

# GREEN GROWTH – ISSUES FOR NEW ZEALAND

## SUBMISSION TO THE GREEN GROWTH ADVISORY GROUP

20 SEPTEMBER 2011

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### BACKGROUND

The Institution of Professional Engineers New Zealand (IPENZ) is the lead national professional body representing the engineering profession in New Zealand. It has approximately 12,000 Members, including a cross-section from engineering students, to practising engineers and senior Members in positions of responsibility in business. IPENZ is non-aligned and seeks to contribute to the community in matters of national interest, giving a learned view on important issues, independent of any commercial interest.

A draft version of this submission was provided to all IPENZ Members via the IPENZ website. In addition, interested Members were sent the draft submission directly. All IPENZ Members were able to comment on the submission and Members' comments are included in this version of the submission.

### SUBMISSION

This submission provides general comments in relation to drivers of green growth, the objective of green growth and appropriate interventions. It then provides more detailed comments on the contents of the *Green Growth – Issues for New Zealand* discussion paper.

### GENERAL COMMENTS

#### GREEN GROWTH DRIVERS

IPENZ notes and supports the potential drivers of green growth (market access and retention, business strategy and the ability to charge price premiums) identified in the discussion paper. We (IPENZ) believe these are the main reasons for green growth being pursued.

We also believe green growth is most likely in a country with high technology industries. Increasing the presence of high technology industries typically leads to increased skills levels and, as a result higher environmental standards and higher societal expectations.

Another factor influencing the ability of a country to progress green growth is its economic prosperity. We believe that again high technology industries are the key as they will increase New Zealand's productivity and the skills required, thereby leading to better paid employment and a more educated society. We thus consider it important that New Zealand focus not only on green growth but also on developing high technology industries which will help New Zealand develop skills and enable it to prosper.

## **THE GREEN GROWTH OBJECTIVE**

While the Terms of Reference include an objective for the Green Growth Advisory Group, it does not include an expressly stated objective for green growth. Given the Terms of Reference we suggest the objective could be “To achieve environmentally sustainable economic growth and development”.

IPENZ notes this is not an “either/or” issue. As the discussion paper explains many countries and international forums are working on green growth policies to achieve mutually reinforcing economic and environmental outcomes. This is not simple and requires balancing shorter term economic objectives with longer term environmental/sustainability objectives.

Balancing economic and environmental/sustainability imperatives means we have to consider which public policy interventions are most appropriate. We believe the full range of interventions should be considered.

We note the Advisory Group is to advise Government on how it can help exporters get leverage from the clean green brand, and how technology, innovation and small to medium enterprises (SMEs) could contribute to green growth. We believe interventions worth considering include information dissemination and sharing, regulation and financial incentives. We are concerned the Advisory Group’s Terms of Reference place an evaluation of existing environment related programmes and fiscal policy interventions out of scope. This severely limits the Advisory Group’s scope and makes it impossible to consider of subsidies or pricing incentives. This thus limits the range of interventions possible.

## **TOPIC 1 - LEVERAGING OUR “CLEAN AND GREEN” REPUTATION IN GLOBAL MARKETS**

### **CAN NEW ZEALAND’S “CLEAN AND GREEN” POSITION BE ENHANCED TO BETTER SUPPORT THE ATTRACTION OF VISITORS, TRADE AND INVESTMENT TO OUR COUNTRY?**

We note a report by the Ministry for the Environment in 2001<sup>1</sup> found New Zealand’s clean green image has a value – at that time estimated to be at least hundreds of millions, possibly billions, of dollars, aggregating value elements from dairy, tourism, and organic produce, and extrapolating to other sectors such as meat. The report also showed a clean, green image is a substantial driver of the value New Zealand can derive for goods and services in the international market place.

We believe New Zealand’s position as a clean green country can be further enhanced and that doing so will help New Zealand retain and attract market access.

### **WHAT ROLE SHOULD GOVERNMENT PLAY TO SUPPORT GREEN GROWTH-RELATED BRANDING EFFORTS IN GLOBAL MARKETS FOR NEW ZEALAND BUSINESSES, PRODUCTS AND SERVICES?**

We believe the Government’s role in relation to branding is four-fold. It is to:

- Set the framework and national values
- Require transparent authentic measurement standards
- Provide robust data and transparent reporting
- Sell the brand.

