors, and we need to prepare for the climate change that is now inevitable. We need to do so in a way that ensures that these sectors remain innovative and internationally competitive, and can take advantage of the opportunities that an international focus on climate change provides.

In early 2007 the Government consulted the land-based sectors on its intention to develop and implement climate change policies through a single sustainable land management and climate change Plan of Action, to be created and implemented jointly with the sectors. This partnership approach was strongly endorsed by stakeholders, particularly sector and industry leaders.

Since then, the Government has agreed in principle to introduce a New Zealand Emissions Trading Scheme (ETS) that will cover all greenhouse gases and all sectors of the economy by 2013. Different sectors will join the scheme over five years, allowing for a gradual adjustment to emission pricing.

The Government will engage with the forestry, agriculture, horticulture and arable farming sectors, Māori and local government to develop joint work programmes under the Plan of Action to achieve a combined sector-government response to climate change. This will be accompanied by significant government investment in key areas.

With respect to the ETS and the land management sectors, the Government has agreed in principle that the forestry sector will come under the scheme as of 1 January 2008. This recognises both the readiness of the sector to enter the scheme and the significance of deforestation as a major contributor to the growth in New Zealand's greenhouse gas emissions.

The Government has also agreed in principle that agriculture, arable farming and horticulture will enter the scheme by 1 January 2013, allowing these sectors five years in which to prepare to meet the particular challenges they face compared to other sectors.



To assist this, the Government is investing more than \$175 million in a range of programmes to help the sectors adapt to, mitigate and exploit the business opportunities of climate change.

Climate change is probably the greatest environmental threat facing humanity. No part of New Zealand society will be immune, but our land-based sectors are particularly affected. We look forward to establishing effective and durable partnerships with all those groups with an interest in meeting the climate change challenge.

Jim Anderton
Minister of Agriculture and Forestry

David Parker
Minister Responsible for Climate Change Issues



Contents

Plan of Action Overview	4
<i>Figure 1: Sustainable Land Management and Climate Change</i> <i>Plan of Action</i>	5
Goals for the Plan of Action	6
The Three Pillars	7
Pillar 1: Adapting to climate change	7
Pillar 2: Reducing emissions and creating carbon sinks	8
Consultation on emission trading	8
Other measures under Pillar 2	9
Forestry	10
Agriculture	10
Pillar 3: Capitalising on business opportunities arising from climate change	12
Supporting Work Programmes	13
Research and innovation	13
Technology transfer	14
Communication and engagement	14
Structuring the Partnership: How the Plan of Action will Work	16
Peak Group	16
Working groups	16
Membership of the working groups	16
Engagement on the <i>Plan of Action</i>	17
<i>Figure 2: Summary of Government investment initiatives</i>	18



Plan of Action Overview

In December 2006 the Government released *Sustainable Land Management and Climate Change: Options for a Plan of Action*.¹ This discussion document set out the Government's wish to develop and implement sustainable land management and climate change policies for the agriculture and forestry sectors through a single *Plan of Action*.

The document contained options for adapting to climate change, reducing agricultural greenhouse gases, encouraging the establishment of forest sinks, managing deforestation and capitalising on new business opportunities arising from the world's response to climate change.

It called for a *Plan of Action* that would:

- contain a set of goals to guide action on climate change;
- identify immediate actions that could be taken;
- show how the Government and different sectors could work together to create solutions for the long term.

The discussion document also outlined four key policy pillars where joint government-sector action might occur:

1. Adapting to climate change.
1. Reducing emissions and creating carbon sinks.
1. Capitalising on business opportunities arising from climate change.
1. The Government and land management sectors working together to respond to climate change.

In response to consultation and written submissions, especially from sector leaders, the 'working together' pillar has been incorporated across all aspects of the refined *Plan of Action*.

The other three pillars identified in the Sustainable Land Management and Climate Change discussion document remain in the refined *Plan of Action*.

