Government AI Readiness Index **2022**

OXFORD INSIGHTS

This report has been produced by Oxford Insights.

Authors:
Annys Rogerson
Emma Hankins
Pablo Fuentes Nettel
Sulamaan Rahim

Regional commentary was contributed by:
Merve Hickok
Eugenio V. Garcia
Markus Anderljung
Alexandru Roja
Golestan Radwan
Wendy Trott
Jibu Elias
Giulia Ajmone Marsan
Emma Martinho-Truswell

Edited by:
Kirsty Trim
Sulamaan Rahim

Please contact research@oxfordinsights.com for more information and with any comments.

Design: Maira Fragoso | Ápice

This version was released on 12 December 2022.

Foreword

We first published this index five years ago. The world was different then. Governments were dealing with a landscape defined by benign growth, relative global stability, the optimism of an emergent technology.

In 2022, it feels like everything has changed. It looks like we are entering a global recession, war has returned to Europe and AI breaks new ground every week. Just the last month has brought advances in art (Stable Diffusion), chat (ChatGPT) and negotiation (CICERO).

The pace of change in AI capabilities has not been matched by the response of governments. For the most part, governments are simply not designed to react quickly to events, but we urgently need governments to be more proactive. Our call for governments is twofold.

We need governments to rapidly roll out responsive regulatory regimes. The hugely significant advances in AI increase the risk of the technologies being harnessed by bad actors or creating services that society is not ready to deal with. Care needs to be taken to make sure that AI systems don't just entrench old inequalities or disenfranchise people. In a global recession, these risks are evermore important.

We need governments to build their own technological capability so that these tools can be used to improve the services used by all. Public services can and should be delivered to a high standard, with the human experience in mind. It is a government's responsibility to ensure the benefits are felt by all, not just a select few.

Despite a new global outlook, the fundamentals of our interest, and our optimism, stay the same:

- AI is a transformational technology;
- Each country has something to gain from harnessing AI; and
- Every government can do more to make that happen.

Doing more starts with officials keeping up with global developments and learning what their peers are working on. With this Index we provide an overview of global progress —to highlight key developments and illustrate the different approaches between countries. Over the coming year we will be supplementing this report with interviews and case studies from countries around the world to shine a light on the practical challenges (and solutions) the global community has faced.

We hope it is useful and look forward to continuing to be a part of the community bringing change.

Richard Stirling CEO, Oxford Insights

Contents

Executive Summary

Artificial intelligence (AI) is increasingly part of governments' plans to reform public services. AI is being used with the goal of improving efficiency in the delivery of services, ensuring fairer access to services, and enhancing citizens' experience of services. However, there is a lack of understanding about precisely what foundations are needed for a government to be in the position to integrate AI into services and, beyond that, what it takes for AI to then be used in government effectively and responsibly. The Oxford Insights Government AI Readiness Index seeks to address this lack of understanding.

With the Government AI Readiness Index, we aim to answer the exam question: **how ready is a given government to implement AI in the delivery of public services to their citizens?** Answering this question means measuring the multiple dimensions of governmental and technological progress that contribute to AI readiness. The resulting index aims to help governments prepare for the adoption of AI in their services by having the capacities, frameworks, skills, resources, and infrastructure in place to make good decisions about AI use when they do so.

Our Findings

Global Leaders

USA tops the index but Singapore leads in two out of three pillars.

Regional shakeup

Western European countries make up fewer than half of the top 10 countries for the first time as three East Asian countries achieve top 10 positions.

Government Pillar

AI strategy work is dominated by middle income countries.

Technology Sector Pillar

AI skills are global, with future developers emerging in a diverse set of countries.

Data & Infrastructure Pillar

Changes to the D&I Pillar expose which governments are taking an active role in supporting data availability and puts three East Asian countries at the top of the dimension.

In the report, we split the world into **9 regions** based on a combination of the **UN** and the **World Bank** regional groupings: North America; Latin America & the Caribbean; Western Europe; Eastern Europe; Sub-Saharan Africa; the Middle East & North Africa; South & Central Asia; and the Pacific. For each region, we include a regional analysis based on a combination of interviews held with regional experts, our index scores, and desk research.

The Government AI Readiness Index

In the 2022 index, our ambition remains the same: to score governments on their readiness to implement AI in the delivery of public services.

We rank **181** countries, up from 160 in last year's iteration. We recognise that government AI Readiness is a global issue and we aim to include as many countries as possible in the index rankings. This guides the selection of our indicators to ensure the data is available for the majority of countries.

We include **39** indicators across **10** dimensions, which make up **3** pillars:

The **Government** pillar:

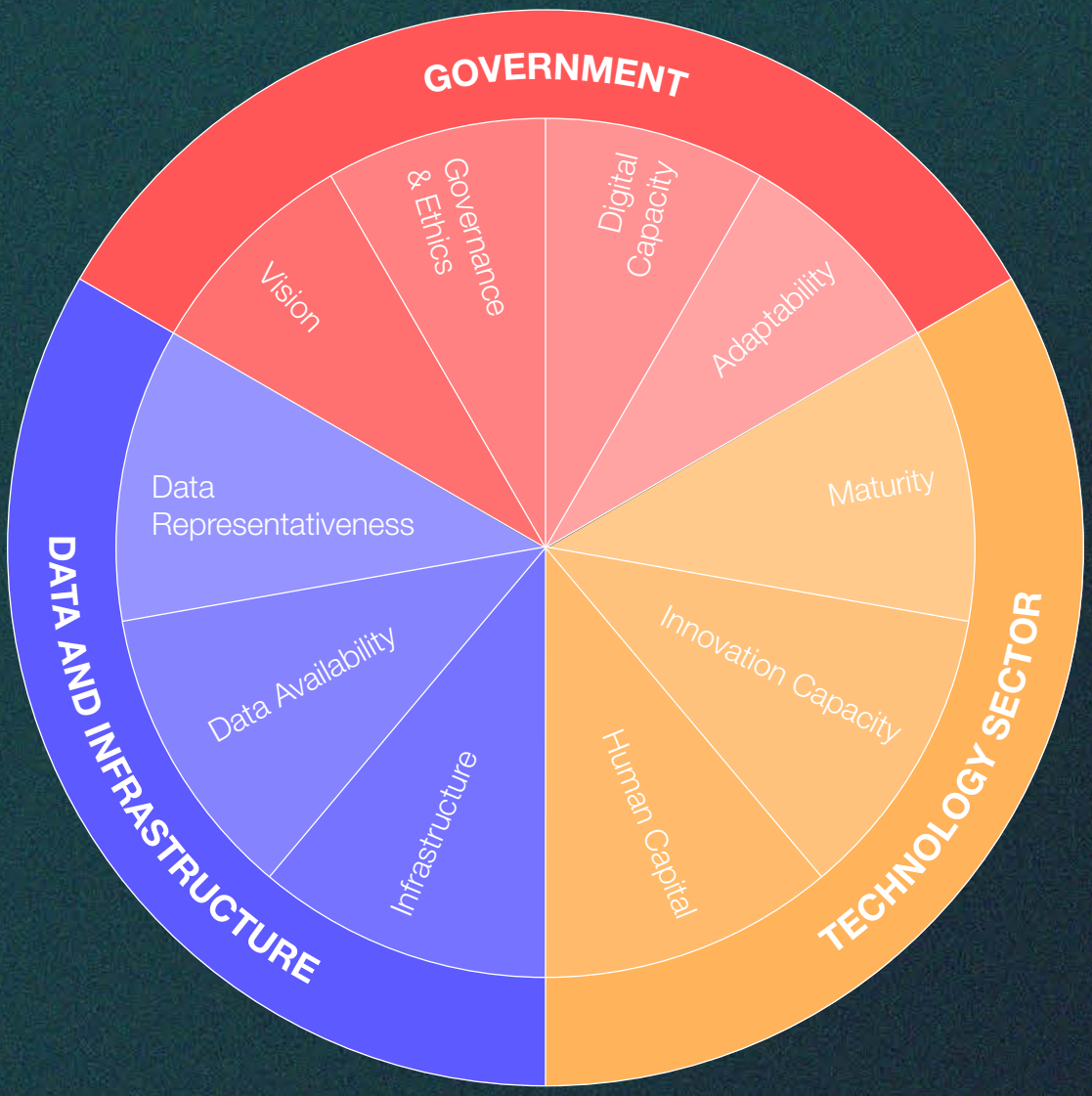
A government should have a strategic **vision** for how it develops and manages AI, supported by appropriate regulation and attention to ethical problems (**governance & ethics**). Moreover, it needs to have strong internal **digital capacity**, including the skills and practices that support its **adaptability** in the face of new technologies.

The **Technology Sector** pillar:

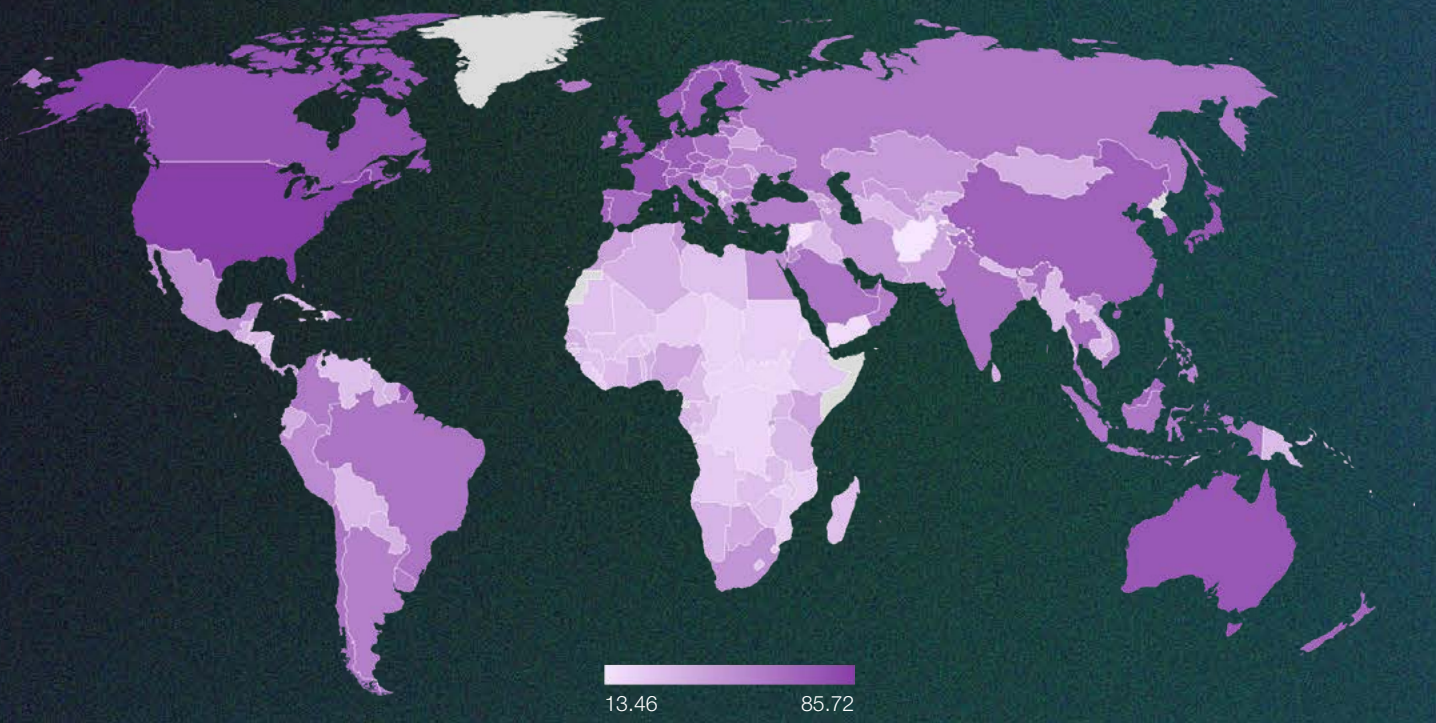
A government depends on a good supply of AI tools from the country's technology sector, which needs to be **mature** enough to supply the government. The sector should have high **innovation capacity**, underpinned by a business environment that supports entrepreneurship and a good flow of research and development spending. Good levels of **human capital**— the skills and education of the people working in this sector—are also crucial.

The **Data & Infrastructure** pillar:

AI tools need lots of high-quality data (**data availability**) which, to avoid bias and error, should also be representative of the citizens in a given country (**data representativeness**). Finally, this data's potential cannot be realised without the **infrastructure** necessary to power AI tools and deliver them to citizens.


GOVERNMENT
Vision
Governance & Ethics
Digital Capacity
Adaptability
TECHNOLOGY SECTOR
Maturity
Innovation Capacity
Human Capital
DATA AND INFRASTRUCTURE
Data Representativeness
Data Availability
Infrastructure

2022 Index Rankings



1 United States of America
2 Singapore
3 United Kingdom
4 Finland
5 Canada
6 Republic of Korea
7 France
8 Australia
9 Japan
10 Netherlands
11 Denmark
12 Norway
13 Sweden
14 Taiwan
15 Germany
16 Austria
17 China
18 Ireland
19 Estonia
20 Israel
21 Belgium
22 United Arab Emirates
23 Switzerland
24 Italy
25 Portugal
26 Luxembourg
27 Spain
28 New Zealand
29 Malaysia
30 Czech Republic
31 Thailand
32 India
33 Malta
34 Poland
35 Chile
36 Qatar
37 Brazil
38 Lithuania
39 Saudi Arabia
40 Russian Federation
41 Slovenia
42 Hungary
43 Indonesia
44 Bulgaria
45 Iceland
46 Latvia
47 Colombia
48 Cyprus
49 Turkey
50 Greece
51 Uruguay
52 Oman
53 Argentina
54 Philippines
55 Viet Nam
56 Bahrain
57 Mauritius
58 Romania
59 Serbia
60 Ukraine
61 Peru
62 Mexico
63 Jordan
64 Slovakia
65 Egypt
66 Croatia
67 Brunei Darussalam
68 South Africa
69 Kuwait
70 Tunisia
71 North Macedonia
72 Kazakhstan
73 Lebanon
74 Azerbaijan
75 Iran
76 Montenegro
77 Andorra
78 Costa Rica
79 Uzbekistan
80 Bangladesh
81 Dominican Republic
82 Albania
83 Republic of Moldova
84 Armenia
85 Fiji
86 Panama
87 Morocco
88 Georgia
89 Bahamas
90 Kenya
91 Belarus
92 Pakistan
93 Rwanda
94 Seychelles
95 Tonga
96 Barbados
97 Nigeria
98 Botswana
99 Bhutan
100 Antigua and Barbuda
101 Ecuador
102 Mongolia
103 Jamaica
104 Ghana
105 Sri Lanka
106 Trinidad and Tobago
107 Saint Lucia
108 Benin
109 Tajikistan
110 Paraguay
111 Algeria
112 Bosnia and Herzegovina
113 Suriname
114 Guatemala
115 Namibia
116 Senegal
117 Grenada
118 Cabo Verde
119 Kyrgyzstan
120 Saint Vincent and the Grenadines
121 Maldives
122 Guyana
123 Uganda
124 Bolivia
125 United Republic of Tanzania
126 Myanmar
127 Gabon
128 Turkmenistan
129 Lao People's Democratic Republic
130 Cuba
131 Iraq
132 Cambodia
133 Vanuatu
134 Honduras
135 El Salvador
136 Côte D'Ivoire
137 Timor-Leste
138 Cameroon
139 Nepal
140 Solomon Islands
141 Papua New Guinea
142 Samoa
143 Belize
144 Djibouti
145 Togo
146 Zambia
147 Venezuela
148 Zimbabwe
149 Libya
150 Mauritania
151 Nicaragua
152 Madagascar
153 Gambia
154 Kiribati
155 Guinea
156 Sao Tome and Principe
157 Mali
158 Congo
159 Burkina Faso
160 Lesotho
161 Eswatini
162 Ethiopia
163 Angola
164 Sierra Leone
165 Malawi
166 Comoros
167 Niger
168 Guinea Bissau
169 Sudan
170 Mozambique
171 Liberia
172 Chad
173 Burundi
174 Democratic Republic of the Congo
175 Eritrea
176 Central African Republic
177 South Sudan
178 Haiti
179 Yemen
180 Syrian Arab Republic
181 Afghanistan

Global Findings in Full

Global Leaders:

USA tops the index, but Singapore leads in two out of three pillars.

