Overview of AI Policies and Developments in Latin America

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1. Introduction

Over the last seven decades, the artificial intelligence (AI) landscape has evolved dramatically from logic-based systems to breakthroughs in machine learning (ML) modeling techniques.[1] Although in its early stages, AI already permeates many peoples' lives, even in subtle ways: spam filters, smart personal and business assistants (e.g., Apple's Siri, Amazon's Alexa, Google's Assistant, or IBM's Watson), sales and business forecasting, and voice recognition are all examples of AI-enabled technology. This document addresses some key aspects of this technology, including the general principles for AI development proposed by different organizations, as well as how the technology is shaping—and being shaped by—policy decisions made at national and international levels.

To that end, Section 2 considers various AI principles and guidelines emerging from different sectors and regions, notably identifying commonalities between them, including in the areas of transparency, privacy, accountability, and fairness. These common focus areas point the way toward widespread areas of interest or concern regarding AI, and the factors any AI stakeholder should keep in mind when developing products, services, policies, and regulatory instruments. Section 3 presents overviews of six Latin American countries that have either undertaken policy and legal activities specifically to enable and promote AI or addressed key subjects that are inherently important to AI development. Considering Latin America and the development of AI in the region, this section also presents information on key policy areas that affect – and will continue to affect – the development of AI. In particular, this includes data protection and privacy and ethics and liability. Finally, Section 4 presents conclusions on AI policy and development, both globally and in the Latin American context.

1.1. What is AI?

There are multiple definitions of AI, with most focusing on AI as a field of computer science and how machines can imitate human intelligence. This report will use the OECD's definition of AI, which describes AI as:

> *"A machine-based system that can, for a given set of human-defined objectives, make predictions, recommendations or decisions influencing real or virtual environments. It uses machine and/or human-based inputs to perceive real and/or virtual environments; abstract such perceptions into models (in an automated manner e.g. with ML* [Machine Learning] *or manually); and use model inference to formulate options for information or action. AI systems are designed to operate with varying levels of autonomy."*[2]

1.2. The impact of AI and notable applications

During the last decade, breakthroughs in AI have been driven by advances in ML and deep learning, along with increasing computational power and large datasets.[3] The future will bring increasingly powerful and

[1] OECD, *Artificial Intelligence in Society*, (2019), at 15, https://read.oecd-ilibrary.org/science-and-technology/artificial-intelligence-in-society_eedfee77-en#page127.

[2] *Id.*

[3] According to the OECD, ML is a subset of AI "in which machines leverage statistical approaches to learn from historical data and make predictions in new situations," *see* OECD, *supra* note 1, at 19. The World Wide Web Foundation defines deep learning as a "subset of machine learning in which the tasks are broken down and distributed onto machine learning algorithms that are organized in consecutive layers. Each layer builds up on the output from the previous layer. Together the layers constitute an artificial neural network that mimics the distributed approach to problem-solving carried out by neurons in a human brain." *See* World Wide Web Foundation, *Artificial Intelligence*, (2017), at 5, http://webfoundation.org/docs/2017/07/AI_Report_WF.pdf.

adaptable AI in almost every field, delivering multiple benefits to businesses, society, and individuals. For instance, the McKinsey Global Institute estimated that AI could potentially deliver additional economic output of approximately USD 13 trillion by 2030, boosting global GDP by about 1.2 percent a year. However, according to McKinsey, late adopters might find it difficult to generate impact from AI, because front-runners will have already captured AI opportunities and late adopters will lag in developing capabilities and attracting talent.[4]

Globally, AI is already impacting multiple sectors as reflected below.[5]

Healthcare: AI is being used to improve the provision of healthcare services. The rise of health and fitness technology (including Internet of Things (IoT)/connected devices) provides individuals and, as appropriate, their healthcare teams with a growing number of data points that include not only health history and significant symptoms or treatments, but also activity levels, effectiveness of medicines, and diet. The increasing amount of data collected, combined with AI's ability to rapidly process data including existing health records, physiological reactions, activity levels, and genomic data, enables clinicians to create personalized prevention and treatment plans, often termed "precision" or "personalized" medicine. For instance, Google Health announced in January 2020 that Google's AI model detected breast cancer in de-identified screening mammograms with greater accuracy than human experts, with fewer false positives and false negatives.[6]

Transportation: On small and large scales, AI can assist transportation planners to understand traffic patterns and optimize available routes and resources. Concurrent with the rise of real-time communications among vehicles and between vehicles and transportation infrastructure (known as intelligent transportation systems, or ITS), as well as autonomous vehicles, AI can potentially reshape transportation. Some companies, such as Tesla and Zoox, are planning to deliver autonomous vehicles with level 4 functionality in 2020 (i.e., the car can drive itself and does not rely on a human to take over in case of a problem, but the system is not yet capable of autonomous driving in all circumstances). Audi/Volkswagen, Baidu, and Ford expect to do the same in 2021.[7]

Finance: AI can also be leveraged for multiple applications in the financial sector, both in terms of assisting with analysis and decision-making and more general improvements to corporate or office efficiency. Financial sector actors are increasingly using AI to improve customer service, accelerate decision-making, and reduce costs. AI is also a key input to the burgeoning financial technology (fintech) market, which leverages and emphasizes the use of technology to enable lending and borrowing. Among other examples, Brazilian fintech companies are already using AI-supported applications (such as Olivia - an AI-powered financial assistant) to help clients better manage their expenses and obtain better

[4] McKinsey Global Institute, *Notes from the AI Frontier - Modeling the Impact of AI on the World Economy*, (2018), https://www.mckinsey.com/~/media/McKinsey/Featured%20Insights/Artificial%20Intelligence/Notes%20from%20the%20frontier%20Modeling%20the%20impact%20of%20AI%20on%20the%20world%20economy/MGI-Notes-from-the-AI-frontier-Modeling-the-impact-of-AI-on-the-world-economy-September-2018.ashx.

[5] *See* ITIF, *The Promise of Artificial Intelligence: 70 Real World Examples*, (2016), https://itif.org/publications/2016/10/10/promise-artificial-intelligence-70-real-world-examples. Also see OECD, *Artificial Intelligence in Society*, (2019), Section 3, https://read.oecd-ilibrary.org/science-and-technology/artificial-intelligence-in-society_eedfee77-en#page11. Note that possible negative impacts and risks, particularly regarding data privacy, are also relevant when trying to understand how these technologies work. *See* Berkman Klein Center for Internet & Society, *Artificial Intelligence & Human Rights: Opportunities & Risks*, (2018), https://cyber.harvard.edu/publication/2018/artificial-intelligence-human-rights.

[6] Healthcare IT News*, Google AI platform aids oncologists in breast cancer screenings*, (2020), https://www.healthcareitnews.com/news/google-ai-platform-aids-oncologists-breast-cancer-screenings.

[7] OECD, *supra* note 1, at 51.

pricing for their products and services.[8] Perhaps less visible, but arguably just as important in the hypercompetitive financial sector, AI is in use to automate administrative tasks and reduce financial company spending on human interactions, potentially lowering costs. Regarding Credit Scoring systems, for instance, credit bureaus in the United States report that deep learning which analyzes data in new ways can improve prediction accuracy by up to 15%.[9] In order to comply with transparency and explainability requirements, Equifax, a credit reporting agency, and SAS, a data analysis company, have created an interpretable credit-scoring tool based on deep learning.[10]

Retail and marketing: The retail sales and marketing sectors are also employing AI-powered tools to better target current and potential customers. While more traditional approaches to sales and marketing can target customers based on certain discrete behaviors, AI tools enable richer analyses that may include specific past purchases, spending habits, location and demographic information, and holiday and life cycle events. These analyses, coupled with the ability to deliver promotions and other relevant communications electronically to individual customers, enable very narrowly targeted marketing. For instance, in 2019 Amazon announced a tool that lets users upload photos and screenshots of clothing and accessories and, using machine-learning algorithms, Amazon matches them to similar items on the online marketplace.[11]

Other potential AI applications: Numerous additional data-centric applications are likely to see increasing use of AI-powered tools in the coming years. These may include:[12]

- public sector administration across a wide range of programs (e.g., governments in OECD countries are experimenting with AI to better meet the needs of public-service users and enhance stewardship of their resources);[13]
- security, including cybersecurity (e.g., IBM is using AI to proactively detect and analyze threats, providing actionable insights to security analysts for making informed decisions);[14]
- law enforcement and criminal justice, including use by judiciary systems (e.g., the Inter-American Court of Human Rights and Colombia's Constitutional Court are using AI to predict results in specific judicial cases);[15]
- anti-corruption (e.g., in Brazil, Rosie, an AI robot analyzes the reimbursement requests of lawmakers and calculates the probability that they are justified);[16]
- scientific research (e.g., AI is used to predict the behavior of chaotic systems, tackle complex computational problems in genetics, and improve the quality of astronomical imaging);[17]

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[8] Exame, *Startup que faz usuários gastarem menos pesquisará IA*, (2019), https://exame.abril.com.br/pme/startup-que-faz-usuarios-gastarem-menos-pesquisara-ia-no-vale-do-silicio/

[9] OECD, *supra* note 1 at 56.

[10] *Id.* at 51.

[11] MIT Technology Review, *Amazon wants to use AI to recommend you clothing—again*, (2019), https://www.technologyreview.com/f/613643/amazon-ai-machine-learning-stylesnap-fashion-retail/.

[12] See OECD, *supra* note 1, at 47.

[13] *Id.*

[14] IBM, *Artificial Intelligence for a smarter kind of cybersecurity*, https://www.ibm.com/security/artificial-intelligence.

[15] Ámbito Jurídico, *Prometea, inteligencia artificial para la revisión de tutelas en la Corte Constitucional*, (2019), https://www.ambitojuridico.com/noticias/informe/constitucional-y-derechos-humanos/prometea-inteligencia-artificial-para-la.

[16] World Bank Blogs, *Rosie the robot: Social accountability one tweet at a time – Part 2*, (2019), https://blogs.worldbank.org/governance/rosie-robot-social-accountability-one-tweet-time-part-2; *see* also The Atlantic, *Honest Politicians Won't Fix Corruption*, (2017), https://www.theatlantic.com/international/archive/2017/12/corruption-russia-venezuela-china/548159/; *see* also CMI, *Is Artificial Intelligence the future tool for anti-corruption?*, (2019), https://www.cmi.no/news/2149-is-artificial-intelligence-the-future-tool-for.

[17] OECD, *supra* note 1, at 47.

- agricultural production and management (e.g., agricultural robots, crop and soil monitoring, and ML to track and predict the impact of environmental factors on crop yield);[18]
- mining and energy (e.g., sensors to capture real-time data to identify potential failure planes on rock surfaces, using handheld hardware to analyze rock surfaces and providing the data to the user within minutes);[19] and
- manufacturing processes (e.g., AI used for manufacturers with heavy assets that helped improve profits within weeks).[20]

1.3. Data protection mechanisms and their impacts on AI applications

In all cases, providing specific data to train the algorithms is essential in order to achieve the intended results. AI leverages collection and analysis of data points in order to improve processes, predict needs, forecast behavior, and record outcomes. While not all AI applications will rely on personal data as heavily as the healthcare or finance sectors, it will be important for stakeholders in AI ecosystems to take appropriate care when handling, storing, and processing data that is used to train and employ AI-based systems and tools. Countries are already implementing different measures to regulate the collection, storage, and handling of personal data used for AI purposes. For instance, the EU General Data Protection Regulation (GDPR) requires a legal basis for processing data and includes the principles of purpose limitation and data minimization, which may have implications for the development, use, and application of AI systems.[21] The GDPR limits the use of automated decision-making in certain circumstances and gives users control over their personal data.[22]

Specifically, article 22 of the GDPR, which provides data subjects with the right not to be subject to a decision based solely on automated processing, could be a barrier to AI development.[23] Existing AI systems take automated decisions without consent; therefore, article 22 (or similar provisions) could have negative impacts on every industry hoping to leverage the power of technology to drive efficiencies through automated means.[24]

However, the exact intent of article 22 is not always clear. Some sectors view article 22 as only applying when a *decision* is based *solely* on automated processing – including profiling – which *produces legal effects* or *similarly significantly affects the data subject*.[25] Additionally, the GDPR gives users the right to an explanation. According to some interpretations, "[m]eaningful information about the logic involved" should be understood as *information* around the algorithmic *method* used rather than an *explanation* about the *rationale* of an automated decision.[26]

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[18] *Id*.
[19] Deloitte/Norcat, *Future of mining with AI: Building the first steps towards an insight-driven organization*, (2019), https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Energy-and-Resources/deloitte-norcat-future-mining-with-ai-web.pdf.
[20] McKinsey&Company, *AI in production: A game changer for manufacturers with heavy assets*, (2019), https://www.mckinsey.com/business-functions/mckinsey-analytics/our-insights/ai-in-production-a-game-changer-for-manufacturers-with-heavy-assets.
[21] Article 19 & Privacy International, *Privacy and Freedom of Expression in the Age of Artificial Intelligence*, (2018), https://www.article19.org/wp-content/uploads/2018/04/Privacy-and-Freedom-of-Expression-In-the-Age-of-Artificial-Intelligence-1.pdf.
[22] *Id.*
[23] General Data Protection Regulation (GDPR), Article 22, https://gdpr-info.eu/art-22-gdpr/.
[24] Information Age, *GDPR—How does it impact AI?*, (2019), https://www.information-age.com/gdpr-impact-ai-123483399/.
[25] SAS, *GDPR and AI: Friends, foes or something in between?*, https://www.sas.com/en_us/insights/articles/data-management/gdpr-and-ai--friends--foes-or-something-in-between-.html#/.
[26] *Id*.

