



Government AI Readiness Index 2023



Credits

This report was produced by Oxford Insights.

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The Government AI Readiness Index 2023

In 2023, artificial intelligence (AI) was in the headlines more than ever. Generative AI breakthroughs, major developments in the field of AI regulation like the European Union's AI Act, and a significant increase in AI-related summits globally have put this technology in the spotlight. The transformative potential of AI is undeniable, with governments worldwide acknowledging its impact.

Governments are not only working to regulate AI and foster AI innovation, but also striving to integrate this technology into public services. Countries like the Republic of Korea are using AI to improve government operations through the [Digital Platform Government](#). Similarly, the UK's National Health Service is supporting the research and innovation of new [AI screening technologies for health and social care](#).

However, understanding how to ensure that AI is adopted effectively **for the public good** remains a challenge. This index attempts to address this challenge. Our primary research question remains unchanged: **how ready is a given government to implement AI in the delivery of public services to their citizens?**

This year, we are expanding our scope to rank **193 countries**, up from 183 in the 2022 edition. We recognise that government AI readiness is a global concern, and our goal is to include as many countries as possible in the index rankings. This guides the selection of our indicators to ensure data is available for the majority of countries.

This report highlights the main findings for each of our pillars and provides insights into global trends in the AI governance landscape. Additionally, as in previous years, we include regional reports analysing the major trends and initiatives affecting each region's AI readiness¹. Our analysis is based on a combination 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 regional and national AI policy contexts than can be provided by numerical scores alone.

¹ We have divided the world into 9 regions, based on a combination of the [UN](#) and the [World Bank](#) regional groupings.



Our Framework

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

Government

A government should have a strategic vision for how it develops and governs AI, supported by appropriate regulation and attention to ethical risks (governance and 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.

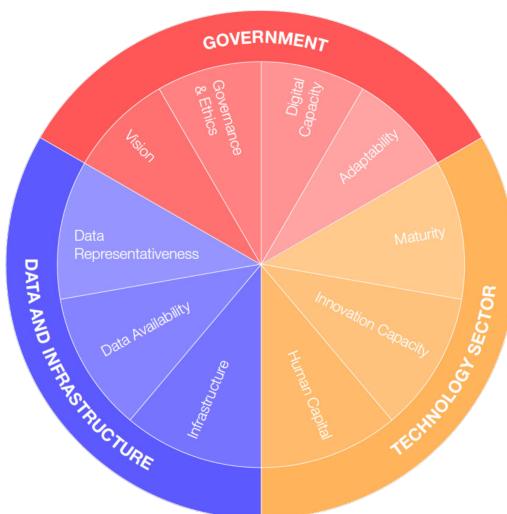
Technology Sector

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 R&D spending. Good levels of human capital — the skills and education of the people working in this sector — are also crucial.

Data & Infrastructure

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.

Figure 1: The Pillars of the Government AI Readiness Index



Global findings in full

Government Pillar

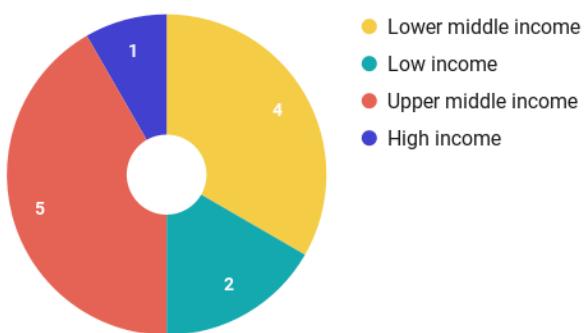
The number of AI strategies released per year is trending downward, but the picture looks more diverse.

The overall number of published AI strategies has decreased compared to previous years. This decline is primarily attributed to fewer strategies published by countries in the higher income end.²

However, it's worth noting that this year marks the most diverse collection of new or upcoming AI strategies to date. **Half of the AI strategies that were published or announced come from low and lower middle income countries.** This represents a significant change as in previous years AI work was dominated by high and upper middle income countries (see Figure 2).

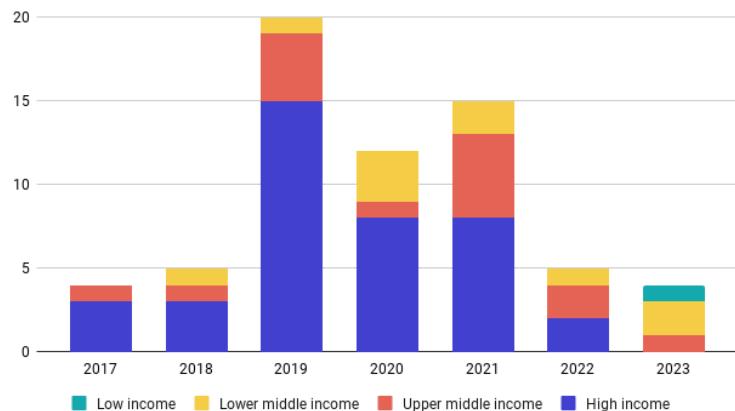
Notably, **Rwanda has become the first country within the low income bracket to publish an AI strategy.** Similarly, lower middle income countries, including Tajikistan, Senegal, and Benin, have published AI strategies this year, while Ethiopia and Sri Lanka are set to release theirs.

Figure 3: Released or announced AI strategies (2023)



their efforts in establishing robust foundations for AI governance, indicating a potential for improved performance in this pillar in the future.

Figure 2: AI strategies published per year (2017-2023)



The picture is also more diverse in terms of regions. Countries that have either announced or published AI strategies this year are spread across Latin America & the Caribbean, South & Central Asia, Sub-Saharan Africa, and the Middle East and North Africa. These regions have historically been underrepresented in AI strategy work, with less than 50% of their countries having released a strategy. Additionally, these regions currently score below the global average in the Government pillar. It is therefore encouraging to observe

² Our income group classification is based on the World Bank's [Group country classifications by income level for 2023-2024](#).



The release and announcement of strategies by countries in the lower-income brackets hint at a potential momentum boost among nations that were lagging in formalising their AI visions. AI, as the global governance trends section highlights, is concurrently becoming a pivotal element in the international development agenda, with cooperation agencies sponsoring and advising developing countries on AI governance. These elements could drive a potential surge in the overall development of AI strategies in the coming years.

Data and Infrastructure Pillar

The digital divide remains a global challenge.

Scores in the Data and Infrastructure pillar show a substantial difference between high and low income economies, illustrating an existing global digital divide. These differences are particularly pronounced in the average scores of low and high income groups within the dimensions of Data Availability and Infrastructure (see Figure 4).

The disparity in these two dimensions is also evident when looking across regions. The Infrastructure dimension reveals one of the highest gaps between the highest and lowest-ranked regions, with North America scoring 80.57 and Sub-Saharan Africa scoring 32.44 (see Figure 5). Notably, there is a substantial disparity in Data Availability, marked by an 18-point difference between the lowest-ranked, Sub-Saharan Africa (32.44), and the second-lowest-ranked, Pacific (50.79). This underscores a pronounced imbalance. When considering all dimensions, the average gap between the lowest and second-lowest regions is 6.10 points, highlighting a significant challenge in terms of data availability for Sub-Saharan Africa.

Figure 5: Scores in Infrastructure dimension by region

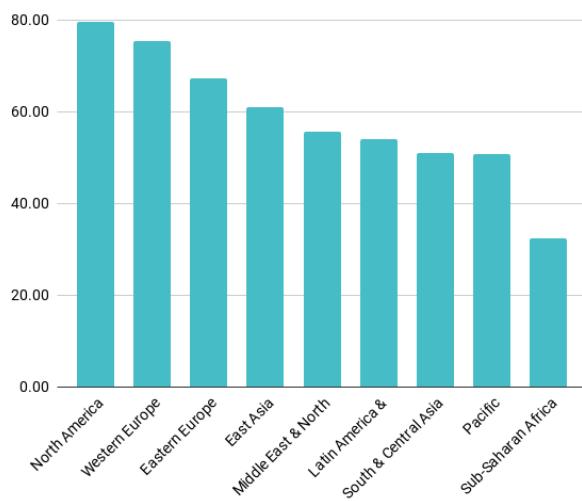
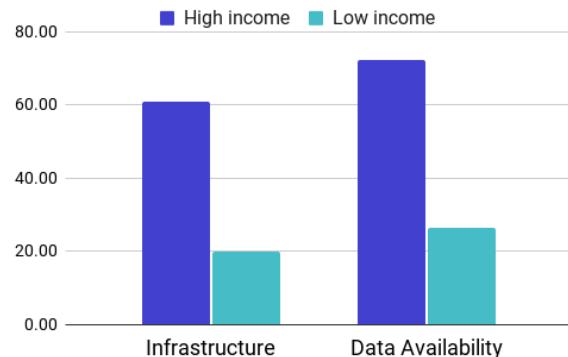


Figure 4: Average Infrastructure and Data Availability scores (High and Low income countries)



This is particularly relevant as both data availability and infrastructure are critical enablers for AI readiness. The development of AI systems requires extensive volumes of data for tasks such as training models, refining algorithms, and mitigating bias, among other crucial aspects. At the same time, establishing a robust infrastructure foundation is essential

to facilitate the operability and scale of AI tools, as well as to guarantee equitable and safe access to them.

Amid the generative AI boom, which puts the spotlight on major risks like privacy, labour displacement, and misinformation, it's important not to underestimate the effects of the existing global digital gap. While the emergence of generative AI models holds the potential for significant improvements in public services for countries in the lower income bracket, the associated risks must be acknowledged. Without a solid base of data and infrastructure, countries may find it challenging to develop domestic generative AI capabilities, potentially leading to reliance on foreign technology. This reliance could introduce additional hurdles, including the unavailability of AI tools in local languages and the potential for biases in AI models. Addressing these challenges becomes essential for fostering equitable and inclusive advancements in AI readiness.

Technology Sector Pillar

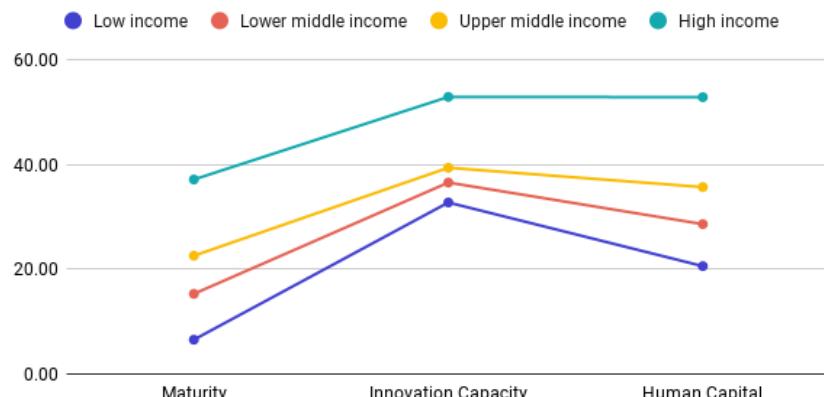
There is a disparity between high income countries and everyone else, though some large middle income economies punch above their weight.

The data also suggests a **disparity within the Technology Sector pillar**.

However, this disparity appears to be between high income countries and countries in every other income group. This is best illustrated by looking at the average scores for each income group within each dimension of the Technology Sector pillar (see Figure 6). Across all

three dimensions, the gap in average scores between low income and lower middle income countries is relatively small (3 to 8 points), as is the gap in average scores between lower-middle-income and upper-middle-income countries (2 to 7 points). However, **the gap in average scores between upper-middle-income and high-income countries is much larger** at 13 to 17 points — in the Innovation Capacity and Human Capital dimensions, this disparity is greater than the gaps between every other income group combined. The US dominates the Technology Sector pillar with a score 12 points higher than the second-ranking United Kingdom — compared to a 2-point difference between first and second-ranking countries in the other pillars. However, even if we exclude this outlier, the gap narrows only slightly — by 0.27 to 0.80 points.

