



18 November 2009

Ministry of Research, Science & Technology
PO Box 5336
Wellington 6145
New Zealand

Email: feedback@morst.govt.nz

Dear Sir/Madam

New Zealand's Research, Science and Technology Priorities: Feedback Document

The New Zealand Manufacturers and Exporters Association (NZMEA) represent the interests of manufacturers and exporters throughout New Zealand.

The Association is New Zealand's only focused and independent voice for manufacturers and exporters. Members make over \$2.7 billion in sales per year, with an export value of around \$1.3 billion. The Association can trace its beginning back to the early history of New Zealand.

The Association also includes in its membership affiliate organisations such as the Wood Processors Association, Plastics New Zealand, the Engineering Printing & Manufacturing Union Inc, HERA (Heavy Engineering Research Association), The Engineering Taranaki Consortium and Capenz (Centre of Applied Engineering New Zealand). Our views are a result of the drive of our membership that is restricted to manufacturers and exporters.

The NZMEA represents the elaborately transformed manufacturing sector; our members specialise in niche products and therefore must export to survive. In order to be competitive in the international market, a significant amount of revenue, generally between 5 and 15 percent, is allocated to product development and improvement. From our standpoint, these expenditures are growth enhancing and should be classed as Research and Development (R&D). Unfortunately under the current tax reporting systems, these expenditures are not reflected in the official statistics for the following reasons:

- Lack of incentive; in the absence of tax incentives such as the R&D tax credit, there is simply no motivation for segregating or reporting research and development spending, since it is only treated as general expenditure.
- The spillover effect; typically the commercialisation process complements R&D during the product development process. Its spillover benefit is difficult to measure, and the significant cost of commercialisation is excluded from R&D expenditure.
- Definitional issue; The Frascati definition of R&D is far too restrictive, only recognising what happens in research laboratories (new-to-the-world knowledge); it does not capture the broad scope of activities associated with new product development and commercialisation, which are largely associated with the elaborately transformed sector.

New Zealand Manufacturers and Exporters Association

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The main thrust of the RS&T document is a drive towards commercialisation; however the use of the Frascati Manual directs scientific endeavour towards “new knowledge” and away from “new products” that are critical for any commercial outcomes. So effectively, Frascati pushes against commercial outcomes.

In the document it needs to be clear what R&D and transformational manufacturing are, and how these differ from elaborate transformation. Currently, the High-Tech industries have a very narrow scope; its major domains only include manufacturing and applications of novel material, information communication and digital technologies, medical and health technologies, and agri-technologies. Most of our manufacturing industries will be excluded.

If commercial outcomes are required we need to appreciate some fundamental system drivers. One science system cannot satisfy the needs of all sectors. The land, sea and air based CRIs have essentially coherent sectors with obvious and clear limits that researchers can use to target their research. At that point, a commercial outcome requires technology transfer to the operating sector, that is the farmers and growers. In the elaborately transformed sector the needs are incoherent and the firms are likely to have a specific level of technical expertise that exceeds that available in the Universities and industrial CRIs. That is a function of the disparate nature of the required knowledge, not a criticism of the tertiary or CRI sector. In reality limited Crown resources mean that it is impossible for them to be masters of all sectors.

Commercial research and development targets new products (products = devices + services). These new products can be based on new knowledge or existing knowledge that has been reconfigured and repackaged. This has implications for the science system and national economic outcomes – support only new knowledge and stymie commercialisation that reconfigures or repackages existing knowledge.

Research and development projects must be complemented by new product deployment processes so that they are able to be successfully commercialised. The statistics suggest that there is underinvestment in the new product process in New Zealand, and it is likely that this is under-reported as mentioned above. However, there are other factors:

- Products are subject to international trade competition - other jurisdictions have better support for R&D efforts, including efforts well beyond the Frascati framework.
- Other jurisdictions have significant military purchasing organisations that are used to stimulate R&D activities.
- The commercial investment in new product development requires a medium term return. Monetary policy and exchange rate fluctuations have robbed the export sector of any expectation of a predictable medium term return.
- Returns from export markets are necessary to amortise the cost of new product development.

Fundamentally, if the policy framework makes it easier to import products from developing countries than to develop new products in New Zealand then the export sector for elaborate, high value add products will not grow.

Unless a friendly policy framework that supports and encourages more firms to shoulder the risks associated with the development and sale of new products with a value added component is introduced, an increase in New Zealand’s productivity growth will be unachievable. The selection of policy interventions is critical. The mechanisms must suit the sector:

- New product development tax concessions – broader than the research and development tax credit aimed at real commercial outcomes pushing away from the Frascati definition.

