OFFICE OF THE PRIME MINISTER'S CHIEF SCIENCE ADVISOR

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Chief Science Advisor

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Annual report 2014 – 2015

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Dear Prime Minister,

Thank you again for your continued support and respect for the independence of my Office and the growing network of Departmental Science Advisors. This is a model that has gained considerable interest internationally and I am pleased to report on its progress.

Overview

2014/2015 was a productive year for the Office of the PMCSA both domestically and internationally. Over the past year, the network of Departmental Science Advisors has taken shape, with Advisors now placed in key government agencies (MPI, DOC, MfE, MBIE, MEd, MSD with MoH and the Justice sector in progress) where there is a significant (or growing) demand for improved evidence to inform policy formation and evaluation. The Committee of DSAs meets regularly under my chairmanship with the Chief Statistician, Chief Economist and the Deputy Head of the SSC invited to also join this meeting. Quarterly we invite the President of the Royal Society of New Zealand to join the meeting.

The Committee of DSAs has acted as a useful sounding board for a number of agencies on matters such as policies around the use of big data, the public understanding of risk, and matters involving the public science system. Of particular import, the Committee was asked by the Minister of Finance and the Minister of State Services to pilot a review process to assist Treasury in assessing selected bids for their evidential base as part of Budget 2015, thus deepen the quality of analysis. This work is bringing evidential review to the core of the policy process. Following this pilot round, I have been asked by Treasury to engage the Departmental Science Advisors in undertaking a similar and broader exercise for 2016. My office is also working with Treasury to develop formative material and interpretive notes to assist proponents in preparing their bids according to the best available evidence.

New Zealand's commitment to developing the relationship between science and society took a step forward in August with the launch of flagship activities within the *Nation of Curious Minds* – Science in Society strategic plan. My Office, in partnership with MBIE

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and MoE, has been involved in developing this plan and provides the national coordination of the plan's Participatory Science Platform project which is being piloted in 3 regions nationally.

The first International Conference on Science Advice to Governments, which was held in Auckland under my chairmanship, has led to considerable recognition of the New Zealand model and invitations to be engaged in follow-up activities. Similarly, the work of the Small Advanced Economies Initiative was cemented this year following a review of its first three years of activity. The secretariat of this initiative sits within my Office as a result of agreement between NZ agencies.

The sections that follow report on the major thematic areas activity for my Office. The Office is supported through 0.7FTE of my own time, together with 2 FTE for office and technical support and a contract researcher who is employed as needed on a project specific basis. A continuing partnership with MFAT, MBIE, DPMC and SAEI partners provides for 1.5 FTE dedicated to the Small Advanced Economies Initiative.

Science in Society and Government

The position as Chief Science Advisor is a boundary role that spans and integrates science with societal interests, the policy process and governmental priorities. Science is core to New Zealand's environmental, social and economic development. But boundary work is necessarily a shared and interactional task and I am pleased that my position has been able to help establish and grow mechanisms within a growing number of government ministries and departments that are building capacity for better scientific input into policy formation. I particularly acknowledge the role of the Policy Advisory group within DPMC in ensuring the effectiveness of the Office.

There are now six Departmental Science Advisors (DSA) in place. Each is a practicing academic scientist on part-time secondment to MBIE, MPI, MoE, MSD, MfE, and DOC. Two additional appointments (MoH and MoJ) are expected soon. These DSAs work with the ministerial senior leadership and departmental staff to raise the level of knowledge and skill for the use of evidence in policy and to assist in addressing specific policy issues.

I also chair a regular meeting of DSAs. This year the group was asked by Treasury to provide advice and guidance on the Budget bid review process. The Committee provided peer review and made recommendations on selected bid proposals. We commented not just on the evidence base for these proposals, but also provided a formative advice on how concurrent and summative evaluation should proceed (ie: elements such as the required data for sufficiency of evidence; how to deal with uncertainty in the policy/program context; how to structure programs for the best possibility of monitoring and evaluation of outcomes, rather than inputs alone, etc). This was a pilot process, following which we gave feedback to Treasury and key ministers on how it may be undertaken in future; this has been taken into account in developing the 2016 process.

In August 2014 the government launched *A Nation of Curious Mind - He Whenua Hihiri i te Mahara*, a pioneering strategy for New Zealand, aimed at achieving both better public engagement with science and better engagement by the science sector with New

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Zealand public(s), especially young people and hard-to-reach learners. I chaired the Reference Group for this initiative and was a member of the steering group along with DCEs of MBIE and MoE. Among the first activities to roll out of the strategy is the Participatory Science Platform (PSP), which is being coordinated through my Office. We recruited Dr Victoria Metcalf, a scientist and noted science communicator, as National Coordinator for the PSP pilot. Victoria, who reports to me, is working with local groups in the three pilot regions (South Auckland, Taranaki and Otago) to coordinate their intake of fundable community-based science projects and an evaluation of their respective models and processes. The PSP seeks to develop community science capital by matching schools and other community-based organisations with science professionals to co-design and carry out locally relevant research. It is expected that a suite of innovative, community-based, pedagogically significant and scientifically robust projects will be up and running in the coming months, with strong potential to create lasting relationships between local groups and science professionals. I have devoted a number of my blog entries and public speeches to discussing the PSP and the key features that distinguish it from traditional citizen science. I suspect it will take some on-the-ground examples for the science community to fully appreciate the uniqueness and opportunity in this approach, and I look forward to these case examples emerging as the project progresses.

