

CIFAR

**BUILDING AN AI WORLD:
REPORT ON NATIONAL AND
REGIONAL AI STRATEGIES
SECOND EDITION**

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ABOUT CIFAR

CIFAR is a Canadian-based global charitable organization that convenes extraordinary minds to address the most important questions facing science and humanity.

By supporting long-term interdisciplinary collaboration, CIFAR provides researchers with an unparalleled environment of trust, transparency and knowledge sharing. Our time-tested model inspires new directions of inquiry, accelerates discovery and yields breakthroughs across borders and academic disciplines. Through knowledge mobilization, we are catalysts for change in industry, government and society. CIFAR's community of fellows includes 20 Nobel laureates and more than 400 researchers from 22 countries. In 2017, the Government of Canada appointed CIFAR to develop and lead the Pan-Canadian Artificial Intelligence Strategy, the world's first national AI strategy.

CIFAR is supported by the governments of Canada, British Columbia, Alberta and Quebec, Canadian and international partners, as well as individuals, foundations and corporations.

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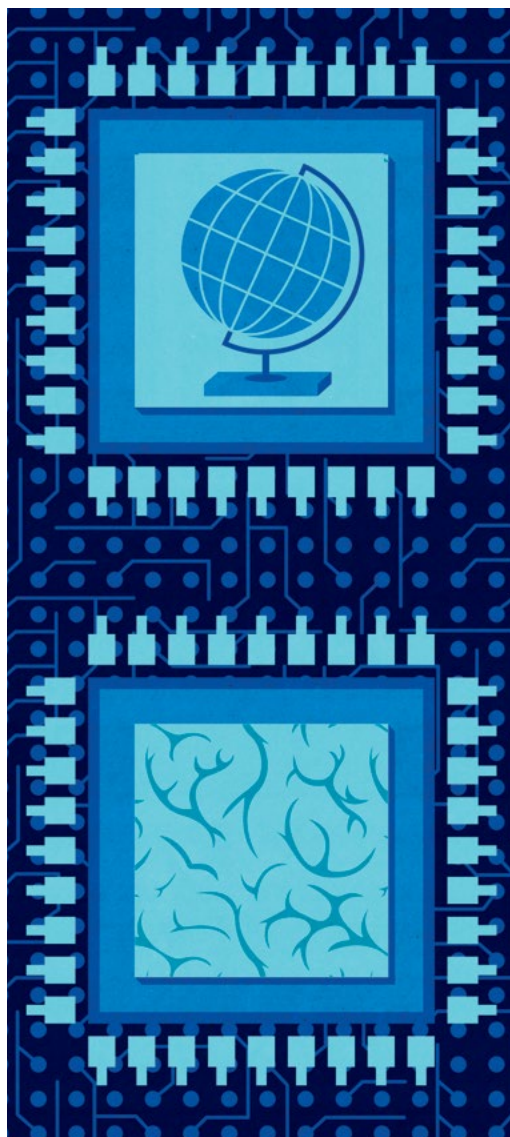
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INTRODUCTION

With Russia’s publication of its *National Strategy for the Development of Artificial Intelligence (AI)* in October 2019, and Brazil’s announcement in December 2019 that the country was opening public consultations for its national AI strategy, all 15 of the [world’s largest economies](#) have now developed, or are in the process of developing, strategies to guide their governments’ policy approach towards the use and development of AI.

In November 2018, CIFAR published the first edition of *Building an AI World: Report on National and Regional AI Strategies*. Since that time, a number of countries have further developed or finalized their own national AI strategies, and more have taken steps towards creating such strategies to ensure that they, too, can capitalize on AI to drive growth and remain competitive. This second edition provides an updated overview of the global landscape of AI strategies as of January 2020.

This report aims to provide a snapshot of the rapidly evolving area of technological policy, highlighting the variety of approaches taken by different countries, and providing policymakers with a reference and a toolkit of potential measures to shape the development of the field in their own countries. It does not seek to evaluate the various national strategies or attempt to draw causal links between the strategies and the current state of development of AI in the respective country.



KEY FINDINGS

- By the end of January 2020, 28 national or supranational jurisdictions – including 27 countries and the European Union (EU) – have published coordinated strategies to guide their governments’ policies on AI. An additional 18 countries are developing their own national AI strategies.
- Countries that are developing or have developed national AI strategies continue to be concentrated among the advanced economies of Western Europe, North America and East Asia, but there is a notable increase in the number of emerging or developing economies on this list.
- Among the AI strategies published between November 2018 and January 2020, the majority either do not come with new or additional funding, or only include new funding for a few specific policies.
- Compared to strategies described in the first edition of this report, the new strategies tend to be more comprehensive, incorporating policy measures that address most or all of eight major policy areas (research, talent development, skills, industrial policy, ethics, data & digital infrastructure, AI in government, and inclusion).
- The AI strategies tend to have the most specific policy measures to address data & digital infrastructure, talent development and industrial policy, and the least specific measures for AI in government and inclusion.
- Broadly speaking, the published national AI strategies can be grouped into three main categories: those that are largely focused on AI research and development, those that are comprehensive across policy areas but with less specific policy measures, and those that are comprehensive and specific.



NATIONAL AI STRATEGIES AS OF JAN 2020



ACROSS ALL PUBLISHED NATIONAL AI STRATEGIES



POLICY AREAS WITH THE MOST SPECIFIC MEASURES

- Data & digital infrastructure
- Talent development
- Industrial policy



POLICY AREAS WITH THE LEAST SPECIFIC MEASURES

- AI in government
- Inclusion

NATIONAL AI STRATEGIES IN 2019: AN INCREASINGLY GLOBALIZED LANDSCAPE

Much as with the first edition of *Building an AI World*, the current analysis focuses on coordinated national strategies that provide an overarching framework guiding the respective government's policies on AI, and which are not simply part of a broader strategy on innovation or digital technology.

This report also limits its analysis to strategies from national and supranational entities, but not from subnational jurisdictions, although a number of these have published, or have taken steps towards formulating their own AI strategies (see [Box 1, pg 10](#)).

Since the publication of the first report, 16 jurisdictions (15 countries plus the EU) have published national strategies on AI, for a total of 28 as of January 2020. An additional 18 countries have started, or have made progress on, the development of a national strategy. While the majority of nations with or working on AI strategies continue to be concentrated in the advanced economies of Western Europe, North America and East Asia, what is notable is that a number of emerging or developing economies in the rest of Asia, Eastern Europe and Latin America (such as Brazil, Qatar, Russia and Sri Lanka) have joined this club in the past year.

Similar to strategies reported last year, the strategies in this report can be broadly divided into two groups: those with specific funding when first announced and those without. In fact, the majority of new strategies did not have new or additional funding beyond what the respective governments already invest in, e.g., research grants, or only included new funding for a few specific policies in the strategy.

Many of the countries with national strategies included in this 2019 report were noted in 2018 as having published a guiding document or having a strategy in development. For example, while Estonia, Finland, Germany and the EU had put out interim or guiding documents previously, they have since announced finalized, fully funded strategies that had been put into implementation, while Malta had announced a strategy with new funding for specific policies.

In several other countries, including Austria, Belgium, Italy, Spain, Sri Lanka and Uruguay, the party responsible for drafting a national strategy (either a government working group, expert committee, or third party institution working with the government) published interim reports or documents for public consultation over the course of 2019. Because these documents do not represent the finalized policies of that nation's strategy, these countries are considered in this report to have a strategy in development, and the documents are not analyzed in detail.

For a summary of jurisdictions with a national AI strategy (funded or unfunded) published since the first edition of this report was released in 2018, see [Table 1, pg 7](#). For a summary of countries with strategies in development, see [Table 2, pg 8](#). See the map in [Figure 1, pg 10](#), for a visual representation of all countries with implemented or in-development strategies, and [Figure 2, pg 11](#), for the change in status for in-development and published strategies between the first and current edition of the report. [Appendix, pg 19](#), provides additional information on the policies of each strategy.

TABLE 1

AI Strategies Published Between November 2018 and January 2020

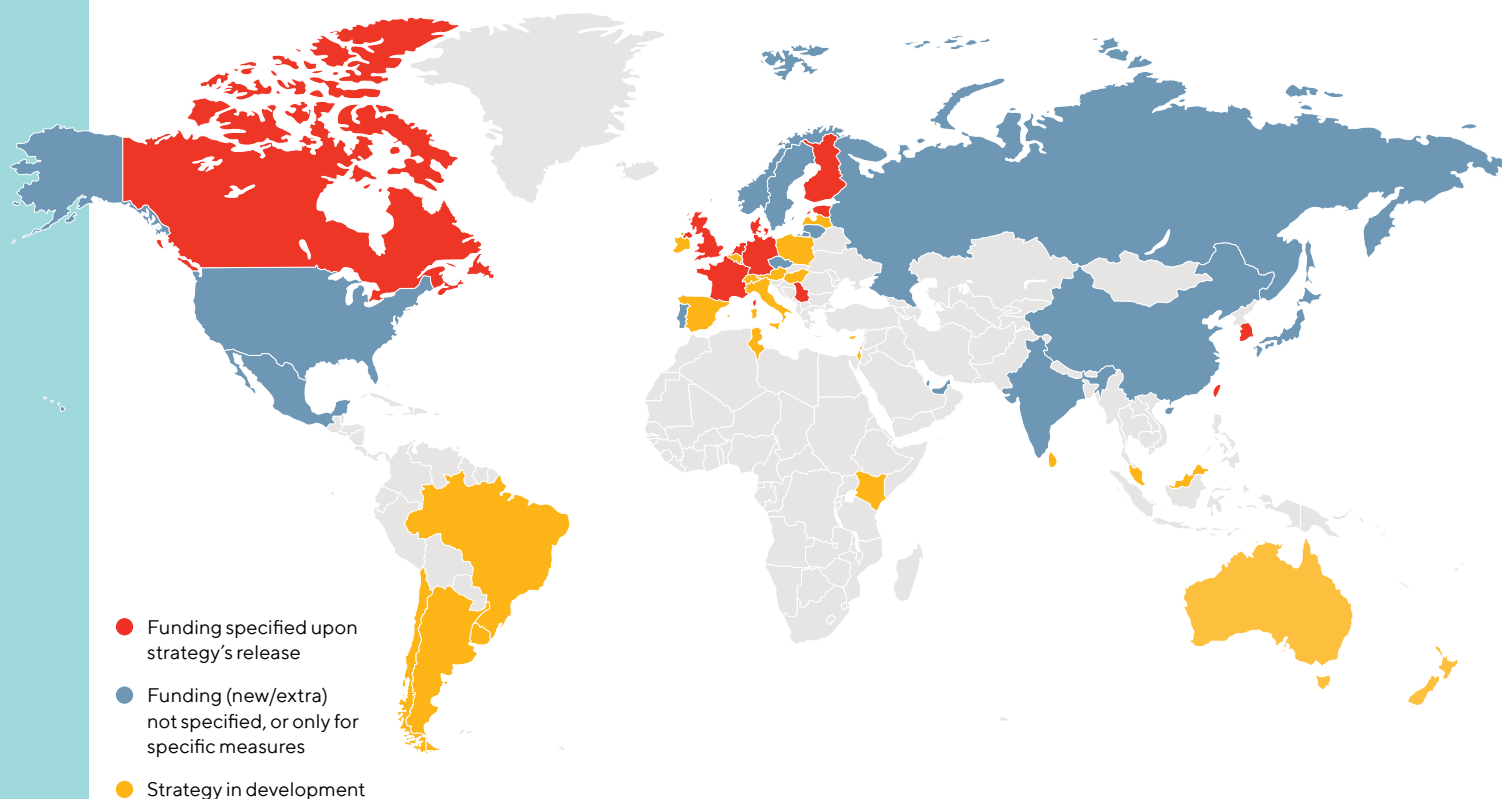
COUNTRY	TITLE	RELEASE DATE	FUNDING (JANUARY 2020 CONVERSION RATES)
Czech Republic	National Artificial Intelligence Strategy of the Czech Republic	May 2019	N/A
Denmark	National Strategy for Artificial Intelligence	March 2019	DKK 60 million (US\$8.9 million) earmarked for 2019–2027
Estonia	National AI Strategy 2019–2021	July 2019	At least €10 million (US\$11 million) for 2019–21
European Union	Coordinated Plan on Artificial Intelligence	December 2018	At least €1 billion (US\$1.1 billion) per year for AI research and at least €4.9 billion (US\$5.4 billion) for other aspects of strategy
Finland	Leading the Way into the Age of Artificial Intelligence	June 2019	€266 million (US\$295 million) specified for various aspects of strategy
Germany	AI Made in Germany	November 2018	€500 million (US\$555 million) allocated in 2019 federal budget; intention for €3 billion (US\$3.3 billion) up to 2025
Lithuania	Lithuanian Artificial Intelligence Strategy: A Vision of the Future	April 2019	N/A
Luxembourg	Artificial Intelligence: A Strategic Vision for Luxembourg	May 2019	N/A
Malta	Malta: The Ultimate AI Launchpad – A Strategy and Vision for Artificial Intelligence in Malta 2030	November 2019	€6 million (US\$6.7 million) specified for a few individual measures
Netherlands	Strategic Action Plan for Artificial Intelligence	October 2019	€380 million (US\$422 million) specified for various aspects of strategy
Norway	The National Strategy for Artificial Intelligence	January 2020	N/A
Portugal	AI Portugal 2030	February 2019	N/A
Qatar	Blueprint: National Artificial Intelligence Strategy for Qatar	October 2019	N/A
Russia	National Strategy for the Development of Artificial Intelligence	October 2019	N/A
Serbia	Strategy for the Development of Artificial Intelligence in the Republic of Serbia for the Period 2020–2025	December 2019	€90 million (US\$99 million)
United States	American AI Initiative	February 2019	N/A