Both the USA and Singapore sit far ahead of the other top-scoring countries, with a 5.58-point difference between Singapore and the United Kingdom, which comes in third place. However, the two countries take different routes to success in the index.

The USA leads the index overall, and its path to success is largely thanks to its unmatched technology sector. Within the Technology Sector Pillar, the USA has extremely strong scores in the Maturity and Innovation Capacity dimensions, which take stock of the technology sector's size, value, and investment levels. A high score in the Maturity dimension points to the presence of later-stage tech companies able to provide off-the-shelf products for governments to purchase. At the same time, a high score in Innovation Capacity points to a healthy startup ecosystem to support the creation of novel AI applications and provide a supply of early-stage companies that are able to compete on price for government contracts. Within the Human Capital dimension of our Technology Sector Pillar, however, the USA is weaker than countries like Singapore and Sweden, who perform better by having higher proportions of the population who are digitally and technically skilled.

Singapore's path to success results from its top position in both the Government and Data & Infrastructure Pillars of the index. The country excels in our Digital Capacity and Adaptability dimensions within the Government pillar. These dimensions aim to measure a government's willingness and ability to solve problems using AI. Singapore's high scores speak to its track record of a dedicated and coordinated effort to implement AI in government since the publication of its National AI Strategy in 2019. Despite its success, Singapore ranks lower in Governance and Ethics. Its relatively lower score in this dimension suggests that more legislative work is needed to ensure citizens see the benefit from and are protected against any possible harms of the public sector innovation taking place.

Regional shakeup:

Western European countries make up fewer than half of the top 10 countries for the first time as three East Asian countries achieve top 10 positions.

While Western European countries make up half of the top 20, only the United Kingdom, Finland, France, and the Netherlands are in the top 10. Other top positions are taken by the leading East Asian countries, Singapore, the Republic of Korea, and Japan. These countries share high performance in the Data & Infrastructure pillar, which puts them above some of the major Western European economies. However, it is notable that Western Europe still ranks second in the overall regional rankings and this speaks to the much greater inequality found within the East Asian region. All Western European countries we rank are found in the top 50% of countries, while two East Asian countries are located in the bottom 25%.

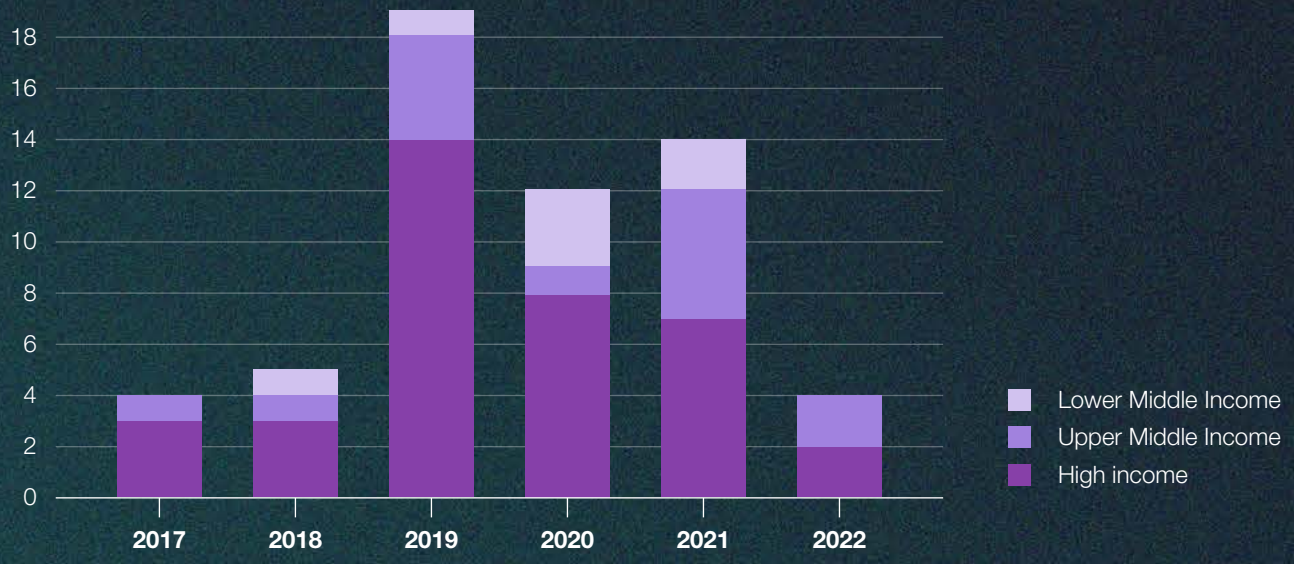
Government Pillar:

AI strategy work is dominated by middle income countries.

Since we started the Government AI Readiness Index in 2017, we have tracked the continued proliferation of AI strategies globally as governments have begun to recognise AI as a priority technology. This year, we have found that the majority (13 out of 17) of countries that published or announced strategies since the 2021 edition of the index have been middle income countries, according to **World Bank** income level classifications for 2022 to 2023. Notably, all of the 13 middle income countries who are classified as lower-middle income countries have just started work on their AI strategies and none have published a full strategy yet. Meanwhile, four upper-middle income countries (Thailand, Malaysia, Peru, and Jordan) have published their full strategies.

The higher proportion of middle income countries we see working on AI strategies this year reflects the fact that high income countries were the first income group to form national AI strategies. 70% of high income countries have published an AI strategy and 2019 was the most common year among high income countries to do so (see Figure 1 below). We take it as a positive sign that middle income countries are beginning work on AI policy and expect the work to be reflected in their AI readiness scores in the future. However, the lack of low income countries represented in the AI policy world remains a concern. Low income countries are likely to face a separate set of problems for which AI applications may be part of the solution, from water shortage to healthcare delivery to managing climate risks. For AI applications to be developed that target these problems, the ambitions of low income countries must be considered and included in ongoing global AI policy work.

Figure 1: Number of countries of each income group publishing an AI strategy per year



As AI strategy work moves to a new income group, we are also seeing a more diverse group of regions represented. Since 2020, the East Asia and MENA regions have seen the greatest increase in the proportion of countries with national AI strategies (see Figure 2 below). Not shown in Figure 2, there is a notable amount of ongoing work in South & Central Asia where four further countries (Azerbaijan, Pakistan, Tajikistan, and Uzbekistan) have announced an upcoming strategy.

Figure 2: % of countries in each region with a published national AI strategy over time

Technology Sector Pillar:

AI skills are global, with future developers emerging in a diverse set of countries.

Within the Technology pillar, the Human Capital dimension points to a diverse set of countries with an emerging AI skills base. We find that the highest proportion of STEM graduates are found in countries in the East Asia and MENA regions: leading their respective regions, Malaysia and Oman perform particularly highly in the indicator. Outside measures of formal education, we use *GitHub* (the world's largest open source code repository) *users per thousand population* as a proxy for the level of programming skills available in a country; this indicator is dominated by smaller Western European countries, such as the Netherlands, Sweden, and Denmark.

This year we also include the *Percentage of STEM graduates* who are female as an indicator. AI solutions in government need to be solutions for the whole population. Having diversity among developers of AI products makes it more likely that the needs of the whole population are reflected in the products that are built. We find that many otherwise high-scoring countries perform poorly in this area, with Western Europe and the Pacific being the two lowest-scoring regions in this indicator on average. This may point to a deficiency within standard conceptions of AI readiness among countries who are otherwise advancing their adoption of AI but may not be advancing inclusively, creating potential risks with the AI projects they undertake.

The scores from our Human Capital dimension create a picture of AI skills that are truly global. We expect that high scores in this dimension will support the development of other dimensions in the Technology Sector pillar in later years and hopefully translate to improvements in the Government Pillar's Digital Capacity scores going ahead. However, for countries with fewer current opportunities in the AI sector, governments must look at how best to retain their domestic AI talent, who may otherwise seek opportunities abroad, while incentivising skilled immigrants to continue contributing to the country's success.

Data & Infrastructure Pillar:

Changes to the Data & Infrastructure Pillar expose which governments are taking an active role in data availability and puts three East Asian Countries at the top of the dimension.

The introduction of new indicators to the Data Availability dimension on *Data Governance* and *Open Data Policies*, has prompted a 10-point drop in the average score for the dimension compared to the 2021 edition of the index. We have included these additional indicators, from the **Global Data Barometer** and the **World Bank GovTech Maturity Index** respectively. We have introduced them primarily as proxies for the availability of high quality data and effective management of how data is collected, stored and shared across government, both of which are needed for the development of AI systems. Secondarily, we include them to recognise the role of open data in giving businesses access to useful datasets for building data-driven products and services for the population.

Our finding that the inclusion of these indicators brings down the Data Availability dimension scores globally suggests that government data management is an area that requires attention and is likely to hold some governments back in their efforts to make use of AI within the public sector. However, the new indicators have also revealed the countries leading in this area. The Republic of Korea, Japan, and Singapore are top of the Data Availability dimension, and these countries' high scores result from well-connected populations, comprehensive open data policies, and taking a whole-of-government approach to data governance.

Regional Analysis

Our analyses of the major trends affecting a region's AI readiness are based on combinations of: the opinions of regional experts interviewed for this report; examination of our index scores; and complementary desk research and analysis. Due to the complexity and breadth of the index, it is not always possible to draw a clear causal line between a particular policy or event and a change in score in a specific indicator. Our goal has been to provide broader insights into countries' and regions' AI policy contexts than can be provided by numerical scores alone.

We have divided the world into 9 regions, based on a combination of the **UN** and the **World Bank** regional groupings, each with a regional expert as an interviewee:

North America

Merve Hickok, Research Director at the **Center for AI and Digital Policy**

Latin America & the Caribbean

Eugenio V. Garcia, Tech Diplomat at the **Consulate General of Brazil in San Francisco**

Western Europe

Markus Anderljung, Head of Policy at the **Centre for the Governance of AI**

Eastern Europe

Alexandru Roja, Head of Innovation at the **Transilvania IT Cluster**

Middle East & North Africa

Golestan Sally Radwan, Former Advisor to the Minister for AI at the **Ministry of Communications and Information Technology in Egypt**

Sub-Saharan Africa

Wendy Trott, Senior Associate at **ALT Advisory**

South & Central Asia

Jibu Elias, Head of Content and Research at **IndiaAI**

East Asia

Giulia Ajmone Marsan, Director of Strategy and Partnership at the **Economic Research Institute for ASEAN and East Asia**

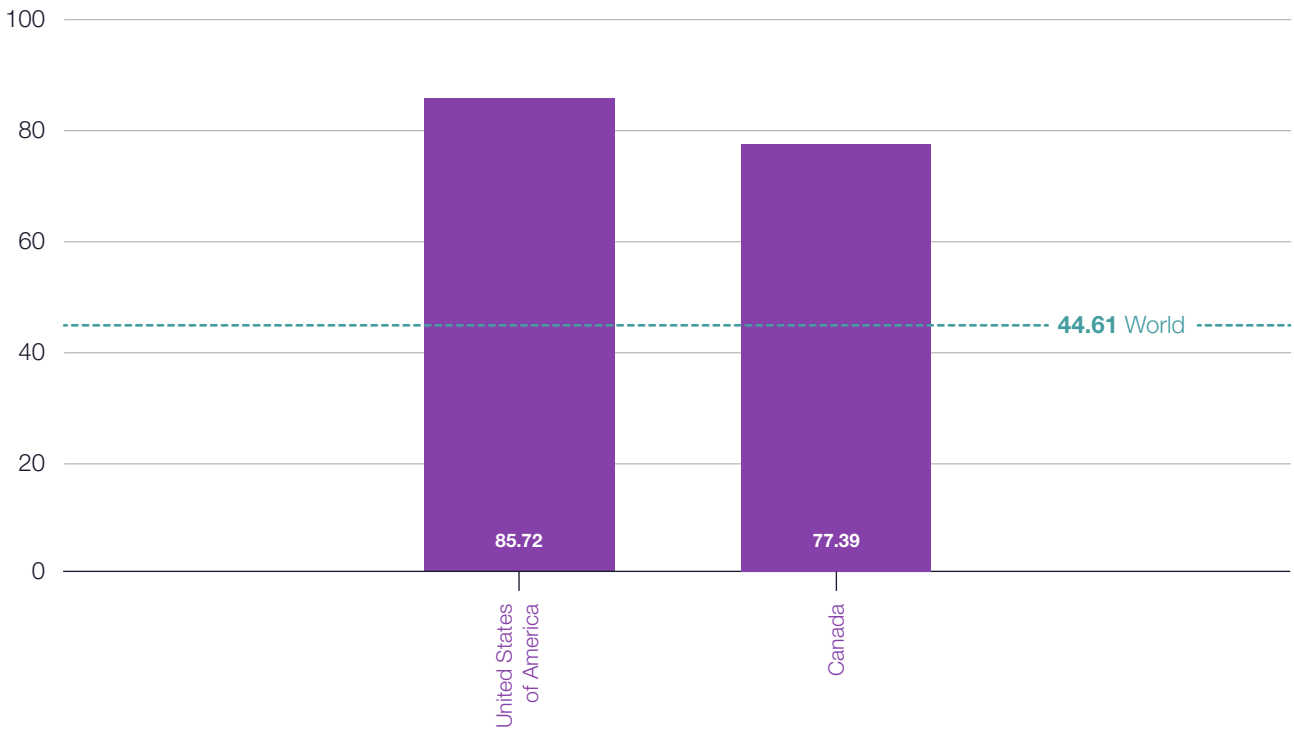
Pacific

Emma Martinho-Truswell, Co-founder of **Oxford Insights**

North America

North America

By Emma Hankins with Merve Hickok as interviewee



Introduction

The North America region, which includes the USA and Canada, is the highest-scoring region in the world in this year's index, with an average score of 81.56 and the highest average scores in each pillar. This is unsurprising given that the region only includes two countries who are both world leaders in AI readiness, with the USA ranking 1st globally and Canada ranking 5th.

The region has a particularly high average score in the Technology Sector pillar, with the USA again ranking 1st globally in this pillar and Canada ranking 5th. Our regional expert Merve Hickok, Research Director at the Center for AI and Digital Policy, noted the strength of the US in investment in R&D, with numerous government bodies like the National Science Foundation and DARPA providing grants in research on AI and emerging technologies. This investment yields strong results, with the US leading the world in *Number of AI unicorns* as well as *Number of non-AI tech unicorns*.

Both North American countries also benefit from a strong appreciation of the potential benefits of AI in the public and private sector alike, which has led to cross-party consensus on the importance of investment in AI and AI policy. This is a critical enabling factor for AI readiness because it means that these countries are likely to maintain a consistent direction of travel on AI policy even if political circumstances change. This provides certainty for businesses and researchers who may benefit from government investment in R&D as well as geopolitical allies who can be confident in American and Canadian cooperation on AI regardless of the political party in power.

Key developments

While the US and Canada both score highly in the Government pillar in our index, our regional expert Merve Hickok observed that the two countries in the region take very different approaches in this area. While the US has multiple documents that meet our index's standards for a national AI strategy and ethical principles, these documents are generally tailored to specific government departments or activities rather than a single overarching strategy. In addition, the US still has no single data protection authority akin to Canada's Office of the Privacy Commissioner, and data privacy in the US is still governed by a patchwork of laws with varying rules for different types of personal data. The US National Artificial Intelligence Initiative (NAII) is a result of the National Defense Authorization Act (FY2021). With national defence as the dominant theme, NAII is meant to coordinate AI research, development, and education activities across US agencies and is supplemented by multiple committees and executive orders.

