



HOUSE OF LORDS

Liaison Committee

7th Report of Session 2019–21

AI in the UK: No Room for Complacency

Ordered to be printed 15 December 2020 and published 18 December 2020

Published by the Authority of the House of Lords

HL Paper 196

Liaison Committee

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Declarations of interest

See Appendix 1.

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Evidence is published online at <https://committees.parliament.uk/work/633/artificial-intelligence-committee-followup/publications/> and available for inspection at the Parliamentary Archives (020 7219 3074).

Q in footnotes refers to a question in oral evidence.

AI in the UK: No Room for Complacency

CHAPTER 1: INTRODUCTION

1. In this report we examine the progress which has been made by the Government in the implementation of the recommendations made by the Select Committee on Artificial Intelligence in their report *AI in the UK: ready, willing and able?*¹

A new procedure

2. Each session the House appoints a number of special inquiry committees—usually four—to inquire into a particular topic and to report to the House by the end of the session. The Select Committee on Artificial Intelligence was one of those appointed in the first year of the session 2017–19. Such special inquiry committees are not sessional committees, continuing from one session to the next; they are set up to report on a particular topic, and cease to exist once they have agreed their report. There is therefore no specialist committee able to continue the work of monitoring implementation by the Government and others of the recommendations they make.
3. In the past the Liaison Committee has carried out this task by correspondence with Ministers, and we have done so in the case of the report of this Select Committee.² However the Liaison Committee has not in the past followed up special inquiry reports with oral evidence sessions. One of the reasons is that its members do not necessarily have the specialist knowledge and expertise in the subject of the inquiry which members of the Select Committee have acquired in the course of their inquiry. In its report *Review of House of Lords Investigative and Scrutiny Committees: towards a new thematic committee structure*,³ the Liaison Committee accordingly recommended that at an appropriate time after the publication of a report the Chair of a former Select Committee could make the case for the Liaison Committee to co-opt some of the members of the former Committee to hold a small number of oral evidence sessions to follow up the recommendations.
4. This is the first occasion on which this new procedure has been utilised. Our initial view is that this is a successful development, and a useful new tool for ensuring that special inquiry committees can pursue their goals even after they have technically been dissolved. We look forward to using this procedure in the case of other committees when time allows.

The Select Committee on Artificial Intelligence

5. The Select Committee was appointed by the House on 29 June 2017 with the remit “to consider the economic, ethical and social implications of advances in artificial intelligence”.⁴ Its report, published on 16 April 2018, made a

1 Select Committee on Artificial Intelligence, *AI in the UK: ready, willing and able?* (Session 2017–19, HL Paper 100)

2 See para 5

3 Liaison Committee, *Review of House of Lords Investigative and Scrutiny Committees: towards a new thematic committee structure* (6th Report, Session 2017–19, HL Paper 398)

4 HL Deb, 29 June 2017, [cols 562–563](#)

large number of recommendations, mainly addressed to the Government. The Government responded to these recommendations in June 2018,⁵ and the report and response were debated in the House on 19 November 2018.⁶ Lord McFall of Alcluith, the Senior Deputy Speaker and Chair of the Liaison Committee, wrote to the Minister of State for Universities, Science, Research and Innovation on 30 January 2020 with a number of questions.⁷ We received a very full reply on 14 August 2020.⁸

6. Lord Clement-Jones, who was Chair of the Select Committee on Artificial Intelligence, wrote to Lord McFall on 11 February 2020 making the case for evidence sessions to be held on the AI Committee's report. At a meeting on 26 February 2020 the Liaison Committee accepted this,⁹ and evidence sessions were arranged for March. They had to be postponed, but eventually took place on 14 October 2020, when five members of the former Select Committee joined the Liaison Committee to hear evidence from nine witnesses over three sessions. The names of the members are recorded in Appendix 1, and those of the witnesses in Appendix 2. We are most grateful to them all.
7. In this report we analyse the evidence that we received, and make further recommendations to the Government for action. We look forward to receiving the Government's response.

5 Department for Business, Energy and Industrial Strategy, Government response to House of Lords Artificial Intelligence Select Committee's report on 'AI in the UK: ready, willing and able?', CM 9645, 28 June 2018: <https://www.parliament.uk/documents/lords-committees/Artificial-Intelligence/AI-Government-Response2.pdf> [accessed 9 December 2020]

6 HL Deb, 19 November 2018, [cols 12–63](#)

7 Letter from the Senior Deputy Speaker to the Minister of State for Universities, Science, Research and Innovation on the Select Committee on Artificial Intelligence, 30 January 2020: <https://committees.parliament.uk/publications/62/documents/704/default/>

8 Letter from the Minister for Science, Research and Innovation to the Senior Deputy Speaker on the Select Committee on Artificial Intelligence, 14 August 2020: <https://committees.parliament.uk/publications/2604/documents/26039/default/>

9 Liaison Committee, '26 February – Decisions document': <https://committees.parliament.uk/publications/423/documents/1580/default/>

CHAPTER 2: LIVING WITH ARTIFICIAL INTELLIGENCE

8. Since the publication of the Select Committee on Artificial Intelligence’s report in April 2018, investment in, and focus on, the United Kingdom’s approach to artificial intelligence has grown significantly. In 2015, the UK saw £245 million invested in AI. By 2018, this had increased to over £760 million. In 2019 this was £1.3 billion.¹⁰ Artificial intelligence has been deployed in the UK in a range of fields—from agriculture and healthcare, to financial services, through to customer service, retail and logistics. It is being used to help tackle the COVID-19 pandemic,¹¹ but is also being used to underpin facial recognition technology, deep fakes,¹² and other ethically challenging uses. The adage from John McCarthy that “as soon as it works no one calls it AI any more”¹³ continues to ring true: AI has become such a prevalent feature of modern life, that it is not always clear when, and how, it is being used. It is all the more important that we understand its opportunities and risks.

Public understanding and data

9. The Select Committee concluded in 2018 that:
- “Artificial intelligence is a growing part of many people’s lives and businesses. It is important that members of the public are aware of how and when artificial intelligence is being used to make decisions about them, and what implications this will have for them personally. This clarity, and greater digital understanding, will help the public experience the advantages of AI, as well as to opt out of using such products should they have concerns.”¹⁴
10. The need to ensure that the public is well-versed in the opportunities and risks involved in artificial intelligence, and the data they share which is used to inform such systems, remains essential. The onset of the COVID-19 pandemic has increased the use of technology in everyday life, as well as its application by the Government. In particular, the collection and sharing of sensitive personal data has been a cornerstone of the national, and international, response to the pandemic.
11. Professor Michael Wooldridge, Head of Department and Professor of Computer Science at the University of Oxford and Programme Director for Artificial Intelligence at the Alan Turing Institute, said that “data and privacy” was one of the risks for artificial intelligence in the next five years.¹⁵ He added that since the Select Committee’s original inquiry in 2017 “we have seen endless examples, every week, of data abuse. Here is the thing: for current AI techniques to work with you, they need data about you. ...That

10 Tech Nation, *UK Tech for a changing world: Tech Nation Report 2020* (17 March 2020): <https://technation.io/report2020/#21-global-innovation> [accessed 9 December 2020]

11 In November 2020 it was reported that the Medicines and Healthcare Regulatory Authority had engaged Genpact UK to develop an AI tool to sift through the high volume of reports of adverse reactions to COVID-19 vaccines. ‘UK plans to use AI to process adverse reactions to Covid vaccines’, *Financial Times* (1 November 2020): <https://www.ft.com/content/17a306cd-be75-48b4-996e-0c2916b34797> [accessed 9 December 2020]

12 AI applications which mimic real people speaking in video format.

13 Bertrand Meyer, ‘John McCarthy’, *Communications of the ACM* (28 October 2011): <https://cacm.acm.org/blogs/blog-cacm/138907-john-mccarthy/fulltext> [accessed 17 November 2020]