TABLE 2
AI Strategies in Development (as of January 2020)

COUNTRY	CURRENT STATUS	SOURCE
Argentina	Thematic and interministry working groups are drafting a national AI strategy.	https://www.bnamericas.com/en/news/argentina-advances-national-ai-plan
Australia	Commonwealth Scientific and Industrial Research Organisation (federal research agency) and Department of Industry, Innovation and Science have worked together to produce an ethics framework and a roadmap in April and November 2019, respectively, and the federal government is now working on a full strategy.	https://data61.csiro.au/en/Our-Research/Our-Work/AI-Roadmap
Austria	The Austrian Council on Robotics and Artificial Intelligence, an advisory board set up by the Austrian Ministry for Transport, Innovation and Technology, released a white paper, “Shaping the Future of Austria with Robotics and Artificial Intelligence”, in November 2018 as a step towards developing a national strategy.	https://www.acrai.at/wp-content/uploads/2019/08/ACRAI_White_Paper_EN.pdf
Belgium	AI 4 Belgium, a coalition of AI stakeholders in academia, industry and public institutions with support by Ministers of Digital Agenda, published a report in April 2019 as the first step towards a formal national strategy.	https://www.ai4belgium.be/wp-content/uploads/2019/04/report_en.pdf
Brazil	Public consultations opened in December 2019 for a national AI strategy.	https://www.zdnet.com/article/brazil-to-create-national-artificial-intelligence-strategy/
Chile	Committee of experts announced in September 2019 that it will work on creating a National AI Policy, expected April 2020.	http://www.latinamerica.tech/2019/09/12/meet-the-experts-who-will-elaborate-chiles-national-policy-in-ai/
Cyprus	Draft of strategy document “AI in Cyprus” was released for public consultation. Full policy was expected in December 2019. Draft strategy was approved by Cabinet in January 2020, awaiting parliamentary approval.	https://ailab.unic.ac.cy/?p=1299 https://cyprus-mail.com/2020/01/27/national-ai-strategy-announced/
Hungary	Six working groups within the AI Coalition, a professional organization with support from the Ministry of Innovation and Technology, released an AI Action Plan in October 2019, and is working towards a national strategy in 2020.	https://www.kormany.hu/en/ministry-for-innovation-and-technology/news/ai-action-plan-and-strategy-to-be-developed-this-year https://www.lexology.com/library/detail.aspx?g=d0882959-b5ee-46d6-95bf-13d5df70f269
Ireland	The Department of Business Enterprise and Innovation closed public consultations in November 2019 and is in the process of developing a National Irish Strategy on AI.	https://dbei.gov.ie/en/Consultations/Public-Consultation-Development-of-a-National-Strategy-on-Artificial-Intelligence.html
Israel	Committee of experts from government, military, academia and industry will submit recommendations for national AI strategy to government in January 2020.	https://sciencebusiness.net/news/israel-sets-out-become-next-major-artificial-intelligence-player https://en.globes.co.il/en/article-israels-national-ai-plan-unveiled-1001307979
Italy	The Ministry of Economic Development released a draft National Strategy for AI in July 2019 for public consultation.	https://www.mise.gov.it/images/stories/documenti/Strategia-Nazionale-Intelligenza-Artificiale-Bozza-Consultazione.pdf

COUNTRY	CURRENT STATUS	SOURCE
Kenya	Minister for Information and Communications formed an 11-person task force in February 2018 to develop a blockchain and AI strategy. (No update since first edition of this report)	https://kenyanwallstreet.com/kenya-govt-sets-blockchain-artificial-intelligence-taskforce/
Latvia	The government released a draft strategy in July 2019 for internal consultation among ministries.	http://tap.mk.gov.lv/lv/mk/tap/?pid=40475479
Malaysia	The Malaysia Digital Economy Corporation, a state-owned entity, was expected to present a National AI Framework to the Malaysian cabinet by the end of 2019.	https://themalaysianreserve.com/2019/07/05/mdec-to-establish-ai-unit-with-local-and-international-experts-to-support-national-ai-framework/
New Zealand	The Minister of Broadcasting, Communications and Digital Media announced in May 2018 that the government is exploring the development of an AI action plan. (No update since first edition of this report)	https://www.zdnet.com/article/new-zealand-examining-ai-ethical-framework-and-action-plan/
Poland	The Ministry of Digitization conducted public consultations on its draft “Artificial Intelligence Development Policy in Poland for 2019-2027” in August-September 2019.	https://www.gov.pl/web/cyfryzacja/konsultacje-spoleczne-projektu-polityki-rozwoju-sztucznej-inteligencji-w-polsce-na-lata-2019-2028
Spain	The Ministry of Science, Innovation and Universities released the Spanish Research, Development & Innovation Strategy in AI in March 2019, which serves as a basis for an interministerial working group to develop a national AI strategy.	http://www.ciencia.gob.es/stfls/MICINN/Ciencia/Ficheros/Estrategia_Inteligencia_Artificial_EN.PDF
Sri Lanka	The Sri Lanka Association of Software and Services Companies has developed a draft AI policy framework in partnership with the Information and Communication Technology Agency and the Ministry of Digital Infrastructure and Telecom, released in June 2019 for debate and comment over the next six months.	http://www.colombopage.com/archive_19A/Jun28_1561662503CH.php
Switzerland	A “Digital Switzerland” strategy was released in 2018. An interdepartmental working group on artificial intelligence was set up which submitted various reports to the Federal Council in fall 2019. More updates on AI strategy expected in spring 2020.	https://www.sbf.admin.ch/sbf/fr/home/le-sefri/numerisation/intelligence-artificielle.html
Tunisia	A national AI strategy was anticipated to be released in the first quarter of 2019. (No update since first edition of this report)	http://www.anpr.tn/national-ai-strategy-unlocking-tunisias-capabilities-potential/
Uruguay	AGESIC, the eGovernment agency in the President’s Office, opened public consultations in April 2019 for its draft Artificial Intelligence Strategy for Digital Government. A final strategy is expected by February 15, 2020.	https://www.gub.uy/participacionciudadana/consultapublica

FIGURE 1
Current Landscape of AI Strategies



BOX 1

Beyond national strategies – subnational jurisdictions, intergovernmental organizations, research consortia

While the current report primarily focuses on AI strategies published by national governments, various other levels of government or intergovernmental bodies have produced their own strategies or set up collaborative entities to advance research and/or the responsible use of AI. As AI policies continue to develop around the world, these additional policy instruments or documents may merit examination in future editions of this report.

- **Subnational AI strategies:**
 As national governments formulate AI strategies and seek to coordinate research and development efforts within their countries, some jurisdictions such as individual provinces or states are also

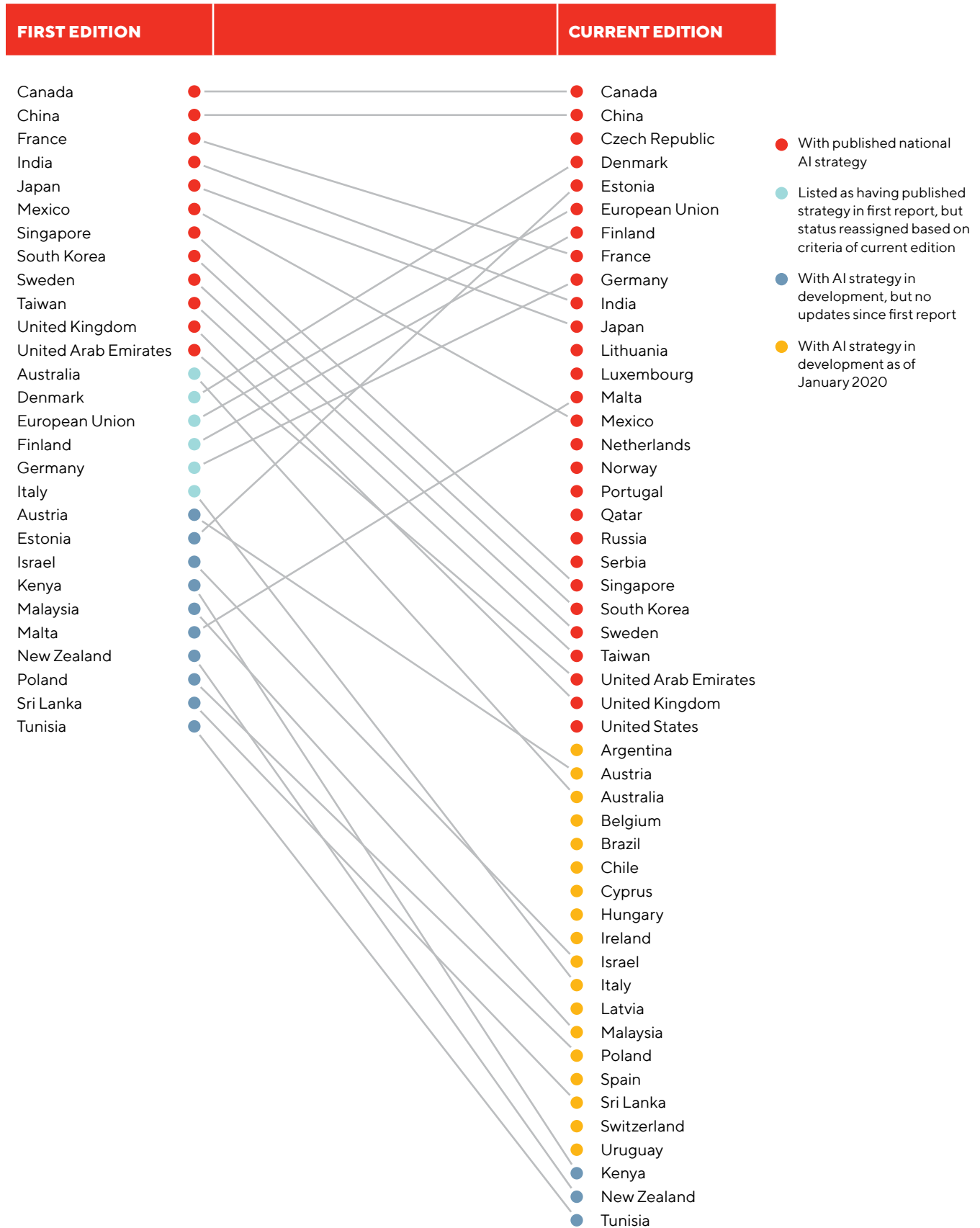
formulating their own AI strategies to better position themselves in the competition for AI talent and investment. Examples include Québec, Catalonia, New South Wales, Scotland and California.

- **Intergovernmental organizations:**
 In addition to the EU, a number of other intergovernmental entities such as [UNESCO](#) and the [G7/G20](#) have produced strategies or guidelines, or set up international alliances or bodies, to promote the ethical and responsible application of AI. This includes the Organisation for Economic Co-operation and Development (OECD), whose council published its [Recommendation on AI](#) as a set of intergovernmental standards for trustworthy AI, and which

launched the [AI Policy Observatory](#) in February 2020 to help countries develop and monitor the responsible development of AI. The Canadian and French governments are also spearheading, with the support of the OECD, a [Global Partnership on AI](#), which aims to be an international forum for AI policy.

- **Cross-national research consortia:**
 Complementary to national or international (top-down) strategies for AI research, the research communities across a number of countries are also working (bottom-up) at the grassroots level to establish networks of labs and research facilities. Two notable examples, both based largely (but not exclusively) in Europe, are [CLAIRE](#) and [ELLIS](#).

FIGURE 2
Change in Status for In-Development and Published Strategies Between the First and Current Edition of This Report



A TREND TOWARDS MORE COMPREHENSIVE STRATEGIES

This edition of the report will analyze the various national strategies according to eight broad policy areas. These are:

- **Scientific Research:** The creation of new research centres, hubs or programs in basic and applied AI research or a commitment to increase existing funding for public AI research.
- **AI Talent Development:** Policies to attract, retain and train domestic or international AI talent, including research chairs and fellowships or the creation of AI-specific master's and PhD programs.
- **Skills and the Future of Work:** Initiatives to help students and the overall labour force develop skills for the future of work, such as investments in STEM (science, technology, engineering, and mathematics) education, digital skills or lifelong learning.
- **Industrialization of AI Technologies:** Programs to encourage private-sector adoption of AI technologies, including investments in strategic sectors, funding for AI start-ups and small and medium-sized enterprises (SMEs), and strategies to create AI clusters or ecosystems.
- **Ethical AI Standards:** The creation of a council, committee or task force to create standards or regulations for the ethical use and development of AI. This area also includes specific funding for research or pilot programs to create explainable and transparent AI.
- **Data and Digital Infrastructure:** Policies for open data partnerships, platforms and datasets, as well as commitments to create test environments and regulatory sandboxes.
- **AI in the Government:** Pilot programs that use AI to improve government efficiency, service delivery and public administration.
- **Inclusion and Social Well-Being:** Ensuring that AI is used to promote social and inclusive growth and that the AI community is inclusive of diverse backgrounds and perspectives.

