

A satellite photograph of New Zealand, showing the two main islands, the North and South Islands, surrounded by the Pacific Ocean. The land is a mix of green and brown, with white snow-capped mountains visible in the interior of the South Island. The ocean is a deep blue with white-capped waves.

GREENING NEW ZEALAND'S GROWTH

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Report of the Green Growth Advisory Group
DECEMBER 2011

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Opening Statement

The greening of the world is good for New Zealand.

The world is shifting towards greener forms of economic growth. People aspire to economic development and higher living standards – and they aspire also to environmental sustainability in all its forms. Greener growth means a shift to more sustainable, or greener, ways of operating and developing modern economies. A shift to greener products, services, technologies, practices and markets.

New Zealand is part of the shift. Greener growth brings major opportunities for our economy and for enhancement of our environment. It brings major challenges as well but overall, the greening of the world is good for New Zealand.

The Government appointed the Green Growth Advisory Group with Terms of Reference (see Appendix 1) to explore, and report on, three topics fundamental to New Zealand's success in achieving greener and faster growth. The Advisory Group took an independent view on all issues and current economic activities. We were informed and advised by various government agencies, and we issued a public discussion paper in July 2011 ("Green Growth Issues for New Zealand"). We then engaged with New Zealand businesses, local authorities, researchers and other interested parties through interviews, small group meetings and written submissions.

The Advisory Group has been struck by New Zealanders' passion for green growth, and their understanding of various issues. Many businesses and other organisations are already moving to greener technologies and practices, and seeking benefit from green growth market opportunities.

This report makes 26 recommendations to the Government on policy measures and initiatives. The Advisory Group took particular care to ensure these recommendations are actionable, and that they are consistent with economic realities in New Zealand and the Government's current policy direction. They also reflect our strong view that greener growth requires concerted action by the private sector as well as the Government and its agencies.

The Advisory Group's work has been informed by OECD green growth thinking and policy guidelines. We have also been extremely mindful of New Zealand circumstances and, in particular, of the Government's Economic Growth Agenda. Our Terms of Reference have served to highlight three areas of opportunity and challenge that are of special relevance to achieving greener and faster growth here.

The Advisory Group has reflected broadly on options for New Zealand. We favour an approach that would green growth across the economy. Our recommendations are directed towards multiple shifts in various sectors and economy-wide. Fundamentally, we propose four core principles as a basis for all green growth policy making:

1. New Zealand needs a whole-economy approach to greener growth. The best outcomes for our economy and environment will come from many and various shifts within and between sectors towards greener products, services, technologies, practices and markets.
2. Innovation involving knowledge and technology is critical to greening the growth of every sector, and this will often occur through the raising of productivity in current economic activities.
3. Improved environmental performance and net gains in biodiversity protection are integral to New Zealand's green growth.
4. New Zealanders have a positive orientation towards green growth – confirmed in the Advisory Group's engagement programme – but they need greater focus and more consistency of effort if they are to benefit more fully from the world's shift in this direction.

The Advisory Group has considered various types of policy measures and initiatives including price-based measures for access to and use of natural resources. These include trading schemes, natural resource rentals and taxes on environmental goods. We make no particular recommendation on such measures given our Terms of Reference. However, we believe they warrant further consideration over the long term, consistent with the principles above.

We wish to acknowledge and thank the many companies, organisations and individuals who contributed comments and information to the Advisory Group. The greening of New Zealand's growth is a shared endeavour by all New Zealanders. We hope this report, while informing the Government's policy-making process, will also promote further awareness, discourse and action among businesses, interest groups and individuals nationwide.

The Advisory Group also wishes to thank government officials for their knowledge and advice. Our work had support from many agencies, under the leadership of the Ministry of Economic Development and the Ministry for the Environment.

Some of the issues covered in this report were subject to substantial debate among Advisory Group members. We sought a consensus view on all key issues. While all members might not subscribe to every statement printed here, they endorse the report as a whole and our recommendations to the Government.

Advisory Group members



Phil O'Reilly, Chairman
Melissa Clark-Reynolds
Whaimutu Dewes
Lain Jager

Neville Jordan
Dr Andy Pearce
Guy Salmon
Peter Yealands

Summary of Recommendations

BUILDING CONSENSUS

Recommendation 1: The Government should publish a series of Green Growth Indicators every three years to provide a comprehensive and credible overview of national progress in the greening and accelerating of economic growth. This report should:

- include a “Dashboard” of key indicators meaningful to New Zealand and international observers;
- align with OECD guidelines for green growth policy making;
- draw on the most authoritative and timely statistics available from New Zealand Government agencies; and
- be the responsibility of one central agency (supported by Statistics New Zealand and other agencies) to prepare and publish within a clearly-defined three year cycle.

The Advisory Group provides a conceptual model for the Dashboard (see Figure 4, page 25).

Note: The Dashboard indicators of green growth in this model are preliminary only, and substantial further work would be required to develop measures of natural assets and resource productivity in New Zealand. Indicators would need to measure the greening of growth as clearly as possible, ideally with relatively few indicators. Draft indicators should be subject to public consultation.

Recommendation 2: Central and local government should be encouraged to make, and/or support, greater use of collaborative processes for the management of natural capital and resolution of complex issues at the interface of economic development and environmental protection. To enable this to occur, guidance should be provided, including statutory guidance where appropriate, on the role of collaborative processes in decision making and the principles that should apply to such processes.

BUSINESS CAPABILITY

Recommendation 3: The Government should continue to look for opportunities for better co-ordination and integration of programmes that support capability building within Small and medium-sized enterprises (SMEs). Co-ordination and integration should occur between central government and local government agencies, industry bodies and sector groups, and other relevant providers.

Recommendation 4: The Government should facilitate businesses’ practical understanding of how to improve environmental performance and to benefit from green growth market trends, with such information targeted especially at small and medium-sized companies (particularly those influenced by international supply chains). These businesses should get practical information particularly on:

- identifying and assessing technologies for greening their growth, and in particular, lowering their Greenhouse gas (GHG) emissions;
- the suitability of different environmental management standards, tools and programmes;

- the proper use of certified environmental performance credentials;
- the use of environmental management systems to strengthen general business management systems and processes; and
- export market requirements and international customer expectations as these relate to environmental practices and sustainability.

Recommendation 5: The Government should promote the voluntary adoption of standards and certification schemes by businesses and other entities where these help raise environmental performance and economic growth. Standards and certifications should be:

- subject to consultation with all interested parties before adoption;
- relevant to New Zealand circumstances;
- recognised between trading partners in the same supply chains to the fullest extent possible; and
- international in their recognition to the fullest extent possible.

Recommendation 6: The Government should establish an agency, based on a refocused Energy Efficiency and Conservation Authority (EECA), committed to helping businesses (including farms) and households reduce their GHG emissions (other than livestock emissions). The agency should have a particular focus on helping small and medium sized enterprises (SMEs). Its role should continue to include specific responsibilities for the promotion of energy efficiency in households and businesses. GHG emission reduction activities should include:

- delivery of complementary policy measures and associated practical support for SMEs to help reduce their emissions in a cost effective way;
- working with business groups on efficient information delivery to SMEs in diverse sectors, throughout New Zealand; and
- co-operating closely with New Zealand Trade and Enterprise (NZTE), the Ministry of Science and Innovation (MSI), the Ministry of Agriculture and Forestry (MAF), regional partners, and the Private Sector in streamlining current government programmes for supporting businesses, especially SMEs, in New Zealand.

Recommendation 7: New Zealand needs to have greater focus on demand side management to improve energy efficiency. The Commerce Commission and the Electricity Authority should prioritise the development and implementation of measures that incentivise better demand side management and adoption of supporting technologies by electricity suppliers, network companies and consumers.

INNOVATION SYSTEM

Recommendation 8: The Government should ensure reforms now being implemented in the Innovation System are given time to work. The Advisory Group supports these reforms, including changes within Crown Research Institutes, and the development of more effective links between the business sector and CRIs and universities.

Recommendation 9: The Government should provide more support for the transfer, adaptation and adoption of existing knowledge and technology into New Zealand from overseas to support green growth. This could:

- better utilise government networks to support activities such as information-gathering, evaluations, and development;

- involve industry-good research organisations that are well placed to understand and respond to industry-wide needs;
- leverage the existing international science intelligence and networks of CRIs, other research organisations, and public sector agencies and include use of existing knowledge transfer mechanisms;
- make optimal use of electronic networks and other digital technologies for knowledge exchange; and
- support the development of sector-specific toolboxes of support (see also Recommendation 19).

Recommendation 10: Public Sector policy and funding agencies with responsibilities for science and innovation, and tertiary education, should give additional consideration to green growth in their existing programmes and activities, most notably when:

- determining priorities which influence the funding of science and innovation including both contestable research and CRI core funding (through MSI);
- prioritising the allocation of CRI core funding towards green growth innovation, (through annual letters of expectation to CRI boards and management);
- providing advice and funding support for international business development (through NZTE and MSI);
- where appropriate, creating science and technology platforms which will enable faster, higher value innovation for green growth; and
- developing tertiary education courses and qualifications in relevant disciplines.

NEW ZEALAND BRAND

Recommendation 11: The Government should develop and distribute to interested parties a fact-based narrative about New Zealand’s place in the world as a competitive trading nation with comparatively strong “green credentials”. This narrative would:

- articulate the story of brand “New Zealand” and its attributes including the nation’s “clean green” reputation;
- draw together relevant facts about New Zealand (including the Green Growth Dashboard) and present these in a compelling manner; and
- become a valuable resource for businesspeople and others in their efforts to inform international audiences about New Zealand.

Recommendation 12: The Government should consider New Zealand’s international reputation and market positioning whenever significant reforms are proposed in the regulation of foreign exchange-earning industries. Regulatory reform will most often have a range of objectives. However, the reform process should also recognise that:

- our reputation and positioning are always, in part, based on standards of regulation in New Zealand, and business practices that are promoted or supported by regulation; and
- regulation can, in effect, become a “platform” or enabler under desired attributes in the New Zealand brand, including “clean green”.

Recommendation 13: The Government should use the international information-gathering capabilities of Ministries and Crown entities to keep New Zealand businesses well informed on green growth opportunities and challenges on international markets. This information gathering would:

- draw, in particular, on the established international networks of MFAT, NZTE, MAF, MSI, and Public and Private Sector research institutions;
- involve formal, regular processes of information dissemination to companies and industry groups who benefit most from such input;
- anticipate, and forewarn about, issues likely to diminish New Zealand's trade and investment opportunities in the world, and promote awareness of opportunities;
- promote more effective and timely decision making by companies engaged in trade and investment; and
- better enable government agencies and companies to manage issues impacting on brand "New Zealand".

PUBLIC SECTOR PROCUREMENT

Recommendation 14: The Government should accelerate the Public Sector-wide implementation of its procurement policy along with efforts to raise management capability in this area, such that the policy's sustainability principle is increasingly evident in practice.

Recommendation 15: The Government should designate construction and healthcare as 'green growth sectors' in relation to Public Sector procurement. Purchasing in these sectors will then be tied more explicitly to the 'sustainability' principle and a small number of priority environmental factors (for example, GHG emission reduction, waste minimisation). In the construction sector, highest priority should be given to the 'greening' of procurement in the rebuild of Christchurch.

Recommendation 16: The Government should consider establishing an "invest-to-save" fund for Public Sector agencies, which enables them to shift sooner to greener technologies and practices, and thereby to encourage innovation among their suppliers. The fund will provide interest-free loans which help agencies to meet the higher upfront costs associated with purchasing greener products, services and technologies – and to secure net financial gains over the long term.

BIODIVERSITY OFFSETTING

Recommendation 17: The Government should create a nationally consistent biodiversity offsetting regime that will facilitate projects for economic growth and, at the same time, deliver net gains to New Zealand's biodiversity and environmental quality. This scheme should:

- be based on widely-understood and accepted principles of equity, efficiency and transparency;
- be based on a good understanding of the New Zealand context, including the need for ongoing, active pest management if biodiversity assets are to survive in the long term;
- be additional to ongoing biodiversity protection and enhancement programmes of relevant government agencies and Crown entities;
- operate through rigorous processes that are supported by the best available environmental science and monitoring;

- include governance arrangements which build public confidence that long-term improvements to biodiversity assets will indeed result, with enforcement of obligations if necessary; and
- potentially lead to the development of a biodiversity trading scheme of further benefit to the greening of New Zealand's growth.

FOOD AND BEVERAGE SECTOR

Recommendation 18: The Government should continue investing in R&D for increased agricultural, fisheries and aquaculture productivity and environmental performance, while also supporting research that increases understanding of the biological systems that underpin these industries and the associated biosecurity risks. This will mean:

- government agencies working with CRIs and industry to improve the quality of information around hydrology, soils, pasture and crop growth, nutrient management and fish stocks, and making this information more accessible to managers of our resources so that better decision making can occur;
- greater use of economic analyses that place a value on natural capital and environmental services, to better inform productivity measurement, and to guide selection of lower impact agricultural intensification strategies and techniques; and
- all stakeholders acknowledging the importance of this work to brand "New Zealand", and applying sound science to protect and enhance national reputation and to improve industry performance.

Recommendation 19: The Ministry of Agriculture and Forestry and other governmental agencies, in partnership with industry, should develop more effective programmes for the transfer of new knowledge and technology between the Innovation System and New Zealand farm businesses. The programmes should:

- draw fully on research and development outcomes from Crown Research Institutes, universities and other institutions;
- make accessible to every farmer a practical 'toolbox' of technologies and actions relevant to his or her circumstances;
- include a particular emphasis on managing diffuse sources of pollution and GHG emissions;
- involve some increase in Public Sector agency resourcing to ensure 'on-the-ground' delivery of this 'toolbox' and other knowledge; and
- be delivered through the co-ordinated effort of agencies, industry groups and individual farmers.

Recommendation 20: Consistent with Recommendation 2, the Government should, where appropriate, promote collaborative processes at regional and national levels for the resolution of environmental issues that arise from farming, fishing, horticulture and/or forestry practices. These processes should include:

- increased resourcing over time for the Government's new Clean-Up Fund to a level commensurate with need nationwide; and
- extension to other primary industries of the approach embodied in the Dairying and Clean Streams Accord.

Recommendation 21: The Government and sector organisations should encourage livestock farmers to invest in technologies and systems for the management of diffuse source pollution including GHG emissions. These could include technologies and systems such as wintering pads, nitrogen inhibitors, better uptake of rural broadband, other tools for precision agriculture, and other measures.

TOURISM SECTOR

Recommendation 22: The Government should work with the tourism industry on a new strategy for positioning New Zealand strongly with high-value tourists in the greener market segment. This strategy should promote:

- increased uptake of environmental management systems and relevant certifications among New Zealand tourism businesses;
- clear linkage of “clean green” country brand attributes to different elements of New Zealand’s tourism offering, including high-quality food and beverage production; and
- enhanced usage of online and social media communications to reach tourists who are both more attuned to these channels and more attracted to environmental sustainability.

Recommendation 23: The Government should explore/investigate, with industry leaders, businesses and local authorities the concept of high-profile New Zealand tourist destinations becoming models or exemplars of green growth in this sector. This model should be:

- drawn from experiences of current locations that have adopted this approach, such as Kaikōura;
- based on coordinated uptake of recognised and credible sustainability practices by as many commercial entities in that location as possible; and
- an authentic and visible demonstration to visitors of environmental sustainability in combination with world-class tourism offerings.

HIGH-VALUE MANUFACTURING AND SERVICES SECTOR

Recommendation 24: The Advisory Group supports the conclusions and recommendations of the “Powering Innovation” and Crown Research Institute Taskforce reports and recommends that the Government consider green growth when implementing the recommendations of those reports. In particular, green growth should be considered in regard to:

- the work programme of the proposed advanced technology institutes;
- measures to support professional skill development in New Zealand; and
- the capabilities of public institutions as these are developed to support growth in high-value manufacturing and services.

See also Recommendations 8, 9 and 10.

PETROLEUM AND MINERALS EXTRACTIVE SECTOR

Recommendation 25: The Government should seek the necessary discourse towards greater consensus among New Zealanders on what of our petroleum and mineral resources should be available for extraction and under what circumstances. The national discourse should be thoroughly informed about the potential benefits, and the costs and risks, of such development and growth. The Government should provide public information that includes:

- the minimum requirements imposed on industries and projects through regulatory and institutional settings (and how these requirements compare internationally);
- objective analysis of economic, social and environmental benefits associated with particular petroleum and mineral resources and extractive projects; and
- objective analysis of costs and risks associated with further development and growth of the sector (including potential impacts on other exporting sectors of the economy).

Recommendation 26: As part of the public discourse outlined in recommendation 25, the Government should investigate further measures by which New Zealand could secure wider economic, environmental and community benefits from the royalties derived from allowing extraction of petroleum and minerals. Such measures could include support for investment in long term infrastructure and social programmes, long term biodiversity and environmental protection and community and regional development projects. Iwi and regions most directly affected by the activity deserve particular consideration in this regard. Other measures could include a sovereign wealth fund or similar to address issues of inter-generational equity.

SECTION 1

Defining Green Growth

- 1.1 Green growth begins with realisation that economic growth and environmental sustainability go hand-in-hand – and that this needs to be increasingly reflected in policies and actions. There is concern worldwide that economic growth will deplete natural resources and erode environmental services. Such growth is unsustainable because economies, ultimately, rely on the latter. Political and business leaders also recognise that a greater focus on environmental sustainability can, itself, become a source of economic growth.
- 1.2 Many countries are adopting policies and programmes broadly definable as green growth. New Zealand was among 34 countries, and the European Union, who signed an OECD Declaration on Green Growth in June 2009. This declaration encouraged green investment and sustainable management of natural resources, and also domestic reforms to remove policies that might thwart green growth. In May 2011, the OECD published a policy framework for the “greening of growth” in every country as both a response to environmental pressures and an opportunity to promote growth (see definition at right). The framework recognises that green growth policies will differ between countries depending on their current policies, institutions and level of development, their natural resource endowments, and their particular environmental pressure points. Much of the current green growth policy focus in many countries is on developing renewable energy sources and so-called clean technologies.
- 1.3 Various governments have adopted green growth concepts and policies as part of their national economic planning, usually in support of targets for the reduction of Greenhouse Gas (GHG) emissions. In most such cases, governments are committing to substantial public investment in specific green growth-related programmes or industries. The United Kingdom, for example, intends launching a green investment bank in 2012 to provide funding for “low carbon projects” with returns that are too long term, or too risky, for capital market investment. China’s 2011-16 Five Year Plan has a “Green Development” section for energy efficiency and other initiatives that will support GHG emissions reduction, ecosystem protection and water conservation. Some countries are going further to embed green growth into a wider range of policy areas. Brazil, for example, has integrated the concept of “sustainable cities” into its urban planning processes.

“Green growth means fostering economic growth and development while ensuring that the natural assets continue to provide the resources and environmental services on which our well-being relies. To do this, it must catalyse investment and innovation which will underpin sustained growth and give rise to new economic opportunities.”

– OECD. “Towards Green Growth: A summary for policy makers”, May 2011

"Growth has no set limits in terms of population or resource use beyond which lies ecological disaster. Different limits hold for the use of energy, materials, water, and land. Many of these will manifest themselves in the form of rising costs and diminishing returns, rather than in the form of any sudden loss of a resource base.

"The accumulation of knowledge and the development of technology can enhance the carrying capacity of the resource base. But ultimate limits there are, and sustainability requires that long before these are reached, the world must ensure equitable access to the constrained resource and reorient technological efforts to relieve the pressure."

– "Our Common Future", Report of the World Commission on Environment and Development, 1987.

