OECD Public Governance Reviews

The Strategic and Responsible Use of Artificial Intelligence in the Public Sector of Latin America and the Caribbean

OECD

CAF DEVELOPMENT BANK OF LATIN AMERICA

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This document reproduces a report jointly prepared by the OECD and Corporación Andina de Fomento, approved by the OECD Public Governance Committee via written procedure on 14 January 2022, and prepared for publication by the OECD Secretariat. The opinions expressed and arguments employed herein do not necessarily reflect the official views of the members of Corporación Andina de Fomento.

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Please cite this publication as:
OECD/CAF (2022), *The Strategic and Responsible Use of Artificial Intelligence in the Public Sector of Latin America and the Caribbean*, OECD Public Governance Reviews, OECD Publishing, Paris, https://doi.org/10.1787/1f334543-en.

ISBN 978-92-64-39887-0 (print)
ISBN 978-92-64-89869-1 (pdf)
ISBN 978-92-64-82092-0 (HTML)
ISBN 978-92-64-50941-2 (epub)

OECD Public Governance Reviews
ISSN 2219-0406 (print)
ISSN 2219-0414 (online)

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Corrigenda to publications may be found on line at: www.oecd.org/about/publishing/corrigenda.htm.

Foreword

The use of Artificial Intelligence (AI) in the public sector can have a significant impact on public policies and services. It has the potential to free up a significant amount of public servants' time, allowing them to shift from mundane tasks to high-value work, thus increasing public sector efficiency and effectiveness. Governments can also use AI to design better policies and make better and more targeted decisions, enhance communication and engagement with citizens and residents, and improve the speed and quality of public services. While the potential benefits of AI in the public sector are significant, attaining them is not an easy task. Government trails behind the private sector in using AI, the field is complex and has a steep learning curve, and the purpose of – and context within – government presents a number of unique challenges.

Governments around the world have shown significant interest in overcoming these challenges and are endeavouring to catch up, with a view to becoming AI-competent governments as a key aspect of their digital maturity. This trend is demonstrated by the more than 60 countries that have developed national AI strategies, with most including a specific focus on AI in the public sector, and the piloting and implementation of public sector AI projects across dozens of use cases. The OECD is closely monitoring AI developments across the globe through the OECD.AI Policy Observatory (https://oecd.ai), a flagship initiative that closely monitors global developments incorporating AI, as well as through public sector-specific efforts from the OECD Digital Government and Data Unit (https://oe.cd/digitalgov) and the Observatory of Public Sector Innovation (OPSI) (https://oecd-opsi.org), in collaboration with the OECD Working Party of Senior Digital Government Officials (E-Leaders).

The Latin America and the Caribbean (LAC) region is seeking to leverage the immense potential of AI, including for the digital transformation of the public sector. The OECD in collaboration with CAF, Development Bank of Latin America, prepared this report to help national governments in the LAC region understand the current regional baseline of activities and capacities for AI in the public sector; to identify specific approaches and actions they can take to enhance their ability to use this emerging technology for efficient, effective and responsive governments; and optimally, to collaborate across borders in pursuit of a regional vision for AI in the public sector. The analysis in this report incorporates a stocktaking of each country's strategies and commitments around AI in the public sector, including their alignment with the OECD AI Principles, the world's first intergovernmental standards on AI.

This report represents the first findings from a larger comprehensive digital government review of LAC governments by the OECD and CAF, covering topics such as governance, skills and capabilities, building a data-driven public sector, open government data, digital innovation and capacities for leveraging collaborative GovTech approaches. This review entitled *Going Digital: The State of Digital Government in Latin America* is expected to be published later this year.

This report was approved by the OECD Public Governance Committee via written procedure on 14 January 2022 and prepared for publication by the OECD Secretariat.

Acknowledgements

The Strategic and Responsible Use of Artificial Intelligence in the Public Sector of Latin America and the Caribbean was prepared by the OECD Directorate for Public Governance (GOV), under the leadership of Elsa Pilichowski.

The report was produced by the OECD Open and Innovative Government division (OIG), led by Barbara-Chiara Ubaldi, Acting Head of Division and Head of the OIG Digital Government and Data Unit, who provided strategic orientation and revisions. The project is framed under the OECD Global E-Leaders Initiative (GELI) to foster policy dialogue and co-operation on digital government and public sector data policies between OECD member and partner countries.

The report was drafted by Jamie Berryhill, Innovation Specialist, Observatory of Public Sector Innovation (OPSI); and Ricardo Zapata, Digital Government Policy Consultant. It was drafted with contributions from Felipe González-Zapata, Alex Seemann, Jacob Arturo Rivera Perez and Benjamin Welby, Policy Analysts, Digital Government and Data Unit. Colleagues from within the OECD reviewed the report and provided comments, including Daniel Gerson from the GOV Public Employment and Management Unit (PEM); Paulo Magina from the GOV Infrastructure and Public Procurement Division (IPP); Audrey Plonk from the Science, Technology and Innovation Directorate (STI) Digital Economy Policy Division (DEP); and Karine Perset, Luis Aranda and Laura Galindo-Romero from the OECD.AI Policy Observatory within STI DEP. The report also benefited from the expertise of the OECD Working Party of Senior Digital Government Officials (E-Leaders). David McDonald provided editorial assistance.

The project itself would not have been possible without the contributions of CAF, Development Bank of Latin America. The report was drafted with guidance, contributions and input from Carlos Santiso, Director of CAF Governance Practice on Digital Innovation in Government; Maria Isabel Mejia, Senior Executive, Digital Innovation in Government; Nathalie Gerbasi, Senior Executive, Digital Innovation in Government; and Martha Rodriguez, consultant, Digital Innovation in Government, as well as the support of Pablo Sanguinetti, Vice-President of Knowledge.

Finally, the OECD and CAF team also wishes to acknowledge the contributions of numerous government officials who shared insights on their government's policies, strategies and initiatives to advance AI in the public sector through structured interviews and virtual missions, including in-depth, fact-finding missions organised by Costa Rica, the Dominican Republic, Paraguay and Uruguay. We also thank stakeholders and experts who shared insights through interviews and discussions, and reviewed and commented on drafts of the report.

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Executive summary

The use of Artificial Intelligence (AI) is reshaping economies, promising to generate productivity gains, improve efficiency and lower costs. Governments hold a unique position in relation to AI, determining national strategic priorities, public investments and regulations. Governments have also acknowledged the importance and future potential of AI in many economic sectors, with more than 60 countries developing national AI strategies. Recognising that issues relevant to AI transcend borders, countries are also increasingly adopting regional approaches to AI, including co-ordinated efforts in the European Union (EU) and the African Union, among Nordic-Baltic states and Arab nations, and within the G7 and the G20. The OECD has also strengthened its AI-related efforts in recent years, spearheaded by the OECD.AI Policy Observatory. Indeed, the OECD AI Principles adopted in 2019 are the first intergovernmental standards on AI.

Like governments elsewhere, those in the Latin America and the Caribbean (LAC) region are seeking to tap into the immense potential of AI in a strategic and trustworthy manner. Seven LAC countries have developed, or are developing, a national AI strategy (Argentina, Brazil, Chile, Colombia, Mexico, Peru and Uruguay), and seven have adhered to the OECD AI Principles (Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico and Peru).

The importance of adopting AI in the public sector is recognised in the majority of national AI strategies. In fact, governments are increasingly using AI for public sector innovation and transformation, redefining how they design and deliver policies and services. This report, conducted by the OECD in collaboration with CAF, Development Bank of Latin America, reviews the strategic and responsible use of AI by the public sector in the LAC region.

Key findings

In the LAC region, all seven countries with a national AI strategy either have a strategy in place for AI in the public sector, or a dedicated focus within their broader strategy. These strategies tend to focus on key themes, including ethics, AI governance, AI adoption, cross-sector collaboration and procurement, skills and capacities, data and technical infrastructure. These represent a significant step forward but vary in terms of action items and enablers to help drive progress. While all have specified actions and objectives and most have measurable goals, the majority of strategies lack time frames, funding mechanisms and monitoring instruments.

LAC countries are also experimenting with AI in the public sector for different uses, including COVID-19 response, improving government efficiency and decision making, enhancing relationships with and services for citizens and businesses, increasing public safety and security, strengthening public sector integrity and accountability, and enhancing education systems.

In addition to applying the OECD AI Principles, the OECD has identified a number of key factors critical for reaping the benefits of AI in the public sector while mitigating risks:

- **Developing a responsible, trustworthy and human-centric approach to the use of AI in the public sector**, including data ethics, ensuring fairness and mitigating biases, providing for

transparency and the explainability of algorithms, promoting digital safety and security, putting in place accountability mechanisms, and ensuring an inclusive and user-centred approach.

- **Building key governance capacities**, including leading, co-ordinating and building support for AI; data leadership and strategy; creating space for experimentation; understanding public sector problems and the potential for AI solutions, and ensuring future preparedness through anticipatory governance.
- **Putting in place key enablers**, including data, funding, internal and external expertise, and digital infrastructure.

The OECD has found that capacities among countries in the region vary:

- Colombia and Uruguay have emerged as leaders in the LAC region, with a number of well-considered strategies and approaches implemented to some extent.
- Argentina, Brazil, Chile and Peru have demonstrated leadership on several issues related to the above factors and a strong commitment to implementation, albeit at a lower level of maturity than regional leaders.
- Costa Rica and Mexico have also demonstrated solid commitment. However, Costa Rica requires additional support and effort in some areas, while Mexico – the first country in the region to publish a national AI strategy and a regional leader in the past – seems to lack clarity regarding current and future priorities.
- Barbados and Panama, and to a slightly lesser extent the Dominican Republic, Ecuador, Jamaica and Paraguay, have demonstrated initial capacity for leveraging AI in the public sector, such as through data protection laws and other initiatives that, while not explicitly aimed at AI, can have positive spillover effects.
- Bolivia, Trinidad and Tobago, and Venezuela require significant effort and potentially support from other countries in the region to make progress in exploring AI for the public sector.

Key recommendations

This report makes **13 recommendations** to LAC national governments to maximise positive potential impacts of the use of AI in the public sector, and to minimise negative or otherwise unintended consequences:

1. Explore the collaborative development and execution of a **LAC regional strategy** and roadmap for AI in the public sector.
2. Develop and adopt **national strategies and roadmaps** for AI in the public sector.
3. Develop a national **public sector data strategy** covering the different aspects of data to serve as a foundation for AI.
4. Explore **regional co-operation and collaboration** for public sector AI projects and initiatives.
5. Support AI efforts at the **sub-national** level and account for them in broader AI policies and initiatives.
6. Strengthen the **focus on implementation** of AI strategies in the public sector to ensure commitments are realised.
7. Take steps to **ensure the long-term sustainability** of public sector AI strategies and initiatives.
8. Implement the **OECD AI Principles** and develop a national ethical framework for trustworthy AI.
9. Ensure a focus on considerations for the use of **trustworthy AI in the public sector** as identified in this report.

10. Provide for **sustained leadership capacity** at the central and institutional levels to guide and oversee AI adoption in the public sector.
11. Leverage **anticipatory innovation governance** techniques to prepare for the future.
12. Ensure a **focus on governance considerations** identified in this report.
13. Ensure a solid **focus on the critical enablers** for AI in the public sector as identified in this report.

1 Introduction

Artificial Intelligence (AI) offers tremendous potential for innovation in all sectors and industries. In the private sector, AI is an intrinsic part of myriad technologies and services in the form of algorithms that mapping apps use to avoid traffic, that Netflix and Spotify use to provide recommendations, and that e-mail providers use to automatically filter for spam. Use of AI in the public sector is just as relevant, and perhaps holds even more potential for improving lives and transforming societies, based on the variety of roles that governments play (financier, buyer, regulator, convener, standards-setter, data steward, user and service provider) (Berryhill et al., 2019[1]).

One study on the public service of the United States (US) suggested that AI could free up nearly one-third of public servants' time, potentially allowing them to shift from mundane tasks to high-value work (Eggers, Schatsky and Viechnicki, 2017[2]). Governments could also use AI to improve policy design, make better decisions, enhance communication and engagement with the public, and upgrade the speed and quality of public services. The inherent possibilities of AI in the public sector are not lost on government officials. A recent study by Microsoft found that two-thirds of public sector organisations see AI as a digital priority (Bertrand, 2020[3]).

While the potential benefits of AI are significant, attaining them is not an easy task. Government use of AI technology lags behind that of the private sector. Moreover, the field is complex and has a steep learning curve. The purpose of AI in the context of government is unique and presents several challenges when compared to the private sector. Indeed, only 4% of public sector organisations in Western Europe have made effective use of AI to achieve any significant degree of organisational transformation (Bertrand, 2020[3]), reflecting the level of difficulty governments face in adopting AI.

Although the public sector trails its private counterpart, governments are seeking ways to catch up. Recent OECD work has focused specifically on relevant use cases, opportunities, challenges and other

considerations that governments need to understand when seeking to make strategic use of AI for public sector innovation and transformation:

- In September 2019, the Working Party of Senior Digital Government Officials (E-Leaders),[1] supported by the Digital Government and Data Unit,[2] published the report *State of the Art in the Use of Emerging Technologies in the Public Sector*.[3] The report highlighted the main opportunities and challenges surrounding the use of AI and other emerging technologies in government, and offered insights into strategies as well as practical examples of governments integrating such technologies.
- In November 2019, the OECD Observatory of Public Sector Innovation (OPSI)[4] published the report *Hello, World: Artificial Intelligence and its Use in the Public Sector*,[5] which sought to unpack the technical aspects of AI for public servants. The report also found that more than 50 countries had developed national AI strategies, with most incorporating a focus on AI in the public sector. In addition, it uncovered key use cases in AI in the public sector and provided guidance on important considerations for the public sector. Since then, the number of countries with national AI strategies has grown to over 60 by mid-2020 (OECD, 2020[4]).[6]
- In September 2021, the OECD Infrastructure and Public Procurement division published a report on Building Resilience, which examined how AI and big data analytics are transforming the availability and use of information, and creating opportunities to plan infrastructure investments better and extend asset life. The report provides a framework and country examples showing how to integrate machine and digital technologies across the infrastructure life cycle, from development to delivery and operations, with a view to improving infrastructure resilience and sustainability (OECD, 2021[5]).

These government-oriented efforts feed into the OECD's flagship initiative to closely monitor global developments incorporating AI: the OECD.AI Policy Observatory.[7] The OECD.AI Policy Observatory builds on the momentum of the OECD's 2019 Recommendation on AI (the "OECD AI Principles").[8] These Principles constitute the world's first intergovernmental standards on AI. They complement existing OECD standards in areas such as privacy, digital security risk management and responsible business conduct. To date, 46 countries around the world have made a commitment to adopt these Principles. In June 2019, the G20 adopted human-centred AI Principles which draw on the OECD AI Principles.

The OECD AI Principles are comprised of five value-based principles to ensure that AI systems are trustworthy and human-centric. They are accompanied by five policy recommendations that policy makers should undertake to foster thriving AI ecosystems that respect human rights and democratic values and benefit societies (Table 1.1).

Table 1.1. The OECD AI Principles

	Principle		Excerpt
Values-based Principles	1.1	Inclusive growth, sustainable development and well-being	*Trustworthy AI has the potential to contribute to overall growth and prosperity for all – individuals, society and the planet – and to advance global development objectives.*
	1.2	Human-centred values and fairness	*AI systems should be designed in a way that respects the rule of law, human rights, democratic values and diversity, and should include appropriate safeguards to ensure a fair and just society.*
	1.3	Transparency and explainability	*AI systems need transparency and responsible disclosure to ensure that people understand when they are engaging with them and can challenge outcomes.*
	1.4	Robustness, security and safety	*AI systems must function in a robust, secure and safe way throughout their lifetimes, and potential risks should be continually assessed and managed.*
	1.5	Accountability	*Organisations and individuals developing, deploying or operating AI systems should be held accountable for their proper functioning in line with the OECD's values-based principles for AI.*

Policy Recommendations	2.1	Investing in R&D	*Governments should facilitate public and private investment in research and development to spur innovation in trustworthy AI.*
	2.2	Fostering a digital ecosystem for AI	*Governments should foster accessible AI ecosystems with digital infrastructure and technologies, and mechanisms to share data and knowledge.*
	2.3	Shaping an enabling policy environment	*Governments should create a policy environment that will open the way to deployment of trustworthy AI systems.*
	2.4	Building human capacity and preparing for labour market transformation	*Governments should equip people with the skills for AI and support workers to ensure a fair transition.*
	2.5	International co-operation	*Governments should co-operate across borders and sectors to share information, develop standards and work towards responsible stewardship of AI.*

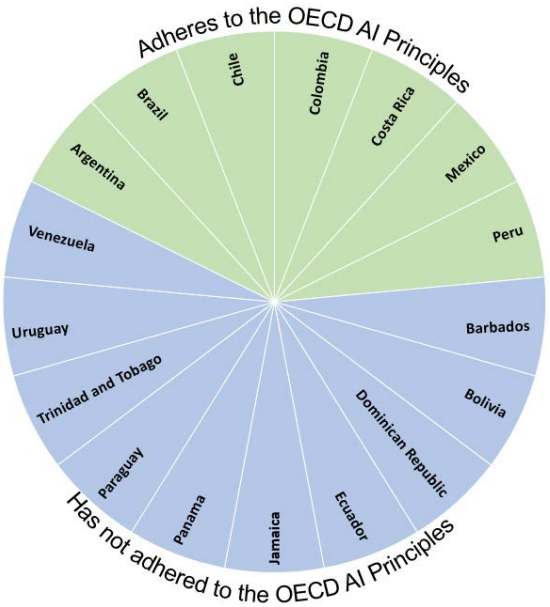
Source: (OECD, 2019[6]).

The OECD AI Principles incorporate a focus on the development of metrics to measure AI research, development and deployment, and the accumulation of an evidence base to assess progress in implementation. Accordingly, in February 2020 the OECD launched the OECD Artificial Intelligence Policy Observatory as a hub to facilitate dialogue and share best practices on AI policies. The Observatory fosters AI policy dialogue and provides access to real-time trends and data on AI development, research, jobs and skills, search trends and investments in AI. The Observatory also enables access to a database of national AI policies from over 63 countries and the European Union,[9] provides information on the ways AI impacts different policy domains from agriculture to healthcare or finance, and maintains a blog on cutting-edge AI research and policies.[10]

These efforts are closely linked to the work of the OECD AI Network of Experts, a multi-stakeholder expert group that develops practical guidance to help implement the OECD AI Principles.[11] In June 2021, the OECD published its first report on the *State of Implementation of the OECD AI Principles: Insights from National AI Policies* (OECD, 2021[7]) The report identifies some of the challenges and associated good practices for governments implementing the AI principles, specifically in relation to research and development, enabling effective policy environments and fostering international co-operation for trustworthy AI.

Latin America and the Caribbean (LAC) governments like their counterparts in the OECD and in other countries and regions across the world have taken a strong interest in AI and its potential benefits and ramifications. In fact, a growing number of LAC countries are developing national AI strategies, and seven have formally adopted the OECD AI Principles (accounting for about 85% of the population of LAC countries within the scope of this review) (Figure 1.1), as discussed later in this report. Additionally, as shown in the cases explored in this report, AI solutions are becoming more accessible to governments, highlighting the need to identify current challenges, and to develop best practices and standards to increase the positive impact of their application.

Figure 1.1. LAC country adherence to the OECD AI Principles



Source: https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0449.

AI is already having a profound impact in the LAC region. A recent study by the MIT Technology Review found that the region has a robust ecosystem of start-ups, and that almost 80% of large businesses in the LAC region have launched AI initiatives and are actively making use of AI (MIT Technology Review, 2020[8]). However, it also found that AI efforts in the region are hindered by political instability, a lack of policy cohesion and limited international collaboration, such as low levels of participation in international efforts to develop governance mechanisms, ethical frameworks and similar approaches.

Such factors also limit the progress that LAC governments can make in leveraging AI for public sector innovation and transformation. The OECD has also identified a number of other factors that can contribute to or hinder government efforts to pursue informed, effective and trustworthy AI strategies, projects and initiatives. Governments must take an active role in shaping these factors and leveraging the potential of AI while managing associated challenges and risks. This review, *The Strategic and Responsible Use of Artificial Intelligence in the Public Sector of Latin America and the Caribbean*, developed by the OECD in collaboration with CAF, Development Bank of Latin America,[12] seeks to help LAC governments achieve this by uncovering national and regional AI approaches and trends, and identifying the extent to which LAC countries are positioned to reap the benefits and mitigate the risks of AI in the public sector.[13] It draws on the lessons and knowledge gained from the OECD's broader work in AI and, for the first time, delves into the landscape, use cases, challenges and considerations for AI in the public sector in a specific region. It is the hope of the OECD and CAF that, armed with new knowledge and insights, LAC governments can take action to build upon or change their existing portfolio of activities to strengthen their strategic use of AI at the national and regional level.

To inform this effort, the OECD and CAF have worked together since the summer of 2020 to:

- Hold in-depth fact-finding interviews with senior leaders and practitioners from LAC governments.
- Administer a survey of the agency responsible for digital government efforts in each country which generally has the leading role in determining how AI and other aspects of digitalisation can be used to shift to a digital government approach throughout the policy and service life cycle in the public sector.

- Conduct extensive research on a variety of topics related to AI in the public sector for each country.

In addition, each country was given two multi-week review windows to review the initial and near-final findings and provide comments and supplementary information, which have been incorporated into the final version. Through all of this work, the OECD and CAF have found that a number of CAF countries have developed exploratory but rapidly advancing portfolios of AI strategies, policies and projects, as well as underlying enablers to support them (e.g. guiding principles, skills, methods and infrastructure, among others). The OECD and CAF have also found that the level of maturity apparent in such efforts varies significantly throughout the region, with some countries developing world-class strategies and initiatives, while others have yet to demonstrate a focus or ambition for AI in the public sector. The chapters of this report seek to paint a picture of the current status of AI in the public sector for the LAC region:

- Chapter 2 provides an overview of the status of national AI strategies in LAC countries, with an emphasis on the inclusion of public sector innovation and transformation. It highlights areas where governments have prioritised efforts and incorporated action plans into strategies to help drive successful implementation.
- Chapter 3 examines cases of AI use in LAC countries today. It provides examples from the public sector of implemented AI projects in focus areas such as COVID-19 response, improving government efficiency, decision making, integrity, public safety and security, and building relationships with and services for citizens and businesses, among others.
- Chapter 4 discusses efforts by LAC countries to ensure a trustworthy and ethical approach to AI in the public sector. It assesses ethical principles, frameworks and other mechanisms and their alignment with the OECD AI Principles. It also discusses LAC government efforts to ensure fairness and mitigate bias and to promote transparency and accountability. As a cross-cutting factor, it explores how countries are being inclusive in their AI initiatives through building multi-disciplinary and diverse teams and maintaining a focus on end users and their needs.
- Chapter 5 addresses key governance capacities identified by the OECD as critical for government success in pursuing AI in the public sector. It focuses in particular on top-level leadership for AI, cross-government co-ordination, strategic data governance mechanisms and spaces for AI experimentation. The chapter also assesses whether LAC governments have put in place adequate mechanisms to understand public problems and evaluate whether AI may be the best solution to overcome these challenges. Finally, it discusses LAC anticipatory innovation governance capacities to grasp potential futures and take actions to prepare for them in the present.
- Chapter 6 explores whether key enablers for AI in the public sector are present in LAC countries. It reviews government efforts to provide funding, enhance internal human capital capacities, leverage external capabilities through partnerships and procurement, and put in place essential digital infrastructure.
- Chapter 7 provides an overall conclusion and recommendations for LAC governments to consider as they continue to explore and adopt AI in the public sector.

Throughout this report, the OECD makes comparisons between the status and characteristics of LAC government efforts for AI in the public sector and those of other governments around the world. The report also compares and contrasts the actions and relative capacities of countries within the LAC region. Visualisations elaborated on the basis of survey results, interviews, research and government validation of findings indicate regional leaders in certain areas, as well as countries for which capacities in various areas are not as apparent. This is not intended to serve as a ranking. Rather, it is intended to help identify particularly strengths among countries to enable others to learn from their practices and lessons. It is also intended to help identify countries who may benefit from increased focus on certain areas or support from

others in the region. Additionally, it may support the potential for a regional approach to AI. For instance, if LAC governments were to collaborate on an AI strategy or initiative, those with relative strengths could help guide certain components (e.g. Argentina on experimentation, Brazil on interoperability, Chile on leveraging external expertise, Colombia on ensuring an ethical and trustworthy approach, Panama on guidance for infrastructure, Uruguay on underlying data strategy, etc.).

The conclusions of this review of AI in the public sector represent the first findings from a larger comprehensive digital government review of LAC governments by the OECD and CAF, covering topics such as governance, skills and capabilities, building a data-driven public sector, open government data, digital innovation and capacities for leveraging collaborative GovTech approaches. This review entitled *Going Digital: The State of Digital Government in Latin America* is expected to be published in 2022.

The review of AI in the public sector in the LAC region and the broader digital government publication is particularly timely. In the COVID-19 context, immediate responses to the pandemic accelerated the digital transformation and shift to coronavirus-related items such as testing, contact tracing, virtual work and education, and the relaunch of the economy. However, over time, it became clear that the COVID-19 crisis also served as a catalyst for public sector innovation in these areas and many more (OECD, 2020[9]). Of particular relevance for this report are efforts devised by governments to leverage AI for pandemic response, through the creation of early warning tools and the acceleration of medical research to produce treatments, among others (OECD, 2020[10]). The crisis has re-emphasised the role of the state as an enabler of the economy and society, and has highlighted the need for governments to respond quickly and effectively, often using new tools and technologies. By strengthening local, national and regional digital and AI capacities now, governments can better position themselves to respond to ongoing and future shocks and challenges.

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OECD (2020), *Using artificial intelligence to help combat COVID-19*, OECD Publishing, https://www.oecd.org/coronavirus/policy-responses/using-artificial-intelligence-to-help-combat-covid-19-ae4c5c21. [10]

OECD (2019), *OECD Recommendation of the Council on Artificial Intelligence*, https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0449. [6]

Notes

[1] https://oe.cd/eleaders.

[2] https://oe.cd/dig-gov.

[3] https://oe.cd/il/gov-emergingtech.

[4] OPSI serves as a global forum for public sector innovation, helping governments to understand, test and embed new ways of doing things through the application of fresh insights, knowledge, tools and connections. See https://oecd-opsi.org for more information.

[5] https://oe.cd/helloworld.

[6] The OECD.AI Policy Observatory maintains a growing database of national AI policies, available at https://oecd.ai/dashboards.

[7] https://oecd.ai.

[8] https://oecd.ai/ai-principles. An official OECD "Recommendation" is a legal instrument which, although not legally binding, is considered by member countries to carry great moral force. OECD Recommendations are adopted when member countries are prepared to make the political commitment necessary to implement the principles set out in the text. This type of instrument is often referred to as "soft law".

[9] www.oecd.ai/dashboards.

[10] www.oecd.ai/wonk.