Figure 6: Average scores in Technology Sector dimensions by income group





That being said, it is important to note that **some lower-income countries punch above their weight, scoring closer to countries in the high income group**. While high income countries dominate the top of most indicators in the Technology Sector pillar, there are notable exceptions. Excluding imputed data, Malaysia is the non-high income country most frequently listed in the top 20 countries in these indicators, appearing as often as the high-income countries of the Republic of Korea, Australia, or Ireland. This aligns with Malaysia's high overall score of 68.71, which is much higher than the average score of 43.69 for upper middle income countries and leads it to rank 23rd globally. Malaysia's strength mostly lies in dimensions related to AI skills and education, performing well in *ICT skills*, *Graduates in STEM or computer science*, *Quality of engineering and technology higher education*, and *AI research papers*. This suggests the country is set up to be a source of much-needed AI talent in the years to come.

Malaysia is followed closely by the **large non-high income economies of China, India, Brazil, and the Russian Federation** — sometimes called the ‘BRIC’ countries — and China ranks tenth in the world in the Technology Sector pillar. What lies behind these scores? China, Brazil, and India all rank near the top in *Number of AI unicorns* and *Number of non-AI tech unicorns*, likely benefiting from huge consumer populations capable of powering billion-dollar start-ups. All BRIC countries are also represented in the top 20 for *AI research papers* (where India outranked the US for the first time in 2023 to take 2nd place behind China) and *Quality of engineering and technology higher education*. This suggests that these countries’ large populations have access to quality educational and research institutions, which is critical for future human capital and research performance.

Even considering these outperforming middle-income countries, **the large disparity in tech sector readiness is concerning**. If a country’s domestic tech sector is too immature or lacking in human capital or innovation capacity to create adequate AI tools, governments may be forced to turn to foreign companies, likely in higher-income countries, to procure AI services. This both stunts the growth of the domestic tech sector and can have even more dire consequences for AI-enabled public services, which may be improperly trained on foreign data not representative or relevant to a country’s context.

Global governance trends

2023 saw increased international collaboration on AI, especially on AI governance and ethics.

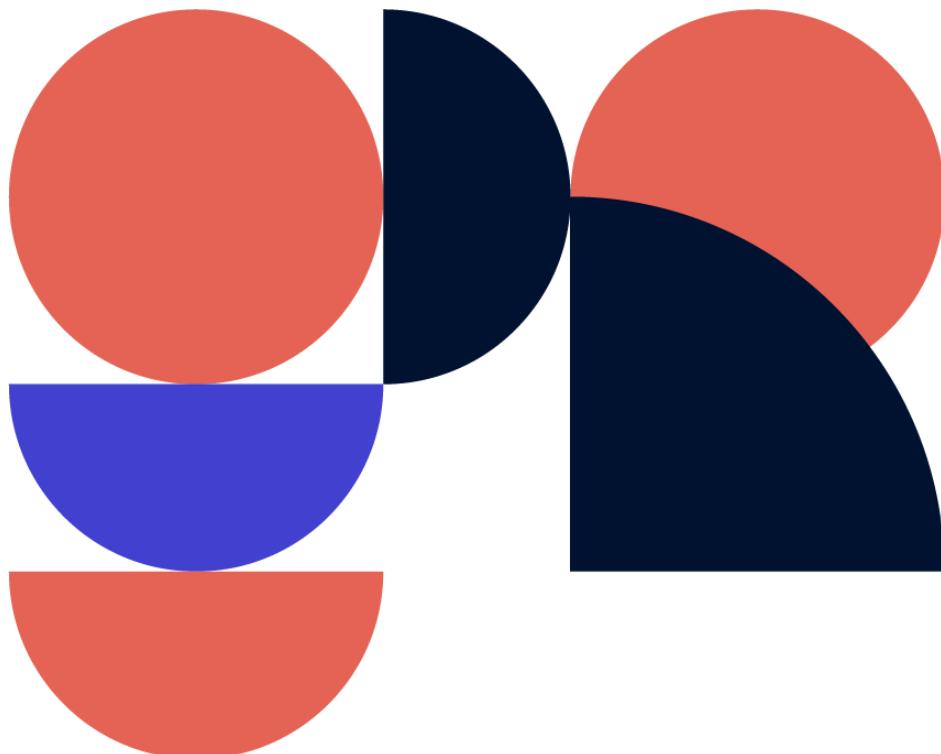
While the index focuses largely on individual countries’ efforts on AI in public services, **2023 has been a very active year for global collaboration on AI**. This is a welcome development, as the impacts of AI cross national borders and AI supply chains are increasingly global. A robust global governance framework for AI is therefore essential to equitably distribute the benefits of this technology and effectively address and mitigate its risks.

We have seen a boom in AI summits, from the launch of the Hiroshima AI process during the G7 Summit in May to the UK's [AI Safety Summit](#) and accompanying AI Fringe in November. Clearly, **we are seeing increased awareness of the societal implications of AI and major political bodies are taking action.** This year has seen the release of several proposed ways of governing AI, including the G7's [International Guiding Principles for Advanced AI Systems](#) and [International Code of Conduct for Organizations Developing Advanced AI Systems](#), as well as the [Bletchley Declaration](#) that emerged from the UK AI Safety Summit. These organisations and documents join others already established in the field of AI governance, including the OECD's 2019 [AI Principles](#), UNESCO's 2021 [Recommendation on the Ethics of Artificial Intelligence](#), and the European Union's draft [AI Act](#).

This year has also seen an **increase in AI governance collaboration at the regional level.** In Latin America and the Caribbean, twenty nations agreed to the [Santiago Declaration](#) after a summit hosted by the Chilean government with the support of UNESCO and the Latin American Development Bank CAF. This follows the 2022 meeting of seven southern African countries in Windhoek, Namibia for a UNESCO-Southern Africa sub-Regional Forum on Artificial Intelligence, which agreed to the [Windhoek Statement](#) recommending actions on data, education, and governance across the region.

As the above summits suggest, **AI has also become part of the international development agenda.** We are now seeing AI governance developments beyond the Global North, in part because of support from cooperation agencies and development banks. These efforts are showing clear results, with [Rwanda](#) and [Senegal](#) publishing national AI strategies this year with the support of international development organisations including GIZ FAIR Forward, the World Economic Forum, and the AU-EU Digital for Development (D4D) Hub.

UNESCO's activities in this area merit a special mention. The organisation has created two methodologies to enable countries to implement their recommendations on AI ethics: the [Readiness Assessment Methodology](#) (RAM), which assesses whether a country is prepared to implement the UNESCO recommendations, and the [Ethical Impact Assessment](#), which helps project teams assess potential ethical impacts of AI systems they are developing. Supported by the Government of Japan, the European Commission, and CAF, UNESCO has announced that it will work with an initial group of [50 countries](#) to create country reports based on the RAM and tailor specific recommendations. Notably, these countries are largely developing countries in the Global South. Some of the countries that have committed to working with UNESCO on implementing its ethics recommendations have not yet published national AI strategies, meaning they may publish ethical AI guidelines before any overarching AI strategy. This would be a reversal of the process we have seen across almost every other country and it has the potential to significantly change how countries approach AI in government.



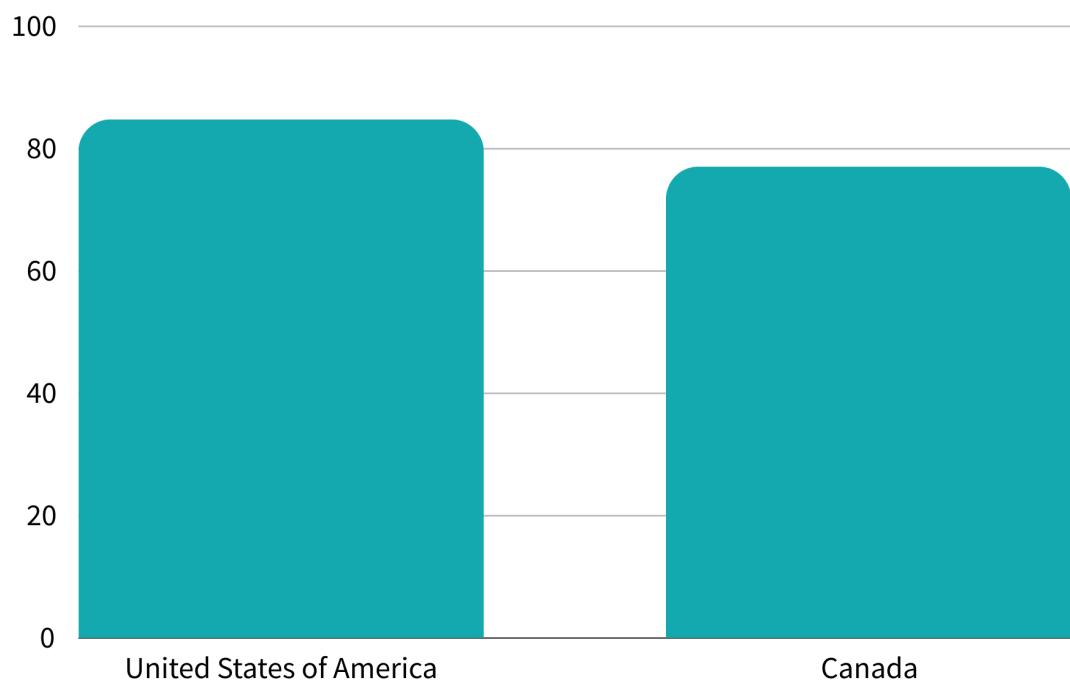
Regional Reports

Government AI
Readiness Index 2023



North America

By Emma Hankins



The regional landscape

Looking at this year's data, the story of the North American region appears to be one of continuity: **the United States and Canada continue to score near the top of the index**, with the USA ranking first at 84.80 and Canada ranking fifth at 77.07. The countries both have high scores in the Government and Data and Infrastructure pillars, but the US dramatically outperforms in the Technology Sector pillar, scoring 12 points higher than any other country. Beyond the numbers, the past year has been a busy time for AI policy developments in both countries.

Key developments

Both the USA and Canada rank in the top five globally in the Government pillar, seemingly tracking the many AI governance initiatives that have been introduced in both countries recently. One of the most important developments in government AI readiness in the region happened in October 2023, as US President Biden announced the [Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence](#). Amongst other things, the sweeping order directs every federal agency to appoint a Chief AI Officer and, for some agencies, to create internal AI Governance Boards. Additionally, agencies are instructed to develop standards for the government's use of AI, according to the National Institute of Standards and Technology (NIST)'s [AI](#)



[Risk Management Framework](#), published January 2023. The executive order also includes a section on ‘strengthening American leadership abroad’ and was released the same week as [US Vice President Kamala Harris spoke](#) at the UK AI Safety Summit, suggesting the US intends to remain active in global AI governance.

While the specific laws and regulations derived from this executive order will be created by Congress, it does impose some mandates by invoking the 1950 Defense Production Act. It requires companies developing large-scale AI systems that could affect national security, public health, or the economy to test these systems and report results to the government. It also orders rules to be drafted around federal procurement of AI, which will have a large impact due to the government’s role as a [major purchaser](#) of advanced technology like AI.

The order also requires the Department of Commerce to develop **guidance on labelling AI-generated content** and requires federal agencies to watermark such content. This rule and the order’s wider callout of the risk of deepfakes and generative AI is particularly timely ahead of the November 2024 general election in the US. Much of the campaign will play out on social media, and [experts have expressed serious concern](#) about the potential for AI products such as deepfakes to foster widespread dis- and misinformation.

Canada, meanwhile, was one of the first countries to respond officially to the generative AI boom of early 2023, publishing its [Guide on the use of Generative AI](#) for federal institutions in September 2023. This guide outlines the challenges that generative AI poses, as well as outlining a number of best practices and additional resources for federal institutions to draw upon when using the new technology. At the same time, Canada also published a [Voluntary Code of Conduct on the Responsible Development and Management of Advanced Generative AI Systems](#) aimed at private companies developing generative AI.