14 Select Committee on Artificial Intelligence, *AI in the UK: ready, willing and able?* (Report of Session 2017–19, HL Paper 100), para 58

15 [Q 2](#) (Professor Wooldridge)

remains a huge challenge. Society has not yet found its equilibrium in this new world of big data and ubiquitous computing.”¹⁶ Other witnesses agreed. Dr Daniel Susskind, a Fellow in Economics at Balliol College, Oxford, said:

“Before the pandemic, there was a very lively public debate about issues of data privacy and security ... At the start of the pandemic, a “do what it takes” mentality took hold with respect to developing technologies to help us to track and trace the virus. Technology companies around the world were given huge discretion to collect smartphone data, bank account statements, CCTV footage and so on in a way that would have been unimaginable eight or nine months ago.”¹⁷

12. While acknowledging that this was needed for the challenge facing society in that moment, Dr Susskind said “There is an important task in the months to come, once the pandemic starts to come to an end, in reining back the discretion and power we have granted to technology companies and, indeed, to states around the world.”¹⁸
13. Professor Dame Wendy Hall, Regius Professor of Computer Science, University of Southampton, co-authored a review with Jérôme Pesenti in 2017 as part of the Government’s Digital Strategy. The review, announced in March 2017, published its report on 15 October 2017.¹⁹ The Hall-Pesenti Review made 18 recommendations on how to make the UK the best place in the world for businesses developing AI. Professor Hall told us that they “made data trusts the first recommendation in our review.”²⁰ She said:

“... there are issues in how we use personal data to do what companies and government need to do to analyse situations and to develop AI. How companies share data, where the asset is recorded and the legal and ethical framework in which we share data in all circumstances are major societal issues. The UK is in the lead in this space. We need to keep the impetus up there as well.”²¹
14. In June 2020, a survey by the Department for Business, Energy and Industrial Strategy (BEIS) found that 28 per cent of people said they were positive about AI, while 20 per cent felt negative about it. A greater number of people said they were neither positive nor negative (44 per cent), with a further eight per cent saying they did not know.²²
15. Caroline Dinenage MP, the Minister for Digital and Culture, told us that “the public feel deeply suspicious of some parts of AI. There seems to be no rhyme or reason as to how we will embrace some aspects of it and not others,

16 Q 2 (Professor Wooldridge)

17 Q 2 (Dr Susskind)

18 Q 2 (Dr Susskind)

19 Professor Dame Wendy Hall and Jérôme Pesenti, *Growing the artificial intelligence industry in the UK* (15 October 2017): https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/652097/Growing_the_artificial_intelligence_industry_in_the_UK.pdf [accessed 9 December 2020]

20 Q 2 (Professor Dame Wendy Hall). A data trust is an entity which would monitor and supervise the sharing of datasets between organisations and companies. The Hall-Pesenti Review emphasised that these trusts would “not be a legal entity or institution, but rather a set of relationships underpinned by a repeatable framework, compliant with parties’ obligations, to share data in a fair, safe and equitable way.”

21 Q 2 (Professor Dame Wendy Hall)

22 Department for Business, Energy and Industrial Strategy, *BEIS Public Attitudes Tracker* (June 2020): https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/906452/BEIS_PAT_W34_-_Key_findings.pdf [accessed 27 November 2020]

on that aspect of trust.”²³ She told us that the Government wants “to ensure the public understand AI, its powers, its limitations and its opportunities, but also its risks”.²⁴ She also highlighted the work of the AI Council “because it has a specific working group dedicated to getting the narrative about AI right.”²⁵

16. Roger Taylor, Chair of the Centre for Data Ethics and Innovation (CDEI),²⁶ told us that there was a “need to educate and engage with the public to understand what is acceptable in the way these technologies are used. This is particularly important in areas of government use of these technologies.”²⁷
17. The 2017 Hall-Pesenti Review also recommended that the “Government should work with industry and experts to establish a UK AI Council to help coordinate and grow AI in the UK.”²⁸ The recommendation was based on the perceived need to facilitate engagement between industry, academia, Government and the public, as “AI in the UK will need to build trust and confidence in AI enabled complex systems.”²⁹ In the Industrial Strategy, published in November 2017, the Government announced that it was taking forward this recommendation, and “working with industry to establish an industry-led AI Council that can take a leadership role across sectors.”³⁰ The membership of the AI Council was announced in May 2019. It is unclear why there was such a delay in getting the Council appointed.
18. It is clear that there is a risk that momentum may be lost in the progress the Government has made in developing its approach to AI. As the deployment and use of AI systems, and wider sharing of data, accelerates, the public’s understanding of that technology, and the ability to give informed consent, could be left behind.
19. **Artificial intelligence is a complicated and emotive subject. The increase in reliance on technology caused by the COVID-19 pandemic, has highlighted the opportunities and risks associated with the use of technology, and in particular, data. It is no longer enough to expect the general public to learn about both AI and how their data is used passively. Active steps must be taken to explain to the general public the use of their personal data by AI. Greater public understanding is essential for the wider adoption of AI, and also to enable challenge to any organisation using to deploy AI in an ethically unsound manner.**
20. **The Government must lead the way on actively explaining how data is being used. Being passive in this regard is no longer an option. The general public are more sophisticated than they are given credit by the**

23 [Q 17](#) (Caroline Dinéage MP)

24 [Q 17](#) (Caroline Dinéage MP)

25 [Q 17](#) (Caroline Dinéage MP)

26 The Centre for Data Ethics and Innovation is tasked by Her Majesty’s Government to connect policymakers, industry, civil society, and the public to develop the right governance regime for data-driven technologies.

27 [Q 8](#) (Roger Taylor)

28 Professor Dame Wendy Hall and Jérôme Pesenti, *Growing the artificial intelligence industry in the UK* (15 October 2017): https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/652097/Growing_the_artificial_intelligence_industry_in_the_UK.pdf [accessed 9 December 2020], p 5

29 *Ibid.*

30 HM Government, *Industrial Strategy: Building a Britain fit for the future* (November 2019), p 39: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/664563/industrial-strategy-white-paper-web-ready-version.pdf [accessed 9 December 2020]

Government in their understanding of where data can and should be used and shared, and where it should not. The development of policy to safeguard the use of data, such as data trusts, must pick up pace, otherwise it risks being left behind by technological developments. This work should be reflected in the National Data Strategy.

21. **The AI Council, as part of its brief from Government to focus on exploring how to develop and deploy safe, fair, legal and ethical data-sharing frameworks, must make sure it is informing such policy development in a timely manner, and the Government must make sure it is listening to the Council’s advice. The AI Council should take into account the importance of public trust in AI systems, and ensure that developers are developing systems in a trustworthy manner. Furthermore, the Government needs to build upon the recommendations of the Hall-Pesenti Review, as well as the work done by the Open Data Institute, in conjunction with the Office for AI and Innovate UK, to develop, and deploy data trusts as envisaged in the Hall-Pesenti Review.**

Ethics

22. An ethical framework for the development and use of AI became a key focus of the Select Committee’s report. The Committee recommended:

“... that a cross-sector ethical code of conduct, or ‘AI code’, suitable for implementation across public and private sector organisations which are developing or adopting AI, be drawn up and promoted by the Centre for Data Ethics and Innovation, with input from the AI Council and the Alan Turing Institute, with a degree of urgency. In some cases, sector-specific variations will need to be created, using similar language and branding. Such a code should include the need to have considered the establishment of ethical advisory boards in companies or organisations which are developing, or using, AI in their work. In time, the AI code could provide the basis for statutory regulation, if and when this is determined to be necessary.”³¹

The Committee proposed five overarching principles around which such a code could be built, providing a foundation for an ethical standard of AI for industry, Government, developers and consumers.

