



Comparing the EU and Australia: A Literature Review of AI-Related Policy

Flynn Shaw and Katherine Daniell

School of Cybernetics and Fenner School of Environment and Society,
Australian National University

The Algorithmic Futures Policy Lab is supported by an Erasmus+ Jean Monnet grant from the European Commission. It is a collaboration between the Australian National University Centre for European Studies, School of Cybernetics, Fenner School of Environment and Society, as well as DIMACS at Rutgers University and CNRS LAMSADE.

The European Commission support for the Algorithmic Futures Policy Lab does not constitute an endorsement of the contents of this document, which reflect the views only of the writers, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

With the support of the
Erasmus+ Programme
of the European Union



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This literature review will critically compare the policy tools employed by the EU and Australia with regard to Artificial Intelligence (AI), and will seek to identify the key factors which have contributed to the particular forms these measures have taken. We will compare three key policy categorisations: Human Capital, Product Development, and Regulation. These categorisations are borrowed from the EU's Joint Research Centre (JRC) and the OECD, and largely reflect the focus areas of both Australia and the EU with regard to AI policy. Specific examples from within these two jurisdictions will be provided. These examples are not intended to be comprehensive but rather to provide some coverage of a diversity of current policy tools and implementations under these three categories.

Human Capital

Human capital refers to the methods taken by governments to strengthen human capacity in terms of AI, as well as future proofing the labour force against the market transformations AI will bring.¹ The broad policy approach to human capital followed by many states in the EU, as well as in Australia, is as follows:

- Countries attempt to increase AI competency at all education levels using supportive policies.²
- Countries provide massive open online courses (MOOCs) and on-the-job training in AI.³
- Governments are setting up polices to evaluate the future needs of the labour market as it pertains to AI competency.⁴

EU

On the first policy type, Denmark has implemented a four-year test programme aiming at strengthening technological understanding in primary and lower secondary education.⁵ This has been coupled with the *Teknologipagten* (Technology Pact), which aims to have 10,000 more people in STEM disciplines within the next 10 years. Although the latter policy is not specifically related to AI, an increased focus on AI and AI-enabled systems throughout the Danish education system will likely increase awareness of the field, and consequently cause some percentile of STEM students to pursue AI.

Finland has found considerable success in re- and up-skilling their labour force by pursuing MOOCs. 'Elements of AI' is a series of free online courses which were created by Reaktor and the University of Helsinki. In its first year it attracted more than 100,000 participants, around 2% of the Finnish population, and it is currently being translated into all languages of the EU in order to increase its reach.⁶

In terms of identifying future labour market trends with regard to algorithmic and digital competences, Sweden (amongst others) has implemented a pilot project which aims at making an inventory of the need for skill development to better utilise new technology, including AI.⁷ Such programs hope to increase knowledge and understanding of the possibilities and limitations of AI in the public and private sector.⁸

Australia

The Australian Government has committed \$24.7m over six years to establishing the Next Generation AI Graduates Program⁹. The Program is comprised of 234 competitive national scholarships, co-funded by participating universities, and is available for

¹ Van Roy, V., "AI Watch - National strategies on Artificial Intelligence: A European perspective 2021 Edition", *Publications Office of the European Union* (2020): pp. 11

² Ibid.

³ Ibid.

⁴ Ibid.

⁵ Denmark, "National Strategy for Artificial Intelligence", *Ministry of Finance and Ministry of Industry, Business and Financial Affairs*, Accessed 12/07/21, pp. 45-46, https://en.digst.dk/media/19337/305755_gb_version_final-a.pdf.

⁶ Op.cit. Van Roy, pp. 13

⁷ Lund University Commissioned Education, "AI and ML for Industry and Society", Lund University, Accessed 11/7/21, <https://www.vinnova.se/en/p/ai-and-ml-for-industry-and-society/>

⁸ Ibid.