In April 2023, Canada completed its third review of its [Directive on Automated Decision-Making](#), which requires most federal institutions that use AI to carry out and publish an [Algorithmic Impact Assessment](#). Amendments to the directive include changing its scope to also apply to internal government services rather than only external ones, additional requirements for impact assessments, and a mandatory gender-based analysis of AI systems before implementing them. Canada’s parliament has also made progress on [Bill C-27](#), which would amend existing data privacy legislation and include a new law, the **Artificial Intelligence and Data Act** or AIDA. According to a [companion document](#) released in March 2023, the AIDA would take a risk-based approach to AI regulation similar to the European Union’s AI Act. The AIDA sets out ‘high-impact’ AI systems which would be subject to stricter requirements and would create an AI and Data Commissioner responsible for education and enforcement.

Looking ahead

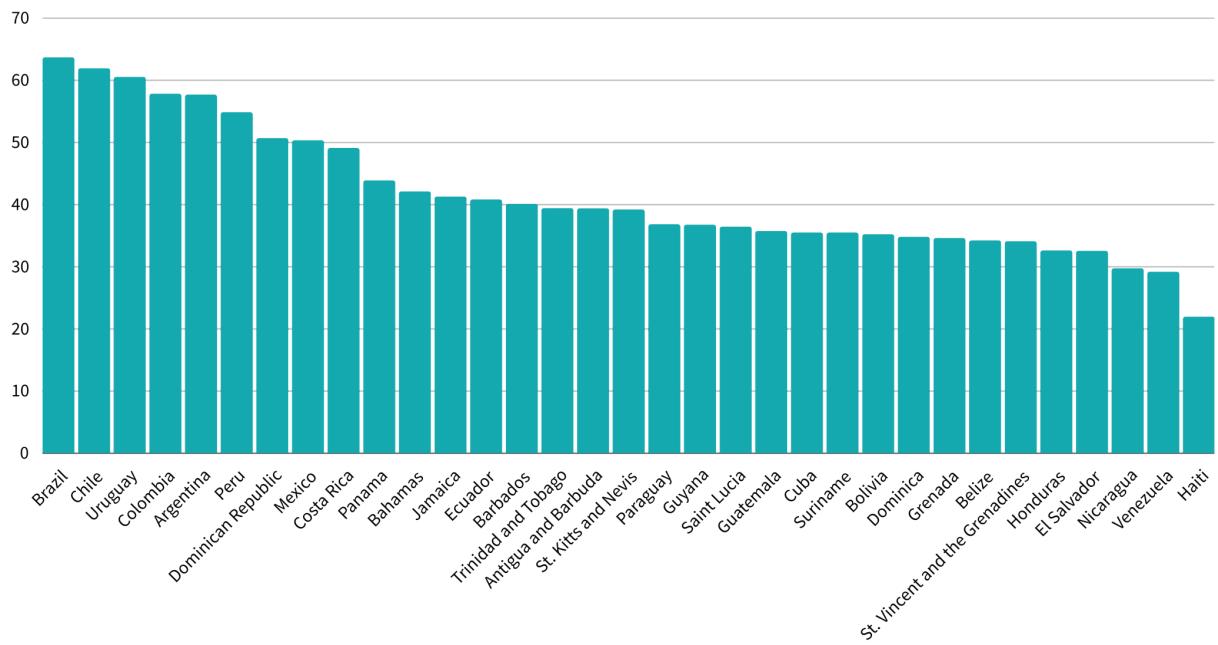
While the US's recent executive order represents a clear move towards regulation of AI in the US, it will take time to see how the resulting regulations are shaped and implemented. In the next year, **we can expect a raft of new regulations from nearly every federal department and agency** as well as NIST. Some parts of the executive order will be more difficult to address than others. For example, the order directs agencies to hire more AI experts, but **competing with the high salaries in the US tech sector will be challenging**. The executive order also urges Congress to pass comprehensive data protection and privacy legislation, which has been [introduced](#) many times but failed thus far. While [a number of states](#) have now passed their own data privacy legislation, the lack of federal legislation covering populations in every state is a growing concern as increasingly advanced AI systems rely on larger and larger datasets that may put Americans' privacy at risk.

Similarly, Canada's AIDA, if passed, would go through several rounds of draft regulation and not come into force until 2025. AIDA's companion document also explicitly states that regulations will be drafted with international interoperability in mind, meaning that any regulation the US, Canada's largest trading partner, adopts could have an impact on Canadian regulatory decisions.



Latin America & The Caribbean

By Gonzalo Grau and Pablo Fuentes Nettel



The regional landscape

This year, **Latin America & the Caribbean (LAC) presents an average score of 41.50, placing it 6th among the 9 regions covered.** There is a substantial difference, nearly 40 points, when compared to the leading region, North America. There are also significant disparities within the region: at 63.70, the highest-ranking Brazil is almost 42 points ahead of Haiti, the lowest-ranking at 21.97.

Five countries — Brazil, Chile, Uruguay, Colombia, and Argentina — stand out from the rest, with scores between 63.70 and 57.72 points. The performance of these countries is particularly strong in the Government pillar, with four out of the five regional leaders within the global top 40 in this category. Latin America & the Caribbean seems to be lagging in the Innovation Capacity dimension of the Technology Sector pillar, where we find a gap of almost 10 points between the regional and global average. **In the Technology Sector pillar, Brazil (45.08) emerges as the regional leader,** maintaining a lead of approximately 5 points over Chile (40.90) and Mexico (39.55), which are the second and third-ranked countries, respectively.

Key developments

This year, one of the most noteworthy developments in the region was the signing of the [Santiago Declaration by 20 Latin American and Caribbean governments](#). This document was the main outcome of the [Summit of Ministers and High-Level Authorities of Latin America and the Caribbean on Artificial Intelligence](#), organised by CAF (Development Bank of Latin America), UNESCO, and the Chilean government. The declaration acknowledges the need for proactive involvement from governments to harness the opportunities that AI brings while addressing its risks. This is a relevant step in terms of regional collaboration on AI readiness. The increased awareness fostered by these initiatives could potentially lead to more robust governance and regulatory frameworks in the region.

Another significant development within the region was the [Dominican Republic emerging as the first Caribbean country to release its National AI Strategy](#). This strategic document outlines a series of initiatives aimed at integrating AI to improve public services in key sectors such as justice, health, education, security, and transportation. [Cuba](#) and [Jamaica](#) have also announced forthcoming AI strategies. This rise in momentum among Caribbean countries is particularly encouraging, especially given they currently trail continental peers by 10 points in the Government pillar.

In a noteworthy approach to AI governance, the [Mexican legislative branch is making proactive efforts to lay the groundwork for a comprehensive AI governance framework](#). This initiative takes form in the [National Alliance for AI](#), a programme presented in the Senate and focused on strengthening the AI ecosystem within the country. In addition, the Mexican Congress has recently approved a [reform to its Law on Science and Technology](#), paving the way towards the adoption of ethical principles for the use of AI.

We have also seen relevant developments related to the Technology Sector pillar, the region's lowest-scoring pillar. The Dominican Republic announced innovation and capacity-building in technology as national priorities in its [2030 National Innovation Policy](#). Similarly, Argentina is looking to spur technological innovation by opening [two new financing streams](#) for AI development and application projects—an investment totalling USD 13.5 million.

Looking ahead

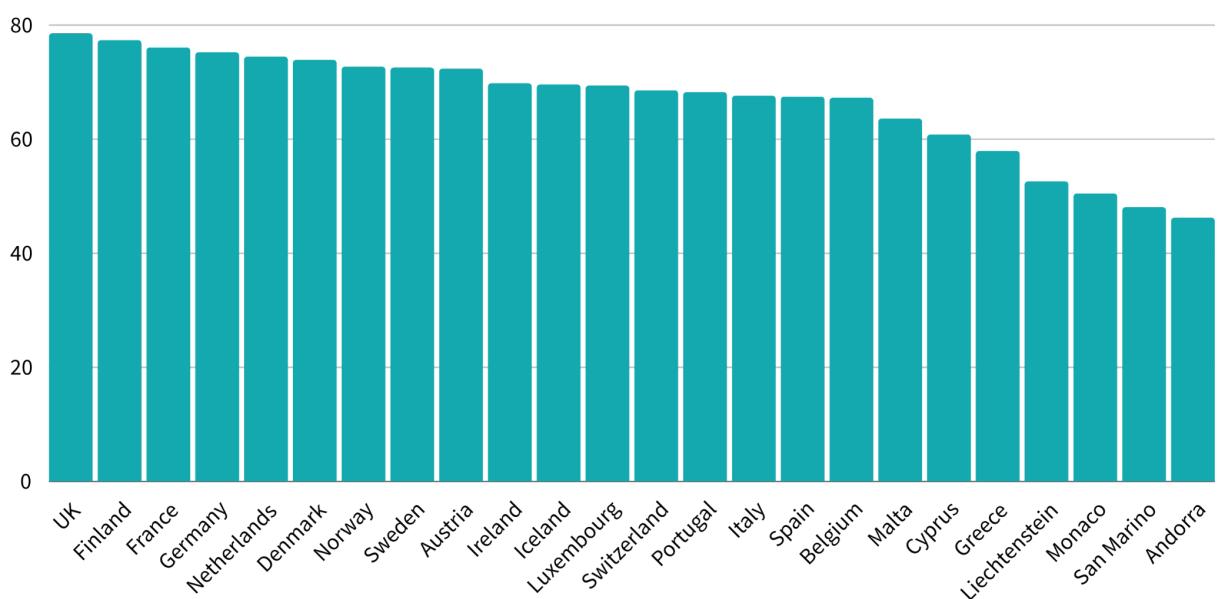
In the upcoming year, it will be crucial to follow Brazil's legislative developments closely — [Brazil's proposed AI bill](#) could be a groundbreaking initiative, [positioning the country as a pioneer in AI regulation within the region](#). Similarly, it will be interesting to follow the latest developments of the [EU-LAC Digital Alliance](#). The collaboration between the European Union and Latin America & The Caribbean in [converging digital policy and regulatory frameworks on AI](#), holds the potential to significantly influence the regulatory landscape in the region.



Additionally, relevant efforts are underway in [Chile](#) and [Uruguay](#), as they actively revise their national AI strategies, with support from UNESCO. These collaborative efforts could lead to strengthening governance frameworks and aligning national strategies with international ethical standards.

Western Europe

By Livia Martinescu



The regional landscape

Western Europe holds the second-highest global average score, with its countries comprising more than **half of the top 20 nations in this year's index**. It ranks behind only North America, a region with just two members that both rank in the top five of the Government and Technology Sector pillars. The region's average score of 66.72 reflects a consistently high level of performance across all pillars. Similar to last year's index, the United Kingdom, Finland, and France continue to lead scores within the region. Excluding the microstates — Liechtenstein, Monaco, San Marino, and Andorra — **Western Europe exhibits a relatively narrow range of scores compared to other regions**. Greece, the lowest-ranked of the non-microstates, is only 20.62 points behind the United Kingdom, the regional leader. Only North America, which only contains two high-ranking countries, has a smaller range than Western Europe, and most other regions have ranges at least 10 points larger.

As observed in last year's edition of the index, this similarity in scores could be in part attributed to regional collaboration in advancing AI readiness, with regulatory and funding initiatives concentrated at the European Union (EU) level.

Key developments

Some of the most noteworthy events in AI readiness within Western Europe over the past year revolve around the ongoing legislative developments concerning the [European Union's AI Act](#). Upon full approval, this legislation could mark Europe's first dedicated AI law. The AI Act introduces



regulatory innovation by **proposing a risk-based approach and imposing legal obligations proportionate to the level of risk associated with AI systems**. By delineating limits and conditions, the legislation will play a pivotal role in shaping the aspirations of EU member states concerning the integration of AI within their national governments.

In addition to these legislative strides, a noteworthy event contributing to the harmonisation of policy and regulation was the **AI Safety Summit hosted by the UK**. This summit led to the creation of the [Bletchley Declaration](#), in which 28 countries (8 in Western Europe) and the EU recognized the various risks associated with AI and agreed to convene for further discussions in 2024.