Similar to strategies surveyed in the first report, most of the newly released strategies continue to have a strong emphasis on industrial policy, deploying a range of measures to attract investment, accelerate startup activities and facilitate the adoption of AI by companies. For instance, Estonia's *National AI Strategy 2019-21* seeks to establish an AI Digital Innovation Hub to lead development of the AI sector in the country and provide funding for up to 70 pilot projects to support AI product development at various levels of technology readiness or ones that make use of government datasets. Meanwhile, Denmark's *National Strategy for Artificial Intelligence* proposes to establish a DKK 20 million (US\$3 million) investment pool, to be managed by the Danish Growth Fund (Denmark's sovereign investment fund), which will leverage private funding (with 50% co-investment) to support companies with AI-based business models.

The German federal government will establish the German AI observatory, a National Further Training Strategy for workers, a Skilled Labour Strategy to inform policy, and Centres of Excellence for Labour Research.

All of the new strategies recognize that AI will affect the future of work, and most of them include policy measures to address this impact. For example, under Germany's finalized national strategy, *AI Made in Germany*, the federal government will establish a German AI observatory to monitor and assess the impact of AI on work and society; launch a National Further Training Strategy to help workers in vulnerable sectors learn new skills and access continued training; develop a Skilled Labour Strategy to

inform policies related to the labour market; enact measures, such as strengthened or new legislation and technical support, to ensure that work councils can exercise their right to codetermination within companies; and establish Centres of Excellence for Labour Research to inform the integration of AI into the workplace in a way that best supports human workers.

All strategies also acknowledge the importance of increasing the intensity of AI research within their jurisdiction, and to train and attract AI talent to boost their research calibre. Research powerhouses such as Germany plan to continue investing heavily in developing their domestic research ecosystem, in Germany's case developing a national network of at least 12 Centres of Excellence for AI and application hubs, developing a Franco-German R&D network, launching a program to support junior researchers, and creating at least 100 new professorships in AI. At the same time, many of the countries examined place an emphasis on technology development or collaboration with international partners rather than focusing solely on building up their own basic AI research strengths. An example is Luxembourg, which outlines in its strategy *Artificial Intelligence: A Strategic Vision for Luxembourg* that the country will actively support the Europe-wide network of AI research centres and cross-border initiatives, as well as become a "living laboratory" and host of test facilities for a variety of AI applications in fields such as finance, healthcare and transportation. The EU, as a multinational body that plays a role in supporting research efforts across its membership, outlines in its *Coordinated Plan on Artificial Intelligence* that it will encourage member states to exchange best practices on how to retain AI talent, leverage the Blue Card work permit system to attract and retain AI professionals and entrepreneurs in Europe, and incorporate the consideration of PhD and post-PhD programs in its calls for AI research excellence centres. Russia, in its *National Strategy for the Development of AI*, announces the intention to employ measures such as competitive financial remuneration and streamlined immigration laws to attract and retain international AI talent, both foreign nationals and Russians living abroad.

Many of the strategies also include policy measures for opening up access to public datasets for AI development, and to a varying

extent, increasing the use of AI in the public sector, either to improve internal public administration or the delivery of public services for citizens, and/or to create new AI-integrated services. Denmark's strategy, for example, outlines plans to identify five public sector datasets to make available for businesses and researchers to develop AI tools, launch test projects to develop AI solutions that make better use of public data, establish secure cloud environments for storing public data, and develop freely-available Danish language resources to support AI-based language technologies. The country will also engage universities to improve digital competencies of central government employees, as well as work with regions and municipalities to fund and implement signature projects to test AI solutions in public service areas such as healthcare and cross-authority case processing. Estonia, sometimes dubbed a "[digital republic](#)", proposes measures such as creating Chief Data Officer positions at the ministerial level, conducting "data audits" in state agencies, and budgeting over €800,000 (US\$890,000) to spur research on the implementation of AI-based decision support in state institutions. And Finland's strategy *Leading the Way into the Age of AI* outlines the official launch of the AuroraAI program, an AI-powered platform to match and deliver the most appropriate public service to citizens in the most timely manner.

The EU Ethics Guidelines for Trustworthy AI outlines four ethical principles:

1. Respect for human autonomy
2. Prevention of harm
3. Fairness
4. Explicability

Finally, a number of new strategies, particularly ones from European countries, emphasize the need for "ethics by design" when developing and deploying AI. As part of its *Coordinated Plan*, the EU tasked a High Level Expert Group on AI to formulate *Ethics Guidelines for Trustworthy AI*, released in April 2019, which outlines three components to trustworthy AI (lawful, ethical,

robust), four ethical principles (respect for human autonomy; prevention of harm; fairness; explicability), and seven key requirements for its implementation (human agency and oversight; technical robustness and safety; privacy and data governance; transparency; diversity, non-discrimination and fairness; societal and environmental wellbeing; and, accountability). These guidelines serve as an ethics framework for AI policies in EU member states. A number of countries additionally align their ethical framework with the OECD Principles on AI, which were adopted by OECD member states

in May 2019. All other strategies also have at least a recognition of the importance for citizens' rights and privacy to be protected in the development of AI. Notably, however, while many of the strategies recognize equity and inclusion as important principles in AI research and the design of AI systems, few of them include very specific policy measures addressing these issues.

A list of common or notable measures included in published national AI strategies to address each of the eight policy areas can be found in **Table 3**, below.

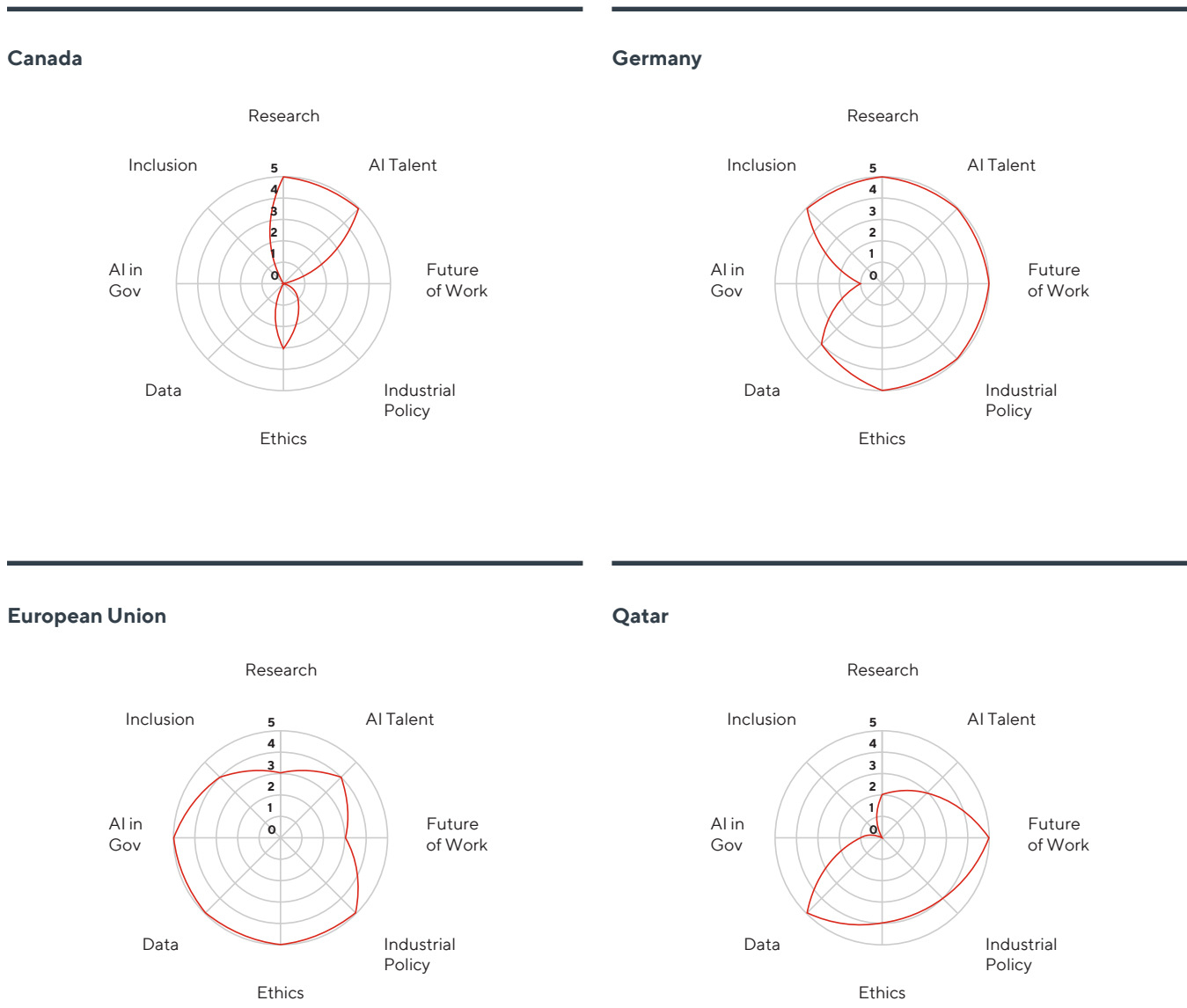
TABLE 3
Common or Notable Policy Measures Across National Strategies

POLICY AREA	COMMON OR NOTABLE POLICY MEASURES
Research	<ul style="list-style-type: none"> • Establish national AI research centres • Increase investment in AI research
Talent	<ul style="list-style-type: none"> • Remuneration incentives and visa policies to attract international talent • Increase AI programs or components in master's and PhD programs
Future of Work	<ul style="list-style-type: none"> • Increase reskilling / training programs for workers • Incorporate more STEM (including AI) in primary-to-undergrad curriculum
Industrial Policy	<ul style="list-style-type: none"> • Establish digital innovation hubs to connect companies to AI expertise • Use state investment funds to support startups and leverage private investments
Ethics	<ul style="list-style-type: none"> • Establish guidelines and promote research on explainability and accountability
Data and Digital Infrastructure	<ul style="list-style-type: none"> • Make public datasets available for development of AI tools • Set up regulatory sandboxes to test AI products • Develop tools in local languages
AI in Government	<ul style="list-style-type: none"> • Pilot AI-based solutions in public service
Inclusion	<ul style="list-style-type: none"> • Support designs and tools that reduce bias and discrimination

In evaluating the emphasis placed by each national strategy on the eight policy areas, rather than trying to give each policy area a unique ranking, the current report produces a “specificity” value for each policy area. Strategies that include specific policy measures and perhaps even allocate funding for a particular policy area is assigned a high specificity value (4 or 5) for that policy area; those that include broad policy goals but perhaps no specific measures, or include a plan to further develop more specific measures, are assigned medium values (2 or 3);

and those strategies that simply recognize the importance of a policy area but do not specify concrete policy goals or measures are assigned a low specificity value (1). The advantage of such a specificity scale is that it would be possible to have a semi-quantitative evaluation of the comprehensiveness of each strategy – e.g., whether it proposes detailed measures in multiple policy areas, or if it focuses only on a certain number of policy areas (**Figure 3**, below, and [Appendix, pg 19](#)).

FIGURE 3
Radar plot for AI strategies of four example jurisdictions, showing the specificity value (0-5) across 8 policy areas.

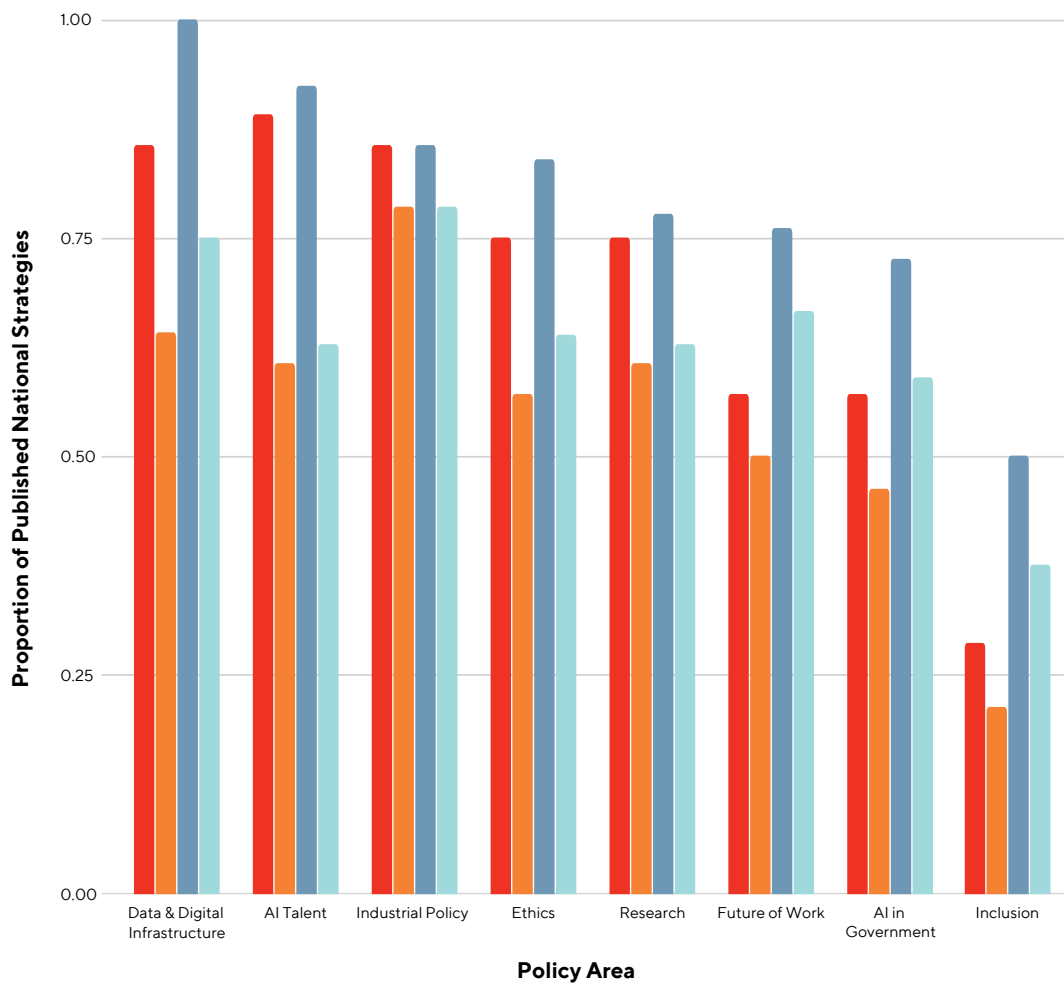


Refer to [Appendix, page 19](#), for all country-specific radar plots.