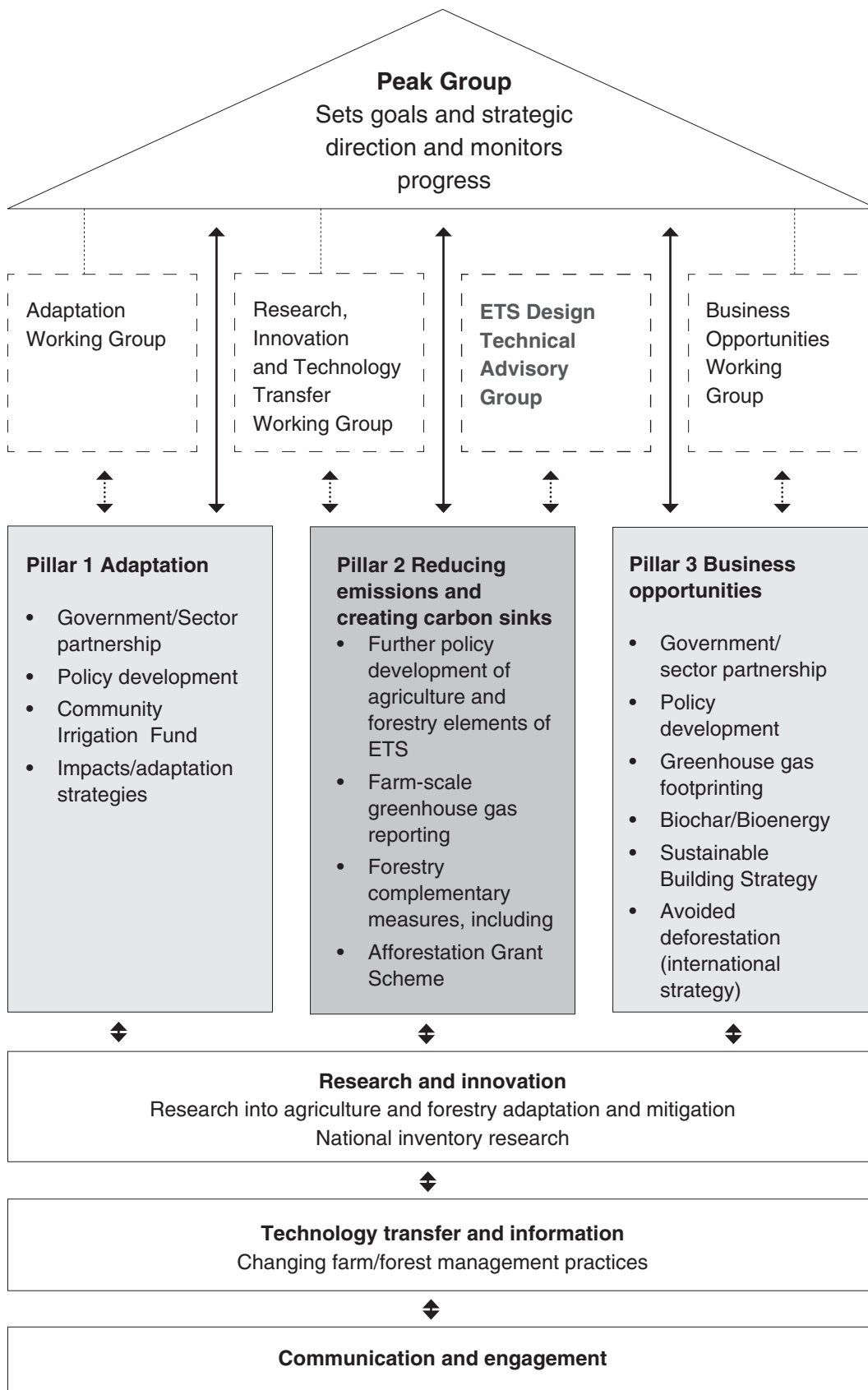
Additional elements have been added:

- a Peak Group made up of sector, local government and Māori representatives to provide leadership and strategic direction on the development and implementation of the *Plan of Action*;
- working groups made up of technical experts and specialists drawn from the *Plan of Action* partners to provide practical advice on managing and coordinating work under the main pillars and supporting work programmes;
- three supporting work programmes covering research and innovation, technology transfer, and communications and information.