The region has also seen relevant efforts to enhance AI governance at the national level. **Spain has made significant progress towards a more robust governance and regulatory framework**. The country has launched an [AI sandbox](#) to assist start-ups in adjusting to regulation while approving a law to establish the first supervisory agency for artificial intelligence in the EU — [the Spanish Agency for the Supervision of Artificial Intelligence \(AESIA\)](#). The AESIA will [monitor adherence to AI standards](#) by implementing quality and responsibility seals. Additionally, it will be tasked with creating controlled testing environments that facilitate the responsible introduction of innovative, high-risk, or general-purpose AI systems. In a similar vein, the Netherlands has appointed an [Algorithm Supervision Body](#) to strengthen the handling of algorithms that process personal data.

Several countries in the region have created new initiatives to support AI start-ups, potentially influencing future scores in the Technology Sector Pillar. In 2023, the United Kingdom established the [Frontier AI Taskforce](#), an internal start-up within the UK government. The overarching objective is to secure funding for a novel government-industry taskforce, ensuring sovereign capabilities and widespread adoption of safe and dependable foundational AI models. This strategic move aims to solidify the UK's position as a [science and technology superpower](#) by the year 2030. In September 2023, the Frontier AI Taskforce released its [inaugural progress report](#), outlining key milestones. Meanwhile, Italy is launching a [Corporate Venture Capital Fund](#) for AI start-ups to develop solutions for the public sector with the aim of implementing their 2021 National AI Strategy and further developing AI-driven policies and services in the public sector by boosting public sector innovation.

There has also been activity in creating AI centres and hubs in the region. Italy recently established a [Future Artificial Intelligence Research \(FAIR\) Centre](#) to implement its policies supporting AI. Malta has opened a [European Digital Innovation Hub](#), joining a network of 227 similar hubs across Europe, which will focus on AI and other emerging technologies. Specific to AI in public services, Portugal has inaugurated a [Hub for Artificial Intelligence and Data Science for Public Administration \(AI4PA\)](#).

In 2023, Western European **microstates have also recorded important progress in data coverage**. San Marino and Liechtenstein have surpassed the 50% threshold for data coverage this year, a notable improvement from the previous year where their data representation was less extensive.³

³ Countries with data coverage below 50% of indicators are excluded from the rankings. This year's increase in data availability has reduced the number of countries omitted from the ranking to only two this year, a significant improvement from last year.

While the current data coverage for both countries stands at 53.85%, meaning their scores are heavily reliant on imputed data, it represents a positive trend. Despite the suboptimal coverage, this development signifies a step in the right direction, showcasing an encouraging trend towards enhanced data inclusivity.

Looking ahead

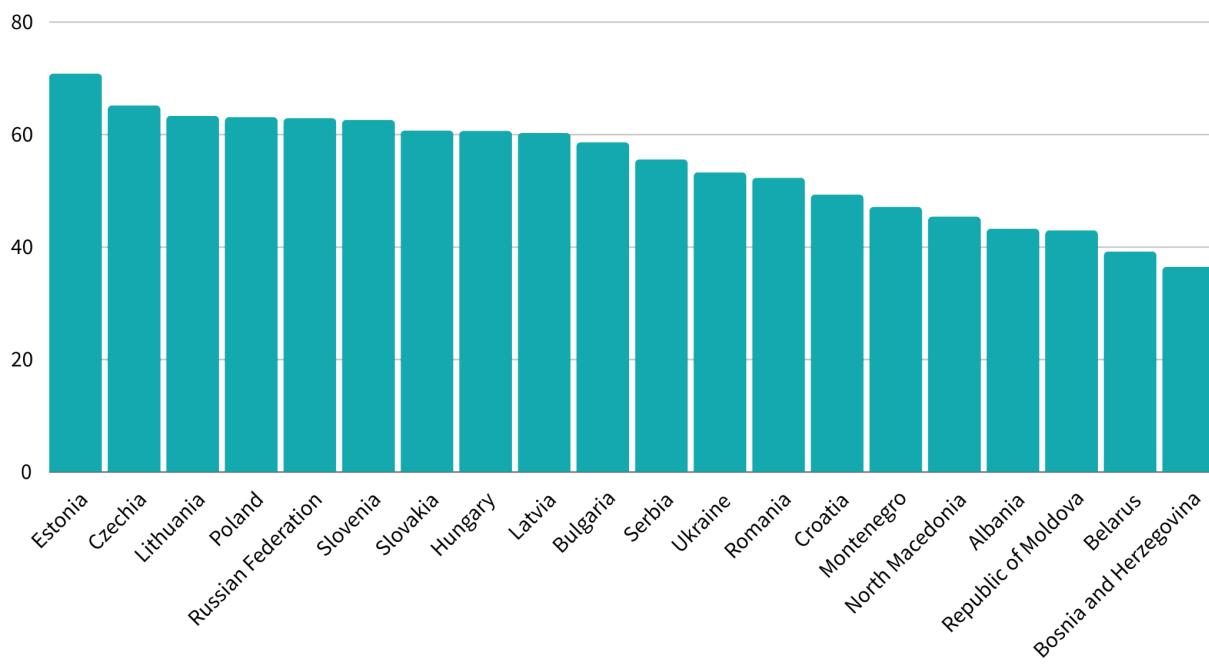
Efforts are underway to narrow the disparity between the progress observed in the Government and Data and Infrastructure pillars and the relatively lower scores in the Technology Sector pillar, where Western European countries exhibit their weakest performance. A case in point is Germany, which has demonstrated notable advancements through its [AI Action Plan](#) for education and research. This strategic initiative is designed to elevate AI infrastructure, with a specific emphasis on computer infrastructure enhancement. Concurrently, the plan aims to foster skill development in the field of AI. Furthermore, it will be important to follow closely the legislative developments surrounding the AI Act, as its approval could have a major impact on how AI is governed by EU members.

Furthermore, it will be crucial to closely monitor the latest **developments related to the approval of the EU AI Act, particularly regarding the regulation of foundation models**. Foundation models, such as those empowering large language models like ChatGPT or Google Bard, are under scrutiny. The [amendment proposed by France, Germany, and Italy](#) advocates for codes of conduct and self-assessment for foundation models without an initial sanction regime, contrasting with prescriptive obligations in the original draft. This modification may impact how governments collaborate with tech companies to integrate GenAI tools for enhancing public services.



Eastern Europe

By Livia Martinescu and Emma Hankins



The regional landscape

The average score across the Eastern European countries this year is 54.67, meaning **the region ranks third globally after North America and Western Europe**. Eastern Europe, on average, lags behind Western Europe by 12.05 points, suggesting a clear gap across the board between these two regions. Leading the charge is Estonia, securing the top position with a score of 70.86 and ranking 17th globally. Czechia ranks second with a score of 65.17 and Lithuania holds the third spot with a score of 63.33, with Poland and the Russian Federation close behind at 63.10 and 62.92, respectively.

There is a large range of scores within this region — regional leader Estonia is 34.38 points ahead of lowest-ranking regional player Bosnia and Herzegovina — demonstrating **clear disparities in AI readiness in Eastern Europe**. Estonia also stands out from the other top-ranking countries in the region, with the 5-point gap between it and second-ranking Czechia larger than any other gap between two next-ranking countries in the region.

Key developments

Estonia, which is world-leading in many e-government indicators, is in the process of launching its [mRiik digital identity app](#), which was developed with the Ukrainian government and modelled after its [Diiia app](#). Estonia is also actively contributing to global standards for the digitisation of public sector infrastructure through its support of [GovStack](#), an open-source community that provides

technology, technical specifications, and implementation support for government digital services. This way, Estonia is using policy innovations to support the integration of AI into the governance systems in the Eastern European region and beyond. In 2023, GovStack released an updated version of the [Building Blocks Specifications](#), accompanied by the [GovStack Implementation Playbook](#). These resources offer valuable guidance for governments and technology developers, emphasising cost-effective and vendor-agnostic solutions for delivering e-government services.

The Eastern European region has seen several promising initiatives in the AI regulation landscape. The Ministry of Digital Transformation in Ukraine unveiled a [roadmap for the regulation of AI](#). This roadmap is designed to assist Ukrainian companies in readiness for the implementation of legislation akin to the European Union's AI Act. Meanwhile, the Serbian government adopted [Ethical guidelines for the development, application, and use of reliable and responsible artificial intelligence](#), which it recommends all public bodies follow. These guidelines are notable for not only listing broad ethical principles for responsible AI but also including detailed questions for AI developers and public servants to answer, acting as a self-assessment tool for whether AI systems are being developed and used responsibly. This makes Serbia only the second country in the region to have published ethical AI guidelines, after the Russian Federation.

Some of the European Union members in the region (Bulgaria, Croatia, Czechia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia) have benefited from investments supported by the EU's [Recovery and Resilience Facility](#), which funds projects and reforms to prepare member states for the green and digital transitions. For example, Latvia is using these funds to establish the [Latvian Federal Cloud](#), while Romania has used them to modernise public libraries and turn them into [digital skills hubs](#). The Lithuanian government has combined these funds with a number of other investments in AI and digital transformation, including: [a funding opportunity of €15 million](#) for AI, blockchain, and robotics start-ups and spin-offs supported by the Recovery and Resilience Facility; [€6 million](#) for development of digital services using open data; and funding worth [€115.26 million](#) for digitalisation of public sector services.

Looking ahead

EU support and investments like the ones above might provide one explanation for the disparity in scores between the highest- and lowest-scoring countries in the Eastern European region: **the five lowest-ranking countries are all non-EU members, while all of the top five countries except the Russian Federation are EU members.** However, the lower-income, non-EU states of Ukraine and Serbia manage to outrank the high-income EU member states Romania and Croatia. This is largely due to Ukraine and Serbia's higher scores in the Government pillar; Romania and Croatia are the only EU member countries in Eastern Europe that still lack national AI strategies. These will be countries to watch as the EU finalises its AI Act. Will EU member states rely on EU-wide regulation instead of creating their own AI strategies? And how will the AI Act affect non-member states like Ukraine and Serbia?

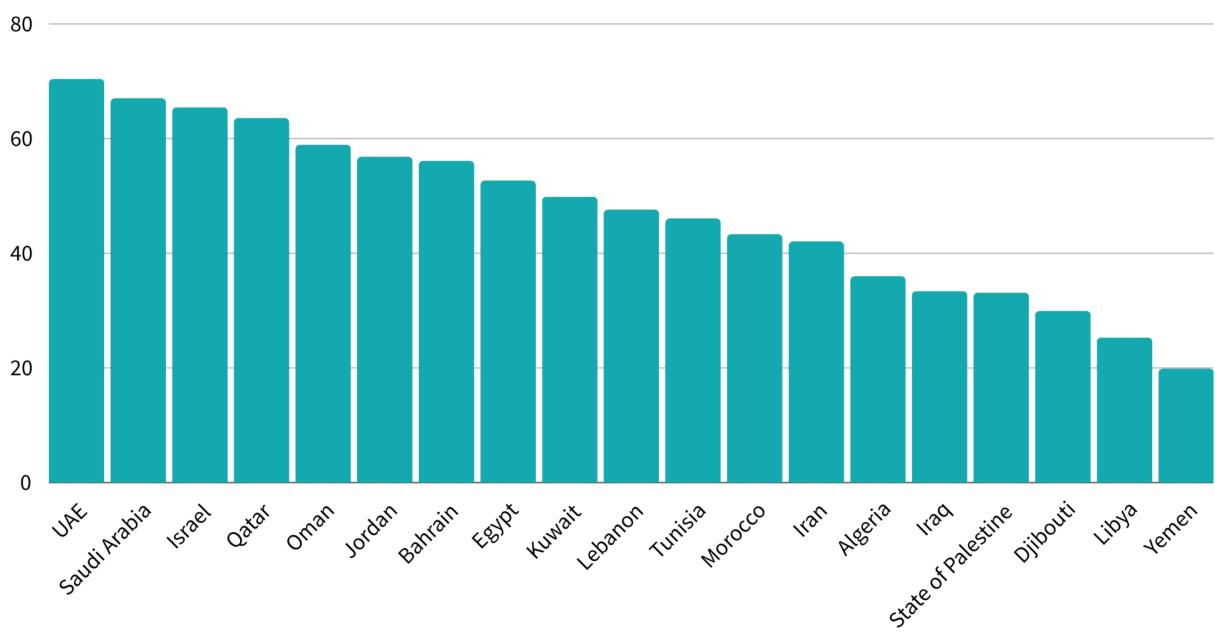
There are also open questions about whether the region can catch up in its lowest-scoring pillar, the Technology Sector. The region's average scores in each dimension of this pillar are only slightly above the global average, and are 10 to 16 points behind Western European averages. Even



the three regional leaders lag behind their counterparts in other regions, with top-ranking Estonia's Technology Sector pillar score below that of the top countries in North America, Western Europe, and East Asia. Unless Eastern European countries catch up with those in other regions, they face vulnerability across various sectors, impacting growth, competitiveness, sustainability, inclusion, security, and strategic strength.