[11] www.oecd.ai/network-of-experts.

[12] www.caf.com.

[13] This report does not profess to be an introduction to Artificial Intelligence or its use in government. Users interested in learning more about the technology and its history as well as different technical applications can find overviews and guidance in the report *Hello, World: Artificial Intelligence and its Use in the Public Sector* (https://oe.cd/helloworld).

2 LAC Artificial Intelligence strategies

Artificial Intelligence (AI) holds tremendous potential for all sectors in Latin America and the Caribbean (LAC) countries. The public sector is responsible for national priorities, investments and regulations, and is thus in a unique position regarding AI adoption. Governments are also in a position to leverage the immense power of AI to innovate and transform the public sector, redefining the ways in which it designs and implements policies and provides services to its people. Such innovation and transformation is critical for governments as they face ever-increasing complexity and demands from their citizens, residents and businesses. This chapter examines the strategic approach to AI adopted by LAC governments, with a particular focus on whether and to what extent they are positioning themselves to leverage its potential for public sector innovation and transformation.

In particular, the chapter discusses the growing regional collaboration among a number of LAC countries in pursuit of collective AI goals, and the development of strategies that articulate national strategic visions for AI. In particular, it discusses the items presented in Figure 2.1.

Figure 2.1. Issues discussed in Chapter 2

Regional collaboration for collective approaches

Governments around the world are adapting to the new possibilities offered by AI to transform government. As part of this process many governments have adopted international – often regional – strategies or other commitments for AI. For instance, in 2018, all European Union (EU) member countries signed the *Declaration of Cooperation on Artificial Intelligence*,[1] committing them to work together to boost European AI capacity and adoption, ensure an adequate legal and ethical framework, and make AI available and beneficial to public administrations. The subsequent *EU Coordinated Plan on Artificial Intelligence*[2] built on the declaration and seeks to "maximise the impact of investments at EU and national levels [and] encourage synergies and cooperation across the EU". A 2021 review of the plan[3] provided a set of joint actions for the European Commission and member states developed to create EU global leadership on trustworthy AI. In another regional effort, ten governments[4] signed the *Declaration on Artificial Intelligence in the Nordic-Baltic Region*,[5] pledging to improve skills development and access to data and to develop ethical guidelines, among others. Outside of Europe, the Arab AI Working Group aims to develop a joint framework for capacity building, train youth to compete in AI jobs and establish a common Arab Strategy, while the African Union has set up a working group to create a common AI strategy for Africa and to initiative projects in support of the Sustainable Development Goals (SDGs) (OECD, 2020[1]).

These commitments help to generate a collective vision for AI based on the unique contexts, cultures, norms and values of a region. They can also help each country bring its comparative strengths to the table, while filling in gaps elsewhere in the region. Additional benefits, depending on the structures of the agreements, can assist in achieving economies of scale for procuring digital solutions, contributing to efforts to share talent and knowledge. They can also pave the way for collaborative international projects and approaches. Such instruments can focus on both the impacts and considerations of AI for broad societal and economic goals, as well as objectives focused on innovation and transformation of the public sector itself.

At present, national governments across the LAC region do not have in place any shared strategies, commitments or other agreements to foster a joint vision and common approach to AI. Such a regional instrument could better align activities in the area, and would also reflect the OECD AI Principles, which highlight the critical nature of international co-operation as a key element for the successful development of AI (OECD, 2019[2]). While governments in the region have not established a collective vision for AI, it has demonstrated the ability to co-ordinate regionally on digital government issues through the Network of e-Government of Latin America and the Caribbean (GEALC Network), as discussed in Box 2.1. In addition,

all governments within the scope of this review are member states of the Inter-American Development Bank (IDB), which has adopted the OECD AI Principles as part of its fAIr LAC initiative.[6,7]

The OECD and the IDB have partnered to produce a data science toolkit[8] for the responsible use of AI in public policy both within the LAC region and beyond. The report uses the AI system life cycle as a guiding framework to provide technical guidance for public policy teams that wish to use AI technologies to improve their decision-making processes and outcomes. For each phase of the AI system life cycle – planning and design, data collection and processing, model building and validation, and deployment and monitoring – the toolkit identifies common challenges related to the use of AI in public policy contexts and outlines practical mechanisms to detect and mitigate them (Sanchez Avalos, Gonzalez and Ortiz, 2021[3]).

This efforts demonstrate the region's ability to collaborate on cross-border issues specific to AI, in spite of the fact that governments in the region have yet to agree on a regional approach to AI.

Box 2.1. GEALC Network

Since 2003, the Network of e-Government of Latin America and the Caribbean (GEALC Network) has brought together the authorities of digital government agencies in the LAC region. Its composition makes it a unique instrument to promote horizontal co-operation, the development of participatory e-government policies, the training of public officials, and the exchange of solutions and experts among countries of the region. The network also enables member countries to share key knowledge regarding the construction of national digital government strategies. The general objective of the GEALC Network is to support digital government policies that place citizens at the centre, with an emphasis on the most vulnerable populations.

Source: www.redgealc.org.

LAC governments have also demonstrated capacities and interest in regional AI collaboration on an ad-hoc basis. For instance, the IA-CKATÓN is a regional hackathon created to explore innovative ideas and novel ways of using AI to improve public services. Originally organised by Uruguay's digital government agency, the *Agencia de Gobierno Electrónico y Sociedad de la Información y del Conocimiento (*AGESIC), the initiative expanded to involve Chile, the Dominican Republic, Panama, Paraguay and Peru. Each participating country carried out its own IA-CKATÓN and selected a national winner who participated in a regional grand finale at the annual meeting of the GEALC Network. Regional AI summits and conferences are another example of LAC regional collaboration. Two events are particularly noteworthy for attracting a diverse pool of actors from different disciplines and countries: the "Regional Forum on Artificial Intelligence in Latin America and the Caribbean", organised by UNESCO and Brazilian partners in December 2019,[9] and the "AI Latin America SumMIT", organised by MIT Latin American researchers in January 2020. The latter recently published an e-book that documents the summit and provides details of planned future events.[10] Such regional initiatives and networks represent remarkable advances in the promotion of AI in the public sector and understanding of its challenges and opportunities. Although still incipient, they represent a path towards greater regional collaboration at the strategic and policy levels.

LAC national AI strategies

While regional strategies can help guide collective action, the most comprehensive and granular strategies are found at the national level. At least 60 countries worldwide have adopted national AI strategies and policies to set strategic visions and approaches to AI (Berryhill et al., 2019[4]) (OECD, 2020[1]), with many others actively developing one. These strategies include AI-related priorities and goals and, in some cases,

a roadmap for achieving them. They can help countries build a common foundation for success in their AI progress, as well as align the capacities, norms and structures of the relevant AI actors and ecosystems. The design of most national AI strategies underwent open public consultations and involved numerous stakeholders, including key industry consortia, academia, trade unions and civil society (OECD, 2020[1]). These efforts clearly demonstrate that many countries see AI as a national priority, and are willing to work openly with a broad array of stakeholders to build legitimacy and trust.

Among LAC countries, seven have developed, or are in the process of developing, a national AI strategy: Argentina, Brazil, Chile, Colombia, Mexico, Peru and Uruguay (see Figure 2.2).[11] This trend signals a growing focus among LAC countries on ensuring they remain competitive with regional and global peers, and a determination to keep up with this rapidly evolving technology and its potential benefits and risks.

When LAC strategies are viewed collectively a number of key themes and objectives emerge. For instance, strategies often seek to catalyse economic development through R&D funding and incentives, transform the labour market and strengthen talent pipelines through upskilling programmes, and promote solid data governance and sharing, including through open government data practices. Notably, all strategies include provisions to help ensure that AI systems are designed and implemented in an ethical and trustworthy manner (e.g. the creation of ethical frameworks and governance bodies). A number of strategies also include a focus on international collaboration, notably the strategies of Argentina, Brazil, Chile and Peru. Some strategies include more specialised components, such as Chile's inclusion of a gender-inclusiveness perspective in AI research and development. Most importantly for this report, all of the strategies include a specific focus on the use and implications of AI for public sector innovation and transformation, as discussed in the next subsection.

Most LAC countries, including those that do not have a current or forthcoming AI strategy, have published a broader national digital government strategy or related digital agenda or programme. These often include components that serve as foundational building blocks for AI (e.g. interoperability, infrastructure, analytics tools and processes, integration of services, etc.), although they do not generally incorporate AI as a main focus. Similarly, some countries have developed overarching data strategies (see the section on *Foundational strategic data governance capacities*), and while these include foundational elements for AI such as data sharing, they do not generally focus on AI-specific areas. However, there are indications that other LAC countries will shortly develop national AI approaches. Ecuador, for instance, has held discussions with academia, industry and civil society on joint efforts for AI development (Gómez Mont et al., 2020[5]). In Costa Rica, the government is collaborating with the IDB on a roadmap for a national AI strategy and an accompanying ethical framework (OECD, 2021[6]). In addition, the Dominican Republic and Panama have stated in interviews with the OECD that their governments have begun exploratory discussions about national approaches to AI, although plans for strategies have not yet been formalised.

Public sector components of national strategies

All of the seven countries with published or upcoming national AI strategies either have a separate strategy in place for AI in the public sector, or a dedicated focus embedded within a broader strategy (see Figure 2.2). This is critical as it allows AI to be integrated into policy making and service design processes.

Figure 2.2. LAC AI strategies and public sector transformation

Source: OECD analysis of AI strategies.

However, the strategies vary in the extent to which they demonstrate a focus on public sector transformation, and in some cases may no longer be in effect:

- Uruguay is the only LAC country with a dedicated strategy for achieving public sector transformation through AI.
- Argentina, Brazil and Colombia all have a dedicated focus on public sector transformation embedded within a broader completed strategy.[12]
- Peru highlights the public sector as a strategic focus area in its forthcoming AI strategy.
- Chile's AI strategy and associated AI Action Plan highlight the importance of public sector AI training and adoption for enhancing public efficiency and service delivery, as well as streamlining public procurement processes. However, the general focus of the strategy is industry, with less attention overall to the strategic use of AI in the public sector than in other strategies in the region.
- Mexico's strategy is not publicly available and thus could not be reviewed. However, subsequent reporting by those involved in its creation indicates that the strategy includes a significant focus on AI in the public sector. Mexico was the first country in the region to develop an AI strategy, but it is unclear whether it still constitutes active policy (see Box 2.2).

Box 2.2. Development of the first AI strategy in the LAC region (Mexico)

In March 2018, Mexico launched the first national AI strategy in the LAC region. To inform its development, the Government of Mexico commissioned an assessment to determine its readiness for AI. The report entitled *Towards an Artificial Intelligence Strategy in Mexico: Harnessing the AI Revolution* analysed Mexico's opportunities and challenges and brought together the perspectives of more than 80 relevant Mexican experts. The authors provided short, medium and long-term recommendations in a handful of key areas, including governance and public services, research and development, skills and capacities, data infrastructure, and ethics and regulation. This effort served as a baseline of understanding for Mexico's subsequent efforts.

Informed by the report, the Office of the President, in collaboration with civil society and academia, launched the national AI strategy, which focused on five key actions:

1. **Develop an inclusive governance framework** through the creation of an AI Sub-commission based on cross-sector participation, with the objective of setting the direction of Mexican AI initiatives and developing co-ordinated action across the public administration.
2. **Determine the uses and needs of AI in industry** through a discovery exercise and the identification of public sector best practices.
3. Hold an open **public consultation** on AI opportunities and challenges in Mexico.
4. **Support Mexico's AI leadership in international fora**, including the OECD, G20 and others, and the creation of a working group for emerging technologies in the GEALC Network (see Box 2.1).
5. **Promote continuity through changing administrations** by working with all interested stakeholders towards an official AI National Policy.

In conjunction with the strategy, the government issued two key documents on AI ethics: Mexico's official AI General Principles and an associated Risk Assessment Tool, which were based on similar successful frameworks developed by the Government of Canada.

To help gain a more comprehensive understanding of AI opportunities and challenges, and to actualise the vision laid out in the strategy, institutions from industry, civil society, academy and government launched a coalition named IA2030.mx in 2018. One of its first actions was to hold a national public consultation on AI. The findings of the consultation provoked the development of a more comprehensive national AI strategy by a series of topic-specific working groups (e.g. ethics, governance and public services). The strategy, *Mexican Agenda on Artificial Intelligence* was issued in September 2020.

In December 2018, a new administration came into power in Mexico, and officials involved in the initial readiness assessment and national AI strategy report that much of the country's digital government work has been halted due to a shift in policy priorities. The work of IA2030.mx continues but the current situation has led to ambiguity about the status of Mexico's original AI strategy. It is also unclear whether the government has adopted the IA2030.mx agenda as official policy, although it was included as part of its portfolio of efforts submitted to the OECD.AI Policy Observatory. The OECD and CAF were unable to obtain clarification on this matter from the Government of Mexico. Regardless, these officials articulated five key lessons that can be derived from Mexico's experience:

1. An **initial assessment** is necessary to determine the position of the government and ecosystem in relation to AI.
2. Strategic, **multi-stakeholder partnerships** are needed to align efforts across different sectors and to ensure the resulting products are inclusive and representative.

3. It is important to **involve other branches and levels of government** to help ensure sustainability.
4. Keeping **human rights and distributed benefits** at the centre of the AI strategy is key.
5. **Public and private funding** is critical to achieve robust and sustainable AI strategies.

Source: https://ia-latam.com/portfolio/hacia-una-estrategia-de-ia-en-mexico-aprovechando-la-revolucion-de-la-ia, http://scioteca.caf.com/handle/123456789/1587, (Coalición IA2030Mx, 2020[7]), OECD.

As with broader national strategies objectives, a number of key topics and themes and objectives emerge across the public sector-focused components that the OECD was able to review. Seven topic areas stand out as shown in Table 2.1.

Table 2.1. Key topics and themes from public sector components of national AI strategies

Topic/theme	Description
Trustworthy and ethical approaches	• Increasing public knowledge of AI and related digital rights to foster trust. • Adapting AI solutions to local contexts and culture. • Providing guidance on the transparent and ethical use of AI in the public sector.
AI governance	• Defining frameworks for AI and data governance within the public sector. • Articulating leadership for AI and commitments for ensuring AI strategy remains up to date. • Defining actors responsible for AI co-ordination across the public sector.
AI adoption	• Promoting the adoption of AI by the public sector through AI-enabled services for citizens and the execution of strategic, high-impact AI initiatives and pilot projects. • Improving the performance of digital government policies.
AI procurement	• Bringing together best practices to formulate technical, functional and background requirements for the procurement of AI in the public sector.
Civil service capacity and skills	• Enhancing civil service capacity through training and recruitment for the use and development of AI • Creating spaces for the sharing of good practices and experiences within the public sector and other actors, and preparing public servants for the new working dynamics offered by AI-enabled automated and semi-automated tasks.
Cross-sector and cross-border collaboration and ecosystem building	• Identifying existing AI ecosystems and related actors in public, private and non-profit sectors, and across national borders.
Experimenting and piloting	• Fostering public innovation based on AI mainly through the creation or strengthening of digital innovation labs and experimentation sandboxes.
Infrastructure	• Building super-computing and/or infrastructure to host public and private AI systems.
Data-driven public sector/open government data	• Promoting strategic management, leverage and opening up of government data to develop tailored services, as well as to fuel AI in the private sector.

Many of these topics and themes surface in the strategies of Uruguay and Argentina provided in Box 2.3.

Box 2.3. Strategising AI in the public sector for Uruguay and Argentina

Uruguay: a dedicated strategy for AI in the public sector

Uruguay's AI strategy is one of the few to be fully dedicated to the public sector. It was formulated to promote and strengthen the responsible use of AI in the public administration, define applicable general principles, and identify specific pillars and lines of action.

The strategy seeks to uphold a series of key principles: purpose, general interest, respect for human rights, transparency, responsibility, ethics, added value, privacy by design and security.

In so doing so, it provides four pillars and eight objectives to orient the work of the public sector:

- AI governance in public administration:
  - Objective I: Identify the AI ecosystem in Uruguay.
  - Objective II: Define an AI governance model for the public administration (PA).
- Skills development for AI:
  - Objective III: Generate capabilities for the development and use of AI in the public administration.
  - Objective IV: Generate a space for learning.
- Responsible use:
  - Objective V: Generate technical guides for the good use of AI in the public administration.
  - Objective VI: Promote algorithm transparency.
  - Objective VII: Design specific action plans for strategic sectors.
- Digital citizenship and AI:
  - Objective VIII: Raise awareness and improve trust among citizens.

Argentina: a public sector focus embedded in a broader AI strategy

The objective of Argentina's AI National Plan is to develop policies that contribute to sustainable growth and the improvement of equal opportunities through AI technologies, ultimately positioning the country as a regional AI leader. In order to achieve this aim, the plan incorporates "public sector implementation" as one of the 11 strategic axes. The other sections of the document also include commitments that directly impact the transformation of the public sector.

The strategy lays out four key public sector objectives:

1. Generating the conditions for AI development and use in the public sector to maximise economic impact, with a particular focus on building an AI ecosystem.
2. Minimising the risks of AI development and implementation.
3. Promoting the development of talent oriented towards AI.
4. Promoting collaboration within government and with other sectors around AI.

Relevant action lines and commitments for the public sector include:

- Data:
  - Strengthening incentives and mechanisms for opening, re-using and sharing data in the public, private and academia sectors.
  - Identifying and generating mechanisms to make available critical public and private data for the development of AI.
- Implementation in the public sector:

- Increasing productivity and efficiency through the implementation of focused AI solutions.
- Optimising public services using traceable AI systems, with well-founded and transparent logics that do not affect the rights of citizens.
- Defining public procurement methodologies and processes for AI.

- Infrastructure:
  - Promoting the generation of a public supercomputer cluster to guarantee international-level processing capacity for public and private users, seeking to establish co-operation mechanisms to support AI scientific research and the development of pilots in strategic areas of the public sector.
- AI Innovation Lab:
  - Building an AI Innovation Lab as a public-private organisation for open innovation, collaboration among sectors and the development of targeted projects.

Source: OECD review of Uruguay's strategy for AI in the public sector (https://oecd.ai/dashboards/policy-initiatives/2019-data-policyInitiatives-26477) and Argentina's AI strategy (https://oecd-opsi.org/wp-content/uploads/2021/02/Argentina-National-AI-Strategy.pdf).

Action plans and enablers for success

A comparative view of the strategies surfaces differences among LAC countries regarding the existence of action plans and enablers to help drive progress in implementation (Table 2.2). Although having these mechanisms in place does not guarantee successful implementation, they can improve overall performance, impact and accountability. In particular:

- All the reviewed strategies include **objectives and specific actions**, which is critical.
- Most also include **measurable goals**. For instance, Argentina, Chile (through an associated Action Plan) and Colombia present their goals in such a way that it is possible to measure progress over time. Uruguay's strategy does not always include measurable goals, leaving some actions open to interpretation. Brazil's strategy largely lacks measurable goals, with the exception of a goal to implement AI in at least 12 public services by 2022. Peru's draft strategy, provided to the OECD for review in May 2021, provides many relevant objectives; however these are generally worded in a manner that does not allow for the measurement of progress or success.
- Chile and Colombia define **responsible actors** linked to each proposed action, which is important for ensuring someone or some organisation has ownership and accountability over implementation progress and success. Argentina defines responsible actors for each strategic axis but not for each action.
- Regarding the definition of **time frames** for the starting and completion of proposed actions, Colombia sets clear periods and Argentina defines time frames for certain actions. Chile includes time frames for initiating action for each action item, but does not include deadlines for completion. Brazil, Peru and Uruguay do not generally include specific time frames.
- Finally, Colombia's strategy is the only one to include clear **funding mechanisms** (discussed further in the *Funding* section of Chapter 6) and a **monitoring instrument** (see Box 4.10 in Chapter 4).[13]

Table 2.2. Existence of action plans and enablers that can help drive implementation

Country	Objectives and specific actions	Measurable goals	Responsible actors	Time frames	Funding mechanisms	Monitoring instrument
Argentina	✓	✓	✓	Partially	×	×
Brazil	✓	×	×	×	×	×
Chile	✓	✓	✓	Partially	×	×
Colombia	✓	✓	✓	✓	✓	✓
Peru	✓	×	×	×	×	×
Uruguay	✓	Partially	×	×	×	×

While only seven LAC countries have developed draft or final national strategies, and the OECD could review six in full, the themes, objectives, roadmaps and enablers discussed here can serve as a valuable reference for other countries as they assemble their own strategies. As mentioned above, a number of other LAC governments told the OECD in fact-finding interviews that although they do not currently have an AI strategy in place, they are laying the groundwork to build their own in the near future. With the recent launch of Brazil's national AI strategy, the pace of development in the region appears to be increasing. The countries represented in this section have been regional vanguards from which others can learn, and who will also need to continually re-examine their progress and iterate and evolve on their own strategies to keep pace with technological advancements.

As additional resources in this area, the OECD.AI Policy Observatory provides access to a wealth of country-specific information on national AI strategy and policy initiatives.[14]

Ensuring strategy coherence and evolution

While the creation of national AI strategies is accelerating both in the region and globally, governments must be careful to ensure that such strategies form a core and integrated part of the country's digital system. To be successful, these strategies must align with and mutually reinforce national digital government strategies (covered in depth in the forthcoming *Going Digital: The State of Digital Government in Latin America)*, national data strategies (see "Foundational strategic data governance capacities" in Chapter 5), and ethical principles and values, and personal data protection policies and laws (see Chapter 4 on "Efforts to develop a responsible, trustworthy and human-centric approach"). Unless all these components work in tandem, public sector AI efforts will struggle to scale beyond small pilots and add public value. Like AI strategies, only a handful of LAC countries have developed comprehensive national data strategies. As such, governments in the region have an excellent opportunity to ensure coherence for these highly interrelated and interdependent strategies from the ground up. Those with strategies already in place can also achieve this convergence by ensuring their strategies are open to interaction and evolution.

Governments also need to ensure that their strategies are not one-off documents. AI is a rapidly evolving technology, and related strategies, policies and projects must also evolve in order to remain relevant and applicable. To help ensure that governments remain informed regarding the latest developments, countries inside and outside of the region have developed dedicated bodies to keep apprised of new information and to advise governments on how to respond (see examples in Box 2.4).

At the global level, governments are applying different models to ensure policy coherence and the effective implementation of national AI policies. These include:

- Assigning oversight of the development and implementation of a strategy to an existing ministry or agency.
- Creating a new governmental or co-ordination body for AI.

- Establishing AI expert advisory groups.
- Receiving input from oversight and advisory bodies for AI and data ethics bodies.

More details about these efforts can be found in the recent OECD report, *State of implementation of the OECD AI Principles: Insights from National AI Policies* (OECD, 2021[6]).

Box 2.4. Artificial Intelligence advisory bodies

Artificial Intelligence Expert Mission (Colombia)

Colombia in collaboration with CAF, IDB and the World Bank has established an Artificial Intelligence Expert Mission, a multi-stakeholder group of ten national and international experts who meet periodically to evaluate the different dimensions of AI and produce concrete recommendations in the short, medium and long term. The Mission is a necessary mechanism to establish a prospective roadmap for the implementation of an AI Policy based on the integral, technical vision of key experts, and was developed to complement and guide Colombia's progress in this area. The Mission was launched on 21 October 2021.

The mandate of the Mission provides two main objectives:

1) To generate recommendations in the areas of employment and talent that respond to challenges originated by Artificial Intelligence, notably relating to knowledge and gender gaps.
2) Promote the development of technological tools to mitigate the effects of climate change, advance environmental protection and promote the sustainable development of the country. Recommendations are expected on the implementation of AI solutions towards these ends, as well as the generation of the requisite talent and skills.

Artificial Intelligence Advisory Council (Spain)

Spain's Ministry of Economic Affairs and Digital Transformation has created the Artificial Intelligence Advisory Council as a formal independent body to provide the government with analysis, advice and support on the topic of AI. The Council's main objectives are:

- To advise and inform the Secretary of State for AI and Digital Affairs on the execution of the government's policy on Artificial Intelligence.
- To evaluate observations and comments and formulate proposals on the National Artificial Intelligence Strategy, in order to draw conclusions that will feed into revised versions of the Strategy.
- To advise on evaluations of the impact of AI on industry, the public sector and society.

The Council consists of Spanish experts from a range of scientific, economic and educational fields.

Source: https://inteligenciaartificial.gov.co/en/mission and https://oecd.ai/dashboards/policy-initiatives/2019-data-policyInitiatives-24271.

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Notes

[1] https://digital-strategy.ec.europa.eu/en/news/eu-member-states-sign-cooperate-artificial-intelligence.

[2] https://digital-strategy.ec.europa.eu/en/policies/plan-ai.

[3] See https://digital-strategy.ec.europa.eu/en/library/coordinated-plan-artificial-intelligence-2021-review.

[4] Denmark, Estonia, Finland, the Faroe Islands, Iceland, Latvia, Lithuania, Norway, Sweden and the Åland Islands.

[5] www.norden.org/sv/node/5059.

[6] The fAIr LAC initiative was created in 2019 to promote the responsible and ethical use of AI, improve social services and mitigate the region's growing social inequality. See https://oecd.ai/wonk/idbs-initiative-for-responsible-ethical-ai-in-latin-america-caribbean-fairlac and https://fairlac.iadb.org.

[7] The IDB, along with the OECD, also participates in the Globalpolicy.AI initiative. Globalpolicy.AI is an online platform made possible by ongoing co-operation between eight intergovernmental organisations with complementary mandates on AI. The platform helps policy makers and the public navigate the international AI governance landscape and access knowledge, tools, data and best practices to inform AI policy development.

[8] See https://oecd.ai/ai-public-policy-data-science-toolkit.

[9] https://en.unesco.org/artificial-intelligence/latin-america-forum.

[10] See https://ailatinamericasummit2020.sched.com for the agenda, www.youtube.com/c/ailatinamericansummit for session videos and https://ialab.com.ar/wp-content/uploads/2021/01/AI-BOOK..pdf for the summary e-book.

[11] See Annex A for details including links to source information.

[12] For forthcoming strategies, the information presented here is based on country responses to survey results, reviews of draft strategies that are publicly available or have been provided to the OECD, and/or or public statements regarding the expected contents of the forthcoming strategy.

[13] https://colaboracion.dnp.gov.co/CDT/Conpes/Econ%C3%B3micos/3975.pdf.

[14] https://oecd.ai/dashboards?selectedTab=countries.

3 AI use cases in LAC governments

The development of Artificial Intelligence (AI) strategies in multiple countries reflects growing awareness of the huge potential for AI application in the public sector, both to improve internal processes and the ways in which government engages with and serves its people. Governments at national and sub-national levels around the world and in Latin America and the Caribbean (LAC) countries have already designed and implemented numerous AI projects and initiatives, as discussed throghout this chapter.

Previous OECD work and research from other organisations have identified a number of key areas where governments are focusing their real-world use of AI in the public sector.

Over the last year, governments worldwide have rapidly deployed innovative solutions in response to the COVID-19 crisis,[1] many of which employ AI to deliver tailored solutions and messaging for citizens and residents to assist their pandemic response (OECD, 2020[1]) (OECD, 2020[2]).