- 1.4 Worldwide many businesses are making contributions to green growth, and to confronting related environmental issues, through their own practices and their management of supply chains. In some areas, the international business community has moved faster than government policy makers. In New Zealand, export businesses told the Advisory Group that shifts to greener purchasing and increased focus on sustainability in some global markets are already creating opportunities and raising risks.
- 1.5 The concept of green growth is also based on the realisation that natural capital is finite and that all ecosystems have limits, and that sustaining growth will mean working within those limits. We can develop and apply other forms of capital – financial, human and social capitals – to address limits in natural resources and ecosystems, and to continue growing the economy in a sustainable manner. Green growth thinking around the world today can, to some extent, be traced back to the earlier concept of "sustainable development" as articulated, for example, by the United Nation's World Commission on Environment and Development, in the "Brundtland report", in 1987.
- 1.6 The OECD contends that green growth is narrower in scope than sustainable development, and that it "entails an operational policy agenda that can help achieve concrete, measurable progress at the interface of the economy and the environment". The OECD guidelines call for governments to consider issues of social equity in their development and implementation of green growth policies. The latter should be seen to be "in parallel with initiatives centering on the broader social pillar of sustainable development".
- 1.7 The OECD sees two types of policy as necessary for the greening of growth in any country: macroeconomic management that is effective for efficient allocation of resources in ways that also conserve natural capital; and specific policies that provide incentives for greater efficiency in the use of natural resources or create penalties for pollution. This approach promotes four core concepts:
 - **Productivity.** Increased efficiency in the use of energy and other resources such that less are used in producing each unit of output, and/or less waste or emission results per unit. Human knowledge and skill are major contributors to increased efficiency and productivity.
 - **Natural capital.** The natural resources and environmental services that are required for economic growth, or that are important in other ways to peoples' wellbeing. Natural capital needs to be valued fully as a factor of production alongside other forms of capital – financial, human and social.

It encompasses land and vegetation, mineral resources, water, air quality and wildlife. Natural capital is core to linking economic and environmental policies so that, for example, natural resources are fully valued and environmental “externalities” are appropriately priced and valued.

- **Innovation.** The creation, accessing, absorption and application of knowledge and/or technology that leads to new or significantly improved products, services or processes. Innovation can include so-called green or clean technologies.
- **Green growth indicators.** Countries need measures beyond Gross Domestic Product (GDP) to measure their green growth progress. Growth in “green industry” components of any economy is important; so is the depletion or enhancement of natural capital in consequence of economic activity. The OECD sets categories of indicators, for each country to apply in relation to its own circumstances and needs.

1.8 In New Zealand, the Advisory Group found that an overwhelming majority of the submissions received supported growth as a concept. Many also wanted greater definitional clarity, combined with a clear and firm green growth commitment from the Government. The Advisory Group has adopted the OECD definition and policy guidelines in this report, and it recommends that the Government do likewise in developing its economic management strategy for New Zealand. The OECD work is soundly based and internationally consistent. It is, therefore, an excellent starting point for New Zealand to develop its own green growth approach.

SECTION 2

New Zealand Perspective

2.1 New Zealand is well positioned for greener growth. We have a major opportunity to adopt policies, practices and technologies that will accelerate our growth and, at the same time, achieve better outcomes for the environment. The opportunity emerges from the profound global shift towards greener growth as companies, consumers, governments and interest groups embrace strategies in this direction, and as many nations take action for the reduction of Greenhouse gas (GHG) emissions. The shift has been clearly evident to the Advisory Group in its dialogue with New Zealand businesses and organisations. We are well positioned for greener growth largely because of the following:

- New Zealand has relatively low population density and less intensive industrialisation compared with other countries, along with extensive mountainous areas, and generous endowments of rainfall and wind.
- New Zealand's history of economic and social development has obviously affected our natural resources and environmental services, but the effects have been generally moderate by international standards. One third of the nation's land area has conservation status and remains in native vegetation, protected high country or other forms of publicly-owned reserve. This land provides a large renewable source of freshwater. Development has degraded lowland water bodies but growing commitment and know-how are being directed at improving this situation.
- New Zealand is making significant advances in its management of biodiversity, while acknowledging that human settlement has caused significant biodiversity depletion through habitat loss and predation (with a legacy of high growth in numbers of threatened and endangered species).
- New Zealand has institutions and regulatory frameworks broadly consistent with good environmental stewardship. Examples from across our economy include: the Resource Management Act 1991 (RMA); Hazardous Substances and New Organisms Act 1996, Conservation Act 1987 food safety laws; and Quota Management System for fisheries; and the New Zealand Emissions Trading Scheme (NZ ETS). There are issues still being addressed around the effectiveness of these and other frameworks. In regard to resource management and energy efficiency, these issues are due principally to the lack of national policies and standards for implementation.
- New Zealand is in the top tier of OECD nations as a leader in the development and use of non-fossil energy for electricity generation. Approximately 70% of our generation is hydro, geothermal and wind power, with a goal to reach 90% by 2025. Of total energy usage, non-fossil fuel sources are approximately 39%. It should be acknowledged that these favourable percentages reflect mainly our relative abundance of renewable energy resources, and our relatively low levels of population density, industrialisation and electricity demand.
- New Zealand has a relatively good research and monitoring capacity for, and understanding of, its environment. There is a strong environmental focus in the nation's Crown Research Institutes (CRIs) and universities. We have a network of regional councils with a mandate to promote the sustainable management of resources, albeit with some variability of capacity and performance across regions.

- New Zealand is recognised in global forums as an environmentally responsible nation (on issues like marine life conservation, introduction of an ETS and renewable energy development). We are already perceived in world markets for goods, services and capital as a relatively green country.

2.2 New Zealand businesses and individuals are generally supportive of protection and enhancement of the environment, while also keen to develop and grow their economy. Environmental stewardship and concepts of kaitiakitanga are integral to our national culture. For Māori, natural resources are central to identity and to economic development, and they are often at the heart of Treaty of Waitangi claims. All elements of the natural world are linked together and people are an integral part of this world. Their access rights to natural resources are, essentially, perpetual and cannot be separated. The Advisory Group believes that, as a general proposition, green growth is consistent with the values of most New Zealanders, although they may vigorously debate its implications.

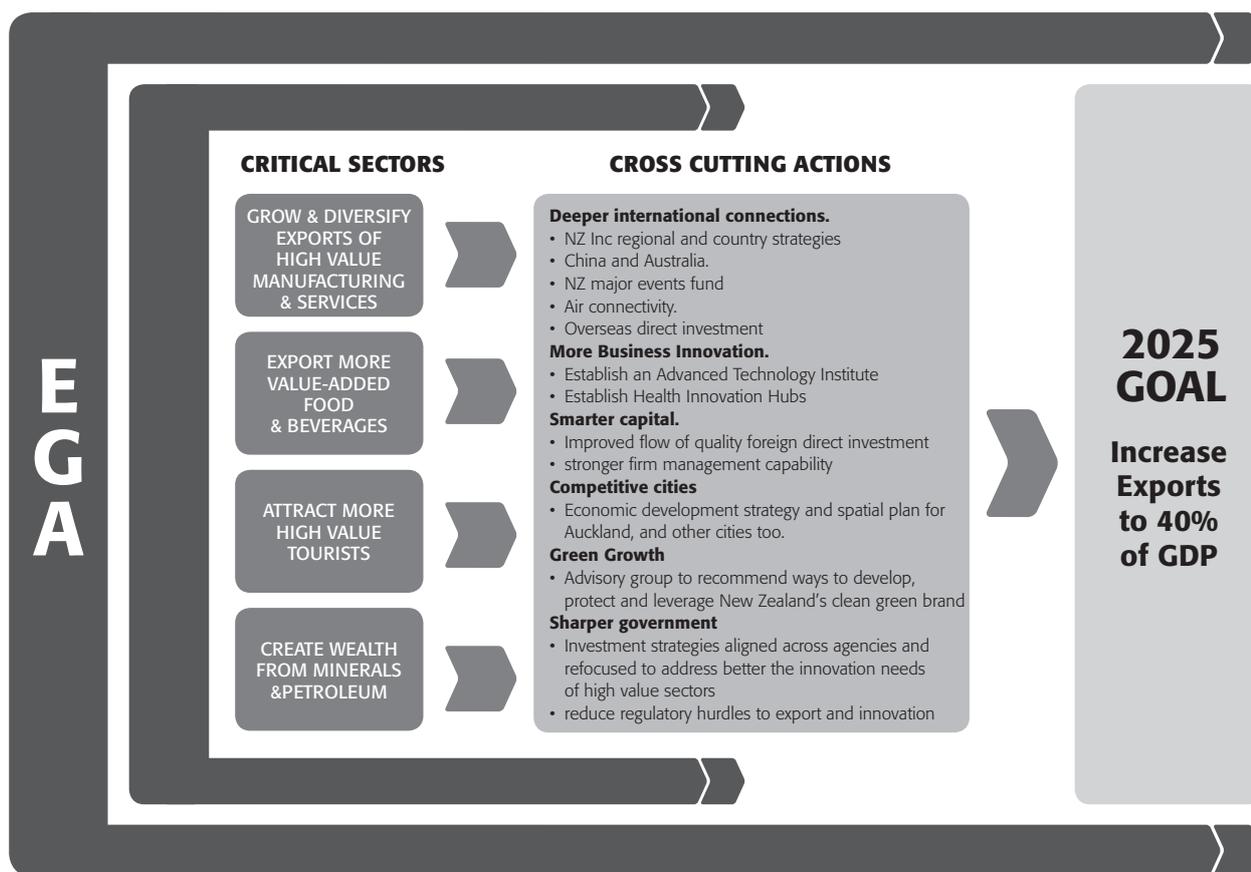
2.3 None of the observations above are intended to deny that New Zealand has substantial environmental issues. Most prominent among these are GHG emissions that are relatively high on a per capita basis and degraded water quality in our lowland waterways. We also lag behind other developed countries in other areas such as our standard practices in waste management. The Advisory Group contends, however, that New Zealand can pursue greener growth from a foundation of relative strength in national capacity to understand, manage and protect the environment.

2.4 The Government has recognised green growth as an enabler of New Zealand's growth and development, alongside other areas of core focus in its Economic Growth Agenda (EGA). The EGA is intended to help create a more productive, export-oriented economy. The Science, Innovation and Trade component of the EGA (see Figure 1) has a particular focus on improving business performance. Green growth has been identified as a "cross cutting enabler" although it has, until now, had little prominence. The Advisory Group believes its recommendations can be a starting point for the greening of growth in context of the EGA. We note that the issues are very complex and green growth will need sustained attention, beyond the scope of this report, to achieve real traction alongside other enablers.

“Operating in an environmentally-responsible manner is intrinsic to who we are as people and is fundamental to our culture. It is also critical to our business, and being seen as having strong environmental credentials creates significant opportunities for Ngāi Tahu.”

- Ngāi Tahu in discussion with officials of the Green Growth Advisory Group.

Figure 1. Economic Growth Agenda – Science, Innovation and Trade



- 2.5 The Advisory Group received submissions calling for the Government to develop an explicit green growth strategy for New Zealand. We acknowledge the reasoning for this call but believe such a strategy could, in effect, become secondary to the EGA and perhaps risk separation in economic and environmental policy making. This could be counterproductive to the greening of growth. The Advisory Group does not support a separate strategy for green growth: We recommend that green growth enablers become part of the core platform in the Government's overall economic management.
- 2.6 The Advisory Group's Terms of Reference highlight three areas in which the policies and practices can become enablers to greener and faster growth. The Advisory Group has explored key questions arising from consideration of three green growth enablers:
- New Zealand's brand in global markets and its positive attributes for trade and investment, particularly our reputation for being "clean green". Our national brand is an intangible asset, available for use and leverage by New Zealand businesses. What should we be doing to protect and build the brand "New Zealand", as issues of environmental sustainability become increasingly important on global markets?
 - New Zealand's innovation system. We have an established system for developing and/or adopting new knowledge and technologies for economic growth. What more should we be doing to drive innovation leading to greener and faster growth?
 - New Zealand's business capability, especially among small and medium sized enterprises (SMEs). Greener and faster growth is reliant on the performance of our businesses – and this raises fundamental questions about the performance capability of SMEs, the dominant form of business in this economy. What more should we be doing to build their capability for seizing green growth opportunities and successfully transitioning to lower GHG emissions?

- 2.7 The Advisory Group has explored these questions within the context of government policy-settings, programmes and reform initiatives currently in place or underway. The greening of growth economy-wide must become a shared endeavour among New Zealanders and especially among businesses as they, in particular, pursue many of the benefits of greener growth (and are exposed to the inevitable costs). The Advisory Group has looked most of all at possible Government actions that will better enable businesses to build and exercise capability in ways that stimulate greener growth. We recognise the important role that sector groups and individual companies can play in working with the Government.
- 2.8 The EGA puts focus on four foreign-exchange earning sectors of the economy that are most likely to drive New Zealand's growth over the medium-to-long term: The primary sector as a producer of food and beverages; the tourism sector; the high-value manufacturing and services sector; and the petroleum and minerals extractive sector. The performance of businesses within these particular sectors will determine, to a large extent, how much greener and faster New Zealand's economy will grow over the years ahead. Accordingly, our green growth enablers should have particular relevance to these sectors.
- 2.9 As a small trade-dependent country, New Zealand will be increasingly pulled towards greener growth as other, larger economies move in this direction. The shift towards greener purchasing and sustainability-based standards is evident in our major trading partners. New Zealand businesses can expect increasing pressure to adopt greener technologies and practices to maintain their competitive advantage as exporters of products and services – and in some cases, to simply maintain access to markets and hold onto to existing revenue streams. Much of the pressure will come from large customers who set increasingly specific requirements of suppliers and supply chain participants across a range of green issues.
- 2.10 In any country, the greening of growth will mean the slowing and, over time, the reversal of adverse environmental trends. The OECD and others place green growth firmly in context of the need for countries, individually and collectively, to reduce GHG emissions and to fight global climate change. In New Zealand, the Advisory Group recognises the need for the greening of growth to support our national GHG emissions reduction objectives and, at the same time, to redress other environmental impacts particularly pressing in this country. New Zealand has set GHG reduction targets for 2020 (a conditional 10-20% reduction on 1990 emission levels) and 2050 (a 50% reduction on 1990). These are responsibility targets, with New Zealand not committed to making all

EMISSIONS INTENSITY

This is the relationship between the GHG emissions of an industry or enterprise and its income from products and services. A global standard for measurement of GHG emissions has been developed under the Kyoto Protocol. Emissions intensity is the ratio between units of GHG emission and dollars of income earned on products and services from the outcome of those emissions. Emissions intensity has become a key measure of environmental footprint. Reduction in such intensity will generally lead to reduction in the total of GHG emissions, although this might not be the case where the industry or enterprise is growing its output of products or services.

CARBON AND GHG EMISSIONS

The Advisory Group's terms of reference refer to a "lower carbon economy". This report uses the term Greenhouse gas (GHG) emissions to reflect that there are six gases covered by the Kyoto Protocol on climate change. Those of greatest interest to New Zealand are carbon dioxide, methane and nitrous oxide. Reduction in GHG emissions is the transition to a lower carbon.

"New Zealand's reputation is very important, as are global standards. They are a ticket to the game. They get you on the field of play. It's after you are on the field that you make your point a difference, decide what more you'll do."

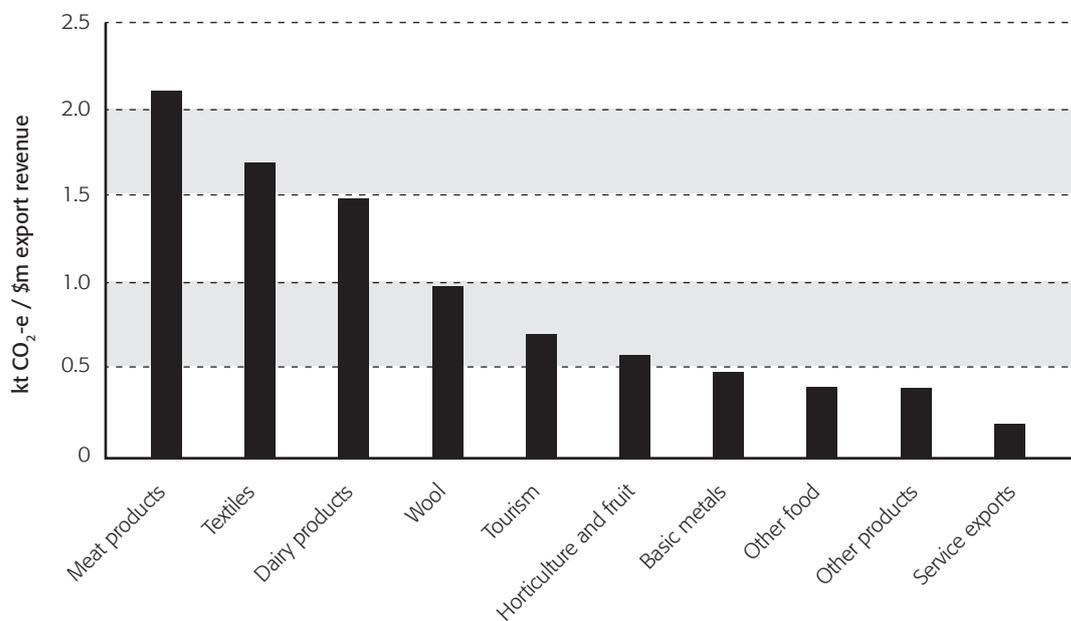
- Horticulture New Zealand in discussion with Green Growth Advisory Group officials.

reductions through domestic efforts. The Advisory Group notes the international progress towards new GHG reduction targets at the recent United Nations meeting on climate change in Durban (COP17). The agreement reached by major emitters such as China, India and the United States reinforces the need for New Zealand to think about “green” when it is thinking about “growth”.

2.11 New Zealand faces two major challenges in de-coupling economic growth from GHG emissions growth. Many of the industries of particular importance to the economy have a high emissions intensity. Emissions intensity in meat production for export is, for example, four times higher than the equivalent measure for basic metal product exports and 10 times that for service exports (see Figure 2). This highlights the need for New Zealand to focus on innovation and productivity gain for reduced emissions intensity in growth industries which currently have high intensity, and/or to accelerate growth in industries of already-lower emissions intensity. The Advisory Group favours a combination of both scenarios, consistent with New Zealand’s long-term targets for emissions reduction.

Figure 2. Emissions Intensity by Industry

Tonnes of GHG gas emission (1000s) per \$1 million of export revenue



Note: The data in figure 2 uses Kyoto Protocol definitions of Greenhouse gas emissions with the exception of Tourism. The Tourism figures include estimates of the emissions associated with international travel, even though New Zealand does not have to account for these emissions under the Kyoto Protocol. The data presented here have been derived from data from the Ministry for the Environment, Statistics New Zealand, the Energy Efficiency and Conservation Authority and Landcare New Zealand. Where particular industries sit in this chart will reflect many factors, including changes in international market prices for products and services. The relative positioning of industries will vary from year to year.

2.12 A key part of New Zealand’s response to de-coupling economic growth from GHG emissions growth will be to reduce the emissions intensity of existing industries. This reflects the fact that changing the structure of the country’s economy significantly is not straightforward. For an individual business, often the only practicable options to reduce emissions are to reduce their level of operation. It also reflects large variability in the emissions intensity of firms within an industry, and moving more players towards best practice will have a material effect on New Zealand’s emissions (in absolute terms).