Middle East & North Africa

By Livia Martinescu



The regional landscape

The Middle East and North Africa (MENA) region displays a significant variation in government AI readiness, ranking as the region with the third-largest range of scores. There is a **clear disparity between Middle Eastern and North African countries**, with average scores of 38.89 and 51.11, respectively. Notably, however, **Egypt is a North African outlier**, securing a position among the top ten in MENA, primarily attributed to its good performance in the Government pillar. The United Arab Emirates (UAE) takes the lead in the region, driven by relatively high scores across all three pillars that place it 18th worldwide.

Key developments

In 2023, the MENA region witnessed **significant developments in terms of governance and AI ethics principles**. Egypt has made notable advancements in this domain by introducing the [Egyptian Charter for Responsible AI](#). This initiative combines insights with actionable measures to facilitate the responsible development, deployment, management, and utilisation of AI systems. Adapting guidelines established by international organisations (OECD, UNESCO, WHO, IEEE, EU), the Charter aims to foster awareness among all stakeholders in the AI ecosystem regarding ethical considerations in AI.



Similarly, the Kingdom of Saudi Arabia (KSA) published its [AI Ethics Principles](#). This framework is aimed at reducing the potentially negative implications of AI systems and protecting and enhancing privacy and personal data protection. The AI Ethics Framework of the KSA outlines principles for governing AI and includes a risk classification system associated with the implementation of AI systems, similar to the European Union's proposed AI Act. Through the application of these frameworks, the government aims to ensure that AI decision-making processes uphold fairness and equity for its citizens.

Recently, countries in the MENA region have taken **important steps towards improving their Data & Infrastructure foundations**. Bahrain has released its [Sixth National Telecommunications Plan](#), outlining the government's strategic vision and overall policy for the telecommunications sector. Within this document, Bahrain emphasises the critical need for establishing resilient infrastructure and connectivity foundations to effectively integrate technologies like AI. The initiative recognises the imminent impact of rapid technological change on both telecommunications and the broader ICT market structure. Furthermore, this document underscores Bahrain's **plans to formulate a national AI strategy**.

The region has also undergone a **notable surge in data centre investments**. Recently, Huawei announced the inauguration of [Riyadh's cloud region](#), and [Oman established a partnership with SAP](#) to introduce a private cloud data centre. Furthermore, Egypt is set to host a [hyperscale data centre](#) with a substantial investment of \$250 million. These advancements are poised to influence the region's readiness in terms of Data & Infrastructure, a pillar where they currently score 4 points below the global average (60.09).

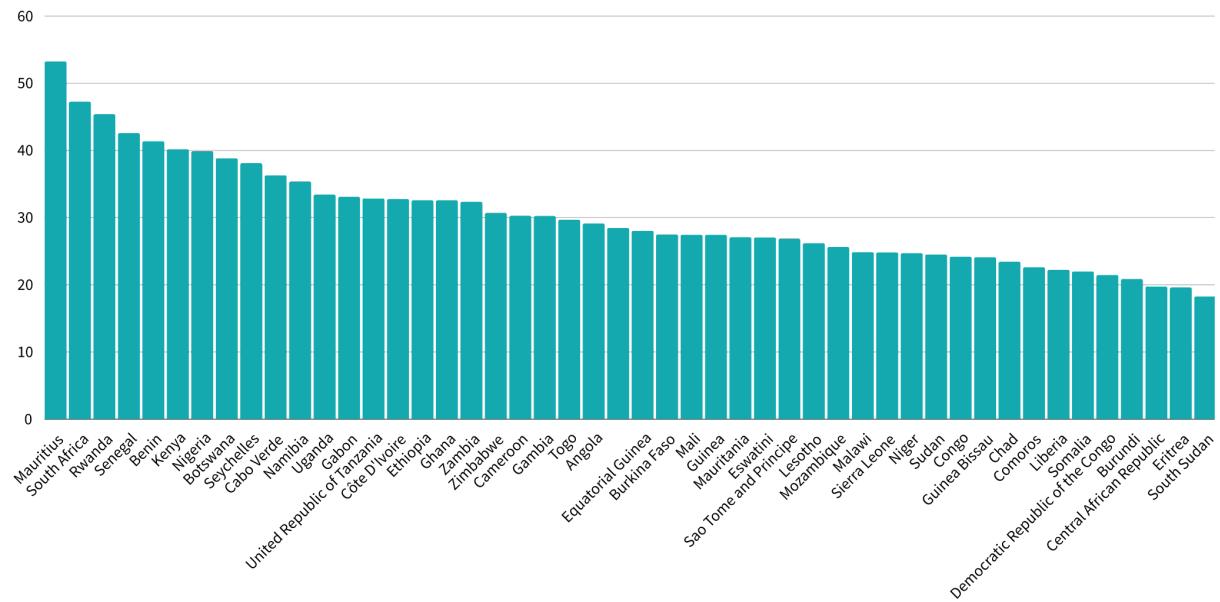
Looking ahead

The effective integration of AI into government operations depends on having a skilled workforce. Looking forward, a potential area for advancement in the MENA region is Human Capital, where the average score stands at 44.70. In this context, the **region showcases promising initiatives that have the potential to cultivate a more proficient workforce**. Notably, the United Arab Emirates has launched the [Coders \(hq\)](#) programme, designed to establish connections between global tech influencers and the local tech community through events such as Hackathons, conferences, and training programs.

Moreover, it is pertinent to closely observe the AI strategy initiatives in the region, with three countries — [Iraq](#), [Tunisia](#), and [Bahrain](#) — announcing upcoming vision documents. This marks a crucial step in enhancing the positioning of these countries within the landscape of government AI readiness. The successful implementation of these initiatives would lead to the Middle East & North Africa joining Western Europe, Eastern Europe, East Asia, and North America as one of the regions where more than half of the countries have introduced AI strategies.

Sub-Saharan Africa

By Emma Hankins



The regional landscape

Despite Sub-Saharan Africa having the lowest average score of any world region in the index, signifying serious challenges to government AI adoption in the region, **there has been real growth over the past 12 months, with 3 countries publishing new national AI strategies** and one announcing a forthcoming strategy. In addition, 3 countries have announced they are working with UNESCO to adopt and implement strategies in line with UNESCO's [Recommendation on the Ethics of AI](#).

Mauritius leads the region with a score of 53.27, followed by South Africa, Rwanda, Senegal, and Benin in the top five. Mauritius's strength lies mostly in the Government pillar — its score of 69.82 in this pillar is 10 points higher than its score in any other pillar — while South Africa leads the region in both the Data & Infrastructure pillar and the Technology Sector pillar. In fact, South Africa is the only country in Sub-Saharan Africa to score above the global average for the Technology Sector pillar.



Key developments

Despite these barriers, the past year has seen significant and interesting developments in government AI readiness in the region. In particular, **Rwanda, Senegal, and Benin's new national AI strategies represent the first AI strategies in mainland Sub-Saharan Africa** and end Mauritius's 5-year term as the only country in the region with an AI strategy. It is also worth noting that these countries are all considered low income (Rwanda) or lower middle income (Senegal and Benin) by the [World Bank](#), unlike upper middle income Mauritius. This goes against the trend we have seen in some other world regions, in which the most developed or largest economies are the first to create national AI strategies. By this logic, countries like South Africa or Nigeria would create national AI strategies first, yet neither has done so (though Nigeria's strategy is [reportedly](#) in development).

It is also worth noting that [Rwanda](#) and [Senegal](#) both created their AI strategies **with support from cooperation agencies and international organisations** — GIZ FAIR Forward, the World Economic Forum, and The Future Society in Rwanda's case; and the African Union and Team Europe via the AU-EU Digital for Development (D4D) Hub in Senegal's case. Furthermore, **regional collaboration seems to be a growing trend in the region**, with Namibia hosting ministers from Botswana, Malawi, Mozambique, South Africa, Zambia, and Zimbabwe at the first UNESCO-Southern Africa sub-Regional Forum on Artificial Intelligence (SARFAI). This forum produced the [Windhoek Statement](#), which recommended actions on AI governance, capacity-building, infrastructure, R&D, environmental protection, gender inclusion, and collaboration across the region. International collaboration is also visible in [Côte D'Ivoire](#), [Namibia](#), and [Rwanda](#), which have (separately) committed to working with UNESCO on implementing the Recommendation on the Ethics of AI. Meanwhile, GIZ FAIR-Forward and the Global Partnership for Sustainable Development Data collaborated with Kenyan stakeholders to co-create an [AI Practitioners' Guide](#) specific to Kenya's legal and regulatory environment.

While most countries in the region lack AI strategies, **there has been continued progress in data protection policies and government digital transformation**, which are essential foundations for government AI readiness. Nigeria enacted a new [Data Protection Act](#) in 2023, replacing its 2019 Data Protection Regulation with more comprehensive legislation, and Senegal published its [National Data Strategy](#), developed with the nonprofit Smart Africa and German development agency GIZ. International cooperation in digital transformation is likely to continue, as the US announced a [Digital Transformation with Africa](#) initiative, the UK launched an [AI for Development](#) programme focused on Sub-Saharan Africa, and GIZ operates eleven [Digital Transformation Centres](#) in the region and has possible plans to expand.

Looking ahead

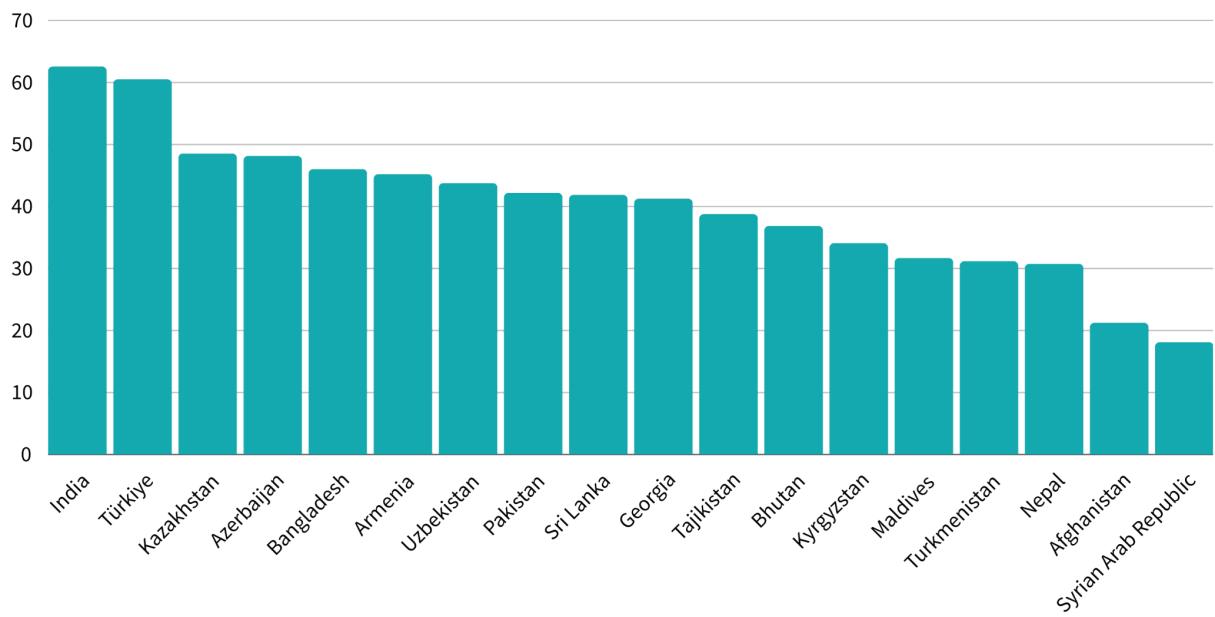
It appears the increase in national AI strategies in Sub-Saharan Africa will continue next year, with [Ethiopia](#) and [Nigeria](#) announcing work on draft AI strategies. Perhaps the most anticipated future

development is the publication and approval of the African Union's [AI Continental Strategy for Africa](#), expected to be launched at the January 2024 AU Summit. As Rwanda and Senegal's new strategies illustrate, **international organisations can be influential in supporting African nations to craft their own national AI strategies.** A continental strategy from the African Union could provide valuable guidance and a blueprint for other countries to follow while saving them precious time and resources in drafting and implementing an AI strategy.