Certain Latin American countries are considering provisions similar to article 22 when developing their national data regulations. We highlight, however, that some commenters have raised concerns regarding this article, noting that, although the GDPR could help build the necessary trust for AI acceptance by consumers and governments, article 22 "will affect the use of AI in at least three ways: by limiting the collection and use of data, restricting automated decision-making, and increasing compliance costs and risks." Moreover, they believe that "unless the EU reforms the GDPR, European countries will fall behind others, such as the United States and China, in the development and use of AI."[27]

1.4. AI in Latin America: Preparing for takeoff

In Latin America, although a growing interest exists with AI systems, their development and use are still in the initial stages. According to the World Economic Forum (WEF), AI is potentially a new factor of production that can help Latin America address future labor shortages and a chronic productivity deficit.[28] What is more, a recent study estimates that AI has the potential to add up to an entire percentage point to the region's annual economic growth rates by 2035.[29]

Faced with this potential, countries across the region want to be part of the global intelligence revolution, expanding AI development. To this end, several Latin American countries are developing national strategies to promote local talent, capacity building, research and development (R&D), data infrastructure, and ethics, among other aspects germane to growing AI capacity and incorporating it across society.

During their AI strategy-building processes, governments often adopt multi-stakeholder governance models in order to leverage multiple and cross-sector approaches that can help them maximize the benefits that new, disruptive technologies can bring, specifically in terms of economic and social development. For instance, in Argentina, various thematic and inter-ministerial working groups drafted the national AI plan, and different ministries as well as key telecommunications and technology companies participated in the process.[30] Moreover, regarding personal data involved in AI systems, the Argentinian Data Protection Authority drafted the Personal Data Protection Bill and held several meetings with and received comments from the private sector, academia, and civil society organizations in order to get feedback and discuss the language of the bill.[31] In the case of Ecuador, a massive data breach accelerated negotiations already underway between the national government and academics in order to ensure approval of a data protection law.[32] Chile is also worth mentioning. The Senate has held meetings and conducted events with academia, companies, scientists and civil society,

[27] ITIF, *Want Europe to Have the Best AI? Reform the GDPR*, (2019), https://itif.org/publications/2019/05/23/want-europe-have-best-ai-reform-gdpr.
[28] World Economic Forum, *Artificial Intelligence Could Help Reverse Latin America's Economic Slowdown*, (2017), https://www.weforum.org/agenda/2017/03/artificial-intelligence-could-help-reverse-latin-america-s-economic-slowdown/.
[29] Accenture, *How Artificial Intelligence Can Drive South America's Growth*, (2017), https://www.accenture.com/_acnmedia/pdf-49/accenture-how-artificial-intelligence-can-drive-south-americas-growth.pdf.
[30] Plan Nacional de Inteligencia Artificial, Presidencia de la Nación, agosto de 2018, https://www.uai.edu.ar/ciiti/2019/buenos-aires/downloads/B1/JA-Plan-Nacional-IA.pdf. Also *see* https://www.argentina.gob.ar/ciencia/desconferencia-sobre-inteligencia-artificial.
[31] *See* Proyecto de Ley de Protección de Datos Personales, https://www.argentina.gob.ar/aaip/datospersonales/proyecto-ley-datos-personales.
[32] *See* El Comercio, *Proyecto de Ley de Protección de Datos en Ecuador es presentado por Mintel*, (2019), https://www.elcomercio.com/actualidad/proyecto-ley-proteccion-datos-ecuador.html. Also *see* Anteproyecto de Ley Orgánica de Protección de Datos Personales, Dirección Nacional de Registro de Datos Públicos, https://privacyblogfullservice.huntonwilliamsblogs.com/wp-content/uploads/sites/28/2019/09/Anteproyecto-de-Ley-Orga%CC%81nica-de-Proteccio%CC%81n-de-Datos-Personales.pdf

among others. This included an event with more than 70 AI experts from academia who met with the Senate to discuss and agree on the need to create a roadmap for AI development roadmap in Chile.

1.5. The impact of policy on AI and the need for timely engagement

A challenging task for policymakers is balancing AI's promise to create efficiencies, improve quality of life, and contribute to economic growth with legitimate concerns over privacy and AI's potential to exacerbate imbalances or discriminatory practices. As AI technologies become both more sophisticated and widespread, policy and regulation will be key to establishing the rules under which the technology can grow and be incorporated into a society or economy.

Given the growing level of interest in AI and related developments in Latin America, it is an opportune time to engage with policymakers and regulators to ensure that AI is not unintentionally stifled by government actions. AI has the potential to be a major contributor to Latin American economies and productivity, but its impact will be largely shaped by the policies and approaches adopted by national governments. The amount of data that can potentially train and be analyzed by AI systems will continue to grow. As this trend continues, legal, regulatory and policy environments must be conducive to introducing new AI-enabled systems and fostering innovation in AI applications across sectors and entire economies. Failure to do so will limit AI's impact for countries in the region.

2. Review of selected AI principles

Numerous national and international stakeholders have developed AI principles or guidelines, including multinational organizations, governments, and private companies. These principles vary. Some focus on the data provided to algorithms (i.e., how to treat the data, how to store it, how to handle it), other principles are geared towards human rights (e.g., the right to privacy), and still others address the ethical aspects of AI (e.g., fairness and explainability). These resources are intended as not only public statements of how these entities approach AI but often also serve as potential guideposts for other stakeholders, including policymakers and regulators in Latin America seeking to develop their own AI policies or approaches. Moreover, as the examples below will show, some countries and entities decide to implement a rules-based approach while others prefer a more high-level principled-based approach.

For purposes of this report, the review focuses on approaches to AI taken by various governments and multilateral organizations. In addition, the report focuses on certain examples of principles developed by companies in the ICT sector. It is likely that other stakeholders may develop additional AI principles, and that the current principles may evolve and expand, as appropriate, over time.

Brief overviews of several such principles or guidelines are presented below, followed by the identification of key commonalities and differences. In considering the commonalities, it is also important to note that the same terms may be used in different contexts. For example, "transparency" could refer to the algorithms and the AI system in general, or visibility into the underlying data used by AI.

2.1. Multilateral organizations

2.1.1. OECD principles on AI

The OECD's Principles on AI were adopted in May 2019 as part of OECD Member States' approval of the OECD Council Recommendation on Artificial Intelligence and are presented as promoting AI that is "innovative and trustworthy and that respects human rights and democratic values."[33] These set standards are intended to be practical and flexible enough to remain relevant over time in a rapidly evolving field. While the full principles are presented in the Recommendation, the OECD's summary of the AI principles is presented in Box 1.[34]

While OECD recommendations can be influential, they are not binding upon OECD members. However, beyond the 36 OECD members, Argentina, Brazil, Colombia, Costa Rica, Peru, and Romania have adopted the

Box 1: OECD AI Principles

Summarized OECD AI Principles

- AI should benefit people and the planet by driving inclusive growth, sustainable development, and well-being.
- AI systems should be designed in a way that respects the rule of law, human rights, democratic values, and diversity, and they should include appropriate safeguards – for example, enabling human intervention where necessary – to ensure a fair and just society.
- There should be transparency and responsible disclosure around AI systems to ensure that people understand AI-based outcomes and can challenge them.
- AI systems must function in a robust, secure and safe way throughout their life cycles and potential risks should be continually assessed and managed.
- Organizations and individuals developing, deploying or operating AI systems should be held accountable for their proper functioning in line with the above principles.

[33] OECD, *The OECD AI Principles*, https://www.oecd.org/going-digital/ai/principles/.
[34] OECD, *Recommendation of the Council on Artificial Intelligence*, OECD/LEGAL/0449 (2019), https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0449.

OECD AI Principles.[35] In June 2019, the G20 adopted AI principles and recommendations for policymakers that are substantially based on the OECD AI Principles.[36] As such, these principles are possibly the most widely adopted or emulated AI principles globally.

The AI principles were developed by an OECD working group representing governments, as well as the business, labor, civil society, academic, and scientific communities.[37]

Alongside the principles, the OECD also published five recommendations specifically for governments:

1. facilitate public and private investment in research & development to spur innovation in trustworthy AI;
2. foster accessible AI ecosystems with digital infrastructure and technologies and mechanisms to share data and knowledge;
3. ensure a policy environment that will open the way to deployment of trustworthy AI systems;
4. empower people with the skills for AI and support workers for a fair transition; and
5. co-operate across borders and sectors to progress on responsible stewardship of trustworthy AI.

The OECD Council's Recommendation also instructs the organization's Committee on Digital Economy Policy (CDEP) to continue its work on AI, taking into account work in other international fora. To this end, the Council instructed the CDEP to develop practical guidance on AI.

The cornerstone of this effort is the OECD AI Policy Observatory, which aims to help countries encourage, nurture, and monitor the responsible development of trustworthy AI systems for the benefit of society.[38] This AI Policy Observatory was launched on February 27, 2020.[39] It is an online platform that brings together AI-related research, policies, and data. The AI Policy Observatory builds on the OECD AI Principles and combines resources from across the OECD, its partners, and all stakeholder groups. This platform provides multidisciplinary, evidence-based policy analysis in the areas in which AI has the most impact.

2.1.2. Ibero-American Data Protection Network Recommendations for Processing of Personal Data by Artificial Intelligence

The Ibero-American Data Protection Network (RIPD, for its initials in Spanish) is an organization comprised of the data protection authorities of Andorra, Argentina, Chile, Colombia, Costa Rica, Mexico, Peru, Portugal, Spain, and Uruguay, with additional participation from data protection entities in other Latin American countries as well as Europe and Africa.[40] In January 2019, RIPD approved "Recommendations for the Processing of Personal Data by Artificial Intelligence."[41] The objective of the recommendations is to advise developers on how to incorporate regulatory requirements on personal data processing into their AI products.

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[35] OECD, *Forty-two countries adopt new OECD Principles on Artificial Intelligence*, (2019), https://www.oecd.org/going-digital/forty-two-countries-adopt-new-oecd-principles-on-artificial-intelligence.htm.
[36] G20, *G20 Ministerial Statement on Trade and Digital Economy*, (2019), https://www.meti.go.jp/press/2019/06/20190610010/20190610010-1.pdf.
[37] OECD, *List of participants in the OECD Expert Group on AI (AIGO)*, https://www.oecd.org/going-digital/ai/oecd-aigo-membership-list.pdf.
[38] OECD, *OECD.AI Policy Observatory*, https://www.oecd.org/going-digital/ai/about-the-oecd-ai-policy-observatory.pdf.
[39] OECD AI Policy Observatory, https://oecd.ai/
[40] Red Iberoamericana de Protección de Datos (RIPD), Relación de Entidades Integrantes de la RIPD, https://www.redipd.org/es/la-red/entidades-acreditadas .
[41] RIPD, *Recomendaciones para el tratamiento de datos personales en la inteligencia artificial*, (2019) https://www.argentina.gob.ar/sites/default/files/recomendaciones-generales-para-el-tratamiento-de-datos-en-la-ia.pdf.