23. Dr Susskind explained how the debate on ethical AI is shifting from a discussion of broad ethical principles to the operationalisation of ethics in developing “practical advice and guidance to the companies and engineers developing these systems and technologies.”³²
24. Since the publication of the Committee’s report a large number of companies and organisations have produced their own ethical AI codes of conduct. Although we welcome this progress, we believe a solely self-regulatory approach to ethical standards risks a lack of uniformity and enforceability. Professor Hall told us “we need to develop quite simple frameworks and audit arrangements for companies using AI that can be very simply applied.”³³ Ms

31 Select Committee on Artificial Intelligence, *AI in the UK: ready, willing and able?* (Report of Session 2017–19, HL Paper 100), para 420

32 Q 3 (Dr Susskind)

33 Q 3 (Professor Dame Wendy Hall)

Kind took this further and said “we need to work out how to apply them in practice and shore up public trust and confidence along the way.”³⁴

25. Professor Hall told us “we have to self-regulate”,³⁵ whereas Ms Carly Kind, the Director of the Ada Lovelace Institute (an independent research institute and deliberative body with a remit to ensure data and AI work for people and society), said that “self-regulation and internal ethics processes have not kept up and have not proved to be sufficient to ensure accountability and public trust.”³⁶ She went on to say that the Ada Lovelace Institute hears “time and time again from members of the public that their trust in technologies is contingent on external oversight of those technologies.”³⁷ She emphasised the importance of the role of regulators, ombudsmen and other scrutiny measures. We heard from Simon McDougall, the Deputy Information Commissioner, about the guidance which the Information Commissioner’s Office (ICO), as a regulator, has published on work on such as AI explainability, an AI auditing framework, and existing tools such as data protection impact assessments.³⁸
26. In the debate surrounding ethical AI, we often discuss the technology of AI systems rather than the human involvement in the process. Professor Wooldridge told us a key barrier to ethical AI is complacency: “the assumption that the technology must be doing something better than a human being, is very dangerous. It could be doing some things better than a human being, but we need that human in the loop.”³⁹ Ms Kind also emphasised the consideration of this human element of AI and told us “we need to think about not only making the technology comport with ethical principles, but the humans using the technology and the system as a whole.”⁴⁰
27. Caroline Dinenage MP told us the Government “take our responsibility in relation to the ethical handling of data and artificial intelligence incredibly seriously.”⁴¹ She highlighted the Data Ethics Framework⁴² and other such products which have been produced to support the Government and the civil service in determining how to manage, use and look after the public’s data. This includes guidance published by the Government Digital Service and the Office for AI in partnership with The Alan Turing Institute on ‘Understanding artificial intelligence ethics and safety’.⁴³
28. This guidance, though applicable to the public sector, is not a foundation for a countrywide ethical framework which developers could apply, the public could understand and the country could offer as a template for global use. Caroline Dinenage MP told us they “feel the legal instruments and

34 [Q 8](#) (Carly Kind)

35 [Q 3](#) (Professor Dame Wendy Hall)

36 [Q 8](#) (Carly Kind)

37 [Q 8](#) (Carly Kind)

38 [Q 8](#) (Simon McDougall)

39 [Q 3](#) (Professor Wooldridge)

40 [Q 8](#) (Carly Kind)

41 [Q 16](#) (Caroline Dinenage MP)

42 Government Digital Service, *Data Ethics Framework* (16 September 2020): <https://www.gov.uk/government/publications/data-ethics-framework/data-ethics-framework-2020> [accessed 9 December 2020]

43 Government Digital Service and Office for Artificial Intelligence, *Understanding artificial intelligence ethics and safety* (10 June 2019): <https://www.gov.uk/guidance/understanding-artificial-intelligence-ethics-and-safety> [accessed 9 December 2020]

mechanisms are sufficient for now, but [they] are keen to watch how industry develops.”⁴⁴

29. In 2018 the Committee believed that the UK was in prime position to lead on the ethical development of AI, and recommended:

“... that the Government convene a global summit in London by the end of 2019, in close conjunction with all interested nations and governments, industry (large and small), academia, and civil society, on as equal a footing as possible. The purpose of the global summit should be to develop a common framework for the ethical development and deployment of artificial intelligence systems. Such a framework should be aligned with existing international governance structures.”⁴⁵

30. This year, when asked for an update on a global summit, the Government stated in its letter to Lord McFall:

“The Government is working with the tech community on London Tech Week, an annual event during spring (delayed to September in 2020 due to Covid-19). London Tech Week is open to all countries, organisations and societies, with a range of events, activities and conferences.

The UK is a signatory of the OECD Recommendation on AI, the G20 non-binding principles on AI, and is an active member in multilateral fora including UNESCO, the Council of Europe and the International Telecommunications Union.”⁴⁶

31. In June 2020, the UK also became a founding member of the Global Partnership on Artificial Intelligence (GPAI) which is “an international and multistakeholder initiative to guide the responsible development and use of AI, grounded in human rights, inclusion, diversity, innovation, and economic growth.”⁴⁷ These various memberships demonstrate the UK’s commitment to collaborate on the development and use of ethical AI, but it is yet to take on a leading role.

32. **Since the Committee’s report was published, the conversation around ethics and AI has evolved. There is a clear consensus that ethical AI is the only sustainable way forward. Now is the time to move that conversation from what are the ethics, to how to instil them in the development and deployment of AI systems.**

33. **The Government must lead the way on the operationalisation of ethical AI. There is a clear role for the CDEI in leading those conversations both nationally and internationally. The CDEI, and the Government with them, should not be afraid to challenge the unethical use of AI by other governments or organisations.**

44 [Q 17](#) (Caroline Dinenage MP)

45 Select Committee on Artificial Intelligence, *AI in the UK: ready, willing and able?* (Report of Session 2017–19, HL Paper 100), para 403

46 Letter from the Minister for Science, Research and Innovation to the Senior Deputy Speaker on the Select Committee on Artificial Intelligence, 14 August 2020: <https://committees.parliament.uk/publications/2604/documents/26039/default/>

47 Joint statement from founding members of the Global Partnership on Artificial Intelligence (15 June 2020): <https://www.gov.uk/government/publications/joint-statement-from-founding-members-of-the-global-partnership-on-artificial-intelligence/joint-statement-from-founding-members-of-the-global-partnership-on-artificial-intelligence> [accessed 9 December 2020]

34. **The CDEI should establish and publish national standards for the ethical development and deployment of AI. National standards will provide an ingrained approach to ethical AI, and ensure consistency and clarity on the practical standards expected for the companies developing AI, the businesses applying AI, and the consumers using AI. These standards should consist of two frameworks, one for the ethical development of AI, including issues of prejudice and bias, and the other for the ethical use of AI by policymakers and businesses. These two frameworks should reflect the different risks and considerations at each stage of AI use.**

Jobs

35. The Committee concluded in 2018:
- “The labour market is changing, and further significant disruption to that market is expected as AI is adopted throughout the economy. As we move into this unknown territory, forecasts of AI’s growing impact—jobs lost, jobs enhanced and new jobs created—are inevitably speculative. There is an urgent need to analyse or assess, on an ongoing basis, the evolution of AI in the UK, and develop policy responses.”⁴⁸
36. We asked our witnesses in October 2020 about the impact of AI on the labour market, in particular in the light of the COVID-19 pandemic. Dr Susskind said “the pandemic has increased or is likely to increase the threat of automation. There are various reasons for this. One is less to do with the fact that we find ourselves in a pandemic and more that we find ourselves in a recession. Evidence suggests, particularly in the US, that recessions are the moment when automation often picks up.”⁴⁹
37. Dr Susskind said that the pandemic “has created a very strong incentive to automate the work people do. A machine, after all, does not fall ill. It does not have to self-isolate to protect customers or co-workers. It will not have to take time off work.”⁵⁰ Professor Hall disagreed, arguing that the COVID-19 pandemic had potentially slowed down companies in a move towards greater use of AI and automation:
- “Generally, the rate at which the forecast saw the jobs going was too great. Over the last few years, we have seen that it takes a long time. Some companies are not even digital, let alone using AI. It is really hard sometimes for management to introduce that type of technology and it does not happen that quickly. The jury is out on how that will play out.”⁵¹
38. Professor Wooldridge said that “AI will change the nature of work.”⁵² He told us that “AI will become embedded in everything we do. It will not necessarily make huge numbers of people redundant, but it will make people redundant.”⁵³