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<sup>1</sup> Valuing New Zealand’s Clean Green Image, Ministry for the Environment, August 2001

In relation to the first, we note New Zealand already has a number of a government policies in place to support and protect its clean, green image. These policies include the Resource Management Act 1991, the New Zealand Emissions Trading Scheme, National Environmental Standards for Air Quality, National Policy Statement for Freshwater Management 2011, Waste Minimisation Act 2008 and the New Zealand Coastal Policy Statement. In addition, we note New Zealand is a signatory to a number of multilateral environmental agreements and has been at the forefront of environmental legislation and initiatives.

It is the second area where the Government could do more. We consider the Government should ensure those who make environmental claims have proof to support their claim. Further, the proof should be undertaken using world-recognised measurement standards so they can be verified and independently confirmed if required.

We think the Government can help ensure transparency in relation to New Zealand's clean green image by providing robust data and transparent reporting. Data is vital to enable the understanding of New Zealand's environmental and economic performance. IPENZ is aware of the current consultation in relation to environmental reporting and considers regardless of who is responsible for state of the environment reporting, the reports need to be based on robust data and sufficiently transparent to give New Zealanders and others confidence as to the clean green image's authenticity.

In relation to the final area (selling the brand) we believe the Government could do more to sell New Zealand as a clean green country. The Government could for example do this when it negotiates internationally. This stance makes sense for environmental and trade reasons. Taking this stance could help New Zealand increase its market share in the currently relatively small, and elite market while reinforcing and enhancing the country's international reputation and image.

Another part of the selling the brand involves the Government acting as a role model. If the Government is serious about green growth and retaining New Zealand's reputation as clean and green then it (the Government) needs to take product lifecycle assessments into consideration for all the decisions it makes. The Government has a large power of influence over other actors in the economy given that in general the Government outlays account for approximately 45 per cent of Gross Domestic Product<sup>2</sup>. We suggest the Government use its influence to encourage others to consider green growth and associated concepts such as product stewardship. In acting as a role model we think the Government will help to ensure their decisions will best suit the country's long term needs.

## **TOPIC 2 - SMARTER USE OF TECHNOLOGY & INNOVATION**

### **WHAT IS THE BEST PATH FOR GREENER GROWTH THROUGH THE SMARTER USE OF TECHNOLOGY AND INNOVATION BY BUSINESSES? WHERE DOES IT ALL BEGIN?**

Governments are best placed to initiate innovation with a green focus, working in partnership with businesses. We suggest this be initiated by a review of the New Zealand Trade and Enterprise *Investment Ready Guide* and funding schemes such as the International Growth Fund. New Zealand Trade and Enterprise could also support green growth by showcasing successful green businesses to the wider export business community.

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<sup>2</sup> 2025 Task Force. Retrieved from <http://www.2025taskforce.govt.nz/firstreport/28.htm>

The Ministry of Science and Innovation could assist in green growth by considering how green growth projects are incorporated in their funding and in their advice to companies undertaking research and development (R&D) projects.

### **WHAT ARE THE BARRIERS TO TECHNOLOGY TAKE-UP AND INNOVATION? HOW CAN BUSINESSES BECOME MORE RESPONSIVE TO DRIVERS FOR GREENER GROWTH?**

In its submission to the Ministry of Science and Innovation in relation to the *High Value Manufacturing and Service Sector R&D Review*<sup>3</sup>, IPENZ noted the following barriers to the uptake of R&D:

- Research providers' research workers being insufficiently conversant with business, its language, processes and drivers. Not all providers need research workers to be conversant with business, but we believe those interacting with business must be.

While the transfer of R&D knowledge from providers to businesses is important, it is not enough. We consider there needs to be an increased transfer of R&D workers from research providers into businesses. We acknowledge that while research providers need to retain some R&D workers, but they should also earmark some workers for transfer, and those workers' professional development should be planned accordingly.

New Zealand needs to develop a culture of encouraging researchers to see career advancement in transferring permanently to the business sector. At present we think there is too much focus on secondment, and whilst that route should not be discouraged, permanent transfer is more important. In universities the Performance Based Research Fund (PBRF) actively discourages academics from developing skills companies need and value.

- Insufficient numbers of research providers have learnt how to engage with companies' strategic planning processes, so companies do not think of R&D enough when they are making their strategic plans. This problem is also impacted by commercial businesses looking to make short term gains to meet investor aspirations. This is a barrier to technology uptake, as the technologies required for sustainable practices need foresight and time to justify the research investments.
- There is a problem of affordability, particularly for small companies. The cost of employing research workers (adding one to a company might cost \$150,000 per year) can be significant compared to company revenue; this can discourage businesses from even considering R&D.
- Research and development providers receive no financial incentive to upskill the industry. We think there are inadvertent disincentives which reduce the diversion of staff from classical research outputs to work with industry and businesses.