As such, while the RIPD recommendations are directed toward AI product developers, they are specifically focused on personal data protection, in contrast to the broader AI recommendations or guidelines proposed by the OECD or other stakeholders. The recommendations are designed to be considered in conjunction with the RIPD's "Personal data protection standards for Ibero-American States."[42]

The RIPD's ten recommendations for protecting personal data in the context of AI are:

1. respect local regulations on personal data processing;
2. perform privacy impact studies;
3. incorporate privacy, ethics, and security by design and by default;
4. incorporate the principle of accountability;
5. design appropriate personal data processing governance schemes in organizations that develop AI products;
6. adopt measures to guarantee the RIPD principles of personal data processing in AI projects;
7. guarantee the rights of data subjects and implement effective mechanisms for the exercise of said rights;
8. ensure the quality of information used;
9. use anonymization tools; and
10. increase transparency and data subject confidence.

2.1.3. Council of Europe Guidelines on Artificial Intelligence and Data Protection

Building on the modernization of its 1981 Convention for the Protection of Individuals with regard to Automatic Processing of Personal Data (Convention 108), the Council of Europe issued Guidelines on Artificial Intelligence and Data Protection in January 2019.[43]

The AI guidelines are intended to create a set of baseline measures that governments, AI developers, manufacturers, and service providers should follow to ensure that AI applications do not undermine human dignity, human rights, or fundamental individual freedoms, notably with regard to the right to data protection. The guidelines are divided into three sections: general guidance; guidance for developers, manufacturers, and service providers; and guidance for legislators and policymakers.

2.2. Principles outlined by regulatory authorities and legislative bodies

Several governments have also developed and shared principles regarding AI development and governance. Selected examples are presented below, while details on principles developed in Colombia and Uruguay are presented in Section 3.

2.2.1. European Union AI White Paper

In February 2020, the European Commission released a White Paper on AI for consultation.[44] According to the Commission, the goal is to address AI's opportunities and challenges while promoting its development and deployment, based on European values and preserving the EU's technological leadership.

[42] RIPD, *Estándares de protección de datos personales para los estados iberoamericanos*, (2017), https://www.redipd.org/sites/default/files/inline-files/Estandares_Esp_Con_logo_RIPD.pdf .
[43] Council of Europe, *Guidelines on Artificial Intelligence and Data Protection*, (2019), https://rm.coe.int/guidelines-on-artificial-intelligence-and-data-protection/168091f9d8.
[44] European Commission, *White Paper On Artificial Intelligence – A European approach to excellence and trust,* (2020), https://ec.europa.eu/info/sites/info/files/commission-white-paper-artificial-intelligence-feb2020_en.pdf.

The White Paper sets out policy options on how to achieve the promotion of AI and address the risks associated with certain uses of this technology. It includes a set of actions and seek feedback on them from interested stakeholders. Importantly, the guidelines only apply to "high-risk" AI, defined as AI that concerns a critical use (e.g., legal effects, risks of death, or damage or injury) in a critical sector (e.g., healthcare, transport, police, or the legal system). High-risk AI will be subject to strict rules, including compliance tests, controls, and sanctions, while other AI applications can use voluntary labelling.

The conclusions of the White Paper include the following:

- AI is a strategic technology that offers many benefits for citizens, companies, and society as a whole, provided it is human-centric, ethical, sustainable, and respects fundamental rights and values;
- for Europe to fully seize the opportunities AI offers, it must develop and reinforce the necessary industrial and technological capacities, which includes the EU becoming a global hub for data; and
- the European approach for AI aims to promote Europe's innovation capacity in the area of AI while supporting the development and uptake of ethical and trustworthy AI across the EU economy.

The White Paper includes a set of guidelines and proposals that are open for comments through a public consultation until May 2020.[45] By the end of 2020, the European Commission will begin drafting legislation based on these proposals and comments received.

2.2.2. Singapore

2.2.2.1. Model Artificial Intelligence Governance Framework

Jointly published by Singapore's Personal Data Protection Commission (PDPC) and the Infocomm Media Development Authority (IMDA), the first edition of the "Model Artificial Intelligence Governance Framework" was presented in January 2019, intending to frame discussions around the challenges and possible solutions to harnessing AI in a responsible manner.[46] The Model Framework seeks to collect a set of principles, organize them around key themes, and compile them into an easily understandable and applicable structure. The framework document notes that it seeks to apply to the use of AI in all contexts and technologies, serving as a baseline set of considerations and measures.

The Model Framework is based on two high-level guiding principles intended to promote trust in AI and understanding of the use of AI technologies:

- Organizations using AI in decision-making should ensure that the decision-making process is **explainable**, **transparent** and **fair**. Although perfect explainability, transparency, and fairness are impossible to attain, organizations should strive to ensure that their use or application of AI is done in a manner reflecting the objectives of these principles.[47] This helps build trust and confidence in AI.

[45] *See* EU's public consultation at https://ec.europa.eu/eusurvey/runner/AIConsult2020. Note that it is necessary to authenticate identity on the European Commission's website to have access to the consultation.

[46] Infocomm Media Development Agency (IMDA) and Personal Data Protection Commission (PDCP*), Model Artificial Intelligence Governance Framework*, First Edition, (2019), https://www2.imda.gov.sg/-/media/Imda/Files/Programme/AI-Data-Innovation/Model-AI-Governance-Framework---First-Edition.pdf?la=en.

[47] "These algorithms are capable of learning from massive amounts of data, and once that data is internalized, they are capable of making decisions experientially or intuitively like humans. This means that for the first time, computers are no longer merely executing detailed pre-written instructions but are capable of arriving at dynamic solutions to problems based on patterns in data that humans may not even be able to perceive. This new approach comes at a price, however, as many of these algorithms

- AI solutions should be **human-centric**. As AI is used to amplify human capabilities, the protection of the interests of human beings, including their well-being and safety, should be the primary considerations in the design, development, and deployment of AI.

Flowing from these two principles, the Model Framework provides guidance on measures promoting responsible AI usage that organizations should adopt in four key areas: internal governance structures and measures, determining an AI decision-making model, operations management, and customer relationship management.

A second edition of the Model Framework, launched on January 21, 2020, includes additional considerations, such as robustness and reproducibility, and refines the original Model Framework for greater relevance and usability.[48] For instance, the section on customer relationship management has been expanded to include considerations of interactions and communications with a broader network of stakeholders. Additionally, the revised Model Framework includes industry examples in each section to illustrate how organizations have implemented AI governance practices.

2.2.2.2. Monetary Authority of Singapore principles

Somewhat separate from the development of the Model Framework, the Monetary Authority of Singapore (MAS), the country's financial sector regulator, developed a set of principles to promote fairness, ethics, accountability and transparency (FEAT) in the use of AI and data analytics (collectively, AIDA) in finance.[49] The so-called FEAT Principles provide guidance to financial products and services firms on the responsible use of AI and data analytics, including how to strengthen internal governance around data management and use. MAS notes that the principles are not meant to be prescriptive or mandatory, but rather to serve as a framework for consideration and discussion.

The FEAT Principles were developed by the MAS with assistance from the financial industry and other relevant stakeholders. However, the MAS notes that it worked closely with the PDPC and IMDA to ensure alignment of the FEAT Principles with IMDA AI governance initiatives. The FEAT Principles provide a case to monitor in order to see how sector-specific and broader AI principles and frameworks interact. The MAS principles are summarized in Box 2 below.

Box 2: MAS Principles

Summarized MAS Principles:

- *Fairness*:

1. Individuals or groups of individuals are not systematically disadvantaged through AIDA-driven decisions unless these decisions can be justified.

2. Use of personal attributes as input factors for AIDA-driven decisions is justified.

can be black boxes, even to their creators." *See* Yavar Bathaee, *The Artificial Intelligence Black Box and the Failure of Intent and Causation*, Harvard Journal of Law & Technology, Volume 31, Number 2, Spring 2018, at 891 (citations omitted), https://jolt.law.harvard.edu/assets/articlePDFs/v31/The-Artificial-Intelligence-Black-Box-and-the-Failure-of-Intent-and-Causation-Yavar-Bathaee.pdf

[48]Infocomm Media Development Authority (IMDA) and Personal Data Protection Commission (PDPC), *Model Artificial Intelligence Governance Framework*, Second Edition, (2020), https://www.pdpc.gov.sg/-/media/Files/PDPC/PDF-Files/Resource-for-Organisation/AI/SGModelAIGovFramework2.pdf.

[49] Monetary Authority of Singapore (SAS), *Principles to Promote Fairness, Ethics, Accountability and Transparency (FEAT) in the Use of Artificial Intelligence and Data Analytics in Singapore's Financial Sector*, (2018), https://www.mas.gov.sg/~/media/MAS/News%20and%20Publications/Monographs%20and%20Information%20Papers/FEAT%20Principles%20Final.pdf.

3. Data and models used for AIDA-driven decisions are regularly reviewed and validated for accuracy and relevance, and to minimize unintentional bias.

4. AIDA-driven decisions are regularly reviewed so that models behave as designed and intended.

- *Ethics*:

5. Use of AIDA is aligned with the firm's ethical standards, values and codes of conduct.

6. AIDA-driven decisions are held to at least the same ethical standards as human-driven decisions.

- *Accountability*:

7. Use of AIDA in AIDA-driven decision-making is approved by an appropriate internal authority.

8. Firms using AIDA are accountable for both internally developed and externally sourced AIDA models.

9. Firms using AIDA proactively raise management and Board awareness of their use of AIDA. External Accountability.

10. Data subjects are provided with channels to enquire about, submit appeals for and request reviews of AIDA-driven decisions that affect them.

11. Verified and relevant supplementary data provided by data subjects are taken into account when performing a review of AIDA-driven decisions.

- *Transparency*:

12. To increase public confidence, use of AIDA is proactively disclosed to data subjects as part of general communication.

13. Data subjects are provided, upon request, clear explanations on what data is used to make AIDA-driven decisions about the data subject and how the data affects the decision.

14. Data subjects are provided, upon request, clear explanations on the consequences that AIDA-driven decisions may have on them.

2.2.3. United Arab Emirates – Dubai AI principles

In the United Arab Emirates, in January 2019, the emirate of Dubai has established AI principles in the context of its overall Smart Dubai initiative.[50] The four non-binding, high-level statements lay out aspirations and a roadmap for the behavior of AI systems. Each principle includes sub-principles intended to more clearly define Dubai's goals for AI design and behavior.

The Dubai AI principles and major sub-principles are:

- **Ethics:** AI systems will be fair, accountable, as explainable as technically possible, and transparent.
- **Security:** AI systems will be safe, secure, and controllable by humans and unable to autonomously hurt, destroy, or deceive humans.
- **Humanity:** Dubai will plan for a future in which AI systems become increasingly intelligent, and also give AI systems human values and make them beneficial to society.
- **Inclusiveness:** AI will promote human values, freedom, and dignity; respect people's privacy; share benefits throughout society; and will be governed as a global effort.

[50] Smart Dubai, *Principles of Artificial Intelligence*, https://www.smartdubai.ae/initiatives/ai-principles.

Dubai's AI principles are accompanied by an Ethical AI Toolkit that provides further guidance in line with the ethics principle, on how to make AI systems fair, transparent, accountable, and explainable.[51]

 2.2.4. United Kingdom principles for an AI Code

Between 2017 and 2019, a UK House of Lords committee conducted an inquiry on AI and its development and use in the United Kingdom (UK).[52] The inquiry and resulting report are far-reaching, with the latter including the observation that the public and policymakers both have a responsibility to understand the capabilities and limitations of AI, which will require an awareness of when and where it is being deployed. The report also notes that AI will have significant implications on how UK citizens live and work, and that government investment in skills and training is necessary to avoid major disruptions. The committee also urges the UK to actively engage in AI development and utilization, serving as a leader rather than a follower in the global development of the technology.

To that end, the report presents numerous suggestions related to AI development and implementation in the United Kingdom.[53] Among these is that a cross-sectoral ethical code of conduct—an "AI Code"—be developed, suitable for implementation across public and private sector organizations that are crafting or adopting AI. While the committee's report does not set out the code itself, it does provide five overarching principles for an AI Code:

1. AI should be developed for the common good and benefit of humanity;
2. AI should operate on principles of intelligibility and fairness;
3. AI should not be used to diminish the data rights or privacy of individuals, families or communities;
4. all citizens should have the right to be educated to enable them to flourish mentally, emotionally and economically alongside AI; and
5. the autonomous power to hurt, destroy or deceive human beings should never be vested in AI.