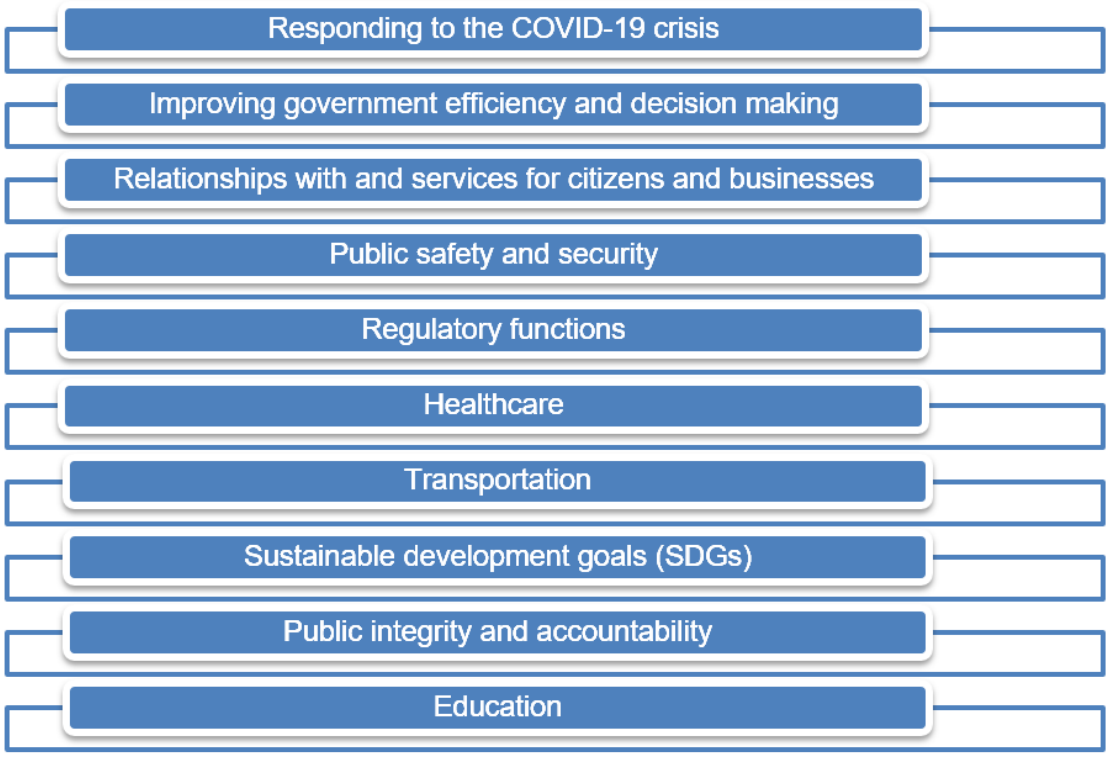
Beyond immediate needs in times of crisis, the most common and immediate uses of AI in the public sector involve automating simple tasks and guiding decisions to make government more efficient and informed (Ubaldi et al., 2019[3]), (Partnership for Public Service/IBM Center for the Business of Government, 2019[4]). Governments have also used AI strategically in a variety of ways to enhance their relationships with and services for citizens and residents (Berryhill et al., 2019[5]).

Globally, a number of topic-specific use cases have emerged in key application areas for AI in the public sector. In particular, many public sector efforts have been concentrated on public safety and security, enhancing regulatory functions, healthcare and transportation (Ubaldi et al., 2019[3]). Governments have also used AI to address cross-cutting issues, such as the Sustainable Development Goals (SDGs) (Berryhill et al., 2019[5]) (IDIA, 2019[6]).

Research for this report found that AI usage in LAC countries is generally aligned with global patterns. However, examination of LAC country AI efforts also found numerous use cases related to enhancing public integrity and accountability, and improving education. This trend accords with two regional priorities: preventing corruption and reducing school dropouts.[2] These efforts are noteworthy because they demonstrate a stronger focus on these areas than observed by the OECD in other regions and countries in regard to AI in the public sector.

This chapter explores a non-exhaustive set of real-world projects that fall under the observed themes. In particular, it explores LAC public sector AI projects in the areas presented in Figure 3.1.

Figure 3.1. Use cases discussed in Chapter 3



Responding to the COVID-19 crisis

Before the world was even aware of the threat posed by COVID-19, AI systems had detected the outbreak of an unknown type of pneumonia in China. Countries are now using AI tools to help monitor and predict the spread of COVID-19 in real time, to enable rapid diagnosis, and to search for treatments at an unprecedented pace and scale (OECD, 2020[7]). One of the most evident outcomes of the innovative response of governments to the pandemic was the rapid acceleration of digital innovation and transformation (OECD, 2020[8]). Throughout the crisis, AI technologies and tools were employed to support the efforts of policy makers, the medical community and society at large to manage every stage of the pandemic and its aftermath (OECD, 2020[7]). In particular, governments used AI to:

- Understand the virus and accelerate medical research on drugs and treatments
- Detect and diagnose the virus, and predict its evolution.
- Assist in preventing or slowing the spread of the virus through surveillance and contact tracing.

- Respond to the health crisis through personalised information and learning.
- Monitor the recovery and improve early warning tools.

LAC governments are also employing or developing the use of AI in a variety of ways that match and reinforce these themes (see Box 3.1).

Box 3.1. LAC country AI responses to COVID-19

Dr ROSA and Dr NICO (Panama)

Dr ROSA (Automatic Health Operational Response) is a virtual assistant/chatbot accessible through WhatsApp that performs virtual COVID-19 screenings. Dr ROSA asks users a series of questions and then uses AI algorithms to evaluate the symptoms. Based on the data, the user may be passed to a virtual office, where they are evaluated by professional doctors who can send an ambulance with specialised personnel for physical observation and home care, or even refer them to a hospital centre as appropriate. Dr NICO (Individual Notification of Negative Case Obtained) is a virtual chatbot that reaches out to citizens who test negative and provides them with social distancing recommendations.

Source: https://rosa.innovacion.gob.pa, https://oecd-opsi.org/covid-response/dr-rosa-chatbot and https://forbescentroamerica.com/2020/03/23/panama-usa-inteligencia-artificial-para-contener-el-covid-19.

AI and data science for pandemic outbreak detection (Argentina)

A public-private consortium consisting of the Interdisciplinary Centre for Studies in Science, Technology and Innovation (CIECTI), the Sadosky Foundation, and the Ministries of Health and Science Technology and Innovation, is creating a system for early detection of epidemic outbreaks. The system will apply AI technology to digital medical records in the public health subsector and other relevant data sources. The process will start with records from two Argentinian provinces and then expand to the rest of the country. The system also considers a gender perspective when capturing primary data in order to generate equitable predictive algorithms. The project is being funded by the International Development Research Centre (IDRC) and the Swedish International Development Cooperation Agency (Sida).

Source: www.fundacionsadosky.org.ar/proyecto-ia-y-ciencia-de-datos-para-deteccion-de-brotes-pandemicos and https://oecd.ai/dashboards/policy-initiatives/2019-data-policyInitiatives-26699.

Voice response robots for medical consultations and tracking cases (Brazil)

In Brazil, AI-assisted interactive voice response (IVR) robots conduct over-the-phone interviews with members of the population to gather data about their movements, their use of public transport and recent contact with potentially infected people. The robots then cross-reference the information with a database to assess who else might be at risk. The IVR asks for permission to make follow-up calls every 8, 10 or 12 hours, as necessary.

Source: https://trends.oecd-opsi.org/wp-content/uploads/2020/11/OECD-Innovative-Responses-to-Covid-19.pdf and https://oecd-opsi.org/covid-response/brazil-uses-ai-and-voice-response-robots-for-medical-consultations-and-tracking-cases.

Funding AI-driven science, technology and innovation projects to tackle COVID-19 (Colombia)

Colombia is funding different types of projects using AI and data analytics to develop rapid diagnostic techniques, devices and/or tools to care for medical personnel and patients. Notable examples include:

- DeepSARS (Bucaramanga) and COVID detection for remote villages (Medellin). This project models and characterises sequences of X-ray images using AI techniques to separate and

identify different stages in the progression of respiratory conditions related to COVID-19, in order to support early diagnosis and management of patients.

- In order to support COVID-19 emergency decision making in the National Institute of Health, a new project will generate analytical models using machine learning and data analytics by integrating external data sources with information available in the public health surveillance system.

Source: https://oecd.ai/dashboards/policy-initiatives/2019-data-policyInitiatives-26726.

Improving government efficiency and decision making

In the context of government, an important and immediately achievable benefit of AI is improvement in the way that public servants perform their tasks. AI has the potential to help government shift from low-value to high-value work and focus more on core responsibilities by "reducing or eliminating repetitive tasks, revealing new insights from data … and enhancing agencies' ability to achieve their missions" (Partnership for Public Service/IBM Center for the Business of Government, 2019[4]).

The average civil public spends up to 30% of their time on documenting information and other basic administrative tasks (Eggers, Schatsky and Viechnicki, 2017[9]). Automating or otherwise avoiding even a fraction of these tasks would enable governments to save a tremendous amount of money and re-orient the work of public servants around more valuable tasks, resulting in more engaging jobs and a greater focus on people (Partnership for Public Service/IBM Center for the Business of Government, 2019[4]).

The growing interest in AI is driven by the vast and increasing amount of available data. However, large volumes of data can also hinder governments from extracting useful knowledge, a phenomenon referred to as "information overload" (Speier, Valacich and Vessey, 1999[10]). AI can help governments overcome information overload, gain new insights and generate predictions to help them make better policy decisions. In Argentina, for example, the Prometea system has reduced operation times in the justice service, leading to replication in institutions inside and outside the country. The use of robots to automate repetitive tasks can also help governments improve efficiency by reducing the processing time of certain public services. Examples of these uses of AI can be found in Box 3.2.

Box 3.2. Making work processes more efficient using AI and automation

Prometea (Argentina)

Prometea is a multilayer AI system designed to expedite the work of the justice service. It was jointly developed in 2017 by the Public Prosecutor's Office of the Autonomous City of Buenos Aires and the Laboratory of Innovation and Artificial Intelligence of the Faculty of Law of the University of Buenos Aires (IALAB). The objective of Prometea is to free judicial officials from performing repetitive tasks, allowing them to focus on complex cases where human input is necessary. The system acts as a virtual assistant that predicts case solutions (based on previous cases and solutions) and helps provide information required to assemble the case file. Prosecutors then decide if the predicted solution is worthy of consideration. In Buenos Aires, between October 2017 and mid-2020, Prometea helped resolve 658 cases related to the right to housing, the right to work and the rights of people with disabilities. Out of 149 housing protection reports where the system was used, the decisions of prosecutors coincided with those of the system 90% of the time. On average, the system can help prepare 1 000 indictments in 45 working days, compared with 174 days without assistance. Prometea

is currently used by the Inter-American Court of Human Rights and the Deputy Attorney General for Administrative and Tax Litigation of the Public Prosecutor's Office of the City of Buenos Aires. However, civil society has called for continued scrutiny of Prometea's implementation as doubts persist over the explainability of its decisions and the associated repercussions for due process. Other concerns include the degree of responsibility of the involved actors (developers and judges) and how training data and design biases might affect end results.

Source: https://oecd.ai/dashboards/policy-initiatives/2019-data-policyInitiatives-26831, https://oecd-opsi.org/wp-content/uploads/2021/02/Argentina-National-AI-Strategy.pdf and www.perfil.com/noticias/sociedad/justicia-automatizada-como-funciona-el-software-que-ya-se-usa-en-caba.phtml (Giandana and Morar, 2019[11]).

Laura (Argentina)

Laura is a system developed by the Ministry of Finance of the Province of Cordoba to automate tasks in bureaucratic procedures. An example of its application is the verification of retirement contributions in the Social Security National Administration (ANSES). Normally, this task would be carried out by a public servant in order to start the provincial retirement process. Instead, Laura connects potential beneficiaries with the ANSES database to verify their pension situation, including key information about salaries and social security contributions over the years. It determines which benefits apply and the retirement amount, and allows for quicker detection of possible incompatibilities.

Source: (Gómez Mont et al., 2020[12]).

Improving process quality through robots (Uruguay)

In an effort to simplify and optimise government processes, AGESIC, the digital government agency of Uruguay, conducted a study which projected that implementation of Robotics Process Automation (RPA) could produce a saving of between 40-75% of public servants' time. AGESIC implemented several RPA pilot projects with a maximum execution time of six months in different state agencies, including the Presidency of the Republic and the Ministries of Defence, Industry, Energy and Mining, Social Development and Housing. The results of the pilot demonstrated a significant reduction in the time public servants spent on mundane tasks, as well as an error rate of 0%.

Source: www.gub.uy/agencia-gobierno-electronico-sociedad-informacion-conocimiento/comunicacion/noticias/pilotos-de-rpa-automatizacion-robotica-de-procesos, AGESIC officials.

Tool for the anonymisation of legal documents (Argentina)

Under this GovTech project, Cambá Cooperative, a software bank work co-operative has developed a scalable AI system to anonymise legal documents in Spanish, under the premise of personal data protection, to reduce time in judicial systems and the margin of error.

Source: www.empatia.la/en/proyecto/ia2.

Digital Justice (Colombia)

The Superintendence of Industry and Commerce of Colombia is implementing the Digital Justice project to digitise the jurisdictional functions of the entity in order to maximise efficiency. Among various actions, the project uses AI to optimise the processing of audio recordings of judgments. This process is able to optimise around 16 500 judgment reports per year amounting to approximately 5 TB of data.

Source: https://govcodashboardcovid19.shinyapps.io/ProyectosTD.

Moving beyond the automation of repetitive tasks, cases such as the prediction of judgments in lawsuits against the State in Colombia show that AI can also improve efficiency by providing richer analyses for enhanced decision making (Box 3.3). The PretorIA case, presented in the same box, provides an example of how public institutions can interact with civil society, listen to key concerns about the implementation of AI and making the necessary adaptations to the technology. This case highlights the importance of a vigilant and capable civil society, with capacities to collaborate with the public sector in the co-creation of trustworthy digital public services.

Box 3.3. Using AI to guide and improve decision making

PretorIA (Colombia)

The "Acción de Tutela" (i.e. Constitutional Action for the protection of fundamental rights) is an instrument available to every person in Colombia allowing them to demand immediate protection against any violation of fundamental rights resulting from the act or omission of a public authority or individual. As part of its mission, the Constitutional Court selects key *tutelas* to set legal precedents on the provision of fundamental rights. However, the Court receives more than 2 000 tutelas each day. Reading, analysing and systematising the information contained in one tutela usually takes a person 36 minutes, making it humanly impossible to read them all. PretorIA automatically reads and analyses all plaints, detects and predicts the presence of predefined criteria, and intuitively presents reports and statistics. The system serves as a tool for judges, thereby ensuring there is a human in charge of the decision-making process.

In its initial version, launched in early 2019, the system was as an adaptation of Prometea (see Box 3.2 3.2), but civil society groups warned against its opacity and possible conflicts with Colombian data protection and transparency legislations. After several discussions,[3] the Constitutional Court transformed the project through the adoption of more explainable and transparent technologies. This led to the new version of PretorIA, launched in mid-2020, which incorporates topic modelling technology instead of neural networks. The new version is fully explainable, interpretable and traceable (see (Berryhill et al., 2019[5]) for a discussion on neural networks and how they can limit explainability). The developer, the Laboratory of Innovation and Artificial Intelligence of the Faculty of Law of the University of Buenos Aires (IALAB), claims it is the first predictive AI system to be used in a high court in the world.

Source: https://ialab.com.ar/pretoria, www.datasketch.news/p/la-propuesta-para-automatizar-la-clasificacion-de-tutelas-en-colombia, https://dpicuantico.com/2019/02/04/inteligencia-artificial-en-la-corte-constitucional-colombiana-otra-experiencia-prometea and www.elespectador.com/noticias/judicial/prometea-la-nueva-tecnologia-para-seleccion-de-tutelas-en-la-corte-constitucional-articulo-838034.

SISBEN (Colombia)

The Identification and Classification System of Potential Beneficiaries for Social Programmes (SISBEN) is an algorithm that uses primary data from individual surveys on living conditions (e.g. income information, access to public services) to create reliable and up-to-date socio-economic profiles of Colombian populations, allowing the government to better target social programmes. The system uses a Quantile Gradient Boosting machine learning model to identify potential beneficiaries. Survey data are also compared with other databases to identify inconsistencies. The system grades an individual's "prosperity" on a scale from 0 to 100 and public entities then use this score to determine whether the person can access social benefits.

Questions have been raised about some of the inherent characteristics of SISBEN. In particular, the system could interfere with an individual's right to fair treatment and access to information: "People who are qualified by means of an algorithm must be able to demand an explanation for the qualification they

received, the reasons for any type of scoring they receive due to inconsistencies, including the databases used and ways of replication" (López and Castañeda, 2020, p. 14[13]).

The system's data has also been used for experimentation. For instance, SISBEN data were used to support a data analytics business development programme where private participants created an experimental model to measure and detect frauds in the system.

Source: (Gómez Mont et al., 2020[12]), (López and Castañeda, 2020[13]).

Prediction of judgments in lawsuits against the State (Colombia)

The National Agency for Legal Defence of the State (ANDJE) and Quantil (a private company) developed a mathematical tool to estimate the probability that a litigation process will fail against the nation and recommend an optimal amount of settlement based on the current conditions of the case. The predictive component of the model is based on machine learning techniques, while the reconciliation optimisation part is based on financial and game theory fundamentals.

Source: https://quantil.co/agencia.

Relationships with and services for citizens and businesses

In addition to using AI to address specific topics, governments are also utilising AI applications in a variety of ways to engage with citizens, residents and businesses. One popular type of AI used in the public and private sectors, especially in the exploratory stages, is chatbots. Simple chatbots use a rules-based approach to interact with citizens in order to perform functions such as answer frequently asked questions. More sophisticated versions leverage machine learning to undertake more complex, less concrete interactions, as illustrated by the case of Jaque on the digital platform of the State of Alagoas, Brazil (Box 3.4).

Box 3.4. Using chatbots in the public sector

Jaque and the Services Guide (Brazil)

Jaque is a virtual clerk based on AI designed to guide citizens through "Services Guide", a digital catalogue that centralises all information on public services offered by the State Government of Alagoas. Services Guide provides a step-by-step explanation for each service provided by each public agency. It contains information on the length of processes, the documents needed, the location and operation time of agencies, the availability of services and so on.

Services Guide is a three-layered system that manages and standardises information. The first layer consists of a website that centralises all information for easy access by citizens. The second layer is dedicated to content management and receives information submitted by public agencies on their services. The third layer is an open application programming interface (API) from which Jaque draws information to provide virtual clerk services.

Jaque becomes more efficient through ongoing interactions. The State Government now plans to expand this chatbot service to other websites and even social media, making Jaque an ever-present avatar of the public service.

Source: https://oecd-opsi.org/innovations/services-guide.

AGESIC Virtual Assistant (Uruguay)

The virtual chatbot developed by AGESIC, Uruguay's public digital agency, was developed in 2018 as a pilot project to experiment and gain experience in the development of AI solutions. This Citizen Service chatbot was "trained" on the questions most frequently submitted through service channels. The virtual assistant answers questions and performs actions to solve problems, such as recovering passwords. It currently forms part of the Multichannel Strategy for Citizen Assistance, which seeks to bring the state closer to people by eliminating technological and/or accessibility barriers, and providing comprehensive information on state procedures and services, quality personalised attention, as well as support and guidance to carry out online procedures through multiple service channels.

Source: www.gub.uy/agencia-gobierno-electronico-sociedad-informacion-conocimiento/comunicacion/noticias/primer-chatbot-en-linea-de-agesic and www.gub.uy/agencia-gobierno-electronico-sociedad-informacion-conocimiento/politicas-y-gestion/programas/es-atencion-ciudadania.

AI can also be used to provide simpler and more tailored services for citizens and businesses. For instance, the Commercial Opportunities Map in Argentina and ParaEmpleo in Paraguay employ algorithms to scan multiple data sources and compare them against user needs and characteristics in order to produce better recommendations. AI technologies have also been used by governments to better comprehend the opinions and perspectives of their citizens at scales that were previously unfeasible. This is achieved through the use of Natural Language Processing and clustering techniques to gain valuable insights from vast troves of information (Berryhill et al., 2019[5]). *Querido Diário* in Brazil is a project that flips these roles and allows citizens to gain deeper understanding of the information published by the state in official newspapers. Finally, the Colombian Government created a project to enhance its relationship with farmers by optimising soil analyses and providing tailored recommendations for soil fertilisation. These examples are discussed in Box 3.5.

Box 3.5. Using AI to better respond to citizen needs

Commercial Opportunities Map (Argentina)

The Government of the City of Buenos Aires provides business outlook information to entrepreneurs interested in starting or expanding businesses in the city. The Commercial Opportunities Map asks for two inputs (a geographical area and a business category) and delivers detailed information about the characteristics of the market in each area using four indicators: the opening and closing of businesses, risk level, and population and real estate indicators. The platform works through an algorithm that compiles different sources of data outlining commercial opportunities per neighbourhood, ultimately enabling direct investments to where it is presumed that they will generate more value. Future versions of the platform plan to include prediction models.

Source: (Ortiz Freuler and Iglesias, 2018[14]), www.buenosaires.gob.ar/empresas/planifica-tu-emprendimiento/elegi-tu-local/mapa-de-oportunidades-comerciales.

ParaEmpleo (Paraguay)

ParaEmpleo is a national job placement platform that links labour market supply and demand, speeding up the process of searching for a job and the selection of personnel. Using deep learning algorithms and knowledge graphs, it suggests the best possible matches between candidates and companies. Users provide their skills, qualifications, specialisations and linguistic knowledge, among others, to

create their profiles. The platform analyses which are the most requested jobs and skills and advises users on how to be more competitive in the job market, for instance, by recommending free or paid courses that they can take to improve their chances of being hired. ParaEmpleo has a database of more than 25 000 applicants.

Source: https://paraempleo.com.py and www.iadb.org/es/mejorandovidas/algoritmos-que-te-consiguen-empleo-en-paraguay, (Gómez Mont et al., 2020[12]).

Querido Diário (Brazil)

Querido Diário is an upcoming project that will use AI "to classify, contextualise and expand the information contained in Brazilian official newspapers, making them available on a platform that will allow the viewing of these newspapers in an open and friendly format". The project is financed by Empatía, an initiative of ILDA and the Centro LATAM Digital, and supported by the International Development Research Centre (IDRC) and the Inter-American Development Bank (IDB).

Source: https://empatia.la/en/proyecto/dear-official-gazette.

Public safety and security

Public safety and security is one of the main focus areas for governments exploring the use of AI. It encompasses both physical safety security and cybersecurity, and can cover a broad swath of topics for which governments are responsible including law enforcement, disaster prevention and recovery, and military and national defence. The *State of the Art in the Use of Emerging Technologies in the Public Sector* paper notes, for instance, that "in the field of surveillance, computer vision and natural language processing systems can process large amounts of images, texts and speeches, to detect possible threats to public safety and order in real time" (Ubaldi et al., 2019[3]).

The OECD could find no instances in which LAC governments are actively using AI to support cybersecurity efforts. However, Uruguay does appear to be advancing towards this area in the form of its "aiUTEChallenge" Cybersecurity Strengthening Program, which is exploring ways to apply AI in combination to monitoring, detection and response to incidents, and digital identification, among others. The country expects to make concrete developments in these areas in the near future.[4]

While the use of AI for cybersecurity remains light, there are many use cases concentrated in law enforcement and other efforts related to the criminal justice system. As a broad example, the International Criminal Police Organization (INTERPOL), of which all countries in the scope of this review are members,[5] is using different types of AI systems for law enforcement and has published *Artificial Intelligence and Robotics for Law Enforcement,*[6] which explores the potential of AI for policing and details real-world projects already underway. Predictive AI systems in particular have gained popularity in the region (see the examples in Box 3.6), often among local urban governments. As can be seen in the examples, AI systems in this area may have some utility, but they also often operate in grey areas and introduce ethical dilemmas that governments must fully consider and evaluate. Transparency of uses and processes and explainability of algorithms become key elements to engage stakeholders in detecting risks of unfair treatment and finding alternative solutions. Additionally, as illustrated by the case of Predpol in Uruguay, governments should also consider that using AI may not always be the best solution to a problem and recognize that other technologies can have similar effects at lower costs.

Box 3.6. LAC examples of using AI for law enforcement and criminal justice

Predpol (Uruguay)

At the end of 2013, the Uruguayan government acquired Predpol AI-enabled policing software to predict the potential for crimes in different areas of the country. The system develops detailed and tailored maps highlighting areas where data suggest a high probability that crimes will be committed, therefore allowing for more effective police deployment. It offered predictions based on data collected by the Ministry of the Interior, but doubts remained because of the possibility that historical biases in the criminal system could bias the data against marginalised groups.[7] Knowledge about the model design was not made public, undermining efforts to explain its decisions, although, according to public information, the machine learning algorithm relied on four variables: type of crime, location, date and time. On 2017, the Ministry of Interior carried out an evaluation: half of the police stations in Montevideo employed Predpol, while the other half used a more traditional annual retrospective reporting system based on statistical tools created by the Police's Tactical Information Directorate (DIT). The process found no significant differences between sets of predictions, thus Predpol was discontinued.

Source: (Ortiz Freuler and Iglesias, 2018[14]), www.minterior.gub.uy/images/2017/Noviembre/Cmo-evitar-el-delito-urbano.pdf.

Prisma (Colombia)

The "Recurrence Risk Profile for the Request for Incarceration Measures" (Prisma) is a tool for predicting the risk of criminal recidivism in individuals. The AI system was developed to support prosecutors when requesting preventive detention in jail against someone investigated by the Colombian authorities. It also compiles all information available about the person under investigation: the number of previous arrests (crime and date), ongoing processes in the Accusatory Oral Penal System (SPOA) and judicial proceedings, and previous incarceration events. Similar criminal rating systems are being used around the world with questions raised about their potential for discrimination and bias. For example, civil society organisations and researchers found that similar algorithms used in the United States to forecast the likelihood of future criminal behaviour, "have been written in a way that guarantees black defendants will be inaccurately identified as future criminals more often than their white counterparts".[8] However, researchers also showed that it was possible to address the disparity if the algorithms focus on the fairness of outcomes, rather than on "predictive parity". As such algorithms are proprietary software, it is not always possible to access the source code in order to understand how the decisions are made. Organisations such as the Partnership for AI have recommended that either risk assessment tools should be used or that standards be put in place to mitigate issues related to accuracy, bias, explainability, governance, accountability and other issues.

Source: www.elespectador.com/noticias/judicial/prisma-el-programa-de-la-fiscalia-para-predecir-la-reincidencia-criminal, www.youtube.com/watch?v=wubXNQ1JxPk, www.partnershiponai.org/artificial-intelligence-research-and-ethics-community-calls-for-standards-in-criminal-justice-risk-assessment-tools.