Nonetheless, there have been many important developments in AI policy in the US. In October 2022, the White House Office of Science and Technology Policy published its Blueprint for an AI Bill of Rights. This document lists principles in alignment with civil rights and includes a Technical Companion explaining how these principles can be applied. Merve Hickok said the blueprint's focus on respecting fundamental rights and democratic values — which has not always been the focus in previous documents — was one of its strongest points and "sets the tone" for the US government. President Biden also recently signed the bipartisan AI Training Act into law, which requires procurement officers within federal agencies to be trained on the risks and benefits of AI. Improved understanding of AI among government employees can increase AI readiness not only by facilitating incorporation of AI into public services, but also by ensuring that officials are aware of potential risks and do not uncritically embrace "a shiny technology that promises the world," as Merve Hickok put it.

Merve Hickok characterised Canada's progress as a move from policy creation to the implementation and monitoring stage of AI policy. The country is a pioneer on AI policy, publishing its first strategy in 2017 and a Directive on Automated Decision-Making in 2019, long before most other countries. In July 2022, Canada continued its tradition of leadership by announcing a second phase of its Pan-Canadian AI Strategy, which largely focuses investment on AI R&D. Merve Hickok also commented that Canada is "walking the talk" on AI governance, aligning its public commitments with "practice on the ground." For example, there is clear compliance with the Directive on Automated Decision-Making, as 4 different ministries have now published Algorithmic Impact Assessments as mandated by the directive. Canada is the only country to have officially adopted mandatory algorithmic impact assessments, making it a leader in the field and providing a model for other countries to adopt.

On regional cooperation, Merve Hickok highlighted both countries' membership of the Global Partnership on Artificial Intelligence (GPAI), with Canada hosting one of the organisation's two centres of expertise, and the OECD, with the US in particular heavily influencing development of the OECD AI principles in 2019. The US also coordinates with European countries through the EU-US Trade and Technology Council, which was established in 2021 and lists promoting trustworthy AI as a priority. Altogether, there is a trend of North American governments aligning themselves with Western Europe and other developed countries on the side of protecting democratic values while developing AI.

Looking ahead

While the region's large tech sector increases its overall AI readiness, Merve Hickok warned that there is a risk of anti-competitive behaviour from the biggest tech companies suppressing innovation in the long term. Not only are big tech companies acquiring more innovative startups, they are also investing in dedicated academic research centres and funded fellowship programmes, meaning they hold power to shape the overall academic research direction. As Merve Hickok explained, this is potentially problematic because funding may be increasingly directed towards areas of interest for big tech companies while other equally promising areas are neglected, thus "narrowing the space of who can do what kind of research." This could result in funding being funnelled toward more commercially-viable applications of AI rather than those with the greatest benefits for the wider public. While Merve Hickok noted US regulators are having "a lot of conversations about monopolies or anti-competitive behaviours", even strict antitrust regulations would be unlikely to inhibit big tech funding of academia.

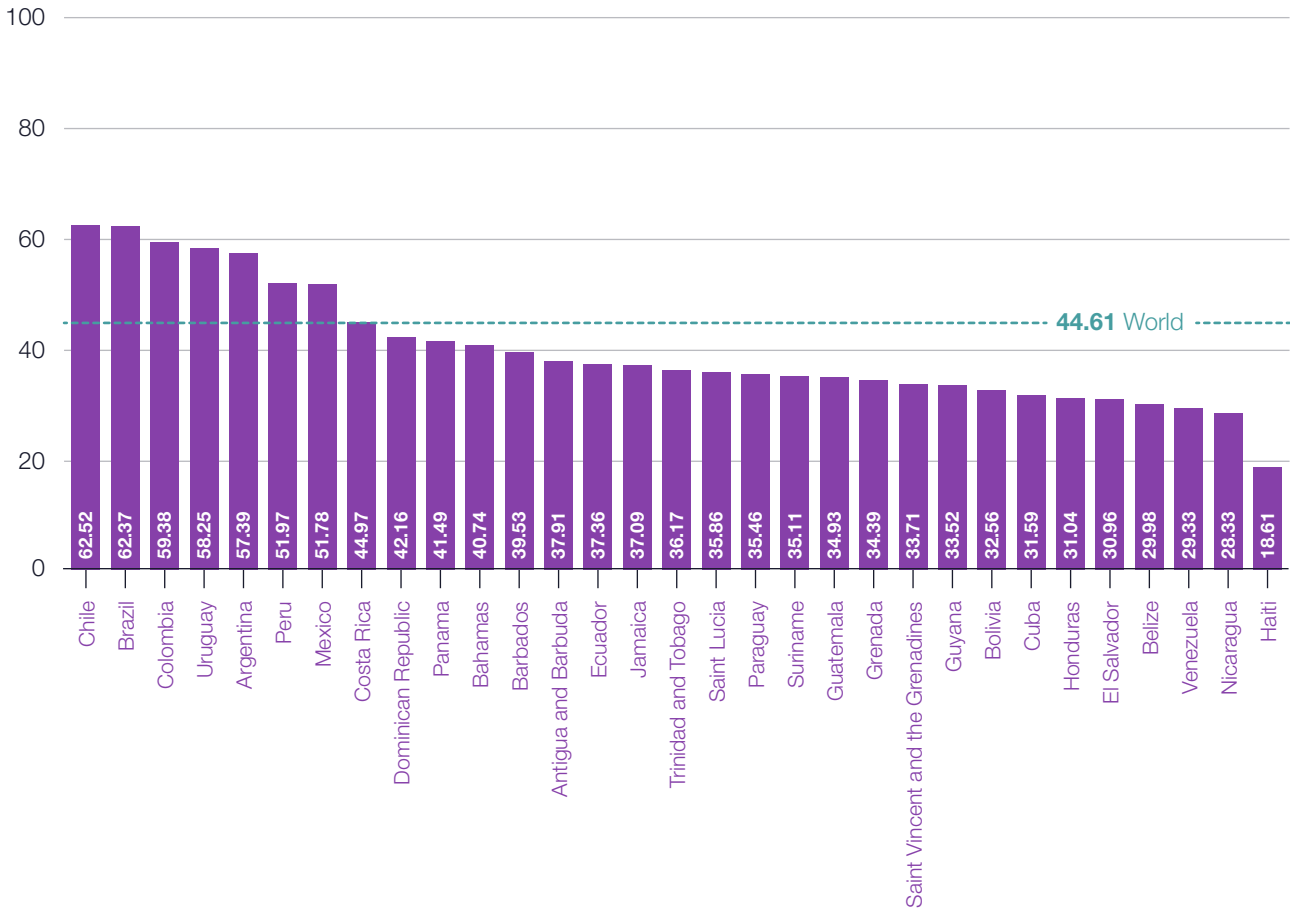
The biggest tech companies also hold an advantage in computing capacity and access to large datasets. Merve Hickok expressed concern about this as well, saying, "If you're dependent on a few technology companies who actually have the compute capability, then your ability to invent or innovate in more foundational technologies reduces in time." Canada is seeking to improve in this area, investing $40 million in providing dedicated computing capacity for AI researchers in the second phase of the Pan-Canadian AI strategy. In the US, recent White House policy guidance instructed that all federally funded research and, crucially, any datasets behind it, should be made free and publicly available without delay. This could contribute greatly to data availability and lower barriers for private or public sector organisations to use big data and AI going forward.

There are a number of regional policy developments to watch for in the coming year. The US is in the process of updating its national AI R&D strategy, and the National Institute of Standards and Technology is developing an AI Risk Management Framework and accompanying playbook to be released in January 2023. Perhaps the most potentially impactful development in the works is the American Data Privacy and Protection Act, which passed a House of Representatives committee with bipartisan support in July 2022. While Merve Hickok feels that the legislation could be improved to make it "more privacy-enhancing and future-resilient," the existing bill would establish explicit consumer data protections and require companies to limit data collection, as well as prohibiting them from using personal data to discriminate based on certain protected characteristics. If this bill were to become law, it could have a major impact on AI development in both the public and private sector by fundamentally reshaping the data privacy landscape in the US.

Latin America & the Caribbean

Latin America & the Caribbean

By Pablo Fuentes Nettel with Eugenio Garcia as interviewee



Introduction

This year, Latin America & The Caribbean presents an average score of 39.88. There is a clear pattern in the region in terms of pillars: all countries in the region score worst in the Technology Sector Pillar. The average score in the Technology Sector Pillar is 27.87, while Government is 37.66 and Data & Infrastructure 54.12.

Five countries—Chile, Brazil, Colombia, Uruguay, and Argentina—stand out from the rest, scoring between 57.39 and 62.52. It is worth noting the particularly strong performance of Chile in the Data & Infrastructure pillar (76.97) and Colombia in Government (74.27). With the exception of Uruguay, the regional leaders also represent some of Latin America's biggest economies, suggesting a correlation between AI readiness and the size of the economy. A notable exception to this is Mexico, which seems to lag behind, placing 7th regionally with a score of 51.78 despite having the second-largest GDP in Latin America. Even though Mexico has the third-highest scores in the region in Technology Sector and Data & Infrastructure, the absence of a national AI strategy and ethics principles result in a low score in the Vision and Governance & Ethics dimensions.

As in previous years, in 2022, the overall picture of the region is one of disparity. It is worth noting that 23 out of 31 countries score below the global average (44.61), while Chile, Brazil and Colombia made it to the top 50. This gap is particularly significant in the Digital Capacity, Infrastructure, and Data Availability dimensions, where Central American and Caribbean countries present the biggest room for improvement.

Key Developments

According to Eugenio Garcia, Tech Diplomat at the Brazilian Consulate in San Francisco, one of the factors that hinders the development of AI readiness in the region, is the lack of consistency and commitment of many governments regarding both AI governance and funding. This issue affects the medium and long-term continuity of AI policies. Yet, some promising developments took place in 2022. For, example, earlier this year Peru released a national AI strategy. The Peruvian National Strategy for Artificial Intelligence aims to govern AI effectively in Peru, across 5 axes: training, economic model, technological infrastructure, data, and ethics. Similarly, having released their national AI strategies already, Colombia and Brazil continue to take steps in the right direction when it comes to governing emerging technologies. Both countries are part of the World Economic Forum's network of Centers for the Fourth Industrial Revolution (C4IR). This network operates in 16 countries and aims to formulate, implement, and improve human-centric policies to address global issues in areas like AI and other emerging technologies.

In terms of regional cooperation, there are also interesting developments going on. For instance, in November this year, the coallition Latam 4.0 was launched in Bogota. This initiative brings together governments, companies, academic institutions and civil society organisations in the region with the aim of developing a Regional Artificial Intelligence Strategy in Latin America. Latam 4.0 is based on the purpose of regionalising AI development to reduce costs, expand markets, exchange best practices, unify governance criteria and promote regional integration.

Becoming a more AI-ready government requires the incorporation of innovative solutions into public services, which is often driven by Research & Development (R&D) in the technology sector. In that vein, interesting initiatives are taking place in the region. Recently, Microsoft announced that Uruguay will host the AI & IoT Insider Lab. This will be the first laboratory of its kind in Latin America and the third outside the US. This initiative contributes to Uruguay's objective of becoming an innovation hub in the region, as it will facilitate R&D on areas like AI, Internet of Things, and cloud computing.

Even though the Technology Sector pillar presents the largest room for improvement in the region, our regional expert, Eugenio Garcia, pointed out two positive aspects. Firstly, there is an increasing awareness of the relevance of AI technologies amongst Latin American private companies. A study published by the MIT Technology Review identified an increase in the deployment of AI in business areas like supply chain, management, and marketing. According to the IBM Global AI Adoption Index 2022, almost half of the companies surveyed in Latin America are exploring the adoption of AI, while a third of them has already incorporated AI-enabled solutions into their services. At the same time, firms in the region have received important amounts of investment in the past couple of years. According to a report from the EIU, since 2019 over $20 billion USD of venture capital (VC) funding has gone into tech start-ups in the region.

Looking ahead

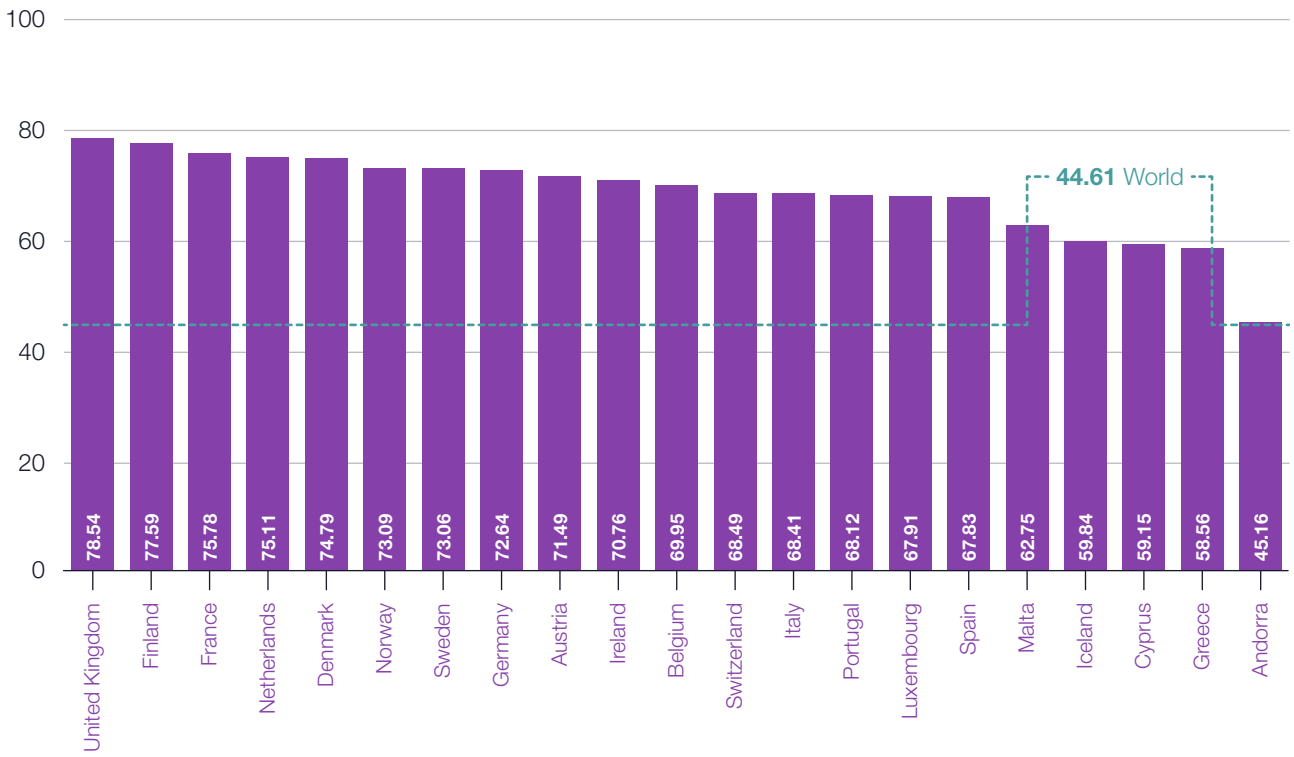
Human capital presents both challenges and opportunities for Latin America & The Caribbean. Even though the region has a young, talented and increasingly skilled population, there is still room for improvement in terms of highly specialised knowledge in computer science and related fields. The region scores 36.15 in the Human Capital dimension, making it the second lowest globally. Nevertheless, countries like Colombia have taken steps in the right direction by fostering the creation of institutions like the Center for Research and Formation in Artificial Intelligence (CINFONIA) at Universidad de los Andes. This is the first research and advanced studies centre in Latin America dedicated exclusively to the study of AI. Furthermore, CINFONIA has established a partnership with DeepMind that aims to offer full scholarships to outstanding students from underrepresented backgrounds to study postgraduate programmes on AI. Initiatives like these could be key to developing a wider pool of specialised tech workers in the region. However, a challenge remains in retaining the talent. Many Latin American graduates from AI-related programmes struggle to find opportunities locally, while technology firms in countries like the US and Canada invest a lot in foreign talent attraction. A more AI-ready region will require a solid collaboration between governments, academia, and the private sector to develop vocational programmes to help students build connections with the industry and prevent brain drain.