Applying this specificity scale to all 28 national strategies published to date (**Figure 4**, below), it can be seen that the policy areas with the most specific measures across all countries are data and digital infrastructure, talent development,

and industrial policy. On the other hand, the policy areas with the fewest specific measures across published strategies are AI in government and inclusion.

FIGURE 4
Proportion of published national strategies with high specificity values in each policy area. Red columns indicate proportions across all strategies; blue columns indicate proportions among only those strategies in which the respective policy area is mentioned (non-zero specificity value).

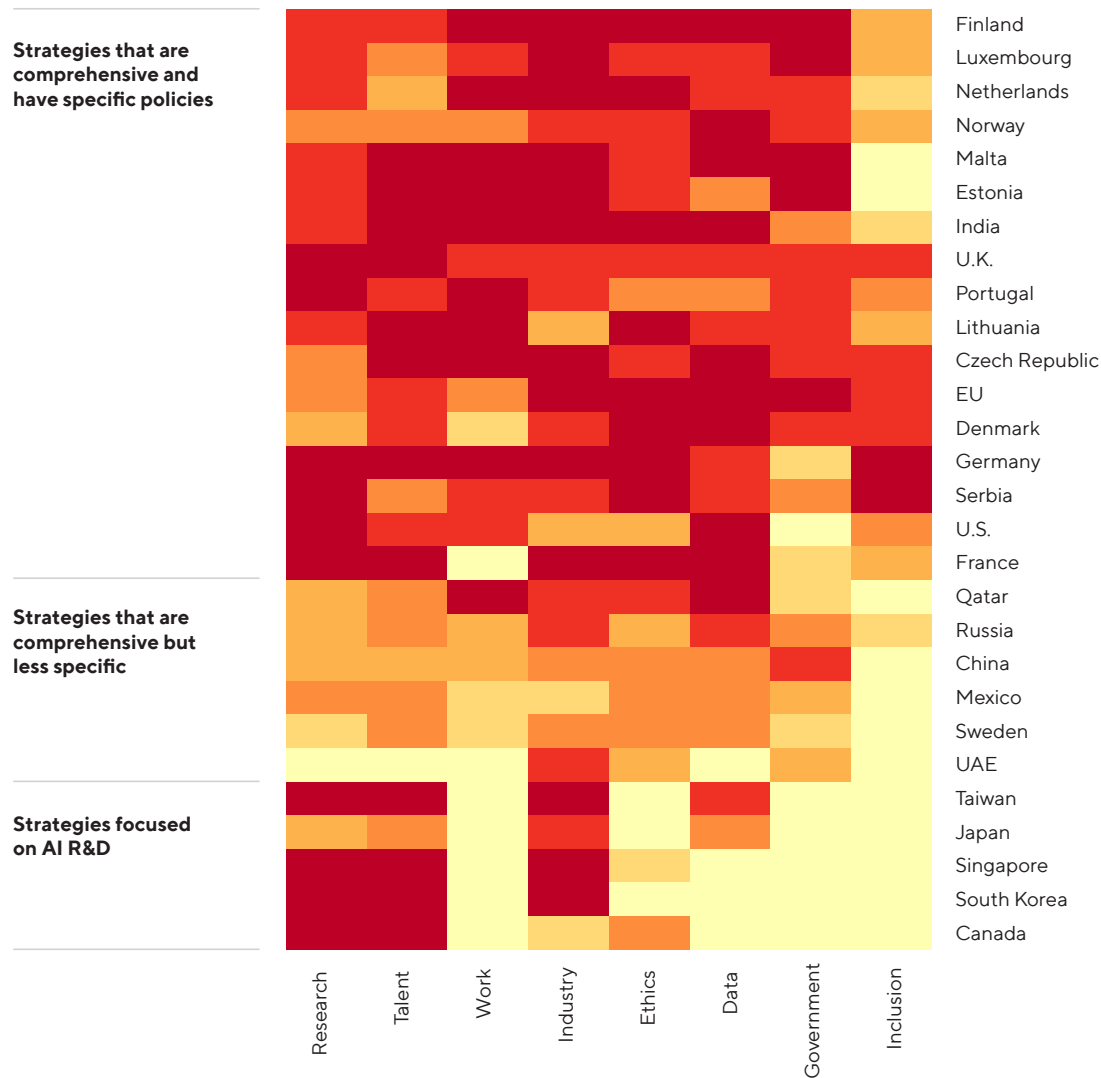


- Specificity value 3 or above (all strategies)
- Specificity value 4 or above (all strategies)
- Specificity value 3 or above (only strategies that include the policy area)
- Specificity value 4 or above (only strategies that include the policy area)

To assess similarities across national strategies in terms of their areas of focus or comprehensiveness, an unsupervised hierarchical clustering was performed (Figure 5, below). The published strategies fall into three major clusters: ones that are largely focused on AI R&D (research, talent development and industrial policy), those that are comprehensive across policy areas but with less specific policy measures, and those that are comprehensive and specific. Generally speaking, many of the strategies that were released before

the first edition of this report (including those of Canada, Japan, Singapore, South Korea and Taiwan) fall into the first cluster, whereas the new national strategies surveyed in this report tend to be more comprehensive, outlining measures in most or all of the eight policy areas. In the case of European countries, this may be prompted by the fact that the EU has launched its comprehensive strategy that serves as a framework for member states, and in its *Coordinated Plan* expressly encourages members to put similar national AI strategies in place by mid-2019.

FIGURE 5
Heatmap of the specificity values across policy areas for all AI strategies.
Strategies are ordered by hierarchical clustering.



<https://www.hiv.lanl.gov/content/sequence/HEATMAP/heatmap.html>; clustering was performed with no transformation, no threshold, complete clustering method, Euclidean distance, standard bootstraps, 100 iterations.

CONCLUSION

As advances continue to be made in both basic AI research and the development of technology that applies AI to a variety of sectors, countries around the world are increasingly recognizing the importance of creating comprehensive, coordinated national strategies in order to remain competitive with their peers.

More and more of these strategies not only advance AI research and development, but also seek to prepare the broader society – both the public and private sectors as well as the wider population – for the economic, social, ethical and policy implications of AI. In the coming year, even more countries, from a wider diversity of geography and economic development, are anticipated to finalize their own national AI strategies. Continued tracking and analysis of these policies will be an informative and critical exercise to evaluate the global approaches to this emerging field of technology and policy, and to identify areas where international conversations or coordinated efforts may be warranted.

With more countries adopting national AI strategies, and some of these strategies entering their third or fourth year of implementation, a number of interesting policy questions may benefit from further research and analysis.

For example:

- How much have governments actually followed through on the published strategies and aligned resources or developed policies to support these strategies?
- What are the accountability mechanisms being put in place to track the implementation of the strategies and evaluate the value in creating such strategies?
- What kind of impact has the adoption of such strategies made on talent recruitment, research output or economic activities in the respective countries?
- Does the inclusion or exclusion of certain policy areas make a difference in terms of the strategy's impact or outcomes?

Tackling these and similar questions will be important for shaping future policy approaches to AI and other areas of rapid technological advancement.

APPENDIX

NATIONAL AI STRATEGY PROFILES

 Canada	20	 Mexico	34
 China	21	 Netherlands	35
 Czech Republic	22	 Norway	36
 Denmark	23	 Portugal	37
 Estonia	24	 Qatar	38
 European Union	25	 Russia	39
 Finland	26	 Serbia	40
 France	27	 Singapore	41
 Germany	28	 South Korea	42
 India	29	 Sweden	43
 Japan	30	 Taiwan	44
 Lithuania	31	 United Arab Emirates	45
 Luxembourg	32	 United Kingdom	46
 Malta	33	 United States	47

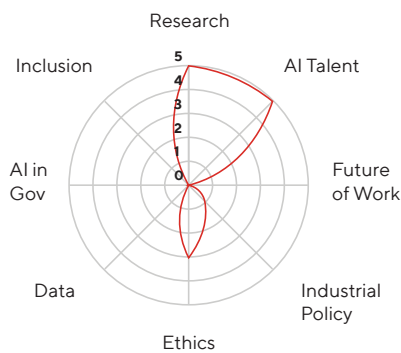


TITLE: CIFAR Pan-Canadian AI Strategy

FUNDING: C\$125 million (US\$96 million)
(at time of publication;
Jan 2020 conversion rate)

OVERALL GOAL OF AI STRATEGY: Enhance Canada’s international profile in AI research and training

POLICY ELEMENTS



Research

- Establish three centres of scientific excellence in AI to generate world class research and innovation

AI Talent

- Centres and CIFAR Chairs in AI designed to attract, retain, and train talent

Future of Work

- N/A

Industrial Policy

- Research centres will work with industry to connect academic research to business

Ethics

- Develop thought leadership on ethical implications of AI
- AI & Society CIFAR program

Data & Digital Infrastructure

- N/A

AI in Government

- N/A

Inclusion

- N/A

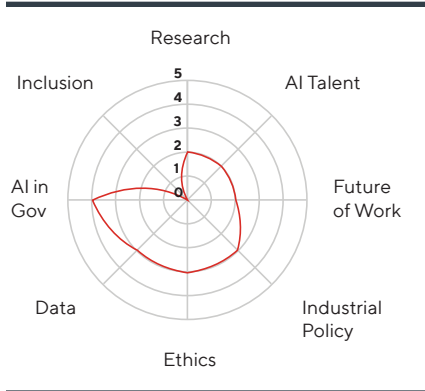
Source: <https://www.cifar.ca/ai/pan-canadian-artificial-intelligence-strategy>



CHINA

TITLE:	A Next Generation Artificial Intelligence Development Plan
FUNDING: (at time of publication; Jan 2020 conversion rate)	N/A
OVERALL GOAL OF AI STRATEGY:	Three phase strategy to make China the world leader in AI theories, technologies, and applications by 2030

POLICY ELEMENTS



Research

- Achieve major breakthroughs in fundamental AI research
- New generation of “1 + N” research mega-projects

AI Talent

- Development of AI talent pool is of “utmost importance”
- AI and “AI + X” degrees
- Universal intelligence project

Future of Work

- Encourage companies to provide skills training
- Improve government re-employment training

Industrial Policy

- Make China the world’s primary AI innovation centre
- Develop industrial parks and new AI businesses

Ethics

- Establish explainability and accountability system
- Lead world in AI standard setting and code of ethics

Data & Digital Infrastructure

- Use data and open-source platforms for growth
- Construct public data sets and cloud service platforms

AI in Government

- Three new AI government offices
- AI platform to integrate AI into government services and decision making
- Integrate AI into health care, education, and pensions to improve quality of life

Inclusion

- Maintain social stability

Source: https://www.fhi.ox.ac.uk/wp-content/uploads/Deciphering_Chinas_AI-Dream.pdf

<https://www.newamerica.org/cybersecurity-initiative/blog/chinas-plan-lead-ai-purpose-prospects-and-problems/>

<https://www.newamerica.org/cybersecurity-initiative/digichina/blog/translation-chinese-government-outlines-ai-ambitions-through-2020>

<https://thediplomat.com/2018/02/chinas-ai-agenda-advances/>

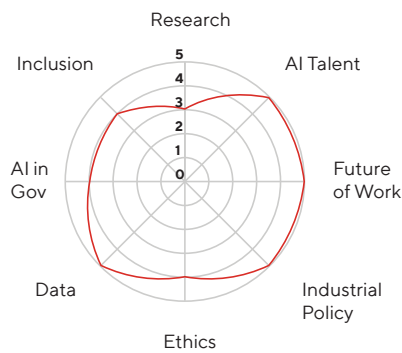


TITLE: National Artificial Intelligence Strategy of the Czech Republic

FUNDING: N/A
(at time of publication;
Jan 2020 conversion rate)

OVERALL GOAL OF AI STRATEGY: Make the Czech Republic an innovation leader and a model European country for AI

POLICY ELEMENTS



Research

- Establish European Centre of Excellence in AI based on Prague-based institutes
- Establish European testing facility for advanced industrial production or advanced transport systems
- Targeted grant funding for AI research by research funding agencies

AI Talent

- Optimize residence and work permit policies to increase recruitment and retainment of researchers and experts
- Create special grant program to recruit and support AI postgraduate students and researchers
- Create financial support system for municipalities and regions to retain talent
- Launch program to support return of Czechs working abroad, especially those skilled in AI
- Establish new English-language PhD program in AI