Relatedly, in June 2019, the Secretary of State for Business, Energy and Industrial Strategy presented Parliament a White Paper on Regulation for the Fourth Industrial Revolution.[54] According to the Secretary, the Government "…will support and stimulate new products, services and business models, with greater space for experimentation."[55] The White Paper's goal is to reshape the UK's regulatory approach so that it supports and stimulates innovation that benefits citizens and the economy.[56] According to the White Paper, the UK government identified six challenges:

- they need to be on the front foot (i.e., an advantageous position) in reforming regulation in response to technological innovation;

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[51] Smart Dubai, *AI Ethics Principles & Guidelines*, (2019) https://www.smartdubai.ae/pdfviewer/web/viewer.html?file=https://www.smartdubai.ae/docs/default-source/ai-principles-resources/ai-ethics.pdf?sfvrsn=d4184f8d_6.

[52] Parliament (United Kingdom), *UK can lead the way on ethical AI, says Lords Committee*, (2018), https://www.parliament.uk/business/committees/committees-a-z/lords-select/ai-committee/news-parliament-2017/ai-report-published/.

[53] House of Lords Select Committee on Artificial Intelligence, *AI in the UK: ready, willing, and able?*, Report of Session 2017-19, (2018), https://publications.parliament.uk/pa/ld201719/ldselect/ldai/100/100.pdf.

[54] Secretary of State for Business, Energy and Industrial Strategy, *Regulation for the fourth Industrial Revolution*, White Paper, (2019), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/807792/regulation-fourth-industrial-strategy-white-paper-web.pdf.

[55] *Id.* at 6.

[56] *Id.* at 8.

- they need to ensure that the regulatory system is sufficiently flexible and outcomes-focused to enable innovation to thrive;
- they need to enable greater experimentation, testing, and trialing of innovations under regulatory supervision;
- they need to support innovators to navigate the regulatory landscape and comply with regulation;
- they need to build a dialogue with society and industry on how technological innovation should be regulated; and
- they need to work with partners across the globe to reduce regulatory barriers to trade in innovative products and services.

Significantly, the White Paper includes a section on supporting experimentation, in which the UK government states that they will enable greater experimentation, testing and trialing of innovations under regulatory supervision to support and stimulate the breakthrough of new technologies.[57] They highlight that a new approach is needed to attract more investors and innovators to the UK and to support businesses to thrive in the Fourth Industrial Revolution.[58] Among the examples the White Paper includes is a successful "regulatory sandbox" created by the Financial Conduct Authority in 2016. According to this Authority, access to the sandbox has helped reduce the time and cost of getting innovative ideas to market (in the first year, 90% of firms progressed towards wider market launch) and improve access to finance (40% received investment during or following their sandbox tests).[59]

2.2.5. U.S. Guidance for Regulation of Artificial Intelligence Applications

In line with the Executive Order on AI, issued in February 2019, in the United States the White House released a draft memorandum containing ten principles that federal agencies must meet when drafting regulations and non-regulatory guidance (such as guidelines, rules, and frameworks) for private-sector AI applications.[60] These principles call for as little regulation as possible and are aimed at ensuring that AI is developed safely, transparently, and in ways that reflect American principles. However, government use of AI is outside the scope of the White House memorandum.

The ten AI principles are:

1. **Public trust in AI.** The government must promote reliable, robust, and trustworthy AI applications.
2. **Public participation.** The public should have a chance to provide feedback at all stages of the rule-making process.
3. **Scientific integrity and information quality.** Agencies should use technical evidence to inform AI policy decisions.
4. **Risk assessment and management.** Agencies should decide which risks are and are not acceptable.
5. **Benefits and costs.** Agencies should weigh the societal impacts of all proposed regulations.
6. **Flexibility.** Any approach should be adaptable to rapid changes and updates to AI applications.
7. **Fairness and nondiscrimination.** Agencies should ensure AI systems do not discriminate illegally.

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[57] *Id* at 19.
[58] *Id.*
[59] *Id.*
[60] White House, *Accelerating America's Leadership in Artificial Intelligence*, (2019), https://www.whitehouse.gov/articles/accelerating-americas-leadership-in-artificial-intelligence/. Also *see* White House, Memorandum for the Heads of Executive Departments and Agencies, *Guidance for Regulation of Artificial Intelligence Applications*, (2020), https://www.whitehouse.gov/wp-content/uploads/2020/01/Draft-OMB-Memo-on-Regulation-of-AI-1-7-19.pdf.

8. **Disclosure and transparency.** The public will trust AI only if it knows when and how it is being used.
9. **Safety and security.** Agencies should implement controls ensuring the confidentiality, integrity, and availability of information processed, stored and transmitted by AI systems.
10. **Interagency coordination.** Agencies should coordinate with one another to ensure consistency and predictability in AI-related policies.

As expressed by Lynne Parker, Deputy U.S. Chief Technology Officer, the principles are intentionally high-level. Federal agencies will tailor regulations according to their sector-specific needs.[61] The draft version of the memorandum is open for comment until March 13, 2020. Following this, the White House will issue a final memorandum to federal agencies and instruct them to submit implementation plans. The memorandum will be binding to all federal agencies, excluding independent agencies such as the Federal Communications Commission (FCC) or the Federal Trade Commission (FTC).

2.3. Principles developed by private sector stakeholders

Understanding that many of the AI products and services with the most significant impacts are implemented by the private sector, numerous ICT companies have developed AI principles that are useful points of reference for policymakers and other relevant stakeholders. This section presents information on some of these AI principles, specifically those implemented by Google, Microsoft, and Telefónica.

2.3.1. Google

In July 2018, Google's CEO published a blog post outlining the company's AI principles, noting that the development and use of AI will have a significant long-term impact on society.[62] The post positions the principles as concrete standards that will govern Google's research and product development and its business decisions. Mr. Pichai's post identifies Google's seven objectives for AI applications as:

1. Be socially beneficial.
2. Avoid creating or reinforcing unfair bias.
3. Be built and tested for safety.
4. Be accountable to people.
5. Incorporate privacy design principles.[63]
6. Uphold high standards of scientific excellence.
7. Be made available for uses that accord with these principles.

Notably, Google also identifies AI applications that it *will not* pursue. Specifically, the company will not design or deploy AI that will cause or are likely to cause harm, weapons or other technologies principally designed to cause or facilitate injury to people, technologies that gather or use information for surveillance violating internationally accepted norms, or technologies whose purpose contravenes widely accepted principles of international law and human rights.

[61] Federal News Network, *White House releases 'first of its kind' set of binding AI principles for agency regulators*, (2020), https://federalnewsnetwork.com/artificial-intelligence/2020/01/white-house-releases-first-of-its-kind-set-of-binding-ai-principles-for-agency-regulators/.
[62] Google, *AI at Google: our principles*, (2018), https://www.blog.google/technology/ai/ai-principles/.
[63] Google, *Our Privacy and Security Principles*, https://safety.google/principles/.

2.3.2. Microsoft

Microsoft has also developed and published principles that govern its approach to AI systems. Specifically, Microsoft states that "designing AI to be trustworthy requires creating solutions that reflect ethical principles that are deeply rooted in important and timeless values."[64] To that end, Microsoft sets out the following AI principles:

- **Fairness.** AI systems should treat all people fairly.
- **Inclusiveness.** AI systems should empower everyone and engage people.
- **Reliability & Safety.** AI systems should perform reliably and safely.
- **Transparency.** AI systems should be understandable.
- **Privacy & Security.** AI systems should be secure and respect privacy.
- **Accountability.** AI systems should have algorithmic accountability.

2.3.3. Telefónica

Telefónica notes that it has been using AI internally to optimize its business processes, improve customer relations, and to help improve operations of business-to-business (B2B) customers. The company also notes that the application of AI technology has the potential to bring about unfair or discriminatory results if not designed and implemented in a manner that is cautious and aware of potential unwanted outcomes.

Telefónica further discusses AI in the context of the company's broader business principles and human rights policy, as well as other internal policies.[65] As such, Telefónica states that "[t]echnology should contribute to making society more inclusive and offer better opportunities for all, and we believe AI can contribute to these goals."

Telefónica's five AI principles are:

- **Fair AI.** Applications of AI should not lead to discriminatory impacts on people based on any personal characteristic or condition. This will be kept in mind during the development and use of training data sets.
- **Transparent and explainable AI.** Telefónica will be transparent about the kind of data used and the purpose for such use and will be transparent when a user is interacting with an AI system. Further, they will ensure that any decisions taken by an AI system, whether provided by Telefónica or a third party, can be clearly understood.
- **Human-centric AI.** AI systems should always stay under human control and be driven by value-based considerations, and Telefónica AI should not lead to a negative impact or achievement of UN Sustainable Development Goals.
- **Privacy and security by design.** In order to comply with Telefónica's privacy policy, the company employs a privacy by design approach, as well as a security by design approach. This entails applying technical and organizational measures that are appropriate for the risk to which the personal data may be exposed, as well as applicable local law.
- **Working with partners and third parties.** When working with partners or third parties on AI-based services, Telefónica reserves the right to verify the logic and data used by those suppliers.

[64] Microsoft, *Our approach to AI*, https://www.microsoft.com/en-us/ai/our-approach-to-ai.
[65] Telefónica, *Business Principles*, https://www.telefonica.com/documents/153952/388559/OurBusinessPrinciples.pdf/adfea195-d91a-4718-8c6f-760f07f4cbdb; Telefónica, *Global Human Rights Policy*, (2019), https://www.telefonica.com/documents/364672/452644/human-rights-policy-telefonica-may-2019.pdf/43045d11-3d08-d0d8-f56a-d1f28510e899.

2.4. Common AI principles

It is perhaps instructive to note that certain key themes are common across many, if not all, of the AI principles and guidelines examined in this section. In particular, the concepts of fairness, privacy, accountability, and transparency are relatively common across each type of organization, providing a foundation for common global AI principles and guidelines.

	Fairness	Privacy	Accountability	Transparency
OECD			✓	✓
RIPD		✓	✓	✓
Council of Europe	✓	✓	✓	✓
Singapore	✓			✓
Singapore MAS	✓		✓	✓
United Arab Emirates	✓	✓	✓	✓
United Kingdom	✓	✓		
United States	✓	✓		✓
Google	✓	✓	✓	✓
Microsoft	✓	✓	✓	✓
Telefónica	✓	✓		✓

The fact that these themes are repeated across multiple AI principles and guidelines developed by different organizations and sectors demonstrates that a broad cross-section of stakeholders has common interests and concerns related to AI development and implementation. As such, these factors form part of a core set of priorities and policy areas that all AI stakeholders should keep in mind, regardless of whether they are developing products or services or shaping policies and laws.

3. Relevant Latin American developments on AI

Given the development of AI in Latin America, it is useful to consider both broader policy instruments that can—and do—affect AI development, as well as reviewing the AI-related activities underway in key markets. In particular, the implementation and review of data protection and privacy laws, and ethical and liability considerations can significantly affect the ability of AI stakeholders to innovate and deploy new products and services. Against this backdrop, this section reviews developments in Argentina, Brazil, Chile, Colombia, Mexico, and Uruguay. AS discussed below, these have all undertaken initial AI-related activities and seek to promote AI development in their markets.

3.1. Countries including AI in policy/legislation

Considering those Latin American countries that have arguably been most active regarding AI, it is useful to review the specific AI-focused activities and initiatives undertaken, as well as key developments in related policy areas. The following sections provide an overview of activities in Argentina, Brazil, Chile, Colombia, Mexico, and Uruguay, each of which has identified AI or AI-related issues as key priorities for the coming years. This cohort of countries is working to ensure that there is an appropriate enabling environment for—and in some cases, the active promotion of—AI innovation and implementation.