- 2.13 Further to this, New Zealand has relatively heavy reliance on fossil fuels for transport (approximately 50% of the country's primary energy). Like most other countries, we typically see such fuel usage and related GHG emissions rise with growth in economic activity (for instance, GHG emissions associated with liquid fossil fuels rose by an average 1.3% per annum between 2000 and 2010). Unlike most countries, New Zealand has relatively low emissions from electricity consumption because of our substantial reliance on renewable electricity generation. This is a major advantage in the greening of our growth, as noted in 2.1.
- 2.14 Like other countries, New Zealand has opportunities to shift some of its transport energy use from fossil fuels to biofuels, with resulting reduction in GHG emissions. The Advisory Group received submissions that strongly advocate this shift. We note that the Biodiesel Grants Scheme, introduced in 2009, has stimulated some domestic biofuels production from a low base. A recent report by Scion, the forestry-based Crown Research Institute, has provided indepth analysis of the nature and scale of opportunities for further biofuels development in New Zealand. Biodiesel can substitute for petroleum-based fuels but the analysis concludes that production will remain relatively low because of limited supply of current feedstocks. Future growth in biodiesel production will depend on the emergence of a biomass industry and of conversion technologies that are still under development internationally. This view has been confirmed by the Parliamentary Commissioner for the Environment. The Advisory Group believes that fuel substitution can only be part of the answer to reducing transport-related GHG emissions. New Zealand has scope for more integrated investment in transport infrastructure and for greater use of new communications technologies – both have significant potential for reduction in fossil fuel use over time. Longer term there is also opportunity for light vehicles to switch to electricity, with only minor increase required in electricity generation.
- 2.15 The Advisory Group has focused on five types of possible Government measure for enabling greener growth and responding to related challenges. Each can involve government activity aimed at promoting greener and faster growth economy-wide, without intervention in the proper functioning of markets for goods and capital. The possible initiatives include:
- i. facilitating better-informed business management through provision of relevant information tools, knowledge and technologies;
 - ii. making it easier for businesses to comply with regulations and conform with voluntary standards;
 - iii. promoting collaborative action between businesses and others for enhanced resource management in the interests of all;
 - iv. investing in research and development by Public Sector entities that will stimulate innovation and productivity gains among businesses; and
 - v. steering the business decisions of Public Sector entities towards desired outcomes in the wider economy.
- 2.16 Each of these measures is reliant to some extent on adherence to particular standards of policy and practice. The Advisory Group heard from various submitters that standards can be very influential on practices and performance within companies and supply chains. In general, standards can apply within and between businesses or Public Sector entities (and their other stakeholders), and/or to behaviours, processes, systems and technologies. Inherently, they are about standardisation across businesses, organisations, industries, nations or the world. Standards can be benchmarks for performance, definitions of best practice and/or tools for business improvement – and their adoption or implementation can be voluntary or mandatory. Standards can be incorporated within, or given power through, government regulation. Conformance or compliance is often recognised through certification. Like any developed society, New Zealand has standards of various kinds throughout its governance and in the functioning of its market economy. The Advisory Group was often told by submitters that international retailers set standards for their suppliers, including New Zealand exporters, which can have an effect through the supply chain similar to regulation.

CARBONZERO™ – BEST-PRACTICE STANDARD FROM NEW ZEALAND

Landcare Research developed carbonNZero™ into the world's first internationally-accredited greenhouse gas (GHG) emissions certification scheme after the Crown research institute did 10 years' research on climate change, GHG measurement and carbon monitoring.

Today carboNZero™ is recognised in more than 50 countries as a best practice standard for consistency of emissions measurement, credibility of reduction and offsetting activity, and assurance of market claims. Organisations, events and individuals can qualify for carboNZero certification through five steps – GHG emissions measurement, management and reduction of emissions, mitigation or offsetting of unavoidable emissions, verification of the measurement, and marketing of carboNZero™ status.

The scheme includes CEMARS™ certification for attainment of the first two steps in carboNZero. International accreditation was awarded by the Joint Accreditation System – Australia and New Zealand (JAS-ANZ), an international accreditation body which is linked to the International Accreditation Forum.

- 2.17 The Advisory Group sees the development of standards and their uptake within and between businesses and other entities as central to our whole-economy greening of growth. New Zealand already has a strong international position in the development of standards for the environmental sustainable conduct of business, through the work of Landcare Research and others. The carboNZero™ scheme is being increasingly taken up by businesses and institutions in a broad range of sectors worldwide (see at left). It is important to note that standards can pose limits on business growth, especially if they are poorly designed and so inhibit innovation or competition. Some New Zealand businesses are faced with a complexity of different standards in different markets.
- 2.18 The Advisory Group notes that the OECD and others contend that price-based measures should be an integral part of green growth policy setting. Price-based measures include trading schemes, natural resource rentals and taxes on environmental goods. They do not mandate particular solutions or behaviours, but incentivise businesses and others to achieve desired outcomes in ways of least cost to them. Price-based measures can also drive demand for innovation to improve resource efficiency, and to reduce environmental emissions and impacts. Prices should reflect the impact on natural capital and environmental services of particular economic activities. Price-based measures will only be effective when supported by good information on the state of resources, the impact of activities on these and on the parties involved. There also need to be appropriate limits on the use of resources, to ensure their sustainability and continuing availability for alternative uses. Price-based measures can be politically difficult to establish where a resource is already being used as a free good. They can take significant time to set up and thereafter gain wide public support.
- 2.19 The Advisory Group sees price-based measures as having an important role in the longer term green growth of New Zealand, although their explicit application has not been part of our work (see Terms of Reference). New Zealand has some such mechanisms well established in its economic management (fisheries Quota Management System and the Emissions Trading Scheme are two examples). The Advisory Group encourages the Government to further consider where and how mechanisms such as resource rentals, specific royalties, emissions pricing and congestion pricing could contribute to greener and faster growth. This would be entirely consistent with our New Zealand perspective on green growth and it would complement the recommendations made in this report.

SECTION 3

Consensus Building

- 3.1 The Advisory Group believes discourse on New Zealand’s future will greatly benefit from broader shared understanding of green growth in concept and in practice. This view is supported by many submissions and other comments to the Advisory Group. They expressed frustration at the often-polarised and unsophisticated nature of debate in this country. New Zealanders have often found difficulty in resolving tensions between economic development and environmental protection. This clearly reflects in part, the complexity of issues. Broader understanding will facilitate the building of consensus and enhancement on the issues that are inevitable in the greening of growth. Greater consensus will make implementation of green growth enablers more effective (see Sections 2, 4 and 5). In addition, consensus will assist in the management of New Zealand’s natural capital through collaboration among stakeholders, particularly where clear property rights do not exist. Collaborative processes take consensus building further in relation to particular issues at a national, regional or local level.
- 3.2 The Advisory Group sees strong merit in the Government taking a lead in green growth consensus-building, first through the provision of authoritative ideas and information about New Zealand’s current position and future progress. We heard from businesses that consensus around types and locations of economic development – and on related environmental issues – would enable better business planning and investment. The Advisory Group has a firm view that green growth requires a long-term focus, matched by policy stability and long-term investment.
- 3.3 Several submissions stressed the particular merits of the Government reporting regularly on national indicators of progress in the greening of growth. This would support consensus building and improved accountability throughout New Zealand, and also help with the telling of our story internationally. The OECD’s green growth policy guidelines provide a clear framework for identifying and reporting information relevant to each country. The OECD proposes four categories of indicator that relate economic activity to environmental trends, and track progress towards greener and faster growth (see Figure 3). The Advisory Group believes New Zealand Government agencies have the resources and capabilities to create and publish authoritative indicators that will raise understanding of green growth and support consensus building. A three yearly cycle for such green growth reporting would be practical, allowing time and resources to deliver credible and comprehensive measures.

Figure 3. Green Growth Reporting: OECD Indicators

INDICATORS	KEY QUESTIONS
Productivity and natural resource use	How effectively are we using natural resources and environmental services to produce economic output?
Natural asset base	How is the state of natural resources and environmental services changing over time, and what are the risks of degradation or depletion beyond thresholds of regeneration?
Environmental quality of life	What changes are occurring in natural resources and environmental services that have a direct bearing on people’s quality of life? (Examples are air quality and access to natural environments.)
Economic opportunities and policy responses	How effective are government policies and actions at driving innovation and take-up of green business opportunities?

WATER MANAGEMENT COLLABORATION

The Canterbury Water Management Strategy (CWMS) is a collaborative effort by local government in Canterbury, and diverse stakeholders in the use and stewardship of freshwater resources in the region. The CWMS encompasses economic, environmental, recreational, tangata whenua and wider public interests in water management. It was developed over six years to replace adversarial processes for the allocation and management of water and related infrastructure.

In the past two decades, Canterbury has seen increasing use of water for irrigation, and increasing concern about water quality and flows in lowland rivers and streams. Published in 2009, the CWMS was initiated by the Canterbury Mayoral Forum and developed by a steering group of farming, industry, environment, recreational and cultural representatives. Its vision is "to enable present and future generations to gain the greatest social, economic, recreational and cultural benefits from our water resources within an environmentally sustainable framework."

The CWMS now includes targets for measurable outcomes that reflect all economic, cultural, environmental and social values associated with freshwater resources. It is being implemented through the work of 10 catchment, or zone, committees which involve collaboration among local stakeholders. There is also a Regional Water Management Committee. The Hurunui-Waiau zone committee is most advanced and in September 2011, it published a work programme for water quality and quantity in this catchment.

- 3.4 Green growth reporting requires a set of indicators that accurately and credibly reflect linkages between economic performance, environmental quality and the state of our natural resources. The indicators would reflect mostly the intersection between economy and environment. They would serve four purposes. First, they would inform public debate and policy making in New Zealand. Second, they would strengthen the accountability on government agencies, businesses and others over their use of resources. Third, they would enable green growth progress to be monitored against established objectives and targets. Fourth, they would augment New Zealand's international credentials as a nation committed to greener growth and environmental sustainability. It would be important that the indicators reflect both international expectations and New Zealand's specific challenges and opportunities.
- 3.5 Collaborative processes have increasing prominence in New Zealand's management of natural resources and environmental services at the regional level. Collaborative forms of governance typically involve direct engagement among various stakeholders to reach agreement on the allocation, use and/or conservation of resources. Outcomes will usually involve compromise between competing interests and commitment to collaborative actions. The approach augments representative governance and can make its task easier. To achieve an influence on policy (as distinct from implementing a community project), collaborative governance usually needs a mandate and funding from central or local government, although the initiative for collaboration may come from private parties. Further consideration needs to be given to the integration of collaborative governance with the two other forms of governance used in resource management - representative governance and judicial decision-making by the Environment Court.
- 3.6 New Zealand has seen various examples of collaborative governance leading to more effective resource management, especially in regard to land use, freshwater and fisheries. Examples are the Land and Water Forum (a national-level collaboration, see page 47), the Canterbury Water Management Strategy (see at left) and the Fiordland Marine Guardians. Collaborative governance should be distinguished from other collaborative projects where communities self-organise to take direct actions to improve the environment through physical projects, often but not always with public funding support, such as the Whaingaroa Harbour Care Group (see page 23) and the many landcare and conservation projects supported by regional councils, the NZ Landcare Trust and the Department of Conservation.

3.7 The Advisory Group believes collaborative governance sits firmly within the New Zealand green growth perspective. It will be applicable, however, only to certain circumstances and cannot substitute for representative governance or legal adjudication processes where issues warrant more formal, rule-based decision-making. Collaborative outcomes that are appropriate and viable can be incorporated into formal planning frameworks. It seems clear that New Zealand can benefit from developing resource-management options that are beyond the traditional adversarial model.

3.8 The Advisory Group believes that Government leadership in helping to build greater consensus on green growth generally, through three-yearly reporting and other measures, can promote the effectiveness of collaborative processes on particular issues. Ministry for the Environment analysis of success factors in various examples has highlighted the importance of stakeholders beginning with shared understanding of the issues they face, of the various interests involved, and of the process that needs to be followed.

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Recommendation 1: The Government should publish a series of Green Growth Indicators every three years to provide a comprehensive and credible overview of national progress in the greening and accelerating of economic growth. This report should:

- include a “Dashboard” of key indicators meaningful to New Zealand and international observers;
- align with OECD guidelines for green growth policy making;
- draw on the most authoritative and timely statistics available from New Zealand Government agencies; and
- be the responsibility of one central agency (supported by Statistics New Zealand and other agencies) to prepare and publish within a clearly-defined three year cycle.

LOCAL COLLABORATION FOR WHAINGAROA

The Whaingaroa Harbour Care group (WHC) was established in 1995 by community members who had become increasingly concerned about degradation of Whaingoroa (also known as Raglan Harbour) since the early 1980s. A key initiative of the WHC has been a riparian planting programme, which has resulted in significant environmental, economic and social benefits for the community, such as improvements in milk production, reduced stock losses in wet areas, reduced drain digging costs, enhanced pasture quality and enhanced water quality.

Community members, along with local and central government and with research and funding institutions, have devoted time and resources to starting and maintaining the WHC. The visible, tangible and measurable benefits of the approach advocated by the WHC appear to be key to continued momentum in the group.

The Advisory Group provides a conceptual model for the Dashboard (see Figure 4, page 25).

Note: The Dashboard indicators of green growth in this model are preliminary only, and substantial further work would be required to develop measures of natural assets and resource productivity in New Zealand. Indicators would need to measure the greening of growth as clearly as possible, ideally with relatively few indicators. Draft indicators should be subject to public consultation.

Recommendation 2: Central and local government should be encouraged to make, and/or support, greater use of collaborative processes for the management of natural capital and resolution of complex issues at the interface of economic development and environmental protection. To enable this to occur, guidance should be provided, including statutory guidance where appropriate, on the role of collaborative processes in decision making and the principles that should apply to such processes.

Figure 4. Green Growth Dashboard: Conceptual Model

GROUP	THEME
<p>Socio-economic context</p>	<p>Economic growth, productivity and competitiveness – A set of measures which indicate how well New Zealand is performing and positioned to achieve economic growth objectives. Gross National Disposable Income per capita (GNDI) is considered by the Advisory Group to be the preferred measure of NZers’ spending power. Labour productivity is also a critical indicator of competitiveness and performance.</p>
	<p>Labour markets, education and income – Measures of income equality, such as the GINI coefficient, will provide a sense to which all New Zealanders are participating in growth.</p>
<p>Environment and resource productivity</p>	<p>Carbon and energy productivity – How are Greenhouse gas (GHG) emissions and energy use varying with economic output growth through time? Are we emitting less greenhouse gases and using less energy per unit of output? Given New Zealand’s unique emissions profile there is a particular interest in the carbon-equivalent productivity of the agriculture and non-agriculture sectors.</p>
	<p>Resource productivity – How is resource use varying with economic output growth through time? Nitrogen and Phosphorous cycles critically underpin our agricultural production systems. Therefore N and P productivity and balances are of particular interest in this regard.</p>
<p>Natural asset base</p>	<p>Renewable stocks – The state and management of renewable stock, like freshwater and fish stocks, are critical to sustainable environmental and economic outcomes. For example, the total number of restricted freshwater use days in a region is a measure of supply and demand stress. Performance against fish stock management targets indicate the state of our fishing resources.</p>
	<p>Biodiversity and ecosystems – Indicators of the health of ecosystems. Metrics of specific interest in the New Zealand context include lake and river ecosystem health, soil erosion and the health of productive soils, and species under threat.</p>
<p>Environmental quality of life</p>	<p>Environmental health and risks – Indicators of how the environment is impacting on quality of life. The population’s exposure to air pollution and other contaminants are possible examples.</p>
	<p>Environmental services and amenities – Indicators of the population’s access to services and amenities. For example, access to safe drinking water; percentage of freshwater monitoring sites suitable for human use (composite of fishing, swimming and mahinga kai).</p>
<p>Economic opportunities and policy responses</p>	<p>Technology and innovation – The performance of the economy in adapting, adopting, inventing and commercialising innovations which will promote greening of the economy.</p>
	<p>Structural change in export sector – Low emissions exports as a percentage of total exports.</p>
	<p>Infrastructure – The strength of institutions supporting key asset economic and environmental classes, including energy, transport, communications and water.</p>

Note: The OECD framework encompasses the lower four groups of indicators and the Advisory Group adds the Socio-economic indicators to add over-arching context to the Dashboard.

SECTION 4

Enabling Growth

4.1 The Government has an array of possible measures for promoting greener and faster growth in New Zealand. The Advisory Group has looked at those consistent with its Terms of Reference and within the five types of measure identified on page 19. Our principal consideration throughout has been how to enable greener and faster growth at the level of the individual New Zealand business and more specifically, how to make enabling measures more effective for businesses. As indicated in the Terms of Reference the Government has opportunities to do this through:

- support for many businesses, especially small and medium-sized enterprises, to build their capabilities for growth and environmental management;
- development of New Zealand's Innovation System; and
- strategic focus on the New Zealand brand in the global marketplace.

4.2 The Advisory Group also believes the Government can go further in enabling businesses to participate in – and to benefit from – green growth trends through two other measures:

- promotion of environmental sustainability as a core value in Public Sector procurement and in New Zealand supply chains more generally; and
- development of a biodiversity offsetting system that can unlock greater potential for economic development in combination with gains to the New Zealand environment and biodiversity.

The Advisory Group has considered each of these green growth enablers in turn. They support the whole-economy approach to greening growth. Under this approach, the Government might also develop and implement other policies and programmes that are based on considerations beyond the Advisory Group's Terms of Reference.

BUSINESS CAPABILITY

4.3 Economic growth reflects the performance of industries and businesses. For greener and faster growth, New Zealand needs businesses – particularly those in foreign exchange earning industries – to increase their productivity, and to maintain or grow their profitability, without adverse impacts on the environment. Such performance, in turn, is reliant on the capabilities within New Zealand businesses – and especially capabilities to take up new and existing knowledge and technologies that drive productivity gain with improved environmental outcomes.

4.4 Large companies have these capabilities to a greater or lesser extent. However, most businesses in New Zealand are relatively small. Of all businesses, 97% are classified as small and medium-sized enterprises (SMEs) each employing 19 or fewer people. Together they account for 42% of New Zealand's GDP. They include most of New Zealand's livestock and arable farms, and horticultural and viticultural producers. Many SMEs do not have strong capabilities for innovation and growth. This is the case with similar-sized businesses in most developed countries. Many SMEs lack some of the management expertise and resources, and the funding capacity to take up new knowledge and technologies for increased productivity and greater supply chain efficiency.