As my primary vehicles for public communication, I have used my blog (www.pmcsa.org.nz) and public speeches (see Appendix) to discuss global trends in science systems that are arguably amplified in small countries such as ours. The importance of public trust in science has featured prominently in my writing, much of which I have directed at the science community itself in addition to the general public. Our system, like all science systems, is going through a period of intense change and a much more public role is demanded of scientists. I have tried to help parse that role and some of the challenges that it entails.

In studying and writing about the challenges of a changing science system in a changing policy environment (with the pressures of innovation, 'wicked problems' and a rapidly changing knowledge base) it has become clear that a common thread running through much of it is the concept of risk. This year, I launched a small working group to help deepen the analysis and clarify the issues for a better public discussion of risk and uncertainty. This work is being done in close coordination with MCDEM and DPMC and is both informing and being informed by work of the Strategic Risk and Resilience Panel (of which I am a member). My Office is currently working on a discussion paper related to these matters to be launched in early 2016.

In August 2014 I hosted and chaired, at the request of the International Council of Science (ICSU) the first International Conference on Science Advice to Governments held in Auckland attended by 220 delegates from 45 countries. Archived material from the conference can be viewed at: (http://www.globalscienceadvice.org/archive-2014-conference/). This conference was supported by MFAT and MBIE. The meeting ended with a strong call for a continued international network of science advice practitioners and academics to advance the global thinking on principles and best practices for science advice to governments in a variety of challenging policy contexts, not least of which, national disasters and emergencies. As a result I was asked to chair the

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establishment group for the International Network on Governmental Science Advice (INGSA) (www.globalscienceadvice.org).

The conference was preceded by a one-day symposium on Science and Diplomacy and followed by the second meeting of APEC science advisors and equivalents that I co-chaired with China.

As interim chair of INGSA, I am pleased to report that we have secured start-up funding from UK's Wellcome Trust and ICSU to support the secretariat and for an initial suite of INGSA activities. One key activity in 2016 will be capacity-building workshops for science advice in the African region, for which the New Zealand and South African governments are also partner sponsors.

Judging by the international interest in this work, New Zealand is increasingly recognised for its leadership at the science for policy nexus.

Technical scientific advice

With your consent and at the request of the Ministry of Health, I also undertook two technical analyses this year in partnership with the Royal Society of New Zealand. The process we undertook represents a new approach to engaging the Academy effectively in providing technical advice where needed by the Crown. Following agreement between myself and the requesting Ministry, I asked the President of the Royal Society of New Zealand to name an advisory group of academic experts who then worked with my Office to prepare the reports. Following external peer review, the President and I then jointly signed off on the reports. This approach gets beyond issues that have affected the value of national academy advice on technical matters in many countries in that it ensures alignment of the report with key knowledge needs among policy makers.

The two reports requested were: The health effects of fluoridation of municipal water systems and on the risk of non-occupational asbestos exposure as a result of the Canterbury Earthquake. Both reports are made available on my website and that of the Royal Society of New Zealand.

My office also undertakes specific analyses for government agencies with your consent. This year we produced a report on the health effects of raw milk at the request of the Ministry of Primary Industries and the Minister of Food Safety. A copy of this report can be found on the MPI website:
https://mpi.govt.nz/news-and-resources/consultations/proposed-options-for-the-sale-of-raw-milk-to-consumers/.

Science system and policy

There has been much discussion this year in NZ and internationally on the changing science system as it relates to the roles of universities and publically funded research entities in advancing knowledge, human and environmental health, as well as innovation and sustainable economic growth. Within such science policy discussions, my role is primarily that of a sounding board to MBIE and the Minister.

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In this regard my Office continues to provide feedback and input, much of which has been developed through our involvement in the Small Advanced Economies Initiative (SAEI). Through this work, we are able to glean important insights into the common opportunities and challenges of small science systems worldwide. This year, the SAEI delivered an analysis on how small systems can broaden the scope of research impact and ways in which this might be linked to quantifiable indicators within the system (http://www.smalladvancedeconomies.org/publications/). We also advanced the discussion of research prioritisation within small economies where limited resources make prioritisation decisions more acute. This type of supplementary analysis has informed MBIE's development of the National Statement on Science Investment.

This year, I was invited by Sir Paul Nurse, President of the Royal Society (London) to serve as one of two foreign nationals on the advisory panel that he has established to review the UK's granting councils.