3.1.1. Argentina

Key Data

- Population (millions): 44.49[66]
- GDP (US$) (billions): 518.48[67]
- Fixed-broadband subscriptions*: 19.1[68]
- Mobile-broadband subscriptions*: 78.1[69]
- Signatory to OECD AI Principles: Yes
- Global Competitiveness Index Ranking: 81[70]
- World Digital Competitiveness Ranking: 55[71]
- Government AI Readiness Index: 51[72]
- Automation Readiness Index: 17[73]
- Party to Council of Europe Convention 108:[74] Yes
- AI Principles Developed: No

(* Per 100 Inhabitants)

[66] World Bank Group, *Country Profile 2018*, https://databank.worldbank.org/views/reports/reportwidget.aspx?Report_Name=CountryProfile&Id=b450fd57&tbar=y&dd=y&inf=n&zm=n&country=ARG.
[67] *Id*.
[68] ITU, Statistics, Country ICT Data (Until 2018), https://www.itu.int/en/ITU-D/Statistics/Documents/statistics/2019/Fixed_broadband_2000-2018_Jun2019_revised27082019.xls.
[69] *Id*.
[70] Out of 140 economies. World Economic Forum, *The Global Competitiveness Report 2018*, http://www3.weforum.org/docs/GCR2018/05FullReport/TheGlobalCompetitivenessReport2018.pdf .
[71] Out of 63 countries. IMD World Competitiveness Center, (2018), https://www.imd.org/globalassets/wcc/docs/imd_world_digital_competitiveness_ranking_2018.pdf.
[72] Out of 194 countries. Oxford Insights, "Government Artificial Intelligence Readiness Index 2019," https://www.oxfordinsights.com/ai-readiness2019. This index was created to answer the question: how well placed are national governments to take advantage of the benefits of AI in their operations and delivery of public services?
[73] Out of 25 countries. The Economist and ABB (2018), https://automationreadiness.eiu.com/whitepaper. The country sample includes G20 countries and 5 additional nations representing diverse regions of the world. "The Automation Readiness Index compares countries on their preparedness for the age of intelligent automation. In assessing the existence of policy and strategy in the areas of innovation, education and the labor market, the study finds that little policy is in place today that specifically addresses the challenges of AI- and robotics-based automation."
[74] This Convention is the first binding international instrument focused on strengthening data protection. It consists of three main parts: 1) substantive law provisions in the form of basic principles; 2) special rules on transborder data flows; and 3) mechanisms for mutual assistance and consultation between the Parties. As residents in one country may encounter difficulties when they want to exercise their rights regarding automated data files in other countries, this Convention is aimed at solving this kind of problem through international cooperation.

Many key aspects of AI remain unaddressed by the current legal framework in Argentina. President Macri's administration showed a great interest in AI as part of wider digital innovation initiatives and as an important engine of economic growth and human development. However, there have not been any indications of how the new administration will address the AI strategy.

3.1.1.1. Government-driven AI activity

Argentina's 2030 Digital Agenda proposes the creation of a National Artificial Intelligence Plan (NAIP) by the end of 2019.[75] The proposed plan is expected to include control of algorithms as an ethical priority, as well as addressing intellectual property, liability, certifications, and standards, according to a key government official.[76] According to information gathered by the OECD, Argentina's priority themes for the NAIP include talent and education; data; R&D and innovation, supercomputing infrastructure; public services and manufacturing; actions to facilitate job transitions and facilitating public-private cooperation on data use.[77] Additionally, transversal issues of the strategy include (i) investment, ethics, and regulation; (ii) communication and awareness building; and (iii) international co-operation.[78] However, the development of AI principles was not part of the agenda. At present, Argentina is still in the process of drafting the 10-year NAIP. The new administration will have to decide how it will continue the AI-strategy development process.

There has also been an effort by both government and the private sector to jointly discuss AI issues and priorities. This includes a two-part conference held in March and July 2019, hosted by the Secretary of Government of Science, Technology, and Production within the framework of the development of the NAIP to bring together the AI ecosystem, including the private sector, and discuss trends, success stories across various industries, and reflect on the debates surrounding AI both in Argentina and globally. The discussions also included the creation of an AI lab where public and private resources can converge to advance AI.[79] Although the industry focus of the NAIP was not completely clear, some government presentations addressed the importance of AI in research, in public administration (e.g., predicting citizens' needs, assisting citizens, and implementing new services), as well as in industry in general (e.g., reducing costs, optimizing logistics, improving quality, maximizing workforce efficiency, and introducing new products and services).[80]

3.1.1.2. Legislative and policy activities relevant to AI development

Argentina has been working on a Personal Data Protection Bill for the last three years.[81] This bill is intended to provide users with the right to access their personal data and to ask for an explanation of the

[75] Casa Rosada, *El gobierno presentó la nueva Agenda Digital 2030,* (2018) https://www.casarosada.gob.ar/informacion/actividad-oficial/9-noticias/44081-el-gobierno-presento-la-nueva-agenda-digital-2030.

[76] Presidencia de la Nación, *Plan Nacional de Inteligencia Artificial*, (2018), https://www.uai.edu.ar/ciiti/2019/buenos-aires/downloads/B1/JA-Plan-Nacional-IA.pdf.

[77] OECD, *supra* note 1, at 125.

[78] *Id.*

[79] iProfesional, *El gobierno impulsa un plan nacional para liderar el desarrollo de inteligencia artificial en la región,* (2019), https://www.iprofesional.com/tecnologia/288670-banda-ancha-ciberseguridad-computadora-Argentina-busca-liderar-la-inteligencia-artificial-en-la-region.

[80] *See supra* note 77.

[81] Ley de Protección de Datos Personales, (2018), https://www.argentina.gob.ar/sites/default/files/anteproyecto_reforma_ley_proteccion_de_los_datos_personales_nueva_version.pdf.

terms of use that apply to their data.[82] The information obtained should highlight the implementation of automated decisions, including the creation of profiles, and information on the logic applied to the process. Moreover, the bill provides a right to oppose to being subject to a decision based solely on automated data treatment.[83] According to the bill, impact evaluation processes would be necessary when the data treatment process expects to make a systematic evaluation of personal data based on automated treatment.[84]

3.1.2. Brazil

Key Data

- Population (millions): 209.47[85]
- GDP (US$) (billions): 1,868.63[86]
- Fixed-broadband subscriptions*:14.8[87]
- Mobile-broadband subscriptions*: 90.2[88]
- Signatory to OECD AI Principles: Yes
- Global Competitiveness Index Ranking: 72[89]
- World Digital Competitiveness Ranking: 57[90]
- Government AI Readiness Index: 40[91]
- Automation Readiness Index: 19[92]
- Party to Council of Europe Convention 108: No
- AI Principles Developed: No

(* Per 100 Inhabitants)

Brazil, similar to other Latin American countries, does not have laws specifically regulating AI development and implementation. However, some regulations address key issues that can be important to consider in the context of AI.

3.1.2.1. Government-driven AI activity

Some AI issues are addressed in the E-Digital Strategy, an initiative by the federal government, led by the Ministry of Science, Technology, Innovation and Communications (MCTIC), and released in 2018 (for the period 2018-2021). The strategy addresses digital transformation, including AI, while protecting citizens' rights and maintaining privacy, developing an action plan for new technologies, and working with other countries to develop new technologies.

According to the strategy, digitalization leads to new opportunities as well as concerns that necessitate the creation of an appropriate regulatory framework and require a governance framework. The strategy also prioritizes the allocation of resources towards AI research, development and innovation, as well as

[82] *Id.*, article 28.
[83] *Id*., article 32.
[84] *Id*., article 40.
[85] World Bank Group, *Country Profile 2018*, https://databank.worldbank.org/views/reports/reportwidget.aspx?Report_Name=CountryProfile&Id=b450fd57&tbar=y&dd=y&inf=n&zm=n&country=BRA.
[86] *Id.*
[87] ITU, Statistics, *Country ICT Data* (Until 2018), https://www.itu.int/en/ITU-D/Statistics/Documents/statistics/2019/Fixed_broadband_2000-2018_Jun2019_revised27082019.xls.
[88] ITU, Broadband Commission for Sustainable Development, (2018).
[89] Out of 140 economies. World Economic Forum, *The Global Competitiveness Report 2018*.
[90] Out of 63 countries. IMD World Competitiveness Center (2018).
[91] Out of 194 countries. Oxford Insights, *Government Artificial Intelligence Readiness Index 2019*.
[92] Out of 25 countries. The Economist and ABB (2018). The country sample includes G20 countries and 5 additional nations representing diverse regions of the world.

capacity building. For example, from 2014 to early 2019, MCTIC provided support for 16 different projects on AI and 59 AI start-ups.[93] [94][95]

More recently, on December 12, 2019, MCTIC launched a public consultation on the Brazilian Strategy on AI.[96] The goal is to receive contributions on a set of questions that will direct a policy enhancing the benefits of AI in Brazil and addresses any possible barriers for its implementation. The government mentions the OECD Principles on AI, which Brazil has already adopted, and structured the consultation on that basis, taking into account the existing OECD guidelines recommended to governments. The base document proposes six vertical axes (education and training; labor force; research, development, innovation and entrepreneurship; government application; productive sector application; and public safety) and three horizontal axes (legislation, regulation and ethical use; international aspects; AI governance).

Among the areas that may benefit from AI in Brazil, the proposal highlights the increase in competitiveness and productivity, the provision of public services, the citizens' quality of life, and the reduction of social inequalities. The consultation is open for comments until March 2, 2020.

3.1.2.2. Legislative and policy activities relevant to AI development

The General Data Protection Law in Brazil was enacted on August 14, 2018, inspired by the European GDPR and addressing automatic data processing.[97] The law imposes new rules regarding the collection, use, processing, and storage of personal data in electronic and physical form and affects all industries and sectors of the economy. Specifically, article 20 empowers data owners to require the revision of decisions made based on the automated treatment of personal data that could affect their interests.

3.1.3. Chile

Key Data

- Population (millions): 18.73[98]
- GDP (US$) (billions): 298.23[99]
- Fixed-broadband subscriptions*: 17.3[100]
- Mobile-broadband subscriptions*: 91.4[101]
- Global Competitiveness Index Ranking: 33[102]
- World Digital Competitiveness Ranking: 37[103]
- Government AI Readiness Index: 39[104]
- Automation Readiness Index: N/A[105]
- Party to Council of Europe Convention 108: No
- AI Principles Developed: No

(* Per 100 Inhabitants)

The current legal framework in Chile does not directly address key AI issues. However, on December 17, 2018, President Piñera launched a new Ministry of Science, Technology, Knowledge, and Innovation

[93] *Id.*

[95] OECD, *supra* note 1.
[96] The consultation is available at participa.br/estrategia-brasileira-de-inteligencia-artificial/governanca-de-ia
[97] *See* Lei Geral de Protecão de Dados, http://www.planalto.gov.br/ccivil_03/_Ato2015-2018/2018/Lei/L13709.htm.
[98] World Bank Group, *Country Profile 2018,* https://databank.worldbank.org/views/reports/reportwidget.aspx?Report_Name=CountryProfile&Id=b450fd57&tbar=y&dd=y&inf=n&zm=n&country=CHL.
[99] *Id*.
[100] OECD, Broadband portal, (2019), https://www.oecd.org/internet/broadband/broadband-statistics/.
[101] *Id.*
[102] Out of 140 economies. World Economic Forum, *The Global Competitiveness Report 2018*.
[103] Out of 63 countries. IMD World Competitiveness Center, (2018).
[104] Out of 194 countries. Oxford Insights, *Government Artificial Intelligence Readiness Index 2019*.
[105] Not available.

(MSTKI).[106] This ministry, which will address AI as part of its wider portfolio aimed at helping Chile join the Fourth Industrial Revolution (4IR), will advise and collaborate with the president in the design and implementation of policies and programs aimed at promoting and strengthening science, technology, and innovation.[107]

3.1.3.1. Government-driven AI activity

On August 23, 2019, President Piñera instructed the MSTKI to produce an AI work plan. This plan is expected to result in the presentation of a National Artificial Intelligence Policy and Action Plan in April 2020, to be developed by the Ministry together with representatives from several other ministries.[108] According to President Piñera, this work plan will be framed along three main axes: enabling factors, such as specialized human capital, fiber optic networks, and computing infrastructure; use and development of AI in Chile; and an axis that will address the ethics, standards, safety, and regulation of this technology. Additionally, this plan will involve an analysis of AI in Chile as well as the development of a document on an AI policy which was expected to be released in January 2020.[109] The expectation is that a final National Artificial Intelligence Policy for Chile will be released together with an Action Plan detailing specific measures and their deadlines by April 2020.