¹ The Sustainable Land Management and Climate Change document was one of five government discussion documents that looked at the wider sustainable management issues around energy and climate change facing New Zealand over the next five years and beyond. See www.climatechange.govt.nz.



Figure I: Sustainable Land Management and Climate Change Plan of Action





Goals for the Plan of Action

The shared goals for climate change and sustainable land management in the *Plan of Action* are an important first step to ensuring a durable and constructive partnership between the Government, the land management sectors, local government and Māori.

- Feedback from consultation in early 2007 provided a number of new suggestions for those goals. The revised goals are that:
- the sectors are positioned to take advantage of the economic opportunities arising from climate change and changing consumer preferences;
- the sectors and their communities are less vulnerable and better able to adapt to a changing climate;
- New Zealand is a recognised world leader in the development of practical technologies and management practices for farmers to measure and reduce agriculture emissions;
- the sectors are internationally competitive and land use flexibility is maintained, taking into account the environmental costs of land use decisions;
- forestry is fully integrated into land use decisions to help deliver sustainable land management outcomes;
- forests and forest products are widely used in adapting to and reducing the impacts of climate change.

These goals will form the basis of discussion between the Government and the land management sectors, local government and Māori as the *Plan of Action* is developed. They will be considered and final recommendations made by a Peak Group of partners to the *Plan of Action*.



The Three Pillars

The *Plan of Action's* three pillars provide a platform from which all parties can work together to tackle climate change. The pillars will encompass a series of tasks to be undertaken over the next five years. The pillars are:

Pillar 1 – Adaptation

Pillar 2 – Reducing emissions and enhancing sinks

Pillar 3 – Business opportunities.

Overseeing the work programmes under the three pillars will be:

- a Peak Group comprising Māori, sector and local government leaders to provide a sounding board and direction for the development of the *Plan of Action*;
- working groups of technical experts and practitioners established under each pillar to provide practical advice and coordinate joint implementation of the work programmes developed.

More information on the structure of the *Plan of Action* partnership, and the Peak Group and working groups, is on page 16.

Pillar 1: Adapting to climate change

Climate change is likely to have a mixed impact on New Zealand land management.

Over the next 100 years, New Zealand is expected to experience warmer temperatures and changes in the amount and distribution of rainfall. This will result in improved growing conditions and longer seasons in some regions. It is also likely to lead to an increase in the frequency and severity of both extreme storm events (in some areas) and drought in others (especially in the east). Increased biosecurity risks from pests and diseases will also need to be managed. Agricultural productivity is expected to be affected, for better and worse, by these projected changes.

The Government will work with the agriculture and forestry sectors, local government and Māori to identify activities to be included in a proposed new five-year *Adaptation Programme* for the sectors. This programme will help the sectors build up the necessary skills and infrastructure needed to respond to the risks posed by the changing climate, as well as take advantage of the new opportunities.

The Government has agreed to fund this work to a total of more than \$7 million over the five years 2008–12 and a further \$910,000 per year thereafter. More details about this funding are available in the *Adapting to a Changing Climate* investment summary sheet that accompanies this booklet. This will be supported by further investment in research and innovation and technology transfer.



Over the nine months to June 2008, an Adaptation Working Group comprising representatives from the sectors, local government, and Māori will be invited to identify the key activities that should be included in the five-year programme. The group will be serviced by a secretariat supported by MAF.

Initiatives that the Adaptation Programme may focus on include:

- developing detailed regional information across New Zealand on climate change impacts on current agriculture and forestry management regimes;
- identifying the most vulnerable areas in New Zealand;
- identifying sector activities that are complementary to adaptation action;
- developing a set of baseline indicators to monitor adaptation actions;
- incorporating forestry into vulnerable landscapes;
- putting in place a Community Irrigation Fund to help rural communities adapt to increasing drought risk.

The Adaptation Programme will be linked to work already being carried out by the sectors, to local authority regional, district and community plans, and to broader central government sustainability initiatives such as MAF's Flood Risk Management Review and Adverse Events Policy, and the National Civil Defence and Emergency Management Strategy.

