In this issue

In this issue of *Science Review* we have a diverse though thoroughly interesting series of articles, news items, book reviews and abstracts.

In our first article, *More than just buzz: New Zealand bee research and its impact* Otago University's Petra and Peter Dearden present a fascinating account as to the state and future of New Zealand bees and the beekeeping industry.

They point out that honeybees are a key part of New Zealand's primary production-based economy, and one where good science can make a huge difference, both in supporting the honey industry, but also supporting and improving pollination by bees and others.

Among the matters discussed, the authors suggest that it's time we used the genomic tools developed for selective breeding of mammalian production animals to improve stocks in bees. Honeybees' short generation time and the lack of intensive selective breeding, mean that significant genetic gains must be possible by deploying appropriate and well researched whole-genome selection techniques. Alongside this they point out the need to understand that New Zealand's production ecosystems are unique. We simply do not know enough about the interactions between bees, pesticides and pathogens in the New Zealand environment, and it is not enough to rely on overseas research to provide solutions.

In all, the authors illustrate that honeybee-related science, especially in New Zealand, is a remarkable case study of the value of basic science to produce applied outcomes. More than that, it shows how questions posed by industry problems can trigger some of the most interesting fundamental research.

In *Research and Innovation*, Jacqueline Rowarth, Tony Parsons and Susanne Rasmussen point out that, while good scientific research is an indispensible prerequisite for progress, science continues to struggle in New Zealand. While the quantity of funding available and the funding allocation model are part of the problem, so also are the managerialism, competition and the erosion of independence that the model has created. The result is a science system under considerable stress.

In their paper the authors look at the principles required to create and sustain a world-class, cost-effective, research service. They point out that over the last two decades different New Zealand governments have presumed that this could be achieved by adopting a business model, notably in the Crown research institutes (CRIs) and increasingly in universities. However, what has arisen is the antithesis – an inefficient, not cost-effective, and not-altogether trusted 'bureaucracy'.

Evidence of this lies in the increasing level of monitoring, scrutiny and intervention by boards, industry and government ministries alike. Further evidence is provided by the constant re-organisation and restructuring, even though past re-organisation attempts have clearly failed to deliver the cost-effective, efficient research service that was the goal. The authors argue that we have passed the tipping point: over-control, intervention and interference have enabled costly infrastructures and poor organisational behaviours, which are substantially counter-productive.

They conclude that an important distinction to resolve in planning for a better research and innovation future is whether the fundamental problem lies with *scientists*, as is evidently so widely presumed, or with how ineffectively science is *managed*.

In our third article, *Building the foundations for scientific advice in the international context*, Yasushi Sato, Hirokazu Koi and Tateo Arimoto consider possible strategies for building sound foundations for scientific advice in international contexts.

They present examples of several scientific advisory systems being deployed at the national, regional, and international levels, and focus on existing international scientific advisory systems, specifically exploring their historical backgrounds and recent endeavours to address the complexities of scientific advice at an international level. Finally, they discuss how international scientific advisory systems could be adapted to new global realities – strengthening the link between scientific advice and policy making, understanding cultural and historical differences among nations, and moving toward a 'system of systems' to augment collaboration between international advisory bodies.

The tertiary sector analysis group within the Ministry of Education continues its series *Beyond Tertiary Study,* with two reports published in 2014. The first, *What young graduates earn when they leave study,* looks at differences in incomes for different types of qualifications and came out in May. The second, *What young graduates do when they leave study*, published in June, focuses on the destinations of young domestic graduates.

Of the two books and one DVD reviewed in this issue *Brian Shorland: Doyen of New Zealand Science* is notable not only because of the achievements of the central figure of the book but also because the author Joan Cameron (née Mattingley) is a former NZAS president.

Finally, we report that at its 31st General Assembly in Auckland, 30 August to 3 September 2014, the International Council for Science (ICSU) endorsed open-access principles and provided key recommendations guarding against the misuse of metrics in the evaluation of research performance.

The Assembly, which unites representatives of 120 national scientific academies and 31 international scientific unions, voted for the statement which stakes out 5 key goals for open access, and offers 12 recommendations that pave the road for attaining them.

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