Another security area where AI is increasingly applied globally is surveillance. Facial recognition has been used in a number of cities around the world to help locate suspected criminals and counter terrorism (Berryhill et al., 2019[5]), although the practice can be highly controversial. LAC governments do not appear to make significant use of facial recognition AI systems; however, the practice is growing in the region, as is civil society resistance (Arroyo, 2020[15]). In some LAC countries, experimental usage is underway to use AI to analyse facial imagery along with other video, imagery and audio (e.g. voices) for the detection of criminal activity. The cases of the Command, Control, Communications and Computing Centre (C4) in Bogotá (Colombia) and ECU 911 in Ecuador (Box 3.7) highlight two main challenges governments need

to overcome in order to generate trust in the these systems: establishing the necessary safeguards when processing sensitive personal data (e.g. biometric data) to prevent unfair treatment of historically discriminated groups; and defining clear frameworks for the use of these technologies in order to prevent possible abuses such as the profiling and persecution of political opponents or protesters.

Box 3.7. Detecting criminal activity through video, image and audio recognition

Command, Control, Communications and Computing Centre – C4 (Colombia)

The Command, Control, Communications and Computing Centre (C4) in Bogotá is testing a predictive security system capable of identifying criminal gangs and their behaviour through statistical and trend analysis, and video, image and audio recognition. The system allows investigators to trace criminals by filtering certain characteristics among live and historical data collected through 6 000 video surveillance cameras and voice registers from emergency calls.

Currently, three facial recognition cameras are also being tested, but their success in terms of facial comparison depends mainly on the quality of the database. For this reason, Bogotá's administration is seeking an agreement with the National Registry, Colombia's identification institution, to access biometric data provided by registered individuals for their identification documentation.

Civil society voices have warned that these technologies pose two issues. First, regarding technical development, the system can produce false positives raising the issue of potential discrimination or exclusion of certain populations. Second, institutional frameworks to prevent the system's use in questionable cases (e.g. the identification and harassment of protesters) are weak or absent.

Source: www.elespectador.com/noticias/bogota/el-reto-de-anticipar-delitos-con-tecnologia-en-bogota.

ECU 911 (Ecuador)

The ECU 911 system has a nationwide network of 4 300 surveillance cameras, 16 regional response centres and over 3 000 government employees watching video footage and responding to calls. The system has a twofold mission: tracking criminals and surveilling seismic and volcanic activity. To this end it uses thermal cameras to monitor snow-capped volcanoes, drones capable of night vision, an automated platform for sending video evidence to courts and an AI research lab. ECU 911 also has plans for large-scale use of facial recognition to catch suspects in major cities and airports, with news reports indicating that some cameras in major cities now use facial recognition technology to identify missing people and criminal suspects. Ecuador has experienced criticism over ECU 911, including an investigation by *The New York Times* which found that video recordings are shared with Ecuador's national intelligence agency.

Source: www.ecu911.gob.ec, www.nytimes.com/es/2019/04/24/espanol/america-latina/ecuador-vigilancia-seguridad-china.html.

As can be seen in these examples, LAC governments like other governments around the world must be cautious in exploring the use of AI in this field and should leverage this technology in ways that do not undermine public trust or tread on civil liberties. Governments need to balance the tensions of using AI systems (e.g. those using data harvesting and monitoring) to serve the public interest, with inevitable concerns about "big brother" and risks of infringing on freedoms and rights. Chapter 4 on *Efforts to develop a responsible, trustworthy and human-centric approach*, and the OECD Report *Embracing Innovation in Government: Global Trends 2020 – Public Provider versus Big Brother*[9] (OECD, 2020[16]) provide some guidance and considerations that governments should consider as they explore AI for public safety, security and other purposes.

Regulatory functions

Regulation refers to the diverse set of instruments through which governments set requirements for enterprises and citizens. Regulation includes all laws, formal and informal orders, subordinate rules, administrative formalities and rules issued by non-governmental or self-regulatory bodies to whom governments have delegated regulatory powers (OECD, 2018[17]).[10]

While regulations and other types of rulemaking often target individuals and organisations outside of the public sector, AI provides significant opportunities to increase government capacity to improve the design and delivery of regulations and regulatory enforcement activities (OECD, 2019[18]) (OECD, 2019[19]). For instance:

- Regulators could apply machine learning tools to the vast quantities of data available to them in order to help predict where they should focus their regulatory efforts. Such tools could be used to determine which key areas and enterprises and citizens merit investigation and inspection.
- Machine learning can be used to better predict the outcome of likely litigation, ensuring greater cohesion between the views of the courts and the views of regulators.

Such potential could enable regulators to streamline their operations by allowing them to move resources away from wasteful activities – such as investigating businesses that are likely compliant with the law, or proceeding with litigation that has a good chance of being unsuccessful – towards activities that better achieve their regulatory goals. Box 3.8 discusses three examples of the use of AI to improve public sector regulatory functions, mainly through increased process efficiency.

Box 3.8. Using AI to enhance regulatory capacity

Improved economic competition (Brazil)

The Administrative Council of Economic Defence (Conselho Administrativo de Defesa Econômica, CADE) uses AI to identify competition dysfunctions in critical areas of the market. Under the Ministry of Justice, CADE has developed improved techniques to detect cartel practices in areas such as gas prices.

Source: (OECD, 2018[20]).

Industry and Commerce Superintendency (Colombia)

The Superintendency of Industry and Commerce is the regulatory agency of the Government of Colombia in charge of regulating, among various other topics, industrial property and consumer protection. It currently applies AI as part of two public services:

- *Patent recognition*: AI is employed by the institution to expedite examinations carried out for patent applications. An algorithm trained on historical data of previous patent recognitions is used to recommend the classification and sectorisation of patents in progress.
- *E-commerce scanning*: the institution uses AI to scan e-commerce webpages and identify irregularities that may affect consumer rights.

Source: (Consejería Presidencial para Asuntos Económicos y Transformación Digital, 2020[21]).

KBoot: tracking potential tax evaders on Instagram (Colombia)

Medellin's digital economy has grown in recent years, yet online sales have become a challenge for the local treasury department due to an increase in tax evasion. Initial efforts to identify potential online tax evaders employed manual search and analysis to detect unregistered online stores. However, the

exponential increase in the use of social media for economic activities necessitated a new approach. In partnership with the Government Innovation Lab, the treasury worked with a local start-up to develop a bot that would automatically scrape Instagram profiles and posts for relevant hashtags, keywords and names associated with online sales in Medellin.

The AI bot, KBoot, downloaded relevant data (usernames, numbers of followers, numbers of posts and telephone numbers) to a database and the treasury department identified the individuals behind the profiles. This involved cross-checking names against their own databases and compelling telephone operators in Medellin to provide information on 9 080 users that had provided a contact number. The office identified 2 683 individuals using Instagram to advertise and sell products. Out of those, only 453 were registered with the treasury department, of which 107 were not currently operational. Some 2 230 individuals identified as selling merchandise on Instagram were not registered with the treasury department. The government integrated these businesses into the "Growing is Possible" (Crecer es Posible) programme, an initiative of the Chamber of Commerce designed to incorporate small businesses into the formal economy.

Source: https://oecd-opsi.org/innovations/tracking-potential-tax-evaders-on-instagram.

Healthcare

Beyond its applications for COVID-19 response, AI is used across the healthcare sector in numerous ways, with enormous potential for government in countries that have national health services. AI applications, especially those involving machine learning, can help interpret results and suggest diagnoses, and predict risk factors to help introduce preventative measures (Ubaldi et al., 2019[3]). They can also suggest treatments and help doctors create highly individualised treatment plans. Combined with the knowledge of doctors and other medical experts, AI can lead to better accuracy, higher efficiency and more positive outcomes in the health field (see Box 3.9).

Box 3.9. Using AI in public healthcare

Crecer con Salud – Growing with Health (Argentina)

In Argentina, 30% of women miss important pregnancy check-ups. The government decided to address this issue through the creation of a virtual assistant (bot) that would use Facebook Messenger to accompany women during their pregnancy and after the birth. Crecer con Salud provides personalised information according to the week of gestation and the age of the baby once born. It also sends alerts for pre- and post-natal check-ups. The government selected Facebook Messenger because the platform is used by more than 30 million Argentinians, including 90% of pregnant women in maternity hospitals, according to internal government research.

Source: https://oecd-opsi.org/innovations/crecer-con-salud-virtual-assistant-for-pregnancy-and-early-childhood and www.argentina.gob.ar/salud/crecerconsalud.

AnemiaApp – early detection of anaemia (Peru)

Peru's Ministry of Development and Social Inclusion (Midis) and the Universidad Peruana Cayetano Heredia collaborated on the development of AnemiaApp, an application for quick and timely detection of anaemia in children. Based on a low-cost portable system, this mobile-based app interprets digital images taken of the subject's eye and analyses the characteristics of the membrane covering the outer

surface. The results are then transmitted to an automatic processing service based on neural network algorithms, which determines the haemoglobin level and, thus, the presence or absence of anaemia. This application is used especially in remote areas with low access to high-tech medical equipment.

Source: (Gómez Mont et al., 2020[12]), https://saluddigital.com/en/big-data/peru-renueva-metodos-para-detectar-la-anemia.

Detecting depression, anorexia and other disorders through social networks (Mexico)

Currently, the lack of clear statistics on depression and anorexia is an impediment to the development of public policies; however social networks provide a means of detection. Psycholinguists have identified a clear connection between language and mood or certain mental disorders. Public research scientists in Mexico at the Laboratory of Language Technologies of the National Institute of Astrophysics, Optics and Electronics (INAOE) have developed AI algorithms that can analyse vast amounts of text from social networks in order to identify potential disorders. The project, which is funded by the National Council of Science and Technology (Conacyt), the government entity in charge of promoting scientific and technological innovation, can help inform policy making and potentially provide assistance to those who facing particular challenges. At present, the project is still experimental and there is ongoing discussion about the ethical issues raised by the approach.

Source: https://u-gob.com/con-tecnologias-del-lenguaje-detectan-depresion-anorexia-y-otros-trastornos-en-redes-sociales.

Transportation

One of the most widely publicised applications of AI is autonomous vehicles, such as the self-driving cars being tested by Uber and several major motor companies. While the government certainly has a role to play in regulating and understanding the implications of such vehicles, they seem to present less opportunities for public sector innovation. Beyond such vehicles, governments around the world and in LAC countries are using AI to transform the ways in which they predict and manage traffic flows (Box 3.10). While all of the overarching themes that the OECD has observed globally also appear to be areas of focus for LAC governments, transportation perhaps had the weakest representation in terms of observed initiatives.

Box 3.10. Use of AI for efficient transportation logistics

AI facilitates passenger flow at the Metro CDMX (Mexico)

In 2015, Mexico City's now Secretary of Education, Science, Technology and Innovation (SECTEI) and the Metro transportation system jointly organised a technological innovation contest. The winning group of PhD students from the National Autonomous University of Mexico (UNAM) worked with Line 1 metro staff to analyse large datasets about passenger flow dynamics using AI. They came up with a strategy based on machine learning computer simulations to reduce train boarding and alighting times. The solution was expanded to other 14 metro stations, reducing delays and increasing passengers flow efficiency by 10-15%.

Source: (Martinho-Truswell et al., 2018[22]).

Rural roads and satellite images (Colombia)

The Ministry of Transportation and the National Planning Department are developing a project that uses machine learning algorithms to detect and identify tertiary or rural roads from satellite images. The approach used is more time and resource efficient than traditional identification methods. The project also marked the launch of the Integral Strategy for the Tertiary Road Network and is complemented by a prioritisation instrument – the CONPES 3857 "Policy Guidelines for the Management of the Tertiary Network". The project seeks to identify tertiary roads across 94% of the country's departments.

Source: https://oecd.ai/dashboards/policy-initiatives/2019-data-policyInitiatives-26727 and https://dapre.presidencia.gov.co/dapre/SiteAssets/documentos/07-10-2020%20Proyectos%20de%20TD%2C%20Tramites%20y%20servicios%20para%20el%20ciudadano_Baja.pdf

Sustainable Development Goals (SDGs)

The adoption of the 2030 Agenda for Sustainable Development saw nations worldwide commit to a set of universal, integrated and transformational goals and targets, known as the Sustainable Development Goals (SDGs). The 17 goals and 169 targets represent a collective responsibility and a shared vision for the world. Governments are working to make progress to reach them by 2030, with many exploring the potential of AI to help achieve this objective.

Research by McKinsey Global Institute has identified a non-comprehensive set of about 160 cases that demonstrate how AI can be used for the "non-commercial benefit of society" (MGI, 2018[23]). Of these, 135 touch on one of the 17 SDGs. These cases often take the form of private sector initiatives, or partnerships among the private sector, public sector and/or civil society. The ECHO initiative (Box 3.11), led by the United Nations Population Fund in partnership with local governments in Colombia, illustrates how AI can be used to support the SDGs at large.

Box 3.11. ECHO (Colombia)

ECHO is an AI-powered tool used to promote participatory planning and citizen awareness of the SDGs through a guided public debate in real time. The system translates citizens' issues, concerns and perceptions into the language of the SDGs, enabling people to visualise how the goals relate to their concerns, and allowing them to participate in more informed discussions on public policy priorities. The result allows local governments to monitor citizen perception and effective participation.

ECHO uses the voice of citizens in guided public discussions as input, and converts them to text using Automatic Speech Recognition. The discussions are based on controlled interviews with staff highly familiar with the content of Agenda 2030. The tool then uses machine learning to link the text with the corresponding SDG goals. The resulting information is then validated by staff in order to produce a conclusive analysis. The project has also implemented a monitoring and evaluation strategy through interviews and focus groups with beneficiaries, enumerators and feedback from local authorities. This approach uses observations to determine actual understanding and learning of the SDGs and to assess the impact of the activities.

ECHO benefits two main groups: those who are unaware of 2030 Agenda and participate only rarely in local decision making, and local authorities who wish to make evidence-based decisions on issues of importance to their communities based on first-hand information.

As of 2020, the project had been implemented in Cartagena, Medellin and Monteria, collecting more than 13 000 testimonials and prioritising key concerns related to the SDGs according to criteria such as neighbourhood, gender or age. The project also made available the results collected during 2019 for use in public policy planning by the new local governments of Cartagena and Medellin in 2020.

Source: United Nations Population Fund (UNFPA) officials, www.efe.com/efe/espana/destacada/echo-una-herramienta-para-amplificar-la-voz-de-gente-y-traducirla-a-los-ods/10011-4111225 and https://whatevercamps.github.io/echo_vis.

With regard to support for individual focus areas, LAC countries are using AI as a tool to address air pollution, a common threat in a several cities and regions (see Box 3.12 for examples). Such efforts are related to SDGs 3 (good health and well-being) and 11 (sustainable cities and communities), and indicate solid progress in working towards the 2030 goals, as well as potential opportunities to explore the use of AI in supporting other SDGs. Peru's draft national AI strategy includes a specific objective to develop AI systems aligned with the SDGs, although these are not yet in place.

Box 3.12. Experimenting with AI to measure and predict air pollution in the southern cone

Air quality predictive model (Chile)

This predictive model is the product of a joint effort between the GobLab of the Adolfo Ibáñez University and the State's Superintendency of the Environment (SMA), and is designed to predict air quality in the cities of Concón, Quintero and Puchuncaví, a region that suffers constantly from high levels of industrial pollution. This public-private partnership aims to strengthen monitoring capacities for the ongoing Environmental Decontamination Plan and to help the SMA take preventive measures such as public alerts for citizens and other public bodies.

Source: https://empatia.la/proyecto/ia-para-el-cuidado-de-la-salud, www.revistaenergia.com/21601, www.sustentable.cl/superintendencia-del-medio-ambiente-y-uai-obtienen-fondo-para-desarrollar-modelo-de-inteligencia-artificial and www.revistaei.cl/2020/08/17/sma-y-universidad-adolfo-ibanez-obtienen-fondo-para-desarrollar-modelo-de-inteligencia-ambiental.

Satellite-based air quality monitoring (Argentina)

This project seeks to map the daily and monthly surface concentration of small particulate matter (e.g. dust, ash and metallic particles) across Argentina, in order to determine the associated risk of diseases to which the population may be exposed. The project will combine satellite information in a Random Forest model and provide it to researchers and environmental authorities. The project has been developed by a consortium consisting of the National Commission of Space Activities (CONAE), the Institute of High Space Studies "Mario Gulich" (IG, CONAE/UNC) and the Ministry of Environment and Sustainable Development (MAyDS).

Source: https://ig.conae.unc.edu.ar/sistema-de-apoyo-para-la-toma-de-decisiones-en-la-gestion-de-la-calidad-del-aire and www.empatia.la/proyecto/conae.

Public integrity and accountability

One of the most dynamic focus areas in LAC is the application of digital technologies to improve transparency and accountability over the use of public resources. Governments are using AI as a tool to determine patterns of action of public and private actors, detect risks and vulnerabilities in public contracting, and cross-reference sources of information for better auditing and public transparency.

Although this category could be considered an expression of improving government efficiency, the strength of emphasis in the LAC region demonstrates the importance of the fight against corruption in the region.

Corruption and the mismanagement of public resources is a top concern in LAC countries, with perceptions of corruption on average higher in Latin America than in most regions (OECD, 2018[24]). According to the *Global Corruption Barometer for Latin America and the Caribbean 2019*, 65% of people in Latin America and the Caribbean think their government is run by and for a few private interests.[11] This contributes to an overall lack of trust in the government. The share of the LAC population having little or no trust at all in governments reached 75% in 2017, 20 percentage points higher than in 2010. The most crucial determinant to tackle this issue is strengthening public integrity (OECD, 2018[24]).

In line with the OECD Recommendation on Public Integrity,[12] the use cases presented in Box 3.13 address different areas of opportunity to improve public integrity in the region while also increasing the efficiency of public resources.

Box 3.13. Using AI to increase public integrity and make better use of public resources

Malha Fina de Convênios (Brazil)

Federal transfers between Brazilian departments were worth around USD 300 billion equivalent between 2008 and 2018. After the negotiation and execution phases, each transfer had to undergo an accountability phase before finalisation. If this action is not performed, the agreement becomes a liability. However, the effort required for accountability analysis was much higher than the available capacity of the transferring agencies. By 2018, the average duration of the accountability phase exceeded 2.5 years. Such bottlenecks resulted in more than 15 000 transfer agreements pending analysis, representing almost USD 5 billion equivalent.

In order to reduce the time and resources spent during the accountability phase, the Brazilian Audit Office (Controladoria-Geral da União, CGU) created a predictive model to grade each agreement according to its associated risk. Malha Fina de Convênios uses a machine learning algorithm based on the characteristics of over 61 000 agreements effected between September 2008 and December 2017. The methodology also combines alerts generated during audit trails in search of predefined patterns indicating irregularities. If the risk grade does not surpass a previously defined threshold and certain other characteristics are met, the granting entity is allowed to finalise the accountability phase of each agreement. This allows granting entities to conclude this phase in less time using less resources.

By 2018, more than 4 000 findings had been shared with federal managers. These were categorised either as (1) conflict of interest, (2) non-compliance with standard, or (3) failure in financial execution. Some 3 044 agreements were flagged and more than 2 000 covenants were approved by the machine. Overall, 15 300 covenants were classified and prioritised by risk.

Source: Government of Brazil Officials, https://bit.ly/3JzftS4, www.opengovpartnership.org/members/brazil/commitments/BR0019 and https://bit.ly/3u6e8fa.

Better monitoring of public procurement (Brazil)

The Court of Accounts of the Union (Tribunal de Contas da União, TCU) in Brazil uses AI to better analyse the procurement processes of the federal administration. Based on the information published on Comprasnet, the public procurement portal, the system analyses the costs of tenders, compares the information with other databases, identifies risks and send alerts to the auditors.

Source: (OECD, 2018[20]).

AI to detect fraudulent taxpayer operations (Mexico)

The Tax Administration Service of the Ministry of Finance and Public Credit in Mexico has tested AI algorithms that automatically identify pattern disruptions in their registries, allowing them to detect companies conducting fraudulent operations. During a six-month pilot, 1 200 fraudulent companies were detected, and 3 500 fraudulent transactions identified. Without the use of these algorithms, the analyses would have taken an estimated 18 months of human work.

Source: (Martinho-Truswell et al., 2018[22])

Océano (Colombia)

The Office of the Comptroller General of Colombia has created a platform to determine relationships between contracting parties at the national level, and analyse them to detect possible cases of corruption. The platform is fed data from public information sources such as national, territorial and Capital District contracting processes, fiscal officials, chambers of commerce, industry data and commerce, and information on taxpayers among others. The platform detects the intervention of "business meshes" or networks, high concentrations of procurement to common bidders, the granting of projects to sanctioned companies, and the use of business records belonging to deceased persons. Colombian officials are incorporating AI to allow for automating debugging of the platform to minimise errors and technical issues.

Source: https://bit.ly/3pyhq9K, www.wradio.com.co/noticias/actualidad/con-mega-base-de-datos-contralor-ira-tras-corrupcion-en-contratacion/20181212/nota/3836803.aspx and www.economiacolombiana.co/desarrollo-futuro/oceano-tecnologia-contra-la-corrupcion-405.

Education

A particular focus area for AI in the LAC region is education – especially preventing school dropouts. Although this issue relates to SDG 4 (quality education), the level of attention at the regional level makes it a trend worthy of a separate discussion. Education was also highlighted as a key theme at the AI Latin America SumMIT, where the participants agreed that AI could become a catalyst for change in the educational system. AI has the potential to modify ways of teaching and contribute to better follow-up of students through more personalised learning processes (Anllo et al., 2021). This growing interest in applying AI to education is directly linked to the issue of school dropouts. Only 60% of students complete secondary education, although it is compulsory in most countries of the region.[13] Additionally, 36% of young women who drop out of school do so due to pregnancy or maternal care, while economic reasons tend to be the main cause of school dropout among young men.

In order to address this issue, (Josephson, Francis and Jayaram, 2018[25]) recommend the use of early warning information systems in programmes and schools to identify risk situations in a timely manner, and to enable targeted and relevant interventions. Most of the use cases presented in Box 3.14 are aligned with this recommendation, specifically the use of AI to help prioritise at-risk children who may need special assistance or guidance. However, such profiling activities are not without risk. One of the first public sector applications of AI in the LAC region took the form of a system to predict teenage pregnancy and school dropout in the province of Salta (Argentina); however, concerns were raised about the possible reproduction of bias and the existence of unfair or discriminatory treatment. Considering ethical standards and principles throughout the development life cycle of an AI system is therefore crucial to delivering trustworthy, inclusive and safe AI systems. In addition, this case shows that diverse and multi-disciplinary development teams can deliver more informed, effective and tailored solutions. Other examples in Box 3.14 relate to upskilling and increasing the efficiency of public education processes.

Box 3.14. Using AI to improve education and prevent school dropout

Predicting teenage pregnancy and school dropout (Argentina)

In Argentina, the Government of the Province of Salta implemented a system to predict teenage pregnancy and school dropout using machine learning algorithms trained on data collected in low-income districts of the city of Salta between 2016 and 2017. The variables included teenagers' personal information (age, ethnicity, country of origin, etc.), environment (number of people with whom they lived, availability of hot water, etc.) and if they were or had been pregnant. In 2018, the model assigned a school dropout probability of more than 70% to 418 children and adolescents, and identified 250 adolescent women with a +70% probability of pregnancy. This led the provincial government to deliver a family-strengthening scheme to develop human capabilities. While the underlying idea was to strengthen perceptions of the importance of education, the system sparked criticism from scholars and activists, in particular relating to the following elements:

- In terms of *explainability and legitimacy*, although the inputs (in this case, a private dataset) and the outputs of the model were knowable, it was not possible for the people affected to learn how or why the system arrived at a particular output due to the black box nature of the algorithm. Thus, affected populations are asked to trust an opaque system.
- Researchers also highlighted three problems within the system: the *algorithm overestimated effectiveness* due to the reuse of the training set as evaluation data (the government later stated that they had changed the evaluation datasets); *training data were biased* since they were limited to the vulnerable population sectors; and the *data were inadequate* to answer the initial question because the factors that have previously led to a pregnancy will not necessarily be the same that lead to pregnancies in the future, as there are other shifting variables involved.
- Regarding the *core concept*, it was noted that the context of structural social inequality that influences the predicted outcomes was not fully considered.

Source: (World Wide Web Foundation, 2018[26]), https://bit.ly/363apqX, https://bit.ly/3JgBNQt and https://liaa.dc.uba.ar/es/sobre-la-prediccion-automatica-de-embarazos-adolescentes.

AI systems to prevent school desertion under development (Chile, Mexico and Uruguay)

In addition to the above example from Argentina, a number of additional AI systems appear to be planned or under development in the region.

- *Chile*: the Ministry of Family and Social Development is developing an early warning system for potential school dropouts for boys and girls.
- *Uruguay*: AGESIC, the government's digital agency, is developing a predictive system to prevent school dropout. The pilot project will be developed with the fAIr LAC initiative of the Inter-American Development Bank (IABD).
- *Mexico*: the Government of the State of Jalisco and the *Tecnológico de Monterrey* University are designing a system to profile students by identifying, through a systemic approach, the factors that have the greatest impact on school dropout. With the help of an AI, the available information will then be analysed to detect patterns associated with the previously defined profiles and design better targeted strategies or programmes.

Source: Política Nacional de Inteligencia Artificial (Borrador/consulta pública) (Chile), https://fairlac.iadb.org/es/piloto/desercion-escolar-uruguay, https://fairlac.iadb.org/es/piloto/abandono-escolar-jalisco.

Future Up (Costa Rica)

Future Up is a pilot skills and training platform that seeks to use AI to provide skill development suggestions to participants, based on their abilities, interests and experiences. The system helps users to understand the skills they should focus and it flags possible financing programmes in case an investment is required.

Source: https://fairlac.iadb.org/es/piloto/future-up.

Assignment of students to educational institutions (Ecuador)

The Inter-American Development Bank (IDB) is working on a pilot project that seeks to develop a platform to centralise student assignment. The platform will provide information on the available educational offers, and allow families to select their preferences from a prioritised list. The assignment will be made through an algorithm operating under prioritised criteria defined by the public authority, assigning vacancies randomly if demand exceeds supply.

Source: https://fairlac.iadb.org/es/piloto/asignacion-estudiantes-instituciones-educacionales.

All of these use cases demonstrate growing interest among LAC governments in exploring the potential of AI in the public sector. As is common with other regions and countries around the world, many of the current uses uncovered represent early-stage pilots or implemented AI systems that tend to use simple but proven techniques. Several of them, though, demonstrate a growing level of sophistication in terms of techniques and machine learning algorithms. This is likely to continue as a number of LAC governments seek to achieve the goals laid out in their national AI strategies, while others work to develop their own. This growing desire to harness the opportunities presented by AI and the increasing sophistication in terms of what LAC governments seek to achieve with the technology also bring with it a number of challenges to overcome and responsibilities to meet. As can be seen in these examples, some LAC governments are already encountering ethical dilemmas and the civil society backlash that can occur as new approaches are pursued. The OECD promotes public sector experimentation and the adoption of AI when it is done in a trustworthy and ethical manner, and with the right investments and enablers in place needed to achieve successful, sustainable results. The next chapter provides guidance on how LAC governments can achieve this, and the extent to which such enablers are already in place in the region.

