

# Chapter 1

## Introduction

1.1 On 18 March 2014, the Senate referred the following matter to the Senate Economics Reference Committee (committee) for inquiry and report by the first sitting day of July 2015:

The challenges to Australian industries and jobs posed by increasing global competition in innovation, science, engineering, research and education, with particular reference to:

- (a) the need to attract new investment in innovation to secure high skill, high wage jobs and industries in Australia, as well as the role of public policy in nurturing a culture of innovation and a healthy innovation ecosystem;
- (b) the Australian Government's approach to innovation, especially with respect to the funding of education and research, the allocation of investment in industries, and the maintenance of capabilities across the economy;
- (c) the importance of translating research output into social and economic benefits for Australians, and mechanisms by which it can be promoted;
- (d) the relationship between advanced manufacturing and a dynamic innovation culture;
- (e) current policies, funding and procedures of Australia's publicly-funded research agencies, universities, and other actors in the innovation system;
- (f) potential governance and funding models for Australia's research infrastructure and agencies, and policy options to diversify science and research financing;
- (g) the effectiveness of mechanisms within Australian universities and industry for developing research pathways, particularly in regards to early and mid-career researchers;
- (h) policy actions to attract, train and retain a healthy research and innovation workforce;
- (i) policy actions to ensure strategic international engagement in science, research and innovation; and
- (j) policy options to create a seamless innovation pipeline, including support for emerging industries, with a view to identifying key areas of future competitive advantage.<sup>1</sup>

---

1 *Journals of the Senate*, 2013–14, no. 20 (18 March 2014), pp 630–31.

1.2 On 24 March 2015, the Senate extended the reporting date to 10 August 2015. On 15 June 2015, the committee received a further extension to report by 15 October 2015. On 19 August 2015, the committee tabled an interim report on the inquiry. The same day, the Senate granted the committee an extension to report by 25 November 2015. On 23 November, the committee was granted a further extension to report by 15 December 2015.

### **Conduct of inquiry**

1.3 The committee advertised the inquiry on the Senate committee's website and in *The Australian*, calling for submissions from interested parties to be lodged by 31 July 2014. The inquiry received 183 public submissions and two confidential submissions. The public submissions are listed at Appendix 1.

1.4 The committee held the following public hearings:

- 8 October 2014 in Newcastle;
- 22 April 2015 in Sydney;
- 27 July 2015 in Brisbane;
- 3 August 2015 in Melbourne; and
- 24 August 2015 in Perth.

1.5 Additional information including questions taken on notice is at Appendix 2. A list of witnesses who appeared before the committee is at Appendix 3.

1.6 This report should be read in conjunction with the committee's interim report, which includes an issues paper authored by Professor Roy Green.

### **Expert consultant**

1.7 In accordance with Senate Standing Order 25(17), the committee appointed an expert consultant to assist the committee in its inquiry. The committee assessed a number of suitable candidates for the position who had specialist knowledge of innovation policy. Professor Roy Green, Dean of the UTS Business School at the University of Technology Sydney, was subsequently contracted as an expert consultant to the committee.

1.8 The expert consultant report produced by Professor Green for the committee is published with this committee report at Attachment 1. Professor Green's report is an important document which explores current innovation challenges and identifies key drivers for Australia's innovation future.

1.9 The committee would like to thank Professor Green for advising the committee throughout the course of the inquiry. The committee takes the view that Professor Green's report is a significant piece of work which makes a major contribution to the debate on innovation in Australia and provides important insights and potential strategies addressing Australia's innovation challenge.

1.10 The committee also acknowledges the work of Adjunct Professor John Howard who provided research support to Professor Green's report.

---

## Acknowledgements

1.11 The committee thanks all those who assisted the inquiry, especially those who made written submissions and those who provided evidence at committee hearings.

### Why innovation matters for Australia

1.12 Innovation has consistently been acknowledged as a fundamental driver of productivity and economic growth which can deliver positive social and environmental outcomes by peak international bodies, key industry stakeholders, government and academia. This view was repeatedly emphasised throughout the course of the inquiry.<sup>2</sup> It was also highlighted in the committee's interim report.<sup>3</sup>

1.13 Furthering the notion of innovation as a global imperative, the Chief Scientist for Australia, Professor Ian Chubb, made the point that:

Nations at all levels of development have therefore put a premium on boosting innovation potential, through the quality of their knowledge infrastructure. Many have strategies that target public investment to identified areas of priority and comparative advantage.<sup>4</sup>

1.14 In a recent report focusing on innovation strategy, the Organisation for Economic Co-operation and Development (OECD) highlighted that new sources of growth are 'urgently needed to help move toward a stronger, more inclusive and sustainable growth path following the financial crises'. It was also noted that innovative economies are more 'productive, more resilient, more adaptable to change and better able to support higher living standards'.<sup>5</sup>