48 Select Committee on Artificial Intelligence, *AI in the UK: ready, willing and able?* (Session 2017–19, HL Paper 100), para 231

49 Q 4 (Dr Susskind)

50 Q 4 (Dr Susskind)

51 Q 4 (Professor Dame Wendy Hall)

52 Q 4 (Professor Wooldridge)

53 Q 4 (Professor Wooldridge)

39. When asked about how prepared the United Kingdom is to respond to changes in the labour market, Professor Hall said: “on skills, we are nowhere near ready.”⁵⁴ She also said that “the Government funded a number of skills programmes. They have been successfully launched, but we need to keep that going. There is not just a money impetus in this; we will have to keep that steady and increase it, if anything.”⁵⁵
40. A report by Microsoft in August 2020 underscored these concerns. That report found that:
- “Only 17 per cent of UK employees say they have been part of re-skilling efforts (far less than the 38 per cent globally), and only 32 per cent of UK employees feel their workplace is doing enough to prepare them for AI (well below global average of 42 per cent)”.⁵⁶
41. This inertia is a concern. Furthermore, a problem remains with the general digital skills base in the UK. Estimates vary, but around 10 per cent of UK adults were non-internet users in 2018.⁵⁷ A Lloyds Bank survey in 2019 found that 19 per cent of individuals lacked basic digital skills, such as using a web browser.⁵⁸ The most common reason for people not going online is lack of interest. In the UK, disparities in internet use exist based on age, location, socioeconomic status and whether a person has a disability. For example, more than half of people aged over 75 do not go online, and older people form the largest proportion of non-internet users.⁵⁹ The COVID-19 pandemic will have shown these issues in sharp relief.
42. The Select Committee made a number of recommendations on preparing the UK public for the widespread adoption of AI, including:
- (a) expanding the National Retraining Scheme;
 - (b) restoring the wider social and ethical aspects of computer science and artificial intelligence to the computer curriculum;
 - (c) enabling teachers to gain additional expertise in technology and related areas; and
 - (d) calling on the Government to outline its plans to tackle any potential societal or regional inequality caused by AI.⁶⁰
43. It is imperative that the Government takes steps to ensure that the digital skills of the UK are brought up to speed, as well as to ensure that people have the opportunity to reskill and retrain to be able to adapt to the evolving labour market caused by AI.

54 Q 4 (Professor Dame Wendy Hall)

55 Q 2 (Professor Dame Wendy Hall)

56 Microsoft, *AI Skills in the UK* (August 2020): <https://info.microsoft.com/rs/157-GQE-382/images/AI%20Skills%20in%20the%20UK%20report-SRGCM3647.pdf> [accessed 9 December 2020]

57 Lloyds Bank, *UK Consumer Digital Index 2019* (June 2020): https://www.lloydsbank.com/assets/media/pdfs/banking_with_us/whats-happening/lb-consumer-digital-index-2019-report.pdf [accessed 9 December 2020]

58 *Ibid.*

59 *Ibid.*

60 Select Committee on Artificial Intelligence, *AI in the UK: ready, willing and able?* (Report of Session 2017–19, HL Paper 100), paras 236, 251, 258 and 276

National Retraining Scheme

44. The National Retraining Scheme was announced by the Government in its 2017 Autumn Budget, which aimed at helping people “re-skill and up-skill as the economy changes, including as a result of automation.”⁶¹ On 13 October 2020, the Government announced that the Scheme would be integrated with the new National Skills Fund.⁶² But what did the Scheme achieve in the interlude? A paper by the Department for Education,⁶³ published the same day as the integration of the Scheme and Fund was announced, found that 3,600 people had accessed the first part of the scheme—the ‘Get help to retrain’ service.⁶⁴ This had been piloted in six areas. The pace, scale and ambition of the Scheme does not match the challenge facing many people working in the UK. It will be imperative for the Government to learn the lessons of the Scheme in the operation of the National Skills Fund, and to move much more swiftly.
45. **There is no clear sense of the impact AI will have on jobs. It is however clear that there will be a change, and that complacency risks people finding themselves underequipped to participate in the employment market of the near future.**
46. **As and when the COVID-19 pandemic recedes and the Government has to address the economic impact of it, the nature of work will change and there will be a need for different jobs. This will be complemented by opportunities for AI, and the Government and industry must be ready to ensure that retraining opportunities take account of this. In particular the AI Council should identify the industries most at risk, and the skills gaps in those industries. A specific training scheme should be designed to support people to work alongside AI and automation, and to be able to maximise its potential.**

Public Trust and regulation

47. In 2018 the Committee concluded:

“Blanket AI-specific regulation, at this stage, would be inappropriate. We believe that existing sector-specific regulators are best placed to consider the impact on their sectors of any subsequent regulation which may be needed. We welcome that the Data Protection Bill and GDPR⁶⁵ appear to address many of the concerns of our witnesses regarding the handling of personal data, which is key to the development of AI. The Government Office for AI, with the Centre for Data Ethics and Innovation, needs to identify the gaps, if any, where existing regulation may not be adequate. The Government Office for AI must also ensure that the existing regulators’ expertise is utilised in informing any

61 Department for Business, Energy and Industrial Strategy, *Industrial Strategy: Building a Britain fit for the future* (November 2019), p 41: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/664563/industrial-strategy-white-paper-web-ready-version.pdf [accessed 9 December 2020]

62 HL Deb, 13 October 2020, [HLWS502](#)

63 Department for Education, *National Retraining Scheme: Key Findings Paper* (October 2020): https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/926045/National_retraining_scheme_key_findings_paper.pdf [accessed 9 December 2020]

64 The service allowed users to identify and input their current skills and then based on these skills, offer suggestions for training and alternative employment. The service is able to then direct users to vacancies in their area based on the suggestions provided.

65 The General Data Protection Regulation was not then in force.

potential regulation that may be required in the future and we welcome the introduction of the Regulator’s Pioneer Fund.”⁶⁶

48. This regulator-led approach is the current Government position. Lorna Gratton, Director of Digital and Technology Policy, told us:

“The approach we have been taking across government is that the sectors are best placed to identify the regulation needed in their sphere. We have typically not left it to the sectors to do, but they have the best understanding of what is needed, particularly in financial services. The regulator for the relevant sector has responsibility for determining what is needed in the sector and can draw on central resource from government to help understand that.”⁶⁷

49. The burden this places on regulators was recognised by Mr Taylor who said regulators: “need to upskill. There is variation between regulators. Some of them are moving at pace and addressing this ... In other areas, there is much more to do. It varies between industry associations.”⁶⁸ As Mr Taylor acknowledged “[t]his technology is developing very rapidly. It is no surprise that regulators and regulation have to move at speed to catch up.”⁶⁹ Although plainly work is needed, it is clear many regulators have taken an active role in explaining the regulations in place and providing relevant, practical guidance for their sector.⁷⁰
50. It is evident that regulatory gaps remain which need to be addressed. The Court of Appeal recently determined that there are “fundamental deficiencies”⁷¹ in the existing legal framework for facial recognition technology. Social media was also raised by our witnesses as a gap in regulation. Ms Kind acknowledged the regulators in this area are “showing a real willingness to work together”.⁷² The ICO has worked with the Competition and Markets Authority (CMA) to set up the Digital Regulation Cooperation Forum, which tackles areas of overlap between regulators to tackle online harm. This demonstrates the positive and coordinated work being carried out by sector-specific regulators in order to address potential regulatory gaps. However, Ms Kind asked “whether we need some type of framework to enable a more overarching look at online platforms and the use of AI there.”⁷³
51. Since the publication of the Committee’s report the CDEI has been established, and its terms of reference include identifying gaps in the regulatory framework. In June 2020 the CDEI published its AI Barometer,⁷⁴ which looks at five key sectors (criminal justice, health and social care, financial services, energy and utilities and digital and social media) and identifies the opportunities, risks, barriers and potential regulatory gaps. This Barometer can be used to better inform policy makers of the risks posed