⁹ Australian Government, Department of Prime Minister and Cabinet, "Digital Economy Strategy 2030", Accessed 12/7/21, <https://digitaleconomy.pmc.gov.au/sites/default/files/2021-05/digital-economy-strategy.pdf>

students from Honours to Doctoral levels.⁹ In a similar vein, The Centre for Augmented Reasoning, which is being established at the University of Adelaide, aims to support Advanced Reasoning research through grants and PhD scholarships.¹⁰ The Australian Government has also taken a similar strategy to Denmark's Technology Pact through its Job-Ready Graduates program, which reduces fees for STEM students in higher education.¹¹ In terms of primary and secondary education, within the Technologies curriculum there is a section on 'creating preferred futures', which incorporates ideas of AI and algorithmic futures.¹² These segments are primarily aimed at students in years 5-10.¹³

With regard to the provision of re- and up-skilling courses for Australia's labour force, the Australian Government has created the 'Foundation Skills for Your Future Program – Digital Project Rounds'. This is a funding program designed to prioritise projects with a focus on digital skills in order to improve the foundational skills of employed or recently unemployed Australians.¹⁴

With regard to identifying and responding to labour market challenges presented by the uptake of AI, the Australian government will establish a National AI Centre, as well as four AI and Digital Capability Centres.¹⁵ Whilst these centres will have a broader mandate than Sweden's proposed pilot project, there is a focus on aiding small and medium enterprises (SMEs) in adopting AI technology.¹⁶ The predicted outcome of this adoption is an SME landscape that is more open to AI, which allows them to remain competitive and theoretically create new AI-related jobs as the need arises.

Product Development

Product development refers to policy measures designed to foster innovation and move AI developments into the market. The primary means by which the EU and Australia are attempting to do this are:

- Through funding and support programmes for the development of initial AI-related ideas (research and innovation)¹⁷
- The creation of national competence centres in AI research¹⁸
- Commercialisation schemes designed to move AI technology "from the lab to the market"¹⁹

EU

Most funding schemes which have or will be used to foster AI innovation have been in place for many years in the EU. Policy tools such as innovation vouchers, seed capital or venture capital schemes have all been employed to some degree throughout the Union.²⁰ For example, Horizon Europe is the EU's primary funding programme for research and innovation, worth around 95.5 billion Euros over 7 years.²¹ It is based upon three pillars: Open Science, Global Challenges and Industrial Competitiveness, and Open Innovation.²² AI, as well as other new or emerging technologies, are encompassed under the latter two pillars. Perhaps most notable under Horizon Europe's mandate is the European Innovation Council (EIC). This falls under the third pillar of Horizon, and primarily focuses on risky/breakthrough technologies with a focus on the market.²³ On the state level, Germany's 'Tech Growth Fund' is an example of an existing innovation fund, providing debt financing to tech startups through KfW, the state-owned investment and development bank.²⁴

¹⁰ Thomas Martin Walker, "Australian Institute for Machine Learning (AIML)", The University of Adelaide (October 2020), Accessed 13/7/21, <https://www.adelaide.edu.au/aiml/news/list/2020/10/07/20m-to-establish-centre-for-augmented-reasoning-at-aiml>

¹¹ Australian Government, Department of Education, Skills and Employment, "Job-Ready Graduates Package", Accessed 13/7/2021, <https://www.dese.gov.au/job-ready/improving-higher-education-students>

¹² Australian Curriculum, "Creating preferred futures", Accessed 10/7/21, <https://www.australiancurriculum.edu.au/resources/digital-technologies-in-focus/resources/key-ideas-and-concepts/>

¹³ Ibid.

¹⁴ Australian Government, Department of Industry Science, Energy and Resources, "Australia's AI Action Plan June 2021", Accessed 9/7/21, pp. 15 <https://www.industry.gov.au/sites/default/files/June%202021/document/australias-ai-action-plan.pdf>

¹⁵ Ibid., pp. 12

¹⁶ Ibid.