Pillar 2: Reducing emissions and creating carbon sinks

Emissions trading is a core component of the Government's policies for tackling climate change and creating a sustainable economy.

It is key to reducing greenhouse gas emissions and encouraging New Zealanders at all levels of society and business to take responsibility (or pay) for actions that impact on our environmental and economic performance.

Consultation on emissions trading

An emissions trading scheme was included in the Government's wider consultation on energy and climate change initiatives in early 2007, and emerged as the preferred option of business and public audiences.

Those making submissions on options to reduce agricultural emissions also indicated that:

- market-based approaches were preferable to government regulation;
- maintaining land use flexibility was an economic necessity;
- equity between sectors and with overseas competitors was highly desirable;



- long-term solutions were preferable to quick policy fixes;
- systems that entailed complexity, bureaucracy, cost and lack of design detail were problematic;
- more incentives and fewer penalties were a good idea.

Those responding on deforestation options argued for:

- a preference for tradable permit systems over charges on land use change;
- a fully free-market trading regime would put the incentives and economic drivers in the right place;
- that unlike the other options, the tradable permit regime did not impose restrictions on the rights of the property owner;
- it could be structured to allow some flexibility to the land manager in how to meet the imposed liability;
- it is significantly more flexible than the other deforestation options;
- it appears to present more advantages than disadvantages.

Following consultation, the Government decided that an emissions trading scheme (ETS) offered New Zealanders the most flexible, effective, fairest and least-cost option for reducing greenhouse gas emissions.

Other measures under Pillar 2

The ETS is not a standalone response to reducing New Zealand's greenhouse gas emissions. The Government has developed a broader package to enable people and organisations in the land management sectors to prepare for the reality of entry into the ETS, and generally to adopt more climate-aware behaviours. The package includes:

- significantly enhanced research and innovation for agricultural and forestry greenhouse gas mitigation;
- development of a programme to monitor and share information on farm greenhouse gas emissions and mitigation technologies;
- development of a greenhouse gas 'footprint' methodology to help land managers identify and reduce greenhouse gas emissions, and promote New Zealand 'climate friendly' products on overseas markets;
- research and innovation to enhance the development of, and access to, new types of carbon sink (for example, through the development of the carbon-sequestering agent 'biochar');
- encouragement for the creation of more forest carbon sinks using initiatives available under the ETS and outside it (the new Afforestation Grant Scheme for smaller forest owners is an example of the latter);
- establishment of an enhanced Technology Transfer Programme to ensure that knowledge and information on emissions reduction is available to land managers;



- encouragement for the replacement of non-renewable energy fuels with other forms of renewable bioenergy such as wood chips and wood residues;
- promotion of sustainable wood-based building materials.

These and related initiatives under the *Plan of Action* are described in the summary sheets accompanying this booklet.

Forestry

A document titled *Forestry in a New Zealand Emissions Trading Scheme* is available as part of the Government's information on the ETS.² This also contains information on the new Afforestation Grant Scheme, highlighted in the Sustainable Land Management and Climate Change consultation earlier this year, and on two existing forestry measures that complement the ETS – the Permanent Forest Sink Initiative and the East Coast Forestry Project.

Three initiatives included in the Plan of Action are designed to increase the size of New Zealand's forests, both planted and indigenous:

1. The Afforestation Grant Scheme, a new initiative that allows landowners who do not wish (for cost or other reasons) to participate in the ETS to benefit from the climate change mitigation benefits of planting new forests. This initiative also allows for the delivery of additional environmental benefits such as erosion reduction, water quality improvements and increased biodiversity. More information is contained in the Government Investment Initiatives summary sheet *Afforestation Grant Scheme* and the *Forestry in the New Zealand ETS* engagement document.
1. The Permanent Forest Sink Initiative (PFSI) is an existing scheme that targets owners of land that will be kept under continuous forest cover, rather than clear felled at the end of each rotation. Under the PFSI, landowners can receive Kyoto Protocol-compliant carbon credits for carbon dioxide absorbed from the atmosphere by eligible forests.
1. The East Coast Forestry Project (ECFP) is an existing project that encourages tree planting on erosion-prone land in the East Coast region of the North Island through the provision of a cash grant for soil conservation purposes.

