



ideas

aspire

knowledge

community

EXECUTIVE SUMMARY 2009 / 1

Standing on the shoulders of science:

Getting more value from
the innovation ecosystem

RICK BOVEN
DECEMBER 2009



EXECUTIVE SUMMARY

New Zealand's economic performance needs a step change improvement. Although economic prosperity as measured by GDP per capita has grown, on average, by about 2% per annum since 1990, New Zealanders earn 16% less than the OECD average and are not catching up.

The drivers of recent economic growth cannot be relied on to ensure future prosperity. Two important challenges are to increase productivity per hour worked and to reverse the decline in export performance.

The prosperity of advanced economies like New Zealand is driven by innovation performance. Innovation contributes to improvement in productivity per hour worked and to the formation of new businesses that can improve New Zealand's export performance and wealth.

New Zealand's innovation ecosystem is already contributing. The Technology Investment Network's TIN100 estimates that the top 100 technology companies produced overall revenues of \$6.6 billion in 2008, with \$5.1 billion exported. These companies contributed over 23,000 jobs with average revenue per job of \$280,000. They are growing.

However the innovation ecosystem could contribute much more. New Zealand's R&D spending per capita is well below average for the OECD. Despite the increase in effort over the last decade, New Zealand has a relatively poorly performing innovation ecosystem and is not making as much effort as other small countries that are seeking advantage from innovation.

Science provides the foundation of an innovation ecosystem. Skilled graduates, research contracts, technology licenses, and launch of new businesses all flow from an effective science infrastructure.

Commercialisation is not the only purpose of science. Science also provides public good research that improves health and safety, and science provides innovations that improve the competitiveness of industries via non-commercial dissemination of results. Many results that form the foundation for valuable new businesses arise from serendipitous discoveries made doing basic research.

The improvement opportunities identified in this paper emphasise improving commercialisation outcomes. A wider lens than used here is required to improve science performance. Three directions for development of the science system would help provide more valuable commercial outcomes. These are to focus research efforts more on sectors where New Zealand has commercial potential, to evolve research institutions to form well-resourced at-scale units, and to ensure that New Zealand is attracting, developing, and

retaining the world-class talent needed to deliver top quality output. Others have more detailed proposals for development of the science system which can further increase the benefits to New Zealand.

An innovation ecosystem includes the research facilities that produce the scientific output and the business organisations that develop the products and launch them in international markets. The performance of the whole is only as good as the performance of the weaker part. Increasing the output from research units will not be enough to deliver a large economic performance lift because commercialisation performance is not consistently world class.

In recent years, institutions that support commercialisation have been established: commercialisation units, incubators, angel networks, and venture funds. At best, the commercialisation part of New Zealand's innovation ecosystem is performing well so it is possible to point to successes and exemplars of best practice. On average though, there is a long way to go before the commercialisation system is sufficiently large and high quality to provide confidence that an increased flow of research will lead to a corresponding increase in commercial and economic success.

The emphasis in this paper is on commercialisation efforts that increase the rate of development of successful international firms based on scientific and other innovation. The focus on go-global firms is because large successful firms provide the most valuable economic benefits and because the improvements required to make go-global firms successful will also lift the performance of other commercialisation pathways.

The research has identified valuable opportunities for improvement of the innovation ecosystem. In summary these are:

- Ensure earlier assessment of market needs
- Lift the productivity of science and commercialisation institutions
- Ensure availability of talent and expansion capital
- Establish a more supportive culture
- Manage the innovation ecosystem as a whole

These specific changes will lift the performance of New Zealand's innovation ecosystem much closer to potential but there are two other things Government can and should do that will ensure a positive trajectory is maintained.

First, Government should highlight the importance of the innovation ecosystem to New Zealand's future economic prosperity. Ensuring people understand the importance and potential will help reduce resistance to change and will encourage talented people to work in the sector.

STANDING ON THE SHOULDERS OF SCIENCE:
GETTING MORE VALUE FROM THE INNOVATION ECOSYSTEM

Second, Government should establish a plan to lift spending on R&D to at least world class levels. New Zealand can and should try to develop the innovation ecosystem as cost-effectively as possible but it would be unrealistic to hope to do so without increasing spending.

The challenge is to improve performance and grow spending; growing spending alone will not be enough. Benefits from increased R&D spending will result only if research is focused where there is real commercial opportunity, and if there are mechanisms and resources to convert the research into new products or services, competitive gains, licence or contract revenue, or to form successful international businesses.

New Zealand needs to move quickly. The economy needs another growth pillar urgently. It will take time to change the innovation ecosystem settings to improve performance, time to gain the benefits from the changes, and time to complete research and develop commercial opportunities. We are in a race.

Finally, although the need for improvement is urgent, it is important to be patient. It takes a long time to grow a scientific innovation into a successful global business and it takes a long time to establish an effective innovation ecosystem. To ensure success New Zealand needs to take action, measure results, monitor progress, and adjust where needed.