### **WHAT TYPES OF POLICY ACTION MIGHT ENCOURAGE AND SUPPORT BUSINESSES TO MAKE THE RIGHT TYPES OF INVESTMENT IN TECHNOLOGY AND INNOVATION?**

#### **POLICY ACTIONS**

At only 0.5 per cent of GDP, New Zealand's business funding in R&D is much lower than other countries and below the OECD average of 1.5 per cent of gross domestic product<sup>4</sup>. New Zealand needs to significantly increase business R&D and be creative as to how it incentivises R&D within current fiscal constraints.

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<sup>3</sup> IPENZ submission to the Ministry of Science and Innovation in relation to the High Value Manufacturing and Service Sector R&D Review, March 2011. Available at [https://www.ipenz.org.nz/ipenz/media\\_comm/documents/Submission-final\\_014.pdf](https://www.ipenz.org.nz/ipenz/media_comm/documents/Submission-final_014.pdf)

<sup>4</sup> New Zealand Treasury 2008, *Putting Productivity First: New Zealand Treasury Productivity Paper 08/01*, New Zealand Government, Wellington.

We note the PBRF recognises “fitness for purpose” of research as a quality measure. We believe many academics, including those in the engineering and technology fields, feel they should focus on academic publication rather than working with industry. We think the greater good of New Zealand would be better served by universities and Crown Research Institutes (CRIs) working more closely together and focusing on increasing innovation expertise.

Our recent publication *Catalysing Economic Growth – Boosting Innovation in the Private Sector*<sup>5</sup> suggests this could be encouraged by the creation of an Innovation Expertise Fund, funded by diversion of part of the PBRF. This fund could be applied in two shares, with one share for the universities and the other for CRIs. We suggest the fitness for purpose of university research be measured against three criteria: evidence of the research’s economic impact; the amount of private sector research investment attracted by the department; and the number of Level 8 or above graduates who have moved directly to New Zealand-based private sector employment.

This fund and these criteria would strongly incentivise academics to go out into industry, to build strategic R&D partnerships with companies, and to transfer skilled people to the company at the end of the project – all of which would benefit New Zealand.

For the CRIs, we recommend Industrial Research Limited (IRL) be altered to be an industrial development agency that is allocated a share of the Innovation Expertise Fund. In this role IRL would continue to deliver important R&D but would become more focused on innovation expertise development. Other CRIs involved with developing private sector expertise could also take on an industrial development focus if needed.

We think there are a number of areas that could benefit from increased R&D. These areas are set out in Appendix 1.

### **TOPIC 3 - SME TRANSITION TO A LOWER CARBON ECONOMY**

#### **WHY MIGHT SMEs FIND IT MORE DIFFICULT TO TRANSITION? WHERE ARE THEY NOW ON THE PATH TO GREENER GROWTH?**

New Zealand is a country that has “large numbers of tiny firms”<sup>6</sup> and these often have insufficient capital and critical mass to invest in R&D, let alone green focused R&D. The profit margins over the lifetime of a product in SMEs can only justify a limited amount of expenditure on R&D.

In *Catalysing Economic Growth – Boosting Innovation in the Private Sector*<sup>7</sup> we set out a proposal for the Government to directly co-fund the early years of employment of R&D workers in new positions in industry. We believe this investment would greatly benefit New Zealand as SMEs would be incentivised to take on R&D staff, thereby having R&D expertise in-house. The investment also lowers the barrier of high initial cost to get a research worker established, thereby encouraging R&D to become part of business as usual.

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<sup>5</sup> *Catalysing Economic Growth – Boosting Innovation in the Private Sector*, IPENZ, February 2011

<sup>6</sup> Shangqin, H., McCann, P. and Ozley, L., 2009, *Innovation in New Zealand: Issues of Firm Size, Local Market Size and Economic Geography*, Department of Economics, College of Business and Economics, University of Canterbury,

<sup>7</sup> *Catalysing Economic Growth – Boosting Innovation in the Private Sector*, IPENZ, February 2011

## CONCLUSION

IPENZ appreciates the opportunity to make this submission and can provide further clarification if required.

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## **APPENDIX 1 – AREAS FOR INCREASED R&D**

IPENZ believes the Government should pursue R&D in the following areas as a way to encourage green growth.