66 Select Committee on Artificial Intelligence, *AI in the UK: ready, willing and able?* (Report of Session 2017–19, HL Paper 100), para 386

67 [Q 17](#) (Lorna Gratton)

68 [Q 9](#) (Roger Taylor)

69 [Q 9](#) (Roger Taylor)

70 Such as the ICO AI auditing framework - <https://ico.org.uk/about-the-ico/news-and-events/ai-auditing-framework/> [accessed 9 December 2020]

71 *R (Bridges) v Chief Constable of South Wales Police & Ors* [2020] EWCA Civ 1058, 11 August 2020, para 91

72 [Q 9](#) (Carly Kind)

73 [Q 9](#) (Carly Kind)

74 Centre for Data Ethics and Innovation, *AI Barometer Report* (June 2020): <https://www.gov.uk/government/publications/cdei-ai-barometer/cdei-ai-barometer> [accessed 9 December 2020]

by AI and any need for regulation. When asked about the AI Barometer’s findings, Caroline Dinenage MP told us that “we have a way to go to address these challenges, but we are on the right lines.”⁷⁵

52. The risk-based analysis has also been seen in work on AI regulation in Europe. In February 2020 the European Commission published a White Paper aiming to create a unified approach to the regulation of and investment in AI. The Commission has determined that a risk-based approach to new AI regulation balances the need to regulate against the burden it creates, especially for SMEs.⁷⁶ The D9+ group⁷⁷ have called for a proportionate approach to risk-based regulation considering both the impact and probability of the risk, in order to ensure that not all AI is considered high risk.⁷⁸ The Council of Europe’s Ad Hoc Committee on AI⁷⁹ similarly is producing a feasibility study on the regulation of AI, in the drafting of which the UK is participating. The way we assess regulatory need will determine whether the UK system takes advantage of opportunities created by AI.
53. Running parallel to the work of the CDEI, the Ministerial Working Group on Future Regulation has been established, and it recommended the development of the White Paper on Regulation for the Fourth Industrial Revolution,⁸⁰ which was published in June 2019. This included the following measures:
- “a new Regulatory Horizon Council which will scan the horizon and identify the areas where regulation needs to adapt to support emerging technologies;
 - building the evidence base for development of a Digital Regulation Navigator to help small and innovative businesses and those with business ideas find out what regulation would apply to them and their ideas;
 - a review of the case for extending the Regulators’ Pioneer Fund, which has funded a number of innovation-enabling projects, led by regulators, to support the entry of new technologies and innovations in markets; and
 - a partnership with the World Economic Forum to shape global approach to regulating innovative products and services.”⁸¹

75 [Q 17](#) (Caroline Dinenage MP)

76 European Commission, *White Paper On Artificial Intelligence - A European approach to excellence and trust* (19 February 2020) [COM\(2020\) 65 final](#), p 17 [accessed 15 December 2020]

77 The D9+ is a group of likeminded countries characterised by their similar approaches to digital issues.

78 Position paper on behalf of Denmark, Belgium, the Czech Republic, Finland, France, Estonia, Ireland, Latvia, Luxembourg, the Netherlands, Poland, Portugal, Spain and Sweden, *Innovative and trustworthy AI: Two sides of the same coin* (8 October 2020): <https://www.permanentrepresentations.nl/binaries/nlatio/documents/publications/2020/10/8/non-paper---innovative-and-trustworthy-ai/Non-paper+-+Innovative+and+trustworthy+AI+-+Two+side+of+the+same+coin.pdf> [accessed 9 December 2020]

79 Council of Europe, *CAHAI - Ad hoc Committee on Artificial Intelligence* (23 September 2020): <https://www.coe.int/en/web/artificial-intelligence/cahai> [accessed 9 December 2020]

80 Department for Business, Energy and Industrial Strategy, *Regulation for the Fourth Industrial Revolution*, CP 111, June 2019: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/807792/regulation-fourth-industrial-strategy-white-paper-web.pdf [accessed 9 December 2020]

81 Letter from the Minister for Science, Research and Innovation to the Senior Deputy Speaker on the Select Committee on Artificial Intelligence, 14 August 2020: <https://committees.parliament.uk/publications/2604/documents/26039/default/>

54. Unlike the CDEI, which focuses specifically on the use of AI, the Regulatory Horizons Council (RHC) considers all industries and innovation. Mr Taylor highlighted the “very clear overlap between what the CDEI is doing and what the Regulatory Horizons Council is doing, which is where regulation and AI meet.”⁸² The RHC joins an already crowded landscape when it comes to the organisations and bodies carrying out work in relation to AI and regulation. However, Mr Taylor told us the two bodies are co-ordinating in order to ensure that work is not duplicated or too disparate, but is “confident that will work.”⁸³
55. Mr Taylor told us that rather than regulatory gaps, “the more significant gap is understanding how to make sense of our existing laws, regulations and ethical standards.”⁸⁴ Mr Taylor cautioned that this gap in understanding will form a barrier to how AI develops.
56. Regulatory gaps are a cause for concern; however there appeared to be consensus that with the existing regulatory framework there is no desire “to rush to legislate now.”⁸⁵ As Ms Kind pointed out “we are still understanding where regulation would be useful and appropriate.”⁸⁶ Mr McDougall told us “[t]he regulatory framework itself, while there is always room for improvement, is broadly applicable to the challenges we are facing with AI.”⁸⁷
57. Beyond its specific purpose, regulation could also play a role in establishing public trust in AI. Ms Kind said we should consider:
- “what role regulation could play in shoring up social licence for these new technologies and creating a sense of social responsibility on the part of both public and private sector entities when deploying them ... Before is it deployed on the public at large there needs to be some kind of quality assurance, circuit breaker or mechanism to validate that a piece of technology is ready for public deployment.”⁸⁸
58. The Select Committee’s 2018 report recommended that:
- “Industry should take the lead in establishing voluntary mechanisms for informing the public when artificial intelligence is being used for significant or sensitive decisions in relation to consumers. This industry-led approach should learn lessons from the largely ineffective AdChoices scheme. The soon-to-be established AI Council, the proposed industry body for AI, should consider how best to develop and introduce these mechanisms.”⁸⁹
59. All our witnesses from DCMS and BEIS agreed that transparency is essential in building public trust.⁹⁰ Mechanisms such as the recommended kitemark better inform the public when AI is being used. Lorna Gratton told us that we also need to help “the public understand the current regulation framework with GDPR and the Equality Act, to give them confidence that

82 [Q 12](#) (Roger Taylor)

83 [Q 12](#) (Roger Taylor)

84 [Q 9](#) (Roger Taylor)

85 [Q 9](#) (Carly Kind)

86 [Q 9](#) (Carly Kind)

87 [Q 9](#) (Simon McDougall)

88 [Q 9](#) (Carly Kind)

89 Select Committee on Artificial Intelligence, *AI in the UK: ready, willing and able?* (Report of Session 2017–19, HL Paper 100), para 59

90 [Q 17](#) (Caroline Dinenege MP, Amanda Solloway MP, Lorna Gratton)

there are already things in place to protect them and regulate the use of AI”.⁹¹ A simple kitemark mechanism may not go far enough, as consumers do not know what standards the technology has had to meet in order to be deployed. Carly Kind shared her concern that for AI systems “to make a difference to our society, they need to enjoy indelible public trust. Unless they get a stamp of approval through a regulatory mechanism, I worry that that will not happen and their benefits will not be realised.”⁹²