- 4.5 It is important to note that while relatively small, many thousands of New Zealand SMEs operate in our key foreign exchange earning sectors, especially primary production, tourism and manufacturing. Many are critical in the supply chains of New Zealand's biggest export-earning companies (although among SMEs, only a small minority are themselves exporters). The performance of SMEs is, in general, fundamental to New Zealand's economy – and to our prospects for greener and faster growth.
- 4.6 The Advisory Group's terms of reference draw attention to SMEs' transition into a lower carbon economy, where all businesses must manage and reduce their Greenhouse gas (GHG) emissions. Emission reductions is a critical driver of green growth in New Zealand and worldwide – and such reductions are particularly challenging for many SMEs, given their limited capabilities to innovate and adjust. The Advisory Group notes that, because of their low emissions intensity, SMEs are generally excluded from the distribution of New Zealand Units in the early stages of the New Zealand Emissions Trading Scheme. The Government needs to consider measures of support for their transition to lower GHG emissions.
- 4.7 Businesses can reduce emissions through direct efforts to do so, including reductions in their use of fossil-fuelled transport. They can also do so through a stronger focus on efficiency in their use of energy and other resources. Due to New Zealand's relatively high use of renewable energy for electricity generation, efficiencies by business in their electricity consumption are not major drivers in lowering GHG emissions. Nationally, efficiencies in fossil fuel burning for other than electricity generation are relatively more important in this regard. In general, companies that reduce their emissions directly and/or through a range of business efficiencies will reduce the emissions intensity of their operations, and of their products and services. This can be very positive for business performance as well as for the environment.
- 4.8 Green growth, including the transition to lower GHG emissions across the New Zealand economy, brings challenges and opportunities for all businesses – and, as noted above, especially for SMEs. How do they reduce emissions especially at a time of increasing energy costs? How do they meet increased consumer demands for greener products and services, and the market-pull towards greater sustainability in their business? What technologies, knowledge and other tools are available to support the transition, and how can these be accessed and implemented? The Advisory Group looked broadly at these challenges, and also the opportunities which green growth trends present to SMEs. Like large businesses, SMEs can grow and prosper through greening their practices, products and services. Green growth implies the opening and/or expanding of some markets, as well as the contraction of others. Moreover, a heightening of focus on resource efficiency and emissions intensity should, in itself, become a stronger driver for growth and increased profitability, especially where the costs to firms of adopting better (more efficient) practices and technologies are relatively low.
- 4.9 There exist a large number of programmes in New Zealand which either directly or indirectly offer support to SMEs to build capability, and to address the opportunities and challenges arising with green growth. The programmes range from providing information and advice, to provision of direct support. Providers range from central and local government, education institutions, businesses and sector groups and the Private Sector.
- 4.10 The number of government programmes and delivery agencies involved raises questions over their cost and effectiveness. The Advisory Group sees significant opportunities for consolidation to secure the best value for money. We heard that it is difficult for businesses to access assistance because this involves multiple contact points across a range of agencies. Better co-ordination is needed between them. In this regard, the Advisory Group acknowledges recent initiatives by New Zealand Trade and Enterprise (NZTE) and the Ministry of Science and Innovation(MSI) to provide support for SMEs through a Regional Partner network. It is important that any new programmes or initiatives be delivered through existing channels and with least transaction cost to firms. The Government will need to work closely with other providers (both public and private) to ensure this occurs.

PROGRAMMES FOR SME'S

There are a range of tools and schemes available to SMEs wanting to improve environmental performance. These range from free self-help tools to comprehensive environmental management consultancy services and scientific investigations into the lifecycle of products. Free options tend to be information resources or web-based self-assessments (e.g. Envirostep, Homestar, LeanStep), although some local councils provide site-specific advisory services focusing on waste, water and energy (e.g. Target Sustainability).

There are also many proprietary schemes available on a user-pays basis, where consultants help SMEs to assess their energy efficiency (e.g. SMARTweb) or carbon footprint (e.g. carboNZero Small Business), develop environmental management systems (e.g. ISO 14001, Enviro-Mark, EcoWarranty, EWof) or improve their sustainability profile (e.g. Get Sustainable Challenge, Green Fleet). There are also many environmental credentials available to SMEs (e.g. ecolabels, management system certifications and reporting schemes), which they can use to communicate their environmental performance to others.

- 4.11 New Zealand has an existing range of technologies, knowledge and other tools that can help SMEs pursue greener growth. They include established standards and guidelines for sustainable business practice, and management tools for monitoring and controlling critical aspects of energy use, production and waste disposal. They also include Energy Efficiency and Conservation Authority (EECA) business support grants, and environmental management programmes delivered through various agencies of central and local government, and through the Private Sector. Several subsidised programmes have been run in recent years to boost SME uptake of good environmental management practices. In addition, New Zealand has a network of 14 Regional Business Partners which are a first point of contact for businesses seeking government assistance for their growth. The partners work with local businesses and government agencies, particularly NZTE and MSI, to provide a range of advice and access to funding and support.
- 4.12 It is clear that some existing programmes, at least, are under-used despite their big potential benefit to SMEs. The barriers to greater uptake include perceptions of complexity and cost, uncertainty of returns and lack of in-house resources. Relatively low uptake also reflects generally poor recognition among government and Private Sector procurement decision makers and regulators of the value in formal environmental credentials. The Government developed the free entry-level scheme, Envirostep, to help overcome barriers but its uptake has also been limited in recent years.
- 4.13 The Advisory Group is firmly of the view that there are substantial benefits for greener and faster growth in raising uptake of environmental management tools among SMEs – and this begins with raising awareness of what is available and the benefits to individual businesses. We believe the Government has a substantial opportunity to promote appropriate tools and programmes in this critical sector of the economy. We believe also that SMEs which take up environmental management tools will also improve their general management systems and processes, which are often weak today. The Advisory Group has looked more directly at opportunities specific to SMEs in key food and beverage, tourism and high-value manufacturing sectors (see Section 5). In stating this view, the Advisory Group makes it very clear that no Government-initiated programme should protect any enterprise from market forces which will, as a matter of course in any sector, see some grow and prosper, and others decline and fail.

- 4.14 New Zealand lacks an agency with a specific mandate to work with businesses on reducing GHG emissions. EECA represents a major opportunity in this regard. This Crown entity could substantially increase its engagement with smaller New Zealand businesses given the importance of energy efficiency in reducing GHG emissions intensity and in the greening of growth. The Advisory Group believes EECA could take on an expanded role with a focus on GHG emissions as well as energy, and with an orientation towards the information needs of SMEs. We see great merit in giving one government agency a clear mandate of support for such businesses as they tackle the challenges and opportunities implicit in green growth. A refocused agency, working with NZTE and MSI, and also regional partners, could become a highly effective enabler in New Zealand's quest for GHG emission reduction over the next 20 years and for higher economic growth. For this, SMEs will need to find it simpler and more effective to access the support available to them.

- 4.15 The electricity industry has a role to play also in helping businesses raise the efficiency of their electricity usage and reduce energy intensity. Demand-side management by the industry through the roll-out of smart metering and other initiatives can be recognised as a significant green growth opportunity. Electricity retailers are moving in this direction with increasing deployment of smart meters (more than 600,000 are now installed in New Zealand businesses and homes). The Advisory Group was told that there are strong commercial drivers for both electricity retailers and local network operators (lines companies) to promote the use of smart meters by customers.

- 4.16 There are important infrastructural and regulatory considerations for electricity industry participants in regard to demand-side management. For example, there are provisions in the Commerce Act (notably section 54Q) that enable the Commerce Commission to require lines companies to work with consumers on improved energy efficiency and demand-side management. Such work could result in clearer incentives for greater use of distributed generation and more effective processes for managing the electricity supply networks. The Advisory Group believes regulatory authorities in the electricity industry, should look at measures to support increased demand-side management where this will help improve the performance of the overall electricity system.

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Recommendation 3: The Government should continue to look for opportunities for better co-ordination and integration of programmes that support capability building within SMEs. Co-ordination and integration should occur between central government and local government agencies, industry bodies and sector groups, and other relevant providers.

Recommendation 4: The Government should facilitate businesses' practical understanding of how to improve environmental performance and to benefit from green growth market trends, with such information targeted especially at small and medium-sized companies (particularly those influenced by international supply chains). These businesses should get practical information particularly on:

- identifying and assessing technologies for greening their growth, and in particular, lowering their GHG emissions;
- the suitability of different environmental management standards, tools and programmes;
- the proper use of certified environmental performance credentials;
- the use of environmental management systems to strengthen general business management systems and processes; and
- export market requirements and international customer expectations as these relate to environmental practices and sustainability.

Recommendation 5: The Government should promote the voluntary adoption of standards and certification schemes by businesses and other entities where these help raise environmental performance and economic growth. Standards and certifications should be:

- subject to consultation with all interested parties before adoption;
- relevant to New Zealand circumstances;
- recognised between trading partners in the same supply chains to the fullest extent possible; and
- international in their recognition to the fullest extent possible.

Recommendation 6: The Government should establish an agency, based on a refocused EECA, committed to helping businesses (including farms) and households reduce their GHG emissions (other than livestock emissions). The agency should have a particular focus on helping small and medium sized enterprises (SMEs). Its role should continue to include specific responsibilities for the promotion of energy efficiency in households and businesses. GHG emission reduction activities should include:

- delivery of complementary policy measures and associated practical support for SMEs to help reduce their emissions in a cost effective way;
- working with business groups on efficient information delivery to SMEs in diverse sectors, throughout New Zealand; and
- co-operating closely with NZTE, MSI, the Ministry of Agriculture and Forestry (MAF), regional partners, and the Private Sector in streamlining current government programmes for supporting businesses, especially SMEs, in New Zealand.

Recommendation 7: New Zealand needs to have greater focus on demand side management to improve energy efficiency. The Commerce Commission and the Electricity Authority should prioritise the development and implementation of measures that incentivise better demand side management and adoption of supporting technologies by electricity suppliers, network companies and consumers.

INNOVATION SYSTEM

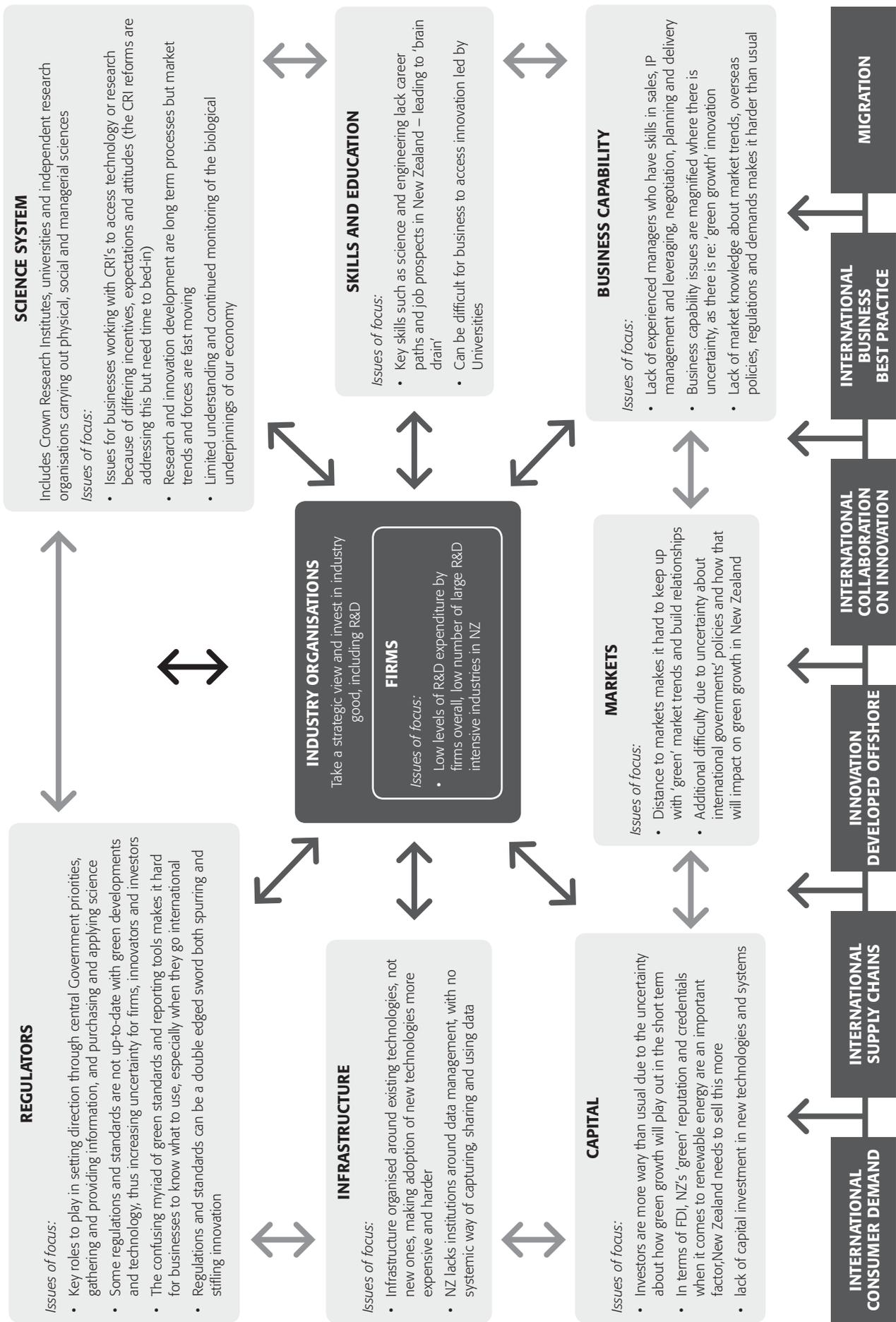
4.17 Innovation has a critical role in achieving green growth in any economy. This is clear from international literature on the topic – and it was reinforced to the Advisory Group in submissions and dialogue with New Zealand businesses and others. Innovation has the potential to improve productivity and/or to directly reduce the environmental impacts of economic activity. Broadly defined, innovation is the creation, accessing, absorption and application of knowledge and/or technology that leads to new or significantly improved products, services or processes. It enables the emergence, growth and success of businesses throughout the economy. It also enables businesses to reduce environmental impacts, through increased productivity or other initiatives that serve to cut GHG emissions, waste and other discharges. The Advisory Group believes innovation is a key enabler of greener and faster growth in New Zealand.

4.18 Innovation includes the development and application of clean technology, or cleantech, created with the explicit intention of reducing reliance on fossil fuels, and lowering emissions, waste and other discharges. The Advisory Group applauds the emergence and growth of cleantech businesses in New Zealand. Their technologies, products and services, and the application of these in other businesses within this country and internationally, make a substantial contribution to green growth. The Advisory Group heard some calls

for increased and more explicit support by the Government for development of cleantech in New Zealand. The Advisory Group emphasises, however, that innovation of all forms can contribute to greener and faster growth. Indeed, it is likely that much innovation that supports green growth will not originate in cleantech or other ostensibly environmental fields. The Advisory group considers that the Government should focus on creating the environment that will support all forms of innovation. In doing this the Government will always be required to make choices and we make a recommendation about how green growth can be reflected in policies and programmes.

- 4.19 Like other developed economies, New Zealand has a range of institutions, policies and processes for stimulating and supporting innovation. Ultimately it is firms that innovate – they develop or otherwise source and then apply knowledge and technology for economic benefit. There are a range of factors that determine how successful firms are in developing, adopting and/or adapting knowledge and technology to enhance their systems, processes, products and so on. The Advisory Group is concerned that too often innovation is equated just with research and development (R&D), and that this receives a disproportionate level of support. R&D is a critical component (and a major focus of government programmes) but innovation has many other sources as well.
- 4.20 The Advisory Group has viewed innovation as a system – our institutions, policies and processes for science, research and development (R&D), tertiary education, business funding, and new product and service commercialisation are all components of this system (See Figure 5, page 32). It is centred on New Zealand businesses or firms – and the system’s most essential role is to enable innovation at the level of the firm. All other components of the Innovation System serve to create and facilitate firms’ access to the knowledge, technology and other inputs, including financial and human capital, that enable innovation. Industry organisations are an important component of the system, enabling firms to form better strategies for investment and providing “industry good” forms of R&D that stimulate and support innovation. The Advisory Group sees a critical role of sector groups and other industry organisations in promoting and supporting uptake of new systems, processes and technologies that will improve sector productivity and environmental performance. The importance of this role was reinforced in feedback across all sectors of the economy.
- 4.21 The Advisory Group believes that insufficient attention has been given to the international sourcing of knowledge and technology, and its transfer into New Zealand for adoption or adaptation by businesses here. The Advisory Group has a firm view that greener and faster growth in this country will require stronger international connections in this regard. Globally, businesses are moving to open innovative approaches that take advantage of digital technologies to source and combine ideas. The ability to access, and to adopt and adapt, knowledge from diverse sources is increasingly important to economic competitiveness – and to the greening of growth.
- 4.22 Too often, New Zealand places precious resources into developing or replicating technologies that are readily available elsewhere. We need to become smarter at partnering for both the intellectual property and the capital required to gain access to these technologies. This is a major responsibility for business, but the Advisory Group also acknowledges the role that public institutions can play. Agencies such as NZTE and the Ministry of Foreign Affairs (MFAT) have the ability to provide knowledge and networks in international markets. Both Crown Research Institutes (CRIs) and universities have extensive international networks and represent a significant conduit of knowledge and technologies. The recent reforms within New Zealand’s science system (including CRIs, universities and other research institutions) have been helpful in creating the environment and relationships between public research organisations (in particular CRIs), and between them and businesses and sector groups, to allow this to happen. The Advisory Group believes that the Government should give this role prominence through mechanisms such as core funding for CRIs.

Figure 5. Innovation System



4.23 We share the widely held view that the system has been underperforming as evident in New Zealand's low rates of R&D (by international comparison), limited growth among new businesses outside the primary sectors, and the performance overall of the New Zealand economy. The Advisory Group was well briefed on current issues in the system and their particular significance for innovation that can contribute to green growth. We endorse the recent reforms to the science sector that focus on making CRIs, in particular, more responsive to business needs. The refocusing of business support and market development provided by NZTE is also a positive step as is the improved integration of programmes provided by NZTE and the newly formed Ministry of Science and Innovation (MSI). The Advisory Group does not see the need for system-wide institutional changes to support innovation for greener growth. The platform is in place to support such growth. In fact, it will be important to maintain institutional stability to allow the reforms to bed in. Further system-wide changes would be counterproductive at this time and may have a detrimental effect on the ability of public institutions to support green growth.

4.24 The Advisory Group notes the recently released "Powering Innovation" report and endorses the recommendations in this report with its emphasis on building capability within key components of the Innovation System and on strengthening linkages across the system. The plans to form an advanced technology institute, as an enlarged CRI that will leverage existing competencies within Industrial Research Limited (IRL), create real opportunities for supporting green growth. It will be important to ensure that this institute develops and maintains the core capabilities to assist the high-value manufacturing and services sector around green growth objectives.

4.25 The Advisory Group believes New Zealand does not need new institutional arrangements dedicated to green growth innovation. We were told in discussion with some businesses that the Innovation System requires stronger "steering" towards creation and delivery of green knowledge and technology for application in parts of our economy. The Advisory Group believes the broad array of innovations needed will best arise from making green growth a key consideration in how existing arrangements function. The prospects for this are much strengthened through the institutional reforms currently under implementation. Consistent with the New Zealand green growth perspective, we need to see innovation – and the greening effects of innovation – embedded as widely as possible across the New Zealand economy. The advanced technology institute could have a major role in this regard (see page 57, in the HVMS section) as can MSI, NZTE, universities and other entities within the Innovation System.

"Within the meat sector there are often low margins but high initial costs associated with the development and uptake of a new technology. To overcome this barrier, firms are forming syndicates to undertake R&D. For example, nine New Zealand meat companies are undertaking a \$16.7 million partnership with a government research fund to further automate sheep processing."

- Meat Industry Association in discussion with Green Growth Advisory Group officials.

4.26 To build on current reforms, the Advisory Group encourages a strong commitment to partnership between institutions, government agencies and businesses, at home and offshore. This facilitates the recognition of market-driven opportunities for new R&D and for commercialisation. It enables businesses to invest and take other steps required for innovation on a more informed and confident basis.

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Recommendation 8: The Government should ensure reforms now being implemented in the Innovation System are given time to work. The Advisory Group supports these reforms, including changes within Crown Research Institutes, and the development of more effective links between the business sector and CRIs and universities.

Recommendation 9: The Government should provide more support for the transfer, adaptation and adoption of existing knowledge and technology into New Zealand from overseas to support green growth. This could:

- better utilise of government networks to support activities such as information-gathering, evaluations, and development;
- involve industry-good research organisations that are well placed to understand and respond to industry-wide needs;
- leverage the existing international science intelligence and networks of CRIs, other research organisations, and public sector agencies and include use of existing knowledge transfer mechanisms;
- make optimal use of electronic networks and other digital technologies for knowledge exchange; and
- support the development of sector-specific toolboxes of support (see also Recommendation 19).