1.15 Innovation has also had a positive impact on Australia's economy 'with strong relationships demonstrated between innovation and productivity growth, firm competitiveness and trade'.<sup>6</sup> The Business Council of Australia (BCA) advised:

Analysis covering the 10 years to 2005 showed that almost two-thirds of Australia's productivity growth was driven by innovation. A key determinant in lifting our productivity performance going forward will be how effectively we unleash innovation.<sup>7</sup>

---

2 Department of Industry, *Submission 110*; Professionals Australia, *Submission 117*; Engineers Australia, *Submission 46*; Innovation Australia, *Submission 157*; Business Council of Australia, *Submission 175*; Ernst & Young, *Submission 52*; Community and Public Sector Union and the CSIRO Staff Association, *Submission 159*; CSIRO, *Submission 36*, p. 1.

3 Senate Economics References Committee, *Australia's Innovation System: Interim Report*, August 2015, [http://www.aph.gov.au/Parliamentary\\_Business/Committees/Senate/Economics/Innovation\\_System/Interim\\_Report](http://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Economics/Innovation_System/Interim_Report)

4 Chief Scientist for Australia, *Submission 20*, p. 1.

5 Organisation for Economic Co-operation and Development, *OECD innovation strategy 2015: An agenda for policy action*, October 2015, p. 2.

6 Innovation Australia, *Submission 157*, p. 2.

7 Business Council of Australia, *Submission 175*, p. 3.

1.16 Arguments in support of a government role in facilitating innovation are related to observations about the importance of innovation. Charles Sturt University argued that the private sector underinvests in innovation (or research and development) because of the spill-over effects that others benefit from (i.e. the shared returns from such investment outweighs the private returns).<sup>8</sup> The OECD has stated:

Undoubtedly the capability to innovate and to bring innovation successfully to market will be a crucial determinant of the global competitiveness of nations over the coming decade. There is growing awareness among policymakers that innovative activity is the main driver of economic progress and well-being...there is a realisation that a co-ordinated, coherent, 'whole-of-government' approach is required.<sup>9</sup>

1.17 Nevertheless, the Australian Academy of Technological Sciences and Engineering (ATSE) made the point that Australian industry 'must be prepared to embrace innovation and research'.<sup>10</sup> The Department of Industry noted that innovation required 'sustained effort' from both private and government sectors':

...not only to invest in new ideas, but to build capacity to be able to execute those ideas. Where there are market failures, government is well placed to assist and facilitate improved economic outcomes.<sup>11</sup>

1.18 The view that innovation is a national imperative was expressed by the cross-section of witnesses to the inquiry including universities, industry, government and the broader society. The need to provide greater opportunities to improve access to research and development (R&D) for knowledge intensive industries in the areas of global growth and the role of government in driving and supporting innovation were recognised as key aspects to transforming Australia into an innovation society. With over 60 per cent of Australia's productivity growth due to innovation, it was made clear during the inquiry that Australia's future prosperity relies in part on the ability of the country's innovation system to translate R&D outputs into innovative new products and services to enable Australia to remain internationally competitive.<sup>12</sup>

1.19 A case in point is that of the Newcastle and Hunter region of NSW. The region is home to Australia's largest regional economy with an output estimated at \$36.9 billion in 2012. While the region's traditional strengths exist in industrial and minerals, its future lies also in 'growing the creative and knowledge based industries

---

8 Charles Sturt University, *Submission 6*, p. 3. See also Ernst & Young, *Submission 52*, p. 3. The benefits of publicly-funded research were quantified by others. Synchrotron Light Source Australia cited studies that estimate the benefit-to-cost ratios of publicly-funded R&D at between 2:1 and 3:1. Synchrotron Light Source Australia, *Submission 139*, pp 2–3.

9 Organisation for Economic Co-operation and Development, *Innovation and Growth – Rationale for an Innovation Strategy*; cited in Ernst & Young, *Submission 52*, p. 3.

10 Australian Academy of Technological Sciences and Engineering, *Submission 96*, p. 2.

11 Department of Industry, *Submission 110*, p. 6.

12 CSIRO, *Submission 36*, p. 4.

which will support the Hunter's socioeconomic transition'.<sup>13</sup> In this regard, the importance of regional innovation ecosystems was highlighted in evidence as a key mechanism through which university-industry collaboration can be achieved. The Parkville precinct in Melbourne was described as one such example of a thriving regional innovation ecosystem in the biomedical and health sciences space.<sup>14</sup>

---

13 Professor Deborah Hodgson, University of Newcastle, *Committee Hansard*, 8 October 2014, p. 1.

14 Pfizer Australia, *Supplementary Submission 138*, p. 3.