Chile's Congress is also taking an interest in discussing AI issues, with one current commission already formed and proposals tabled for additional working groups and committees. The Senate's Challenges of the Future, Science, Technology and Innovation Commission led the initiative to produce a national strategy on AI.[110] In June 2019, the Commission invited more than 70 representatives from academia specializing in AI to an event to discuss and agree on the need to create a roadmap for AI development in Chile.[111] The first task was to identify focus areas, including health, youth training, and the creation of AI industry and research centers.[112] The president of the Commission pushed for Chile to develop an ambitious AI policy that involves infrastructure, technology, education, and literacy. Other meetings were held with companies, scientists, universities, and civil society and their contributions have been included

[106] Created by Law 21,105 of 2018, https://www.leychile.cl/Navegar?idNorma=1121682.
[107] Gobierno de Chile, *Presidente Piñera presenta Ministerio de Ciencia, Tecnología, Conocimiento e Innovación*, (2018), https://prensa.presidencia.cl/discurso.aspx?id=88814. *See* also Gobierno de Chile, *Ministerio de Ciencia presenta a comité asesor del gobierno en Inteligencia Artificial*, (2019), https://ia-latam.com/2019/09/11/ministerio-de-ciencia-presenta-a-comite-asesor-del-gobierno-en-inteligencia-artificial/.
[108] IA Latam, *Chile follows the path of Mexico and announces national policies for the application of AI*, (2019), https://ia-latam.com/2019/08/26/el-presidente-de-chile-anuncio-las-politicas-nacionales-para-la-aplicacion-de-inteligencia-artificial/. *See* also Ministerio de Ciencia presenta a comité asesor del gobierno en Inteligencia Artificial, https://www.gob.cl/noticias/ministerio-de-ciencia-presenta-comite-asesor-del-gobierno-en-inteligencia-artificial/. *See* also La Tercera, *Por qué la IA debe ser un tema de país? Científicos y gobierno preparan plan estratégico*, (2019), https://www.latercera.com/que-pasa/noticia/inteligencia-artificial-cientificos-gobierno/797860/.
[109] AETecno, *Ministro de Ciencias y Tecnologías de Chile destaca lanzamiento de política nacional de IA en 2020*, (2019), https://tecno.americaeconomia.com/articulos/ministro-de-ciencias-y-tecnologias-de-chile-destaca-lanzamiento-de-politica-nacional-de-ia
[110] República de Chile, Senado, *Members of the MSTKI,* https://www.senado.cl/appsenado/index.php?mo=comisiones&ac=ficha&id=941&tipo_comision=10.
[111] América Economía, *Más de 70 expositores nacionales e internacionales se darán cita en Congreso Futuro 2020*, https://mba.americaeconomia.com/articulos/notas/mas-de-70-expositores-nacionales-e-internacionales-se-daran-cita-en-congreso-futuro
[112] La Tercera, *¿Qué es la Inteligencia Artificial? Científicos, filósofos y políticos proponen crear estrategia nacional para su explotación*, (2019), https://www.latercera.com/que-pasa/noticia/proponen-estrategia-inteligencia-artificial/720301/.

in a draft document that was delivered to President Piñera in the second half of 2019.[113] The final version of the document was published in September 2019.

The document outlines the steps necessary to develop an AI strategy for Chile, taking into account the country's specific challenges related to productivity, competitiveness, and employability. Importantly, the document mentions the OECD principles on AI and addresses its five recommendations for governments: 1) facilitate public and private investment in innovation and development to stimulate trustworthy AI development; 2) encourage AI ecosystems with digital infrastructure, and technologies and mechanisms able to share data and knowledge; 3) ensure a political background that lead to the deployment of trustworthy AI systems; 4) provide people with the necessary AI abilities and support workers for a fair transition; and 5) cooperate through frontiers and sectors to responsibly develop trustworthy AI.[114] The document focuses on a roadmap to effective development of AI in Chile, but it does not include additional principles.

3.1.3.2. Legislative and policy activities relevant to AI development

One Chilean legislator has indicated that he will propose the creation of a working group in the Chamber of Deputies to analyze the future of AI and digital development in Chile. One of the first tasks for this group would be to identify bills that could be related to AI issues, revising and adding to them as necessary to ultimately further the development of the 4IR. He has also proposed the creation of a Committee on AI in the Chamber tasked with preparing a report with short-, medium- and long-term recommendations that would help balance innovation, development, responsibility, and security in AI policy development.[115]

Finally, Congress is currently discussing a Data Protection Bill, which includes a right to oppose a specific treatment of personal data when an automated process is being applied.[116] With some exceptions, the bill protects the rights of the data owners and states that they could ask not to have any decisions that could significantly affect them made exclusively on the basis of automated data treatment.[117]

3.1.4. Colombia

Key Data

- Population (millions): 49.65[118]
- GDP (US$) (billions): 330.23[119]
- Fixed-broadband subscriptions*:13.4[120]
- Global Competitiveness Index Ranking: 60[122]
- World Digital Competitiveness Ranking: 59[123]

[113] *Id*. Also, *see República de Chile, Senado, Comisión Desafíos de Futuro propone estrategia de Inteligencia Artificial para Chile, (2019),* https://www.senado.cl/comision-desafios-de-futuro-propone-estrategia-de-inteligencia/senado/2019-09-12/174942.html. The AI strategy document is called *Inteligencia Artificial para Chile: La urgencia de desarrollar una estrategia*, https://www.senado.cl/senado/site/mm/20190912/asocfile/20190912174942/final_inteligencia_artificial_3__1_.pdf

[114] Comisión Desafíos del Futuro, Ciencia, Tecnología e innovación*, Inteligencia Artificial para Chile,* (2019), https://www.senado.cl/senado/site/mm/20190912/asocfile/20190912174942/final_inteligencia_artificial_3__1_.pdf

[115] *Id*.

[116] Proyecto de Ley de Protección de Datos en Chile, (2017), http://www.informatica-juridica.com/proyecto-de-ley/proyecto-ley-proteccion-datos-chile-abril-2017/.

[117] *Id.*

[118] World Bank Group, *Country Profile 2018*, https://databank.worldbank.org/views/reports/reportwidget.aspx?Report_Name=CountryProfile&Id=b450fd57&tbar=y&dd=y&inf=n&zm=n&country=COL.

[119] *Id*.

[120] OECD, Broadband portal, (2019).

[122] Out of 140 economies. World Economic Forum, *The Global Competitiveness Report 2018*.

[123] Out of 63 countries. IMD World Competitiveness Center, (2018).

- Mobile-broadband subscriptions*: 52.1[121]
- Signatory to OECD AI Principles: Yes

- Government AI Readiness Index: 44[124]
- Automation Readiness Index: 20[125]
- Party to Council of Europe Convention 108: No
- AI Principles Developed: Yes

(* Per 100 Inhabitants)

3.1.4.1. Government-driven AI activity

The National Development Plan (NDP) for 2018-2022 indicates that strategic projects for the digital transformation of the public administration must prioritize the implementation of emerging technologies (like AI) that facilitate the provision of government services.[126]

Additionally, on November 8, 2019, Colombia's National Planning Department, together with the ICT Ministry (MinTIC) and the President's administrative Office, released a CONPES (Nacional Council for Economic and Social Policy) document including Colombia's National Policy for Digital Transformation and Artificial Intelligence.[127] The goal of the strategy is to identify how AI can increase social and economic well-being through the strategic use of digital technologies in Colombia's public and private sectors.[128] In particular, the government intends to develop appropriate conditions for Colombia to take advantage of the opportunities and tackle the challenges created by the 4IR by carrying out strategic steps that include the creation of an enabling environment for AI as a key driver of digital transformation.

According to the CONPES document, a rule-based approach should be avoided. Instead, it is necessary to design and implement flexible principles and guidelines that enable the deployment of AI systems. Based on this approach, and even though Colombia has already adopted the OECD principles on AI, the government has developed a list of 14 additional principles on AI, and intends to address market experimentation of any AI initiatives, including building education and ethics into the different AI processes.[129] The Colombian government's principles focus on the development of AI in the country and particularly address the following issues: 1) creating an AI market, 2) prioritizing market-creative innovations, 3) policies should be based on evidence and impact metrics, 4) adoption of experimental regulation, 5) easy-access data infrastructure, 6) AI market as an enabler of inclusion and equity, 7) ethical framework for AI and security, 8) credible agreements as a result of consensus, 9) experimentation space to develop policies, 10) strategic role of universities and academic research in the development of an AI

[121] *Id*.
[124] Out of 194 countries. Oxford Insights, *Government Artificial Intelligence Readiness Index*, (2019).
[125] Out of 25 countries. The Economist and ABB, (2018). The country sample includes G20 countries and 5 additional nations representing diverse regions of the world.
[126] The NDP is the legal instrument through which the executive branch plans the nation's long-term and medium-term goals and priorities and the outline of economic and social policies that it will adopt. In other words, the government´s policy goals are turned into a law passed by the Congress. *See* section 6, art. 147 of the National Development Plan, http://www.secretariasenado.gov.co/senado/basedoc/ley_1955_2019.html.
[127] Política Nacional para la Transformación Digital e Inteligencia Artificial (CONPES), (2019), https://www.mintic.gov.co/portal/604/articles-107147_recurso_1.pdf.
[128] MinTIC, *Tras primer año de Gobierno del presidente Duque, Colombia está lista para recibir la gran 'ola' de conectividad en 2020*, (2019), https://www.mintic.gov.co/portal/inicio/Sala-de-Prensa/Noticias/102072:Tras-primer-ano-de-Gobierno-del-presidente-Duque-Colombia-esta-lista-para-recibir-la-gran-ola-de-conectividad-en-2020.
[129] In the CONPES document Colombia acknowledges that the OECD has already developed principles and guidelines on AI "that propose good practices on the promotion, implementation, and development of AI, as well as a framework to work so as to promote innovation and trust on AI", and that the country has already adopted them. However, given its recent release in May 2019, they are not currently implemented and, according to the CONPES document, this prevents innovation, the development of AI, as well as socioeconomic benefits AI may provide.

market, 11) attract international experts, 12) evidence-based policies on the future of workforce, 13) the government as an AI enabler and user, and 14) continuous access to knowledge from the international community.

The document also outlines an action plan and specific recommendations to the National Council on Economic and Social Policy, which include the approval of the National Policy on Digital Transformation and AI and implementation of the actions outlined.

3.1.4.2. Legislative and policy activities relevant to AI development

On July 26, 2019, MinTIC released for public consultation the new ICT Plan 2018-2022, "The Digital Future is for Everyone."[130] The plan indicates that in terms of human capital, AI leads the list of areas where it will be more difficult to find a workforce with specific knowledge, ahead of digital security and blockchain. The new ICT Plan also addresses the need to promote business and the digital transformation of productive sectors. For this purpose, the plan announces the future design and development of a strategy for the construction of a Center of Excellence and AI Appropriation. The idea is to generate innovative ICT-leveraged solutions that add value to the national economy, while also influencing AI development beyond Colombia and serving as an international reference.[131]

The ICT plan emphasizes the need to work to remove barriers to the adoption of technology that prevents the development of digital businesses.[132] In relation to these efforts, in April 2019, a Center for the 4IR was opened in Medellin as part of a World Economic Forum initiative. One area of focus for the Center will be improving government oversight processes (such as investigating tax evasion) through increased use of AI, and also on strengthening criminal policy through the use of AI.