¹⁷ Op.cit., Australian Government, Department of Industry Science, Energy and Resources, pp. 15; Op.cit., Van Roy, pp. 12-13

¹⁸ Op.cit., Australian Government, Department of Industry Science, Energy and Resources, pp. 12; Op.cit., Van Roy, pp. 12-13

¹⁹ Op.cit., Australian Government, Department of Industry Science, Energy and Resources, pp. 16; Op.cit., Van Roy, pp. 12

²⁰ Op.cit., Van Roy, pp. 12

²¹ Horizon Europe, although established in 2020, is a reworking of Horizon 2020, which was created in 2014; European Commission, "Horizon Europe", Accessed 14/7/21, https://ec.europa.eu/info/research-and-innovation/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe_en

²² MODUS, "From Horizon 2020 to Horizon Europe", Accessed 14/7/21, <https://modus.ltd/from-horizon-2020-to-horizon-europe/>

²³ Ibid.

²⁴ Wolfram Schweickhardt, "Start-up campaign: KfW and German Federal Government launch debt financing for innovative companies in the growth phase", KfW, Accessed 13/7/21, https://www.kfw.de/KfW-Group/Newsroom/Latest-News/Pressemitteilungen-Details_513152.html

As with the Australian case, many European states have set up AI competence centres as the primary means of coordinating the country's implementation and development of AI. For example, a key aspect of France's 'AI for Humanity' strategy is the creation of 4 interdisciplinary AI institutes created with the aim of fostering relationships between higher education and industry.²⁵

On commercialisation, the European approach has largely been to identify high priority sectors with significant potential for AI applications. These include manufacturing, agriculture and healthcare.²⁶ For example, in 2019 Bulgaria released its 'Strategy for the digitisation of agriculture and rural areas', which set up an intelligent AI-related system for information management which supported more efficient farming practices.²⁷

Australia

Much like the European case, many of the funding tools referenced in Australia's AI Action Plan were already in place and are rarely specifically tailored to AI start-ups. The \$1.5b 'Modern Manufacturing Strategy', which aims to pivot Australia's manufacturing priorities towards areas of comparative advantage with the aid of technological developments, is an example of this.²⁸ Similarly, the Entrepreneurs' Programme provides business with access to advice and financial support, which includes but is not limited to the utilisation of AI for SME's operations.²⁹ An important point of difference between the Australian system of research and investment and the European case is exemplified by Horizon Europe. Australia does not have a unified innovation fund like Horizon; instead, funding is funnelled through various government organisations such as the Australian Research Council (ARC), Cooperative research centres (CRCs), the National Health and Medical Research Council (NHMRC) and the Medical Research Future Fund (MRFF). The MRFF is of particular note here due to the planned \$19m investment by the Australian government in AI-related medical research.³⁰

As previously mentioned, and in line with the European approach, Australia is setting up a National AI Centre as a means of coordinating Australia's approach to AI technology innovation and adoption.

A notable departure from the European case is the Australian Government's University Research Commercialisation Scheme, which is providing \$5.8m to translate university outputs into commercial goods.³¹ A potential explanation for this departure is Australia's need to diversify its primary exports. The need to pivot away from a commodity-based economy towards growth industries such as smart manufacturing or tech development necessitates a plan to commercialise the R&D outputs of universities.

Regulation

Regulation refers to policies for the development of ethical guidelines, standardisation and legislative reform.³² This includes policy regarding human rights, privacy, accountability and explainability. For the EU, the General Data Protection Regulation (GDPR) is the key data protection legislation which frames regulatory attempts on AI. In many ways it mimics the Australian Privacy Act 1988, particularly in terms of its requirements for accountability, transparent information handling practices and the implementation of a 'privacy by design' approach to compliance.³³ More generally, the policy measures pursued by Australia and the EU are:

- Articulation of principles of ethical AI, facilitated by AI ethics committees and councils³⁴
- Monitoring and reward systems for compliance with AI principles³⁵
- Regulatory sandboxes³⁶

²⁵ Op.cit., Van Roy, pp. 59

²⁶ Ibid., pp.13

²⁷ Ibid., pp. 33

²⁸ Australian Government, Department of Industry, Science, Energy and Resources, "Make it Happen" The Australian Government's Modern Manufacturing Strategy", Accessed 11/7/21, <https://www.industry.gov.au/data-and-publications/make-it-happen-the-australian-governments-modern-manufacturing-strategy/our-modern-manufacturing-strategy>