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Notes

[1] The OECD OPSI report on *Innovative Responses to the COVID-19 Crisis*, which forms part of the Embracing Innovation in Government: Global Trends 2020 report series, provides an in-depth discussion on this topic. See https://oe.cd/c19-innovation.

[2] The OECD report *Integrity for Good Governance in Latin America and the Caribbean* found that Latin America is perceived to have a higher level of corruption than most regions (OECD, 2018[24]). Moreover, only 60% of students complete their studies in the region, even though secondary education is compulsory in most LAC countries (CAF, 2018[27]).

[3] https://web.karisma.org.co/como-implementar-inteligencia-artificial-en-la-corte-constitucional-la-pregunta-que-nos-monto-en-una-colaboracion-academia-sociedad-civil-y-la-propia-corte.

[4] See www.gub.uy/agencia-gobierno-electronico-sociedad-informacion-conocimiento/comunicacion/noticias/inteligencia-artificial-ciberseguridad for more information.

[5] www.interpol.int/en/Who-we-are/Member-countries.

[6] www.unicri.it/news/article/Artificial_Intelligence_Robotics_Report.

[7] For example, in New York City (US), over a period of three years (2015-2018), the city police arrested low-income and black people on marijuana-related charges at a rate eight times higher than that of whites, while studies show that marijuana use is equal across all racial groups (www.nytimes.com/2018/05/14/opinion/stop-frisk-marijuana-nyc.html).

[8] www.propublica.org/article/bias-in-criminal-risk-scores-is-mathematically-inevitable-researchers-say.

[9] https://trends.oecd-opsi.org/trend-reports/public-provider-versus-big-brother.

[10] The OECD Public Governance Directorate and its Regulatory Policy Division work to help governments achieve their missions through the use of regulations, laws and other instruments to deliver better social and economic outcomes and enhance the life of citizens and businesses. Their work can be found at http://oecd.org/gov/regulatory-policy.

[11] www.transparency.org/en/news/political-integrity-lacking-in-latin-america-and-the-caribbean-especially-a.

[12] www.oecd.org/gov/ethics/recommendation-public-integrity.

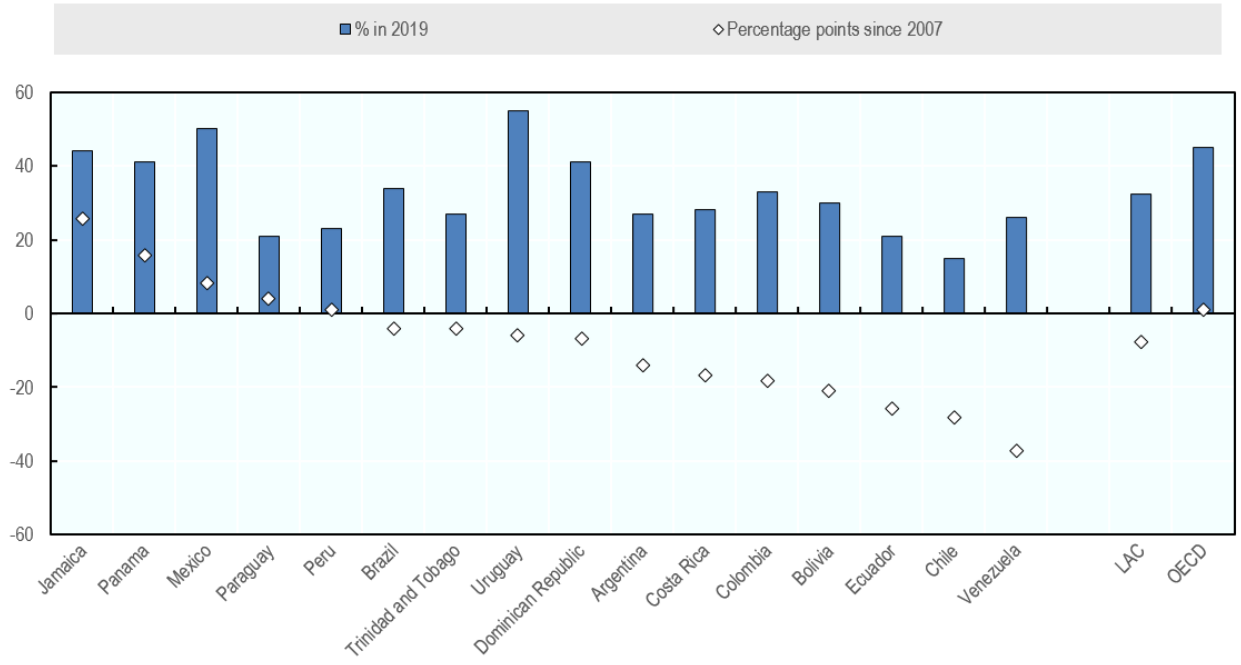
[13] www.caf.com/es/conocimiento/visiones/2018/08/el-alto-costo-del-abandono-escolar-en-america-latina.

4 Efforts to develop a responsible, trustworthy and human-centric approach

As is evident from the use cases presented in Chapter 3, there is significant potential for AI applications in the public sector across the LAC region. However, the application of AI also raises many challenges and has implications that LAC government leaders and public servants need to consider when determining whether and how the technology can help them address problems and achieve their objectives. This chapter explored how LAC governments are building principles and taking actions for ensuring that they take a responsible, trustworthy and human-centric approach to AI.

Low and often declining levels of trust in LAC governments (see Figure 4.1) demonstrate that LAC governments must take a strategic and responsible approach to AI in the public sector. This approach must build confidence among the public that AI is being used in a trustworthy, ethical and fair way, and that the needs and concerns of citizens are at the heart of government decisions and actions with regard to AI.

Figure 4.1. Trust in government is declining in many LAC countries, often from a low starting point



Note: Data refer to the percentage of people who answered "yes" to the question "Do you have confidence in your national government". Data for Barbados are not available, data for Trinidad and Tobago are for 2017 rather than 2019, and data for Jamaica and Trinidad and Tobago are for 2006 rather than 2007.
Source: Gallup World Poll.

In order to achieve this, LAC governments must develop a responsible, trustworthy and human-centric approach to designing and implementing AI, one that identifies trade-offs, mitigates risk and bias, and ensures open and accountable processes and actions. Governments will also need to bring together multi-disciplinary and diverse teams to help with such determinations and to promote the development of public sector AI initiatives and projects that are both effective and ethical. Finally, a key aspect for addressing these and other considerations is for LAC countries to gain an understanding of the needs of their people and to ensure a focus on users and individuals who may be affected by AI systems throughout their life cycle.[1]

This chapter explores these issues in the LAC regional context with the aim of helping government leaders and public servants to maximise the benefits of AI while mitigating and minimise potential risks. The overall topics in this chapter are present in Figure 4.2.

Figure 4.2. Issues discussed in Chapter 4

Data ethics

Most modern AI systems are built on a foundation of data. However, the availability, quality, integrity and relevance of data are not sufficient to ensure the fairness and inclusiveness of policies and decisions, or to reinforce their legitimacy and public trust. Consistent alignment and adherence to shared ethical values and principles for the management and use of data are essential to: 1) increase openness and transparency; 2) incentivise public engagement and ensure trust in policy making, public value creation, service design and delivery; and 3) balance the needs to provide timely and trustworthy data (OECD, 2020[1]). To help countries think through the considerations around the management and use of data, the OECD has developed the *Good Practice Principles for Data Ethics in the Public Sector* (Box 4.1). Since data are foundational for AI, data ethics, by extension, are essential for the trustworthy design and implementation of AI. The forthcoming review *Going Digital: The State of Digital Government in Latin America* will provide a broader discussion of data ethics in LAC countries. Accordingly, this section focuses more specifically on aspects of trustworthy and ethical AI.

Box 4.1. OECD Good Practice Principles for Data Ethics in the Public Sector

Governments need to be prepared to handle and address issues and concerns associated with data corruption; biases in data generation, selection and use; data misuse and abuse; and unexpected negative outcomes derived from data use increase. The OECD Digital Government and Data Unit and its Working Party of Senior Digital Government Officials (E-leaders) have finalised guiding principles to support the ethical use of data in digital government projects, products and services to ensure they are worthy of citizens' trust. The principles are as follows:

- Manage data with integrity.
- Be aware of and observe relevant government-wide arrangements for trustworthy data access, sharing and use.
- Incorporate data ethical considerations into governmental, organisational and public sector decision-making processes.

- Monitor and retain control over data inputs, in particular those used to inform the development and training of AI systems, and adopt a risk-based approach to the automation of decisions.
- Be specific about the purpose of data use, especially in the case of personal data.
- Define boundaries for data access, sharing and use.
- Be clear, inclusive and open.
- Publish open data and source code.
- Broaden individuals' and collectives' control over their data.
- Be accountable and proactive in managing risks.

Source: (OECD, 2021[2]).

Trustworthy AI and alignment with the OECD AI Principles

Ensuring trustworthy and ethical practices are in place is critical because the application of AI involves governments implementing AI systems with various degrees of autonomy. Ethical decisions regarding citizens' well-being must be at the forefront of governments' efforts to explore and adopt this technology, if they are to realise the potential opportunities and efficiencies of AI in the public sector. Trust in government institutions is contingent on their ability to be competent and effective in delivering on their mandates, while operating consistently on the basis of a set of values that reflect citizens' expectations of integrity and fairness (OECD, 2017[3]).

The use of AI to support public administrations should be framed by strong ethical and transparency requirements, in order to complement the relevant regulations in place (e.g. in terms of data protection and privacy) and to avoid doubt regarding possible biased results and other issues arising from opaque policy procedures and AI usages. The OECD Digital Economy Policy Division[2] in the Science Technology and Innovation Directorate has developed the OECD AI Principles, which include the development of a reference AI system life cycle (OECD, 2019[4]). Since 2019, the Digital Economy Policy Committee has been working to implement the OECD AI Principles in a manner consistent with its mandate from the OECD Council. The Committee has also launched the OECD.AI Policy Observatory and engaged a large OECD AI Network of Experts to analyse and develop good practices on the implementation of the OECD AI Principles.

This section of the report leverages the OECD AI Principles to assess how LAC countries are approaching trust, fairness and accountability for the development and use of AI systems. It examines the mechanisms that exist to address such concerns along the AI system life cycle. Accordingly, the analysis considers how countries respond to the ethical questions posed by the design and application of AI and associated algorithms.

Many national governments have assessed the ethical concerns raised by AI systems and applications, notably related to inclusion, human rights, privacy, fairness, transparency and explainability, accountability, and safety and security. Several countries around the world are signatories to international AI guiding principles. As touched on in the Introduction, 46 countries have adhered to the OECD AI Principles (Box 4.2), including seven LAC countries. Recently, the G20 adopted the "G20 AI Principles",[3] which are drawn directly from the OECD AI Principles. Three LAC countries – Argentina, Brazil and Mexico – have committed to these principles by virtue of their participation in the G20. Some countries have also designed their own country-specific principles. Adhering to or otherwise articulating clear principles for AI represents a positive step for international co-operation, and for bringing about an environment and culture aligned

with the societal goals and values articulated in the Principles. Table 4.1 provides an overview of LAC government adherence to the OECD and G20 AI Principles and indicates where own country-specific principles have been put in place.

Box 4.2. OECD AI Principles

The OECD Principles on Artificial Intelligence support AI that is innovative and trustworthy, and which respects human rights and democratic values. OECD member countries adopted the Principles on 22 May 2019 as part of the OECD Council Recommendation on Artificial Intelligence (OECD, 2019[5]). The Principles set standards for AI that are sufficiently practical and flexible to stand the test of time in a rapidly evolving field. They complement existing OECD standards in areas such as privacy, digital security risk management and responsible business conduct.

The Recommendation identifies **five complementary, values-based principles** for the responsible stewardship of trustworthy AI:

- 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.
- Organisations and individuals developing, deploying or operating AI systems should be held accountable for their proper functioning in line with the above principles.

Consistent with these value-based principles, the OECD also provides **five recommendations to governments**:

- Facilitate public and private investment in research and development to spur innovation in trustworthy AI.
- Foster accessible AI ecosystems with digital infrastructure and technologies and mechanisms to share data and knowledge.
- Ensure a policy environment that will open the way to deployment of trustworthy AI systems.
- Empower people with the skills for AI and support workers for a fair transition.
- Co-operate across borders and sectors to progress on responsible stewardship of trustworthy AI.

In early 2020, the OECD convened a multi-stakeholder and multi-disciplinary OECD Network of Experts in AI (ONE AI) to develop practical guidance to implement the AI Principles (OECD, 2019[5]). The working group on Policies for AI has developed a report on the *State of Implementation of the OECD AI Principles: Insights from National AI Policies* (OECD, 2021[6]). The report provides good practices and lessons learned regarding implementation of the five recommendations to policy makers contained in the OECD AI Principles.

Source: https://oecd.ai and https://oecd.ai/network-of-experts.

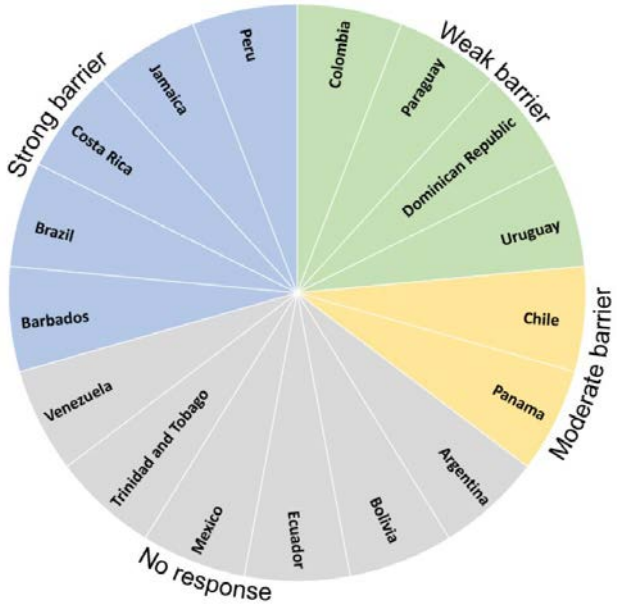
Table 4.1. LAC country establishment and adherence to the AI principles

	OECD AI Principles	G20 AI Principles	Country-specific principles
Argentina	✓	✓	
Barbados			
Brazil	✓	✓	
Bolivia			
Chile	✓		✓
Dominican Republic			
Colombia	✓		✓
Costa Rica	✓		
Ecuador			
Jamaica			
Mexico	✓	✓	✓
Panama			
Paraguay			
Peru	✓		
Trinidad and Tobago			
Uruguay			✓
Venezuela			

Source: OECD LAC Digital Government Agency Survey (2020); https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0449; https://oecd.ai.

Committing or adhering to ethical principles is likely to be a necessary but not necessarily sufficient condition for trustworthy deployment of AI. If principles are to have maximum impact on behaviour, they must be actionable and embedded in the processes and institutions that shape decision making within governments. The OECD has found that the absence of common standards and frameworks are the obstacles most often cited by digital government officials in their pursuit of AI and other emerging technologies, largely due to growing concerns around fairness, transparency, data protection, privacy and accountability/legal liability (Ubaldi et al., 2019[7]). Out of 11 respondents to the OECD's digital government agency survey, seven LAC countries stated that insufficient guidance on the ethical use of data represents a strong or moderate barrier for data-enabled policy making, service design and delivery, and organisational management (Figure 4.3). Among these countries were a number that have adhered to the OECD principles and/or have created their own country-specific principles. While the responses focus on the ethical use of data, they can serve as a proxy measure for AI ethics. The use cases discussed in the previous chapter also show that public data and AI developments have encountered ethical challenges that could be mitigated or clarified if ethical guidance, standards and/or frameworks were in place to help actualise high-level principles. The following sections review the main instruments and initiatives that contribute to developing responsible, trustworthy and human-centric approaches to AI in the public sector.

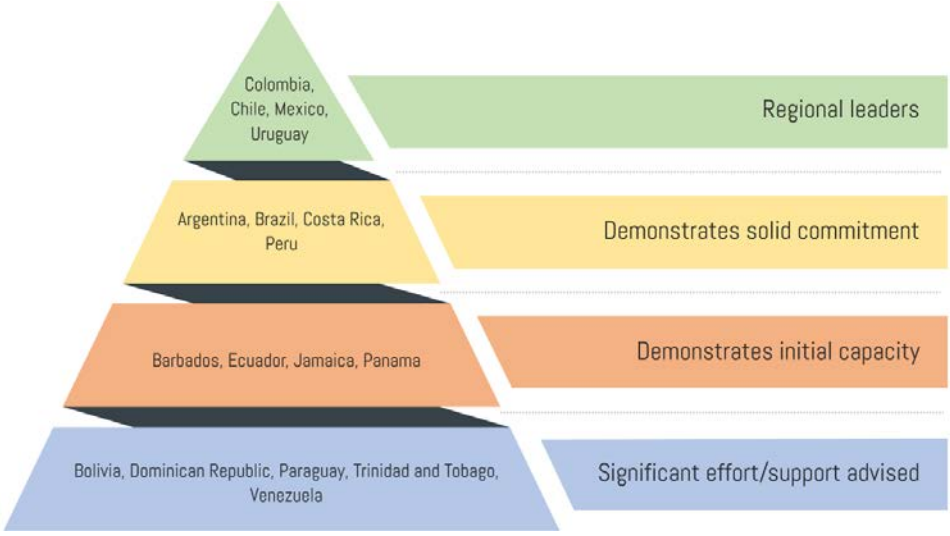
Figure 4.3. Insufficient guidance on the ethical use of data as a barrier to improved policy making, service design and delivery and organisational management



Source: OECD LAC Digital Government Agency Survey (2020).

LAC country frameworks and mechanisms for trustworthy and ethical AI in the public sector

Figure 4.4. LAC region capacities for establishing legal and ethical frameworks for AI



Note: All countries that adhere to the OECD AI Principles have been categorised as "demonstrates solid commitment" or higher.

As shown in Table 4.1, of the 17 LAC governments featured in this study, five have developed or are developing their own country-specific principles to guide their exploration and use of AI. All of these efforts have been initiated in the last few years, indicating a recent and accelerating focus specifically on ensuring trustworthy and ethical AI policies and systems. A brief overview of evolution in this area is as follows:[4]

- In 2018, Mexico published 14 principles for the development and use of AI, becoming the first country in the region to advance in setting frameworks for this technology with a focus on the public sector.
- In 2019, Uruguay included nine general principles as part of their AI strategy to guide the digital transformation of the government and provide a framework for the use of AI in the public sphere.
- In 2020, both Colombia and Chile released consultation draft principles documents to guide their AI efforts. The former published the Ethical Framework for AI, a product of commitments included in its 2019 AI strategy, and is currently organising expert roundtables to receive feedback in order to develop a final version.[5] Chile also includes an Ethics sub-axis as part of its AI policy.
- In its 2021 national AI strategy, Brazil committed to developing ethical principles for the design and implementation of AI systems. While ethics was a strong focus in the Brazilian AI strategy, the scope and content of its country-specific ethical principles have not yet been released.

In addition to AI-specific principles, Barbados, Brazil, Jamaica, Panama and Peru have issued recent data protection legislation that better align the countries with the OECD AI Principles due to the inclusion of transparency, explainability, and fairness rights and principles with regard to data collection and processing. Brazil's data protection legislation additionally includes principles related to safety and accountability. Such rules can contribute to trustworthy and ethical design and use of AI systems, and represent a step forward in building a legal and regulatory framework to support and guide AI progress. Such updates have been cited by a number of LAC countries as essential in the light of new technologies. For instance, in Panama, there was a consensus among all public sector organisations interviewed during an OECD fact-finding mission in November 2018 that the legal and regulatory framework needed updating to reflect technologies such as AI and data analytics (OECD, 2019[8]).

As seen in Annex B,[6] for the most part, LAC countries developing their own principles address the same topics as the OECD Principles, although in more detail and with greater precision in order to emphasise local priorities and country-specific context. For example, when considering how countries are aligned with the first OECD Principle on "inclusive growth, sustainable development and well-being", they generally cover inclusion, social benefit and general interest, but also stress particular issues. Uruguay states that AI technology development should bear as purpose complementing and adding value to human activities; Mexico believes that measuring impact is fundamental to ensuring AI systems fulfil the purposes for which they were conceived; Peru envisions the creation of a dedicated unit to monitor and promote the ethical use of AI in the country; Colombia incorporates a specific measure to protect the rights of children and adolescents; and Chile's approach integrates environmental sustainability (comprising sustainable growth and environmental protection), multi-disciplinarity as a default approach to AI, and the global reach and impact of AI systems.

When considering data protection legislation from countries without dedicated AI principles, there is strong alignment with OECD Principle 2 (human-centred values and fairness) and Principle 3 (transparency and explainability). In line with recent developments in other parts of the world (e.g. the General Data Protection Regulation in Europe), the latest data protection laws in LAC include safeguards against bias and unfairness, and promote the explainability of automated decision-making. This is the case for Barbados, Brazil, Ecuador, Jamaica, Panama and Peru. However, these data protection laws are not specific to AI and neglect certain aspects that more nuanced and targeted instruments such as AI ethical frameworks and principles seek to address. For instance, these laws generally do not account for the options open to individuals to contest or appeal decisions based on automated processes, nor do they consider how AI developments could support or hinder the achievement of societal goals. In addition, since they are focused on data protection, they are limited in the extent to which they consider the downstream uses of data, such as for machine learning algorithms. There may be opportunities to review current data protection laws in light of the growing number of ways that data can be used for purposes such as algorithms and automated

decision making. This implies that current legislation may need to be updated or supplemented (e.g. with AI-specific frameworks) in order to capture the new opportunities and challenges posed by AI technologies.

Colombia's Ethical Framework for AI serves as a good example in the region (Box 4.3), as it explicitly touches on all areas included in the OECD AI Principles, to which the country has adhered, while also grounding the framework in Colombia's own context and culture. Outside the LAC region, Spain's Charter on Digital Rights serves as a strong human-centred mechanism that in a manner relevant and appropriate for the country, seeks to "transfer the rights that we already have in the analogue world to the digital world and to be able to add some new ones, such as those related to the impact of artificial intelligence" (Nadal, 2020[9]) (Box 4.4). While extending beyond Artificial Intelligence, the Charter includes important AI principles and requirements that are uniquely framed around public rights.

Box 4.3. Colombia's Ethical Framework for AI

The Ethical Framework for AI was designed as a response to the ethical implications of increased implementation of AI technologies in Colombia and to ignite a discussion around the desired social boundaries of their use. It touches upon moral problems related to data (including their generation, recording, adaptation, processing, dissemination and use), algorithms and their corresponding practices (including, responsible innovation, programming, hacking and professional codes).

The Framework consists of principles and implementation tools for public and private entities to implement AI. The table illustrates how the implementation tools interact with the principles.

	Transparency	Explanation	Privacy	Human control	Security	Responsibility	Non-discrimination	Inclusion	Youth rights	Social benefit
Algorithm assessment	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Algorithm auditing	✓	✓	✓		✓					
Data cleansing			✓		✓	✓	✓			
Smart explanation	✓	✓					✓			
Legitimacy evaluation	✓			✓			✓	✓	✓	✓
Sustainable system design					✓	✓				
Risk management			✓	✓	✓	✓				
Differential policy			✓		✓					
Codes of conduct	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
AI ethics research	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Privacy impact assessments			✓		✓		✓			
Ethical data approaches			✓	✓	✓	✓	✓			
Personal data stores			✓							
Strengthen business ethics	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Several versions of the Ethical Framework were released for consultation by means of triggering multi-sectorial debate and suggestions which were incorporated into the final iteration of the document.

The final version of the Ethical Framework was launched on 12 October 2021 and can be consulted here: https://bit.ly/3EC7wJy.

Source: (Guío Español, 2020[10]).

Box 4.4. Charter on Digital Rights (Spain)

Spain's Ministry of Economic Affairs and Digital Transformation and its Secretary of State for Digitalisation and Artificial Intelligence (see Box 5.1) has developed a Charter on Digital Rights to meet one of its commitments under the Spain Digital 2025 strategy.

The draft Charter included 28 sets of rights, many of which relate directly to the ethical and trustworthy development and use of AI systems and underlying data. The most relevant falls under Article 25, "Rights with regards to AI":

- Artificial intelligence shall ensure a people-centred approach safeguarding the inalienable dignity of every individual, shall pursue the common good, and ensure compliance with the principle of non-maleficence.
- In the development and life cycle of artificial intelligence systems:
  - The right to non-discrimination, irrespective of origin, cause, or nature, shall be guaranteed concerning decisions, use of data and processes based on artificial intelligence.
  - Conditions of transparency, auditability, explainability, traceability, human oversight and governance shall be established. In any case, the information provided shall be accessible and understandable.
  - Accessibility, usability and reliability shall be ensured.
- Individuals have the right to request human oversight and intervention and the right to challenge automated decisions made by artificial intelligence systems that impact their personal sphere or patrimony.

The Charter was developed in co-ordination with a variety of experts and relevant stakeholders, and was subject to an open public consultation that closed on 20 January 2021. The government reviewed and evaluated the comments received and finalised the charter in July 2021.

Source: www.lamoncloa.gob.es/presidente/actividades/Documents/2021/140721-Carta_Derechos_Digitales_RedEs.pdf and https://portal.mineco.gob.es/es-es/ministerio/participacionpublica/audienciapublica/Paginas/SEDIA_Carta_Derechos_Digitales.aspx.

In addition to the development of AI principles, some LAC countries are seeking complementary approaches to ethical and trustworthy AI, though perhaps in a less explicit, detailed or mature manner than discussed above:

- Argentina's AI strategy includes an "Ethics and Regulation" transversal axis that pledges to "Guarantee the development and implementation of AI according to ethical and legal principles, in accordance with fundamental rights of people and compatible with rights, freedoms, values of diversity and human dignity." It also seeks to promote the development of AI for the benefit, well-being and empowerment of people, as well as the creation of transparent, unbiased, auditable, robust systems that promote social inclusion. Although the strategy does not define an ethical framework, it creates two bodies responsible for leading the design of such instruments: the AI National Observatory and the AI Ethics Committee.[7] Argentina further pledges to "promote guidelines for the development of reliable AI that promote, whenever pertinent, human determination in some instance of the process and the robustness and explicability of the systems". It also considers the importance of a "risk management scheme that takes into account security,

protection, as well as transparency and responsibility, when appropriate, beyond the rights and regulations in force that protect the well-being of people and the public". Finally, it recognises that it may not be appropriate to use AI systems when the following standards are not met: transparency, permeability, scalability, explicability, bias mitigation, responsibility, reliability and impact on equity and social inclusion.