Recommendation 10: Public Sector policy and funding agencies with responsibilities for science and innovation, and tertiary education, should give additional consideration to green growth in their existing programmes and activities, most notably when:

- determining priorities which influence the funding of science and innovation including both contestable research and CRI core funding (through MSI);
- prioritising the allocation of CRI core funding towards green growth innovation, (through annual letters of expectation to CRI boards and management);
- providing advice and funding support for international business development (through NZTE and MSI);
- where appropriate, creating science and technology platforms which will enable faster, higher value innovation for green growth; and
- developing tertiary education courses and qualifications in relevant disciplines.

NEW ZEALAND BRAND

4.27 The Advisory Group has formed a clear view that “New Zealand” is the national brand of this country and “clean green” is a reputation often, but not always, associated with our brand. There has been substantial research and analysis by NZTE and others that confirms foreigners generally see New Zealand as a “clean green” food producer and tourist destination. Accordingly, “clean green” is one attribute of brand “New Zealand” alongside other positive attributes including “trustworthy and non-corrupt”, “easy to do business with” and “inventive”. The research indicates that our brand also has other less positive attributes in the perception and experience of foreigners: New Zealanders are sometimes seen as “naive and risk averse” in their international business dealings, and as not particularly innovative or good at developing their potential. Having consulted with government agencies and New Zealand businesspeople, the Advisory Group believes our “clean green” reputation is the cornerstone of the positive attributes around brand “New Zealand”.

4.28 Brands – country brands, company brands and product or service brands – can be highly valuable in the international marketplace if they help attract business, investment, visitors and so on. However country brands, in particular, are notoriously difficult to manage and to measure as sources of value. Positive brand attributes are “bestowed” by customers, investors and others, far more than they are constructed and controlled by companies and governments. Clearly, brand attributes are subject to a vast array of influences. The basics of country branding apply to New Zealand no more or less than they do to any country. But as a small nation dependent on global trade, New Zealand’s brand is potentially a more important enabler of growth than is the case for many other countries. Being part of New Zealand, and associated with its positive brand attributes, could be a major advantage to New Zealand industries and companies as they venture into global markets for food and beverages, tourism trade or whatever.

4.29 The Advisory Group believes brand “New Zealand” is important for greener and faster growth because of its various positive attributes. Clearly, our “clean green” reputation is positive in markets where sustainability and strong environmental performance have increasing value in the decisions of consumers, tourists, investors and others. Being perceived as trustworthy, easy to do business with and inventive is also valuable as these qualities, too, attract increasing recognition in markets. The Advisory Group is strongly of the view that the Government and New Zealand businesses should seek to strengthen “clean green” and other positive attributes to the extent they can – and to leverage the value of these wherever they can.

ONE “CLEAN” ATTRIBUTE

New Zealand has international recognition as a country “clean” of official corruption – and this has definitely become part of our brand. New Zealand is ranked first among 183 countries and territories in Transparency International’s Corruption Perceptions Index for 2011. We rank ahead of Denmark and Finland in the top three cleanest countries (and ahead of Australia, ranked eighth). The index is based on surveys and other assessments of how non-corrupt (or how corrupt) the Public Sector is perceived to be in each of the 183 countries and territories. Our top ranking is further indication that “non-corrupt” is a core attribute of brand “New Zealand” and it serves to reinforce that attribute.

“New Zealand is also seen as a natural, safe and pure source of secure food nutrition for the world. This ensures New Zealand produce is preferred by many global customers. This also ensures that New Zealand is able to enjoy comparatively good market access. The New Zealand Government should seek to ensure this image is retained by maintaining and building on the current standards for biosecurity, animal welfare and environmental performance. Companies are then able to seek ‘green premiums’ by demonstrating individual environmental credentials.”

- Fonterra in discussion with Green Growth Advisory Group officials.

- 4.30 What does “clean green” actually mean? NZTE analysis indicates this reputation is built from perceptions and experiences of New Zealand landscape, products and services, forms of economic activity, and national culture. It has different meanings in different markets and locations. Some of these are deliberately promoted by New Zealanders and some are not. In international tourism markets, “clean green” is clearly associated with remote mountain and coastal scenery, and with outdoor relaxation and adventure. For New Zealand food and beverages, “clean green” is associated with qualities of taste, purity and safety, and with farming and growing that occurs in unpolluted, green environments and to high standards of animal welfare.
- 4.31 For other sectors, “clean green” would seem less significant. Manufacturing businesses might, instead, draw value from foreigners’ perceptions of New Zealanders as trustworthy, easy to do business with and inventive. NZTE and others have identified mutually- reinforcing associations between “clean green” and other positive human attributes of New Zealand’s brand today. For example, trustworthy people are more easily recognised as responsible stewards of the environment and “inventiveness” might imply capability for resolving environmental issues, as well as technical or operational issues.
- 4.32 The Advisory Group sees our “clean green” reputation, and perhaps other positive attributes of brand “New Zealand”, as vulnerable to loss or diminution of value as global markets sharpen their focus on sustainability and environmental performance in the practices, technologies, products and services of this country (and of all others). Related issues are discussed further in Section 5. Development, management, safeguarding and leveraging of brand “New Zealand” are highly dynamic processes – and outcomes can only ever be approximate in relation to the decisions and activities of the Government and Private Sector entities. New Zealand’s publication of a Green Growth Dashboard (see pages 23-25) would be a substantial step in underpinning positive attributes of our brand through public communication of comprehensive and credible information on the environment and on our commitment to the greening of growth. We encourage the Government to take a more active role in relation to brand “New Zealand” and its use in global markets.
- 4.33 As noted, country brands are very difficult to manage. They can, however, be influenced by the communication and action of governments. In New Zealand’s case, the Government is well placed to lead in developing and distributing this country’s “story” – a narrative on who we are, what matters most to us and what we offer the world. The Advisory Group heard from exporting companies that such collateral could be very useful in their approaches to, and subsequent dealings with, international customers, partners, suppliers and/or investors. New Zealand is a small country, not well known or understood in much of the world. Our small size and strength of domestic and international networks could make the compiling of an authentic story around the brand “New Zealand” readily achievable and available to New Zealanders for their reference and use. It would leverage the recommended Green Growth Dashboard and give evidence for our “clean green” reputation and other preferred attributes of this country’s brand.
- 4.34 The Government will always play a critical role in relation to brand “New Zealand” through its policy-making and regulatory activities. These will inevitably be reflected in the perceptions and experiences of this country by foreigners. If New Zealand wants to protect and build particular attributes – and “clean green” is clearly one such attribute – we need to work at authenticating these through regulatory frameworks and institutions in relevant areas of our economy and society. The Advisory Group believes the Government can steer the country further towards its desired brand and market position by giving explicit consideration to reputation and other attributes during reform processes (recognizing, of course, that reform will have many other drivers).

Figure 6. New Zealand Brand Management



4.35 Government agencies including NZTE and MFAT are routinely active worldwide in managing issues that impact on our brand. They work at correcting misinformation, in foreign media for example, and at positioning this country, its industries and products with other governments and publics. The Advisory Group believes this is a key role for the Government – and related to this, there is a role to make New Zealand businesses more aware and informed about developments in overseas markets. Such market intelligence, ranging from specific business opportunities to emerging trends market wide, can be very valuable to businesses at any stage of their internationalization. Much of this already happens: The opportunity is to make it more systematic and effective across a broader base of the New Zealand economy. That would involve a high level of proactivity by agencies with the resources and status needed, and also the greater use of nontraditional information channels. Intelligence sharing and signalling on markets could enable more businesses to align themselves with brand “New Zealand” and the particular attributes that support their endeavours.

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Recommendation 11: The Government should develop and distribute to interested parties a fact-based narrative about New Zealand’s place in the world as a competitive trading nation with comparatively strong “green credentials”. This narrative would:

- articulate the story of brand “New Zealand” and its attributes, including the nation’s “clean green” reputation;
- draw together relevant facts about New Zealand (including the Green Growth Dashboard) and present these in a compelling manner; and
- become a valuable resource for businesspeople and others in their efforts to inform international audiences about New Zealand.

Recommendation 12: The Government should consider New Zealand’s international reputation and market positioning whenever significant reforms are proposed in the regulation of foreign exchange-earning industries. Regulatory reform will most often have a range of objectives. However, the reform process should also recognise that:

- our reputation and positioning are always, in part, based on standards of regulation in New Zealand, and business practices that are promoted or supported by regulation; and
- regulation can, in effect, become a “platform” or enabler under desired attributes in the New Zealand brand, including “clean green”.

Recommendation 13: The Government should use the international information-gathering capabilities of Ministries and Crown entities to keep New Zealand businesses well informed on green growth opportunities and challenges on international markets. This information gathering would:

- draw, in particular, on the established international networks of the Ministry of Foreign Affairs and Trade (MFAT), NZTE, MAF, MSI, and Public and Private Sector research institutions;
- involve formal, regular processes of information dissemination to companies and industry groups who benefit most from such input;

- anticipate, and forewarn about, issues likely to diminish New Zealand's trade and investment opportunities in the world, and promote awareness of opportunities;
- promote more effective and timely decision making by companies engaged in trade and investment; and
- better enable government agencies and companies to manage issues impacting on brand "New Zealand".

PUBLIC SECTOR PROCUREMENT

- 4.36 The Government has substantial capability to influence New Zealanders' awareness and understanding of green growth through the \$31 billion procurement activities of 219 State Sector agencies each year. The Government Procurement Reform Programme, established in 2009, is being progressively adopted by government departments, Crown entities, State owned enterprises and local authorities. The Government Procurement policy framework has six core principles that include: "Requiring sustainably produced goods and services wherever possible, having regard to economic, environmental and social impacts over their life cycle."
- 4.37 The Advisory Group sees Government Procurement as a major opportunity for stimulating greener growth through additional competitive pressure on businesses to opt for increased environmental sustainability in production and supply of a broad range of goods, services, technologies and assets. In their procurement activities, Public Sector agencies can make demands of suppliers aligned with the principle above. The increased weight given to greener supply of the Public Sector can be expected to shape, over time, supply chain requirements and market preferences throughout the economy. It can be used to stimulate upskilling in this area across the Private Sector, with new knowledge and skills spreading through supply chains economy-wide.
- 4.38 It must be noted, however, that the Reform Programme is at an early stage of implementation and significant barriers to greener procurement have been identified. These include: an ingrained focus by procurement decision makers and their suppliers on cost and immediate affordability above all else; a lack of understanding about what "greener" supply can mean in many areas; and a lack of business capability in demonstrating sustainability as a quality in goods and services. Public Sector agencies often do not have sufficient incentive or resource to opt for "greener" alternatives in their building, technology and vehicle purchasing. New Zealand could potentially adopt the "invest to save" concept pioneered in the United Kingdom and Europe, where State agencies have been encouraged to broaden the range of benefits factored

PROCUREMENT PRINCIPLES

The Government's policy on procurement is based around six core principles:

- *Best value for money over the whole of life;*
- *Open and effective competition;*
- *Full and fair opportunity for domestic suppliers;*
- *Improving business capability, including e-commerce capability;*
- *Recognition of New Zealand's international trade obligations and interests; and*
- *Requiring sustainably produced goods and services wherever possible, having regard to economic, environmental and social impacts over their life cycle.*

These principles, if reflected in practice, are consistent with green growth.

However, there is considerable variation across Government in terms of capability and practice. A major focus of the Procurement Reform Agenda is to address these issues. The overarching objectives of the Reform Programme are to improve public sector productivity and procurement capability, improve opportunities for New Zealand businesses to participate in supplying to Government and to deliver fiscal savings through aggregation and better practice.

“Many of our environmental initiatives are responses to demand for products with reduced environmental footprints. We are working to better describe the environmental footprints of our products, including getting life-cycle analyses information out into our supply chains.”

- Fletcher Building in discussion with Green Growth Advisory Group officials.

into their procurement decision making through increased availability of initial funding. With “invest to save”, agencies can opt for greener buildings, equipment and vehicles that have higher up-front cost but lower operating cost thereafter, along with higher returns environmentally and socially. The concept implies net financial gain over time.

- 4.39 There are opportunities to forge these green growth links in Public Sector procurement in particular industries and locations, with benefit to both the Reform Programme roll-out and to New Zealand’s interest in greening growth economy-wide. The Advisory Group has identified the construction industry – with special reference to procurement on the rebuilding of Christchurch – and the public healthcare sector as priority areas to lift sustainability performance.
- 4.40 Rebuilding Christchurch represents a spike in spending on construction of both residential and commercial buildings. In fact, this is a once-in-a-lifetime opportunity to facilitate change in New Zealand’s construction industry with investment in creating greener living and workspaces through, for example, walling insulation, double-glazing, and low GHG-emitting and energy-efficient heating. The industry has an established orientation towards greener design, and greener building materials and methods. This is evident, for example, in the Green Star ratings given to most new large commercial buildings in New Zealand today. The construction industry’s focus on improving its own productivity is also key when considering its potential role in greening the Christchurch rebuild.
- 4.41 Government procurers can work closely with the Ministry of Social Development Property Centre of Expertise, the DBH Productivity Taskforce and the Private Sector to deliver a healthier, more comfortable “green city” for the people of Christchurch. Options can also be explored with the New Zealand Transport Authority in regard to roads and with local government in regard to public transport, and with other agencies engaged in significant reconstruction spending in the city. Focusing on Christchurch in this way could promote further green growth thinking and practice in construction nationwide.
- 4.42 Healthcare is one of the most significant ongoing areas of Government expenditure and with this comes high potential to influence Private Sector markets through procurement-driven demand. Vote Health is almost \$14 billion, mostly devoted to purchasing health services nationally or through district health boards.

4.43 The Advisory Group believes Government procurers can work with the Ministry of Health and healthcare providers for the increased purchasing of products and services assessed to have less adverse effects on the environment and on human health than competing products and services. Assessment might include identifying products that are less disposable and/or those that have less unnecessary packaging. It could also focus on reducing reliance on products that are energy- or water-intensive, and those that require special handling or hazardous waste disposal at the end of their life. Food and other consumables are a big area of expenditure in the healthcare sector, and focus on greener procurement here could positively influence New Zealand’s large food and beverage sector.

4.44 The Advisory Group believes the best way forward under the Government Procurement Reform Programme for greener procurement in the construction and healthcare sectors is for relevant agencies to engage in partnership with the Private Sector, establishing criteria and processes likely to have the best outcomes for all parties. Over time, the focus on construction and healthcare could be broadened to other industries and sectors, notably the education sector where the Government also has high ongoing expenditure.

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Recommendation 14: The Government should accelerate the Public Sector-wide implementation of its procurement policy along with efforts to raise management capability in this area, such that the policy’s sustainability principle is increasingly evident in practice.

Recommendation 15: The Government should designate construction and healthcare as ‘green growth sectors’ in relation to Public Sector procurement. Purchasing in these sectors will then be tied more explicitly to the ‘sustainability’ principle and a small number of priority environmental factors (for example, GHG emission reduction, waste minimisation). In the construction sector, highest priority should be given to the ‘greening’ of procurement in the rebuild of Christchurch.

Recommendation 16: The Government should consider establishing an “invest-to-save” fund for Public Sector agencies, which enables them to shift sooner to greener technologies and practices, and thereby to encourage innovation among their suppliers. The fund will provide interest-free loans which help agencies to meet the higher upfront costs associated with purchasing greener products, services and technologies – and to secure net financial gains over the long term.

GLOBAL STANDARD

The international Business and Biodiversity Offsets Programme (BBOP), with representation from New Zealand's Department of Conservation, is developing a global standard for offsetting regimes. The BBOP defines offsetting as "measurable conservation outcomes resulting from actions designed to compensate for significant residual adverse biodiversity impacts arising from project development after appropriate prevention and mitigation measures have been taken. The goal of biodiversity offsets is to achieve no net loss and preferably a net gain of biodiversity on the ground."

BIODIVERSITY OFFSETTING

- 4.45 The Resource Management Act requires companies planning economic development projects to avoid, remedy and mitigate the effects of activities on the environment. In some instances, project developers have sought to quantify in advance what the effects will be and plan steps to "offset" them in meaningful ways. New Zealand law makes no explicit provision for offsetting in this context, and such practices to date have been variable and ad hoc, often with deficient compliance, monitoring and enforcement.
- 4.46 The Advisory Group sees substantial potential in establishing standard principles and processes for offsetting. Projects could then be planned, consented and developed with a common understanding of how environmental effects – or more precisely in this context, biodiversity loss – will be measured, and of what offsets will be appropriate and credible. The benefits include greater transparency and certainty around developments, enabling these to occur faster and at less cost, and enhancements to biodiversity and the natural environment overall. The current system may not result in the best overall biodiversity (and environmental) outcomes. Offsets tend to be of a "like for like" nature in the vicinity of the particular development. Given that offsetting is an investment in biodiversity, providing for greater flexibility in the system will result in greater biodiversity returns for that investment. However, the Advisory Group acknowledges that this requires clear national priorities for biodiversity by type and species, location and activity.
- 4.47 Biodiversity offsetting could also evolve into a "bio-bank" where biodiversity credits are held for use in particular offsetting transactions. Credits are quantified and verified units of on-the-ground conservation. A New Zealand example might be 1000 hectares purposefully fenced and managed in perpetuity as habitat of recognised priority for conservation of native species. Because introduced pests are the major threat to biodiversity assets in New Zealand, offsetting is likely in many cases to involve establishing an endowment to support pest management on the site in perpetuity. A typical scenario would see a project developer quantify the environmental effects expected from a development and proceed through the standard legal processes required for consent. The latter would be given subject to suitable conditions that include the purchase of that 1000-hectare biodiversity credit from the bio-bank. Once purchased the credit would be "retired", ensuring no change to its conservation status.

- 4.48 The Advisory Group believes New Zealand can learn much from the mixed experience of other countries with various forms of formalised biodiversity offsetting. The United Kingdom, France and Sweden are among countries now developing markets where offsetting credits can be more easily sourced and valued. The United States reportedly has 15 active biodiversity trading programmes. In Australia, New South Wales and Victoria have each developed schemes based on biobanking. “BushBroker” holds native vegetation credits in Victoria, with around 300 transactions recorded so far. Japan and Vietnam are among Asian countries also looking at systemised biodiversity offsetting. It is important to note that many of these countries have relatively large areas of similar biodiversity assets and this is not the case with New Zealand. There is, also, little international experience with offsetting that involves the sort of pest management issues that must be addressed in this country.
- 4.49 Of critical importance to any scheme are the principles and methodologies that can be applied to each step: They must be capable of credible application across a broad range of circumstances, be fair and equitable, and enable the transparent exercise of sound judgment. Monitoring and certification will be needed to verify that gains are indeed being delivered especially in relation to pest management. Efforts are underway to establish internationally-standard principles and criteria for biodiversity offsetting (see page 42). The Advisory Group notes that New Zealand would need to resolve critical questions around the extent to which offsetting might include the Conservation Estate and many of its biodiversity assets.
- 4.50 The Advisory Group believes that biodiversity offsetting, based on sound principles, rigorous environmental science and monitoring, and appropriate institutional arrangements, could make a significant contribution to greener and faster growth in New Zealand. The concept could be introduced through formalised offsetting on a case-by-case basis. This would require consensus on offsetting principles and processes, with these also being flexible enough to encompass land and resources in public or private ownership (or combinations of both). Public acceptance of the concept and its practice would rest largely on the quality of governance arrangements established for oversight of each offsetting transaction and its implementation. Clearly, there must be a high level of trust that a loss of biodiversity assets in one place is indeed being offset by real gains elsewhere and real net gains to the environment.
- 4.51 The Advisory Group sees a spectrum of options if New Zealand wants to develop biodiversity offsetting further over time. Options include a scheme for the trading of offsetting credits and thereafter a “biodiversity market”. Such development could have significant benefits and challenges (see Figure 7, page 44). It would be important to build experience and public acceptance for formalised offsetting transactions before further developments. Figure 7. sets out a potential path for the evolution of biodiversity offsetting in New Zealand over time.