I am a member of the new established advisory board to the STI division of the OECD that is involved in analysing the changing nature of both science and innovation systems and how these are mutually shaping each other.

Science and diplomacy

In my role as MFAT's Science Envoy there is considerable scope to support New Zealand interests by using science and science policy as an entry point to consider larger foreign policy objectives where science can play a role. Internationally-facing activities have been mentioned elsewhere in this report include the establishment of INGSA and the SAEI secretariats.

INGSA in particular provides an opportunity for New Zealand to exercise considerable leadership in the space between international aid and diplomacy. Indeed, planning for the African Regional capacity building workshop for science advice has already positioned New Zealand as a development partner in the region using a relatively small financial contribution and leveraging the expertise and experience within my Office and INGSA.

My Office and MFAT jointly hosted the 2nd annual meeting of the APEC economies Chief Science Advisors' and Equivalents meeting. This gathering brought together lead science representatives of the APEC economies to discuss and share best practices on developing and delivering science advice in the APEC context. Now going into its third year, we are working with the Policy Partnership on Science, Technology and Innovation (PPSTI) to better delineate and position the issues of science advice for policy, from the work of policy advice for science.

Looking ahead

My principal discussion document on decision making in the context of uncertainty (risk) will be published in early 2016, launching what I hope will become a deeper and more informed national conversation about understandings and perceptions of risk, resilience, precaution and innovative action.

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I look forward also to engaging directly with the Participatory Science Platform projects that are now coming on board in the pilot regions. Already, we have interest to develop an innovative vehicle for community-based scientific publishing that I plan to link to the PSP.

Having established our credible and strong relationship with ICSU, the European Commission, APEC and the OECD in the area of STI advice and policy, I will continue to use the tools of science diplomacy to build and strengthen these strategic partnerships for New Zealand.

I am grateful for the continued support of members of Cabinet, and the CEs of ministries, agencies and of DPMC. For advice and support, I thank Ms Barbara Annesley of DPMC, Ms Kristiann Allen, my Chief of Staff, Professor Stephen Goldson, my strategic advisor (part-time), Ms Kate Harland, former Project-Lead for the SAEI (now relocated to Canada), Mr Julian Tollestrup, Research and Policy Coordinator within my Office and the SAEI, and Dr Anne Bardsley, my principal research analyst. I also thank the staff at MFAT and MBIE, Ms Marian McCay and Ms Megan Stünzner for their assistance throughout the year.

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APPENDIX:

Published essays and speeches 2014-2015

2014

July

22 July – Media release: Sir Peter Gluckman welcomes appointment of Chief Education Scientific Advisor

23 July – Inaugural Lecture at Manawatu Branch of the Institute of Professional Engineers NZ: *Visioneering a Future*

28 July – Media Release: Sir Peter Gluckman welcomes NZ Data Future Forum's Report and Recommendations

29 July – Media Release: Science in Society Plan – *A Nation of Curious Minds – published*

29 July – Comments by Sir Peter Gluckman at the Launch of the Science in Society Plan

August

22 August – Review finds community water fluoridation safe and effective

25 August – Science Advice to Government Briefing Paper: *Diverse Systems, Common Challenges*

27 August – Opening Speech at Auckland's Science and Diplomacy Symposium

28 August – Opening Speech to First Global Conference on Science Advice to Governments: *Post-normal science advising in an era of post-normal policy formation*

29 August – Media Release: *Science Advice to Governments Comes of Age at Auckland Conference*

September

Synthesis Report – Science Advice to Governments Conference

October

15 October – Address to Joint Research Centre of European Commission, Brussels: *The art and science of policy advice: can we embed science into the processes of government?*

November

7 November – Opening Address at Science Agora Meeting in Tokyo: *The future of the nexus between science, society and governments*

7 November – Comments by Sir Peter Gluckman at Science Agora, Tokyo: *Science in transition – bridging science, society and policy*

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December

4 December - Media Release: *Survey reveals Kiwis' attitudes to science*

2015

February

13 February - Keynote address at AAAS Annual Meeting: *Building a Global Scientific Enterprise*

March

18 March - Media Release: *Tackling Childhood Obesity*

April

10 April - Address to the NZ Association of Scientists: *Trusting the Scientist*

15 April – Royal Society of NZ and OPMCSA Report on Asbestos Exposure in NZ

28 April – Address to the NZ Agricultural Greenhouse Gas Mitigation Conference: *The Challenges of Climate Change*

May

1 May – Address to the Christchurch Health in All Policies Conference: *Good Policy Making Requires Good Science*

6 May – Address to the Public Symposium on Engagement of Indigenous and Science Knowledge Systems: *The Epistemologies of scientific and Indigenous Knowledge Systems*

June

11 June – Address for the Paolo Budinich Lecture: *Science Diplomacy: Opportunities and challenges for small countries*

26 June – Address to the E-Research 2020 Workshop: *The intended and unintended consequences of e-research: why scientists must engage openly with the community*

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