South & Central Asia

By Livia Martinescu



The regional landscape

The South and Central Asia region registers **the second-lowest average globally**, with a score of 40.17. The region also exhibits a considerable range of 44.46 — fourth-highest in the world and similar to that of the Middle East and North Africa and Pacific regions. The diverse scores across countries in the region indicate significant disparities in their readiness for AI transformation. This is partially attributed to major differences in economic development, technological adoption, and governance structures among the countries.

India and Türkiye stand out as the top performers in the region, securing the first and second positions respectively, and leaving an 11-point gap between these countries and third-ranking Kazakhstan. On a global level, India and Türkiye demonstrate competitive scores in both the Government pillar, as both rank in the top 30 countries worldwide, and the Technology Sector pillar, where both rank in the top 50 globally. However, both fall behind in the Data and Infrastructure pillar globally, with Türkiye ranking 61st and India 66th.

Key developments

The regional leader, India, released the first edition of [IndiaAI 2023](#), drafted by an Expert Group for the Ministry of Electronics and Information Technology. The detailed report serves as an

implementation plan for India's 2018 [national AI strategy](#) and provides **a roadmap for the integration of AI into the structure of the nation**, encompassing governance, data management, and strategic partnerships to foster innovation and technological advancement, and serves as a cornerstone for the nation's AI readiness. The publication offers strategic recommendations to capitalise on India's [demographic dividend](#) — that is, the potential for economic growth that occurs when a labour force grows faster than the population dependent upon it — and leverage its status as an IT superpower. Alongside this, India is providing ever more use cases of AI in the public sector, including launching [Bhashini](#), an interactive platform that aims to enable citizens to access the internet and digital services in their own language as part of the Indian government's [National Language Translation Mission](#).

This year, **Türkiye published its Industry and Technology Strategy**, articulating its aspirations to emerge as a technological power and emphasising a synthesis of competitiveness, autonomy, and innovation. Amidst these ambitions, Türkiye also aims to further its domestic digital policies by addressing data governance, content moderation, and competition policy. Moreover, the strategy provides recommendations related to the use of AI, particularly in relation to data protection in the field. The strategic alignment of these policies signals Türkiye's aim of fostering an environment conducive to technological advancement and innovation.

Central Asian countries have also shown progress in AI readiness and digital transformation. Tajikistan has published its [national AI strategy](#), which seeks to both encourage AI companies to set up in Tajikistan and adapt the country's legislative and regulatory frameworks to support its goals for AI. Meanwhile, in Kazakhstan, the [Astana Hub](#), an international technology park with special tax and visa status, has partnered with Google for Startups on its [Silkway Accelerator](#) programme to provide support and mentoring for tech startups in the region.

While it may seem these countries can be overshadowed by the much larger economies of India and Türkiye as well as powerful neighbouring countries like the Russian Federation and China, **Central Asian countries are reportedly seeking a common, harmonised approach to AI in the region**, possibly through the C5 group of Tajikistan, Kazakhstan, Kyrgyzstan, Turkmenistan, and Uzbekistan.

Looking ahead

Overall, **the region presents low average scores in specific dimensions across all three pillars of our index**. Some, like the Maturity dimension of the Technology Sector pillar, may improve with time, especially given some countries' stronger scores in Human Capital indicators like *Graduates in STEM or computer science*. Other areas, however, may be cause for concern in the future. For example, the region has low average scores on Data Availability and Data Representativeness, two critical dimensions of creating unbiased, relevant AI tools.

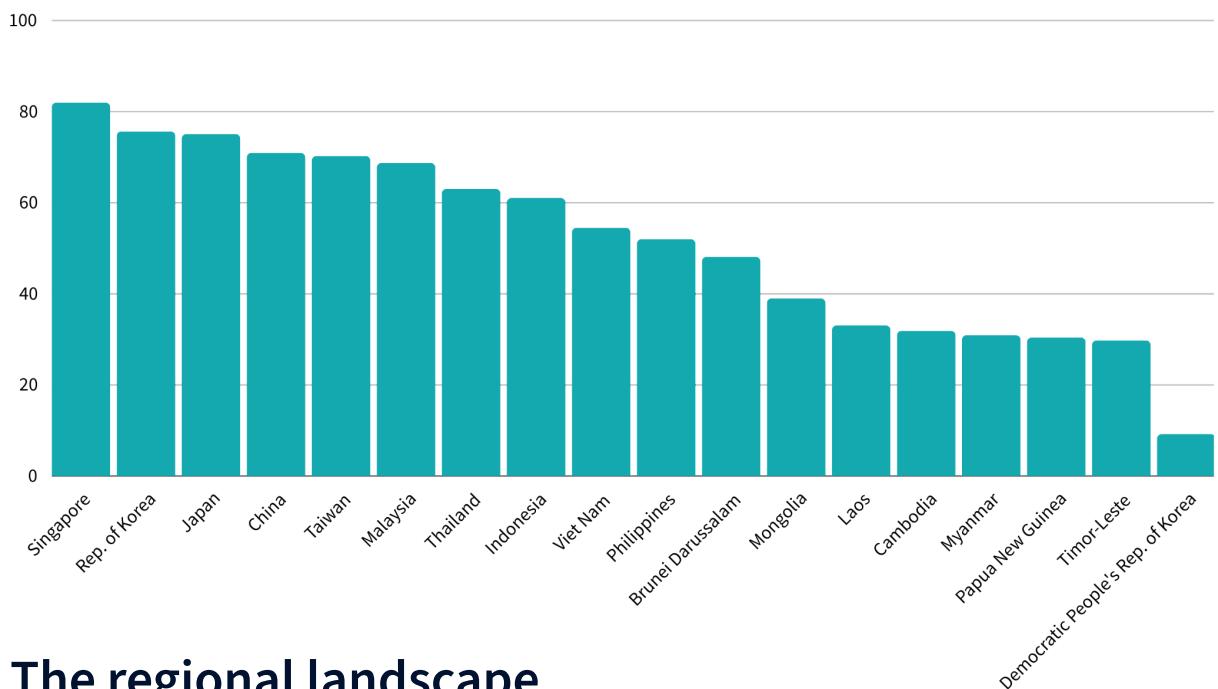
The year ahead may be a busy one for AI governance in South and Central Asia. Regional leader India will take council chairmanship of the [Global Partnership on Artificial Intelligence \(GPAI\)](#), a multi-stakeholder initiative focused on AI governance and responsible AI. The region also has a number of forthcoming strategies: [Azerbaijan](#), [Uzbekistan](#), and [Sri Lanka](#) have stated their intention to develop strategies, and [Pakistan](#) has released a draft document. These and a possible C5



agreement on AI could be influential in a region in which 78% of countries still lack national AI strategies.

East Asia

By Gonzalo Grau and Emma Hankins



The regional landscape

East Asia presents an average score of 51.41, placing it 4th amongst the 9 regions covered. Looking closely, the region presents a higher score than its immediate neighbours. It scores 11 points above South and Central Asia and outperforms the Pacific by 10 points. The region's high-scoring performance, however, hides large regional disparities: **East Asia has the highest range of scores in government AI readiness this year**, with 72 points between first-ranking Singapore and 18th-ranking Democratic People's Republic of Korea (DPRK). Even excluding the DPRK's low score, which is partially due to lack of data, there is a 52-point gap between Singapore and 17th-ranking Timor-Leste — still the largest range in scores of any region.

In a region where more than one third of countries are below the global average of 44.94, regional leaders like Singapore (81.97), the Republic of Korea (75.65), and Japan (75.08) are performing exceptionally across all pillars. All three economies score above 80 points out of 100 in both the Government and Data and Infrastructure pillars. With regards to the Technology Sector pillar, these countries — along with China, Taiwan, and Malaysia — are among the top 25 performers worldwide. Most notably, Singapore is the global leader in both the Government (90.40) and the Data and Infrastructure (89.32) pillars.



Key developments

There has been **significant collaboration between regional leaders and countries outside of East Asia** in the past year. Most prominently, Japan has held the [G7 presidency](#) for 2023 and convened a summit in Hiroshima that started a process of developing responsible AI guidelines. The Republic of Korea agreed a [memorandum of understanding](#) with the United Kingdom on strengthening government digital services, including exploring the potential of AI in government. This memorandum is part of a larger [science and technology accord](#) between the two countries, which includes a commitment to coordinating the development of responsible AI as well as a framework for cooperation on semiconductors.

East Asia has also seen **one of the world's first laws on generative AI** come into effect. In August, the Cyberspace Administration of China (CAC), along with six other government agencies, approved the [Interim Measures for the Administration of Generative Artificial Intelligence Services](#), which require firms to follow rules on data privacy and intellectual property, but only for generative AI systems that would be available to the public. These measures come as temporary legislation before an all-encompassing national 'AI Law' is drafted. Elsewhere, Singapore's Monetary Authority has begun collaboration with banks and tech firms to develop a [risk framework for generative AI](#), while its government has begun [tralling a ChatGPT-like chatbot](#) for public servants and testing how similar large language models (LLMs) can improve users' experiences accessing support services.

Large tech companies are also taking an interest in the region, providing funds for upskilling in multiple countries. Mongolia has [signed a digital skills partnership with Google](#) in order to accelerate its human capital development, while Singapore is working with [Microsoft](#) to train SMEs in data use and protection. Malaysia's government also announced a [partnership with Google](#) to train individuals in AI and data analytics for free and the company is considering the creation of a Google data centre in Malaysia.

There have also been **promising developments in East Asian countries beyond the regional leaders**. In its first [government report on AI](#) in the country, Cambodian scholars made detailed recommendations on how the government could support and regulate AI, potentially laying the groundwork for a strategy. Amidst a series of moves to modernise its regulatory framework for increasing AI deployment and uptake, Papua New Guinea has published the [third iteration](#) of its Data Governance and Protection Policy. It has also [begun to reform](#) its now 14-year-old National ICT Act in an effort to adapt to the current technological landscape, a move which has been accompanied by a larger focus on SME support within its national budget for 2023.