Another major task for the region will be to make digital services more accessible and invest in infrastructure. There is a clear digital gap in the region, which places internet-enabled services beyond the financial reach of lower income groups. On average, a 1GB data plan costs 2.7% of monthly household income in the region (or 8-10% for the bottom quintile in some countries). This percentage is significantly higher than the 2% affordability threshold set by the International Telecommunication Union. Furthermore, when we look at more advanced digital infrastructure, our research shows that today less than half the countries in the region have 5G infrastructure in place. As the world moves quickly to implement 5G networks, the deployment of proper infrastructure to enable them will be critical in the path towards a more AI-ready region.

Western Europe

Western Europe

By Annys Rogerson with Markus Anderljung as interviewee



Introduction

Western Europe is the second-highest ranking region globally and its countries make up half of the index's top 20. The region comes second only to North America, which only has two members, largely due to Western Europe's lower Technology Sector pillar scores. The UK, Finland, and France have the highest scores in the region but, other than Andorra, Western Europe has a very small range of scores relative to other regions. There is a difference of only 19.98 between the second-lowest (Greece) and the top score (United Kingdom). The similarity in scores may speak to the regional collaboration taking place on AI readiness, with many of the regulatory and funding initiatives on AI taking place at the level of the European Union (EU).

The EU's AI Act and AI Readiness

The European Union's AI Act is the most significant development within Western Europe for AI readiness in the past year. Introduced in April 2021 and expected to pass into law in the first half of 2023, the AI Act is the EU and the world's first dedicated AI law introduced by a major regulator. The AI Act aims to address the individual harms that could be caused by AI systems by categorising systems into risk levels and setting legal obligations on a system according to its risk.

Primarily, the AI Act is relevant to AI readiness because the limits and conditions it sets on the use of AI systems will direct the ambitions of EU member states' use of AI within their national government. For systems categorised as 'unacceptable risk', the law will prohibit governments from

using them entirely. This includes systems that have already been used by governments outside the EU, such as the use of AI for social credit scoring by the Chinese government. Markus Anderljung, Head of Policy at the Centre for the Governance of AI, expects these prohibitions will help create trust among citizens, who will have confidence that certain applications are not an option as governments increasingly integrate AI systems into their operations.

For unprohibited systems, those that are classified as high risk will have a set of requirements placed on developers and operators of those systems. High risk systems, as conceived in the AI Act, are largely those systems involved in high stakes decision-making and this applies to many possible applications of AI in government. Indeed, the AI Act specifies domains in which an AI system may be categorised as high risk and many of these intersect with the functions of government, including access to services, law enforcement, and migration. Similarly to the prohibitions, Markus Anderljung suggests these requirements on high risk systems are also likely to increase trust among citizens. However, it is still unknown how the requirements will be operationalised, meaning their impact on government use of AI is uncertain.

Secondarily, the AI Act is also significant for the Technology Sector pillar of the Index. The Act defines the types of AI products and services that can be developed in the EU and sold to EU citizens. As a result, domestic and international businesses will need to conform and adapt their offerings to the EU market. The implications of this for the European AI sector are not yet known but there is early work on estimating the cost of compliance for businesses as well as speculation over the impact on private investment in and demand for AI products[1].

It is notable that some of Western Europe's largest AI sectors are outside the EU. Looking at Technology Sector pillar scores, both the UK and Switzerland are in the top 10 globally. In a recent paper on the 'Brussels Effect', Markus Anderljung and co-author Charlotte Siegmann argue that being outside the EU does not mean the countries' AI sectors will be unimpacted by the AI Act. Markus Anderljung suggests that the AI Act is likely to impact neighbouring countries in two ways: through non-EU companies making a decision to build EU-compliant products in order to maintain their presence in the EU market and through regulators ensuring their own set of AI regulations are consistent with the EU's. Within the Maturity dimension, the UK scores highly in the number of AI and non-AI unicorns that are located there, while Switzerland scores highly for the value of its ICT services trade as well as company spending on software. Their different routes to success in the Technology Sector pillar could mean that the two countries feel the impact of the 'Brussels Effect' differently. However as close trading partners to the EU, these countries can both expect to feel the impact more than others.

1 See CEPS Study to support an impact assessment of regulatory requirements for Artificial Intelligence in Europe for the European Commission and subsequent analysis from Meeri Haataja and Joanna J. Bryson

Looking Ahead

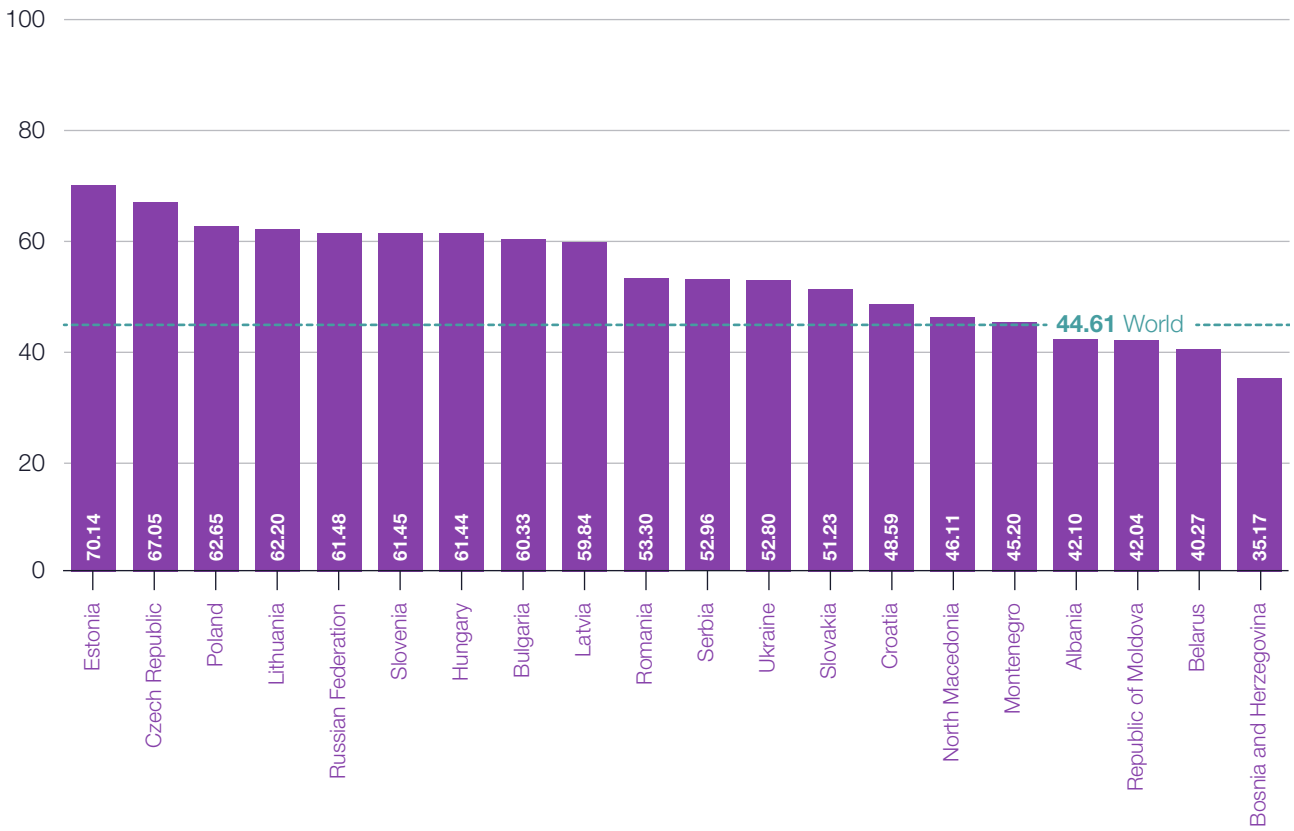
As we see Western European governments advance their adoption of AI in government, we are also seeing the realisation of some of the possible harms caused by AI as well. A recent example comes from The Netherlands, whose Tax Authority has been fined for its use of an algorithm that provided risk profiles for applicants of childcare benefits, which was revealed to unfairly penalise those with high debts to the authority. These incidents raise concerns about the pace of AI adoption in government. Markus Anderljung points out that systems used in the public sector demand a very high degree of accuracy as the harm of failure is often higher than in the private sector. Markus Anderljung also suggests that governments in the region need to strongly consider how they make decisions about whether AI is a useful solution in a particular context. The balancing act between the efficiency and fairness that AI can bring to government services — and the accompanying elevated risks — will be one of the biggest challenges for AI readiness in Western Europe going forward.

There is reason to think that Western European countries will manage this balancing act well. Countries score highly in the Governance and Ethics dimension of the index and the region scores particularly highly within the *Accountability* indicator, with an average of 76.33, suggesting that countries have the legal and institutional backdrop in place to protect and empower citizens in misuse cases of AI. The approval of the AI Act will also go a long way in ensuring this. However, Markus Anderljung points out that the AI Act does not cover all types of harms and systems that may need to be regulated. Instead, it focuses on identifying high risk systems that can cause acute harm to individuals. In response to these limitations, University of Cambridge feedback on the AI Act suggests making the categorisation of high risk systems more flexible by allowing for the addition of more domains in which potentially high risk systems are operated and by broadening the definition of harms to include those at the societal level. It is clear that the AI Act, despite its branding, will only be part of the future of AI governance in the region. Consequently, governments both in the EU and beyond will need to be adaptive and responsive to the changing risks and opportunities of AI systems.

Eastern Europe

Eastern Europe

By Annys Rogerson with Alexandru Roja as interviewee



Introduction

Eastern Europe sits just behind East Asia in the rankings by regional average and there is a significant gap between the region and its neighbour Western Europe, the average score of which is 14.7 points greater. Estonia leads the region and is well known for being an advanced digital government; it scores far above any other country in the region in our Digital Capacity dimension. Alexandru Roja, Head of Innovation at the Transilvania IT Cluster, puts this down to state infrastructure being digital by design since the country first gained independence in 1991. As a result, Estonia is able to more easily pivot towards use of emerging technologies, including AI. The country demonstrates this adaptability through its already advanced adoption of AI for forecasting, chatbots, personalised services, and fraud detection. Estonia uses policy innovations to support the integration of AI, such as its new AI Govstack Testbed, which is a lightweight procurement framework inviting developers to help build AI applications for the state.

Key Developments

Outside of Estonia, other Eastern European countries are also looking to progress in their digital transformation. AI has become an important part of this goal and 12 out of the 20 countries in the region have now developed national AI strategies. Alexandru Roja suggests that the strategies, both for AI and digital transformation more broadly, reflect the leadership's commitment to these is-

sues but that the top down approach leaves out detailed plans for how the strategies will be operationalised. For AI to be used effectively in government operations and services, there needs to be an understanding among public servants about where and how AI can be useful for solving problems. Currently, according to Alexandru Roja, existing strategies do not achieve this. However, Alexandru Roja sees promising developments at the local government level where more detailed plans and projects are being undertaken to integrate AI into government. One example comes from the Romanian City Hall of Cluj which is integrating an automatic data processing system, Antonia, to remove the need for citizens to submit physical forms in person.

Just over half of the countries in the Eastern European region of the index are members of the European Union (EU) and we find that those that are members of the EU typically score higher overall. The average score for EU member states in the region is 59.84 whereas it is 46.46 for non-EU states. This may in part be explained by the funding available for AI projects in the EU. One EU funding and support mechanism for AI projects in both the public and private sectors is the network of newly formed Digital Innovation Hubs. These are regional hubs that have a focus on AI and allow companies to test digital solutions before they choose to invest in them by providing companies with the necessary skills and infrastructure to build and trial their products.

The Digital Innovation Hubs are in part a response to low levels of digitisation within EU companies. The EU's Digital Intensity Index found that only 18% of EU SMEs reached a high level of digitisation in 2021. Interventions like the Digital Innovation Hub that support the digitisation of businesses could help grow the market for AI products and services in Europe and stimulate the creation of new tools for governments to procure. However, Alexandru Roja suggests that, like in the public sector, there is a lack of understanding at the moment among business leaders in the region about how AI can be implemented in a business model to increase efficiency or productivity. Alexandru Roja contrasts this with the US, where the digital economy is the economy. This contrast is clear in the *Computer Software Spending* indicator, which is led by the US and in which the average for Eastern European countries is significantly lower than the global average.

Looking Ahead

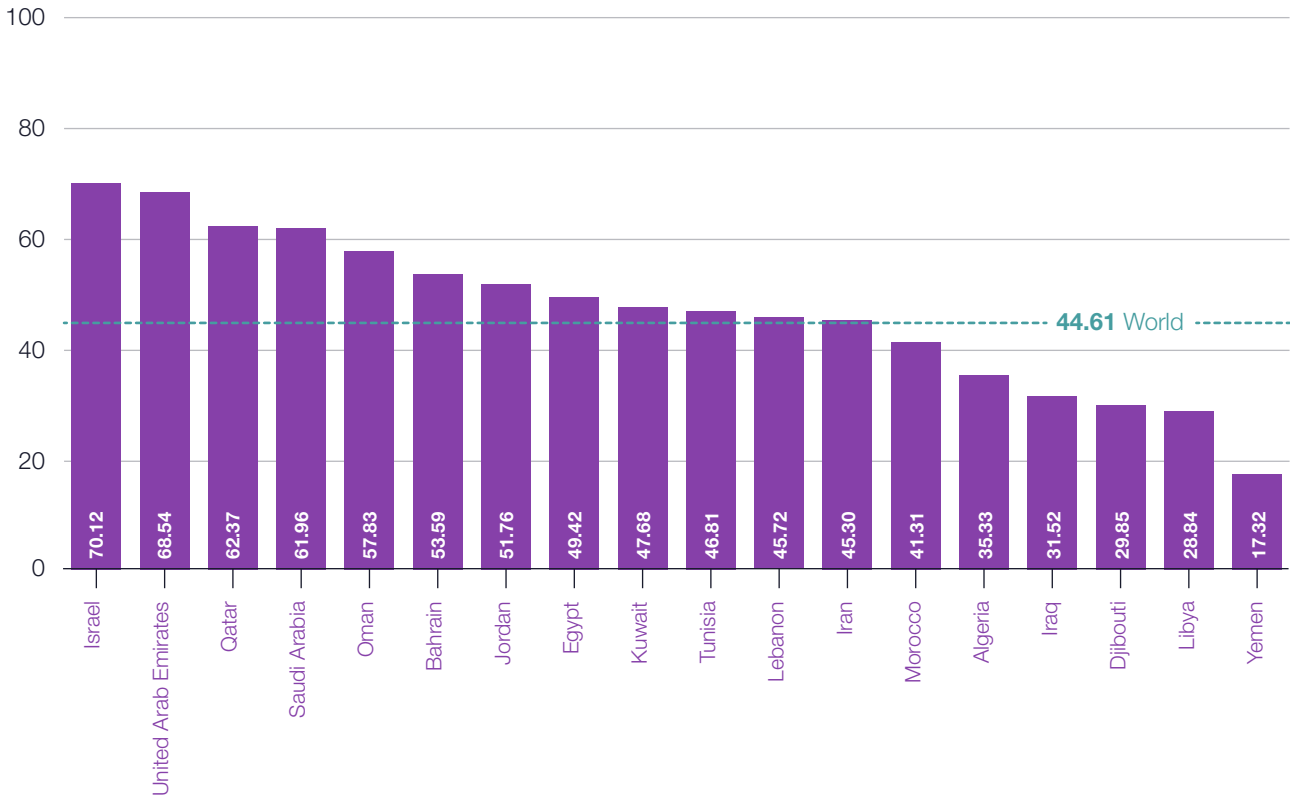
Going forward, a major obstacle for Eastern European governments to overcome will be their ability to effectively adapt existing legislative and institutional frameworks to create opportunities for digitalisation and more advanced projects involving AI. In the index, the region receives lower scores in the Adaptability and Digital Capacity dimensions than regional neighbours in Western Europe. Alexandru Roja puts this down in part to outdated legislation. For example, some laws still mandate that relevant forms are physical and provided in person, which limits a government's ability to deliver the service online.