60. **The challenges posed by the development and deployment of AI cannot currently be tackled by cross-cutting regulation. The understanding by users and policymakers needs to be developed through a better understanding of risk and how it can be assessed and mitigated. Sector-specific regulators are better placed to identify gaps in regulation, and to learn about AI and apply it to their sectors. The CDEI and Office for AI can play a cross-cutting role, along with the ICO, to provide that understanding of risk and the necessary training and upskilling for sector specific regulators.**
61. **The ICO must develop a training course for use by regulators to ensure that their staff have a grounding in the ethical and appropriate use of public data and AI systems, and its opportunities and risks. It will be essential for sector specific regulators to be in a position to evaluate those risks, to assess ethical compliance, and to advise their sectors accordingly. Such training should be prepared with input from the CDEI, Office for AI and Alan Turing Institute. The uptake by regulators should be monitored by the Office for AI. The training should be prepared and rolled out by July 2021.**

91 [Q 17](#) (Lorna Gratton)

92 [Q 9](#) (Carly Kind)

CHAPTER 3: LEADING ON ARTIFICIAL INTELLIGENCE

The role of Government

62. It is over two and a half years since the Select Committee published its report. We asked our witnesses what progress the Government had made in that time. The replies were encouraging. Professor Wooldridge said: “I give a big thumbs up for what has happened nationally in AI in the UK over the last few years. We have done the right things.”⁹³ But he added: “The one thing I would ask is to understand that this is a long-term project ... Let us hold this course and be aware that this is not a one-year or 18-month project.”⁹⁴ In the following session Roger Taylor echoed this: “We are making good progress, but I would refer to the comments made in the previous session. This is not a short-term game; it is a long-term game. We are in the foothills of getting this sorted and we have a huge amount to do. There is good progress, but the task ahead of us is probably much greater than what has been achieved so far.”⁹⁵

Coordination

63. At the date of the report many Government departments were active in development of AI, in the use of AI, and in training in its use. There cannot now be a single department that is not to some extent involved. There are cross-departmental bodies like the Office for AI. There are regulators on the fringes of Government: the ICO is deeply involved, and has joined with the Competition and Markets Authority and Ofcom in setting up the Digital Regulation Cooperation Forum, “a recognition of the fact that data protection, competition and consumer protection, telecoms regulation and online harms overlap far more than they used to.”⁹⁶
64. There are also many other bodies outside the framework of Government which are to a greater or lesser extent involved in an advisory role: the AI Council, the CDEI, the Ada Lovelace Institute, the Alan Turing Institute, and the RHC, to name but a few.
65. Coordination is plainly essential, and we asked whether the departments, agencies and bodies involved in the development of AI policy in the UK worked together effectively. Simon McDougall was cautiously optimistic: “I think so far, so good. A number of bodies have been formed relatively recently, since the original report came out. As the regulator, we find this an incredibly rich area to work in with these different organisations.”⁹⁷
66. Roger Taylor was even more positive: “Our communication and co-ordination efforts are going well. We are all talking to each other regularly, as well as to civil society, including [the Ada Lovelace Institute], to co-ordinate how we operate as far as possible. That is good. As this develops, we shall see over time what the long-term institutional landscape needs to look like.”⁹⁸ Later he added: “There is a real benefit from greater co-ordination of our efforts in this space, through national leadership and the identification of clear objectives. Those may be sectoral, as with the industrial strategy. They

93 [Q 6](#) (Professor Wooldridge)

94 [Q 6](#) (Professor Wooldridge)

95 [Q 13](#) (Roger Taylor)

96 [Q 12](#) (Simon McDougall)

97 [Q 11](#) (Simon McDougall)

98 [Q 11](#) (Roger Taylor)

could be in other sectors, for example the use of AI in education. Having clear, central government-set objectives in that regard is useful.”⁹⁹

67. Certainly, the Government now seems to be aware of the need for coordination between the wide variety of bodies: the National Data Strategy, launched on 9 September 2020, states:
- “We will consider the roles of the Alan Turing Institute, the National Innovation Centre for Data, the Open Data Institute, the Data Skills Taskforce, the AI Council, the UK Cyber Security Council, the Data Lab, and others in the data skills ecosystem for ways to improve the leadership and facilitation of new and better collaborations between industry, the public sector, universities and institutes.”¹⁰⁰
68. We believe however that more needs to be done. Coordination needs to be raised to a higher and more influential level. This is not a case where one Minister or department needs to be given greater or even sole responsibility. In a matter of such importance there needs to be cooperation at a formal ministerial level. We anticipate that matters relating to AI which are of sufficient importance to be decided by Ministers collectively will currently go to the Domestic and Economy Implementation Committee of the Cabinet, whose remit is “To support collective agreement of matters relating to the implementation and delivery of domestic and economic policy.”¹⁰¹
69. The full membership of the Committee includes every Cabinet Minister except the Prime Minister and the Leader of the House of Lords. This is too large and unfocused a group to give AI the full attention it properly deserves. We note that of the 15 Cabinet Committees one, the National Space Council, has the remit “To consider issues concerning prosperity, diplomacy and national security in, through and from Space, as part of coordinating overall Government policy.”¹⁰² The Committee is chaired by the Chancellor of the Exchequer and has five other members. If Space, whose importance cannot be doubted, merits a dedicated Committee, so certainly does AI, whose tentacles spread much more widely.
70. Cabinet Committees conduct much of their business by correspondence. They can co-opt other Ministers when necessary. Ministers who are members can and should seek the advice of the AI Council, the CDEI and other expert independent bodies.
71. **We commend the Government for its work to date in establishing a considered range of bodies to advise it on AI over the long term.**
72. **However we caution against complacency. There must be more and better coordination, and it must start at the top. A Cabinet Committee must be established whose terms of reference include the strategic**

99 Q 13 (Roger Taylor)

100 Department for Digital, Culture, Media and Sport, *National Data Strategy* (para 5.1.2 in the updated version of 9 December 2020): <https://www.gov.uk/government/publications/uk-national-data-strategy/national-data-strategy> [accessed 16 December 2020]

101 Cabinet Office, *Cabinet Committees* (19 November 2020) p 11: <https://www.gov.uk/government/publications/the-cabinet-committees-system-and-list-of-cabinet-committees> [accessed 10 December 2020]

102 Cabinet Office, *Cabinet Committees* (19 November 2020) p 14: <https://www.gov.uk/government/publications/the-cabinet-committees-system-and-list-of-cabinet-committees> [accessed 10 December 2020]

direction of Government AI policy and the use of data and technology by national and local government.

73. **The first task of the Committee should be to commission and approve a five year strategy for AI. Such a strategy should include a reflection on whether the existing bodies and their remits are sufficient, and the work required to prepare society to take advantage of AI rather than be taken advantage of by it.**
74. When the Government consulted on the setting up of the CDEI, a number of those replying thought it should be put on a statutory footing to emphasise its long-term capacity, its independence and its authority. In its response, the Government said it remained “committed to establishing the Centre on a statutory footing after its initial phase of operation and views this as the most effective way to secure its long-term credibility, accountability and effectiveness.”¹⁰³
75. We have emphasised in the previous chapter the importance of the role played by the CDEI. The Government has not pursued its plans to put the Centre on a statutory footing; regardless of such plans, it is essential that the CDEI should be allowed to work effectively and independently, and should be given the resources to enable it to do so.
76. There are particular deficiencies to be addressed. Professor Hall explained that the AI Council was about to launch a road map, and added: “It is really important that the Office for Artificial Intelligence is strengthened and works across government. It is hard for it to do that. Please, government, listen to your AI Council. That is what we are there for.”¹⁰⁴ We wholly endorse that plea, but it emphasises how important it is for the AI Council to concentrate on pragmatic issues, and to recommend to the Government the specific courses it should follow and actions it should take.