Looking ahead

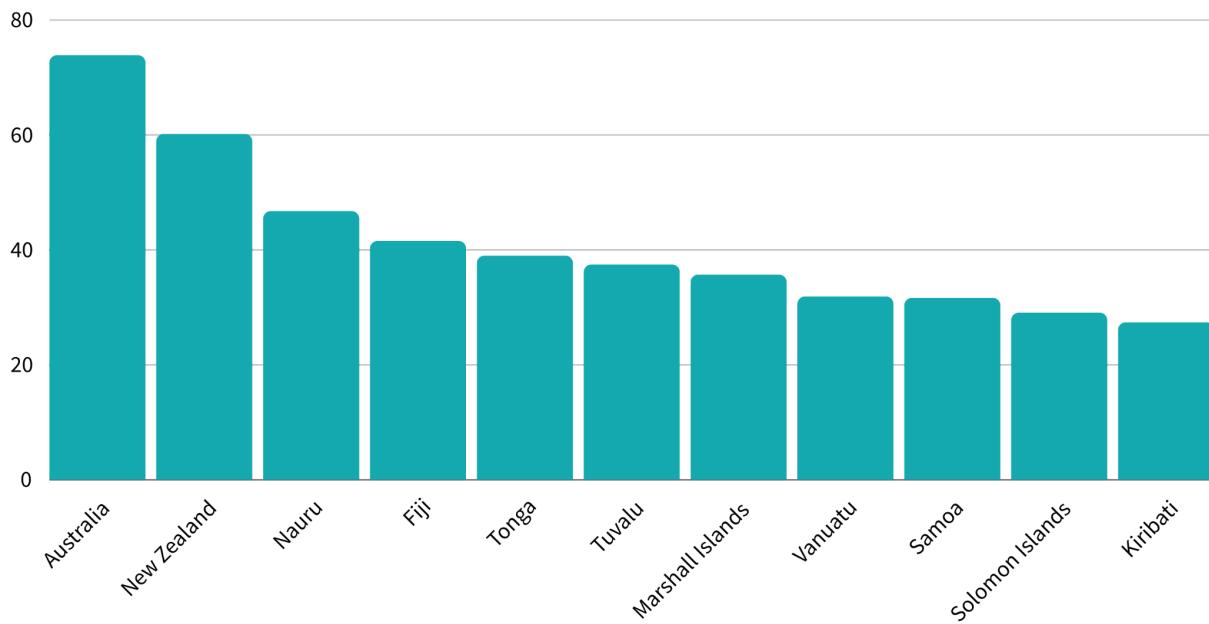
China's in-progress AI law adds to **a number of potentially influential AI governance initiatives currently in the draft stages in East Asia**. One major initiative is the Association of Southeast Asian

Nations (ASEAN)'s so-called [ASEAN Guide on AI Governance and Ethics](#), which tech companies are reportedly being consulted on and may be finalised as soon as January 2024. While no draft of this guide, which would be voluntary, has been made public, [reports suggest](#) that it may take a less prescriptive approach than the EU's AI Act. On the other hand, Japan's [draft AI guidelines](#) will reportedly require organisations that use the technology to ensure they are not relying too heavily on AI and maintain records of their interactions with AI. Whatever the final versions of these documents contain, the policies of a large organisation like ASEAN and a regional and global leader in government AI readiness like Japan could certainly influence the direction of future national AI policy in the region.



Pacific

By Livia Martinescu and Emma Hankins



The regional landscape

This year, the Pacific region attains the seventh-lowest scores, with an average of 41.33 and a range of 46.48. Our data shows an evident regional gap in AI readiness. There is a **noticeable disparity between the leading economies in the region (Australia and New Zealand) and the rest of the Pacific nations**, which are Small Island Developing States (SIDS): we see a difference of 13.44 in score between the second and third highest-ranking nations in the region. The Pacific SIDS, characterised by geographical dispersion and relatively small populations, face the challenge of being distant from major international markets.

Globally, Australia secures the 12th position, whereas New Zealand holds the 49th spot. Notably, **both countries excel in the Data and Infrastructure pillar**, achieving scores of 85.75 and 81.66 respectively. These impressive scores position Australia at 3rd place and New Zealand at 13th place on a global scale within this pillar.

This year, **the number of countries included in the index within the Pacific region has increased from eight to eleven**. This expansion signifies progress in data availability, as our index exclusively evaluates countries with values for more than 50% of our indicators. Despite this positive development, a considerable portion of the scores for these additional countries is still dependent

on imputed data, given their proximity to the inclusion cutoff. Further efforts are imperative to enhance the availability of data, particularly pertaining to government and economic aspects, across the region.

Key developments

Regional leaders **Australia and New Zealand have both seen developments in AI governance** this year. In the Australian Government's [response to the Australian Parliament's Inquiry into Social Media and Online Safety](#), it announced that it will undertake research into algorithms to improve understanding of the use and harms related to algorithms on digital platforms and determine if there are regulatory gaps for the Government's consideration. This initiative will drive regulatory measures and reforms for the Australian government in the application of AI technologies. In addition, eSafety, Australia's independent regulator and educator for online safety, published a [position statement](#) addressing generative AI. The statement outlines various regulatory challenges and proposed approaches to addressing this evolving technology.

Likewise, second-ranking New Zealand published [interim generative AI guidance for the public service](#) in July 2023, and the Ministry of Education published [guidelines for teachers](#) on using generative AI in schools. Notably, **these guidelines are the first AI policy documents New Zealand's government has released publicly**, and they recommend that each agency develop its own AI policy, while providing some recommendations on mitigating the risks of generative AI. While new government AI policies are a welcome change for New Zealand, which still lacks a national AI strategy and ethical AI guidelines, public servants may need to work across agencies to ensure that government AI policies are consistent and clear to service users. The government has recognised this, directing the Ministry for Business, Innovation and Employment to lead development of a [cross-agency work programme on AI](#) and report back to ministers by early 2024.

New Zealand's government also recently established the [Interim Centre for Data Ethics and Innovation](#) to support safe, inclusive, and innovative applications of data. The centre prioritises leading the responsible use of data and promoting ethical, data-driven innovation. Its objectives include cultivating public trust and confidence while enabling government agencies to engage in innovative practices with data.

Beyond Australia and New Zealand, **the Pacific island nations' AI and digital transformation efforts largely focus on addressing and mitigating the existential threat of climate change**. For instance, Tuvalu's government has created the [Future Now Project](#), which, among other things, seeks to digitise government administration and important historical and cultural documents to protect them in the face of more frequent natural disasters. Meanwhile, the United Nations Capital Development Fund is [assisting Fiji in harnessing the power of AI](#) in natural disaster recovery. Not only is this programme accelerating the restoration of local livelihoods, it also increases access to digital tools in an area that is affected by digital divides.



Looking ahead

Over the past few years, SIDS have made significant strides in enhancing their readiness for AI. Global leaders will gather in [Antigua & Barbuda in 2024](#) to establish a new action plan outlining the development priorities for SIDS, including the Pacific island nations, over the next decade. This presents Pacific island nations with a unique opportunity to delineate their priorities in the realm of AI. Simultaneously, it allows them to present a united and influential front among low and middle income countries (LMICs), taking a prominent role in international AI governance discussions to ensure that AI is governed inclusively. Both Australia and New Zealand should also see progress on AI governance in the next year, with Australia's research into the risks of algorithms and New Zealand's cross-agency work programme both due to be delivered in early 2024.

Annex I: 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 , UN IDIR AI policy portal)
		Data protection and privacy legislation	UN data protection and privacy legislation worldwide
Governance and Ethics	Are there the right regulations and ethical frameworks in place to implement AI in a way that builds trust and legitimacy?	Cybersecurity	Global Cybersecurity Index
		Regulatory quality	Worldwide Governance Indicators
		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



	Government effectiveness	Worldwide Governance Indicators
Adaptability	Can the government change and innovate effectively?	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?	Time spent dealing with government regulations	World Bank World Development Indicators
		VC availability	Global Innovation Index
		R&D spending	UNESCO
		Company investment in emerging technology	Network Readiness Index
		Research papers published in AI	Scimago

	Graduates in STEM	UNESCO
	GitHub users per thousand population	GitHub
Human Capital	Female STEM graduates	World Bank
	Quality of engineering and technology higher education	QS Engineering & Technology rankings
	ICT skills	ITU

Data and Infrastructure Pillar			
<i>Dimension</i>	<i>Description</i>	<i>Indicator</i>	<i>Source</i>
Infrastructure	Does the country have a good technological infrastructure to support AI technologies?	Telecommunications infrastructure	UN e-Government Survey
		Supercomputers	Top 500
		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
		Mobile-cellular telephone subscriptions	ITU
		Households with internet access	ITU
		Statistical capacity	World Bank



Data Representative- ness	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:

- Federated States of Micronesia
- Palau

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 11 countries, imputation of peer group means was not possible for some missing indicators as they were either the sole country in their peer group or in a peer group in which all countries were missing data for that indicator. These countries were:

- Afghanistan
- Canada
- Democratic People's Republic of Korea
- Iraq
- Libya
- Maldives
- Seychelles
- State of Palestine
- Syrian Arab Republic
- United States of America
- 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 *Regulatory quality*, *Accountability*, and *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 Network Readiness 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), *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).

For two indicators, *Time spent dealing with government regulations* and *Gender gap in internet access*, scores were normalised using the formula $100 - x$, so that a higher score is given to countries with a smaller gender gap in internet access and where less time is spent dealing with government regulations.

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:

- Number of AI unicorns
- Number of non-AI technology unicorns
- Value of ICT goods trade per capita
- Value of ICT services trade per capita
- VC availability
- R&D spending



- AI research papers
- GitHub users
- Supercomputers

As *VC availability* is a pretreated score rather than hard data, this was left untreated.

The indicators *Number of AI unicorns*, *Number of non-AI technology unicorns*, and *Supercomputers* have large numbers of countries scoring 0. 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 eight skewed indicators were treated using the logarithmic transformation $\log(1 + x)$. For indicators other than *Number of AI unicorns*, *Number of non-AI technology unicorns*, and *Supercomputers*, this brought skewness and kurtosis down to acceptable levels. For the other three indicators, skewness and kurtosis in the subset of countries with values > 0 were 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.

New indicators

In previous editions of the Index, we used four indicators from the World Economic Forum's Global Competitiveness Index. However, this index has not been updated since 2019, and this year we felt it was time to attempt to replace as many of these indicators as possible with more up-to-date data.

We also decided that the *Cloud providers* indicator from last year's Index, which measured whether countries had access to cloud services from just the top 5 cloud providers by market share, was unnecessarily exclusive to other cloud providers and thus not the best measure for cloud capacity in a given country. For this reason, we decided to replace it with an indicator measuring the number of top 500 supercomputers located in a given country, as a proxy for compute power available in that country.

Old indicator	New indicator	Description of new indicator
Legal framework's adaptability to digital business models	Regulatory quality (Worldwide Governance Indicators)	Measures 'perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.'
Business administrative requirements	Time spent dealing with government regulations (World Bank Enterprise Surveys)	Percent of senior management time spent dealing with the requirements of government regulations.
Digital skills	ICT skills (ITU)	Percent of the population with ICT skills, defined as having carried out a specific task in the past three months. There is data on eleven skills, but three were excluded due to low country coverage. An average of the percentages for the remaining eight skills was taken to create one score per country. If a country was missing data on four or more skills, it was not given a score.
Cloud providers	Supercomputers (Top 500)	Number of supercomputers listed on the Top 500 list of supercomputers in the world.

We decided to keep one indicator, *Government responsiveness to change*, from the 2019 Global Competitiveness Index because we were unable to find a suitable alternative indicator. We are hopeful that the forthcoming first edition of the World Bank's Business Ready report will provide more up-to-date and robust alternatives to these indicators in the future.

Limitations of the Data

Age of the data

While the majority of our datasets were from 2023, 2022 or 2021, some were older. Aside from the single indicator we kept from the 2019 Global Competitiveness Index, the indicators *Female STEM*



graduates and *Statistical capacity* are based on data from 2019, while the *Cybersecurity* indicator data is from 2020. 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
- Time spent dealing with government regulations
- 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 felt it was better for these countries to have an old value rather than no value at all.