Future of Work

- Promote investment in sectors and jobs at low risk of automation
- Support new or expanded master's and doctoral programs that include AI
- Promote further education to prepare for changing labour markets
- Introduce teaching of AI skills in all levels of education
- Transform lifelong learning, reskilling and professional qualifications to increase AI-relevant skills
- Involve employer and employee representatives in assessing impact of technological trends
- Investigate changes in social benefits and pension systems
- Increase support for labour market flexibility, self-employment, etc

Industrial Policy

- Establish Digital Innovation Hubs as part of knowledge transfer ecosystem
- Run two pilot complex projects to facilitate transfer of academic know-how
- Establish Innovation Hub for AI under CzechInvest (investment and business development agency)
- Create financial instruments under CMZRB (Czech development bank) to support financing AI businesses
- Analyze needs to establish fund to support AI solutions in industry, especially SMEs
- Eliminate legislative barriers, administrative burdens and legal risks for competitiveness of Czech AI businesses

Ethics

- Establish PhD program in social, economic, legal implications of AI
- Develop industry-specific codes of conduct
- Establish expert platform and forum to continuously monitor legal and ethical rules and instruments
- Revise AI legislation with emphasis on preventing discrimination, protecting rights and privacy

Data & Digital Infrastructure

- Implement program to collect and protect high quality health care data
- Make medical and transport data available for research purposes
- Establish digital infrastructure and processes for efficient provision of open data
- Establish competence centres, certification and evaluation laboratories, and centres of excellence for cybersecurity

AI in Government

- Establish start-up support program on AI applications for public sector and public services
- Launch AI pilot projects in public administration and health care
- Introduce AI elements into judiciary

Inclusion

- Revise AI legislation with an emphasis on preventing discrimination, protecting rights and privacy
- Support older and low-skilled people and reducing gender segregation in labour market

Source: https://www.mpo.cz/assets/en/guidepost/for-the-media/press-releases/2019/5/NAIS_eng_web.pdf



TITLE: National Strategy for Artificial Intelligence

FUNDING: DKK 60 million (US\$8.9 million) earmarked for 2019-2027
(at time of publication; Jan 2020 conversion rate)

OVERALL GOAL OF AI STRATEGY: Denmark should become a frontrunner when it comes to the responsible development and use of AI

POLICY ELEMENTS



Research

- Further prioritise research into digital technologies such as AI
- Engage in dialogue with public research funding foundations to clarify support options for research projects within AI and data science

AI Talent

- AI will be part of the focus of a national centre for research into new digital technologies, supported by Innovation Fund Denmark, to build talent pool

Future of Work

- A working group will examine whether there is need to launch initiatives such as new education programs, analyses and development projects

Industrial Policy

- Danish Growth Fund will manage investment pool to partner with private investors and co-invest in Danish AI businesses

Ethics

- Six ethical principles for AI (self-determination, dignity, responsibility, explainability, equality and justice, development) that reflect Danish values
- Establish Data Ethics Council
- Draw up additional guidelines for data ethics, transparency, security and regulations

Data & Digital Infrastructure

- Develop freely-available Danish language resource to support language technologies
- Identify five public-sector data sets to make available for businesses and researchers
- Launch test projects to develop AI solutions that make better use of public data
- Establish secure cloud environments for public data
- Create tools, guidelines and data-ethics label for businesses to responsibly use data

AI in Government

- Engage universities to improve digital competencies of central government employees
- Work with regions and municipalities to fund and implement signature projects in a number of public service areas to test AI solutions

Inclusion

- One of the six ethical principles is "Equality and justice", which stipulates AI should not reproduce prejudices against marginalised groups, with active work to prevent unwanted bias and promote designs that avoid discrimination
- Encourage demographic and professional diversity in workforce

Source: https://en.digst.dk/media/19337/305755_gb_version_final-a.pdf



TITLE: National AI Strategy 2019–2021

FUNDING: At least €10 million (US\$11 million) for 2019–21
(at time of publication;
Jan 2020 conversion rate)

OVERALL GOAL OF AI STRATEGY: To advance the takeup of AI in both private and public sector, to increase the relevant skills and R&D base as well as to develop the legal environment

POLICY ELEMENTS



Research

- Fund research in AI and machine learning, data science and big data, and robot-human cooperation under IT Academy program
- Fund applied research by companies

AI Talent

- Train at least 50 master’s students in specialized program in data science (including AI) between 2020–23
- Fund at least 20 doctoral students specializing in AI in two years
- Hire at least 8 lecturers to teach AI across disciplines

Future of Work

- Support development of AI electives for postgraduate studies
- Incorporate AI into general education curriculum
- Create online courses to raise public awareness of AI
- Develop training program on application of AI for business leaders

Industrial Policy

- Establish Estonian AI Digital Innovation Hub
- Renew governmental support for digitalization of companies
- Launch innovation competition to fund up to 10 projects utilizing governmental datasets
- Support at least 40 pilot projects of AI product development and 20 projects at higher readiness level

Ethics

- Draft proposal for principles of responsible use of data
- Create guidance materials for launching and evaluating AI projects, including responsible development and sustainable management of AI solutions, methodology for impact assessment, etc

Data & Digital Infrastructure

- Develop open data portal
- Conduct data audits in state agencies
- Implement 2018 national strategy for cyber and information security

AI in Government

- Create Chief Data Officer positions in government ministries
- Develop training modules for public sector managers
- Fund research on AI-based decision-making support
- Fund pilot projects for digital government
- Create technological sandboxes to test and develop public sector AI applications

Inclusion

- N/A

Source: https://f98cc689-5814-47ec-86b3-db505a7c3978.filesusr.com/ugd/7df26f_27a618cb80a648c38be427194affa2f3.pdf



TITLE: Coordinated Plan on AI

FUNDING:

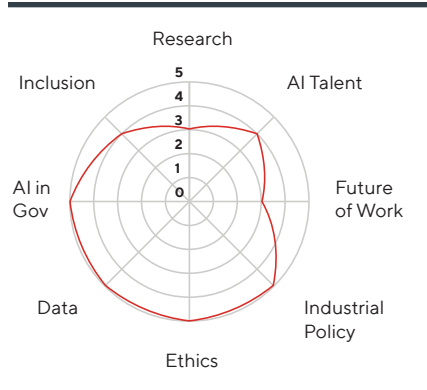
(at time of publication; Jan 2020 conversion rate)

- At least €1 billion (US\$1.1 billion) per year from Horizon Europe and Digital Europe Programme dedicated to AI research
- €100 million (US\$110 million) in 2020 to support AI and blockchain startups and scale-ups
- €50 million (US\$55 million) from Horizon 2020 to support networks of AI research excellence centres
- €390 million (US\$430 million) in 2019-20 and €1.5 billion (US\$1.6 billion) beyond 2020 to develop testing platforms and pilots
- €100 million (US\$110 million) in 2019-20 and €900 million (US\$990 million) beyond 2020 to support Digital Innovation Hubs
- €700 million (US\$770 million) beyond 2020 to support advanced skills through master's degrees and traineeships
- More than €1.2 billion (US\$1.3 billion) to develop data tools and platforms

OVERALL GOAL OF AI STRATEGY:

For Europe to become the world-leading region for developing and deploying cutting-edge, ethical and secure AI, promoting a human-centric approach in the global context

POLICY ELEMENTS



Research

- Increase investment in AI research
- Encourage member states to develop national AI strategies by mid-2019
- Create tighter networks of European AI research excellence centres

AI Talent

- Encourage member states to exchange best practices on how to retain AI talent
- Use EU Blue Card system to attract and retain AI professionals and entrepreneurs in Europe
- Include component of PhD and post-PhD programs in call for AI research excellence centres to train industrially-oriented PhDs and keep them in Europe after training

Future of Work

- Encourage member states to exchange best practices on how to re- and upskill existing workforce
- Issue report by early 2020 on how to incorporate AI into curricula of secondary and tertiary education and vocational training
- Support inclusion of AI modules in master's and adult training programs

Industrial Policy

- Finance portfolio of AI companies
- Develop EU-wide investors community focusing on AI
- Pilot European Innovation Council to support scaling up of startups and SMEs
- Encourage member states to support innovation through national promotional banks, innovation vouchers, etc
- Set up Digital Innovation Hubs to foster AI uptake by companies
- Establish world reference testing facilities with possibility of regulatory sandboxes

Ethics

- Help forge global consensus on ethical implications of AI
- Develop Ethics Guidelines for Trustworthy Artificial Intelligence, released Apr 2019 (**3 components:** lawful, ethical, robust; **4 principles:** Respect for human autonomy, Prevention of harm, Fairness, Explicability; **7 key requirements:** Human agency and oversight; Technical robustness and safety; Privacy and data

governance; Transparency; Diversity, non-discrimination and fairness; Societal and environmental wellbeing; Accountability)

Data & Digital Infrastructure

- Increase investment in AI research
- Encourage member states to develop national AI strategies by mid-2019
- Create tighter networks of European AI research excellence centres

AI in Government

- Deploy EU-wide AI-enabled services in areas of public interest
- Engage in EU-wide exchange of best practices and experiences of using AI in public service delivery
- Identify areas for joint procurement of AI solutions
- Offer AI-enabled eTranslation to public administrations in member states
- Experiment with AI-enabled public service through Digital Innovation Hubs
- Develop integrated earth observation and AI solutions to support evidence-based policy making

Inclusion

- Pay particular attention to inclusion in AI training priorities and attract more women to AI studies

Source: <https://ec.europa.eu/digital-single-market/en/news/coordinated-plan-artificial-intelligence>



TITLE: Leading the way into the age of artificial intelligence

FUNDING:

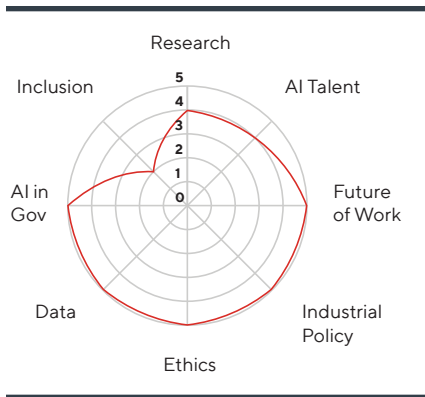
(at time of publication; Jan 2020 conversion rate)

- €200 million AI Business Programme (2018-22, US\$220 million) to accelerate Finnish companies in AI and platform economy (<https://www.businessfinland.fi/en/for-finnish-customers/services/programs/ai-business/>)
- €8.3 million flagship funding (2019-22, US\$9.2 million) for Finnish Center for AI
- €17.8 million (2018, US\$21 million) grants from Academy of Finland for AI research
- more than €40 million (US\$47 million) for equipment, research infrastructure, data management and education

OVERALL GOAL OF AI STRATEGY:

Leverage existing strengths to become the global leader in the application of AI

POLICY ELEMENTS



Research

- Increase funding for AI research at Finnish Centre for AI and other institutions
- Develop national development and innovation strategy for the exploitation of AI technologies

AI Talent

- Train, retain and attract AI talent through stronger investment and enhanced visibility of Finnish AI expertise
- Invest in systematic international partnerships with the top institutions to train experts
- Continue programs such as Talent Boost to attract international talent

Future of Work

- Create extensive provision of online courses for adult population to supplement and renew competences
- Open up university courses to all those who want to participate, ensuring flexibility of study modules
- Explore learning vouchers for every Finn of working age
- Improve social security system to ensure smooth transition

Industrial Policy

- Vake Oy (Finnish State Development Company) will invest in promising technology businesses and launch development projects, with AI as first theme
- Continue and expand AI Accelerator

Ethics

- Balance protection of privacy and other rights with benefits of AI
- Make Finland an international testbed for AI ethics implementation
- Establish a national ethics council for technology
- Involve citizens in discussions about ethics and societal impacts
- Encourage industry to self-regulate and share best practices
- Increase interdisciplinary long-term research on the societal impacts

Data & Digital Infrastructure

- Support development of testbeds and integrate into Finnish Digital Innovation Hub network
- Develop sandboxes for testing data exploitation and value-added services, with goal of developing regulation for portability of publicly-owned personal data
- Develop “Small Data” AI solutions
- Invest in RDI in digital security ecosystem and toolbox

AI in Government

- Implement AuroraAI, a platform for organizations to come together and provide “human-centred” public service

Inclusion

- Must ensure that norms built into AI systems respect fundamental human rights, equality of citizens and the realization of democracy

Source: http://julkaisut.valtioneuvosto.fi/bitstream/handle/10024/161688/41_19_Leading%20the%20way%20into%20the%20age%20of%20artificial%20intelligence.pdf



FRANCE

TITLE: AI for Humanity: French Strategy for Artificial Intelligence

FUNDING: €1.5 billion (US\$1.7 billion) over five years
(at time of publication;
Jan 2020 conversion rate)

OVERALL GOAL OF AI STRATEGY: Strengthen France’s AI ecosystem, leverage public data, fund specific sectors, and create regulations for AI

POLICY ELEMENTS



Research

- National AI Programme: network of four to five AI research institutes

AI Talent

- Attract and train talent in institutes
- Research chairs
- Double trained AI practitioners in five year

Future of Work

- N/A

Industrial Policy

- Funding for AI startups and industrial projects
- European DARPA-style organization
- Attract private sector FDI
- Fund “national champions”

Ethics

- International group of experts to develop ethical framework
- All public algorithms be transparent and explainable

Data & Digital Infrastructure

- Open data policy for growth
- Shared data platforms
- Health data hub
- Personal privacy protection

AI in Government

- Use AI to improve public services

Inclusion

- Encourage diversity in AI
- Government investment in companies that demonstrate non-discriminatory AI