Agriculture

The Government has decided in principle to bring all agricultural emissions into the New Zealand Emissions Trading Scheme (ETS) on 1 January 2013, and not to introduce any other price-based measures in the interim. This decision reflects undertakings given by the Government as part of its

² The Forestry engagement document is available on the government websites www.climatechange.govt.nz and www.maf.govt.nz/climatechange. Printed copies can be ordered from climatechange@maf.govt.nz or by calling 0800 CLIMATE (254 628).



2003 Memorandum of Understanding³ with key agriculture representatives and acknowledges the operational challenges of bringing agriculture into the ETS.

Including agriculture in the ETS from 2012 means that farmers will need to start taking the cost of carbon emissions into account in their business and production decisions.

The sector will still be exposed to some of the cost of greenhouse gas emissions before 2013 through increased supply chain costs caused by the entry of the transport and energy sectors into the scheme.

The five-year period before agriculture enters into the ETS also provides farmers and growers with an important window of opportunity to:

- contribute to the Government's work in developing appropriate design details for the agricultural elements of the ETS to ensure it works effectively and fairly;
- prepare for the reality of participation in the ETS post-2012, by having the knowledge and practices to handle:
 - mandatory monitoring and reporting of agricultural greenhouse gas emissions as early as 2011;
 - voluntary activities, which will be encouraged and available to the sectors, including:
 - pilot trials of farm-level monitoring and reporting;
 - increased contribution from the sectors to research into agricultural greenhouse gas mitigation and adaptation;
 - increased sector contribution to technology transfer, in particular commitments to roll out mitigation technology, and energy efficiency on farms.

These preparatory activities will be negotiated with the sectors through partnership agreements to be developed under the *Plan of Action*.

A special secretariat, supported by a Technical Advisory Group drawn from technical and scientific experts in agricultural science and research, will be set up by the Ministry of Agriculture and Forestry (MAF) to work out the practicalities of how agriculture could be included in the ETS.

This Technical Advisory Group will have different structure and governance arrangements to the working groups being developed under the *Plan of Action* partnerships under Pillars 1 and 3 (Adaptation and Business Opportunities), and the supporting work programme on Research and Technology Transfer discussed on pages 13 and 14 of this document.

As information from this working group emerges, it will be made available to stakeholders through workshops and seminars. Stakeholders and Māori will then have the opportunity to comment on the design and implementation of these elements.

³ The Memorandum of Understanding reads: "The Crown will not implement a legislated levy on the agricultural sector for the purposes of provision of research into agriculture non-carbon dioxide abatement as long as this Memorandum of Understanding is in effect."



Pillar 3: Capitalising on business opportunities arising from climate change

Moving from a high-emission to a low-emission economy is as much about positioning New Zealand for longer-term economic growth as it is about meeting our international climate change obligations. New Zealand's agricultural and forestry industries will need to adapt to changing markets and capitalise on the resulting business opportunities if they are to secure their long-term viability.

Under the *Plan of Action*, the Government proposes to develop a five-year Government-primary sector partnership programme on maximising business opportunities. This programme will identify how New Zealand's land-based primary sector firms and industries can position themselves for longer-term economic growth and competitive advantage. A working group will be set up, with representatives from the primary sector and Māori, to identify the activities to be included under the programme over the six months to March 2008. Some of the activities that are likely to start immediately include:

- strategic analysis to inform the primary sectors and the Government on the strengths, weaknesses, opportunities and threats from climate change from a business opportunities perspective;
- the development of an extensive carbon footprint response for the primary sectors;
- research projects, and information dissemination and capacity-building programmes on carbon grey markets, the creation of markets for emission-reducing technologies, a clean development mechanism and joint implementation opportunities, and opportunities in emerging markets;
- the development of a Sustainable Building Strategy to promote greater use of wood;
- research, development and commercialisation of biochar/biofuel, and opportunities for energy efficiency;
- research on and implementation of an international strategy for avoiding deforestation, and related issues.