Other barriers to AI adoption are institutional. Estonia has demonstrated the benefits of building public institutions that are digital by design and other countries in the region, who do not have this advantage, face the challenges of digitalising existing, analogue processes. Alexandru Roja adds that digitalisation can also be held up by cultures of resistance to change within the public sector and stresses the need for buy-in at all levels. Impactful AI projects will require a level of risk, which governments in the region must manage and embrace by involving experts to inform decisions and simulating possible scenarios to minimise the risk taken. For countries who are EU member states, some dimensions of this risk, namely the risk to individual rights posed by AI systems, are being managed at a supranational level through the EU's AI Act. These countries will be facing the same challenges as their partners in Western Europe in operationalising the requirements of the AI Act in the years to come, while also benefiting from the opportunity to develop the trust of citizens in their use of AI in public services.

Middle East & North Africa

Middle East & North Africa

By Annys Rogerson with Golestan Sally Radwan as interviewee



Introduction

The Middle East & North Africa (MENA) region has the second largest range of scores within any region globally. There is a notable divide in scores between Middle Eastern and North African countries, which average 51.14 and 38.59 respectively. However both Egypt and Tunisia outperform their neighbours in North Africa and score in the top ten in the region. Egypt achieves this through its performance in the Government pillar, while Tunisia performs well in the Data & Infrastructure pillar.

Israel leads the region largely due to its Technology Sector pillar score being far above other countries both in MENA and globally; Israel ranks fourth in the pillar overall. Golestan Radwan, former Advisor to the Minister for AI at the Ministry of Communications and Information Technology in Egypt, puts this down to three main factors. Firstly, the country has a pre-existing, successful cybersecurity industry that receives 16% of all global investment in cyber. Having an established cybersecurity industry means that the country already has a technically skilled workforce, for whom reskilling in AI is achievable, and a high level of digital infrastructure in place. Secondly, Golestan Radwan points to the startup culture in Israel. Israel scores second in the Innovation Capacity dimension globally and this is thanks to its top scores in *VC Availability* and *R&D Spending* indicators. This level of investment, alongside incubation and scal-

ing opportunities from private sector actors and significant government support through the Israel Innovation Authority, provide the enabling environment for AI startups to grow. Lastly, Golestan Radwan notes that Israel has the ability to create important partnerships with multinational companies and advantageous projects with academics outside the region, which help position the country on the global AI stage.

Key Developments

By 2020, only 5 countries in the MENA region had published national AI strategies and these were for the most part Gulf countries. In particular, Qatar, UAE, and Saudi Arabia were early developers of AI strategies and they all state their ambitions to become global leaders in AI. In 2022 there has been a surge of 4 countries either announcing or publishing a national AI strategy, more than in most other regions. Golestan Radwan points to a shift in how governments in the region think about AI in recent years that might explain this surge. Previously, there had been limited understanding of the applications of AI and the technologies were largely equated to automation, which brought concerns about employment. Only those countries who made it an ambition to be competitive in the global AI race developed strategies early on. However, there is now greater awareness of the role that AI technologies can play in solving development issues and achieving strategic objectives in other sectors. Consequently, governments such as Oman and Jordan have published strategies in the past year. These represent a new wave of countries with ambitions to prioritise AI, not as a sector in and of itself but as an opportunity to accelerate digital development and innovation within other priority sectors.

As attention on AI has grown throughout the region, so have the government use cases. Countries who have strong existing digital government infrastructure and high scores in the Digital Capacity dimension, like the UAE and Saudi Arabia, are known to be advanced in their uptake of AI in government. In other MENA countries, which are at earlier stages of digitalisation, governments are undertaking smaller-scale but innovative and potentially impactful AI projects. Golestan Radwan finds that many governments are looking to integrate AI into projects within key sectors for the country, such as agriculture, manufacturing, healthcare, or infrastructure. An example Golestan Radwan provides from Egypt is a three-part project in the agricultural sector to tackle water shortage issues in the country. The project uses a range of AI techniques to create an agricultural map of Egypt, estimate the water requirements for agricultural plots and provide a mobile-delivered virtual assistant for farmers.

The challenges for AI readiness vary in different parts of the region. Many of the top-scoring countries, with a focus on developing leading AI sectors, are competing for global AI talent and are experiencing a shortage of specialist skills. Currently, the Gulf states and Israel are generally performing lower in the Human Capital dimension of the index than Western European competitors and the US who are scoring in the mid to high 60s. This shortage has prompted government initiatives to attract talent, for example through the UAE's recent visa rules overhaul for highly-skilled workers. In North Africa and the Levant, Golestan Radwan suggests one of the main barriers to AI readiness is the standard of infrastructure. For many countries in these parts of the region, their scores in the Infrastructure dimension are well below the global average of 43.24. Infrastructure is a priority as both widespread access to digital infrastructure and the availability of high performance computing resources are required for governments to develop and deploy AI projects effectively. However, the low scores in the region are likely a result of the large amounts of capital needed to invest in large-scale infrastructure projects.

Looking Ahead

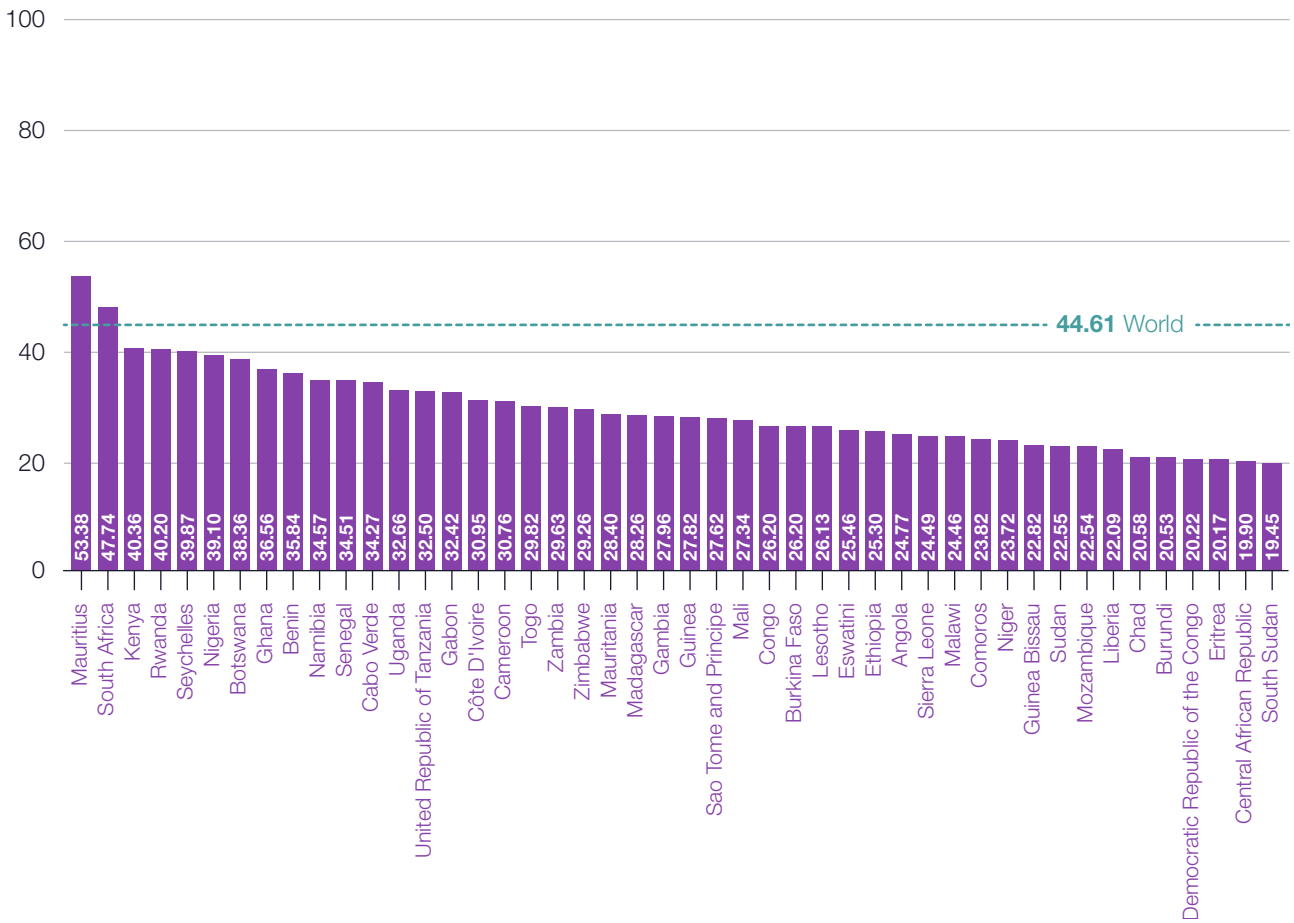
As the pace of adoption accelerates, Governance and Ethics is becoming a crucial dimension of AI Readiness for the region. MENA scores below the global average for this dimension, suggesting this is a key area for development in the region. As regional leaders in AI adoption, it might be expected that the UAE and Saudi Arabia would be further ahead in this dimension. However, both countries score below 50 in Governance and Ethics. Notably, Saudi Arabia has published a draft version of its upcoming AI Ethics Principles and has opened a public consultation for feedback on this. This is important progress. However, beyond ethical principles, the country's low score in Data Representativeness, relative to similar scoring countries overall, suggests Saudi Arabia must also look to wider inclusion efforts to ensure AI projects cater to the needs of all service users. In the region more broadly, there are further signs of development as Jordan has published its National AI Code of Ethics in 2022 and the development of the Egyptian Charter for Responsible AI is underway. The important challenge for countries in the future, as Golestan Radwan puts it, is in transforming these largely academic concepts into operational principles that do not hinder innovation.

Another dimension of responsible AI, viewed as critical within the MENA region, is localising AI development. Golestan Radwan says this is a concern shared and voiced across the North African countries in the region. As AI is more widely adopted across North Africa, these countries jointly believe that one of their main priorities is the protection of cultures, indigenous languages, and users from products that have not been trained on local data. Shared priorities like this, as well as other shared challenges for the region, are why Golestan Radwan believes that cross-border collaboration is currently an untapped mechanism for accelerating work on common solutions for MENA countries. If there is progress in this area, for example via a common AI Strategy for Arab countries, it could be a big driver of AI readiness in years to come.

Sub-Saharan Africa

Sub-Saharan Africa

By Emma Hankins with Wendy Trott as interviewee



Introduction

This year, the average score of the 46 Sub-Saharan African countries included in the index was 29.38 —the lowest globally. The region is overrepresented at the bottom of the ranking spectrum, with 21 out of the 25 lowest scores belonging to Sub-Saharan African countries. The region scores particularly low in the Technology Sector pillar, with an average score of 20.96.

With a score of 53.38, Mauritius leads the region and ranks 57th globally. Mauritius scores especially high in the Governance pillar and is the only country in the region to have published a national AI strategy. South Africa follows with a score of 47.74, but its strength comes instead from the Data & Infrastructure pillar. It is the only country in the region with access to both a top 5 cloud provider and commercially available 5G infrastructure. Our regional expert Wendy Trott, Senior Associate at ALT Advisory, also noted that South African telecommunications regulators have now taken action on mobile data costs, which has the potential to have “a massive impact” on access and may lay the foundation for more of the population to benefit from AI technologies.

As the relatively low scores across the region suggest, there are many barriers to progress on AI readiness in Sub-Saharan Africa. While broadband coverage has increased in recent years, the

majority of people in the region still lack access to mobile internet, due in part to high device and data costs. This is reflected in the index, in which Sub-Saharan African countries have the lowest average scores on *Percentage of households with internet access* and *Cost of cheapest internet-enabled device relative to GDP per capita.* The lack of connectivity for some is contrasted with what Wendy Trott describes as "quite dynamic and sophisticated and advanced private sectors that cater to a very small minority of the elite." This high inequality hinders the development of AI-based technologies even amongst those who would be able to access them, as the amount, quality, and representativeness of any data collected for use in AI is inherently poorer.

Key developments

One area of progress in the region is on data protection legislation, with the majority of Sub-Saharan African countries now having passed data protection laws and the African Union's Executive Council endorsing a Data Policy Framework in early 2022. Our regional expert Wendy Trott noted that while such legislation is a "crucial enabling step" in taking advantage of AI, data protection authorities in most countries are not given the necessary resources to enforce these laws. There is also a lack of comprehensive follow-up regulation regarding these laws as well as a lack of regulation on the specific risks of AI.

While Mauritius is the only country in the region with a published AI strategy, there has been a small boom in countries announcing forthcoming strategies, with Benin, Ghana, Nigeria, and Rwanda's strategies currently in development. Wendy Trott attributed this to joint efforts from national governments, international organisations, and the private sector. Smart Africa, a regional collaboration led by the Rwandan government, is one such organisation and is currently partnering with the governments of Ghana and Rwanda to develop their national AI strategies.

The African Union (AU) is also playing an influential role as a multilateral forum for collaboration and a potential generator of model legislation on AI and data protection. The AU has a working group on AI that is in the process of consulting with experts on a regional AI strategy, and the AU recently worked with Smart Africa to publish the AI for Africa Blueprint, which outlines the opportunities and challenges of AI in the region as well as proposing key principles and pillars for inclusion in any regional AI strategy.

Another multilateral body, the African Commission on Human and People's Rights, recently adopted Resolution 473, calling on national governments, the AU, and other fora to work towards developing legal and ethical frameworks to govern AI and emerging technologies. This may combat what Wendy Trott described as a tendency for governments in the region to view AI as a 'silver bullet' for developmental problems while being "quite uncritical" of potential risks.

While the region has a low average score in the Technology Sector pillar of this year's index, there is still an active, if not yet mature, private tech sector in Sub-Saharan Africa. Wendy Trott highlighted Kenya and Nigeria as having dynamic startup ecosystems, and Kenya ranks highly in the region on *Venture capital availability* while Nigeria produced the second-highest number of AI research papers in the region in 2021. Fintech is the fastest-growing startup sector in the region due to a large unbanked population, and even low-tech tools like USSD and zero rating are being used to address financial and digital exclusion.

Looking ahead

While Rwanda ranks fourth in the region, the country is quickly becoming a regional leader, and it seems poised to forge ahead in the coming years, according to our expert. This is mainly driven by strong political will and the country's leadership of Smart Africa, which Wendy Trott says has "incredible normative power" that means "other countries look up to Rwanda and they're learning from Rwanda."