Source: <https://www.aiforhumanity.fr/en/>



GERMANY

TITLE: AI Made in Germany

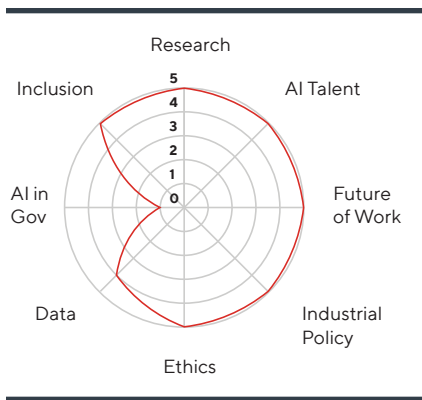
FUNDING: (at time of publication; Jan 2020 conversion rate)

- €500 million allocated in 2019 federal budget
- Intention for €3 billion up to 2025 (US\$553 million, US\$3.3 billion)

OVERALL GOAL OF AI STRATEGY:

- A framework for a holistic policy on the future development and application of AI in Germany
- Make Germany and Europe a leading centre for AI and thus help safeguard Germany’s competitiveness in the future
- A responsible development and use of AI which serves the good of society
- Integrate AI in society in ethical, legal, cultural and institutional terms in the context of a broad societal dialogue and active political measures

POLICY ELEMENTS



Research

- Develop national network of at least 12 Centres of Excellence for AI and application hubs
- Develop Franco-German R&D network
- Form European innovation cluster and fund collaborative research

AI Talent

- Launch program to support junior researchers
- Create at least 100 new professorships for AI

Future of Work

- Establish regional Centres of Excellence for Labour Research
- Establish German AI Observatory to monitor and assess impact of AI on work and society
- Examine how to audit AI use in companies
- Launch National Further Training Strategy
- Use skills monitoring system to inform Skilled Labour Strategy
- Strengthen or create new legal safeguards for the right of works councils for codetermination at workplaces

Industrial Policy

- Strengthen and expand technology transfer structure
- Provide funding for joint business-academic collaborations to create pilot AI applications
- Increase AI-specific support for SMEs
- Support establishment of test beds and “living labs” for technologies and business models
- Create road shows and demonstration centres for commercial pilot projects
- Strengthen existing and new funding instruments for start-ups

Ethics

- Promote research into transparent and explainable AI systems and research into new ways of protecting privacy
- Review legal framework governing data use in AI applications and ensure use is in line with non-discrimination and right to privacy

Data & Digital Infrastructure

- Expand provision of open government data for unrestricted further use
- Develop criteria for companies to build data partnerships
- Fund development of standards for data formats and interfaces

AI in Government

- Use AI in public sector to improve efficiency, quality and security of services

Inclusion

- Establish Digital Work and Society Future Fund to create nation-wide centre of excellence for overarching and inclusive measures in participatory social shaping of technology
- Ensure development of “people-focused” AI applications, with fostering and adequately representing diversity as a guiding principle

Source: https://www.ki-strategie-deutschland.de/home.html?file=files/downloads/Nationale_KI-Strategie_engl.pdf

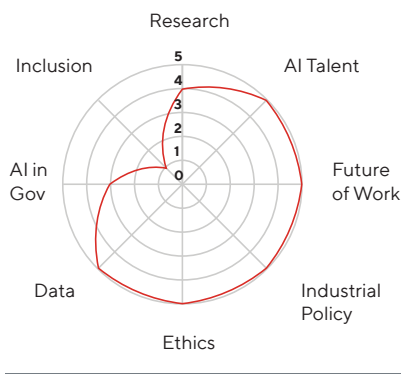


TITLE: National Strategy for Artificial intelligence: #AIforAll

FUNDING: N/A
(at time of publication;
Jan 2020 conversion rate)

OVERALL GOAL OF AI STRATEGY: Leverage AI for economic growth, social inclusion, and inclusive growth – #AIforAll

POLICY ELEMENTS



Research

- Two tiered research strategy – new centres for basic research and new centres for applied research

AI Talent

- AI Fellowships
- Faculty chairs in AI

Future of Work

- Task force for employment changes
- Data science training camp
- MOOCs and bridge courses for non AI specialists

Industrial Policy

- Health, education, agriculture, mobility, and cities
- National AI Marketplace
- Startup incubation hubs

Ethics

- Ethics councils at each research centre
- Sector specific guidelines for privacy, security, and ethics

Data & Digital Infrastructure

- Open data platforms
- India specific annotated datasets
- National AI marketplace
- Data protection framework

AI in Government

- Educate policymakers about AI
- Adopt AI solutions in government to create social impact

Inclusion

- Overarching goal of strategy is to leverage AI for inclusion: create AI that has social impact

Source: https://niti.gov.in/writereaddata/files/document_publication/NationalStrategy-for-AI-Discussion-Paper.pdf



JAPAN

TITLE: Artificial Intelligence Technology Strategy

FUNDING: N/A
(at time of publication;
Jan 2020 conversion rate)

OVERALL GOAL OF AI STRATEGY: Industrialize AI in priority sectors related to social issues Japan and world faces

POLICY ELEMENTS



Research

- Existing research centres will become new hubs for industry-academia-government AI R&D projects

AI Talent

- Address shortage of AI talent: new education programs; attract talent with AI centres; provide higher salaries

Future of Work

- N/A

Industrial Policy

- Industrialization roadmap for health, medical care and welfare and mobility
- Provide support for startups

Ethics

- N/A

Data & Digital Infrastructure

- Improve data maintenance
- Create environments to test AI

AI in Government

- N/A

Inclusion

- N/A

Source: <http://www.nedo.go.jp/content/100865202.pdf>

https://japan.kantei.go.jp/97_abe/actions/201604/12article6.html

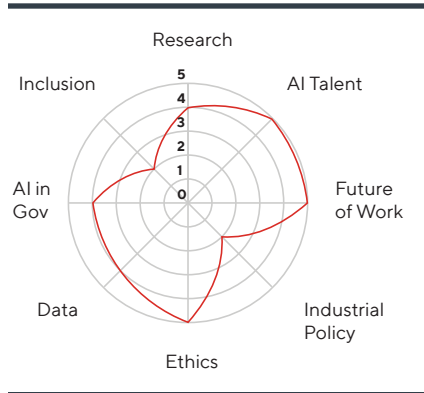


TITLE: Lithuanian Artificial Intelligence Strategy: A Vision of the Future

FUNDING: N/A
(at time of publication;
Jan 2020 conversion rate)

OVERALL GOAL OF AI STRATEGY: To modernize and expand the current AI ecosystem in Lithuania and ensure that the nation is ready for a future with AI

POLICY ELEMENTS



Research

- Create dedicated AI research funding program
- Increase funding for AI R&D programs by 70% by 2020
- Establish national AI research centre
- Increase funding for university hardware for AI research

AI Talent

- Create AI Fast Track online portal for university AI programs
- Refocus university IT programs
- Plan master's program on AI systems
- Fund PhD research on AI systems

Future of Work

- Create classwork to teach AI starting in early education
- Create field-specific semester course on AI in university
- Create vocational training programs and MOOCs in AI

Industrial Policy

- Incentivize sectoral leaders to implement AI
- Create AI startup hub
- Develop individual approaches for key economic sectors

Ethics

- Establish multidisciplinary AI ethics committee to review impact of technology
- Develop public feedback system for regulations
- Make additional investments to advance AI safety and security, including explainability and transparency, trust, and validation
- Create national interdisciplinary centre on AI to promote discussions

Data & Digital Infrastructure

- Sandbox to open up public sector data for development of AI tools
- Establish public sector data team
- Work with data scientists to create model for data management and revise data infrastructure

AI in Government

- Create regulatory sandbox for use and testing of AI in public sector
- Assist public institutions in implementing AI systems, for better services and optimized internal workflow
- Establish Lithuanian AI Advisory Board to assist government decisions on AI policy

Inclusion

- Support research to reduce bias

Source: <http://kurkit.lt/wp-content/uploads/2018/09/StrategyIndesignpdf.pdf>

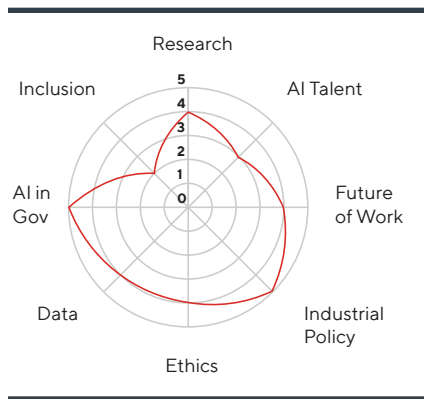


TITLE: Artificial Intelligence: A Strategic Vision for Luxembourg

FUNDING: N/A
(at time of publication;
Jan 2020 conversion rate)

- OVERALL GOAL OF AI STRATEGY:**
- To be among the most advanced digital societies in the world, especially in the EU
 - To become a data-driven and sustainable economy
 - To support human-centric AI development

POLICY ELEMENTS



Research

- Actively support European AI research network and cross-border AI initiatives
- Be a “living laboratory” for applied AI, with focus on personalized medicine, financial services and world-reference testing facilities for autonomous vehicles

AI Talent

- Include AI skills in government talent attraction strategy
- Share best practices for reinforcing excellence and retaining talent in Europe

Future of Work

- Digital Skills Bridge to upskill current workforce
- Develop digital training modules for general public
- Explore incorporating AI into school curricula and vocational training

Industrial Policy

- Finance portfolio of AI companies with public investment funds
- Create new incentive mechanisms and PPPs to unlock private investments for AI development
- Use Luxinnovation’s Digital Innovation Hub to stimulate applied research, funding of AI products and services by startups, etc.

Ethics

- Promote EC HLEG’s Ethics Guidelines for Trustworthy AI
- Set up governmental technology & ethics advisory committee to discuss ethical AI implementations
- Collaborate with key bodies to accelerate adoption of proper AI corporate governance

Data & Digital Infrastructure

- Relaunch open data policy with new roadmap
- Support development of data infrastructure to enhance data quality and accessibility, including sandboxes for AI services
- Actively adopt and contribute to international standards for open data and open source tools

AI in Government

- Foster research to assess AI systems for public sector
- Contribute to development of AI solutions to build more efficient and personalized public administration services
- Use AI tools to support implementation of government’s Digital by Default initiative (<https://digital-luxembourg.public.lu/initiatives/digital-default-principles>)

Inclusion

- AI products / services should better engage Luxembourg’s diverse, multilingual and multicultural society

Source: https://digital-luxembourg.public.lu/sites/default/files/2019-05/AI_EN.pdf



TITLE: Malta: The Ultimate AI Launchpad – A Strategy and Vision for Artificial Intelligence in Malta 2030

FUNDING: (at time of publication; Jan 2020 conversion rate)

- €1 million (US\$1.1 million) through Tech.mt to promote Maltese businesses
- €5 million (until 2023; US\$5.5 million) through Investing in Skills program to help employed people increase knowledge and skills

OVERALL GOAL OF AI STRATEGY: Become the "Ultimate AI Launchpad" – a place in which local and foreign companies and entrepreneurs can develop, prototype, test and scale AI, and ultimately showcase the value of their innovations across an entire nation primed for adoption

POLICY ELEMENTS



Future of Work

- Launch national campaign to build awareness
- Establish think tank to develop policy for technology's impact on workforce
- Launch national reskilling program
- Develop measures to help employers invest in on-the-job training
- Offer professional certification courses
- Fund AI Olympiad for primary and secondary school students
- Develop AI training for educators
- Introduce AI modules in postsecondary curriculum

Data & Digital Infrastructure

- Invest in development of Maltese language tools
- Set up data sandbox for organizations looking to use personal data to develop and test AI products and services
- Incentivize further investment in data centres
- Increase public datasets available through Malta Data Portal
- Prepare roadmap for integrating sensors-based data into national open data platforms
- Expand access to computing and cloud infrastructure

Research

- Develop digital collaboration platform for government, research institutes and private sector
- Invest to strengthen academic and applied AI research at higher-ed institutions
- Support AI-related research commercialization programs and technology development
- Incentivize companies to undertake AI R&D and employ those with doctoral degrees

AI Talent

- Create tax incentive for employees in AI-related roles
- Develop Applied AI Platform at University of Malta to increase courses and research
- Provide scholarships for postgraduate studies in AI
- Launch new AI programs at Malta College of Arts, Science & Technology

Industrial Policy

- Partner with internationally renowned startup accelerator to run program in Malta
- Malta IT Agency's early stage accelerator, YouStartIT, will provide seed capital grant to help startups validate and develop early proofs-of-concept
- Provide additional support for AI ventures via TAKEOFF Seed Fund Award
- Establish investment fund with private co-investment for startups and scale-ups
- Launch startup visas for entrepreneurs
- Develop AI readiness toolkits for businesses
- Create Digital Innovation Hub for businesses to access technical expertise

AI in Government

- Collaborate with researchers, startups and companies to pilot and deploy AI solutions in Malta
- Launch awareness campaign and update training curricula for public officers
- Develop guidance documents and technical policy statements for AI adoption in public services and internal administration
- Implement AI pilot projects across various ministries
- Establish Technology Regulation Advisory Committee to assess laws with respect to new technologies and work on establishing regulatory sandbox

Ethics

- Finalize and implement AI Ethical Framework
- Set up National Technology Ethics Committee
- Launch national AI certification program for systems developed in ethically aligned, transparent and socially responsible manner