Figure 7. Future Options for Biodiversity

FORMALISED OFFSETTING	TRADING IN CREDITS	BIODIVERSITY MARKET
<p>Establish a consistent methodology (common language, standardised metrics, and clearer decision-making processes) for determining appropriate biodiversity offsets.</p>	<p>Define biodiversity 'credits' for trading and establish an independent broker or 'bank'.</p>	<p>Enable a public market to evolve, with government possibly playing a role in administering a centralised registry.</p>
<p>Benefits</p> <ul style="list-style-type: none"> • Increased certainty for all involved, particularly regarding the costs of a development. • Improved biodiversity and environmental outcomes, through reduced barriers to determining offsets which meet an appropriate standard of ecological integrity. • Transparency of decision-making and increased assurance that the offset is appropriate, rather than an arbitrary cost. • Efficiency (eg reductions in the time required to develop an offsetting plan) leading to reduced transaction costs . 	<p>Additional benefits</p> <ul style="list-style-type: none"> • Specialisation between the suppliers of biodiversity credits (eg landowners) and the consumers (eg developers), resulting in productivity gains. • Full transparency and traceability of an environmental asset from creation to eventual 'retirement' from circulation. • Potential for greater flexibility as to where offsetting occurs and the nature of the offset, possibly allowing offsets to be focused on high priority biodiversity. 	<p>Additional benefits</p> <ul style="list-style-type: none"> • Transparent spot and future pricing facilities will apply, enabling improved risk management for development projects. • Enhanced liquidity of biodiversity credits.
<p>Challenges</p> <ul style="list-style-type: none"> • Current lack of certainty (eg definition of an "offset") means considerable work will be required to develop a scientifically credible and robust methodology for offsetting. • Need to ensure that offsets are recognised by all stakeholders. • Need to ensure that offsets are additional to ongoing government-funded conservation programmes. 	<p>Additional challenges</p> <ul style="list-style-type: none"> • The greatest potential gains would come from trading between different types of biodiversity, ie 'apples' for 'oranges,' and this would call for a valuation and certification mechanism for biodiversity credits. • To achieve widely accepted valuations of biodiversity credits and debits, a trusted governance entity would be required, which involves non-governmental and scientific organisations with a recognized interest or expertise in biodiversity. • Valuations would not be in dollars and a biodiversity "currency" would be needed. 	<p>Additional challenges</p> <ul style="list-style-type: none"> • Transferability of biodiversity credits may be essential – this would be very challenging with current data and technology. • Enabling legislation may be required, along with trading, settlement and registry systems. • Future biodiversity supply and demand information would be required. • Further development of the governance regime.

Recommendation 17: The Government should create a nationally consistent biodiversity offsetting regime that will facilitate projects for economic growth and, at the same time, deliver net gains to New Zealand's biodiversity and environmental quality. This scheme should:

- be based on widely understood and accepted principles of equity, efficiency and transparency;
- be based on a good understanding of the New Zealand context, including the need for ongoing, active pest management if biodiversity assets are to survive in the long term;
- be additional to ongoing biodiversity protection and enhancement programmes of relevant government agencies and Crown entities;
- operate through rigorous processes that are supported by the best available environmental science and monitoring;
- include governance arrangements which build public confidence that long-term improvements to biodiversity assets will indeed result, with enforcement of obligations if necessary; and
- potentially lead to the development of a biodiversity trading scheme of further benefit to the greening of New Zealand's growth.

SECTION 5

Sector Opportunities

- 5.1 The Government's Economic Growth Agenda (EGA) has identified four priority sectors as the basis for New Zealand's future economic growth: Food and beverage production; tourism; high-value manufacturing services; and minerals and petroleum extraction. This section of the report looks at the greening of growth in each of these sectors.
- 5.2 The Advisory Group recognises the food and beverage sector (the dominant component of the primary sector) as core to New Zealand's economy for the foreseeable future. Some of this country's greatest green growth challenges exist in this sector, along with substantial opportunities. Tourism also has substantial challenges and opportunities, as this sector turns more towards attracting and servicing high-value international tourists. In the extractive sector, green growth issues are reflected in the current deep division of views among New Zealanders and these need to be addressed if there is to be further development and growth in this sector.
- 5.3 The EGA has identified the importance of high-value manufacturing and services (HVMS), which includes agri-technology, to growth and productivity gain across this economy. New Zealand has a diverse set of HVMS businesses, based on innovation. The Advisory Group sees HVMS as particularly significant to the greening of New Zealand's growth because of its growth potential and the generally lower environmental intensity of businesses in this sector. Over time, this sector is expected to make a bigger contribution to New Zealand's growth and to the greening of that growth. There are key questions around what role the Government might play in a shift of relative importance in sectors that make up New Zealand's economy. The Advisory Group has focused on greener and faster growth in the four sectors, based on the current situation of each.

FOOD AND BEVERAGE SECTOR

Current Situation

- 5.4 Food and beverage production and exporting are critical to New Zealand's economy – and this will remain so into the future. In the year ended June 2011, dairy products, meat, fruit, fish and other foods and beverages accounted for 58.5% of exported goods (by value). The food and beverage sector has developed internationally competitive advantages based on productivity gains in agriculture, horticulture, viticulture, aquaculture and fisheries. Its advantages also reflect New Zealand's position on global markets as a supplier to consistently high standards of taste, nutrition and safety. These qualities clearly contribute to our "clean green" reputation, as do international perceptions that our primary production is in environments relatively free of pollution, and includes high standards of animal welfare and sustainability. Such perceptions are vulnerable as closer attention is paid to particular aspects of environmental performance.
- 5.5 Primary production, by definition, relies heavily on natural resources and environmental services of all kinds. Pastoral and arable farming, and horticulture and viticulture account for 50% of New Zealand's land area, and it uses 70% of all abstracted water (for irrigation). Forty seven per cent of this country's Greenhouse gas (GHG) emissions are attributed to livestock farming. Growth in production over the past 20 years has brought deterioration in some environmental quality measures, most notably faecal contamination, nitrate and phosphorus levels, and sediment buildup in rivers and lowland streams, lakes and estuaries.

5.6 New Zealand agriculture faces substantial issues around water use and water quality, largely as a legacy of past choices and entrenched practices. Some regions have long-standing, diffuse source pollution. Entitlements (legal or assumed) to take water and to discharge contaminants into rivers and streams have, in some locations, been capitalised into property values, which makes compliance with newer environmental limits potentially costly to current landowners. There are various initiatives underway to address the issues, including:

- the Dairying and Clean Streams Accord 2003, between Fonterra Co-operative Group and local and central government, for voluntary protection of waterways;
- the use of information technologies such as “Overseer” for better on-farm management of nutrients and other environmental challenges;
- a national policy statement requiring regional councils to set limits on water takes and water quality
- collaborative governance initiatives to implement water management improvements, for example, in the Land and Water Forum at the national level and Hurunui-Waiiau catchment in Canterbury.

5.7 The Advisory Group notes the importance of the Land and Water Forum, established in 2009 as a collaborative initiative at the national level. In response to the forum’s initial work, the Government announced in mid 2011 a package of policies for freshwater management, including a Clean-Up Fund to help local authorities address pollution in waterways of national significance. The forum will report further to the Government on methods, tools and governance arrangements for the setting of water use limits, and for the management of resources within these limits. Rising interest in collaborative initiatives is being accompanied by willingness to provide ratepayer or taxpayer support for farmers to make the changes required in areas of high public interest. Most notably, a limit on nitrate discharges into Lake Taupo is being supported by a trading scheme in discharge rights and \$81.5 million in public funds, available to compensate landowners for making the needed reductions in discharges.

5.8 Positive links are frequently seen between productivity and environmental impact: Gains in the former can reduce the intensity of the latter per unit of production. The application of new knowledge and technologies to farming can lead to reduced usage of natural resources in each unit of production and/or reduction in the discharge of waste or other emissions

GLOBAL RESEARCH ON AGRICULTURAL EMISSIONS

New Zealand established the Global Research Alliance (GRA) on Agricultural Greenhouse Gases (GHG) in December 2009 – a demonstration of leadership by this country on a green growth issue of critical importance to the world

The GRA is a collective commitment to research, development and extension of technologies and practices that will help deliver ways of growing more food (and more climate-resilient food systems) without growing GHG emissions.

Thirty two countries are now GRA members, with New Zealand currently chair of the governing council. The GRA has three international research groups (croplands, livestock and paddy rice) and two cross-cutting groups (on “soil carbon and nitrogen cycling”, and “inventory and measurement”). New Zealand is supporting the GRA with a \$45 million budget, of which \$25 million has gone into the New Zealand Fund for Global Partnerships in Livestock Emissions Research.

This fund will be available over four years for research on grazing livestock systems. New Zealand’s other GRA support includes fellowships and scientist exchange schemes, technical workshops, guidelines on various agricultural GHG measurement techniques, collaborative research projects, and the creation of international networks on specific areas.

per unit. One example is the advance of nutrient management technology in pastoral farming. The Overseer tool, developed by AgResearch, enables producers to calculate productive nutrient flows in their farming system, and maximise the benefits to pasture while managing the risks of adverse environmental impact. The Advisory Group notes that much of New Zealand's Innovation System is focused on productivity improvement in food and beverage production, with significant success over a long period. In agriculture, measured productivity (excluding externalities) has improved an average 2.5% per annum for the past decade (much higher than for the economy overall).

- 5.9 The Advisory Group notes that traditional measures of productivity in New Zealand agriculture do not take full account of environmental externalities. Some productivity gain has, for example, been driven by introducing higher levels of nitrogen to farms (both as fertilisers and as supplementary feeds) while, at the same time, nitrogen-rich urine has become a driver of water quality deterioration and of higher GHG emissions. The full environmental impact of New Zealand's use of imported supplementary feeds, most notably palm kernel extract, is another unknown. Such issues need recognition in greening the growth of our primary sector.
- 5.10 In recent years, some farmers have learnt how to maximise returns from better management of nitrogen and from use of effluent as a fertiliser, rather than expand the application of costly artificial nitrogen. Further research is needed to better determine the costs and benefits of intensification in farm management by accounting for natural capital and environmental services. This could improve our understanding of agricultural productivity and guide the selection of lower impact agriculture development strategies.
- 5.11 There are many developments in New Zealand food and beverage industries that directly address, or anticipate, market-pull towards greener products and more sustainable production. For example, organic production is a growing segment in most industries, with price premiums sometimes available for meats, fruits and vegetables taken to market with organic certification. In arable farming, many growers now engage in minimal tillage to conserve soil and water, along with judicious use of agrichemicals. There is also increasing adoption of integrated pest-management systems that combine new knowledge on crop management with biological control agents.
- 5.12 In agriculture generally, however, the tools available to improve productivity and reduce environmental footprint are incomplete. There is wide variation in the uptake of available tools, and wide variation in productivity levels between farms and regions. This country has approximately 60,000 farm enterprises including many that are highly productive with relatively low environmental impact. On the other hand, we also have a significant "tail" of lower-performing farm operations. To improve performance, it will be necessary to improve New Zealand's technology transfer system such that uptake of new technologies, farming systems and practices occurs in a broader, more timely manner. For this to be achieved, we need to address capability within primary sector businesses.
- 5.13 The Government and Private Sector entities have begun addressing these issues through the Primary Growth Partnerships (PGP) programme, which has so far generated substantial projects in the dairy, red meat and seafood industries. The PGP explicitly links capability building with productivity gain and reduced environmental impact. Projects can include research and development, education and training, and technology commercialisation and transfer. Government funding for PGP projects will reach \$70 million per annum in 2013. The Precision Seafood Harvesting project will, for example, involve \$52.6 million of investment (by Government and Private Sector) over six years in developing new harvesting technologies that minimise the catch of non-target species and sizes, and protect fish quality in the harvest process. The PGP is in its early stages.

5.14 New Zealand's commercial fisheries are sustainably managed under a Quota Management System (QMS) acknowledged widely to be an example of international best practice. This system has been in place since 1986. Nonetheless, resources within our Exclusive Economic Zone (EEZ) are often subject to tensions between economic (principally fish harvesting) and environmental values (such as protection of species, genetic diversity and habitats). While most QMS stocks are above biomass levels that require formal rebuilding plans, 19 stocks were below this level (known as the "soft limit") in 2011. A total of 127 stocks are subject to monitoring on this measure. To ensure the integrity of the QMS, the environmental practices of fishers are subject to routine monitoring. On some areas of New Zealand coast, there is mounting tension between commercial and recreational use of fisheries.

5.15 The Advisory Group notes the importance of forestry and wood processing industries to New Zealand's overall management of natural resources and environmental services, and hence to our green growth. This country's extensive plantation forests are a major sink for GHG emissions and they provide other important services especially in respect to water quality.

Green Growth Opportunities

5.16 Global demand for food and beverages is rising, based on underlying economic growth. In dairy, for example, Fonterra predicts demand growth in developing countries will outstrip supply over the next decade, along with continued growth in demand for its higher-margin products as supplied to customers who are global food companies. Across the food and beverage sector, demand in some markets will be strongest for products of consistently high quality and safety, and produced and supplied to standards of environmental sustainability. New Zealand's reputation for "clean green" is unlikely to confer advantages in all markets, but could strengthen our opportunities for premium products in premium markets. The nature and mix of demands varies between markets. Food safety and traceability of products are "green" issues, particularly for supply to the European Union and North America. These markets also include increasing demand for organically-certified food and beverage products.

5.17 Advances in scientific knowledge have added value to various existing products by revealing their special qualities. For example, manuka honey has been identified as having health-enhancing antibacterial properties which give the product a premium in the consumer market.

GHG FOOTPRINTING

New Zealand has a well-developed understanding of the GHG emissions associated with its primary-production exports. GHG footprinting (also known as carbon footprinting) has been undertaken on over 80% of these exports. Measuring footprints enables producers and marketers to understand precisely where emissions sit in the supply chain and to take more effective actions for reduction, management and mitigation.

GHG footprinting enables the calculation of emissions through each stage of the primary product's life cycle. This includes on-farm activities and farm-related inputs (including imported inputs), the processing and transport of products to overseas markets, and the disposal of related waste.

To assist with developing scientifically-robust methodology for such measurement, the Ministry of Agriculture and Forestry funded the establishment of the New Zealand Life Cycle Management Centre hosted at Massey University in collaboration with Crown Research Institutes.

"The integrity of our supply chain – especially in terms of animal welfare and environmental performance – is becoming very important to our customers and to the New Zealand public. We are focused on efforts to facilitate improvements in productivity, welfare and environmental footprint behind the farmgate, given that the opportunity exists for significant gains in these areas. In conjunction with this, we are an advocate for the setting of New Zealand-wide environmental standards which are outcomes based, rather than prescriptive, and which bring more credibility to New Zealand's clean green image."

- ANZCO in discussion with Green Growth Advisory Group officials.

PRECISION IRRIGATION

Technology uptake in the use of water for irrigation is delivering economic and environmental benefits. Centre pivot irrigators and linear move irrigators are increasingly be installed on New Zealand farms. There is a continuing shift in farming towards centre pivots/linear move irrigators and irrigation scheduling. Some progressive farmers are also moving to the variable rate application of water based on electro-magnetic mapping of soil types and water holding capacity, and the use of individual GPS units on each irrigator nozzle to apply the precise amount of water required in every part of the paddock. Early results with this technology have shown 20% water savings with increased pasture performance. The benefits include less drainage taking nitrates into groundwater.

Precision agriculture, more generally, is the application of technologies with livestock and agronomic principles to manage key variables in agricultural production for improved animal and crop performance, with increased agricultural quality.

Technical services and non-traditional products are growing sources of earnings for the primary sector. Such technical services include consultancy on food production, processing, food safety and logistics. Non-traditional products range from lactoferin and pharmaceutical intermediates from animal bile, to probiotics for digestive health, to anti-oxidants from fruit and vegetables for use in nutraceuticals. These make a particular contribution to greening growth because they tend to have higher value than traditional products in end markets, and each unit of production requires relatively fewer resources (some are derived from traditional by-products).

- 5.18 Global markets offer substantial growth opportunities if the sector can supply the volume, quality and consistency required, and meet rising green expectations. We must expect the latter to become a baseline requirement in some markets. This is evident, for example, in the sustainability standards applied by UK supermarket chains to their procurement of food stuffs from suppliers. To secure and develop the opportunities, especially for growth in value-added food and beverages, New Zealand will need continued innovation that drives productivity gain and also reduced intensity of environmental impact.
- 5.19 The disparity between strong and weak performers across the primary sector spells substantial opportunity – and also substantial risk. If more producers can achieve higher levels of productivity and environmental performance, growth will become greener and faster. However, the “tail” of lower performers could also attract increasingly negative scrutiny from international customers and market observers, to the likely detriment of New Zealand’s reputation for “clean green” production. The sector needs more effective processes for transferring tools for productivity gain and environmental management to producers, and for assisting those in the “tail” to significantly improve or exit.
- 5.20 New Zealand’s nationwide broadband roll-out is expected to provide primary sector producers with better access to information tools, knowledge and technologies that support productivity growth. This is part of the impact broader access to IT and telecommunications infrastructure is having on on-farm productivity. The PGP project, Farm IQ Systems, is demonstration of this potential in the red meat industry, with centralised data gathering and analysis now underway on selected sheep and beef farms. This project could bring major productivity gains across the sector through the creation and widespread sharing of new knowledge on livestock management and feeding.

5.21 Opportunities exist for increased use of collaborative governance, especially in setting clear limits for water quality and abstraction, while promoting flexible self-management and engaging local knowledge in how to achieve best results within those limits (see also discussion Section 3). In this regard, the Advisory Group supports recommendations of the Land and Water Forum in its September 2010 report. Enhancing New Zealand's ability – through collaboration, audited self-management and improved regulation – to protect natural resources and strengthen ecosystems can support greener growth. It can also protect and strengthen New Zealand's "clean green" reputation in global markets.

Challenges

5.22 Maintaining and applying world-class R&D capability in biological systems and production is a continuous challenge for New Zealand (as for all small countries). We must, more than ever, align relevant parts of the Innovation System with the needs of the primary sector for knowledge and technologies that raise both environmental performance and productivity. The Primary Growth Partnership programme, with projects now underway in dairy, red meat and seafood, is an important further development in the system that is expected to deliver on both these fronts.

5.23 The underlying challenge for New Zealand agriculture is to gain further control over environmental impacts and especially diffuse source pollution and GHG emissions. Other initiatives might warrant consideration including, greater use of winter feed pads. In some cases, it is not clear who is ultimately mandated to ensure the effectiveness of measures to reduce discharges to the environment (for example, by ensuring management practices reduce nitrate and nitrous oxide emissions from pastoral systems) and meet market expectations. The underlying challenge for agriculture also includes gaining increased knowledge on the environmental impact of various established practices – and having the capability to both manage these impacts and respond to related questions from customers and others. The use of imported palm kernel extract is, for example, an area of concern in this regard.