Supporting Work Programmes

The Government wants to establish three work programmes to support the activities of the *Plan of Action*. These will cover:

- research and innovation;
- technology transfer;
- communication and engagement.

1. Research and innovation

Research and innovation, especially involving reduction of methane on farms, is fundamental to addressing the challenge of greenhouse gas emissions in the land management sectors. This was recognised in the almost universal support for research in submissions in response to the discussion document *Sustainable Land Management and Climate Change: Options for a Plan of Action*.

The Government has committed itself to spending more than \$175 million over the next five years to invest in research into sustainable land management and climate change, as a matter of urgency. This will focus on the development of new technologies and practices for the measurement and mitigation of greenhouse gas emissions.

Under the *Plan of Action*, a strategic research framework will be developed for Sustainable Land Management and Climate Change.

The broad themes have been identified as priorities following consultation, and discussion with research providers:

- impacts of climate change and adaptation;
- mitigation of agricultural and forestry greenhouse gas emissions;
- National Greenhouse Gas Inventory: Measurement and Validation;
- cross-cutting issues, including economic analysis, life-cycle analysis, farm catchment systems analysis and social impact.

In collaboration with other countries, New Zealand is also seeking to initiate an international research network focused on greenhouse gas emissions from animal agriculture. The Government is investing in a research fund to bolster New Zealand's international leadership position in agriculture and forestry climate change research and help develop the country's role as a world leader in this field.

A working group will be set up with representatives from the land management sectors, local government and Māori, to refine the Strategic Research Framework and identify priorities for funding. Over the next six months, the working group will coordinate a process with other government agencies, research providers, the agriculture and forestry sectors, Māori, and local government to identify these priorities.



To maintain momentum, immediate research will start on priority areas while the longer-term framework is being developed. The immediate work will include:

- a tree-breeding programme for bioenergy;
- developing and commercialising cost-effective collection systems for bioenergy (wood residue);
- mitigation potential of nitrous oxide technologies, including nitrification inhibitors, stand-off pads and other emission reduction technologies.

2. Technology transfer

The Government has committed to a package of \$22 million to invest in technology over the next five years to encourage and accelerate the uptake of new technologies and practices for the measurement and mitigation of greenhouse gas emissions.

Under the *Plan of Action*, a technology transfer implementation programme will be developed to help encourage the land management sector to roll out and adopt new greenhouse gas emissions mitigation technologies and land management practices. It is proposed that the research and innovation working group also have responsibility for technology transfer.

The technology transfer implementation programme could include:

- coordination of activities within both government programmes and industry;
- communication of information in an understandable, user-friendly manner;
- demonstration of new greenhouse gas emission mitigation technologies and practices through demonstration farms, project activity (including demonstration sites and trials), farm monitoring and field days, and farmer/forester or grower-led technology transfer and extension activities;
- education, capacity-building, including industry training, of organisations that are trusted sources of information for farmers;
- responses that acknowledge the varying needs of regions, sectors and Māori regarding both mitigation and adaptation to climate change.

3. Communication and engagement

Feedback from consultation has shown that, if it is to be effective, the *Plan of Action* needs broad support and understanding from all its partners – the sectors, local government and Māori.

A communications and engagement programme that uses this collaborative approach is being developed and will be discussed with the sectors as part of discussions and negotiations under the *Plan of Action*.



The programme will:

- deal with issues and concerns about climate change and government policies, as raised during consultation;
- support and coordinate the delivery of seminars and workshops for farmers, growers and foresters and their advisers on sustainable land management and climate change;
- ensure that all partners under the *Plan of Action* are fully informed on developments in each Pillar and its supporting work programme;
- coordinate and share information with sector organisations on climate change, sustainability, the ETS and *Plan of Action* initiatives as they develop;
- research and investigate the value of a public education programme to enhance the knowledge and understanding of farmers, growers and foresters and their communities on climate change issues.



Structuring the Partnership: How the *Plan of Action* will Work

Peak Group

A 'Peak Group' will provide the highest level of partnership to support the *Plan of Action*.