Inclusion

- N/A

Source: https://malta.ai/wp-content/uploads/2019/11/Malta_The_Ultimate_AI_Launchpad_vFinal.pdf



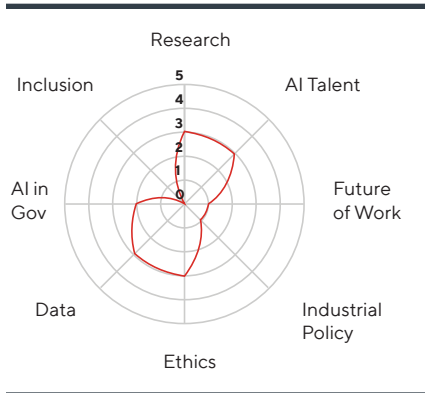
MEXICO

TITLE: Towards an AI Strategy in Mexico: Harnessing the AI Revolution

FUNDING: N/A
(at time of publication;
Jan 2020 conversion rate)

OVERALL GOAL OF AI STRATEGY: Set a strategic direction, invest in data and research, and support learning to help adapt to technological change

POLICY ELEMENTS



Research

- National centre for AI research
- Strengthen academia-industry connections
- Create an AI government fund

AI Talent

- Increase master’s and PhD students in AI and data science
- Tools for continued education in AI (MexicoX)

Future of Work

- Broaden AI learning beyond STEM students in public and private universities

Industrial Policy

- Prioritize support for local AI startups

Ethics

- Create a Mexican AI Ethics Council

Data & Digital Infrastructure

- Maintain a resilient open data infrastructure
- Training data to inform AI applications
- Protect personal privacy

AI in Government

- Strategically use government procurement to create AI technologies

Inclusion

- N/A

Source: https://docs.wixstatic.com/ugd/7be025_e726c582191c49d2b8b6517a590151f6.pdf



TITLE: Strategic Action Plan for Artificial Intelligence

- FUNDING:** (at time of publication; Jan 2020 conversion rate)
- €65m for start-up and scale-up strategy
 - €200m for individual training and development budget
 - €3m for research on impact of digital tech
 - €2.3m for research on responsible AI
 - €110m for measures related to higher-ed

OVERALL GOAL OF AI STRATEGY: Capitalise on AI's societal and economic opportunities, as well as to safeguard the public interests of AI, thus contributing to prosperity and well-being

POLICY ELEMENTS



Future of Work

- Provide individual training and development budget to citizens, and work with employers, sectors and tax agency to encourage employer investment in employee training
- Invest in research on impact of digital technologies
- Evaluate and improve Lifelong Learning program for adults
- Provide funding for vocational colleges to improve connection to labour market
- Fund sector plans and education innovation in universities
- Implement digital literacy in curriculum

Industrial Policy

- Increase access to innovation financing for startups via innovation credit, seed capital, scale-up fund, and regional development corporations
- AI will be one of the focus areas for InvestNL (public investment fund)
- Provide knowledge and training to SMEs via smart industry hubs and data value hubs

Ethics

- Fund research into AI's implications for public values, law, privacy
- Set up "transparency lab" for government organizations to exchange knowledge on transparency, explainability and accountability
- Engage in cross-government conversations about considerations in making algorithms public
- Work with Dutch AI Coalition to ensure companies involved in implementing EU HLEG ethics guidelines
- Fund research into responsible AI use and transparency of algorithms

- Contribute to development of AI standards
- Evaluate if regulators are equipped to monitor algorithms
- Modernize and better enforce consumer protection and anti-competition rules

Data & Digital Infrastructure

- Make government data available for reuse
- Organize sector dialogues on data sharing bottlenecks and needs
- Include AI applications in innovation plans for network and connectivity

AI in Government

- Increase AI and digital competence of civil servants, e.g., through online courses
- Develop implementation toolbox for innovative technologies within government
- Develop tools such as chatbots for public service
- Experiment with text-mining for applications such as searching archive or council documents
- Use Small Business Innovation Research Programme competitions, procurement legislations and other instruments to stimulate private sector innovation in developing AI solutions for societal issues

Inclusion

- Netherlands will chair EC working group on AI and gender and will issue opinion in spring 2020

Source: <https://www.rijksoverheid.nl/documenten/beleidsnotas/2019/10/08/strategisch-actieplan-voor-artificiele-intelligentie>

Research

- NWO (Dutch Research Council) will formulate AI research agenda (published Nov 2019)
- Set up multi-year programs for key application areas for AI innovation
- Establish AI Knowledge Centre based on Dutch research strengths
- Ensure visible involvement in broad European collaborations on AI
- Actively seek cooperation with countries outside Europe

AI Talent

- Optimize residency rules and tax laws to attract talent



TITLE: The National Strategy for Artificial Intelligence

FUNDING: N/A
(at time of publication;
Jan 2020 conversion rate)

OVERALL GOAL OF AI STRATEGY: For Norway to take the lead in developing and using AI that respects individuals' rights and freedoms

POLICY ELEMENTS



Research

- Continue to support ICT research, including through Technology Initiative escalation plan
- Encourage research cooperation between academia and industry
- Continue to pursue participation in EU research programs

AI Talent

- Set expectations for universities to design AI study programs to meet market needs and integrate AI into study programs where relevant
- Establish knowledge base to monitor trends in AI study places and candidates

Future of Work

- Under 2020 Curriculum Renewal, make natural science a more exploratory and practical subject
- Present white paper on skills reform for lifelong learning
- Make online AI course available in Norwegian
- Implement Skills Program for employees needing new skills

Industrial Policy

- Continue to support businesses starting up AI project through SkatteFUNN tax deductions and Researcher Pool (apply for hours of assistance from research to develop idea and get feedback)
- Enable Digital Innovation Hubs to help SMEs apply AI
- Engage nonprofit DigitalNorway to help SMEs take more advantage of AI
- Support business clusters to promote business development in AI, through current Innovation Norway - Research Council of Norway - Siva (Industrial Development Corporation of Norway) joint program

Ethics

- Set transparency and accountability requirements in public administration systems involving AI
- Establish advisory body and regulatory sandbox on privacy and data protection
- Encourage AI development and use according to EC HLEG ethical principles
- Encourage industry to establish responsible use standards
- Encourage schools to give ethics a central place in AI programs
- Establish Digital Clearinghouse Norway, a forum for consumer protection and supervisory authorities

Data & Digital Infrastructure

- Establish resource centre for data sharing
- Establish principles for extracting and managing data from central registries
- Consider policy instruments for industries to more easily share data while safeguarding privacy and security
- Consider areas of public interest in business sector data where access may be required
- Recommend that text produced by public sector be deposited at National Library and made available for developing language technology
- Accelerate broadband deployment
- Continue to establish Norway as attractive host of data centres

AI in Government

- Develop guidance on responsible use of AI in public administration
- Establish health analysis platform to streamline health data access for research and analysis
- Prepare strategy for digital competence in public sector
- Run pilot AI projects in public sector
- Facilitate cooperation and sharing best practice within government via Digitalization Agency
- Establish public-private innovation partnership

Inclusion

- Present white paper on indigenous Sami language, culture and society with focus on digitalization

Source: https://www.regjeringen.no/contentassets/1febbbb2c4fd4b7d92c67ddd353b6ae8/en-gb/pdfs/ki-strategi_en.pdf

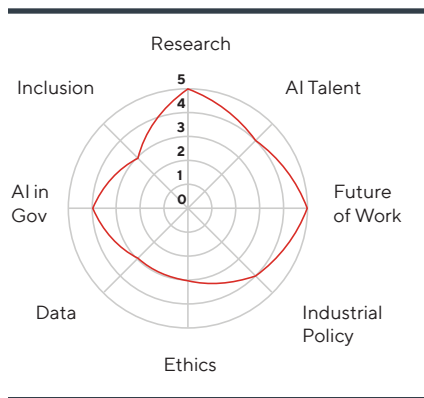


TITLE: AI Portugal 2030

FUNDING: N/A
(at time of publication;
Jan 2020 conversion rate)

OVERALL GOAL OF AI STRATEGY: An innovation and growth strategy to foster Artificial Intelligence in Portugal in the European context

POLICY ELEMENTS



Research

- Participate in developing Europe-wide network of centres of excellence for AI R&D
- Focus on areas of research strength (natural language processing, real-time decision making, AI for software development, AI for edge computing), areas relevant to investment by European companies (e.g., sustainable cities and energy systems, mobility, health, cybersecurity), and fundamental research (e.g., transparent AI, emotional AI, computational creativity)

AI Talent

- Promote development of master’s and PhD programs
- Attract international talent, including through “Study and Research in Portugal Initiative”

Future of Work

- Develop Regional/Local Networks for Digital Qualification
- Promote and develop adult training for reskilling and upskilling
- Launch e-learning courses
- Incorporate computer studies curriculum into all levels of education, involving schools, science clubs, “Coding Fests”, etc

Industrial Policy

- Foster industry-academia collaboration with innovation vouchers, framework contracts, etc
- Set up digital innovation hubs and AI-on-demand platforms
- Develop regulatory sandboxes

Ethics

- AI will need to be transparent and accountable, and protect privacy and fairness
- Need to develop best practices for assessing AI risks and ethics and mechanisms to detect and prevent misuse
- Adjust legal framework to determine liability in conflicts involving AI decision making

Data & Digital Infrastructure

- Develop National Data Infrastructure as central repository for administrative data
- Promote availability of adequate computing infrastructure

AI in Government

- Create Collaboratory Lab for AI in the Public Administration
- Reinforce public sector AI and data science qualification programs
- Fund collaborative projects between public sector and academia to develop administrative innovation solutions

Inclusion

- “Digital inclusion” is at centre of Portugal’s digital strategy, using “Creative Communities for Digital Inclusion” initiative to help vulnerable and digitally excluded communities (particularly those due to age, lack of qualifications or ethnicity) develop tools and understanding of benefits and risks of AI and achieve digital autonomy

Source: https://www.incode2030.gov.pt/sites/default/files/julho_incode_brochura.pdf



TITLE: Blueprint: National Artificial Intelligence Strategy for Qatar

FUNDING: N/A
(at time of publication;
Jan 2020 conversion rate)

OVERALL GOAL OF AI STRATEGY: To have AI so pervasive in all aspects of life, business and governance in Qatar that everyone looks up to Qatar as a role model for AI+X nation

POLICY ELEMENTS



Research

- Ensure global leadership in AI research in strategic domains, such as oil & gas and health
- Lead AI development for Arabic language processing

AI Talent

- Design degree programs with AI apprenticeship pathways
- Adopt internationally competitive incentives to attract talent

Future of Work

- Develop strong academic and experiential K-12 curriculum
- Run AI bootcamps for those already in workforce
- Encourage local businesses to adopt AI solutions rather than low-cost labour
- Train citizens to manage and build AI solutions

Industrial Policy

- Direct startup funds and incubators to focus on AI technology
- Build stable regulatory and incentive framework to attract international AI businesses to incorporate in Qatar

Ethics

- Introduce guidelines for level of explainability for different types of decisions by AI algorithms
- Build up existing guidelines on privacy and data sharing
- Develop AI ethics and governance framework that is consistent with Qatari norms and international guidelines

Data & Digital Infrastructure

- Develop governance rules and guidelines for data sharing
- Launch and lead multilateral diplomatic efforts for data sharing among countries
- Develop and maintain cutting edge computing and connectivity infrastructure
- Launch international efforts for AI standards
- Use FIFA 2022 to collect data (e.g., on logistics) and pilot AI applications

AI in Government

- Augment existing digital government services with AI capabilities

Inclusion

- N/A

Source: https://qcai.qcri.org/wp-content/uploads/2019/02/National_AI_Strategy_for_Qatar-Blueprint_30Jan2019.pdf

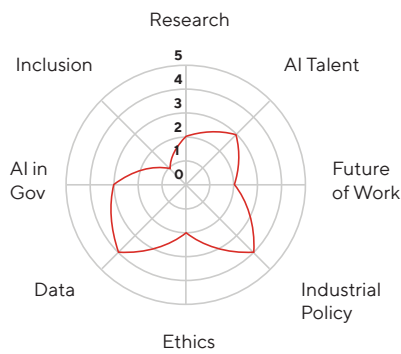


TITLE: National Strategy for the Development of Artificial Intelligence

FUNDING: (at time of publication; Jan 2020 conversion rate) Funding will be provided by federal budget, state extrabudgetary foundation funds, development institutions, state-owned companies, and private investments

OVERALL GOAL OF AI STRATEGY: For the Russian Federation’s entry into the group of world leaders in the field of the development and introduction of artificial intelligence technologies, and consequently, for the country’s technological independence and competitiveness

POLICY ELEMENTS



Research

- Provide priority support for relevant basic and applied research
- Attract investments in development of AI technologies
- Expand research infrastructure, including researchers’ access to datasets
- Develop international cooperation
- Enhance efficiency of evaluating researchers

AI Talent

- Assure competitive financial remuneration of specialists
- Create conditions, such as salary and immigration laws, to attract specialists including Russians working abroad as well as foreign nationals
- Develop educational modules, advanced training and professional retraining in AI-relevant fields

Future of Work

- Incentivize employers to help employees acquire AI skills
- Inform public of benefit and safety of using AI-based technological solutions

Industrial Policy

- Create incentives to attract private investment
- Simplify implementation of pilot projects
- Assure Russian self-sufficiency by supporting domestic development of processors, electronic components and optical elements
- Create favourable legal conditions for data access, simplified testing and introduction of AI solutions