3.1.5. Mexico

Key Data

- Population (millions): 126.19[133]
- GDP (US$) (billions): 1,223.81[134]
- Fixed-broadband subscriptions*: 14.8[135]
- Mobile-broadband subscriptions*: 70.9[136]
- Signatory to OECD AI Principles: Yes
- Global Competitiveness Index Ranking: 46[137]
- World Digital Competitiveness Ranking: 51[138]
- Government AI Readiness Index: 32[139]
- Automation Readiness Index: 23[140]
- Party to Council of Europe Convention 108: Yes
- AI Principles Developed: No

(* Per 100 Inhabitants)

While Mexico has taken multiple steps towards developing a coherent national AI policy in recent years, the current status of its AI strategy is unclear given that the administration of President López Obrador

[130] MinTIC, *Plan TIC 2018-2022*, (2018), https://www.mintic.gov.co/portal/604/articles-101922_Plan_TIC.pdf.
[131] *Id*. at 88.
[132] *Id*. at 92.
[133] World Bank Group, *Country Profile 2018*, https://databank.worldbank.org/views/reports/reportwidget.aspx?Report_Name=CountryProfile&Id=b450fd57&tbar=y&dd=y&inf=n&zm=n&country=MEX.
[134] *Id*.
[135] OECD, Broadband portal, (July 2019).
[136] *Id.*
[137] Out of 140 economies. World Economic Forum, *The Global Competitiveness Report 2018*.
[138] Out of 63 countries. IMD World Competitiveness Center, (2018).
[139] Out of 194 countries. Oxford Insights, *Government Artificial Intelligence Readiness Index 2019*.
[140] Out of 25 countries. The Economist and ABB, (2018). The country sample includes G20 countries and 5 additional nations representing diverse regions of the world.

has not indicated whether the government plans to implement the AI policy-related recommendations formulated under previous administrations. Mexico's Development Plan 2019-2024, which outlines priorities for the current government, does not include any specific reference to AI, although it includes innovation as a tool to strengthen economic growth.[141]

3.1.5.1. Government-driven AI activity

In June 2018, a white paper titled "Towards an AI Strategy in Mexico" developed by Oxford Insights and C Minds in close collaboration with the Mexican government, was published.[142] This white paper sets out the foundations for a national AI strategy and includes quantitative analysis predicting the economic impact of AI on the Mexican labor market. The paper urges increased investment in AI as well as a formalized National Strategy for AI and provides a set of recommendations grouped into five categories: government & public services; data & digital infrastructure; research and development; capacity, skills & education; and ethics. It also recommends that the Mexican government create a permanent office to implement and coordinate Mexico's digital and AI policy.

The document focuses on the use of AI to improve specific sectors at the national and regional levels. At a national level, this includes the healthcare sector and the use of AI to detect fraudulent operations. For regional use, the report highlights Mexican AI initiatives that aim to improve agricultural yields, to optimize bus services, or to develop AI skills. Moreover, the report includes examples of initiatives that are using AI to increase efficiency in government services to counter false news, as well as to improve passenger flow in the metro and promote a culture of technology innovation and digital skills.[143]

In March 2018, the former government's National Digital Strategy Department publicly announced the aforementioned white paper and presented the "Artificial Intelligence Strategy of Mexico 2018" (IA-MX 2018) aimed at advancing short-term recommendations and laying the foundations for long-term actions towards 2019.[144] The IA-MX 2018 Strategy included:

- developing an appropriate governance framework to foster multisectoral dialogue, through the creation of a Subcommittee on Artificial Intelligence within the Intersecretarial Commission for the Development of Electronic Government (CIDGE);[145]
- mapping the uses and needs in the industry and identifying government best practices;
- holding a public consultation on the recommendations made by the aforementioned report; and
- working with experts and citizens through the Subcommittee on Artificial Intelligence to achieve the continuity of these efforts during the next administration.

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[141] Presidencia de la República, *Plan Nacional de Desarrollo 2019-2024*, (2019), https://lopezobrador.org.mx/wp-content/uploads/2019/05/PLAN-NACIONAL-DE-DESARROLLO-2019-2024.pdf.
[142] C Minds *et al*, *Towards an AI Strategy in Mexico: Harnessing the AI Revolution*, (2018), https://docs.wixstatic.com/ugd/7be025_e726c582191c49d2b8b6517a590151f6.pdf.
[143] *Id*.
[144] Gobierno de México, *Estrategia de Inteligencia Artificial MX 2018*, (2018), https://www.gob.mx/mexicodigital/articulos/estrategia-de-inteligencia-artificial-mx-2018.
[145] Gobierno de México, *Crea SFP Subcomisión de Inteligencia Artificial y Deep Learning de la CIDGE*, (2018), https://www.gob.mx/cidge/articulos/crea-sfp-subcomision-de-inteligencia-artificial-y-deep-learning-de-la-cidge-161421?idiom=es

Importantly, in September 2018, the *Instituto Federal de Telecomunicaciones* (IFT) released a document outlining a 2019-2023 plan for the agency's regulatory vision on telecommunications and broadcasting.[146] On the AI front, the report mentions the following planned actions:[147]

- develop agile and flexible policies that could be modified depending on the rapid evolution of technology;
- determine mechanisms and conditions that allow for the simplification of the adoption of new Internet protocols;
- establish recommendations on action protocols in the case of cybersecurity incidents; and
- promote good practices and recommendations framework on the use of data.

On Big Data, the document outlines three strategic axes to follow:[148]

- competition and big data opening;
- big data opportunities for telecommunications and broadcasting; and
- data mining regulation.

3.1.5.2. Additional AI-related activities

Following on from this strategy, several multi-stakeholder bodies have formed to advance AI issues in Mexico. These include the creation of the "IA2030Mx Multisectoral Coalition," composed of academics, public entities, private companies, and startups; the "Artificial Intelligence Consortium," a consortium of research centers of the National Council of Science and Technology (Conacyt); and the "Subcommittee on Artificial Intelligence" within the CIDGE with representatives from civil society, academia and industry.[149] Additionally, AI centers run by local governments and other stakeholders have been created in Chihuahua, Jalisco, and Mérida.[150]

Mexico has also conducted multiple surveys on AI matters, including the 2018 National Artificial Intelligence Survey launched by the IA2030Mx Multisectoral Coalition and a government consultation on principles and guide on impact analysis for the development and use of AI systems in the federal administration.[151]

[146] IFT, *Visión regulatoria de las telecomunicaciones y la radiodifusión, 2019-2023*, (2018), http://www.ift.org.mx/sites/default/files/contenidogeneral/transparencia/1vision19-23.pdf
[147] *Id*. at 38.
[148] *Id*. at 29.
[149] IA2030MX, https://www.ia2030.mx/. *See* also Conacyt, Consorcio en Inteligencia Artificial, https://www.consorcioia.mx/, and *supra* note 146.
[150] Secretaría de innovación y Desarrollo Económico, *Centro de Inteligencia Artificial ubica a Juárez en el mercado de la tecnología y el conocimiento*, (2018), http://www.chihuahua.com.mx/blog/single/2. *See* also El Occidental, *Laboratorio de Inteligencia Artificial para resolver retos en Jalisco*, (2019), https://www.eloccidental.com.mx/local/laboratorio-de-inteligencia-artificial-para-resolver-retos-en-jalisco-3369210.html and Expansión, *Yucatán, motor de la inteligencia artificial en México*, (2018), https://expansion.mx/tecnologia/2018/09/19/yucatan-motor-de-la-inteligencia-artificial-del-pais.
[151] IA2030MX, Encuesta Nacional de Inteligencia Artificial, https://docs.wixstatic.com/ugd/7be025_9e91bfffeea647a0a663630ea716aa8f.pdf and Función Pública, Principios y Guía para el desarrollo y uso de Inteligencia Artificial, (2018), https://www.participa.gob.mx/consultas/principiosiamx.

3.1.5.3. Legislative and policy activities relevant to AI development

Mexico has adopted a separate a Federal Personal Data Protection Law for the private sector and another one for the public sector.[152] The National Institute of Transparency, Access to Information, and Personal Data Protection (INAI) is responsible for guaranteeing the right to access to public information, protect individuals' personal data, and adjudicate government refusals to data access requests. These abilities may have impacts on the data AI developers have access to in order to train their algorithms.

In 2019, the Organization of American States (OAS) published a report on cybersecurity in the financial system in Mexico, which reveals that 43% of the biggest financial entities in Mexico had been victims of cybersecurity incidents over the last year.[153] According to the report, Mexico should prioritize the development of AI and big data technologies to improve the detection and prevention of cybersecurity attacks.[154]

3.1.6. Uruguay

Key Data

- Population (millions): 3.45[155]
- GDP (US$) (billions): 59.60[156]
- Fixed-broadband subscriptions*: 28.3[157]
- Mobile-broadband subscriptions*: 112.1[158]
- Global Competitiveness Index Ranking: 53[159]
- World Digital Competitiveness Ranking: N/A
- Government AI Readiness Index: 35[160]
- Automation Readiness Index: N/A
- Party to Council of Europe Convention 108: Yes
- AI Principles Developed: No

(* Per 100 Inhabitants)

Although Uruguay has not adopted AI regulation, over the last decade the country has shown a growing interest in IT and its implementation in the functioning of government and administrative services. Particularly, Uruguay's Electronic Government and Information and Knowledge Society Agency (Agesic) has been working on several initiatives on the use of AI in the public sector.

3.1.6.1. Government-driven AI activity

Agesic formed an interdisciplinary working group to develop general AI principles and design a strategy to implement AI within Uruguay. The working group, which has produced a series of general principles and a strategy for the application of AI in digital government, is formed by experts from various areas, including engineering, sociology, law, communication, medicine, and organizational transformation.

As part of this work, Agesic studied strategies and examples of AI applications in governments around the world, exchanging experiences with groups that developed AI strategies for digital government in

[152] Ley Federal de Protección de Datos Personales en Posesión de los Particulares, (2010), http://www.diputados.gob.mx/LeyesBiblio/pdf/LFPDPPP.pdf. Also *see* Ley General de Protección de Datos Personales en Posesión de Sujetos Obligados (2017), http://www.diputados.gob.mx/LeyesBiblio/pdf/LGPDPPSO.pdf
[153] OEA, *Estado de la ciberseguridad en el sistema financiero mexicano*, (2019), http://www.oas.org/es/sms/cicte/documents/informes/Estado-de-la-Ciberseguridad-en-el-Sistema-Financiero-Mexicano.pdf
[154] *Id*. at 73.
[155] World Bank Group, *Country Profile 2018*, https://databank.worldbank.org/views/reports/reportwidget.aspx?Report_Name=CountryProfile&Id=b450fd57&tbar=y&dd=y&inf=n&zm=n&country=URY.
[156] *Id.*
[157] ITU, Statistics, Country ICT Data (Until 2018).
[158] ITU, Broadband Commission for Sustainable Development, (Sept. 2018).
[159] Out of 140 economies. World Economic Forum, *The Global Competitiveness Report 2018*.
[160] Out of 194 countries. Oxford Insights, *Government Artificial Intelligence Readiness Index 2019*.

countries such as Italy and Canada.[161] During the first half of 2019, Agesic conducted two public consultations.

On April 2, 2019, Agesic released a public consultation on a draft document including nine general principles for AI implementation in the public administration. As a result of the public consultation, the following AI general principles were adopted:[162]

Purpose	AI must enhance human capabilities, improving quality of life, and providing added value to human activity.
Public Interest	State-promoted AI-based solutions should protect the public interest, guaranteeing inclusion and equity.
Respect for Human Rights	Any technological solution that uses AI must respect Human Rights, individual freedoms and diversity.
Transparency	AI solutions used in the public sphere must be transparent, complying with current regulations on access to public information.
Responsibility	Technological solutions based on AI must have a clearly identifiable person responsible for the actions derived from the solution.
Ethics	When the application and / or the development of AI-based solutions present ethical dilemmas, they must be addressed and solved by human beings.
Value added	AI-based solutions should only be used when they add value to a process. AI should not be an end, but a tool that can enhance the development of digital government.
Privacy by design	AI solutions must be designed to consider personal privacy and Uruguay's Personal Data Protection Principles.
Security	AI developments must incorporate the basic principles of information security in their design, including the cybersecurity guidelines and regulations in force in Uruguay.

In April 2019, Agesic released an AI strategy aimed at promoting and strengthening the responsible use of AI in government, identifying four main pillars with specific objectives: 1) AI governance, 2) capacity building, 3) AI and digital citizenship, and 4) responsible use. Each pillar is supplemented by multiple action areas. The Agesic proposed AI strategy remains in draft form following a public consultation, with a final document that was expected to be approved after February 15, 2020.[163]

3.1.6.2. Legislative and policy activities relevant to AI development

In February 2018, Uruguay joined the Digital 9 (D9) group, a network of the world's most advanced digital nations with a shared goal of harnessing digital technology and new ways of working to improve citizens' lives.[164] Members of the D9 group agree on a set of guiding principles, including the following:

Box 3: D9 Guiding Principles on AI

According to the D9 guiding principles on AI, to ensure the effective and ethical use of AI, the government will:

- **understand and measure** the impact of using AI by developing and sharing tools and approaches;

[161] Agesic, *Inteligencia Artificial y Gobierno Digital; un camino en construcción*, (2019), https://www.gub.uy/agencia-gobierno-electronico-sociedad-informacion-conocimiento/comunicacion/noticias/inteligencia-artificial-y-gobierno-digital-un-camino-en-construccion.