²⁹ Op.cit., Australian Government, Department of Industry Science, Energy and Resources, pp. 13

³⁰ Ibid., pp. 18

³¹ Australian Government, Department of Education, Skills and Employment, "Higher Education reviews and consultations", Accessed 12/7/21, <https://www.dese.gov.au/urc>

³² Op.cit., Van Roy, pp. 9

³³ Australian Government, Office of the Australian Information Commissioner, "Australian entities and the Eu General Data Protection Regulation (GDPR)", Accessed 14/7/21, <https://www.oaic.gov.au/privacy/guidance-and-advice/australian-entities-and-the-eu-general-data-protection-regulation/>

³⁴ Op.cit., Van Roy, pp. 15; Op.cit., Australian Government, Department of Industry, Science, Energy and Resources, pp. 19

³⁵ Op.cit., Van Roy, pp. 15

³⁶ Ibid.

EU

Approaches to regulation differ across countries in the EU. Denmark, for example, released a Data Ethics Toolbox in 2019 to support the public and private sector in implementing data ethics.³⁷ In January 2021, statutory data ethics compliance was implemented for Denmark's largest businesses.³⁸ However, irrespective of the particular ethical guidelines created by respective EU governments, many have established AI ethics committees in order to facilitate the development of the given guidelines. This includes, but is not limited to, the Czech Republic, Denmark and Finland.³⁹

Malta has implemented an AI certification framework, which serves as recognition that the certified AI systems have been developed in an ethical and socially responsible manner.⁴⁰ Similarly, Denmark and Germany have adopted systems designed to act as quality seals for responsible AI development.⁴¹

Regulatory sandboxes refer to controlled, real-life environments for AI experimentation which temporarily reduce regulatory burdens to aid in testing innovations.⁴² It should be noted that the development of AI regulatory sandboxes, through appealing to most countries in principle, is still in the very early stages. Italy is one case where a sandbox has been instituted, the 'Sperimentazione Italia', though this is not limited solely to AI development.⁴³

Australia

Although Australia has released its AI Ethics Principles, there has been no indication that the government plans to institute a regulatory body dedicated to AI.⁴⁴ Its regulatory approach is similar to that of Germany, whereby the reform of existing legislation (such as the Federal Data Protection Act in Germany or the Privacy Act 1988 in Australia) is prioritised over AI-specific policy measures.⁴⁵ This is not to say that AI-specific institutional arrangements are not being considered. In 2021 the Australian Human Rights Commission completed a report into Human Rights and Technology, which advocated for the creation of an AI Safety Commissioner.⁴⁶ This report is currently being considered by the Australian Government.⁴⁷ Further, Australia's AI Ethics Principles are currently being piloted within the Australian Public Service (APS) as well as with businesses such as the Commonwealth Bank of Australia, Microsoft and Telstra.⁴⁸ The case studies from these pilot tests will be published when concluded.

Australia appears to be doing little with regard to the remaining two prominent policy tools (regulatory sandboxes and compliance rewards). However, both of these tools are recommended in the Human Rights Commission's report.⁴⁹ Thus, it is not outside the realm of possibility that they are implemented in the future.

Conclusions and Key Debates

Both Australia and the EU are employing similar tools in the pursuit of AI development and implementation. Across the three policy domains referred to, there are only four notable differences in policy approach.

The first is in Australia's financial commitment to product development through the University Research Commercialisation Scheme. As explained, it is possible that this is due to the changing nature of Australia's economic ecosystem; the movement from a commodities based-economy in the post-mining boom, post-Chinese industrial expansion era necessitates the promotion of new economic pursuits.⁵⁰ As commodities exports, particularly mining exports, are far less valuable to European states, there is a less pressing need to diversify into new and emerging technologies such as AI-research. This effect is exacerbated by the European Single Market, as many European producers have ready access to a relatively uncompetitive market. This, in turn, disincentivises rapid pivots into emerging technologies as there is not necessarily a need for producers to do so.