- As noted above, Brazil's AI strategy commits to developing AI principles. The strategy itself also has a strong focus on ethics, with considerations woven throughout the document. For instance, it includes a cross-cutting thematic axis on "legislation, regulation and ethical use", and commits to "shar[ing] the benefits of AI development to the greatest extent possible and promote equal development opportunities for different regions and industries". It also includes actions to develop ethical, transparent and accountable AI; ensure diversity in AI development teams with regard to "gender, race, sexual orientation and other socio-cultural aspects"; and commits to develop techniques to detect and eliminate bias, among other actions included in Annex B.
- Chile's AI policy includes a section dedicated to ethical considerations and measures, with associated actions detailed in the AI Action Plan. Specific activities include conducting an ethics study, developing a risk-based system for categorizing AI systems, ensuring the agreement of national best practices for ethical AI and developing an institution to supervise AI systems, among others. Interestingly, the policy and Action Plan also call for adapting school curricula to include education on technology ethics.
- In its digital strategy, Panama envisions a co-operation agreement with IPANDETEC (the Panama Institute of Law and New Technologies) for the promotion of human rights in the digital context.[8]
- Peru's 2021 draft national AI strategy includes a cross-cutting pillar on ethics and a strategic objective to become a regional leader in the responsible use of data and algorithms. It also commits to country-specific implementation of the OECD AI Principles, to which Peru adheres, and the creation of a unit to monitor and promote the responsible and ethical use of AI in the country. The draft further envisions the development of country-specific "ethical guidelines for sustainable, transparent and replicable use of AI with clear definitions of responsibilities and data protection". In addition, the country's *Digital Trust Framework* mandates the ethical use of AI and other data-intensive technologies: "Article 12.2 – Public entities and private sector organisations promote and ensure the ethical use of digital technologies, the intensive use of data, such as the Internet of Things, Artificial Intelligence, data science, analytics and the processing of large volumes of data".[9] However, it does not explain what is understood as ethical or a more precise set of applicable principles, although Peru adheres to the OECD AI Principles, implying that these might serve as the criteria.

In seeking to implement and operationalise high-level principles and ensure a consistent approach across the public sector, only Mexico and Uruguay have issued guidelines to assess the impact of algorithms in the public administration. Uruguay's digital agency, AGESIC, has elaborated the *Algorithmic Impact Study Model*, a set of questions that can be used by project managers across the public sector to evaluate and discuss the risks of systems using machine learning. Mexico has published the *Impact Analysis Guide for the Development and Use of Systems Based on Artificial Intelligence in the Federal Public Administration*. As with the AI strategy and principles, this guide was developed by Mexico's former administration and the state of top-level support for implementation is not clear. Box 4.5 presents further information about both guides.[10] Such mechanisms can help to materialise many aspects of building a trustworthy approach, including items discussed later in this section.

Box 4.5. Existing LAC guidelines to assess the impact of algorithms in public administrations

Algorithmic Impact Study Model (Uruguay)

The Algorithmic Impact Study (EIA) was designed by AGESIC, the public digital agency of Uruguay, as a tool for analysing automated decision support systems that use machine learning. Aimed at project managers or teams that lead AI projects, EIA is designed to identify key aspects of systems that merit more attention or treatment. The model consists of a set of questions that evaluate different aspects of systems including the underlying algorithm, the data and their impacts. Users can then share, analyse and evaluate the results. The questionnaire is structured as follows:

- Brief description of the project.
- Project outcome or objective.
- Social impact.
- About the system.
- About the algorithm.
- About the decision.
- Impact evaluation of the automated decision system.
    - About the data.
        - Origin of the data of the automated decision system.
        - Automated decision system data types.
    - Stakeholders of the automated decision system.
    - Actions to reduce and mitigate the risks of the automated decision system.
        - Data quality.
        - Procedural fairness.

Source: (AGESIC, 2020[11]).

Impact Analysis Guide for the development and use of systems based on AI in the Federal Public Administration (Mexico)

The Impact Analysis Guide is a tool designed to determine the societal and ethical reach of AI systems developed by the Federal Public Administration, and to define safeguards in accordance with their potential impacts. It is based on Canada's Directive on Automated Decision Making and its associated Algorithmic Impact Assessment.

The guide presents an initial questionnaire that analyses five dimensions:

- The use and management of data.
- The process.
- The level of autonomy and functionality of the system.
- Its impact on individuals, companies and society.
- Its impact on government operations.

Each question generates a score to which a multiplier is added depending on the number of areas where it has an effect (physical or mental impact, user experience, standards and regulations, objectives/goals, operation, reputation). This process produces a score for each of the five dimensions and an overall impact level.

Depending on the overall score and the resulting impact for each dimension, the guide assigns a total "level of impact" to the system on a scale of 1 to 4. According to each level, the system must fulfil a set of requirements before, during and after implementation. For example, AI systems where two or more dimensions, including socio-economic scope, have high or very high impact are assigned to level IV. Level IV systems must meet the following requirements:

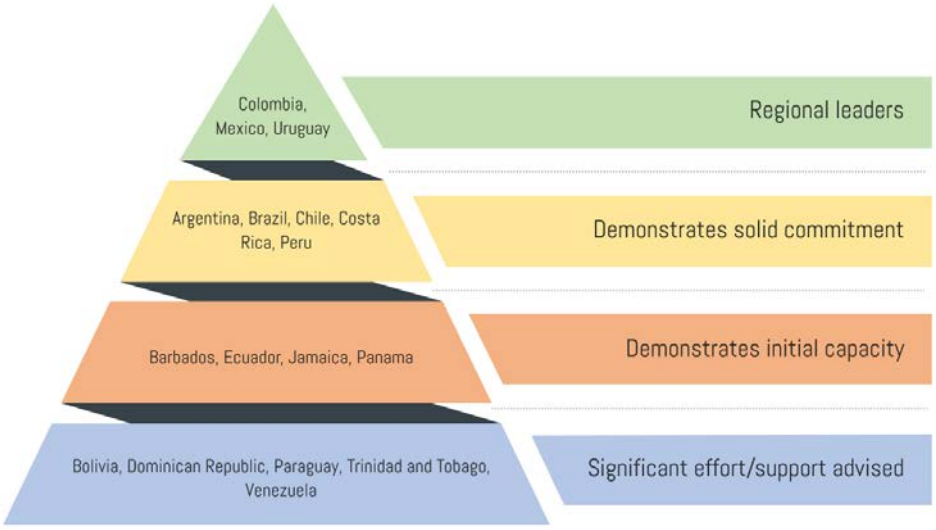
- Before implementation.
  - Register the system with the Digital Government Unit (UGD), including a clear and complete description of its function, objectives and expected impact.
  - Submit a report to the UGD detailing ethical concerns, risks and possible unplanned uses of the system.
  - Allocate resources to research the impact and implications of using the system.
- During implementation.
  - Conduct quarterly robustness, reliability and integrity testing of the system and model.
  - Publish information (variables, metadata) about the data used in the training of an algorithm and the methodology for the design of the model.
  - Share with users and the public a clear and complete description of the model and its expected impact.
- After implementation.
  - Provide a meaningful, clear and timely explanation to users about how and why the decision was made (include variables, logic and technique).
  - Publish information on the effectiveness and efficiency of the system every six months.

Source: (Coordinación de la Estrategia Digital Nacional, 2018[12]).

Fairness and mitigating bias

While data and algorithms are the essence of modern AI systems, they can create new challenges for policy makers. Inadequate data lead to AI systems that recommend poor decisions. If data reflect societal inequalities, then applying AI algorithms can reinforce them, and may distort policy challenges and preferences (Pencheva, Esteve and Mikhaylov, 2018[13]). If an AI system has been trained on data from a subset of the population that has different characteristics from the population as a whole, then the algorithm may yield biased or incomplete results. This could lead AI tools to reinforce existing forms of discrimination, such as racism and sexism.[11]

Figure 4.5. LAC region capacities for establishing safeguards against bias and unfairness



Note: All countries that adhere to the OECD AI Principles have been categorised as "demonstrates solid commitment" or higher.

All the LAC countries that have adhered to the OECD AI Principles have demonstrated a strong commitment to fairness, non-discrimination and prevention of harm (Principle 2). This principle also constitutes a strong focus of LAC countries' self-developed principles and data protection laws. Some of the most explicit aspects of these principles are as follows:

- As part its Ethical Framework for Artificial Intelligence, Colombia developed a monitoring Dashboard available for free to all citizens. The dashboard provides information about the use of AI systems across the country and implementation of the ethical principles of Artificial Intelligence in AI projects by public entities.
- Colombia, Mexico and Uruguay have established a clearer role for humans in terms of maintaining control of AI systems, resolving dilemmas and course correcting when necessary.
- Uruguay's "General Interest" principle aligns with OECD principles 1 and 2. The first part of the principle sets a social goal, namely, protecting the general interest, and guaranteeing inclusion and equity. The second part states that "work must be carried out specifically to reduce the possibility of unwanted biases in the data and models used that may negatively impact people or favour discriminatory practices".
- Chile's Inclusive AI principle calls for no discrimination or detriment to any group, and emphasises consideration of children and teenagers and the need for a gender perspective, which can be compared to the gender sub-axis in the country's AI Policy. The country's AI strategy and action plan calls for continuous discussions across sectors about bias as well as the development of recommendations and standards regarding bias and transparency in algorithms.
- The data protection legislation of Barbados, Brazil, Jamaica, Panama and Peru includes safeguards against automated decision making and profiling that may harm the subject or infringe upon their rights. The right to not be subject to automated decision making is shared by these countries. This may apply when automated data processing leads to decisions based on or that define the individual's performance at work, aspects of their personality, health status, creditworthiness, reliability and conduct, among others. In the case of Ecuador, although the *Guide for the Processing of Personal Data in the Central Public Administration* does not have the same

legal standing as data protection legislation, it stipulates that personal data treatment by the central public administration cannot originate discrimination of any kind (Art. 8).

Aside from aspects included in country-specific principles and data protection laws, LAC countries are establishing safeguards against bias and unfairness. Efforts that show strong potential include the following:

- Argentina's AI Strategy recognises the risk of bias in AI systems as part of its diagnostic of the 'Ethics and Regulation' transversal axis, although no specific measures are explained.
- Brazil's national AI strategy includes action items to develop techniques to identify and mitigate algorithmic bias and ensure data quality in the training of AI systems, to direct funds towards projects that support solutions that support fairness and non-discrimination, and to implement actions to support diversity in AI development teams. It also commits to developing approaches to reinforce the role of humans in a risk-based manner.
- Chile's AI Policy proposes the creation of new institutions capable of establishing precautionary actions directed at AI. It proposes fostering research on bias and unfairness, while a unique gender element evaluates how to reduce gender-related biases, and highlights the production of biased data and development teams with little diversity. Relevant actions include:
    - Actively promoting the access, participation and equal development of women in industries and areas related to AI.
    - Working with research centres to promote research with a gender perspective in areas related to AI.
    - Establishing evaluation requirements throughout the entire cycle or life of AI systems to avoid gender discrimination.
- Colombia's Centre for the Fourth Industrial Revolution, established by the government and the World Economic Forum (WEF), leads a project to generate comprehensive strategies and practices oriented towards gender neutrality in AI systems and the data that feed them.[12]
- Peru's 2021 draft national AI strategy envisions the collaboration of public sector organisations to conduct an impact study on algorithmic bias and to identify ways to lessen such bias in algorithms that involve the classification of people. However, the scope of this effort appears to be limited to private sector algorithms. In addition, the strategy mandates that all public sector AI systems related to the classification of people (e.g. to provide benefits, opportunities or sanctions) must undergo a socioeconomic impact study to guarantee equity.
- Uruguay has released two relevant instruments to address bias and unfairness. The *Framework for Data Quality Management*[13] includes a set of tools, techniques, standards, processes and good practices related to data quality. More specifically on AI, the *Algorithmic Impact Study Model* (see Box 4.5) references questions to evaluate and discuss the impacts of automated decision-making systems. The section *Measures to reduce and mitigate the risks of the automated decision system* (p. 8) includes various questions designed to mitigate bias. *The Social Impact* (p. 4) and *Impact evaluation of the automated decision system* (p. 6) sections aim to help development teams evaluate if their algorithms might lead to unfair treatment.

It should not be assumed that AI bias is an inevitable barrier. Improving data inputs, building in adjustments for bias and removing variables that cause bias may make AI applications fairer and more accurate. As it discussed earlier, codified principles and newer data protection laws are impacting how AI systems process personal data. Legislation is one option that can help address these issues and mitigate associated risks. Developing laws in this area may be a particularly useful approach in LAC countries, where the OECD has observed a strong legal focus and attention to meeting the exact letter of the law

(OECD, 2018[14]) (OECD, 2019[8]). While such an approach can promote trust, it can also quickly become outdated and hinder innovation or discourage public servants from exploring new approaches. Another approach involves creating agile frameworks that adopt necessary safeguards for the use of data-intensive technologies but remain adaptable and promote experimentation.

Moving ahead, LAC governments will need to couple high-level principles with specific controls and evolving frameworks and guidance mechanisms to ensure that AI implementation is consistent with principles and rules. The algorithmic impact assessments discussed earlier represent a step in the right direction (Box 4.5). Countries outside the region have also developed some examples that go beyond strategy pledges and principles. For instance, the UK government recognises that data on issues that disproportionately affect women are either never collected or of poor quality. In an attempt to reduce gender bias in data collection, it has developed a government portal devoted to gender data (OECD, 2019[15]).[14] The existence of an independent entity also facilitates progress, particularly with regard to testing ideas, setting strategies and measuring risks, as in the case of the Government of New Zealand's Data Ethics Advisory Group (Box 4.6).

Box 4.6. New Zealand: Data Ethics Advisory Group

In order to balance increased access and use of data with appropriate levels of risk mitigation and precaution, the government chief data steward in New Zealand founded the Data Ethics Advisory Group, the main purpose of which is to assist the New Zealand government in understanding, advising and commenting on topics related to new and emerging uses of data.

To ensure the advisory group delivers on its mandate, the government chief data steward has appointed seven independent experts from different areas relevant to data use and ethics as members, including experts in privacy and human rights law, technology and innovation.

The group discusses and comments solely on subjects and initiatives related to data use, not broader digital solutions provided by public bodies. Examples of topics that the Data Ethics Advisory Group might be requested to comment on include the appropriate use of data algorithms (e.g. how to avoid algorithmic bias) and the correct implementation of data governance initiatives.

Source: (OECD, 2019[15]), www.data.govt.nz/about/government-chief-data-steward-gcds/data-ethics-advisory-group and https://oecd.ai/en/dashboards/policy-initiatives/http:%2F%2Faipo.oecd.org%2F2021-data-policyInitiatives-25665.

A subset of AI systems that have been particularly contentious with regard to bias is facial recognition. Such systems can also have an inherent technological bias (e.g. when based on race or ethnic origins) (OECD, 2020[16]). As discussed in Chapter 3 of this report, facial recognition represents a very small but growing use case for AI in LAC governments. For instance, Ecuador officials told the OECD that they are exploring a facial recognition identity program for access to digital services. Governments and other organisations are designing frameworks and principles to help guide others as they explore this complex field. A relevant example that may be useful for LAC countries is the Safe Face Pledge, which focuses on facial biometrics (Box 4.7).

Box 4.7. The Safe Face Pledge

The Safe Face Pledge was a joint project of the Algorithmic Justice League and the Center on Privacy & Technology at Georgetown Law in Washington, DC. It served as a means for organisations to make

public commitments towards mitigating the abuse of facial analysis technology. It included four primary commitments:

- **S**how Value for Human Life, Dignity and Rights.
  - Do not contribute to applications that risk human life.
  - Do not facilitate secret and discriminatory government surveillance.
  - Mitigate law enforcement abuse.
  - Ensure your rules are being followed.
- **A**ddress Harmful Bias.
  - Implement internal bias evaluation processes and support independent evaluation.
  - Submit models on the market for benchmark evaluation where available.
- **F**acilitate Transparency.
  - Increase public awareness of facial analysis technology use.
  - Enable external analysis of facial analysis technology on the market.
- **E**mbed Commitments into Business Practices.
  - Modify legal documents to reflect value for human life, dignity and rights.
  - Engage with stakeholders.
  - Provide details of Safe Face Pledge implementation.

The Safe Face Pledge was sunset in February 2021; however, its general principles remain relevant.

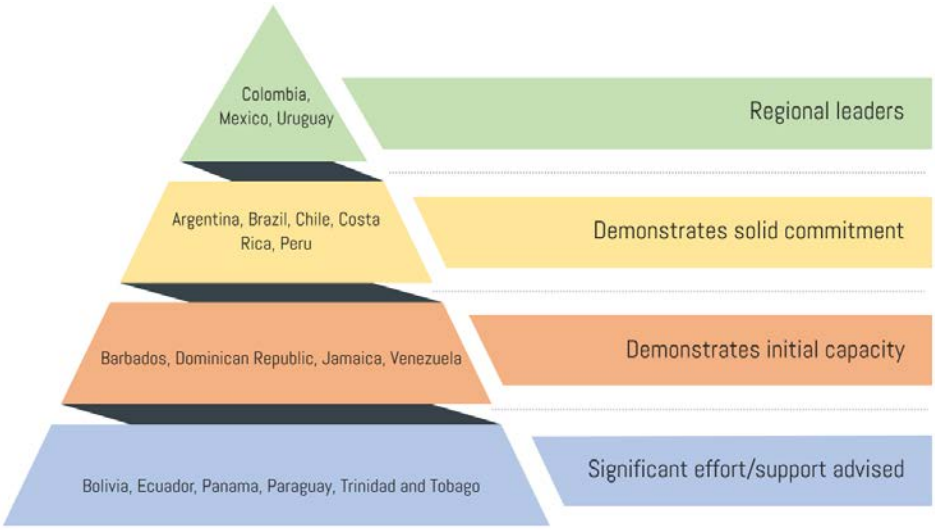
Source: www.safefacepledge.org/pledge.

Other factors are related to mitigating bias and ensuring fairness. In the field of AI, diverse and inclusive teams working on product ideation and design can help prevent or eliminate possible biases from the start (Berryhill et al., 2019[17]), notably those related to data and algorithmic discrimination. The section *Ensuring an inclusive and user-centred approach* later in this chapter explores this issue in greater detail.

Transparency and explainability

An important component of a trustworthy AI system is its capacity to explain its decisions and its transparency for the purposes of external evaluation (Berryhill et al., 2019[17]). In the case of PretorIA (Colombia) (Box 3.3), the Constitutional Court decided to make the explainability of this new system a top priority, on the basis that it could influence judicial outcomes through interventions in the selection process of legal plaints. Conversely, in Salta, Argentina, the algorithm designed to predict teenage pregnancy and school dropout (Bx 3.14) was opaquer, leading to uncertainty about how it was reaching its conclusions. This feature contributed to civil society scrutiny and a lack of trust in subsequent years. Overall, as part of analysis of these use cases, this study found low availability of information concerning the deployment, scope of action, status and internal operation of AI systems in the public sector.

Figure 4.6. LAC region capacities for considering the explainability of AI systems and automated decision making



Note: All countries that adhere to the OECD AI Principles have been categorised as "demonstrates solid commitment" or higher.

LAC countries are working in different ways to ensure the transparency of AI systems and decisions. Countries that have developed AI principles and ethical frameworks generally present strong alignment with OECD AI Principle 3 (Transparency and explainability). Uruguay's principles represent a slight exception here as they consider transparency but make no mention of explainability. However, inclusion of the expression "active transparency" could open the principle up to broader interpretation. However, Uruguay's Algorithmic Impact Study (EIA) does consider explainability. Other efforts include the following:

- Colombia's Ethical Framework for AI includes two relevant implementation tools: an *algorithm assessment* which enables constant mapping of public sector AI systems to assess how ethical principles are being implemented, and an *intelligent explanation* model which provides citizens with understandable information about AI systems.
- Mexico's AI Principles require that users have explained to them the decision-making process of the AI system as well as expected benefits and potential risks associated with its use. The principles also foster transparency through the publication of information allowing users to understand the training method and decision-making model of the system, as well as the results of its evaluations.

Most recent data protection legislation also extends traditional access rights by requiring greater transparency with regard to the methods and processes involved in automated decision making. For Barbados and Jamaica, right of access includes the right to know about the existence of automated decision making, as well as the algorithmic processes. Barbados further extends this right to include "the significance and the envisaged consequences". Brazil confers access to information on the form, duration and performance of the treatment of personal data. When automated decision making is in place, subjects may access information regarding the criteria and procedures, in compliance with trade and industrial secrets.

Countries are also developing approaches to increase transparency and explainability beyond formal frameworks and laws. Such approaches include the following:

- As part of its "Ethics and Regulation" transversal axis, Argentina's AI Strategy states that "developments that tend towards Explainable Artificial Intelligence (Explainable AI or "XAI")

should be promoted, in which the result and the reasoning for which an automated decision is reached can be understood by human beings". However, no specific measures are discussed.

- Brazil's national AI strategy commits to directing funds toward projects that support transparency, and to put in place supervisory mechanisms for public scrutiny of AI activities.
- Chile's national AI strategy and action plan provide a number of considerations for the transparency and explainability of AI systems, notably developing standards and good practices that can be adapted as the concept is better understood over time, promoting new explainability techniques and conducting research in this area. This process includes establishing standards and transparency recommendations for critical applications.
- The Dominican Republic developed a Digital Government guide[15] that includes a provision on the documentation and explainability of digital government initiatives, software, services, etc. However, specific guidelines for algorithmic transparency and explainability are not provided.
- Peru's draft 2021 national AI strategy envisions the development of a registry of AI algorithms used in the public sector and the underlying datasets used in public sector AI systems. It is unclear whether the registry would be open to the public.
- Uruguay's AI strategy promotes the transparency of algorithms through two interrelated actions: the definition of "standards, guidelines and recommendations for the impact analysis, monitoring and auditing of the decision-making algorithms used in the [public administration]"; and the establishment of "standards and procedures for the dissemination of the processes used for the development, training and implementation of algorithms and AI systems, as well as the results obtained, promoting the use of open code and data".
- Venezuela's Info-government Law defines a principle of technological sovereignty, which mandates that all software adopted by the state should be open and auditable. For instance, Article 35 states that "Licenses for computer programs used in the public administration must allow access to the source code and the transfer of associated knowledge for its compression, its freedom of modification, freedom of use in any area, application or purpose, and freedom of publication and distribution of the source code and its modifications".[16]

While countries have made a number of commitments, most have not yet been implemented in a manner that makes them actionable. Box 4.8 provides an example from outside the LAC region showing how a government has approached this challenge.

Box 4.8. Guidance transparency and explainability of public AI algorithms (France)

Etalab, a Task Force under the French Prime Minister's Office, has produced a guide for public administrations on the responsible use of algorithms in the public sector. The guide sets out how organisations should report on their use to promote transparency and accountability. The guidance covers three elements:

- **Contextual elements**. These focus on the nature of algorithms, how they can be used in the public sector, and the distinction between automated decisions and cases where algorithms function as decision-supporting tools.
- **Ethics and responsibility of using algorithms to enhance transparency**. This includes public reporting on the use of algorithms, how to ensure fair and unbiased decision making, and the importance of transparency, explainability and trustworthiness.
- **A legal framework for transparency in algorithms** including the European Union's General Data Protection Regulation (GDPR) and domestic law. This includes a set of rules to be applied

to administrative decision-making processes on what specific information must be published about public algorithms.

Etalab also proposes six guiding principles for the accountability of AI in the public sector:

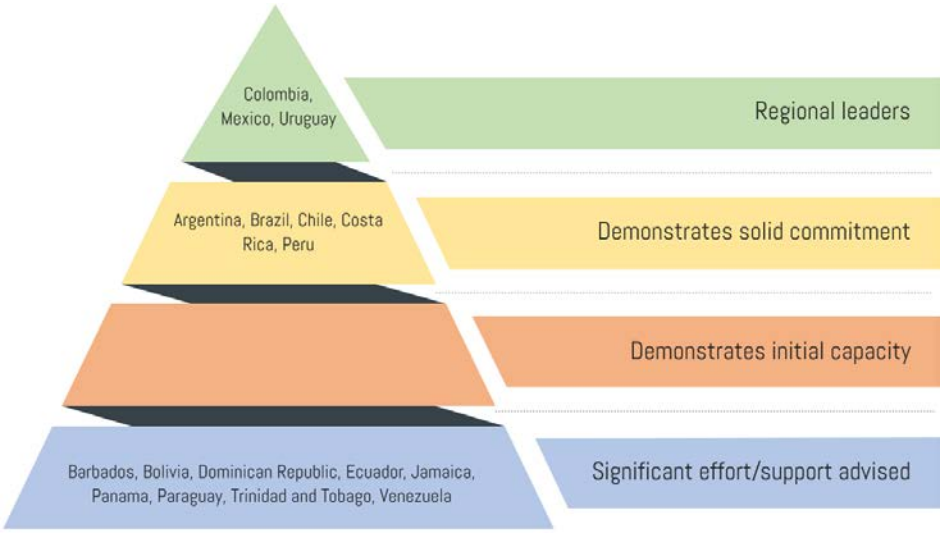
1. **Acknowledgment**: agencies are obligated to inform interested parties when an algorithm is used.
2. **General explanation**: agencies should provide a clear and understandable explanation of how an algorithm works.
3. **Individual explanation**: agencies ought to provide a personalised explanation of a specific result or decision.
4. **Justification**: agencies should justify why an algorithm is used and reasons for choosing a particular algorithm.
5. **Publication**: agencies should publish the source code and documentation, and inform interested parties whether or not the algorithm was built by a third party.
6. **Allow for contestation**: agencies should provide ways of discussing and appealing algorithmic processes.

Source: www.etalab.gouv.fr/datasciences-et-intelligence-artificielle; www.etalab.gouv.fr/how-etalab-is-working-towards-public-sector-algorithms-accountability-a-working-paper-for-rightscon-2019/, https://etalab.github.io/algorithmes-publics and www.europeandataportal.eu/fr/news/enhancing-transparency-through-open-data; www.etalab.gouv.fr/algorithmes-publics-etalab-publie-un-guide-a-lusage-des-administrations (Berryhill et al., 2019[17]).

Safety and security

This section examines how and to what extent LAC countries are establishing measures to develop and use safe and secure AI systems. As stated in the OECD AI Principles, "AI systems should be robust, secure and safe throughout their entire life cycle so that, in conditions of normal use, foreseeable use or misuse, or other adverse conditions, they function appropriately and do not pose unreasonable safety risk.[17] Such AI systems may involve the application of a risk management approach, such as the development of an algorithmic impact assessment process, ensuring the traceability of processes and decisions, and providing clarity regarding the (appropriate) role of humans in these systems (Berryhill et al., 2019[17]).[18]

Figure 4.7. LAC region capacities for promoting safety and security in public sector AI systems



Note: All countries that adhere to the OECD AI Principles have been categorised as "demonstrates solid commitment" or higher.