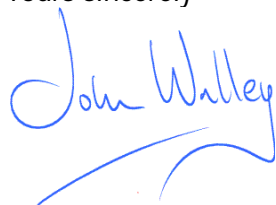
- Immediate write off of plant, equipment and patents.
- Low cost assistance for investment in export development.
- Exchange rate stability target for monetary policy
- We do not support or see the value in grant systems, non-discretionary or otherwise. Grants favour either those best able to play the system or those that apply first – both criteria are less than optimal.

The idea that our economy cannot afford a policy bias to new product development because of the unknown impact to government revenue or some feeling that the claims will be rorted, is like claiming firms should not invest in new product development as they can't afford it and it might go wrong. Risk is inherent in the process of new product commercialisation – the Government must take the necessary steps to support this risk taking.

Clearly, there is an upfront impact and there would be little reason to do it if the revenue model is flat-lined. At its heart new product development is growth oriented and assessed by firms on that basis – the zero growth cost to revenue line of argument has no place in this space.

We are happy to discuss further our position and experience on this submission.

Yours sincerely



John Walley
Chief Executive

Supplementary Reading

Research and Development, http://www.mea.org.nz/documents/498-research_and_development_updated.pdf

Striving to Improve Productivity, http://www.mea.org.nz/documents/420-striving_to_improve_productivity.pdf

Overcoming Obstacles to Investment in Productivity Growth, http://www.mea.org.nz/documents/406-overcoming_obstacles_to_investment_in_productivity_growth.pdf

Innovation, Growth and the High Cash Rate, http://www.mea.org.nz/documents/38-innovation_growth_and_the_high_cash_rate.pdf

Additional comments from members

Lesley Middleton presented to us recently on 'New Zealand's research, science and technology priorities', and these were the comments from a couple of our members:

From: Steve [mailto:steve.wilson@talbot.co.nz]
Sent: 17 November 2009 19:18
To: lesley.middleton@morst.govt.nz
Cc: John Walley
Subject: Your address at M.E.A.

Hi Lesley,

You did well weathering the storm last night while presenting to the Council of the Manufacturers and Exporters Association. As you will have gathered, we are a passionate group! This is largely because we feel we are the last remaining group with the interests of the elaborately transformed product manufacturers that actually generate a good proportion of New Zealand's higher value export earnings. We also feel that many market analysts and, dare I say it, government officials forget that the money that we spend in our economy has to start somewhere, and it generally starts where someone grows something, digs something valuable out of the ground, or MAKES something.

I undertook to put some of my personal views that I discussed with you last night into a simple email, which is what this is meant to be!

(1) Firstly, I believe that the manufacturing sector suffers from two common fallacies:

- That our manufacturing companies spend less on R & D than their equivalents in other O.E.C.D. nations.
- That we have a "productivity" problem.

The first of these fallacies, I think, influences a lot of thinking about the approach to support R & D activity. This was evidenced when Professor Gluckman was asked by Plastics New Zealand why there were no manufacturers included in the initial group he asked to a think tank on R & D. His response was "You have had your chance, and shown that you are not prepared to support R & D". While he subsequently relented and included three or four manufacturing representatives, it shows what impressions the statistics can wrongly create.

I believe the figures on individual company spend on R & D are wrong for a number at least two reasons. The first, and most important, is the lack of incentive to report R & D (in fact there has been a financial dis-incentive to report). My own Company spends \$300,000 to \$600,000 per annum on R & D, and yet reports less than \$100,000, partially because of the definitions adopted for what is R & D, and partially to avoid capitalizing R & D spend. I believe we are typical of our technical exporters in this respect. The second reason is the thinking that is applied centrally to what R & D is. Most revenue creating R & D is the unique adaption and application of combinations of existing I.P. As such, it is usually not classified as R & D in policy analysis, and this is a serious mistake. You certainly got some feedback on this last night.

Many government officials, and M.P.'s we talk to, are affected by the second fallacy – the fallacy that the fact that we show up as very low on the productivity scale amongst O.E.C.D. nations is because our workers do not work smart or hard enough. More detailed analysis shows that this is not the case. I think I am right in saying that on average we work the 4th highest average hours per year, and our actual labour productivity on an enterprise basis is high. The problem is that we have the second highest ratio of people not involved in production to those involved in production, and a huge proportion of our work force is involved in commodity and pastoral markets where earnings per employee per year are low. In commodity markets outputs are typically in the region of \$60,000 per employee per year, whereas in the electronics, plastics, or super yacht markets, outputs are typically \$250,000 - \$280,000 per employee per year. We need to start assessing where we get the most export value per employee and more heavily support those activities!