Data Availability

This year, we were able to include more countries than ever before in our rankings due to almost every country having data for more than 50% of our indicators. While we welcome this increase in overall data availability and coverage from our indicator sources, there are now a number of countries included in the Index whose scores rely upon more than 40% imputed data or, in the case of the 11 countries listed above, whose scores are calculated based on fewer data points. In the interest of transparency, countries whose scores are based on more than 40% imputed data are listed below:

- Andorra
- Antigua and Barbuda
- Central African Republic
- Comoros
- Democratic People's Republic of Korea
- Dominica
- Equatorial Guinea
- Eritrea
- Grenada

- Guinea Bissau
- Libya
- Liechtenstein
- Marshall Islands
- Monaco
- Nauru
- Saint Kitts and Nevis
- Saint Vincent and the Grenadines
- San Marino
- Sao Tome and Principe
- Somalia
- South Sudan
- Syrian Arab Republic
- Taiwan
- Tonga
- Tuvalu
- Vanuatu



Annex II: Detailed scores

Global Ranking	Country	Total score	Government Pillar	Technology Sector Pillar	Data & Infrastructure Pillar
1	United States of America	84.80	86.04	81.02	87.32
2	Singapore	81.97	90.40	66.19	89.32
3	United Kingdom	78.57	82.50	68.80	84.42
4	Finland	77.37	88.34	60.36	83.39
5	Canada	77.07	85.30	64.73	81.17
6	France	76.07	84.03	60.40	83.80
7	Republic of Korea	75.65	87.55	54.36	85.02
8	Germany	75.26	80.78	63.28	81.72
9	Japan	75.08	82.76	56.85	85.61
10	Netherlands	74.47	78.90	61.96	82.55
11	Denmark	73.91	84.11	59.98	77.65
12	Australia	73.89	83.34	52.57	85.75
13	Norway	72.71	81.77	54.97	81.40
14	Sweden	72.55	74.70	62.71	80.26
15	Austria	72.37	77.69	56.43	82.98
16	China	70.94	77.32	60.76	74.75
17	Estonia	70.86	80.54	52.52	79.54
18	United Arab Emirates	70.42	78.32	56.67	76.28
19	Taiwan	70.25	75.33	54.58	80.85
20	Ireland	69.82	71.51	56.96	81.00
21	Iceland	69.59	76.21	52.78	79.80
22	Luxembourg	69.41	83.11	46.51	78.60
23	Malaysia	68.71	79.99	54.13	72.00
24	Switzerland	68.57	57.33	62.96	85.42
25	Portugal	68.28	80.48	50.95	73.42
26	Italy	67.63	76.61	50.98	75.29

27	Spain	67.47	72.86	50.96	78.60
28	Belgium	67.28	73.09	56.02	72.74
29	Saudi Arabia	67.04	78.71	49.59	72.83
30	Israel	65.46	53.68	66.29	76.42
31	Czechia	65.17	72.25	47.72	75.55
32	Brazil	63.70	72.44	45.08	73.57
33	Malta	63.64	80.74	40.89	69.31
34	Qatar	63.59	69.64	44.31	76.81
35	Lithuania	63.33	75.31	43.70	70.99
36	Poland	63.10	69.79	46.84	72.66
37	Thailand	63.03	77.21	41.33	70.55
38	Russian Federation	62.92	74.13	43.38	71.26
39	Slovenia	62.63	71.75	41.86	74.29
40	India	62.58	75.18	49.39	63.17
41	Chile	61.95	74.56	40.91	70.38
42	Indonesia	61.03	76.24	43.48	63.38
43	Cyprus	60.84	69.39	42.04	71.09
44	Slovakia	60.73	67.70	40.60	73.90
45	Hungary	60.66	69.96	42.20	69.82
46	Uruguay	60.57	74.40	35.32	71.99
47	Türkiye	60.51	75.08	42.32	64.13
48	Latvia	60.30	72.07	38.57	70.27
49	New Zealand	60.18	51.85	47.05	81.66
50	Oman	58.94	69.35	37.71	69.76
51	Bulgaria	58.64	66.04	38.17	71.73
52	Greece	57.95	55.92	48.37	69.56
53	Colombia	57.85	74.98	35.28	63.30
54	Argentina	57.72	70.31	35.27	67.59
55	Jordan	56.85	67.56	40.62	62.36
56	Bahrain	56.13	57.96	39.24	71.19
57	Serbia	55.57	74.29	37.13	55.30
58	Peru	54.87	70.15	32.29	62.18



59	Viet Nam	54.48	69.04	37.82	56.58
60	Ukraine	53.29	68.93	36.18	54.75
61	Mauritius	53.27	69.82	30.63	59.35
62	Egypt	52.69	68.19	40.11	49.77
63	Liechtenstein	52.63	41.38	47.78	68.75
64	Romania	52.32	51.42	39.23	66.30
65	Philippines	51.98	65.43	34.38	56.13
66	Dominican Republic	50.71	68.07	25.34	58.73
67	Monaco	50.50	41.75	39.97	69.80
68	Mexico	50.37	43.08	39.55	68.49
69	Kuwait	49.86	38.14	40.58	70.85
70	Croatia	49.34	42.25	39.35	66.42
71	Costa Rica	49.12	53.41	33.20	60.76
72	Kazakhstan	48.56	48.56	30.97	66.13
73	Azerbaijan	48.15	55.86	30.77	57.82
74	Brunei Darussalam	48.10	39.57	41.86	62.87
75	San Marino	48.08	37.11	44.21	62.94
76	Lebanon	47.62	50.56	36.99	55.31
77	South Africa	47.28	37.82	40.22	63.79
78	Montenegro	47.15	40.21	35.53	65.70
79	Nauru	46.75	38.19	38.54	63.50
80	Andorra	46.25	38.82	35.04	64.90
81	Tunisia	46.07	48.31	38.47	51.44
82	Bangladesh	46.04	57.96	26.07	54.10
83	North Macedonia	45.40	39.55	33.89	62.77
84	Rwanda	45.39	67.82	27.87	40.48
85	Armenia	45.22	43.50	33.58	58.57
86	Panama	43.91	38.33	33.26	60.15
87	Uzbekistan	43.79	49.07	24.80	57.49
88	Morocco	43.34	37.54	35.69	56.79
89	Albania	43.26	42.53	31.97	55.28

90	Republic of Moldova	42.97	42.69	28.21	58.02
91	Senegal	42.58	59.65	27.67	40.43
92	Pakistan	42.20	43.00	34.07	49.53
93	Bahamas	42.14	34.49	31.43	60.51
94	Iran (Islamic Republic of)	42.07	31.56	38.77	55.88
95	Sri Lanka	41.89	42.05	33.02	50.60
96	Fiji	41.57	37.78	35.12	51.80
97	Benin	41.37	61.38	24.46	38.27
98	Jamaica	41.32	48.01	28.41	47.53
99	Georgia	41.27	41.96	30.33	51.50
100	Ecuador	40.84	36.13	27.82	58.57
101	Kenya	40.19	40.03	28.95	51.58
102	Barbados	40.13	33.53	32.87	54.00
103	Nigeria	39.88	44.94	24.49	50.21
104	Trinidad and Tobago	39.44	32.70	32.25	53.38
105	Antigua and Barbuda	39.41	33.33	27.56	57.34
106	Saint Kitts and Nevis	39.23	31.71	28.09	57.90
107	Belarus	39.20	30.95	32.28	54.38
108	Tonga	39.01	35.37	33.52	48.14
109	Mongolia	38.99	35.83	27.71	53.43
110	Botswana	38.84	34.82	29.20	52.50
111	Tajikistan	38.78	53.18	20.41	42.77
112	Seychelles	38.11	36.44	19.50	58.37
113	Tuvalu	37.45	29.27	34.01	49.08
114	Bhutan	36.88	36.81	24.31	49.52
115	Paraguay	36.85	37.45	24.32	48.79
116	Guyana	36.79	30.62	27.19	52.58
117	Bosnia and Herzegovina	36.49	27.92	31.68	49.86
118	Saint Lucia	36.46	30.37	27.95	51.08
119	Cabo Verde	36.30	36.68	27.24	44.98
120	Algeria	35.99	30.10	30.56	47.30
121	Guatemala	35.76	29.55	24.94	52.78



122	Marshall Islands	35.70	30.25	32.26	44.60
123	Cuba	35.52	35.32	27.09	44.15
124	Suriname	35.52	28.27	26.85	51.43
125	Namibia	35.37	32.02	28.30	45.80
126	Bolivia (Plurinational State of)	35.25	28.47	26.66	50.63
127	Dominica	34.82	27.97	24.51	51.97
128	Grenada	34.63	27.77	25.48	50.65
129	Belize	34.24	23.44	29.09	50.19
130	Saint Vincent and the Grenadines	34.13	30.53	24.40	47.47
131	Kyrgyzstan	34.10	33.53	22.86	45.90
132	Uganda	33.44	38.06	20.96	41.30
133	Iraq	33.40	28.86	29.07	42.26
134	State of Palestine	33.14	21.15	31.90	46.37
135	Gabon	33.09	25.12	27.67	46.47
136	Lao People's Democratic Republic	33.05	28.39	25.81	44.96
137	United Republic of Tanzania	32.86	35.46	20.71	42.42
138	Côte D'Ivoire	32.78	34.33	20.28	43.73
139	Honduras	32.63	25.75	30.14	42.01
140	Ethiopia	32.59	37.29	20.35	40.11
141	Ghana	32.58	34.66	23.23	39.87
142	El Salvador	32.58	23.70	26.31	47.72
143	Zambia	32.36	32.32	20.33	44.42
144	Vanuatu	31.91	26.19	25.23	44.32
145	Cambodia	31.88	27.93	22.53	45.17
146	Maldives	31.71	31.71	20.79	42.63
147	Samoa	31.66	27.52	22.85	44.61
148	Turkmenistan	31.17	20.05	30.51	42.94
149	Myanmar	30.91	21.63	27.98	43.14
150	Nepal	30.77	31.04	24.21	37.06
151	Zimbabwe	30.71	24.08	23.41	44.63

152	Papua New Guinea	30.41	25.82	22.56	42.84
153	Cameroon	30.27	30.91	22.07	37.84
154	Gambia (Republic of The)	30.25	25.13	20.81	44.81
155	Djibouti	29.95	19.43	29.50	40.92
156	Nicaragua	29.77	24.53	26.33	38.45
157	Timor-Leste	29.77	24.25	21.32	43.75
158	Togo	29.69	29.74	19.96	39.36
159	Venezuela, Bolivarian Republic of	29.20	17.17	26.14	44.29
160	Angola	29.14	22.55	18.51	46.37
161	Solomon Islands	29.09	23.72	23.41	40.14
162	Madagascar	28.47	25.01	19.28	41.14
163	Equatorial Guinea	28.04	19.94	26.19	37.99
164	Burkina Faso	27.50	27.04	18.20	37.26
165	Mali	27.45	24.71	19.12	38.52
166	Guinea	27.44	26.65	19.99	35.69
167	Kiribati	27.40	25.74	16.64	39.83
168	Mauritania	27.09	22.21	22.27	36.80
169	Eswatini	27.05	23.80	18.21	39.15
170	Sao Tome and Principe	26.86	25.41	19.96	35.22
171	Lesotho	26.21	25.41	20.46	32.75
172	Mozambique	25.62	21.90	17.82	37.15
173	Libya	25.31	10.02	28.10	37.81
174	Malawi	24.87	22.00	20.49	32.11
175	Sierra Leone	24.83	21.85	18.10	34.52
176	Niger	24.71	25.48	15.88	32.77
177	Sudan	24.51	15.42	23.35	34.75
178	Congo	24.19	22.50	19.68	30.40
179	Guinea Bissau	24.11	15.31	18.81	38.22
180	Chad	23.44	21.10	16.65	32.56
181	Comoros	22.62	15.87	20.66	31.33
182	Liberia	22.24	19.28	19.90	27.55



183	Somalia	21.98	18.01	19.35	28.58
184	Haiti	21.97	8.92	22.89	34.10
185	Democratic Republic of the Congo	21.47	18.36	16.39	29.66
186	Afghanistan	21.27	13.99	21.71	28.11
187	Burundi	20.87	18.44	16.21	27.96
188	Yemen	19.89	19.59	30.94	9.13
189	Central African Republic	19.74	13.51	17.64	28.06
190	Eritrea	19.62	9.73	19.49	29.65
191	South Sudan	18.26	13.36	17.80	23.61
192	Syrian Arab Republic	18.12	13.67	28.13	12.55
193	Democratic People's Republic of Korea	9.20	8.03	14.27	5.29