### **Organic Agriculture**

Building on New Zealand's strong biological sector and our green brand, New Zealand's export organic agricultural production is an excellent area to consider. These industries could be supported by more R&D on areas such as:

- Preservation methods with no chemicals
- Further research into preservation of timber for fence posts and vineyard posts
- Research into ways to grow high quality healthy agricultural products optimally working in with nature including re-finding sources of traditional knowledge

Organic agriculture also has additional value because in well kept organic soil there is a rich content of humus, which serves as a carbon store.

### **Timber Buildings**

Forestry is extremely important for New Zealand and is useful for our clean green image. This is because the Kyoto Protocol allows increases in our forestry's carbon pool to be offset against our carbon dioxide emissions<sup>8</sup>.

The principal benefit from increasing the use of wood in New Zealand buildings is the reduction of energy required to manufacture building materials. The University of Canterbury study<sup>9</sup> has shown that a significant change in the New Zealand construction industry, resulting in the use of much more wood and wood products as substitutes for energy intensive materials, would assist compliance with the Kyoto Protocol by reducing carbon dioxide emissions associated with building materials. Similarly a report by BRANZ<sup>10</sup> investigated the potential for greater use of timber in government and private sector buildings in New Zealand, identifying up to half a million square metres of floor area of eligible projects each year, resulting in carbon dioxide emission savings of 64,000 tonnes per year.

A significant increase in the use of timber in new buildings will require a co-ordinated investment in education, research and promotional activities. Education of engineering, architecture and design students provides design skills and confidence in new materials for innovative future design of buildings and building products. Education is also needed to support the solid wood processing industry, to encourage economical production and design of innovative new products using New Zealand grown timber. Further research is needed on building performance including wind, fire and earthquake resistance, noise control thermal behavior and durability.

### **Emulsified Diesel**

Emulsified diesel results in less air pollution and better fuel efficiency. This area would benefit from further research – there has been some work undertaken at the Central Institute of Technology. Older worn engines can be kept going for more time, whilst maintaining acceptable emissions, leading to an overall saving.

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<sup>8</sup> How Will Timber Buildings Help New Zealand Meet Kyoto Protocol Commitments? Dr Andy Buchanan, University of Canterbury, NZ Timber Design Journal, Issue1 Volume 13,2005

<sup>9</sup> Wood-Based Building Materials and Atmospheric Carbon Emissions, A.H.Buchanan & S.B.Levine, Environmental Science and Policy, Vol 2,427-437,1999

<sup>10</sup> Timber Products in New Government Buildings, Ian Page, BRANZ report E356, July 2004

## **Biological Breakdown of Plastics**

Further research needs to be undertaken on the biological breakdown of plastics, by micro organisms.

## **Green Infrastructure**

The New Zealand Green Building Council (NZGBC) is facilitating an initiative to achieve more sustainable outcomes for New Zealand's infrastructure investment, and has now established a Working Group to progress its development.

Currently no mechanism exists to assess and benchmark our new and existing assets' whole of life economic, social and environmental sustainability in an integrated and consistent way across sectors. A sustainability benchmarking framework may provide a key tool in managing risk and future-proofing public and private sector investments and is currently being considered. In turn this will promote the use of green technologies to construct and maintain infrastructure.

## **Environmentally sustainable freight transport modes**

A number of New Zealand businesses choose to use rail (including Fonterra) over road or shipping as a means of reducing costs on freight export. Countries with a focus on rail transport have the added benefit of enhancing their green image, particularly where electric traction engines are used.

Apparently some shipping companies have indicated they prefer to deliver containers to Whangarei and tranship internally using rail to inland ports. This reduces their sea time delivering to Auckland by almost a day and to Tauranga by more than a day.

These are examples of the relationship between the transport infrastructure investment and export business investment achieving both economic and environmental outcomes and should be further encouraged.

IPENZ has concerns the Government's current emphasis of rail over road, as alternative modes of moving freight, will not achieve the best environmental outcomes. Current proposals include the closure of at least two major North Island lines, and upgrading State Highway 1 when for a much lesser cost the North Island Main Trunk Rail line can be opened up to high cube containers. Environmental outcomes might also be enhanced if the North Island Main Trunk, the Tauranga line, the South Island Main Trunk, and the New Plymouth and Kawarau lines were electrified.

Trains can move the equivalent freight of 40 or more trucks, diesel electric motors use approximately 25 per cent of the fuel that trucks use per tonne-mile, electric motors are more efficient again and roads require considerably more maintenance than roads per tonne-mile of goods moved.