Adherence by LAC countries to the OECD AI principles can be interpreted as a solid commitment to safety and security. Countries in the region are also taking additional measures to ensure AI systems are safe and secure. Those that have developed national AI strategies and country-specific AI principles often emphasise the safety, security and robustness of AI systems in those principles. For instance:

- Argentina's AI strategy commits to the creation of an ethical framework including a risk management scheme that takes into account security, protection, transparency and responsibility, with a view to protecting the well-being of people and the public.
- Chile's AI Policy incorporates a focus on AI safety including through risk and vulnerability assessments and the enhancement of cybersecurity, with a specific goal to "position AI as a relevant component of the cybersecurity and cyber defence field, promoting secure technological systems".
- Colombia's Ethical Framework for AI proposes safety mechanisms such as the immutability, confidentiality and integrity of base data, and the establishment of codes of conduct and systems of risk to identify possible negative impacts. It seeks to ensure that "Artificial intelligence systems must not affect the integrity and physical and mental health of the human beings with whom they interact" (p. 34).
- Mexico's Impact Analysis Guide for the development and use of systems based on AI[19] provides a detailed set of principles on safety related to the mitigation of risks and uncertainty, design and implementation phases, and mechanisms for user data protection.
- Uruguay's AI principles state that "AI developments must comply, from their design, with the basic principles of information security". The country's Algorithmic Impact Study Model helps set up a risk-based approach to AI safety and security and also includes guidelines to clarify the role of humans in algorithmic decision making.

Box 4.9. Evaluating the human role in algorithmic decision making (Uruguay)

The Algorithmic Impact Study model of Uruguay allows digital government teams to evaluate the role of humans in algorithmic decision making, prompting ethical discussions on this topic. Although the model does not clarify the appropriate role of humans in decision making, its guiding questions help public sector teams to evaluate current or proposed algorithms in the light of safety and accountability principles (see next section), and to decide which features to incorporate. The following selected questions from the Algorithmic Impact Study model refer to safety and accountability:

Impact evaluation of the automated decision system

1. Will the system only be used to help make decisions in the context of this project? (Yes or no)
2. Will the system replace a decision that would otherwise be made by a human? (Yes or no)
3. Will the system automate or replace human decisions that require judgment or discretion? (Yes or no)
4. Are the effects resulting from the decision reversible?
    a. Reversible.
    b. Probably reversible.
    c. Difficult to reverse.
    d. Irreversible.

Procedural fairness

1. Does the audit trail identify who is the authorised decision maker? (Yes or no)
2. Is there a process to grant, monitor and revoke access permissions to the system? (Yes or no)
3. Is there a planned or established appeal process for users who wish to challenge the decision? (Yes or no)
4. Does the system allow manual override of your decisions? (Yes or no)

Source: (AGESIC, 2020[11])

Brazil is the only LAC country without country-specific AI principles that includes objectives in other laws that are aligned with the OECD AI Principles in this area. In particular, the national data protection law incorporates a “prevention principle” calling for the adoption of measures to prevent damage caused by the processing of personal data. In addition, the country’s recent national AI strategy commits to actions that ensure human review and intervention in high-risk activities and commits to directing funds towards projects that support accountability in AI systems.

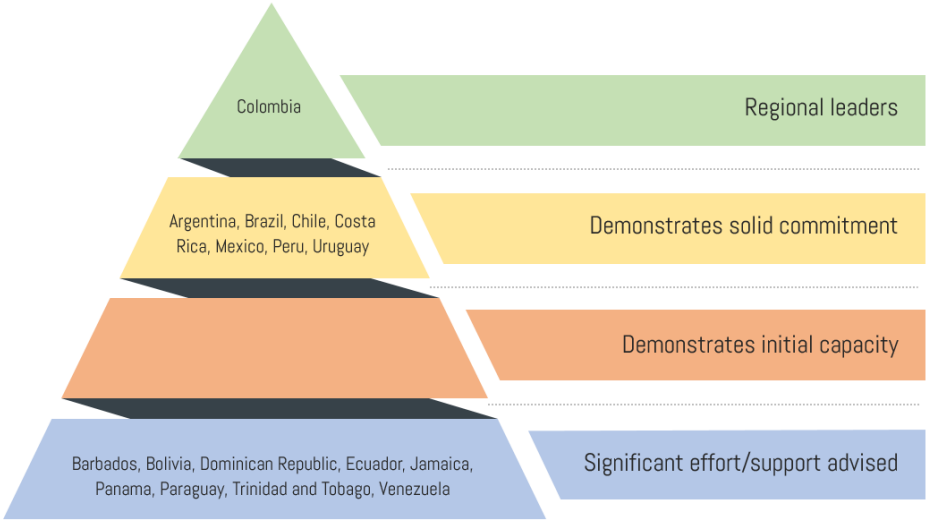
Accountability

This section examines the extent to which accountability mechanisms are present and operational in LAC countries, and ensure the proper and appropriate functioning of systems. Accountability is an important principle that cuts across the others and refers to “the expectation that organisations or individuals will ensure the proper functioning, throughout their lifecycle, of the AI systems that they design, develop, operate or deploy, in accordance with their roles and applicable regulatory frameworks, and for demonstrating this through their actions and decision-making process”.[20] For instance, accountability

measures can ensure that documentation is provided on key decisions throughout the AI system life cycle and that audits are conducted where justified. OECD work has found that in the public sector this involves developing open and transparent accountability structures and ensuring that those subject to AI-enabled decisions can inquire about and contest those decisions (as seen in Box 4.8) (Berryhill et al., 2019[17]).

It is essential for LAC government pursuing AI to develop the necessary guidelines, frameworks or codes for all relevant organisations and actors to ensure accountable AI development and implementation.

Figure 4.8. LAC region capacities for promoting accountability in public sector AI systems



Note: All countries that adhere to the OECD AI Principles have been categorised as "demonstrates solid commitment" or higher.

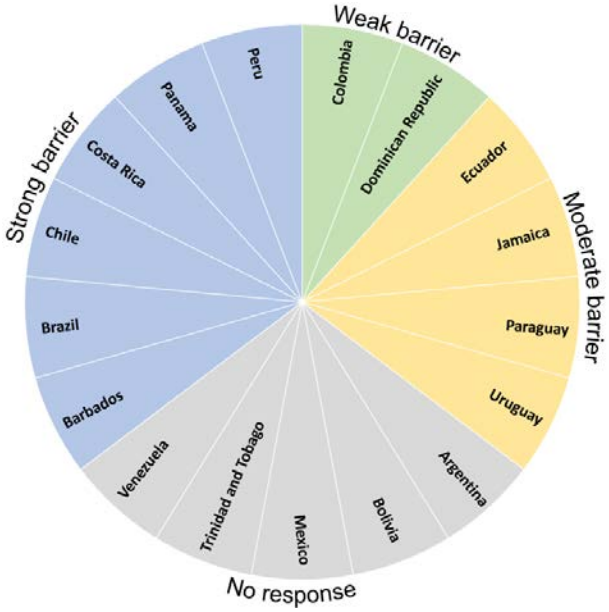
Adherence by LAC countries to the OECD AI principles can be interpreted as a solid commitment to this issue. Countries in the region are also taking additional measures to ensure AI systems are accountable, but to a somewhat lesser extent compared to certain other topics reviewed elsewhere in this chapter. Only Colombia, Mexico and Uruguay have integrated accountability into national AI strategies or principles, although clear evidence of implementation is not available in most cases. The following examples are particularly noteworthy:

- Chile's national AI strategy includes a goal to "Develop the requirements for prudent development in an agile way and responsible use of AI", including through the creation of an institution that can supervise AI systems at different stages of their life cycle. It also calls for organisations to have clearly defined roles and responsibilities to ensure lines of responsibility.
- Colombia's Ethical Framework for AI states that there "is a duty to respond to the results produced by an Artificial Intelligence system and the impacts it generates". It also establishes a duty of responsibility for entities that collect and process data and for those who design algorithms. It also recommends defining clear responsibilities for the chain of design, production and implementation of AI systems.
- Mexico's AI Principles integrate accountability by highlighting the importance of determining responsibilities and obligations across the whole life cycle of an AI system.
- Peru's 2021 draft national AI strategy envisions the adoption of ethical guidelines that include clear definitions of responsibilities.
- Uruguay's AI principles include a requirement that technological solutions based on AI must have a clearly identifiable person responsible for the actions derived from the solutions.

Brazil is the only LAC country without country-specific AI principles that includes objectives in other laws that are aligned with the OECD AI Principles in this area. In particular, the national data protection law includes a responsibility and accountability objective which requests that data processors adopt measures in order to comply effectively with the data protection law, thereby ensuring accountable actors are in place. These objectives represent a solid step towards implementing the OECD's previous recommendation that Brazil develop "transparency mechanisms and ethical frameworks to enable a responsible and accountable adoption of emerging technologies solutions by public sector organisations" (OECD, 2018[14]). In addition, the country's recent national AI strategy commits to directing funds towards projects that support accountability in AI systems.

The common absence of legal or methodological guidance on accountability coincides with a major perception among LAC countries that lack of clarity regarding checks and balances/accountability for data-driven decision making represents a strong or moderate barrier to the use of data in the public sector (Figure 4.9). While this is not specific to AI in the public sector, the concepts are related.

Figure 4.9. Lack of clarity regarding checks and balances/accountability for data-driven decision making as a barrier



Source: OECD LAC Digital Government Agency Survey (2020).

Finally, monitoring during the implementation stage is vital to ensure that AI systems operate as intended in accordance with the OECD AI Principles, and that organisations are accountable in this regard. Related to the topic of safety and security discussed in the previous sub-section, such monitoring should ensure that risks are mitigated and that unintended consequences are identified. A differentiated approach will be required to focus attention on AI systems where the risks are highest – for instance, where they influence the distribution of resources or have other significant implications for citizens (Mateos-Garcia, 2018[18]). For the most part, LAC countries have not developed these types of monitoring mechanisms, with the exception of efforts being undertaken by Colombia (Box 4.10). Such mechanisms may represent the next stage of development for regional leaders once efforts to build ethical frameworks and enabling inputs have solidified.

Box 4.10. Monitoring AI in Colombia

Colombia is developing policy intelligence tools to monitor the implementation of i) national AI policies, ii) emerging good practices to implement the OECD AI recommendations to governments, and iii) AI projects in the public sector:

- SisCONPES is a tool that monitors the implementation of every action line in the AI national strategy. It reports advances and challenges in implementation to entities leading implementation of the strategy, notably the Presidency of the Republic.
- A follow-up plan to monitor implementation of the OECD AI Principles and identify good practices matches specific actions implemented by the Colombian government to the OECD recommendations.
- The GovCo Dashboard monitors the implementation of AI projects in the public sector. The dashboard includes a description of each project and highlights mechanisms through which AI is used and the progress of each project.
- A dashboard for monitoring the Ethical Framework for Artificial Intelligence, a public access tool where citizens can learn more about the use of AI systems in the State and implementation of the ethical principles of Artificial Intelligence in AI projects. The dashboard is available at https://inteligenciaartificial.gov.co/en/dashboard-IA.

These policy intelligence tools are also used by the Presidency and the AI Office to evaluate resource allocation and evaluate policy implementation.

Source: (OECD, 2021[6]), Colombia officials.

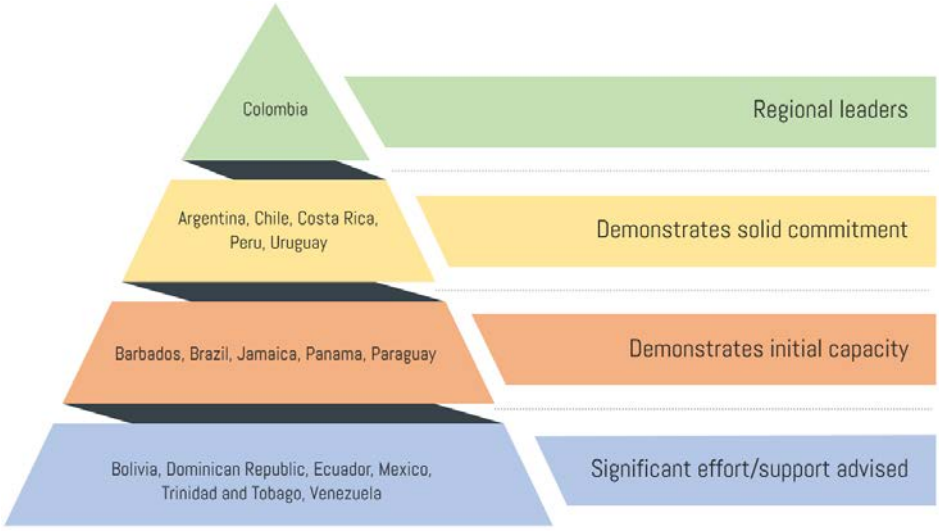
Ensuring an inclusive and user-centred approach

Inclusive

Ensuring the representation of perspectives that are **multi-disciplinary** (different educational backgrounds, professional experiences and levels, skillsets, etc.),[21] as well as **diverse** (different genders, races, ages, socio-economic backgrounds, etc.), together in an **inclusive** environment where their opinions are valued is a critical cross-cutting factor relevant to many of the considerations discussed in this chapter and the next. This factor is fundamental to achieving AI initiatives that are effective and ethical, successful and fair. It underpins initiatives ranging from comprehensive national strategies to small individual AI projects, and everything in between. The OECD's recent *Framework for Digital Talent and Skills in the Public Sector* (OECD, 2021[19]) affirms that the establishment of multi-disciplinary and diverse teams is a prerequisite for digital maturity and achieving a digitally enabled state.

Developing AI strategies, projects and other initiatives is an inherently multi-disciplinary process. Moreover, multi-disciplinarity is one of the most critical factors for the success of innovation projects, especially those involving tech. Pursuing such projects requires consideration of technological, legal ethical and other policy issues and constraints. Clearly, AI efforts need to be technologically feasible, but equally they need to be acceptable to a range of stakeholders (including the public) and permissible under the law.

Figure 4.10. LAC region capacities for setting guidance for building multi-disciplinary teams



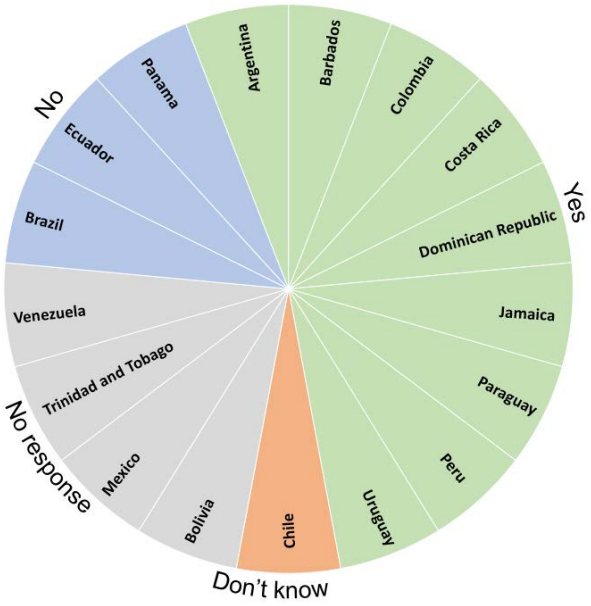
Many LAC countries have embraced multi-disciplinarity (see Table 4.2 for examples of professions involved) as a criterion for the development of digital projects, services and strategies (Figure 4.11). Nevertheless, guidance for the inclusion of multiple disciplines in the design and development of AI specifically is scarce. This trend demonstrates initial competence and commitment, but also signals that AI-specific guidance may be necessary as countries increasingly adopt and design these systems. At present, Colombia is the only country with guidance covering this topic for the development and use of AI and other emerging technologies. In their strategies, Argentina, Brazil and Uruguay recognise the importance of multi-disciplinarity for the development of AI in the public sector, but do not offer specific guidance or methods. Various other countries promote multi-disciplinarity either through innovation labs, declarations on their digital strategies and/or empirically, although not specifically for AI.

Table 4.2. Professions involved in a multi-disciplinary team

Digital professionals	Non-digital professionals
User-centred design	Law, policy and subject matter
Product and delivery	Strategy and governance
Service ownership	Commissioning and procurement
Data	Human resources
Technologists	Operations and customer service
	Psychologists and sociologists

Source: (OECD, 2021[19]).

Figure 4.11. Use of multidisciplinary teams for delivering digital, data and technology projects in LAC countries



Source: OECD LAC Digital Government Agency Survey (2020).

In Colombia, three key guidelines for the development of digital public services emphasise the need to incorporate multiple disciplines and perspectives:

- In relation to AI, the *Emergent Technologies Handbook* proposes two measures. The first is the involvement of non-technical members in project implementation, "[working] closely with the service owners" (p. 11) and not just at the engineering level. The second is the creation of a pilot project evaluation team composed of internal and external actors (p. 9).[22] Additionally, the *Task Force for the Development and Implementation of Artificial Intelligence in Colombia* states that multi-disciplinarity is an important consideration when assembling an Internal AI Working Group. The working group structure proposed by the document includes an expert in AI policy, a data scientist expert, an ethicist, an internationalist and researchers.[23]
- For digital projects in general, the *Digital Government Handbook* asserts that developers should "count on everyone's participation" (p. 33) and, more specifically, should work to: generate integration and collaboration among all responsible areas; seek collaboration with other entities; identify the project leader and assemble multi-disciplinary teams to participate in the design, construction and implementation, testing and operation of the project; and establish alliances between different actors.[24]
- Finally, the *Digital Transformation Framework* notes that "the digital transformation of public entities requires the participation and efforts of various areas of the organization, including: Management, Planning, Technology, Processes, Human Talent and other key mission areas responsible for executing digital transformation initiatives"[25] (p. 21).

The Ethics and Regulation strategic axis of Argentina's AI strategy includes an objective to "form interdisciplinary and multi-sectoral teams that manage to address the AI phenomenon with a plurality of representation of knowledge and interests" (p. 192). Additionally, this section recognises that "bias may even be unconscious to those who develop [AI] systems, insofar as they transfer their view of the world both to the selection of the training data and to the models and, potentially, to the final result. Hence the

importance of having a plural representation in the development of these technologies and the inclusion of professionals who build these methodological, anthropological and inclusion aspects" (p. 189).

One of four "transversal principles" in Chile's national AI strategy is "Inclusive AI". This states that all action related to AI should be addressed in an interdisciplinary way. The strategy also recommends reframing education programmes to incorporate different conceptions of AI from the perspectives of various disciplines.

Brazil's national AI strategy explicitly discusses the multi-disciplinary nature of AI and the importance of a multi-disciplinary approach, but does not contain action items directed at supporting such an approach.

Uruguay's strategy recognises the importance of training in multi-disciplinary contexts for public servants, in order to generate skills that enable them "to understand all the difficulties, challenges and impacts that arise when using AI in the services and processes of the Public Administration" (p. 12). Indeed, the strategy itself was developed by a multidisciplinary team representing the fields of technology, law, sociology and medicine, among others. In summary, LAC country strategies with specific references to the inclusion of multi-disciplinarity in AI development provide general, models which are applicable to every AI project. Working from the basis of the existing pool of use cases and lessons, a next step for policy makers in the region could be to provide guidance or methods for the inclusion of other disciplines to tackle key issues that have arisen in specific focus areas.

Although not specific to AI, LAC countries have also developed a considerable set of practices and guidelines for the inclusion of multi-disciplinarity in the development of digital government projects. These are relevant because guidelines and initiatives focused on broader digital government efforts should also apply to projects involving AI in the public sector. They include the following examples:

- Argentina's public innovation lab, LABgobar, has created the "Design Academy for Public Policy". The lab works addresses has two main purposes: 1) to identify and strengthen specific-themed communities of practice through diverse approaches that inspire action, participation and collaboration; and 2) to train interdisciplinary teams of public servants from different ministries through the Emerging Innovators executive programme, which provides real challenges for participants to solve through the application of innovation tools.[26]
- Barbados' *Public Sector Modernization Programme* proposes the creation of a digital team with expertise in areas such as "digital technologies, open innovation, service design, data analytics and process reengineering, among others".[27]
- During innovation processes, Chile's Government Lab recommends forming "a multifunctional work team, composed of representatives of all the divisions related to the initial problem or opportunity" and provides guidance on so doing.[28]
- The National Code on Digital Technologies of Costa Rica recommends building multi-disciplinary teams as part of its standards for digital services, including specific roles such as a product owner, project manager, implementation manager, technical architect, digital support leader, user experience designer, user researcher, content designer, back-end developer and front-end developer.[29]
- Jamaica developed a multi-disciplinary experience as part of its COVID-19 CARE programme. Several government agencies were involved in developing an online system for the receipt of grant applications, automated validations and payment processing.[30]
- Panama's *Digital Agenda 2020* was designed by a multidisciplinary team (p. 2).
- The development of Paraguay's *Rindiendo Cuentas* portal (https://rindiendocuentas.gov.py) for transparency and accountability involved various teams across the public administration.[31]
- Peru's Government and Digital Transformation Laboratory includes among its objectives the "transfer of knowledge on Agile Methodologies in the public sector and [the promotion of] the creation of multidisciplinary teams" for the co-creation of digital platforms and solutions.[32]

Additionally, all public administration entities are mandated to constitute a Digital Government Committee consisting of a multi-disciplinary team including, at least, the entity director, the Digital Government leader, the Information Security Officer, and representatives from IT, human resources, citizen services, and legal and planning areas.[33]

- In relation to recruitment processes, Uruguay "seeks complementarity through multidisciplinary teams, complementary knowledge and different perspectives".[34]

These efforts show that building multi-disciplinary teams has been a recurrent practice among most LAC governments when delivering digital solutions. Nevertheless, for many of the initiatives in question, the OECD was unable to determine the process whereby the teams were built and how the different participating disciplines contributed to the end objective. It also proved difficult to ascertain the composition of the development teams of existing AI use cases. As part of transparency measures to increase trust and safety (see the chapter *Develop a responsible, trustworthy and human-centric approach*), providing further information on team composition could be a good practice for LAC countries to adopt when delivering AI solutions. As an example of this, Box 4.11 presents two non-AI cases where multiple disciplines contribute to the deliverance and governance of digital services.

Box 4.11. Multi-disciplinary teams to improve digital public services

The following two cases are not related to AI initiatives, but provide nevertheless excellent examples of multi-disciplinary approaches that could also be applied to AI at a strategic level.

Redesigning the disability certification process (Argentina)

In Argentina, an estimated 3 million people have some form of disability. In order to certify these disabilities, the Medical Evaluation Boards (MEB) issues a *Certificado Único de Discapacidad* (disability certificate, CUD) which allows people to access rights and benefits provided by the government.

The process to obtain a CUD was long and difficult. In the absence of digital support the process could take up to seven months and involved many steps, many of which required the user to visit a public office in person. Not only was turnaround slow but the process itself added extra burdens and complexity to the lives of people who needed increased levels of support.

Having identified the need to transform this service, the National Agency for Disability paired with the team at Mi Argentina, Argentina's platform for providing citizen-centred services. This multi-disciplinary team consisted not only of software engineers and designers but also psychologists, political scientists, anthropologists and sociologists. Together, the team set out to simplify and speed up the procedure while accompanying people throughout the process.

To this end, the team interviewed people with disabilities, their families and health workers. As they built up a picture of the challenges people faced, they identified opportunities for simplifying the process and designing a one-step online approach. The new CUD application process now guides citizens through the requirements of their application rather than requiring them to attend a physical meeting to establish the necessary documentation.

Source: (OECD, 2020[20]).

The Open Data Working Group (Uruguay)

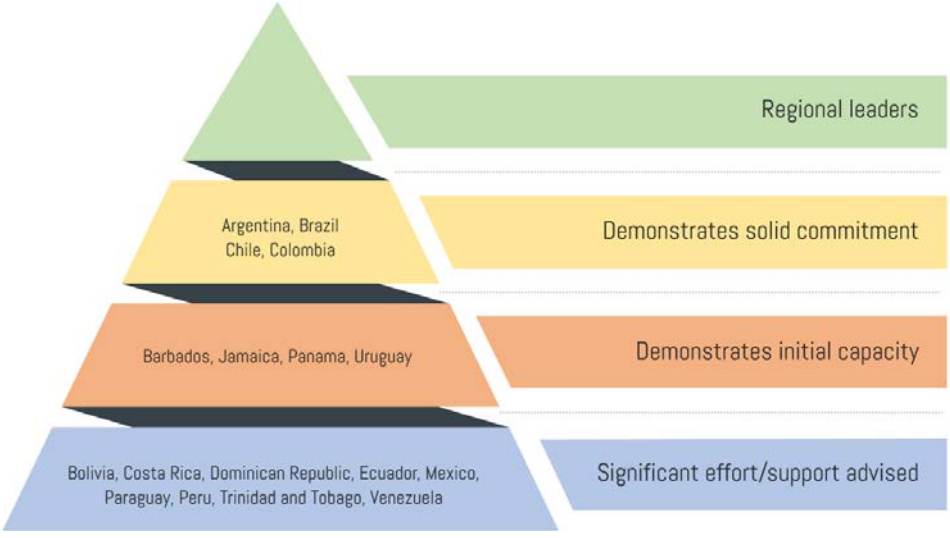
In order to implement an open data policy, co-ordinate action among different actors, and generate a collaborative work environment for public entities, civil society and academia in the field of active transparency, Uruguay created the Open Data Working Group, a multi-disciplinary entity that comprises representatives from various non-tech public sector institutions. Core members include the Ministry of

Social Development, Management and Evaluation, the Faculty of Engineering (University of the Republic of Uruguay), the National Institute of Statistics, the Open Government Network (Civil Society), the Municipality of Montevideo and the digital agency, AGESIC.

Source: www.gub.uy/agencia-gobierno-electronico-sociedad-informacion-conocimiento/comunicacion/publicaciones/grupo-trabajo-datos-abiertos

Alongside multi-disciplinarity, another critical concept is **diversity**. This umbrella concept recognises that people, whilst similar in many ways, have different life experiences and characteristics, such as gender, age, race, ethnicity, physical abilities, culture, religion and beliefs (Balestra and Fleischer, 2018[21]). These elements produce unique and important values, preferences, characteristics and beliefs in each individual that have been shaped by the norms and behaviours they have experienced over time. In the field of AI, diverse teams can better consider the needs of different users and help prevent or eliminate possible biases from the outset (OECD, 2019[22]), because diverse representation in product ideation and design helps to minimise the possibilities of data bias and algorithmic discrimination. As touched on earlier, this benefit can only be fully realised in an environment that is *inclusive*, where the opinions of individuals are valued and they feel safe to express them.