[162] Agesic, Consulta Pública: Inteligencia Artificial para el Gobierno Digital, (2019), https://www.gub.uy/agencia-gobierno-electronico-sociedad-informacion-conocimiento/comunicacion/noticias/consulta-publica-inteligencia-artificial-para-gobierno-digital-0. *See* also Agesic, *Principios generales sobre Inteligencia Artificial para el Gobierno Digital* (2019), https://www.gub.uy/system/documents/attachments/000/000/001/original/abc45c0eb835393a55232b2d9a3c54446f0c4278.pdf.

[163] Agesic, Consulta Pública, https://www.gub.uy/participacionciudadana/consultapublica. Agesic's website does not have updated information on the document's approval.

[164] The Digital 9, https://www.digital.govt.nz/digital-government/international-partnerships/the-digital-9/. Other members include Canada, Estonia, Israel, Mexico, New Zealand, Portugal, South Korea, and the United Kingdom.

- **be transparent** about how and when AI is used, starting with a clear user need and public benefit;
- **provide meaningful explanations** about AI decision making, while also offering opportunities to review results and challenge these decisions;
- **be as open as possible** by sharing source code, training data, and other relevant information, all while protecting personal information, system integration, and national security and defense;
- **provide sufficient training** so that government employees developing and using AI solutions have the responsible design, function, and implementation skills needed to make AI-based public services better.

Another example of this growing interest in IT is Uruguay's Digital Agenda 2020. One of the agenda's main objectives, "Integrated and Intelligent Government," includes goals related to the design of an AI strategy for the public sector. This includes establishing the principles for AI use and its implementation in the improvement of government services.[165]

Additionally, *Transforma Uruguay* released a "Roadmap on Data Science and Machine Learning (DS/ML)," aimed at presenting a set of initiatives in these areas.[166] The construction of this roadmap was led by the Ministry of Industry, Energy, and Mining in consultation with a group of experts in the field. This The roadmap visualizes Uruguay as a reference in the application of DS/ML solutions in strategic sectors, and Uruguayan companies as their producers.

3.2. Actions to promote AI development in Latin America

The actions taken by governments throughout Latin America will have a profound impact on the overall development of AI. Failure to adequately consider the roles of AI, to develop appropriate AI policies, and to determine whether regulation is appropriate will be a missed opportunity to maximize the benefits and minimize the negative consequences of AI and their impact on the economy and society in the region.

In particular, as governments across Latin America begin to formulate and publish action plans and strategic plans for AI, there are a number of key components that should be considered and included. This section focuses on two key areas that should be taken into account in any AI strategy: data protection, and liability and ethics. These are examined both for their importance to wider AI policy, and also because governments across Latin America have made them a priority. Moreover, these issues have been the main focus of guidelines and regulations from other regions. For instance, as already mentioned, the GDPR framework includes specific measures regarding personal data implemented in AI systems and the United Kingdom highlights the importance of ethical principles in order to "make a benefit for humanity." Given that these and other documents are already being used as reference by various Latin American countries in their AI policymaking, it is useful to explore them in further detail here.

[165] Presidencia de la República Oriental del Uruguay, *Agenda Uruguay Digital 2020*, (2019), https://www.gub.uy/agencia-gobierno-electronico-sociedad-informacion-conocimiento/sites/agencia-gobierno-electronico-sociedad-informacion-conocimiento/files/documentos/noticias/Descargar%20Agenda%20Digital%202020%20%28Mayo%202019%29%20%28.pdf%20318%20KB%29.pdf.

[166] Agesic, *supra* note 162 at 5. The National System of Productive Transformation and Competitiveness - *Transforma Uruguay*- was created by Law No. 19,472 (December 2016) in order to promote productive and innovative economic development, with sustainability, social equity and environmental and territorial balance. The Roadmap is available at https://www.transformauruguay.gub.uy/es/documentos/tic.pdf. For purposes of this document, Data Science (CD) is defined as the discipline that seeks to extract knowledge and insights from data.

3.2.1. Data protection/privacy laws

As already discussed in Section 1.2, data is key to obtaining intended results from an AI system. Both quantity and quality of data are essential to AI growth and development. However, new applications and uses of large quantities of data raise questions about how best to maintain privacy and protect the data of citizens, including personal data. As such, data protection/privacy laws and guidelines affect the ability to use personal data for AI purposes, making data protection agencies significant stakeholders in the development of AI. Taking AI into account in data protection frameworks can further help prevent stifling the development of AI applications due to outdated laws and regulations that are not fit for purpose.

Regulatory framework governing use of data

One of the key precursors to the development of AI is access to data. Technologies such as machine learning require large quantities of data in order to be effective. AI algorithms depend on access to data so as to learn from past patterns and to hone their decision-making.[167]

Furthermore, significant computing power is also required to process this data. Not only is there a demand for data in AI, but the amount of data collected and generated is expected to grow dramatically in the coming years with the growth of IoT.[168] Thus, the legal frameworks that govern data throughout the region will be key to shaping the positive development of AI. This is particularly true because incomplete, inaccurate, or otherwise compromised or biased input data can have a negative impact on the decision-making of AI applications, replicating biases and negative outcomes.

Governments that have opted to develop concrete AI requirements and regulations must ensure that AI models are trained with appropriate data sets and that the data used is protected accordingly. It is, therefore, crucial to mitigate the misuse of data, including ensuring that data sets used to train AI applications are created with the goal of creating diversity and preventing biases. It is also important for governments to be proactive in designing data protection frameworks that are not only conducive to easy access to and use of data, but that also protect personal and sensitive data. Moreover, governments should not overlook the fact that data is essential for AI innovation.

Open Data

Government policy can help the development of AI by considering how AI can benefit from open data sets maintained by the government. In particular, governments throughout the world collect and maintain huge troves of high-quality data that can be critical to improving the outcomes of AI applications. However, this data is not frequently available; by some estimates, more than 9 in 10 government data sets around the world are not open.[169] By taking action to make data easily accessible to AI developers, policymakers can lay the groundwork for the growth and development of AI in the region.

3.2.2. Ethics and Liability

As AI continues to develop and becomes an important part of society, the consequences of decisions taken by AI systems are only likely to become more apparent. These effects raise questions about the responsibility for the decisions taken by AI, notably who should be held accountable for the consequences of AI-driven decisions, and whether existing legal frameworks addressing liability require updates to

[167] World Wide Web Foundation, *How open data can save AI*, (2018), https://webfoundation.org/2018/01/how-open-data-can-save-ai/.
[168] For instance, *see* International Data Corporation (IDC), *The growth in Connected IoT Devices is Expected to Generate 79.4ZB of Data in 2025*, (2019), https://www.idc.com/getdoc.jsp?containerId=prUS45213219.
[169] *Id.*

account for AI. Such questions are not unrelated to the issue described in Section 3.2.1, that AI can take decisions that reproduce biases and discrimination, and that there will be a need to determine liability when negative outcomes arise. Ethical questions surrounding AI implementation have been central to many AI policy discussions, as shown by the inclusion of ethical matters in many guidelines and principles. As AI continues to expand and develop, these impacts will affect transportation, healthcare, finance, and myriad other sectors of the economy and society, and current liability laws may not be equipped to handle such cases.

From a public policy perspective, transparency, broad participation, and accountability are key to revising legal frameworks to account for AI.[170] Public policy must also define the groups of actors involved in the AI ecosystem, not least technical developers, regulatory entities, the general public, civil society organizations, and small and medium enterprises.[171] By developing a policy that takes into account the role played by each stakeholder group, offering definitions of who is included and their opportunities for participation in the AI ecosystem, a public policy can lay the foundation for identifying liability for negative consequences of AI and, at the same time, potential avenues for seeking remedies.

It is crucial for governments to consider necessary legal framework revisions at an early stage of AI development, as a lack of regulatory certainty may inhibit AI development or innovation and, as discussed, updated frameworks will play a role in mitigating discrimination. In addition, regulatory certainty will be important to fostering an understanding of accountability and redress mechanisms available to those affected negatively by AI-influenced decisions or actions.

3.2.3. Additional considerations

Even beyond data protection, liability, and ethical concerns, AI requires regulators and policymakers to rethink many different aspects of the legal and regulatory framework. For example, connectivity is essential to both the development and consumption of AI products and services. Government policies have a significant impact on connectivity initiatives and, by taking into account the potential benefits and uses of AI, these connectivity initiatives can be tailored to ensure that citizens are connected in such a way that allows them to benefit from new and emerging technologies. Importantly, the design and correct implementation of cybersecurity strategies could be significant for the development of AI technologies. The possibility of cyberattacks could discourage innovation. However, countries should be careful not to be overinclusive when designing policies, since it could also disincentivize innovations. For instance, the need to comply with strict cybersecurity policies or regulations could discourage innovators from developing AI, while the lack of a cybersecurity policy could make a country unattractive for AI development. Striking the right cybersecurity policy balance is thus crucial for enabling or restricting AI growth.

Given the ongoing activities related to the development of AI approaches and the incorporation of AI into national development plans and policies, this could be an opportunity to start designing a coordinated AI strategy for Latin America in the long run. Taking into account the specific sectors addressed in the already existing AI strategies or initiatives, a joint AI strategy could be focused on the public sector and improvement of public administration processes like the ones developed in Mexico and Uruguay: public transportation, manufacturing, healthcare, education, and literacy. In addition to the countries identified in this report, a coordinated approach could prove useful in discussions with other Latin American countries that are earlier in the process of developing AI policies, plans, and legislation. In order to address

[170] Web Foundation, *Algoritmos e Inteligencia Artificial en Latinoamérica*, Chapter 3, (2018), http://webfoundation.org/docs/2018/09/WF_AI-in-LA_Report_Spanish_Screen_AW.pdf.
[171] *Id.* Chapter 3, Figure 10.

essential aspects such as data protection and ethical issues, a multi-stakeholder approach toward AI policymaking could assist in achieving desired policy goals.

4. Conclusions

In reviewing prominent AI principles, as well as relevant policies and activities in Latin America, certain key conclusions can be drawn.

- **AI development is continuing globally in various sectors and with participation by numerous actors.** While the concept of AI has a long history, recent increases in computing power and the ability to collect data points have created an ideal situation for the advance of AI and its use across entire economies. AI technology is already being leveraged in sectors as diverse as healthcare, transportation, finance, and retail, and is expected to be increasingly incorporated into security, law enforcement, research, agricultural, and manufacturing processes among others.
- **Many AI principles and guidelines have common threads.** Multiple organizations and companies have published AI principles, seeking to guide AI development. While each entity has its own priorities and approach, there are commonalities among the various principles and guidelines reviewed, including an emphasis on fairness, privacy, accountability, and transparency. These certainly reflect and are meant to counter fears about the potential for AI to negatively affect individuals and society as a whole.
- **Latin American governments have varying levels of AI-related legislative or policy activity.** Six key Latin American markets have included AI in policy or legislative instruments: Argentina, Brazil, Chile, Colombia, Mexico, and Uruguay. The level of activity varies and is expected to increase. It is noteworthy that Latin American governments have already acknowledged the need to include AI in national development plans and other policy instruments. It is crucial that policy makers carefully weigh potential impacts on AI so as to prevent stifling innovation.
- **Governments and policymakers must consider and, if needed, review legislation and policies not directly related to AI that can affect AI policy and development.** Absent specific AI policies and plans, most countries in Latin America and beyond have laws and policies in place that have the potential to affect AI development. As countries consider their AI approaches, it will be critical to review data protection and privacy laws, ethics and liability statutes, connectivity policies and programs, as well as their cybersecurity strategies. While perhaps developed before AI became a major global trend, these instruments will play key roles in fostering or restricting AI development.
- **In general, initiatives in Latin America focus on some specific sectors.** Although it is not homogeneous and each AI strategy or initiative addresses particular sectors, some appear more frequently, such as AI applications for the public sector, the use of AI to improve public administration processes, public transportation, manufacturing, healthcare, education, and AI literacy. When designing AI policies, governments should pay attention to the key sectors that may benefit from technology in their particular countries.

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