5.24 Farmers and growers must be willing and able to adopt the productivity and environmental management tools available to them. Some do not currently have the capabilities and resources to identify and implement the tools most relevant to their circumstance. Farmers and growers will need also to be increasingly responsive to market signals on sustainability and environmental performance as these relate to farming practices. There is a real challenge in raising the capability of lower performing farms to match good performers.

5.25 The current technology transfer system is complex and fragmented. There needs to be greater clarity in who is responsible for helping farmers manage diffuse source pollution and GHGs, so that farmers receive factual information that is relevant and trustworthy and reflects the latest scientific knowledge. In the Advisory Group's view, the Government, through agencies such as the Ministry of Agriculture and Forestry, needs to work closely with industry and sector groups in enhancing existing programmes and developing additional programmes or toolboxes as required. Delivery of advice and assistance with adoption of technology will be most effective if conducted through trusted advisors, so existing channels and networks should be used where effective. Local authorities also have a significant role in ensuring that policies, limits and systems are in place and that performance is monitored and supported by effective enforcement.

5.26 Effective collaborative processes are required for environmental enhancement through improved information sharing and leadership for farmers, growers and fishers. New Zealand has seen the collaborative model achieve results in some areas of agriculture. However, it has potential to deliver much more if a more effective framework for issues resolution can be developed, with support from voluntary and regulatory standards.

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Recommendation 18: The Government should continue investing in R&D for increased agricultural, fisheries and aquaculture productivity and environmental performance, while also supporting research that increases understanding of the biological systems that underpin these industries and the associated biosecurity risks. This will mean:

- government agencies working with CRIs and industry to improve the quality of information around hydrology, soils, pasture and crop growth, nutrient management and fish stocks, and making this information more accessible to managers of our resources such that better decision making can occur;
- greater use of economic analyses which place a value on natural capital and environmental services, to better inform productivity measurement, and to guide selection of lower impact agricultural intensification strategies and techniques; and
- all stakeholders acknowledging the importance of this work to brand “New Zealand”, and applying sound science to protect and enhance national reputation as well improve industry performance.

Recommendation 19: The Ministry of Agriculture and Forestry and other governmental agencies, in partnership with industry, should develop more effective programmes for the transfer of new knowledge and technology between the Innovation System and New Zealand farm businesses. The programmes should:

- draw fully on research and development outcomes from Crown Research Institutes, universities and other institutions;
- make accessible to every farmer a practical ‘toolbox’ of technologies and actions relevant to his or her circumstances;
- include a particular emphasis on managing diffuse sources of pollution and GHG emissions;
- involve some increase in Public Sector agency resourcing to ensure ‘on-the-ground’ delivery of this ‘toolbox’ and other knowledge; and
- be delivered through the co-ordinated effort of agencies, industry groups and individual farmers.

Recommendation 20: Consistent with Recommendation 2, the Government should, where appropriate, promote collaborative processes at regional and national levels for the resolution of environmental issues that arise from farming, fishing, horticulture and/or forestry practices. These processes should include:

- increased resourcing over time for the Government’s new Clean-Up Fund to a level commensurate with need nationwide; and
- extension to other primary industries of the approach embodied in the Dairying and Clean Streams Accord.

Recommendation 21: The Government and sector organisations should encourage livestock farmers to invest in technologies and systems for the management of diffuse source pollution including GHG emissions. These could include technologies and systems such as wintering pads, nitrogen inhibitors, better uptake of rural broadband, other tools for precision agriculture, and other measures.

TOURISM

Current Situation

- 5.27 Tourism is New Zealand's second biggest foreign exchange-earning sector (after dairy exporting), with more than 2.5 million international visitors coming here in the year ended August 2011. Visitor arrivals have doubled in the past 20 years as part of a long-term growth trend which the industry expects to continue for the foreseeable future. The most recent Ministry of Economic Development prediction is for arrivals to top 3 million per annum in 2015. The volume growth has, however, been accompanied by a decline since 2002 in the average spend by international visitors while in this country.
- 5.28 Tourism growth has been based largely around the appeal of New Zealand's natural scenery, its offering of outdoor experiences, and its reputation as a safe destination for relaxation and visiting friends and family. These perceptions are reinforced by the "clean green" attributes of our national brand. The tourism sector certainly leverages the brand on global tourism markets as evident, for example, in Tourism New Zealand's "100% Pure New Zealand" campaign. This promotes this country as a tourist destination offering a cluster of distinctive New Zealand experiences in natural environments.
- 5.29 Global tourism markets include an expanding segment of tourists who base much of their attraction to destinations on the natural environments they will encounter, and/or on values of environmental sustainability in products, services, technologies and economic systems. Such tourists (holidaymakers or business visitors) are typically more affluent, and more inclined to use online media to research destinations and select from tourism offerings. They have high expectations of services they receive and of their overall experience.
- 5.30 New Zealand's "clean green" attributes are attractive to tourists in this greener market segment, although they may come here with expectations that are not always matched by the quality of local services. For example, the Advisory Group was told that some European tourists, while retaining positive perceptions overall of New Zealand's environment, express disappointment at recycling facilities that are below the standards commonplace in their home countries.
- 5.31 In this market segment also, New Zealand's "clean green" reputation is vulnerable to the performance of other sectors in our economy and to related perceptions, especially those conveyed by the international media. For example, degradation of river water quality could be an issue in this regard.
- 5.32 Growth in New Zealand's tourism sector has meant growth in the number and range of businesses providing accommodation, transport, tours, activities, venues, and access to locations and wildlife that are distinctively New Zealand. Tourism businesses range from large public companies to thousands of small businesses operating at a local level. The sector is estimated to include between 13,500 and 18,000 small-and-medium-sized enterprises. Together, tourism businesses are responsible for the employment, directly or indirectly, of 9.6% of the nation's workforce. The sector, accounting for almost 10% of GDP, is large but very fragmented: Businesses vary greatly in size, type and location, and in their management capabilities. Many of these businesses have a primary focus on servicing domestic tourism, although they are also part of New Zealand's offering to the international market.
- 5.33 New Zealand has an established voluntary regime of standards certification in the tourism sector. The Qualmark organisation launched Enviro Awards in 2008 for businesses to be assessed in five areas of environmental impact including energy efficiency and waste management. There are now approximately 1000 businesses with Enviro certification (gold, silver or bronze) – almost half of those that would be eligible for such recognition.

5.34 It is important to note that tourists, once here, experience not just the products and services of tourism businesses, but potentially those in every other economic sector as well as New Zealand's social and physical infrastructure. Their perceptions of this country – and their recognition or otherwise of “clean green” and other attributes – are derived from an infinite array of influences. Tourists also contribute directly to the environmental performance of New Zealand's businesses and infrastructure: As users of roads, waste disposal systems and other public services, they add pressure to natural resources and environmental services. Growth in the volume of tourists, including those with the highest green expectations, can bring its own risks. Notwithstanding these issues, the Advisory Group notes that international tourist feedback on New Zealand's environment and on experiences of visiting here remains generally very positive.

Green Growth Opportunities

5.35 Growth in tourist numbers is expected to continue but New Zealand will benefit most from growth in per-visitor spend. Businesses in the sector have told the Advisory Group that they are looking for a significant shift from volume to value. Growth in high value tourists coming to New Zealand (even with slower or no growth in visitor numbers) is seen as delivering higher returns on investment and helping defer the need for additional infrastructure to support the sector. The Advisory Group believes a focus on high-value tourism is inherently a shift to greener growth in this sector. Revenue and earnings will increase but associated environmental pressures, from increased use of transport, waste disposal systems and other infrastructure, will rise at a relatively slower pace. Higher value tourism implies higher profitability in tourism businesses – and more capacity to meet the environmental costs of sector growth.

5.36 New Zealand is well placed for tourism growth from the expansion of the greener market segment. The typically-more affluent tourist in this segment conforms to the desired shift to high-value tourism. Research for the Ministry of Economic Development in 2009 found that “international nature-based tourists” spent significantly more on average while visiting New Zealand than did tourists in general. The opportunity requires significant shifts in the sector as well, to better define and present our environment-based tourism offering, and to address standards of environmental practice sector-wide and within individual businesses. New Zealand's “clean green” reputation in the international tourism market is undoubtedly shaped, in part, by what visitors directly experience and see here.

5.37 The Advisory Group believes that developing the opportunity for high-value tourism growth can be supported by stronger environmental performance among transport and tour operators, accommodation providers, and other businesses across New Zealand. Certifications like Qualmark Green/Enviro Awards could become more important, along with other tools for improving environmental (and business) performance generally. There is a case for greater sector-wide coordination in marketing New Zealand as a green tourism destination through use of online media most preferred in the target market. Some large operators, most notably Air New Zealand, seek to make environmental sustainability central to their own branding in global markets and to their association with brand “New Zealand”.

5.38 The Advisory Group sees merit in identifying particular New Zealand locations as models or exemplars of Green Growth for the sector where all or most service providers integrate sustainability practices into their business processes and offerings to visitors. Such an approach would require support from organisations that represent the sector, the businesses concerned and local government. While the Government has a role as a facilitator, the approach must be owned and led by the industry itself to be successful. This approach would need to build on the experiences of New Zealand locations that are already adopting similar ideas (such as Kaikōura) and would ‘lift the bar’ in terms of overall capability and performance across the sector. It would also be important to ensure that the claims associated with these locations are credible and can be verified in our international markets.

Challenges

- 5.39 New Zealand tourism is based on international perceptions of natural landscapes and environmental quality, and related experiences. The sector faces two fundamental challenges. The first is ensuring that growth in tourist volume does not, itself, undermine the perceptions and experiences on which the tourism sector depends. The second is to ensure that activities and growth in other sectors of the economy do not undermine those experiences and “clean green” perceptions of New Zealand in the international tourist market.
- 5.40 As noted, the tourism sector is very fragmented and includes thousands of SMEs with limited capability for business development. These factors make it challenging for the sector to achieve greater coordination around a distinctive New Zealand green offering to tourists – an offering that can channel growth towards high-value tourism of the kind that is more profitability and greener. The limited capability typical of SMEs in New Zealand (and other economies) has particular significance in tourism where businesses can struggle to understand, implement and fund the environmental management systems needed to reach sector-wide standards and, ultimately, to support “clean green” in context of the New Zealand brand. Potentially, positive attributes of the brand are undermined by the performance of just a few operators.
- 5.41 Heightened concern with environmental sustainability worldwide brings other challenges beyond New Zealand’s control. These include increasing costs of long-haul air travel as carbon pricing takes effect in Northern Hemisphere countries.

Recommendation 22: The Government should work with the tourism industry on a new strategy for positioning New Zealand strongly with high-value tourists in the greener market segment. This strategy should promote:

- increased uptake of environmental management systems and relevant certifications among New Zealand tourism businesses;
- clear linkage of “clean green” country brand attributes to different elements of New Zealand’s tourism offering, including high-quality food and beverage production; and
- enhanced usage of online and social media communications to reach tourists who are both more attuned to these channels and more attracted to environmental sustainability.

Recommendation 23: The Government should explore/investigate, with industry leaders, businesses and local authorities the concept of high-profile New Zealand tourist destinations becoming models or exemplars of green growth in this sector. This model should be:

- drawn from experiences of current locations which have adopted this approach, such as Kaikōura;
- based on coordinated uptake of recognised and credible sustainability practices by as many commercial entities in that location as possible; and
- an authentic and visible demonstration to visitors of environmental sustainability in combination with world-class tourism offerings.

“Rapid development of the high value manufacturing and services sector has the potential to generate a step change in the economic growth and social wellbeing of New Zealand... the traditional contribution of our food and fibre-based sectors will remain critically important to our future but international experience shows that the HVMS sector offers a pathway to higher productivity and a means to reverse our relative decline in living standards”.

- “Powering Innovation”, report of the Panel on High Value Manufacturing and Services.

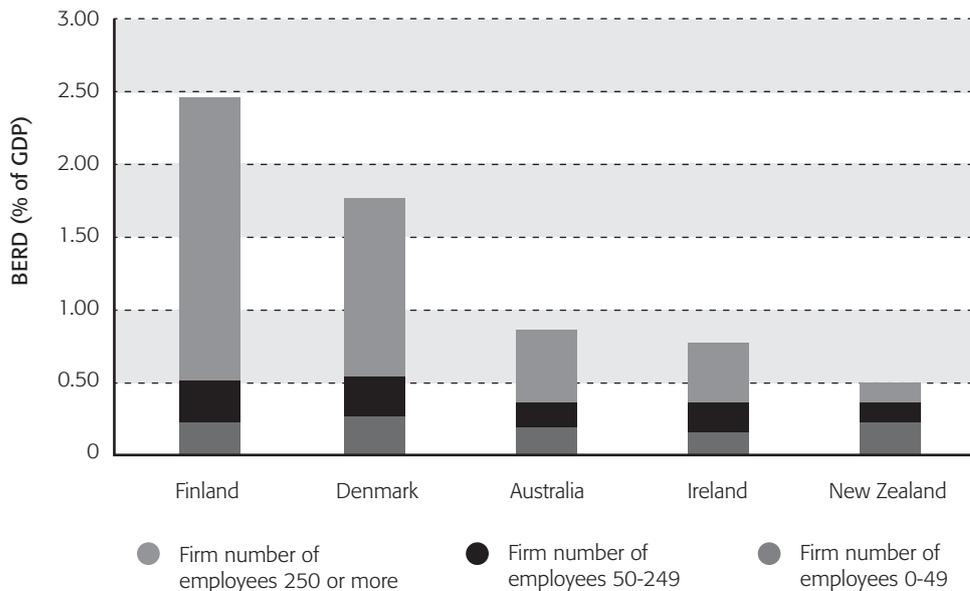
HIGH VALUE MANUFACTURING AND SERVICES

Current Situation

- 5.42 High-value manufacturing and services (HVMS) is a broad term for a diverse range of knowledge and technology-based businesses based in New Zealand but with a strong international focus. The HVMS sector encompasses the “TIN100” group of companies, as identified by Industrial Research Limited (IRL), NZTE and MSI. These companies produce high-technology products, biotechnology and/or Information and Communications technology (ICT). The 200 companies in this group (each having more than 10% of their sales in exports) had total revenues of \$7 billion for the 2011 financial year. The HVMS sector also includes a diverse range of smaller technology companies and various businesses that supply knowledge-intensive services. There is no sector-wide data for the HVMS sector as here discussed, although clearly its role in our economy is small by international standards. As one indicator, official statistics for medium and high-technology product exports show these make up approximately 15% of New Zealand’s total merchandise exports, significantly lower than comparable percentages for most other developed economies. Typically HVMS businesses are innovative and have high growth prospects in their particular niche. The Advisory Group shares the view that HVMS is under-developed and has substantial growth potential over the long term.
- 5.43 Generally, HVMS businesses have relatively low environmental impact and low GHG emissions intensity. This reflects their basis in knowledge and technology, rather than in natural resource use or in more traditional forms of manufacturing or service delivery to mass markets. In some cases their products are “weightless”, being software or information in other forms. For many businesses in this sector, the most significant inputs to these businesses are educated people and research and development (R&D) capability, along with access to broadband communications and international markets. Larger manufacturing businesses in the sector are usually consolidated on few sites where outputs to the environment are monitored and subject to tight constraint.
- 5.44 The emergence and growth of HVMS is heavily reliant on the performance of New Zealand’s Innovation System (see discussion in Section 4). R&D activity, adoption of knowledge and technologies from offshore, and commercialisation of new products and services all help create and sustain HVMS businesses. The Innovation System is partly geared in this direction, most notably through the work of IRL, Technology New Zealand’s TechNZ voucher system and the business funding, advice and other support programmes of NZTE.

5.45 New Zealand appears to perform relatively well on R&D within smaller companies economy-wide and this includes the HVMS businesses in which innovation has relatively higher importance. As Figure 8. (below) indicates, business R&D expenditure by firms with fewer than 50 employees as a percentage of GDP is similar to other OECD countries. The relative level of such expenditure falls off, however, as firms gain in size. R&D by larger New Zealand businesses is low by comparison with others including Australia. The data encompass all sectors. However it does tend to confirm that in HVMS, as in other sectors, this country struggles to grow and retain enterprises beyond a certain level.

Figure 8. International Comparison of R&D Intensity by Firm Size



5.46 The Government recently released “Powering Innovation”, a report addressing some of the barriers faced by businesses that can be identified as HVMS. Many of the findings are consistent with the Advisory Group’s views on Business Capability and the Innovation System as outlined in Section 4. If New Zealand can overcome the range of issues outlined in “Powering Innovation”, we will enable this sector to better realise its potential for growth. The proposed advanced technology institute, developed from the current IRL, has significant potential for supporting innovation in this sector, particularly through the adopting and adapting of knowledge and technologies from international sources.

5.47 Specifically, “Powering Innovation” identifies gaps in knowledge and technologies that are needed for growth and improved productivity across the New Zealand economy including HVMS. The Advisory Group received submissions calling for specific programmes to support the development and take-up of green or clean technologies. We do not support measures that would particular technologies over others, because of the difficulties in predicting which will actually lead to faster and greener growth. As noted, the Advisory Group believes that it is more important to build capabilities and skills within the Innovation System so that it can support multiple green growth shifts in different sectors including HVMS.

Green Growth Opportunities

5.48 As noted, New Zealand has substantial potential for growth in HVMS – growth that, by the nature of these businesses, can have less impact on the environment than growth in other sectors. The Advisory Group believes this sector represents a significant green growth opportunity for this country. Its development can occur in parallel with efforts elsewhere in the economy to innovate and raise productivity for sustained growth at lower levels of GHG emissions intensity.

5.49 HVMS is also a significant opportunity for the Innovation System. Institutional reforms and the strengthening of key programmes and linkages within the system, as proposed or under implementation, will have particular importance for the emergence and growth of businesses in this sector.

Challenges

5.50 HVMS businesses face the same business capability challenges as identified in other sectors: limited management knowledge and skill for business development; lack of practical information around the sourcing and application of innovation; and shortages of capital and time. The Advisory Group believes faster and greener growth in this sector will come as New Zealand addresses business capability issues, especially among smaller enterprises, economy-wide (as discussed in Section 4).

5.51 Challenges to the Innovation System have been discussed (Section 4), and they have been more fully addressed in "Powering Innovation" and the report of the Crown Research Institutes Taskforce (March 2010). The challenges are also challenges to HVMS because of this sector's reliance on the system. The Advisory Group believes that giving increased consideration to green growth across innovation funding and support programmes will see more R&D and other capabilities go into HVMS.

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Recommendation 24: The Advisory Group supports the conclusions and recommendations of the "Powering Innovation" and Crown Research Institute Taskforce reports and recommends that the Government consider green growth when implementing the recommendations of those reports. In particular, green growth should be considered in regard to:

- the work programme of the proposed advanced technology institutes;
- measures to support professional skill development in New Zealand; and
- the capabilities of public institutions as these are developed to support growth in high-value manufacturing and services.

See also Recommendations 8, 9 and 10.

PETROLEUM AND MINERAL EXTRACTIVE SECTOR

Current Situation

5.52 Petroleum and minerals extractive industries raise difficult issues in the greening of New Zealand's growth. They are issues reflected in deep divisions among New Zealanders over prospects for developing and growing the country's extractive industries. There are entrenched views for and against such development in general and in the context of specific proposals. The Advisory Group believes New Zealand needs greater public consensus on the future role of extractive industries in New Zealand's future development. Further growth of these sectors will be difficult without the country engaging in discourse with the intention of reaching greater consensus on: what resources are available for extraction and under what circumstances; how the impact of these activities should be managed and mitigated; and how issues of inter-generational equity should be addressed.