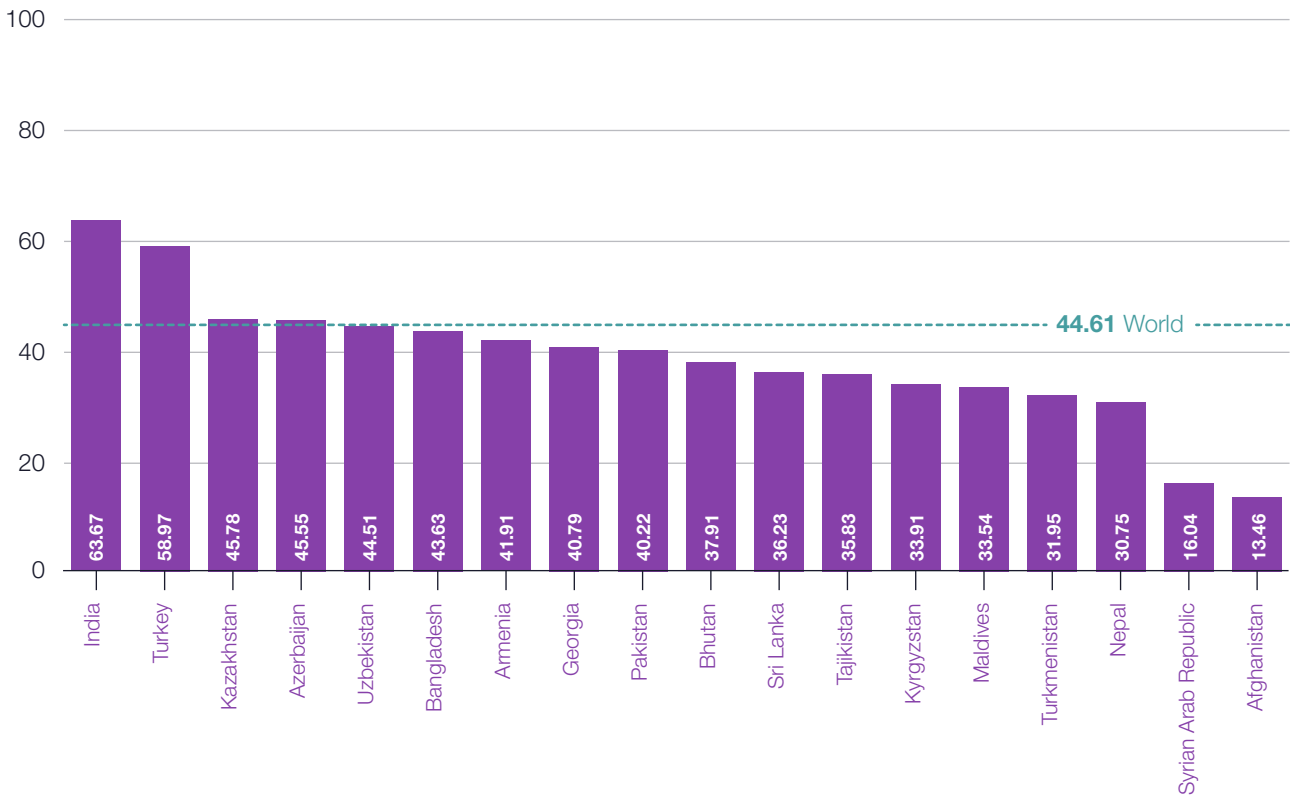
South Africa will likely also retain a leading role in the region as it continues to benefit from relatively strong infrastructure, but the country still faces challenges, including a continuing energy crisis. However, South Africa is very influential in the region due to its size, history, and level of development and, like Rwanda, any AI strategy or legislation it puts forward has the potential to serve as model legislation for other countries with less internal capacity.

Going forward, Wendy Trott would like to see governments in the region craft comprehensive regulations and ethical principles so that these are in place before technology is widely adopted and becomes less easily governed. She also recommends investment in digital literacy, especially for communities who are now able to access the internet for the first time. There is a clear opportunity for multilateral groups in the region to share best practices on these issues to reduce the cost of creating policies from scratch. In addition, Sub-Saharan Africa's lack of digitalisation and slower adoption of AI technology means that strong regulations and investment in digital literacy at this early stage have the potential to powerfully shape the sector in years to come.

South & Central Asia

South & Central Asia

By Sulamaan Rahim with Jibu Elias as interviewee



Introduction

South & Central Asia is the second lowest-scoring region, with a regional average of 38.59, sitting just behind Latin America & the Caribbean. There is a very large range of scores within the region (50.21 points) indicating substantial intra-regional inequality. Two countries in the region sit comfortably above the rest: India and Turkey. This is perhaps no surprise given that they are the two largest economies in the region. Jibu Elias, Head of Content and Research at IndiaAI, suggests that we are beginning to see the impact of India's National AI Strategy,published in 2018. He also suggests that the quality of India's IT talent pool is a contributing factor—a suggestion reflected in the index scores, where India ranks 24th in our Human Capital dimension.

Key Developments

India has seen the development of a number of initiatives aimed at embedding AI use throughout all levels of government and society, as well as ensuring that technological developments cement India's place on the global stage. For example, its draft National Data Governance Framework aims to 'transform and modernise Government's data collection and management processes and systems'. As our index seeks to highlight, a strong base of high-quality data is vital for effective digital services in government. The government also recently announced that it would train three million government officials in AI and other emerging technologies. Other initiatives include India's Semiconductor Mission, which seeks 'to drive the long-term strategies for developing a sustainable semiconductors and display ecosystem.'

Outside of these two regional powerhouses, we are beginning to see a number of developments elsewhere in the region. Bangladesh published a national AI strategy in 2021, while Azerbaijan, Pakistan, Tajikistan, and Uzbekistan have announced forthcoming strategies. This means that seven out of 18 countries in the region now have either published or have forthcoming AI strategies. In fact, South & Central Asia as a region saw the highest number of AI strategies published or announced (tied with Eastern Europe) with 5 such strategies published/announced. Jibu Elias suggests that countries in the region are beginning to wake up to the power and the potential of AI technologies. Some, however, are unable to take advantage despite this growing awareness: countries like Sri Lanka and Pakistan, he suggests, are undergoing levels of political and economic turmoil that make capitalising on AI difficult.

The region scores highest on the Data and Infrastructure Pillar and lowest on the Technology Sector Pillar. Jibu Elias suggests that the strength of the Data and Infrastructure Pillar in countries like India can in part be attributed to strong e-governance practices and the governmental attitude that data is a vital part in solving socio economic problems. He also suggests that the weakness of the Technology Sector Pillar can in part be attributed to economic strength. Save India and Turkey—the two regional leaders—there aren't many strong economic players within the region. This, he suggests, goes part way to explaining why there is less development within the Technology Sector Pillar: countries are unlikely to compete globally given their current economic position and so are less likely to innovate themselves. He also highlights a lack of focus on R&D spending within the region.

Looking Ahead

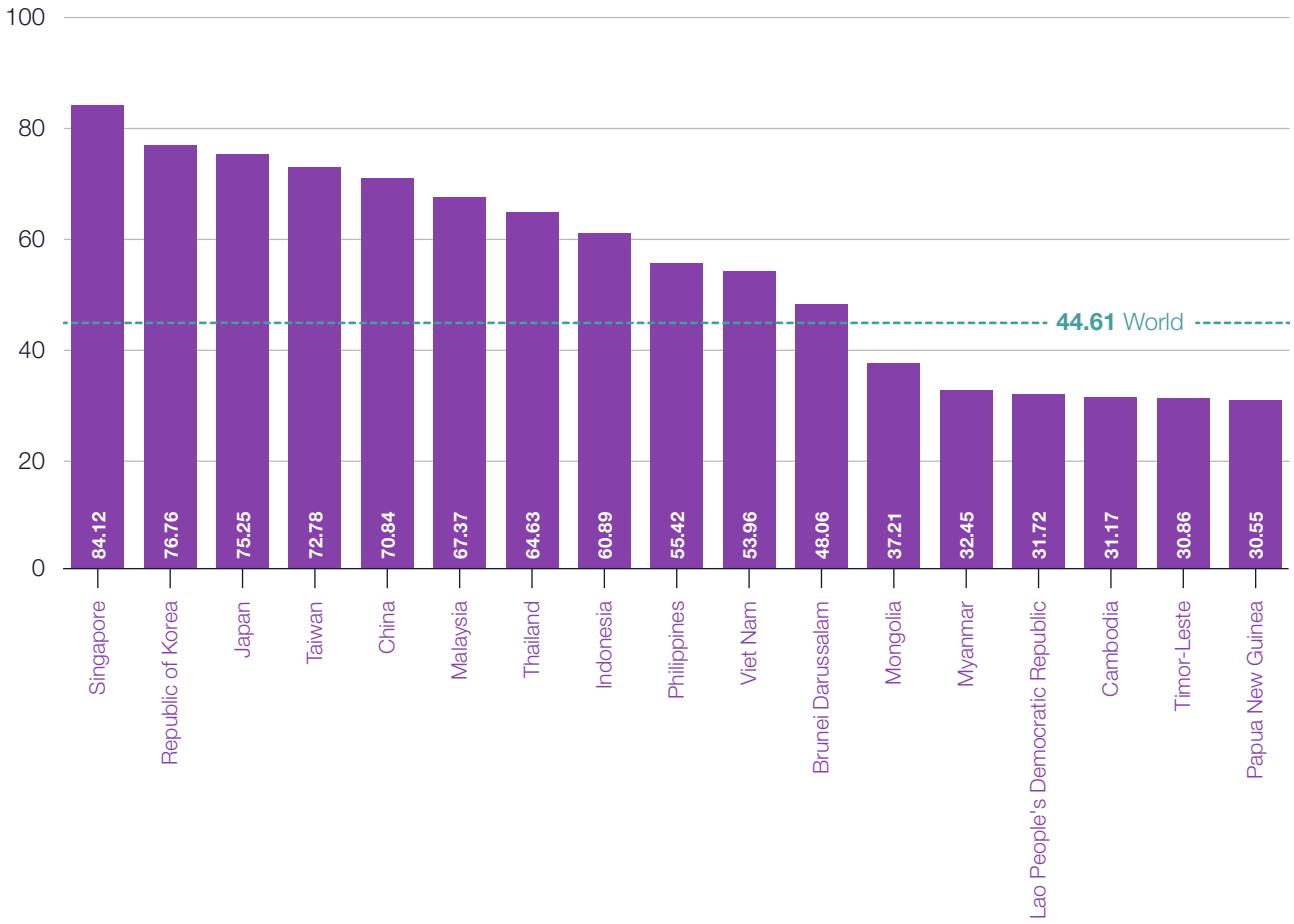
Many countries in the region have vast populations: three of the top ten most populated countries in the world (India, Pakistan, and Bangladesh) are situated in this region. This creates unique problems around data collection and analysis, and the joining up of public services. Jibu Elias notes that countries like India are data-rich; ensuring, then, that there are appropriate systems in place and the right technologies and APIs to facilitate proper collection and sharing of this data will be vital. As it stands, much of the data collected is not in the appropriate format (i.e. machine readable) and sits in siloes. There is a huge amount of insight and value to be found within this data and an important step in the development of these countries' AI readiness will be determining how best to extract that value.

There will also need to be a focus on the technology sectors within countries in the region. As mentioned above, investment in R&D and the fostering of a culture of innovation will likely be important for countries in the region in the future. Moreover, there is a lack of domestically produced hardware in the region that is vital for the development of AI: semiconductors, supercomputers, etc. Governmental leadership in this area will be important for the future of the region to ensure that it can make the most of its rich data, but it remains to be seen whether there are sufficient natural local resources and/or the ability to procure the necessary materials for countries in the region to realise this ambition.

East Asia

East Asia

By Annys Rogerson with Giulia Ajmone Marsan as interviewee



Introduction

East Asia, which includes 17 countries, has emerged as a leading region in the 2022 index, with three countries (Singapore, Japan, and Republic of Korea) appearing in the top 10 and the region making up one quarter of the top 20. Singapore is a standout in the index overall. The country is particularly strong in the Government pillar because of its innovative and committed approach to digital government, paired with a business-friendly legislative environment. Singapore serves as an example of how this pairing can breed productive public-private partnerships to support public sector innovation. One recent partnership is between Singapore's National Office for AI and Google Cloud, which aims to build the government's AI capabilities, including through AI and Machine Learning training for public sector officers. While Singapore excels across the Index, it is important to recognise the advantage of its low population size. With a population of only 5.90m, Giulia Ajmone Marsan, Director of Strategy and Partnership at ERIA, suggests Singapore is more comparable with big, innovative global cities than countries and points to Jakarta as an example of a city in the region that could soon become competitive with Singapore in its AI readiness.

Despite the performance of the top-scoring countries, East Asia has the largest range of scores of any region in the index. The region has a cluster of low-scoring countries (Mongolia and those ranked below it) which perform poorly in the Government pillar and the Infrastructure dimension. Giulia Ajmone Marsan notes that, while there is significant inequality between countries in the region, there is also inequality within countries in terms of infrastructure and connectivity. This in part explains why China, a world leader in AI research and development, comes in fifth in the region for AI Readiness. China's score is boosted by its technology sector but the country achieves a relatively low score in the Data & Infrastructure pillar. In this pillar, China's score is brought down by a weaker performance in indicators measuring household internet access and the proxy we use for socioeconomic gap in internet access[2]. These results point to a digital divide within the country that is a concern for AI readiness with respect to both having a supply of representative data on the population, and for delivering accessible, digital public services to all those eligible.

Key Developments

Technology sectors across the region are growing. We find that there are 9 East Asian countries with unicorns (companies valued over $1bn) this year, compared to 6 in last year's index. The Philippines, Viet Nam, and Malaysia have all added companies that qualify. Giulia Ajmone Marsan suggests the region is well-positioned for tech sector growth because of its young, digitally skilled population who are fast adopters of digital alternatives. This is exemplified by the uptake of telemedicine during the COVID-19 pandemic when apps such as Halodoctor in Indonesia were used to get access to consultations and treatments online. Giulia Ajmone Marsan suggests the telemedicine example may point to a broader trend of using privately provided services instead of government services, which may not be delivered to the same standard online. While this trend may point to deficiencies within public services, these private sector developments present an opportunity for governments to use public-private partnerships as a lever to accelerate digitalisation. One country that benefited from such a partnership during the pandemic is Myanmar, which had an existing relationship with the telecommunication service provider Oooredoo, that they were able to scale to support healthcare workers and primary care delivery.

As well as a digitally-able market, index scores point to a supply of technically-skilled workers, with the region scoring above the global average for the Human Capital dimension, and Singapore, Taiwan, and Malaysia all performing particularly well in this dimension. However, Giulia Ajmone Marsan suggests that government support is needed for attraction and retention of talent. Some governments in the region have recently taken action on this. For example, Thailand and Indonesia have both introduced 'digital nomad' visas in 2022 as a policy innovation aimed at attracting new, skilled tech workers to the country. Meanwhile, Singapore has introduced a flexible visa scheme aimed at 'top talent' in sectors including science and technology.