(2) Secondly, I believe that we waste a good deal of the money applied to R & D in universities and C.R.I.'s. I used the example last night of PHD projects, and specifically one on the computer analysis of the behaviour of non benoulian fluids, that would have had substantial value if it had been done under the overview of a potential adopter (making the dangerous assumption that I know what the project outcomes could be!). In the case of this analysis of the behavior of compressible fluids, I believe that there has been considerable interest from the designers and users of rocket motors and jet engines, yet it appears that we are happy to give the I.P. away in public domain papers, rather than earn revenue from it, because projects are allowed to be treated as "blue sky" when a little research would show that they have ready commercial application, if approached from that point of view. I know that you have spoken with Robin Martin of Plastics New Zealand, and that he is supplying some background on the Plastics Centre of Excellence (a Partnerships for Excellence "joint venture" between PNZ and University of Auckland). I was one of the instigators of this initiative, and Chairman of the Governance committee. The Centre has already come up with some unique, patentable, I.P., but its contribution has been severely limited by the thinking behind how these joint ventures should work. Even though it is a "joint venture" the money is given solely to the University, and is administered by the T.E.C., who apply the usual University judgments and rules to it. This severely limits what the Centre can achieve, as the focus is shifted strongly to academic outcomes rather than commercial ones, and money can be only spent on fixed assets etc.

(3) I believe that the way to unlock more value out of the considerable talent, and often wonderful resources, of the Universities and C.R.I.'s is to drive more of the research – even that that is loosely "blue skies" research - by channeling money and direction through the businesses and organizations that can turn any successful outcomes into increased export revenue. Why shouldn't research funding be channeled through Industry groups, or even individual companies, to Universities and C.R.I.'s to chase individual opportunities for increased export revenue in the same was as happens in the primary industries? I think this is not ever on the table because of the fallacy of poor individual R & D expenditure, and the feeling that Companies or Industries will not use the money well.

(4) Finally, I believe that the Applied Technology Suspensory Loans of the 1970's and 1980's are the model to think about to encourage more R & D spend. I am old enough to have been a C.E.O. of manufacturing companies for 32 years, and in all that time I have never seen a more productive industrial R & D period as when the Applied Technology Programme was in effect. It was originally a Trade and Industry funded programme, if I remember correctly, that was allocated to D.F.C. to administer. When the D.F.C. went under as the result of some very poor venture capital funding decisions, rather than the failure of the Applied Technology Fund, the fund got tainted by that failure.

What was unique about that programme is that Companies had to prove they were worthy of support, they were subject to audit and if they used the money in ways not conducive to I.P. development, they could lose the ability to apply for further funding. If I.P. initiatives were successful, the fund benefited from royalty income from the successful commercialization of the I.P., so it was a programme that backed winners, shared in the risk, and shared in any and all successful outcomes.

Regards,

Steve Wilson B.E. (1st Class), MNZM, FINZM

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From: [Les Rudd](#)
To: lesley.middleton@morst.govt.nz
Cc: [John L Walley](#) ; [Selwyn Pellett](#)
Sent: Tuesday, November 17, 2009 10:44 AM
Subject: NZ and R&D

Lesley,

I've little doubt you will get more follow up from NZMEA on this subject, but just to highlight some things I recall from last night:

Frascati definition - "new knowledge" to world, is appropriate for consolidated 'blue-skies' research as appropriate for well developed knowledge bases associated with well developed business sectors, i.e. NZ's agriculture. However, it's inappropriate in a product development space, particularly in a less homogeneous sector, i.e. NZ 'niche' manufacturing sector = value added exports. Here it's about commercially leverageable new knowledge/configured knowledge - to a firm, a firm's market position - matching a market need/want, that a firm has the capacity to deliver.

Policy development strategy/process - take a leaf out of John Whitehead's book, say what is most effective and efficient and appropriate - for NZ's needs. It's up to the poly's then what they pick, but to my mind your job is to offer/list advice on "most effective and efficient and appropriate", and again to my mind that for private sector R&D is tax credits - but without being hamstrung by the Frascati definition. Other countries get this right, why can't we?

Note, people who had successful past experiences of the old Development Finance Corporation (DFC) 'soft loans' might well be in favour of similar being re-introduced, as some might with similar successful experiences of discretionary grants - and this might especially be the case when politicians have just terminated a better option. However, that does not make 'soft loans' and grants more effective, efficient and appropriate than pluralistic tax credits for private sector R&D, in NZ - it just makes them more possible given the political corners some people seem to have painted themselves into - but some did not, rightly, deter John Whitehead. I hope it will not deter you.

Wheels - don't reinvent them.

Value-add exporters - try to talk with more people who know what they are talking about, i.e. John Walley, NZMEAs governance and Selwyn Pellett of the Productive Economy Council (PEC).

For more context, some background on the difference between NZMEA, PEC and Business New Zealand:

<http://www.interest.co.nz/ratesblog/index.php/2009/09/24/exchange-rate-reduces-price-volatility-for-nz-commodity-exporters-westpac-says/#comment-40651>

(some useful points in the remainder of the thread too.)

Best regards,

Les Rudd PhD. B.Eng(Hons) FMM MCGI
Invited Member
NZMEA