Ethics

- Reliably protect access to personal data
- Formulate ethical rules for human interaction with AI

Data & Digital Infrastructure

- Assure conditions for creating open source AI libraries and standards for security, compatibility, reference software architecture and test environments
- Formulate unified and updated methodologies for description, collection and labeling of data, together with mechanism for monitoring compliance
- Modernize public platforms for dataset storage
- Create legal and regulatory framework for storage of data within Russia and priority access for Russian authorities and organizations

AI in Government

- Establish procedures for delegating individual decision making to AI systems during performance of state functions by public authorities

Inclusion

- Basic principles to be observed in Strategy implementation include protection of human rights and liberty, and nondiscriminatory access to knowledge, skills and products

Source: https://cset.georgetown.edu/wp-content/uploads/t0060_Russia_AI_strategy_EN-1.pdf

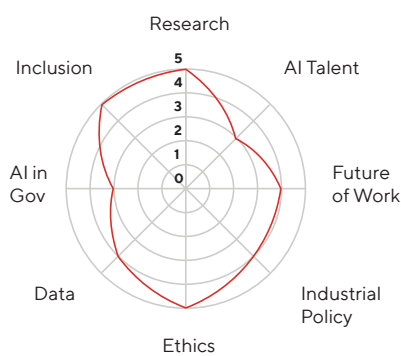


TITLE: Strategy for the Development of Artificial Intelligence in the Republic of Serbia for the period 2020–2025

FUNDING: Around €90 million (US\$99 million)
(at time of publication;
Jan 2020 conversion rate)

OVERALL GOAL OF AI STRATEGY: The use of artificial intelligence in favor of economic growth, employment and improvement of the quality of life

POLICY ELEMENTS



Research

- Increase funding for AI research institutions and projects, particularly in priority fields with exceptional application potential
- Support cooperation of research institutes, business and public sector through Science Fund and Innovation Fund
- Establish AI Institute, with 2025 goals of 50 researchers, 30 master’s or PhD students, 10 collaborative projects with business sector

AI Talent

- Develop AI master’s and PhD programs

Future of Work

- Develop digital skills in primary and high schools
- Establish minimal standards for AI topics in undergraduate programs
- Develop professional training for IT sector through short study programs and informal learning

Industrial Policy

- Provide training, infrastructure and other support for startups and SMEs
- Increase investment level in companies developing AI through Innovation Fund, Science Fund and other instruments
- Support AI application projects in areas of public interest
- Establish regulatory sandboxes

Ethics

- Develop and implement plan for personal data protection in AI applications, e.g., with certification
- Issue national ethical guidelines based on EC HLEG guidelines
- Ensure transparency, sustainability and ecological responsibility in AI development
- Encourage public dialogue on challenges from AI development and implementation

Data & Digital Infrastructure

- Open public data sets for AI development
- Incentivize private sector to donate data for reuse
- Establish National AI Platform as shared computation infrastructure resources for AI development

AI in Government

- Establish AI Council to coordinate state authorities and implement strategy
- Implement AI solutions in public sector, e.g., in healthcare and traffic control

Inclusion

- Develop ethical code, with recommendation that teams working on AI development be as diverse and representative as possible
- Organize educational workshops for AI development on preventing discrimination
- Organize competitions to develop tools to prevent bias and discriminatory data
- Establish regulations and define responsibilities for cases of discrimination in automated or AI-assisted decision making

Source: <https://www.srbija.gov.rs/tekst/en/149169>



SINGAPORE

TITLE: AI Singapore

FUNDING: S\$150 million (US\$111 million) over five years
(at time of publication;
Jan 2020 conversion rate)

OVERALL GOAL OF AI STRATEGY: Use AI to create social and economic impacts, build an AI ecosystem, and put Singapore on the world map for AI

POLICY ELEMENTS



Research

- Call for AI research proposals in explainability, learning from small datasets, AI safety, AI alignment, and AI creativity

AI Talent

- AI Apprenticeship Programme: a 9-month structured program to foster a new cohort of AI talent in Singapore

Future of Work

- N/A

Industrial Policy

- Develop an AI ecosystem: Grand Challenges, 100 Experiments

Ethics

- Ethics of AI is a suggested topic for funding in AI research

Data & Digital Infrastructure

- N/A

AI in Government

- N/A

Inclusion

- N/A

Source: <https://www.aisingapore.org/>



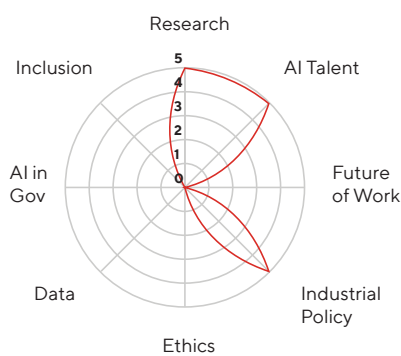
SOUTH KOREA

TITLE: Artificial Intelligence R&D Strategy

FUNDING: ₩2.2 trillion (US\$1.89 billion)
(at time of publication;
Jan 2020 conversion rate)

OVERALL GOAL OF AI STRATEGY: Transform South Korea into an AI heavyweight by 2022 and catch up to the U.S. and China in AI capabilities

POLICY ELEMENTS



Research

- Five new AI research centres to research how to integrate AI into robotics, bioscience, machinery, and automobiles

AI Talent

- Six new AI graduate programs by 2022 to train 5000 AI specialists

Future of Work

- N/A

Industrial Policy

- Large-scale projects in defence, medicine, and safety
- Asia AI Hub
- Semiconductor, supercomputer, AI chips

Ethics

- N/A

Data & Digital Infrastructure

- N/A

AI in Government

- N/A

Inclusion

- N/A

Source: <https://www.msit.go.kr/web/msipContents/contentsView.do?catelId=policycom2&artId=1382727>



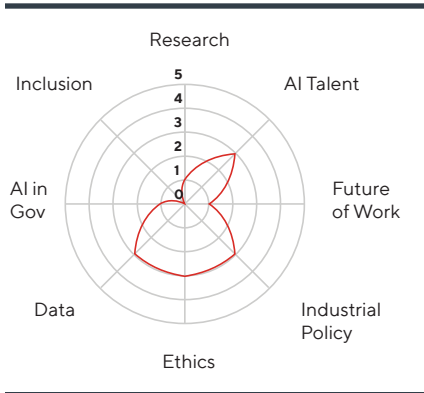
SWEDEN

TITLE: National Approach to Artificial Intelligence

FUNDING: N/A
(at time of publication;
Jan 2020 conversion rate)

OVERALL GOAL OF AI STRATEGY: Make Sweden a leader in harnessing the opportunities that AI can offer, with the aim of strengthening Sweden’s welfare and competitiveness

POLICY ELEMENTS



Research

- Focus on basic and applied research
- Build connection with international community
- Civil and defence research

AI Talent

- Increase training of AI professionals in universities
- AI components in non-technical programs for interdisciplinary perspectives on responsible use of AI

Future of Work

- Establish continuing and further education for practising professionals

Industrial Policy

- Launch pilot projects, test beds, and environments to speed up development of AI application

Ethics

- Develop rules, standards, norms and ethical principles to guide ethical and sustainable AI

Data & Digital Infrastructure

- Leverage high quality public data
- Protect personal privacy
- Review digital infrastructure

AI in Government

- Launch public sector innovation projects that use AI tools

Inclusion

- N/A

Source: <https://www.government.se/491fa7/contentassets/fe2ba005fb49433587574c513a837fac/national-approach-to-artificial-intelligence.pdf>



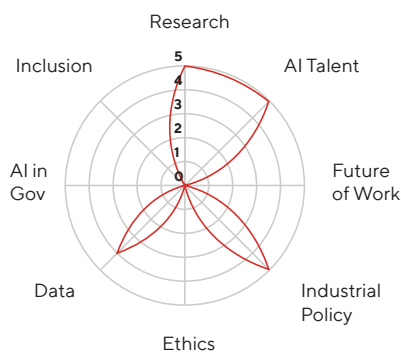
TAIWAN

TITLE: Taiwan AI Action Plan

FUNDING: NT\$36 billion (US\$1.2 billion) over four years
(at time of publication;
Jan 2020 conversion rate)

OVERALL GOAL OF AI STRATEGY: Build an AI Innovation ecosystem that makes Taiwan a hub for AI development and industries and applications

POLICY ELEMENTS



Research

- DARPA-like model for advanced AI research
- National AI Forward-looking Research Network

AI Talent

- AI Talent Program: 1,000 AI researchers, 10,000 AI professionals, recruit international talent

Future of Work

- N/A

Industrial Policy

- AI International Innovation Hub for 100 startups
- Integration into 5 + 2 industrial strategy

Ethics

- N/A

Data & Digital Infrastructure

- Open data test fields to test AI solutions
- Research relevant laws and regulations

AI in Government

- N/A

Inclusion

- N/A

Source: <https://ai.taiwan.gov.tw/#actionplan>

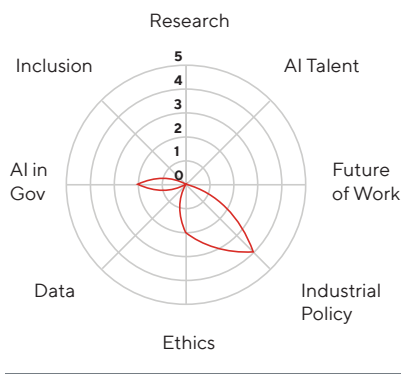


TITLE: UAE Strategy for Artificial Intelligence

FUNDING: N/A
(at time of publication;
Jan 2020 conversion rate)

OVERALL GOAL OF AI STRATEGY: Put AI at the centre of the government’s strategic plans to improve government performance and efficiency

POLICY ELEMENTS



Research

- N/A

AI Talent

- N/A

Future of Work

- N/A

Industrial Policy

- Apply AI to 9 sectors: health transport space, renewable energy, education, technology, water, environment, traffic

Ethics

- Considering a law on the safe use of AI

Data & Digital Infrastructure

- N/A

AI in Government

- Overall strategy aims to make the UAE’s government more efficient and effective
- Training course for government officials in AI

Inclusion

- N/A

Source: <https://government.ae/en/about-the-uae/strategies-initiatives-and-awards/federal-governments-strategies-and-plans/uae-strategy-for-artificial-intelligence>



TITLE: Industrial Strategy: Artificial Intelligence Sector Deal

FUNDING: £950 million (US\$1.24 billion) from government, academia, and industry
(at time of publication;
Jan 2020 conversion rate)

OVERALL GOAL OF AI STRATEGY: Promote collaboration between the government and private sector to make the U.K. a global centre for AI

POLICY ELEMENTS



Research

- Raise total R&D investment
- Alan Turing Institute will expand to become the national AI research centre

AI Talent

- Turing Fellowship programme to attract and retain AI talent
- Government funded AI PhDs
- Industry funded AI master's

Future of Work

- Investment in skills training, with a focus on STEM
- Introduce a National Retraining Plan in Parliament

Industrial Policy

- Attract foreign foreign direct investment in AI
- Provide investment funds for startups
- Establish a co-financed investment fund

Ethics

- New Centre for Data Ethics and Innovation

Data & Digital Infrastructure

- Create data trusts
- Provide legal certainty over sharing and use of data
- Improve digital infrastructure

AI in Government

- Alan Turing Institute's upcoming review of the application of AI to government
- GovTech fund

Inclusion

- Work with AI Council to promote the importance of a diverse research base and workforce in AI

Source: <https://www.gov.uk/government/publications/artificial-intelligence-sector-deal>



TITLE: American AI Initiative

FUNDING: N/A
(at time of publication;
Jan 2020 conversion rate)

OVERALL GOAL OF AI STRATEGY: Maintain and accelerate American leadership in AI

POLICY ELEMENTS



Research

- Promote sustained R&D in collaboration with industry, academia and international partners
- R&D funding agencies shall consider AI as priority
- Chartered National Science and Technology Council Select Committee on AI to coordinate AI initiative and advise on R&D priorities
- Released “National AI R&D Strategic Plan: 2019 Update” in June 2019 (<https://www.whitehouse.gov/wp-content/uploads/2019/06/National-AI-Research-and-Development-Strategic-Plan-2019-Update-June-2019.pdf>)

AI Talent

- Make AI a priority area for federal fellowship and service programs

Future of Work

- Use apprenticeships, skills programs and STEM education to ensure workers can take full advantage of AI
- Provide technical expertise to the National Council for the American Worker on matters regarding AI and the American workforce

Industrial Policy

- Remove regulatory and other barriers to safe development and testing of AI technologies, to enable the creation of new AI-based industries and adoption of AI by existing industries

Ethics

- Develop regulatory guidelines for AI applications to ensure public trust and uphold civil liberties, privacy, and American values

Data & Digital Infrastructure

- Enhance access to high-quality and fully traceable federal data, models, and computing resources while maintaining safety, security, privacy, and confidentiality protections
- Federal agencies shall prioritize use of high performance computing resources for AI-related applications
- Directed NIST to develop technical standards to support robust, reliable and trustworthy AI systems; “A Plan for Federal Engagement in Developing Technical Standards and Related Tools” was released in Aug 2019 (https://www.nist.gov/system/files/documents/2019/08/10/ai_standards_fedengagement_plan_9aug2019.pdf)

AI in Government

- N/A

Inclusion

- NSF collaborating with Amazon on Fairness in AI project that includes inclusivity as an area of focus

Source: <https://www.whitehouse.gov/ai/>

CIFAR

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