5.53 New Zealand does, of course, have an established petroleum and mineral extractive sector. It includes oil, gas, coal, aggregates, gold and ironsands. Aggregates are fundamental to the construction and infrastructure sectors, while coal and gas are used for heating in some primary product processing and they also provide export income. Ironsands are currently extracted for steel production at the New Zealand Steel plant, our largest single-site employer. Minerals and petroleum are estimated to be 8-10% of New Zealand's export earnings, and these industries employ 6,800 to 14,000 people. New Zealand has substantial known resource deposits for possible future development. A recent report by Woodward Partners to the Government estimated the value of the royalty streams for the petroleum industry from producing fields to be \$3.2B and the value of royalty streams from future discoveries to be in the range of \$1.6B to \$10.3B. The latter range is dependent on assumptions about the rate of exploration and the price of oil. This study was restricted to New Zealand's petroleum resources, and there is less certainty on the scale and value of our mineral resources. The work by Geological and Nuclear Sciences Limited, one of the CRIs, also assists in developing the information base necessary to inform a national discourse on the future of the extractive sector as well as improving our understanding of New Zealand's natural hazards.

5.54 Extraction, processing and utilisation of petroleum and minerals are, by their nature, significant contributors to GHG emissions. Different resources have different qualities and uses, and their emissions profiles vary accordingly. The world is moving towards an era of lower emissions but the pace and extent of this transition is very uncertain – and under all scenarios, most countries will continue to rely on fossil fuels for many years yet. Where those fuels are used, there are clearly benefits in them coming from the most efficient sources of supply around the world.

5.55 In New Zealand, as in other countries, extractive industries can pose high risks to the environment and to people. This has been well demonstrated in recent history including the Deepwater Horizon oil spill disaster in the Gulf of Mexico in 2010. New Zealand's extractive industries can clearly have a bearing on our "clean green" reputation. The extent to which this country is a petroleum and minerals producer – and the particular resources involved – along with the regulation and conduct of these industries are all potentially critical influences on how New Zealand is seen internationally. A large scale environmental incident involving these industries could have a significant impact on international perceptions of New Zealand's food and tourism sectors. Maintaining a "clean green" reputation requires maintaining the highest standards of regulation and conduct.

"Customers are showing an increasing interest in the environmental footprint of our production systems ... multinationals are assessed for their behaviour everywhere they operate."

- New Zealand Aluminium Smelters in discussion with Advisory Group officials.

- 5.56 Countries with extractive industries have regulatory and other measures to identify, reduce and manage the risks, and to address any adverse impacts. In New Zealand, the Government currently has a programme of action towards strengthening regulatory systems for health and safety in the sector, and for improving environmental protection. As part of this programme, the Government has introduced to Parliament the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Bill which will establish an environmental permitting regime in marine areas beyond 12 nautical miles from New Zealand's coastline. There are also a number of regulatory reviews underway, most notably a review of the Crown Minerals Act 1991. The Advisory Group believes it is essential that these reviews and resulting regulatory reforms recognise all costs and benefits to New Zealand's economy and environment, in particular to communities and iwi directly affected by extractive activities.
- 5.57 The current polarisation of views among New Zealanders encompasses issues of environmental protection, of employee health and safety, and of social and cultural impacts especially on communities directly affected by extractive activities. Disquiet over petroleum exploration, for example, has led to protests by Greenpeace and members of iwi Te Whānau-ā-Apanui over plans for seismic surveying in the Raukumara Basin. Interested parties have filed a judicial review challenging the Government's action in granting a permit for the survey. The Advisory Group believes the discourse in New Zealand needs to be better informed on critical aspects of how extractive industries operate today, and on how they might develop and grow in future. The conduct of that discourse is also important to the building of consensus. In this regard, the Advisory Group notes a discussion paper recently issued by the Institute of Professional Engineers New Zealand Inc (IPENZ) to articulate issues around growth in extractive industries. IPENZ has raised key questions about the economic value of extractive activities, their environmental and social impacts, and the regulatory framework this country needs.
- 5.58 This sector raises a particular set of issues associated with the non-renewable nature of mineral and petroleum resources. Their extraction at any given time represents a one-off economic gain to New Zealand and to the commercial interests directly involved. Where resources are finite and of significant value, how equitable is this to future generations and what actions might be appropriate to share value? The questions can, of course, arise for any country with extractive industries. Some have retained royalty income for equitable distribution over time. Norway is a much quoted example: The Norwegian Government invests income from the development of that nation's petroleum resources in the North Sea into a sovereign wealth fund, from which around 4% will be withdrawn per annum to fund public services for decades to follow. The fund has reached NZ\$540 billion. If New Zealand decided on a similar course, any comparable figures would be much smaller, but we would face much the same issues as Norway and others have in addressing inter-generational equity.

Opportunities

- 5.59 In the Advisory Group's view, the extractive sector will continue to be part of New Zealand's economic future. As such, our framework for green growth must be able to accommodate these activities. Extracted resources are part of the economy-wide platform for many developments that are needed for greener and faster growth: Efficient and relatively low cost energy supply and locally-sourced building materials are two examples. Second, the extractive sector can provide specific inputs to greener technologies, products and services. Third, the expertise and technologies attracted to New Zealand for extractive projects can become positive additions to the economy with applications that help growth across other sectors as well. However, this is not to diminish the challenges associated with these sectors, particularly as oil, gas and coal are likely to dominate them for the foreseeable future.

- 5.60 Decisions on which resources are available for development must be accompanied by steps to avoid, mitigate, and/or remedy adverse environmental and community impacts on a project-by-project basis. Much depends on the particular context, location and structure of each. Where projects do proceed, the Advisory Group believes New Zealand has the opportunity to use mechanisms that could deliver overall gains to biodiversity and environment quality. The Government is moving in that direction through the current programme of regulatory reviews and reforms. In any case, the Advisory Group believes that the institutional and regulatory framework for the extractive sector must be of very high standard if this sector is to contribute more to the greening of New Zealand's growth.
- 5.61 As noted, New Zealand has the opportunity to secure long-term benefits in many ways. The Advisory Group believes the range of benefits, social as well as environmental, merit full discussion among New Zealanders. The one-off gains potentially derived from coal, petroleum and minerals extraction must create benefits that flow into the future, across generations – benefits that are commensurate with the risks, and the economic, social and environmental costs of development. This principle has been a cornerstone of the Norwegian response to development of North Sea petroleum resources (see 5.57). Royalties received from growth in the sector could, for example, be applied directly to provision of long-term infrastructure, the strengthening of social programmes, increased biodiversity and environmental protection, and/or special community development projects. This focus could be on long-term benefits, particularly to Iwi and other communities most directly affected.
- 5.62 One clear option would be to concentrate some portion of this funding on biodiversity protection and environmental enhancement. This could include a greater New Zealand-wide commitment to biodiversity protection based on funding provided by a growing extractive sector through royalty or resource rental payments. Such funding could, for example, contribute to the Government's Clean - Up Fund for lowland waterways (see page 47). These options represent opportunities for New Zealand to associate growth in this sector directly with initiatives for environmental enhancement that is of national significance.

Challenges

- 5.63 There are two key challenges for the nature and extent of future growth of the extractive sectors. The first is how we arrive at decisions over which resources are available for extraction and under what circumstances. Having the necessary discourse will assist in well informed decision-making and greater consensus, but these processes represent a major challenge for New Zealand given the depth of current divisions. The inherent complexity of extractive industries adds to the challenge. The Government has a leadership role in building consensus over the role of these sectors in New Zealand's economic future. A critical part of this role is for the Government seeing that the national discourse on these issues is as well informed as possible. We believe it will be essential for the Government to demonstrate with a high degree of rigour the nature and extent of public benefits, and of risks and costs.
- 5.64 The second challenge is to ensure that credible mechanisms exist to avoid, remedy and/or mitigate the impacts of extractive activity on the environment, and communities, and to address issues of inter-generational equity. New Zealand must have institutions and regulatory frameworks in the extractive sector commensurate with best international standards and relevant to New Zealand conditions. The Government has a substantial challenge to complete its current reform programme and ensure all relevant issues are addressed in this context. In addition, the Advisory Group encourages the Government to consider other options for securing economic, environmental and community benefits from short-term extractive activities and associated royalties. Some options have been outlined above. The Advisory Group believes a significant commitment in this direction would be fundamental to allowing this sector to grow over time within a green growth context.

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Recommendation 25: The Government should seek the necessary discourse towards greater consensus among New Zealanders on what of our petroleum and mineral resources should be available for extraction and under what circumstances. The national discourse should be thoroughly informed about the potential benefits, and the costs and risks, of such development and growth. The Government should provide public information that includes:

- the minimum requirements imposed on industries and projects through regulatory and institutional settings (and how these requirements compare internationally);
- objective analysis of economic, social and environmental benefits associated with particular petroleum and mineral resources and extractive projects; and
- objective analysis of costs and risks associated with further development and growth of the sector (including potential impacts on other exporting sectors of the economy).

Recommendation 26: As part of the public discourse outlined in recommendation 25, the Government should investigate further measures by which New Zealand could secure wider economic, environmental and community benefits from the royalties derived from allowing extraction of petroleum and minerals. Such measures could include support for investment in long-term infrastructure and social programmes, long-term biodiversity and environmental protection and community and regional development projects. Iwi and regions most directly affected by the activity deserve particular consideration in this regard. Other measures could include a sovereign wealth fund or similar to address issues of inter-generational equity.

SECTION 6

Conclusion

- 6.1 The world is shifting to greener forms of growth – and so is New Zealand. The Advisory Group hopes this report will, in addition to assisting the Government in policy formation, stimulate discussion among New Zealanders on opportunities and challenges in this shift. In our view, our best course is to green growth right across the economy. Rather than the Government pursuing a green growth strategy, we urge a greening of strategies in every area of government activity and throughout the business sector. Everyone can – we think, should – Look at greening their growth and securing all the advantages of this.
- 6.2 Greener growth can drive, over the long term, economic development and higher living standards. It can also bring real protection and enhancement to our environment. As markets go greener in the preferences of consumers, regulators and supply chains, there are strong economic incentives for businesses to shift further into this space. In short, green business will increasingly become better business – more innovative, more competitive and more profitable.
- 6.3 The Government has a key leadership role in enabling New Zealand businesses – especially exporters and others most exposed to international markets – to achieve greater success in seizing green growth opportunities and in managing their way through the challenges.
- 6.4 The Advisory Group thinks the Government should provide certain forms of additional support for small and medium-sized businesses in particular – support that builds the capability of each business to do what it must to thrive and prosper in a competitive world. The Government should make it easier and simpler for them to access such support. The Government should also promote the effectiveness of New Zealand’s Innovation System so that businesses take up more and better knowledge and technology. Our system needs stronger linkages internally and externally with the rest of the world. We must get better at adopting and adapting the innovation New Zealand needs for greener and faster growth. There is also a key role for the Government in enabling businesses to make better use of brand “New Zealand” – potentially a valuable asset for each company venturing into international markets. Our national reputation for “clean green” is a brand attribute increasingly aligned with the greening of the world.
- 6.5 We have been privileged to hear from many New Zealanders in business, government, research and other fields on their green growth views, aspirations and fears. This report is the first attempt at a comprehensive perspective on the issues, opportunities and challenges – and it is exploratory more than definitive. We are very mindful that New Zealand, while recognised as “clean green” in some contexts, has real pressures on its environment. We have plenty of challenges in greening our growth and they include reversing deterioration in some key environmental measures. The Advisory Group is confident that we can – and that green growth will bring major advantages to New Zealand economically, socially and environmentally.

Appendix 1: Terms of Reference

Background

International trade is important to New Zealand's economy and with the majority of that trade derived from our natural resources the decisions made around the use of natural resources will be of increasing importance. The concept of green growth provides a framework for aligning environmental and economic performance.

While New Zealand is already undertaking a number of activities to align environmental stewardship and economic performance, we need a more coherent strategy. To achieve this, there are three areas of work to be undertaken by the Advisory Group, who will evaluate and advise the Government on:

- how New Zealand, and in particular Government agencies, can help exporters leverage greater value in international markets from our clean, green brand;
- opportunities for smarter use of existing technologies and innovation, as well as greater development and adoption of new technologies (including clean technology) in our productive sectors; and
- the options for our small and medium-sized businesses to move to a lower carbon economy while sustaining the desired level of productive growth.

Objective of the Advisory Group

The Advisory Group is being established to evaluate and advise on opportunities for green growth to contribute to an increased rate of economic growth for New Zealand. The Advisory Group will provide this advice in a report to the Minister for Economic Development and the Minister for the Environment by 20 December 2011.

Scope of the Advisory Group

The Advisory Group will provide analysis and recommendations to the Government related to the three areas of work outlined above. It will be supported by a Secretariat made up of officials from the Ministry of Economic Development and the Ministry for the Environment.

In its work and preparation of recommendations, the Advisory Group will be mindful of the Government's goals as expressed through the Economic Growth Agenda work. This will ensure that any recommendations are informed by a balanced assessment of costs and benefits. The Advisory Group should take account of international efforts relating to a strategy for green growth and the alignment of environmental stewardship and economic performance, including in particular, the report of the OECD scheduled for May 2011 and related reports by other relative international agencies.

Out-of-scope for the Advisory Group

The Advisory Group should not evaluate existing government programmes or existing reviews. The Advisory Group should not get involved in the detail of issues that have other venues (such as water reform). The Advisory Group should not duplicate work already underway within government and under investigation by other advisory groups and forums. For example, evaluation or consideration of the Emissions Trading Scheme and waste policy are outside the scope of the Advisory Group.

The Advisory Group should not investigate fiscal policy interventions such as green taxes.

Appendix 2: Group Members

Phil O'Reilly – Chair

Phil O'Reilly is Chief Executive of BusinessNZ, New Zealand's largest business advocacy group, advocating for New Zealand's success by sustainable economic growth. He is a member of the Business and Industry Advisory Committee to the OECD and is New Zealand's employer delegate to the International Labour Conference and a member of the ILO Governing Body. Phil serves on a number of Boards including the Innovation Board of the Ministry of Science & Innovation, and the Council of the Royal Society of New Zealand.

Melissa Clark-Reynolds

Melissa Clark-Reynolds is the founder and CEO of MiniMonos.com, a virtual world for children. As well as being on the Board of Wellington's incubator, Creative HQ, she also serves on the Board of Accuro Health Insurer, and Pivot Software. Melissa has been an entrepreneur for almost 20 years, and holds a Masters Degree with a focus on Environmental Health.

Whaimutu Dewes

Whaimutu Dewes is a director on Ngāti Porou Forests, Ngāti Porou Seafoods, Housing New Zealand, Aotearoa Fisheries and Contact Energy Boards. Whaimutu is of Ngāti Porou and Ngāti Rangitihī descent.

Lain Jager

Lain Jager has been the Chief Executive of Zespri since December 2008. Previous roles with the company included Human Resources, Grower Relations, Innovation, Supply Chain, and Corporate Strategy.

Prior to joining Zespri, Lain worked for Starwood Hotels and Resorts and Fletcher Challenge in a variety of Human Resources and Operations Management roles. Lain has a Masters degree in Social Sciences from the University of Waikato.

Neville Jordan CNZM

Neville Jordan was Chair of the CRI Review Taskforce. Neville has served six years on the board of AgResearch, and three years each on the boards of the Foundation of Research Science & Technology as well as the Prime Minister's Growth and Innovation Advisory Board. He has also been Chair of an SOE Establishment board.

In 1997 he received the Governor General's Supreme award for Exporting. He is a laureate of the NZ Business Hall of Fame as well as the Hi-Tech Hall of Fame. He is the immediate Past President of the Royal Society of New Zealand and has an honorary Doctorate from the University of Canterbury.

Dr Andrew (Andy) Pearce

Andy Pearce is currently the Chair of the Regional Committee to give effect to the Canterbury Water Management Strategy.

During his career, he has been involved with a diverse range of public and private-sector organisations and brings broad governance and management experience. His experience has included roles in the infrastructure sector, banking, publicly-listed companies, research and development organisations, as well as the not-for-profit sector.

Andy was founding Chief Executive Officer of Landcare Research from 1992 to 2005 and sits on a number of boards including the Bank of New Zealand, Christchurch City Holdings, and the Energy Efficiency and Conservation Authority.

Guy Salmon

Guy Salmon is Executive Director of the Ecologic Foundation, an independent think tank on sustainable development. A specialist in environmental policy and governance, his work involves policy research, consulting and advice in New Zealand and internationally.

His research on approaches to environmental governance in the Nordic countries raised interest in collaborative governance in New Zealand. He is a former board member of Landcare Research and of the Energy Efficiency and Conservation Authority, and a current member of the Land and Water Forum.

Peter Yealands

After pioneering the mussel farming industry, Peter led the development of embryonic transplant technology in deer farming. A keen interest in the application of new technology allowed Peter to develop the rolling hills of the Awatere Valley, Marlborough into Yealands Estate Wines, at the time some of the first terraced vineyards in the country. Not content with developing the largest single vineyard in New Zealand, Peter set the ambitious goal of becoming the most sustainable wine producer in the world, combining state-of-the art technology with some home grown innovations.

Shortly after the launch in 2008, Yealands Estate Wines received CarboNZero accreditation and in 2010 was recognised as the Global Winner of the Sustainable Wine Tourism Practices accolade. Exporting to over 65 countries the Yealands Estate wine brand has quickly gained an international reputation for producing award winning, sustainably produced wines.

APPENDICES

Appendix 3: Dialogue

The Advisory Group received submissions from the following organisations and individuals in response to the discussion paper "Green Growth Issues for New Zealand":

Auckland Council	New Zealand Luxury
Bioenergy Association of New Zealand	Royal Society of New Zealand
Centre for Sustainability: Agriculture, Food, Energy, Environment, University of Otago	Stephen Tindall
Coal Association of New Zealand	Straterra
Domestic Energy Users Network	Sustainable Business Network
Ecodiesel Limited	Office of the Parliamentary Commissioner for the Environment
Fonterra Co-operative Group Limited	Organic Dairy and Pastoral Group Limited
Greenpeace Aotearoa	Packaging Council of New Zealand
IPENZ Engineers New Zealand	Primary Focus Trust
Kāpiti Coast District Council	Pure Advantage
Kevin Cudby	Wood Processors Association of New Zealand
New Zealand Agriseeds Limited	WWF New Zealand

On behalf of the Advisory Group, officials met with representatives of the following companies, local authorities and organisations:

Accor Group	Mainfreight Limited
Air New Zealand	Meat Industry Association
Alliance Group	Methven Limited
ANZCO Foods	NZ Combined Trade Unions
Auckland Council	NZ Business Council for Sustainable Development
Ballance Agri-Nutrients Limited	NZ Building Industry Association
Canterbury Employers Chamber of Commerce	NZ Forest Owners Association
Christchurch City Council	NZ Institute of Economic Research
Contact Energy Limited	NZ Merino
DairyNZ	NZ Retailers Association
Eco-stock Supplies Limited	NZ Seafood Industry Council
Employers and Manufacturers Association	Ngāi Tahu
Federated Farmers of New Zealand	Otago Southland Employers Association
Fletcher Building Limited	Rio Tinto / NZ Aluminium Smelters
Fonterra Cooperative Group	Roading NZ
Foodstuffs NZ	Sealord Limited
Genesis Limited	Silver Fern Farms
GS1 New Zealand	Sustainable Business Network
Holcim	Tait Communications
Horticulture NZ	Talleys
Hospitality NZ	Telecom New Zealand
Infratil Limited	Vector Limited
InterfaceNZ	

APPENDICES

Appendix 4: Further Reading

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