³⁶ Ibid.

³⁷ Ibid.

³⁸ Ibid.

³⁹ Ibid., pp. 42, 46, 55

⁴⁰ Ibid., pp. 15

⁴¹ Ibid.

⁴² Ibid.

⁴³ Italian Government, MITD, "Sperimentazione Italia", Accessed 12/7/21, <https://innovazione.gov.it/notizie/articoli/en/sperimentazione-italia/>

⁴⁴ Op.cit., Australian Government, Department of Industry Science, Energy and Resources

⁴⁵ Ibid., pp. 19; Op.cit., Van Roy, pp. 66

⁴⁶ Australian Human Rights Commission, "Human Rights and Technology Final Report 2021", Accessed 9/7/21, https://tech.humanrights.gov.au/downloads?_ga=2.138898935.594400763.1626150799-1874534162.1626150799, pp. 128

⁴⁷ Op.cit., Australian Government, Department of Industry Science, Energy and Resources, pp. 19

⁴⁸ Ibid.

⁴⁹ Op.cit., Australian Human Rights Commission, pp. 95, 102

⁵⁰ This need is exacerbated by the current diplomatic tensions between Australia and China which has spilled over into trade disputes; (Matthew Doran, "Most Australian trade with China has plummeted 40 per cent amid tensions, DFAT reveals", ABC News, March 2021, <https://www.abc.net.au/news/2021-03-25/australian-trade-with-china-plummets/100029910>)

The second regards overarching innovation funds such as Horizon Europe. The primary reason for difference here is the massive bureaucratic challenge faced by the Union. It is not strictly necessary for Australia to have a singular innovation fund to mimic Horizon as it does not have to tie together various economies into a functioning Union; there is not a considerable enough loss in bureaucratic efficiency incurred by the existence of several different innovation investment funds or organisations to warrant a ‘Horizon-esque’ fund.

The remaining two policy departures regard regulation. The EU appears to be taking a stronger legislative approach to the regulation of AI than Australia. In April 2021 the EU considered a proposal for harmonised rules on AI in order to create a binding, Union-wide legislative baseline for AI development.⁵¹ This, coupled with the various regulatory forms already articulated (such as Denmark’s legislation on data ethics for big business), presents a view of the EU as highly concerned by the ethical issues posed by AI. Australia, by contrast, is yet to implement any of the recommendations put forward by the Australian Human Rights Commission, and currently has very little AI regulation.

These policy discrepancies highlight two important debates which underpin contemporary AI policy. The first is the inherent tension between regulation and innovation. Governments are clearly struggling with how to develop AI ethically without strangling the budding industry in red tape. There is some evidence for this in the institutional differences between Australia and the EU. Whilst companies operating within the EU have the security of the Single Market, Australian companies must compete globally from a much earlier stage in their development. Regulatory barriers may well inhibit this competitiveness, and this is reflected in Australia’s approach to AI regulation. Interrelated with this debate is the question of how international pressures will shape governmental approaches to AI regulation. The race to market, coupled with the rapid and consistent innovations in AI technology, will present countries with a difficult trade-off between highly regulated production, and unfettered, potentially ethically-questionable tech development. In this debate even the EU’s Single Market may not be immune, as late arrivals to the market risk losing market-share to fast-moving companies, and there is no guarantee a more ethically produced product will be able to regain the lost market-share. However, there is a cultural argument counterargument to consider here. Both the EU and Australia’s business cultures are perhaps less focused on developing leviathan, market-dominant firms such as Amazon, and more focused on developing large, stable and more technically specialised businesses. This stems from a more risk-averse business culture and is exemplified by the significant role government plays in both states, e.g., both state’s governments as a primary source of R&D funding. Both arguments hold weight, however it is worth noting the current lack of regulation in Australian AI development as a potential challenge to the cultural argument.

Acknowledgments and disclaimers: This work was done in support of The Algorithmic Futures Policy Lab, which is supported by an Erasmus+ Jean Monnet grant from the European Commission.

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⁵¹ European Union, “Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts), Accessed 12/7/21, <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52021PC0206>