2 We use "Cost of cheapest internet-enabled device (% of monthly GDP per capita)" from the GSMA Connectivity Index

Looking Ahead

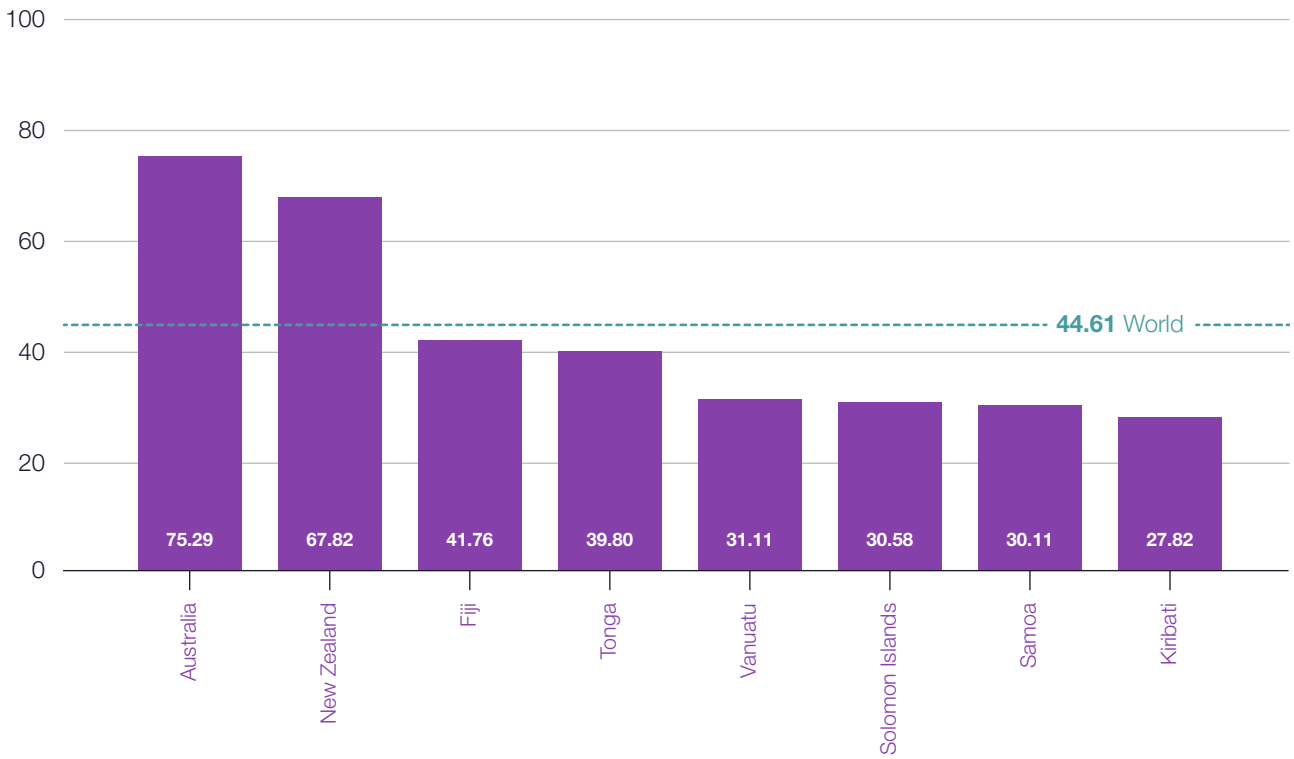
One challenge for all countries in the region going forward is to define their approach to the governance of AI. This issue has become particularly pronounced since the COVID-19 pandemic. Some governments in the region have been criticised for not ensuring the privacy of their citizens when using location-tracking apps for public health reasons and for implementing increasingly strict online censorship laws in the name of tackling disinformation. In the index, Governance & Ethics is the weakest dimension in the Government pillar and 7 countries in the region score below the global average.

Giulia Ajmone Marsan views regional collaboration, via forums such as APEC and ASEAN, as one route to progress in this area. Trade-focused APEC has shown how trade agreements can be effective at pushing governments to update legal and regulatory frameworks in order to form partnerships with countries with frameworks already in place. An early example of this was APEC's Privacy Framework aimed at preserving privacy in cases of cross-border information flows. ASEAN has also had an increasing focus on the digital economy. For instance, its Digital Data Governance Framework aims to harmonise approaches to data governance in South East Asia. With this foundational work on data protection and privacy already in progress, regional collaboration may prove to be a positive and effective mechanism for helping countries to adapt and strengthen future regulation that is relevant to or directed at AI.

Pacific

Pacific

By Emma Hankins with Emma Martinho-Truswell as contributor



Introduction

At 43.04, the Pacific region's average score is below the global average for this year's index. However, this is largely due to the diversity of countries in the region contributing to a wide disparity in scores, with two highly developed countries and then a 26-point gap between the region's 2nd-ranking New Zealand and 3rd-ranking Fiji. The other five of the eight countries in the region are classified as Small Island Developing States (SIDS) by the UN, with two of these countries also classed as Least Developed Countries (Solomon Islands and Kiribati).

Australia and New Zealand not only lead the Pacific region, but rank highly globally, with Australia ranking 8th and New Zealand 28th. Both countries are particularly strong in the Data & Infrastructure pillar, with scores almost tied for 2nd place globally. Australia is the only country in the region with a published national AI strategy, while New Zealand's strategy is currently under development. Australia and New Zealand also score highly in the Government pillar, with both having highly-developed e-government capabilities.

This year, the number of countries included in the Pacific region has risen from three to eight. The fact that we have been able to include more countries from this region than ever before demonstrates progress on data availability, as our index only ranks countries that have values for more than 50% of our indicators. However, because many of these countries are just above our cutoff for inclusion in the index, their scores are still fairly reliant on imputed data, and more work is needed to make data, especially government and economic data, more widely available in the region.

Key Developments

In keeping with its leadership in the region and globally, Australia has seen a number of recent developments related to AI readiness. The country is making progress on the main goals of its 2021 AI Action Plan: it launched its National AI Centre at the end of 2021, and the country's first cohort of Next Generation AI Graduates began their studies in autumn 2022. Australia is also seeing investment from the private sector, with Google launching the Digital Future Initiative, a $1 billion investment in research partnerships in Australia, including an Australian research hub focused on AI. Australia is also considering reforms to a number of its underlying digital and privacy laws, including an ongoing review of the Privacy Act and a new Online Privacy Bill. In 2022, the country passed the Data Availability and Transparency Act, which created a National Data Commissioner and established a system for sharing public sector data. This could improve AI readiness in the country by easing sharing of data across government bodies to improve public services as well as enabling research institutions to use data for AI R&D.

Individual Australian states are also making progress on AI readiness. Australia's largest state, New South Wales, has built upon its 2020 AI strategy and recently implemented a mandatory AI Assurance Framework that all agencies must use to assess risks when developing or procuring AI tools. In February 2022, the state of Victoria announced the creation of an Australian AI Centre of Excellence in Melbourne, and Queensland has an AI Hub in Brisbane aimed at supporting AI businesses and retaining AI talent.

New Zealand is also making progress in AI readiness. In September 2022, the country released its inaugural Digital Strategy for Aotearoa. While this strategy addresses issues beyond AI, it lays a foundation for further developments in AI readiness. For example, some of its key initiatives include development of an Algorithm Charter for Aotearoa New Zealand, a Maori Data Governance model, and a refresh of the government's cloud-first policy, all of which have the potential to provide the data availability and governance necessary for AI-ready public services. The new digital strategy, which is divided into overarching themes of trust, inclusion, and growth, is also illustrative of New Zealand's emphasis on taking a responsible, ethical, and collaborative approach to policy on emerging technology. This approach appears to be reflected in the country's work on developing an AI strategy, which it is co-designing and focusing on gaining a social licence for AI, developing internal understanding of AI policy, and mitigating AI risks. The country also recently modernised its data and statistics legislation with the Data and Statistics Bill, which replaced laws from the 1970s and should ease data-sharing between governments and research institutions.

Looking beyond Australia and New Zealand, many of the Pacific island states share structural challenges when it comes to AI readiness. Geographic isolation and distance from major markets lead to high costs of doing business and delivering public services. Some countries lack the physical and technological infrastructure needed to overcome these costs, with limited access to undersea internet cables and mobile broadband. Small population sizes also lead to challenges in human capital and capacity issues in both the public and private sector. These issues all mean that the Pacific island states are at much earlier stages of AI readiness than Australia or New Zealand.

Given the existential threat that the climate crisis poses to countries in the Pacific, much of the available government capacity in the region is focused on climate change mitigation and adaptation. There is huge potential for Pacific island states to take advantage of AI-based technologies to achieve climate-related goals, but these have not yet been widely adopted outside of a few prominent use cases. One such use case is the Secretariat of the Pacific Regional Environment Programme's Strandings of Oceania database, which is hosted by Flukebook and uses AI to identify user-reported stranded whales and dolphins, helping researchers track species diversity and identify possible threats. Another multilateral group, the Pacific Community (SPC), is developing Digital Earth Pacific, an AI-assisted tool that will provide decision makers with current and past satellite imagery.

Looking ahead

Aside from New Zealand's forthcoming AI strategy, there are a number of developments to look forward to in the region. Australia is in the process of reforming its regulation on AI and automated decision making as part of developing a new Digital Age Policy Framework to inform future regulation. If New Zealand's forthcoming AI strategy matches its other policy documents in emphasis on ethics and collaborative government, the country has the potential to become a global leader in overall AI readiness. However, challenges remain. One issue highlighted by the New Zealand Government is a lack of domestic talent, with more than 50% of new tech roles in New Zealand filled via immigration. Addressing this issue is a major goal in implementing the country's Digital Tech Skills and Talent Plan, but significant investments and reforms will need to be made over a very long period to meet challenges like this one.

While there have been a few encouraging developments, small Pacific island states risk being left behind in terms of AI readiness. These countries could benefit from AI technology, but there is also a need to respond to private sector use of AI. For example, some companies and NGOs in the fishing sector, which many Pacific island states rely upon economically, are already using AI-based surveillance technology to monitor workers aboard fishing vessels. Clearly, this raises ethical and privacy issues, but no Pacific island state has passed a general data protection law. There is an opening in this area for regional cooperation, perhaps via an existing multilateral forum like the Pacific Community, which could allow Pacific island states to benefit from the learnings of more AI-ready governments.

Annex 1: Methodology

Dimensions and Indicators

The table below summarises the dimensions and indicators used in the Index.

Government Pillar			
Dimension	Description	Indicator	Source
Vision	Does the government have a vision for implementing AI?	**National AI strategy (Y/N)**	Desk research (e.g. OECD AI Policy Observatory, Future of Life Institute)
Governance and Ethics	Are there the right regulations and ethical frameworks in place to implement AI in a way that builds trust and legitimacy?	**Data protection and privacy legislation**	UN data protection and privacy legislation worldwide
		Cybersecurity	Global Cybersecurity Index
		Legal framework's adaptability to digital business models	Global Competitiveness Index
		National ethics framework (Y/N)	Desk research (e.g. Nature, AI Ethics Lab)
		Accountability	Worldwide Governance Indicators
Digital Capacity	What is the existing digital capacity within government?	**Online services**	UN e-Government Survey
		Foundational IT infrastructure	World Bank GovTech Maturity Index
		Government promotion of investment in emerging technologies	Network Readiness Index
Adaptability	Can the government change and innovate effectively?	**Government effectiveness**	Worldwide Governance Indicators
		Government's responsiveness to change	Global Competitiveness Index
		Procurement data	Global Data Barometer

Technology Sector Pillar			
Dimension	Description	Indicator	Source
Maturity	Does the country have a technology sector capable of supplying governments with AI technologies?	**Number of AI unicorns**	CB Insights
		Number of non-AI technology unicorns	CB Insights
		Value of trade in ICT services (per capita)	UNCTAD
		Value of trade in ICT goods (per capita)	UNCTAD
		Computer software spending	Global Innovation Index
Innovation Capacity	Does the technology sector have the right conditions to support innovation?	**Business administrative requirements**	Global Competitiveness Index
		VC availability	Global Innovation Index
		R&D spending	UNESCO
		Company investment in emerging technology	Network Readiness Index
		Research papers published in AI	Scimago
Human Capital	Are there the right skills in the population to support the technology sector?	**Graduates in STEM**	UNESCO
		GitHub users per thousand population	GitHub
		Female STEM graduates	World Bank
		Quality of engineering and technology higher education	QS Engineering & Technology rankings
		Digital skills	Global Competitiveness Index

Data and Infrastructure Pillar			
Dimension	Description	Indicator	Source
Infrastructure	Does the country have a good technological infrastructure to support AI technologies?	**Telecommunications infrastructure**	UN e-Government Survey
		Cloud providers	Cloud regions of top 5 cloud providers by market share as reported by Statista
		Broadband quality	EIU Inclusive Internet Index
		5G infrastructure	Ookla 5G Map
		Adoption of emerging technologies	Network Readiness Index
Data Availability	Is there good availability of data that could be used to train AI models?	**Open data**	Global Data Barometer
		Data governance	World Bank GovTech Maturity Index (2020 edition)
		Mobile-cellular telephone subscriptions	ITU
		Households with internet access	ITU
		Statistical capacity	World Bank
Data Representativeness	Is the data available likely to be representative of the population as a whole?	**Gender gap in Internet access**	EIU Inclusive Internet Index
		Cost of internet-enabled device relative to GDP per capita	GSMA Mobile Connectivity Index

Missing Values

Only countries with values for **more than 50% of indicators** are included in the final index. For this reason, the following countries were not included in the final rankings:

- Democratic People's Republic of Korea
- Dominica
- Equatorial Guinea
- Liechtenstein
- Marshall Islands
- Micronesia
- Monaco
- Nauru
- Palau
- Saint Kitts and Nevis
- San Marino
- Somalia
- Tuvalu

Peer Group Mean Imputation

For the majority of indicators with some data missing, we imputed the value of the peer group mean for each country (where peer group is their geographical region plus their World Bank income group). For a few indicators, the only possible scores are 0, 50, or 100. When we imputed scores for these indicators, we rounded the peer group mean to the nearest possible score.

For 5 countries, imputation of peer group means was not possible as they were either the sole country in their peer group or in a peer group in which all countries were missing data. These countries were:

- Afghanistan
- Maldives
- Seychelles
- Syrian Arab Republic
- Yemen

For these countries, no imputation was attempted where values were missing.

Calculating Scores

Normalisation

All scores were normalised to be between 0 and 100. The formula for normalisation was as follows:

$$\frac{x - x_{min}}{x_{max} - x_{min}}$$

For all indicators except *Effectiveness of government* (where x_{min} = -2.5), the value of x_{min} was set to 0.x_{max} was either the maximum possible value (in the case of data from other indices e.g. the Global Competitiveness Index), or the maximum observed value. The two exceptions were for *Mobile-cellular telephone subscriptions* where we set the maximum value to 130 (i.e. above 130 subscriptions per 100 mobile-cellular telephones are sufficiently widespread to warrant a score of 100, and values any higher would not represent a significant improvement), and *Percentage of STEM graduates who are female* where we set the maximum value to 50 (i.e. countries closer to gender parity in STEM graduates score higher, but once parity is achieved, a higher percentage of female graduates does not mean a higher score).

Treatment of Skewed Indicators

Nine indicators were identified as skewed (either (a) absolute skewness > 2.0 and kurtosis > 3.5 or (b) kurtosis > 10). These were:

- National ethics framework
- Number of AI unicorns
- Number of non-AI technology unicorns
- Value of ICT goods trade
- Value of ICT services trade
- VC availability
- R&D spending
- AI research papers
- GitHub users

As *national ethics framework* and *VC availability* are pretreated scores rather than hard data, these were left untreated.

The indicators *number of AI unicorns and number of non-AI technology unicorns* have large numbers of countries scoring 0 for having no technology unicorns. We were therefore willing to tolerate a higher degree of skewness in these indicators. However, looking purely at the countries with a value of > 0 in these indicators, absolute skewness was still > 2.0 and kurtosis still >3.5, so we still felt the need to treat them in some way.

The seven skewed indicators treated were using the logarithmic transformation For indicators other than *number of AI unicorns* and *number of non-AI technology unicorns*, this brought skewness and kurtosis down to acceptable levels. For the other two indicators, skewness and kurtosis in the subset of countries with values > 0 was brought down to acceptable levels, even if skewness and kurtosis were still higher in the indicator overall.

Following the logarithmic transformation, the indicators were normalised as above.

Total Score

To calculate the total score, we took the arithmetic mean of each dimension. Then we took the arithmetic mean of each pillar. The final score is the arithmetic mean of the three pillars. All indicators, dimensions and pillars were weighted equally.

Limitations of the Data

While the majority of our datasets were from 2022, 2021 or 2020, some were older. The Global Competitiveness Index was from 2019. Since the Index is based on data collected for the World Economic Forum Executive Opinion Survey, which is completed by business leaders, we felt that it continues to provide the best data available on the level of digital skills and business' experience of legislation and regulation, all of which are important for measuring AI readiness. While we recognise this means that countries' scores may not reflect the most up-to-date picture, we still chose to include these datasets given their importance, and the lack of a suitable alternative.