The Peak Group will be a small but important group comprising representatives from the forestry and agriculture sectors, Māori and local government. The members of this group will help to provide a sounding board and strategic direction on the development and implementation of the *Plan of Action*.

In recognition of the partnership between the Crown and Māori, and the particular issues of land ownership that pertain to Māori, there will be Māori involvement in the *Plan of Action* through both the Peak Group and the various working groups.

It is envisaged that the Peak Group will exist for at least 10 years. It will be chaired by the Director-General of MAF, and report to the Minister of Agriculture and Forestry and the Minister Responsible for Climate Change Issues on a twice-yearly basis.

Working groups

The Peak Group will be assisted in its work by a number of working groups for the various pillars and supporting work programmes of the Plan of Action. These groups will provide practical and technical advice, and coordinate joint implementation of work. It is envisaged that there will be four working groups, covering:

- adaptation;
- research, innovation and technology transfer;
- ETS design;
- business opportunities.

Membership of the working groups

Technical experts from the forestry and agriculture sectors, Māori, local government and the research and science community will be identified to participate in the working groups as appropriate. Members will be chosen for their expertise rather than their representation of a particular sector or group of constituents. They may also be specialists seconded or contracted to do specific work for the group. The makeup and terms of reference of the groups will be approved by the Peak Group.

The technical working groups will include appropriate experts, specialists and government agency representatives. They will, however, have a more sectoral representation element to ensure input from the sectors under the 'partnership approach'.



The Government will fund the organisation and administration of these working groups through a secretariat.

Engagement on the *Plan of Action*

The Government wants to establish a durable and constructive way of working with the sectors, local government and Māori. Good relationships will help all concerned to identify key issues, create better solutions, make the most of opportunities and ensure informed decision-making. The consultation undertaken in 2007 to develop the *Plan of Action* is part of a long process of engagement.

This process has already been underway for a number of years. It has involved broad formal consultation (in 2002 and 2007), as well as sector-specific consultation and one-on-one engagements.

Building on this, engagement meetings and hui are scheduled to start from late September 2007.

For details, visit www.maf.govt.nz/climatechange or call 0800 CLIMATE 254 628.



Figure 2: Summary of Government investment initiatives

Vote Agriculture and Forestry	All figures are \$m				
Initiative	2007/08	2008/09	2009/10	2010/11	2011/12
Pillar 1: Adaptation					
Partnership and policy development	0.335	0.660	0.790	0.910	0.910
Community Irrigation Fund	0.112	0.360	0.600	0.980	1.360
Pillar 2: Reducing emissions and creating carbon sinks					
Emissions trading policy development	1.200	1.827	1.415	1.415	1.415
Farm-level greenhouse gas reporting	0.860	1.510	1.210	1.210	1.215
Afforestation Grant Scheme	1.068	6.341	11.497	11.497	11.547
GIS infrastructure ⁴	2.468	1.535	1.453	1.496	1.432
Pillar 3: Business opportunities					
Partnership and policy development	2.844	3.615	3.215	2.335	2.055
Bioenergy and biochar research and development	3.775	3.750	2.300	0.500	-
Supporting work programmes					
Research and innovation					
Research	4.300	6.475	8.475	10.475	10.605
Inventory development ⁵	2.720	2.850	2.850	3.150	3.150
Technology transfer					
Partnership development and implementation	2.744	5.060	5.020	4.670	4.469
Communications and engagement					
	0.897	0.698	0.653	0.653	0.653
TOTAL INVESTMENT	21.960	33.881	39.478	39.291	38.811
TOTAL OVER 5 YEARS	\$175.584 million				

⁴ A new Geographic Information System to track the status of land under new and existing climate change forestry initiatives

⁵ Improving the New Zealand greenhouse inventory for reporting under the United Nations Framework on Climate Change. A key focus will be having new technologies for emission reduction recognised by the international community







MAF POLICY

Ministry of Agriculture and Forestry
Te Manatū Ahuwhenua, Ngāherehere
Pastoral House, 25 The Terrace
PO Box 2526, Wellington
New Zealand
www.maf.govt.nz/climatechange