A Chief Data Officer

77. One matter must be dealt with immediately: the appointment of a Government Chief Data Officer. In 2017 the Government announced: “We will appoint a new Chief Data Officer for government to lead on use of data.”¹⁰⁵ This was listed among “Priorities until 2020”. On 21 October 2019 Simon Hart MP, then a Minister at the Cabinet Office, in reply to a Question from Jo Platt MP asking “until what date the objective of appointing a Chief Data Officer by 2020 applies”, replied: “No specific date has been set for the appointment, however the government remains committed to appointing within the timeframe set out in the Government Transformation Strategy.”¹⁰⁶
78. No appointment was made. On 9 September 2020 Oliver Dowden MP, the Secretary of State for Digital, Culture, Media and Sport, launched the Government’s National Data Strategy, which states: “To succeed, we need a whole-government approach led by a Government Chief Data Officer

103 Department for Digital, Culture, Media and Sport, *Centre for Data Ethics and Innovation: Government response to consultation* (November 2018), p 14: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/757509/Centre_for_Data_Ethics_and_Innovation_-_Government_Response_to_Consultation.pdf [accessed 15 December 2020]

104 Q 6 (Professor Dame Wendy Hall)

105 Cabinet Office and Government Digital Service, *Government Transformation Strategy: better use of data* (9 February 2017): <https://www.gov.uk/government/publications/government-transformation-strategy-2017-to-2020/government-transformation-strategy-better-use-of-data> [accessed 10 December 2020]

106 House of Commons Written Question, [UIN 1134](#)

from the centre in strong partnership with organisations ... We will recruit senior cross-government data leadership, including a Chief Data Officer for government”.¹⁰⁷ We are not aware that any steps have been taken to recruit a suitable candidate to this essential post.

79. **The Government must take immediate steps to appoint a Chief Data Officer, whose responsibilities should include acting as a champion for the opportunities presented by AI in the public service, and ensuring that understanding and use of AI, and the safe and principled use of public data, are embedded across the public service.**

Autonomy Development Centre

80. On 19 November 2020, in announcing an increase in defence expenditure, the Prime Minister said: “We will establish a new centre dedicated to artificial intelligence.”¹⁰⁸ This is to be an Autonomy Development Centre to accelerate the research, development, testing, integration and deployment of world-leading artificial intelligence and autonomous systems. At the date of this report no details have been given of when the Centre will be established, whether it will be solely focused on defence and security applications of AI, whether it will be replacing any existing AI-related bodies the Government is involved in, and what will be done to ensure coordination of its activities with those of other bodies.
81. In its report the Select Committee expressed concern that “the Government’s definition of an autonomous system used by the military as one where it ‘is capable of understanding higher-level intent and direction’ is clearly out of step with the definitions used by most other governments.”¹⁰⁹ This limited the extent to which the UK could participate in international debates on autonomous weapons, and its ability to take an active role as a moral and ethical leader on the global stage in this area. The Committee recommended that “the UK’s definition of autonomous weapons should be realigned to be the same, or similar, as that used by the rest of the world.”¹¹⁰
82. In his letter of 30 January 2020 one of the questions put by Lord McFall to the Minister of State for Universities, Science, Research and Innovation was to ask what discussions the Government had had with international partners about the definition of an ‘autonomous weapons system’.¹¹¹ In her reply Amanda Solloway MP explained that there was no international agreement on the definition or characteristics of autonomous weapons systems, and that “the UK does not intend to change its definition”.¹¹² If we had known of the intention to establish a new Autonomy Development Centre when Ms Solloway gave evidence to us on 14 October 2020, we would have pressed her on this issue.

107 Department for Digital, Culture, Media and Sport, *National Data Strategy* (Mission Three and para 4.2.3, updated 9 December 2020): <https://www.gov.uk/government/publications/uk-national-data-strategy/national-data-strategy> [accessed 16 December 2020]

108 HC Deb, 19 November 2020, [col 489](#)

109 Select Committee on Artificial Intelligence, *AI in the UK: ready, willing and able?* (Report of Session 2017–19, HL Paper 100)

110 Select Committee on Artificial Intelligence, *AI in the UK: ready, willing and able?* (Report of Session 2017–19, HL Paper 100), paras 345–346

111 Letter from the Senior Deputy Speaker to the Minister of State for Universities, Science, Research and Innovation, 30 January 2020: <https://committees.parliament.uk/publications/62/documents/704/default/>

112 Letter from the Minister for Science, Research and Innovation to the Senior Deputy Speaker, 14 August 2020: <https://committees.parliament.uk/publications/2604/documents/26039/default/>

83. **We believe that the work of the Autonomy Development Centre will be inhibited by the failure to align the UK’s definition of autonomous weapons with international partners: doing so must be a first priority for the Centre once established.**

The United Kingdom as a world leader

84. The Global AI Index ranks 54 countries for their investment, innovation and implementation, using a weighted index of eight factors.¹¹³ Amanda Solloway MP referred to the fact that the UK is currently ranked third, after the USA and China, and described this as “a really strong and great place to be”.¹¹⁴
85. Caroline Dinenage MP later added:
- “As one of our success stories, we are third in the world for producing tech unicorns. We have more tech unicorns, these billion-dollar mythical creatures, in the UK than Germany, France and the Netherlands combined. That is really important. We are fourth in the world for scale-up investment, behind only the US, China and India; £10.1 billion was invested in UK tech companies in 2019. We have now overtaken the US for foreign investment per capita. Part of that is having the right business environment and skills, but it is also having a reputation as a safe, ethical, humane and attractive place to do business.”¹¹⁵
86. Professor Hall also referred to the UK being third in the global AI ranking, and added: “Our ambition is not just to remain third, but to be a real player in the world in this. ... The biggest risk to us is that we do not keep up the impetus.”¹¹⁶
87. A closer look at the table reveals that while the UK is top of the league for operating environment and third for research, it is only seventh for government strategy, eighth for infrastructure and eleventh for development. We therefore agree that there is no room for complacency.
88. In its report the Select Committee stated:
- “Alongside a very strong tradition of computer science research in our universities, we [the UK] have world-leading humanities departments, who can provide invaluable insight and context regarding the ethical and societal implications of AI. ... We have some of the world’s foremost law firms, legal experts and civic institutions ... And finally, we have world-respected institutions such as the BBC, alongside a long history of international diplomacy, engagement and leadership ...”¹¹⁷
89. We asked our witnesses whether it is still the case that the United Kingdom is an attractive place to learn about and work in AI, what mechanisms could be put in place to improve collaboration between universities and industry, and how our AI research centres can be more inclusive and coordinated. The replies were encouraging. Professor Hall told us: “we have seen international

113 ‘The Global AI Index’, *Tortoise media* (3 December 2019): <https://www.tortoisemedia.com/2019/12/03/global-ai-index/> [accessed 10 December 2020]

114 [Q 15](#) (Amanda Solloway MP)

115 [Q 20](#) (Caroline Dinenage MP)

116 [Q 2](#) (Professor Dame Wendy Hall)

117 Select Committee on Artificial Intelligence, *AI in the UK: ready, willing and able?* (Report of Session 2017–19, HL Paper 100) para 401

students coming into the UK, even during the pandemic, to study AI at the universities. That flow does not seem to have stopped, even from China.”¹¹⁸

90. Professor Wooldridge agreed:

“The UK has always been and remains an extremely attractive place to study AI. We have been there from the very beginning. The moves we have seen, the introduction of the centres for doctoral training in AI ... have been a tremendous boost to this area. That was exactly the right thing to do and it is having an effect. Interestingly, when I went back and studied my evidence in 2017, both [Professor Hall] and I called for an increase in capacity. We were desperately short of capacity and we are addressing that issue. We still have a long way to go before we get there ... the UK has always benefited, on the wider European scene, from being seen as being a stable, liberal, cosmopolitan, meritocratic society. All those things have made us an attractive place for researchers to come and work. If you are a top AI researcher, you can take your pick. It is a given that you will get an outstanding salary anywhere in the world.”¹¹⁹

91. Nevertheless, when asked at the end of the evidence session for a one word answer to the question “Do you think we are as internationally competitive now as we were when we looked at this as a Select Committee?” Professor Wooldridge answered No,¹²⁰ and elaborated on this in subsequent written evidence.¹²¹ He had two reasons for believing that we are not as competitive now as we were in 2017:

“First, the rest of the world has also responded. On this side of the Atlantic, France and Germany have launched a range of similar initiatives, while in North America, both the US and Canada have responded likewise. China has continued to invest in AI on a staggering scale, through private and public routes, and has continued its rapid ascent of the AI league tables. Many other smaller nations have also reported similar initiatives. So, the international goal posts have moved.