The following indicators included data from a range of years and some countries had no data for recent years. Where a country had a value missing, we used the most recent period for that value.

- Value of trade in ICT services per capita
- Value of trade in ICT goods per capita
- R&D spending
- Graduates in STEM
- Female STEM graduates
- Mobile-cellular telephone subscriptions
- Internet users (% of households)
- Gender gap in internet access

Although this leads to some countries having values 5 or more years out of date, we decided it was better for these countries to have an old value rather than no value at all.

Annex 2: Detailed scores

Global Position	Country	Total Score	Government Pillar	Technology Sector Pillar	Data and Infrastructure Pillar
1	United States of America	85.72	86.21	81.67	89.28
2	Singapore	84.12	89.68	68.50	94.17
3	United Kingdom	78.54	81.81	65.57	88.24
4	Finland	77.59	87.80	58.71	86.27
5	Canada	77.39	84.11	64.41	83.65
6	Republic of Korea	76.76	86.82	53.96	89.50
7	France	75.78	83.04	59.36	84.95
8	Australia	75.29	81.82	54.11	89.94
9	Japan	75.25	81.22	56.09	88.45
10	Netherlands	75.11	78.23	59.94	87.16
11	Denmark	74.79	83.26	58.39	82.72
12	Norway	73.09	81.11	53.44	84.73
13	Sweden	73.06	74.03	61.47	83.66
14	Taiwan	72.78	77.40	55.02	85.94
15	Germany	72.64	75.22	60.42	82.29
16	Austria	71.49	76.86	53.55	84.06
17	China	70.84	78.75	59.84	73.91
18	Ireland	70.76	69.90	57.60	84.78
19	Estonia	70.14	80.00	51.95	78.47
20	Israel	70.12	63.33	65.00	82.02
21	Belgium	69.95	72.01	54.78	83.05
22	United Arab Emirates	68.54	73.53	52.19	79.92
23	Switzerland	68.49	56.16	60.55	88.76
24	Italy	68.41	75.28	49.09	80.85
25	Portugal	68.12	74.50	49.95	79.91

Global Position	Country	Total Score	Government Pillar	Technology Sector Pillar	Data and Infrastructure Pillar
26	Luxembourg	67.91	82.57	43.32	77.83
27	Spain	67.83	71.82	48.70	82.96
28	New Zealand	67.82	63.23	50.45	89.77
29	Malaysia	67.37	77.70	50.26	74.16
30	Czech Republic	67.05	70.50	48.61	82.04
31	Thailand	64.63	76.77	38.70	78.42
32	India	63.67	75.58	48.58	66.83
33	Malta	62.75	80.65	38.80	68.80
34	Poland	62.65	68.72	45.05	74.18
35	Chile	62.52	71.27	39.31	76.97
36	Qatar	62.37	69.34	41.70	76.08
37	Brazil	62.37	69.62	43.43	74.05
38	Lithuania	62.20	74.39	43.95	68.27
39	Saudi Arabia	61.96	73.81	42.83	69.25
40	Russian Federation	61.48	76.21	43.88	64.36
41	Slovenia	61.45	71.15	41.62	71.57
42	Hungary	61.44	69.22	39.45	75.65
43	Indonesia	60.89	73.85	41.51	67.32
44	Bulgaria	60.33	65.70	37.56	77.74
45	Iceland	59.84	50.63	49.44	79.46
46	Latvia	59.84	70.61	39.19	69.72
47	Colombia	59.38	74.27	35.05	68.81
48	Cyprus	59.15	68.35	40.91	68.19
49	Turkey	58.97	75.48	39.93	61.50
50	Greece	58.56	54.37	44.71	76.61
51	Uruguay	58.25	71.10	32.20	71.44
52	Oman	57.83	69.28	34.74	69.47
53	Argentina	57.39	65.56	33.56	73.03
54	Philippines	55.42	65.02	36.33	64.90
55	Viet Nam	53.96	66.77	39.18	55.93

Global Position	Country	Total Score	Government Pillar	Technology Sector Pillar	Data and Infrastructure Pillar
56	Bahrain	53.59	45.14	36.87	78.77
57	Mauritius	53.38	68.65	31.16	60.34
58	Romania	53.30	50.96	36.62	72.30
59	Serbia	52.96	68.70	35.44	54.75
60	Ukraine	52.80	68.96	34.68	54.74
61	Peru	51.97	64.51	29.87	61.54
62	Mexico	51.78	43.05	38.85	73.45
63	Jordan	51.76	67.54	36.20	51.55
64	Slovakia	51.23	41.71	39.20	72.77
65	Egypt	49.42	63.46	36.07	48.72
66	Croatia	48.59	40.70	36.12	68.93
67	Brunei Darussalam	48.06	37.81	42.63	63.72
68	South Africa	47.74	37.90	37.60	67.73
69	Kuwait	47.68	37.40	34.72	70.93
70	Tunisia	46.81	48.63	36.92	54.87
71	North Macedonia	46.11	50.66	32.05	55.62
72	Kazakhstan	45.78	48.40	29.22	59.72
73	Lebanon	45.72	51.09	33.99	52.06
74	Azerbaijan	45.55	56.85	30.58	49.21
75	Iran	45.30	45.08	34.10	56.71
76	Montenegro	45.20	39.26	33.13	63.20
77	Andorra	45.16	38.57	32.58	64.32
78	Costa Rica	44.97	40.37	33.02	61.51
79	Uzbekistan	44.51	49.90	24.45	59.17
80	Bangladesh	43.63	58.48	24.80	47.60
81	Dominican Republic	42.16	42.67	24.49	59.30
82	Albania	42.10	41.98	30.66	53.65
83	Republic of Moldova	42.04	41.75	28.26	56.09
84	Armenia	41.91	43.59	31.07	51.06
85	Fiji	41.76	38.57	34.34	52.36

Global Position	Country	Total Score	Government Pillar	Technology Sector Pillar	Data and Infrastructure Pillar
86	Panama	41.49	38.29	29.14	57.03
87	Morocco	41.31	34.81	34.00	55.13
88	Georgia	40.79	41.23	29.35	51.79
89	Bahamas	40.74	33.95	30.54	57.73
90	Kenya	40.36	40.36	28.76	51.95
91	Belarus	40.27	32.36	32.30	56.15
92	Pakistan	40.22	44.32	34.67	41.67
93	Rwanda	40.20	53.28	28.14	39.19
94	Seychelles	39.87	37.21	27.30	55.10
95	Tonga	39.80	36.68	32.46	50.27
96	Barbados	39.53	32.77	31.42	54.40
97	Nigeria	39.10	44.91	23.08	49.31
98	Botswana	38.36	33.42	26.61	55.05
99	Bhutan	37.91	37.33	26.69	49.73
100	Antigua and Barbuda	37.91	32.62	25.18	55.94
101	Ecuador	37.36	36.07	26.55	49.46
102	Mongolia	37.21	35.21	26.68	49.76
103	Jamaica	37.09	34.30	29.99	46.99
104	Ghana	36.56	47.22	22.82	39.65
105	Sri Lanka	36.23	30.19	30.92	47.59
106	Trinidad and Tobago	36.17	30.14	28.44	49.94
107	Saint Lucia	35.86	29.78	27.50	50.30
108	Benin	35.84	48.40	22.99	36.12
109	Tajikistan	35.83	41.81	19.79	45.90
110	Paraguay	35.46	36.77	21.44	48.16
111	Algeria	35.33	30.17	29.93	45.88
112	Bosnia and Herzegovina	35.17	26.70	27.98	50.82
113	Suriname	35.11	29.59	26.09	49.65
114	Guatemala	34.93	29.60	23.07	52.10
115	Namibia	34.57	29.17	26.58	47.95

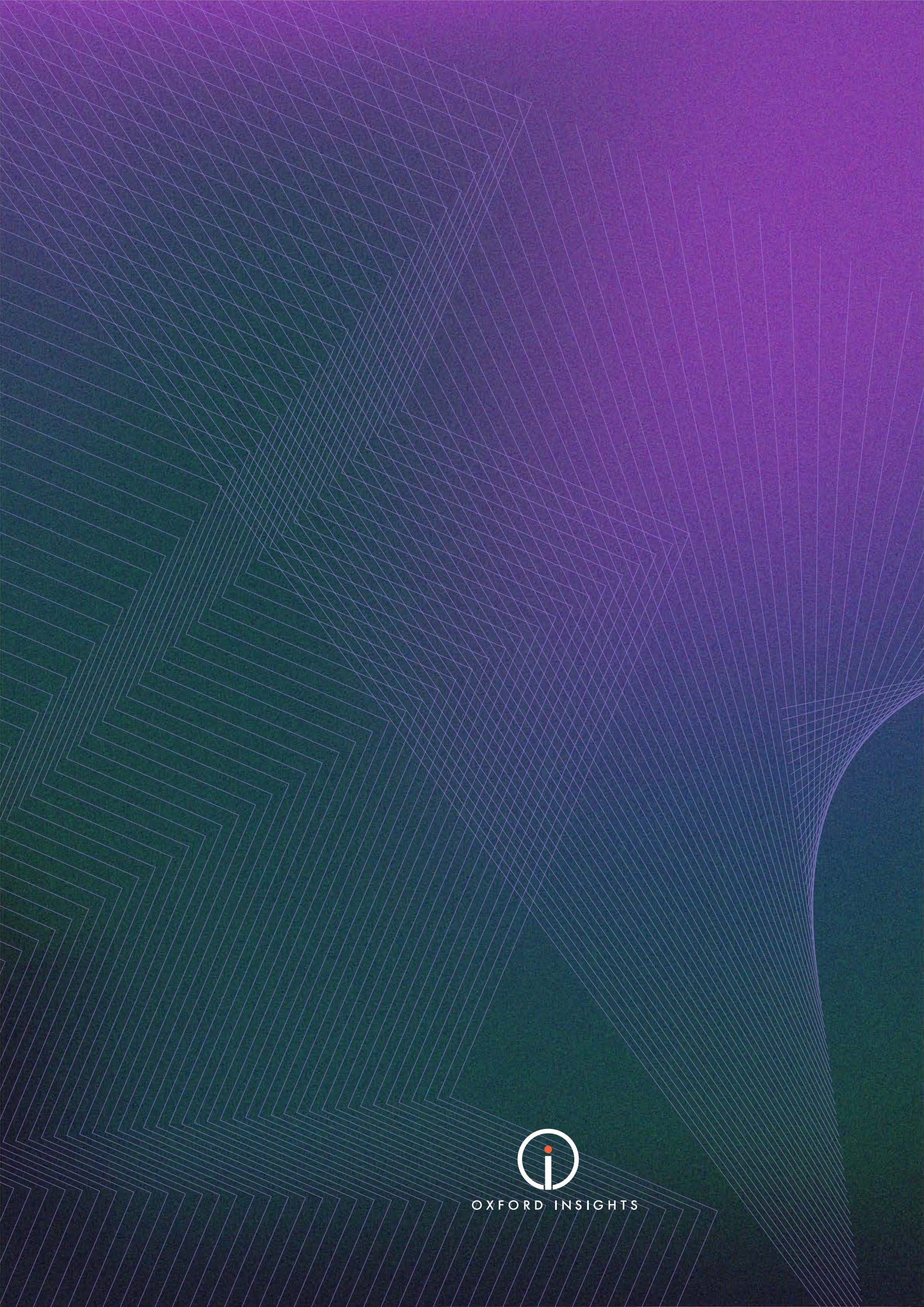
Global Position	Country	Total Score	Government Pillar	Technology Sector Pillar	Data and Infrastructure Pillar
116	Senegal	34.51	35.01	27.25	41.28
117	Grenada	34.39	27.41	24.69	51.07
118	Cabo Verde	34.27	35.91	24.45	42.46
119	Kyrgyzstan	33.91	33.73	22.49	45.50
120	Saint Vincent and the Grenadines	33.71	30.21	23.94	46.97
121	Maldives	33.54	33.68	15.16	51.76
122	Guyana	33.52	29.26	23.93	47.36
123	Uganda	32.66	37.78	19.49	40.70
124	Bolivia	32.56	27.80	20.56	49.31
125	United Republic of Tanzania	32.50	35.43	20.05	42.01
126	Myanmar	32.45	24.26	25.91	47.17
127	Gabon	32.42	25.31	26.33	45.62
128	Turkmenistan	31.95	22.43	29.43	43.99
129	Lao People's Democratic Republic	31.72	29.64	21.46	44.06
130	Cuba	31.59	24.37	27.04	43.35
131	Iraq	31.52	21.01	27.18	46.37
132	Cambodia	31.17	27.96	21.14	44.40
133	Vanuatu	31.11	27.03	22.76	43.53
134	Honduras	31.04	26.23	24.83	42.06
135	El Salvador	30.96	23.34	22.76	46.78
136	Côte D'Ivoire	30.95	31.42	21.62	39.81
137	Timor-Leste	30.86	25.50	21.87	45.23
138	Cameroon	30.76	31.31	22.70	38.28
139	Nepal	30.75	30.88	23.50	37.88
140	Solomon Islands	30.58	25.03	22.81	43.90
141	Papua New Guinea	30.55	27.19	21.85	42.61
142	Samoa	30.11	28.57	22.16	39.61
143	Belize	29.98	20.67	24.39	44.89
144	Djibouti	29.85	19.89	28.99	40.66

Global Position	Country	Total Score	Government Pillar	Technology Sector Pillar	Data and Infrastructure Pillar
145	Togo	29.82	29.65	19.43	40.40
146	Zambia	29.63	31.55	19.59	37.75
147	Venezuela	29.33	17.62	26.41	43.95
148	Zimbabwe	29.26	24.25	20.29	43.25
149	Libya	28.84	16.52	27.98	42.01
150	Mauritania	28.40	21.79	19.57	43.84
151	Nicaragua	28.33	24.59	21.30	39.11
152	Madagascar	28.26	25.10	19.51	40.16
153	Gambia	27.96	25.21	20.74	37.94
154	Kiribati	27.82	26.51	18.34	38.61
155	Guinea	27.82	26.33	19.94	37.17
156	Sao Tome and Principe	27.62	25.89	20.75	36.23
157	Mali	27.34	24.83	19.43	37.75
158	Congo	26.20	23.33	18.64	36.64
159	Burkina Faso	26.20	27.79	16.48	34.33
160	Lesotho	26.13	25.81	19.07	33.52
161	Eswatini	25.46	23.06	15.65	37.66
162	Ethiopia	25.30	25.15	19.70	31.05
163	Angola	24.77	21.33	14.98	37.99
164	Sierra Leone	24.49	22.46	17.84	33.18
165	Malawi	24.46	21.88	17.17	34.33
166	Comoros	23.82	16.38	19.93	35.15
167	Niger	23.72	25.63	16.15	29.40
168	Guinea Bissau	22.82	16.29	18.63	33.55
169	Sudan	22.55	16.55	21.16	29.96
170	Mozambique	22.54	21.38	16.07	30.17
171	Liberia	22.09	19.76	18.45	28.07
172	Chad	20.58	21.03	15.21	25.49
173	Burundi	20.53	18.72	15.89	26.97
174	Democratic Republic of the Congo	20.22	18.67	14.16	27.83

Global Position	Country	Total Score	Government Pillar	Technology Sector Pillar	Data and Infrastructure Pillar
175	Eritrea	20.17	11.53	18.53	30.44
176	Central African Republic	19.90	14.50	17.36	27.84
177	South Sudan	19.45	14.45	16.90	27.02
178	Haiti	18.61	9.72	15.11	31.00
179	Yemen	17.32	18.39	22.05	11.53
180	Syrian Arab Republic	16.04	13.72	19.10	15.30
181	Afghanistan	13.46	14.46	10.70	15.21

Government AI Readiness Index **2022**

OXFORD INSIGHTS


OXFORD INSIGHTS