Second ... my honest sense is that the UK’s reputation as a home for international talent has taken something of a battering over the past few years. I emphasise this is not a political point: I am simply reporting on the basis of my personal experience, as someone whose job involves attempting to attract (and retain) world class researchers to the UK. I personally know of leading international AI researchers who were perfectly content working in the UK, who became frustrated and disillusioned by the tone of the debate around our decision to leave the EU, and who subsequently relocated back to continental Europe as a consequence. In seemingly every discussion I have with an international researcher about the possibility of relocating to the UK, the issue comes up. One of the most frequently voiced concerns is about whether UK-based researchers will still be able to apply for funding from the European Research Council (ERC), which is the jewel in the crown of European Research Funding. If we eventually find that we cannot, then that will be hugely damaging.”¹²²

118 Q 5 (Professor Dame Wendy Hall)

119 Q 5 (Professor Wooldridge)

120 Q 6 (Professor Wooldridge)

121 Written evidence from Professor Wooldridge (AIF0001)

122 Written evidence from Professor Wooldridge (AIF0001)

92. Professor Hall had answered “Yes” to this question. In subsequent written evidence she pointed to the launch in April 2018 of the AI sector deal, the £1 billion investment package, the setting up of the Office for AI and the AI Council, investment in skills through funding for PhDs, MSc and Turing AI Fellowships, research through investment in the Turing Institute, and adoption of AI by industry through Industrial Strategy Challenge Funds, which had all had been perceived very well internationally, and had significantly helped the UK to retain its position in the Global Index for AI.¹²³ She added:

“I would argue this has helped to balance the negative effects of Brexit. I am also very optimistic for the future as we make the case for more funding so that whether or not we are able to take part in the European Research Council competitions, we have the funding to recruit and retain top talent in AI and invest as a nation in AI research and innovation.”¹²⁴

93. The ability of this country to attract and retain the top AI research talent is of paramount importance, and it will therefore be hugely unfortunate if, for whatever reason, while other countries have moved forward, the UK has taken a step back, with the result that top researchers will be less willing to come here. The Government must take urgent steps to make clear that foreign researchers are very welcome, and must ensure that any changes to the immigration rules take this into account. It must also ensure that funding for research is available, especially if EU funding ceases after the end of 2020.
94. For students, Professor Hall saw Brexit as “a huge opportunity to remodel the way we bring in international students.”¹²⁵ She added:

“Until now we have had a huge difference in fees between UK and EU PhD students, and anybody from outside the EU. We have a chance now to attract international students from all over the world, including Europe, in ways that are affordable. The UK should seize that opportunity. It is possible in ways that were not possible when we were part of the European Union. We need to do that, because we are a sought-after place.”¹²⁶

95. **The UK remains an attractive place to learn, develop, and deploy AI. It has a strong legal system, coupled with world-leading academic institutions, and industry ready and willing to take advantage of the opportunities presented by AI. We also welcome the development of Global Partnership on Artificial Intelligence and the UK’s role as a founder member.**
96. **It will however be a cause for great concern if the UK is, or is seen to be, less welcoming to top researchers, and less supportive of them. The Government must ensure that the UK offers a welcoming environment for students and researchers, and helps businesses to maintain a presence here. Changes to the immigration rules must promote rather than obstruct the study, research and development of AI.**

123 Written evidence Professor Dame Wendy Hall ([AIF0002](#))

124 Written evidence Professor Dame Wendy Hall ([AIF0002](#))

125 [Q 5](#) (Professor Dame Wendy Hall)

126 [Q 5](#) (Professor Dame Wendy Hall)

APPENDIX 1: LIST OF MEMBERS AND DECLARATIONS OF INTEREST

Members

Lord Bradley
 Lord Davies of Oldham
 Baroness Hayter of Kentish Town
 Earl Howe
 Lord Lang of Monkton
 Lord Low of Dalston
 Lord Judge
 Lord McFall of Alcluith (Chair)
 Lord Smith of Hindhead
 Lord Tyler
 Baroness Walmsley

The following members of the former Select Committee on Artificial Intelligence participated in the meetings:

Lord Clement-Jones (Chair)
 Lord Hollick
 The Lord Bishop of Oxford
 Baroness Rock
 Lord St John of Bletso

Declarations of interest

Lord Bradley
Chair of Council of the University of Salford

Lord Clement-Jones
Consultant to DLA Piper (global law firm)—includes issues relating to AI governance
Independent consultant to Council of Europe ad hoc committee on AI (unpaid)
Chair of Council of Queen Mary, University of London

Lord Davies of Oldham
No relevant interests to declare

Baroness Hayter of Kentish Town
No relevant interests to declare

Lord Hollick
Director Honeywell International Inc
Chair, Independent Advisory Board UKRI CDT in Accountable, Responsible and Transparent AI at the University of Bath

Earl Howe
No relevant interests to declare

Lord Judge
No relevant interests to declare

Lord Lang of Monkton
No relevant interests to declare

Lord Low of Dalston
No relevant interests to declare

Lord McFall of Alcluith

No relevant interests to declare

Lord Bishop of Oxford

Board Member, Centre for Data Ethics and Innovation

Project Member: Ada Lovelace Institute, Rethinking Data Project

My eldest son, Paul Croft, is founder and co director of the Tonic Games

Group of computer games companies: <https://www.tonicgames.com>

Lord Smith of Hindhead

No relevant interests to declare

Lord St John of Bletso

No relevant interests to declare

Baroness Rock

Board member, Centre for Data Ethics and Innovation

Senior adviser, Newton europe

Senior adviser, Instinctif partners

Member, APPG AI

Member. House of Lords Select Committee, Science and Technology

Member of advisory board, Onward

Lord Tyler

No relevant interests to declare

Baroness Walmsley

No relevant interests to declare

A full list of members' interests can be found in the Register of Lords' Interests: <http://www.parliament.uk/mps-lords-and-offices/standards-and-interests/register-of-lords-interests>

APPENDIX 2: LIST OF WITNESSES

Evidence is published online at <https://committees.parliament.uk/work/633/artificial-intelligence-committee-followup/publications/> and available for inspection at the Parliamentary Archives (020 7219 3074).

Evidence received by the Committee is listed below in alphabetical order.

Alphabetical list of witnesses

Caroline Dinenage MP, Minister for Digital and Culture, Department for Digital, Culture, Media and Sport	QQ 14–20
Lorna Gratton, Director, Digital and Technology Policy, Department for Digital, Culture, Media and Sport	QQ 1–6 AIF0002
Professor Dame Wendy Hall, Regius Professor of Computer Science, University of Southampton	QQ 14–20
Carly Kind, Director, Ada Lovelace Institute	QQ 7–13
Simon McDougall, Deputy Information Commissioner, Office of the Information Commissioner	QQ 7–13
Amanda Solloway MP, Minister for Science, Department for Business, Energy and Industrial Strategy	QQ 14–20
Daniel Susskind, Fellow in Economics, Balliol College, Oxford	QQ 1–6
Roger Taylor, Chair, Centre for Data Ethics and Innovation	QQ 7–13
Professor Michael Wooldridge, Professor of Computer Science, University of Oxford, and Programme Director for Artificial Intelligence, Alan Turing Institute, London	QQ 1–6 AIF0001