Figure 4.12. LAC region capacities for setting guidance for building diverse AI teams

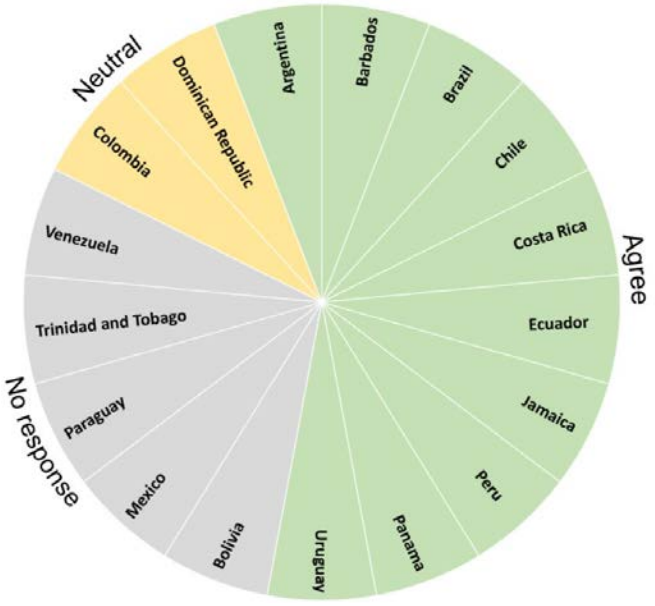


Source: OECD analysis based on research and LAC country surveys and interviews.

At the global level, lack of gender and racial diversity persists in AI research and the AI workforce, in spite of its acknowledged importance (NSTC, 2016[23]). However, many countries in the LAC region retain the perception that digital teams in the public sector are diverse and reflect broader society (Figure 4.13). Given the scope of this study, it was not possible to assess the actual diversity of these teams; however, guidance or methods for ensuring such diversity is mostly absent in LAC countries. Although the AI strategies of Argentina, Brazil, Chile and Colombia highlight the importance of diversity for AI development, there are very few examples of specific initiatives and guidance being developed to make diversity a key factor for the composition of AI teams. One such example is the proposed design for Colombia's AI Task Force, which considers the inclusion of diverse backgrounds in the construction of its teams.[35] Among the considerations evaluated in this and the next chapter, diversity was the least addressed by LAC countries.

LAC countries perceptions that their digital teams are diverse coupled with scant guidance in this area creates a somewhat contradictory scenario and may indicate blind spots to potential problems. Granted, it may indicate that teams are indeed diverse, although without more solid guidance such diversity may be fleeting and subject to change. Countries should consider adopting general guidance by assessing the state of diversity in their digital teams and recognising its importance in strategies or guidelines. As previously pointed out, existing experience in the LAC region could lead to guidance tailored to focus area and contexts where team diversity has proven to be an important element of AI development.

Figure 4.13. Digital teams in the public sector are often diverse and reflect broader society in my country



Source: OECD LAC Digital Government Agency Survey (2020).

In its AI strategy, Argentina recognises the importance of "plural representation in the development of [AI] technologies and the inclusion of professionals who design (…) methodological, anthropological and inclusion aspects" (p. 189). Its chief concern is to tackle bias throughout the development process, including the selection of training data, the design of algorithms and final outcomes. More specific instructions on diversity exist for the creation of the AI Ethics Committee, "an independent, multidisciplinary and multisectoral entity consisting of professionals from different areas of knowledge and members of the community, balanced in age, sex and ethnic and cultural origin". The Committee also emphasises the need to ensure "that its members have a constant link with civil society organisations oriented to these issues and access to external consultants with specific knowledge, if necessary, for particular cases".

Brazil's AI strategy commits to "stimulate the diverse composition of AI development teams with regard to gender, race, sexual orientation and other socio-cultural aspects".

Chile's AI Policy underlines the importance of diverse and inclusive teams, particularly from a perspective of gender and sexual diversity. In order to foster equity in the implementation of AI systems, the policy also highlights the importance of developing AI in an inclusive manner incorporating perspectives from Indigenous groups, people with special needs and the most vulnerable.

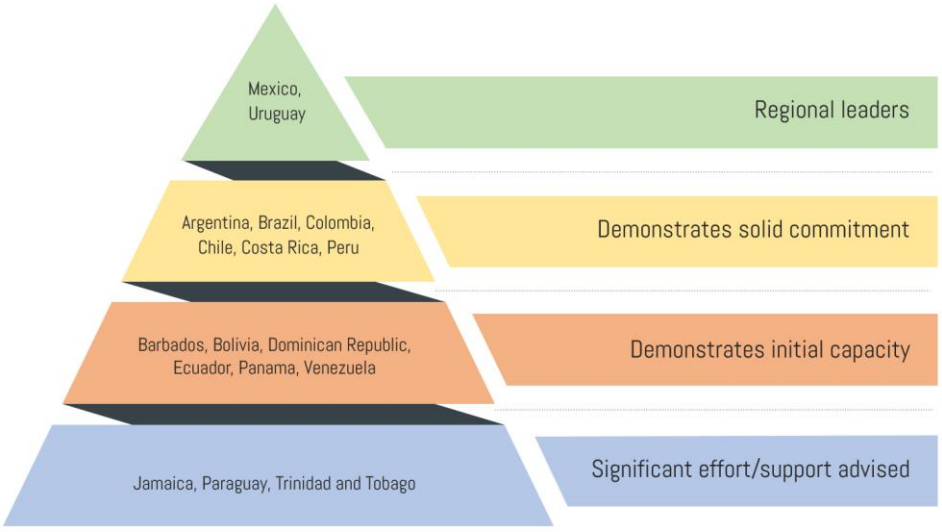
Finally, Colombia's AI Ethical Framework affirms, as part of its non-discrimination principle, that "a diverse group of the population should participate in the design generating impact matrices that make it possible to detect any type of discrimination at an early stage and correct accordingly in a timely manner".

User-centred

Each national approach must operate within its own unique context as well as its own culture and norms. Governments should engage with citizens, residents, businesses, public servants and anyone else who may interact with, or be impacted by, an AI-based solution, through deliberative dialogue to more clearly understand their perspectives, values and needs (Balaram, Greenham and Leonard, 2018[24]). Users of public services may want meaningful engagement and assurances to clarify how the use of AI will impact the services on which they depend. In some instances, citizens can also become co-creators of public services that use AI, a process that involves significant user engagement (Lember, Brandsen and Tõnurist, 2019[25]). Finally, AI has the potential to help governments move towards proactive public services. Such services anticipate and handle user needs before action is required (e.g. completing a form) (Scholta et al., 2019[26]) and would not be possible without greater understanding of these needs.

Unless they engage with potential users (both inside and outside government, as appropriate), public servants will not be able to be determine accurately which problems exist and whether a potential AI application or alternative will satisfy core needs. Such engagement will become increasingly important and should be included as an integral part of national strategies and overall direction. Civil servants must also be empowered to interact with users.

Figure 4.14. LAC region capacities for setting guidance and methods for understanding user needs



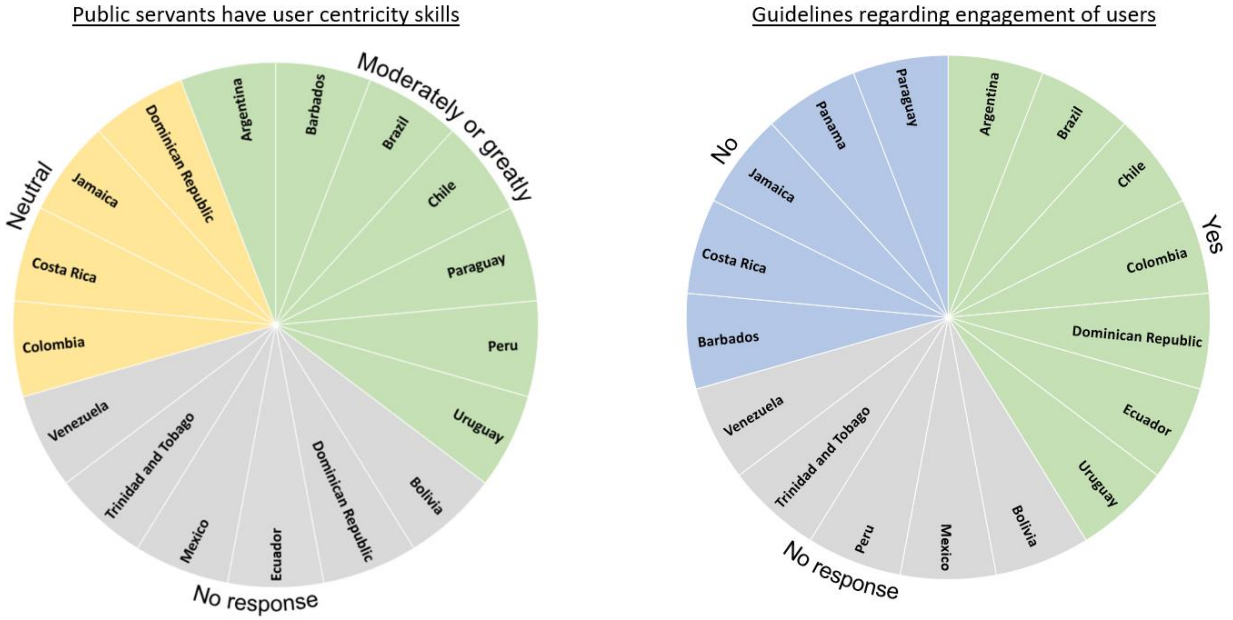
In the LAC region, countries have developed two complementary approaches to designing digital public services according to user needs. The first is a *user-driven* approach that centres on understanding users and co-designing public services. The second is a *user-informed* approach focused on adapting and designing services according to requests, response rates, usability and measured satisfaction. The OECD Digital Government Policy Framework recommends that policy processes, outputs and outcomes not just be informed, but also shaped by the decisions, preferences and needs of citizens through mechanisms for engagement and collaboration (OECD, 2020[27]). Such an approach is designed to allow people's voices to be heard in public policy making. To this end, governments can establish new forms of partnerships with the private and third sectors, crowdsource ideas from within the public administration and society at large, and make use of methodologies such as user research, usability (UX) design and human-centred design to create and improve public services (OECD, 2020[28]).

The difference between both approaches is illustrated by the case of Panama, where the OECD found a focus on digitising existing processes and procedures, and less attention to understanding user needs and re-orienting services accordingly.

> *The dominant themes of delivery in Panama are centred on digitisation and/or automation of existing processes rather than on users and their needs. Consequently, there is greater focus on the technologies that can be deployed rather than the transformation of the underlying services. This leads to the proliferation of apps and different technologies responding to particular problems from a technology point of view rather than considering critical policy actions (…) to reflect the diversity of the country's population and better serve their needs (OECD, 2019[8]).*

Perception among LAC countries of user centricity skills among public servants remains generally positive. Additionally, half of the surveyed countries that responded confirmed the existence of guidelines to encourage user engagement in the service and policy design process. Figure 4.15 illustrates the increasing inclusion of users' perceptions and needs in the design of digital services in the region. Although evidence related specifically to user-centred AI development is scarce, current work shows a solid ground to extend guidance and professional expertise in order to better understand users and take their needs into account when designing AI systems.

Figure 4.15. Perception that public servants have user centricity skills and countries have guidelines in place for user engagement



Note: For user centricity skills, no countries indicated "to some extent" or "not at all".
Source: LAC Digital Government Agency Survey (2020).

Mexico and Uruguay are the only two countries in the LAC region to explicitly consider user-centred indications for AI development within their AI impact assessment guides (Box 4.5). Mexico's *Impact Analysis Guide for the development and use of systems based on artificial intelligence in the Federal Public Administration* asks whether a system" [was] consulted or tested with interest groups and/or vulnerable groups" (Coordinación de la Estrategia Digital Nacional, 2018, p. 8[12]) in order to assess if a system meets users' needs. In another approach to user needs, Uruguay's Algorithmic Impact Study model seeks to ascertain the existence, or not, of "a mechanism to collect feedback from system users" (AGESIC, 2020, p. 11[11]).

Various LAC countries have developed user-driven capacities, principally focused on human-centred design methodologies, albeit not exclusively in the field of AI:

- One of the objectives of LABgobar, Argentina's public innovation lab, is to design user-centred policies and services. To this end, it carries out ethnographic research focused on studying the habits and behaviours of citizens as they interact with the state, and delivers methodologies to incorporate people's views, feelings and voices into decision making to bring them to the attention of the institutional actors responsible for implementing public policies.[36]
- Argentina's National Direction of Digital Services within the Government Secretariat of Modernisation (Secretaría de Gobierno de Modernización) established a set of principles to carry out research on user needs, advise public sector organisations and design solutions. The first principle states: "Prioritise user needs: we constantly talk with citizens, we observe their contexts, we understand what they need beyond what they say".[37] In addition, this entity created the *Code of good practices for the development of public software*, which compiles various methodologies and prerequisites to understand user needs (Box 4.12).
- Brazil's national digital government strategy also includes a principle focused on citizens' needs.[38] This objective is supported by the Design Thinking Toolkit for Government, developed by the Innovation Laboratory of the Federal Court of Audit, which provides guidance on the engagement of end users in the early stages of service design, with a view to the dissemination and use of relevant techniques to public institutions. The Design Thinking Toolkit consists of five phases: empathy, (re)definition, ideation, prototyping and testing. Each phase is explained and accompanied by a set of tools.[39] Additionally, the federal government has created a dedicated team to collect information about the quality and adequacy of digital public services using simple and agile methodologies. As of February 2021, the team had reached 31 660 people through 2 373 interviews, 29 287 online forms and 58 research projects.[40]
- The principles of Chile's Government Laboratory (Laboratorio de Gobierno, LabGob) help guide different types of government projects, and notably include a principle to "Focus on people" in order to understand their needs, assets, motivations and capacities as agents of the innovation process (see Box 5.11). LabGob has also produced a set of guidelines entitled "How Can We Facilitate Face-to-Face Spaces for Public Innovation?" to help public sector organisations obtain external views, including from users (see Box 6.7). The OECD has previously elaborated a number of recommendations for Chile, which the country is evaluating, on how to advance in becoming more citizen-driven by uncovering user needs, among other approaches (OECD, 2020[20]).
- Colombia has three relevant instruments for understanding user needs. The *Emergent Technologies Handbook* does not define specific guidelines but instead emphasises the need to consider "User Experience" as part of the solution's architecture (p. 10). It also suggests the inclusion of users in pilot project evaluation teams (p. 9).[92] Another document, the *Digital Government Handbook*, recommends to "Identify the problem or need and the stakeholders related to the project" (p. 31).[93] Finally, the *Guide for Characterization of Citizens, Users and Stakeholders,* which is not limited to digital government services, provides a general guideline for the characterisation of users in all government projects involving external actors: "To characterise is to identify the particularities (characteristics, needs, interests, expectations and preferences) of the citizens, users or stakeholders with whom an entity interacts, in order to group them according to similar attributes or variables" (p. 10).[94]
- In Bogotá, Colombia, the city's innovation lab, LAB Capital, developed an online course on public sector innovation for public officials to help public servants gain insights into innovating on policies and services from a user-centred perspective, as well as to foster an ecosystem of innovators among public offices.[41]
- Costa Rica's National Code on Digital Technologies lists a set of applicable principles, policies and standards (see the chapter, "Digital accessibility, usability and user experience").[42] Among the standards for digital services, the code defines a user-centred procedure to be considered when designing and procuring digital services. This procedure includes understanding users' needs,

performing constant research about users, building a multi-disciplinary team, using agile methodologies, iterating to achieve permanent improvement, running tests with users, and collecting performance data and indicators, among others.

- Peru's *Government and Digital Transformation Laboratory* also uses user-centred methodologies to design public services, according to the "Digital Agenda towards the Bicentennial".[43] Additionally, the *Guidelines for the Formulation of the Digital Government Plan* includes within its principles the importance of focusing design on the needs and demands of the citizen. It states that "public entities [must] make use of innovation, agile or other frameworks focused on the citizen's experience, and investigate and analyse their behaviours, needs and preferences" (p. 35).[44] The country has also developed a digital volunteering programme to engage academia, the private sector, civil society and citizens in various projects to design, redesign and digitise public services and policies.[45] In an interview with the OECD, Peru officials stated that they are working to shift public sector mind-sets and cultures through such guidance to ensure a continuous focus on core user needs, drawing on user research, interviews and user testing with rapidly developed prototypes and minimum viable products.
- In Uruguay, the *Social Innovation in Digital Government Lab* (Laboratorio en Innovación social en Gobierno Digital) provides co-creation and participation methodologies to find better ways to deliver public services (Box 4.12). Their process involves four stages: understand, empathise, co-create and experience.

Box 4.12. Methodologies to understand user needs

Code of Good Practices for the development of public software (Argentina)

The National Office of Information Technology within the Secretariat of Public Innovation has developed a Code of Good Practices for the development of public software. The first section of the Code requires public officers to understand the contexts and real needs of users, in order to realize the functions of the digital systems they are designing and be able to better assess development priorities. The Code provides a set of ideal and minimum good practices, as well as guidance on taking the first steps:

Ideal

- Create user story maps to understand the experience of all different types of users, including people with disabilities.
- Develop prototypes to test the service with real users.
- Make decisions based on the collection and analysis of objective data, including A/B tests, service usage metrics and usability tests.
- Design the software taking into account the entire user experience, including actions performed outside of digital systems.
- Evaluate the service using W3C tools.

Minimum

- Comply with accessibility regulations to guarantee real equality of opportunities and treatment of all people.
- Ensure familiarity with the standards of the National Directorate of Digital Services.
- Determine the type of devices preferred by users and calibrate the interface design and development and user experience accordingly.

Where to start

- Consult the "Know your project" Technological Ten Commandments.
- Consult the "Make sure your solutions are accessible" Technological Ten Commandments.
- Create a user history map in order to understand the experience of frequent users.

Source: www.argentina.gob.ar/onti/codigo-de-buenas-practicas-para-el-desarrollo-de-software-publico/.

Co-creation and participation methodologies of the Social Innovation in Digital Government Lab (Uruguay)

The Social Innovation in Digital Government Lab provides public institutions in Uruguay with co-creation and participation methodologies to identify better ways to deliver public services. Among the different methodologies offered, the following two templates can be employed to better understand user needs:

"Actions with Actors" template

This template seeks to understand expectations, opportunities and risks associated with a specific actor. Development teams are asked to complete a template sheet with the following information and discuss among the group. The key output is defining actions to take with regard to:

- The **expectations/motivations** of a specific actor.
- The **risks/fears** of a specific actor.
- **Opportunities** – once expectations and fears have been discussed, teams must identify an opportunity to which they can provide a response.
- **Actions to take.**

"Typology of User" template

This template seeks to identify the different types of users of a particular service and thus generate an inclusive solution. Teams must respond to the following questions/tasks:

- What is the **actor's name, age and location**?
- What are the **needs and motivations** of the concerned actor?
- Represent the actor with a **drawing/image**.
- What is the concerned actor's **relationship with technology**?

Development teams are asked to complete the template for each type of person identified and then analyse and systematise the information, identifying patterns and generating groups, if applicable. The type of data required to assemble the profiles may vary based on the project. For example, data on educational level and declared gender may be relevant.

Source: www.gub.uy/agencia-gobierno-electronico-sociedad-informacion-conocimiento/tematica/metodologias-lab.

LAC countries are also adapting and designing services according to user requests, response rates and measured satisfaction. Although the following examples relate to user-centred methodologies, they concentrate mostly on measuring, and thus fall into the category of "user-informed" approaches, rather than prioritising a more comprehensive understanding of user needs.

- Barbados has implemented a usability testing programme for its Electronic Document and Records Management System.[46]
- In Brazil, under the Digital Government Strategy, agencies are required to use public satisfaction tools. In this regard, the Strategy details three main courses of action. First, as part of its "Digital services satisfaction assessment" objective, the country aims to standardise satisfaction assessment, increase user satisfaction of public services and improve useful perception of public information. Second, strategy states that agencies will "conduct at least one hundred experience surveys with real users of public services by 2022". And third, the strategy commits to "implement a mechanism to personalise the offer of digital public services, based on the user's profile".[47] This approach aligns with the digital services monitoring dashboard offered as part of the country's one-stop-shop portal,[48] which makes available general satisfaction indicators including users' evaluation of information and services, and average waiting time.
- Ecuador has published the *Open Data Guidelines* (under consultation), a document that provides guidance on selecting and prioritising demands for open data, creating an inventory of the most requested information, fostering citizen participation in order to better define the public's open data needs, and evaluating perception and the re-use rate of published datasets.[49]
- Uruguay assesses citizens' response to digital services through focus groups and monitoring strategies. Research projects based on focus groups are carried out annually to evaluate aspects such as image, satisfaction and access barriers. Different focus groups consist of prioritised segments of the population, previously identified in quantitative studies. Monitoring strategies and indicators include a satisfaction survey, studies of the general population that measure completion and satisfaction with online procedures, and interoperability platform indicators.[50]
- Venezuela's *Info-government Law* includes a general guideline on the design of ICT initiatives based on accessibility and usability conditions. Article 15 states that "in the design and development of systems, programs, equipment and services based on information technologies, the necessary accessibility and usability considerations must be foreseen so that they can be used universally by those people who, for reasons of disability, age, or any other condition of vulnerability, require different types of information media or channels".[51]

To assist governments in further developing their user-centred design skills, the Government of Australia's BizLab kindly provided OPSI with its full Human Centred Design curriculum, including editable source files, which OPSI has made available on its Toolkit Navigator.[52]

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Whittaker, M. et al. (2018), *AI Now Report 2018*, https://ainowinstitute.org/AI_Now_2018_Report.pdf. [29]

Notes

[1] (OECD, 2019[4]) presents a common understanding of what constitutes an AI system as well as a framework detailing the stages of the AI system life cycle.

[2] www.oecd.org/digital/ieconomy.

[3] www.mofa.go.jp/files/000486596.pdf.

[4] See Annex B for sources and details.

[5] For instance, the OECD participated in the Expert Roundtable on International Best Practices and the Expert Roundtable on Youth Issues, hosted by the Berkman Klein Center for Internet and Society at Harvard University. A summary report of their discussions is available at: https://cyber.harvard.edu/story/2021-01/summary-report-expert-roundtable-colombias-draft-ai-ethical-framework.

[6] Annex B presents an overview of some of the mechanisms aligned with the OECD AI Principles that have been put in place by LAC governments. It should be noted that the seven LAC countries that officially adhere to the OECD AI Principles are considered to be in full alignment. Thus, for these countries, the Annex shows areas where they *further* strengthen their commitment through the elaboration of country-specific principles.

[7] https://oecd.ai/dashboards/policy-initiatives/2019-data-policyInitiatives-15065.

[8] See initiative 5.7 of Agenda Digital 2020.

[9] https://cdn.www.gob.pe/uploads/document/file/473582/du_007_2020.pdf.

[10] Outside of the LAC region, Canada's Directive on Automated Decision Making and its associated Algorithmic Impact Assessment represent the leading example of such an approach. Further details can be found at www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=32592 and an in-depth case study is available in the OECD report *Hello, World: Artificial Intelligence and its Use in the Public Sector* (Berryhill et al., 2019[17]).

[11] See www.digital.nsw.gov.au/digital-transformation/policy-lab/artificial-intelligence for examples of risks associated with AI bias and other challenges.

[12] See https://issuu.com/c4irco/docs/brochure_c4ir_english_issuu.

[13] www.gub.uy/agencia-gobierno-electronico-sociedad-informacion-conocimiento/comunicacion/publicaciones/marco-referencia-para-gestion-calidad-datos

[14] For more information see: www.gov.uk/government/publications/gender-database/gender-data.

[15] https://optic.gob.do/wp-content/uploads/2019/07/NORTIC-A1-2014.pdf.

[16] http://conatel.gob.ve/files/leyinfog.pdf.

[17] https://oecd.ai/dashboards/ai-principles/P8.

[18] This section does not consider broader cybersecurity and information security efforts that are not directly related to AI in the public sector.

[19] www.gob.mx/innovamx/articulos/guia-de-analisis-de-impacto-para-el-desarrollo-y-uso-de-sistemas-basadas-en-inteligencia-artificial-en-la-apf.

[20] https://oecd.ai/dashboards/ai-principles/P9.

[21] Such individuals could include policy analysts and advisors, field experts, user experience designers, software developers and attorneys. Depending on the AI system and relevant applications, this may also include professions like sociologists, psychologists, medical doctors or others that have subject matter expertise in fields with which an AI initiative may interact (Whittaker et al., 2018[29]).

[22] https://gobiernodigital.mintic.gov.co/692/articles-160829_Guia_Tecnologias_Emergentes.pdf.

[23] https://dapre.presidencia.gov.co/TD/TASK-FORCE-DEVELOPMENT-IMPLEMENTATION-ARTIFICIAL-INTELLIGENCE-COLOMBIA.pdf.

[24] Section 3.2 (ICT Guidelines for the State and ICT for Society).

[25] https://mintic.gov.co/portal/715/articles-149186_recurso_1.pdf.

[26] www.argentina.gob.ar/jefatura/innovacion-publica/laboratoriodegobierno and https://oecd-opsi.org/innovations/design-academy-for-public-policy-labgobar.

[27] www.gtai.de/resource/blob/214860/d0599cb76af4c3f5c85df44bfff72149/pro202001315003-data.pdf.

[28] How can we solve public problems through innovation projects? https://innovadorespublicos.cl/documentation/publication/32/#

[29] www.micit.go.cr/sites/default/files/cntd_v2020-1.0_-_firmado_digitalmente.pdf

[30] OECD LAC Digital Government Agency Survey (2020).

[31] OECD LAC Digital Government Agency Survey (2020).

[32] www.gob.pe/8256.

[33] Ministerial Resolution No. 119-2018-PCM, and its amendment Ministerial Resolution No. 087-2019-PCM.

[34] OECD LAC Digital Government Agency Survey (2020).

[35] See https://dapre.presidencia.gov.co/TD/TASK-FORCE-DEVELOPMENT-IMPLEMENTATION-ARTIFICIAL-INTELLIGENCE-COLOMBIA.pdf (p. 50).

[36] www.argentina.gob.ar/jefatura/innovacion-publica/laboratoriodegobierno and https://oecd-opsi.org/innovations/design-academy-for-public-policy-labgobar

[37] https://github.com/argob/estandares/blob/master/principios.md.

[38] www.gov.br/governodigital/pt-br/EGD2020.

[39] https://portal.tcu.gov.br/inovaTCU/toolkitTellus/index.html.

[40] www.gov.br/governodigital/pt-br/transformacao-digital/ferramentas/pesquisa-com-usuarios.

[41] https://oecd-opsi.org/innovations/online-public-innovation-course-for-public-officials-labcapital.

[42] www.micit.go.cr/sites/default/files/cntd_v2020-1.0_-_firmado_digitalmente.pdf.

[43] See pp. 43-50, https://cdn.www.gob.pe/uploads/document/file/748265/PERU_AgendaDigitalBicentenario_2021.pdf.

[44] See https://guias.servicios.gob.p and www.peru.gob.pe/normas/docs/Anex_I_Lineamientos_PGD.pdf

[45] www.gob.pe/8257.

[46] OECD LAC Digital Government Agency Survey (2020).

[47] Decree 10.332/2020, www.planalto.gov.br/CCIVIL_03/_Ato2019-2022/2020/Decreto/D10332.htm.

[48] http://painelservicos.servicos.gov.br.

[49] https://aportecivico.gobiernoelectronico.gob.ec/legislation/processes/14/draft_versions/33.

[50] OECD LAC Digital Government Agency Survey (2020).

[51] www.conatel.gob.ve/ley-de-infogobierno.

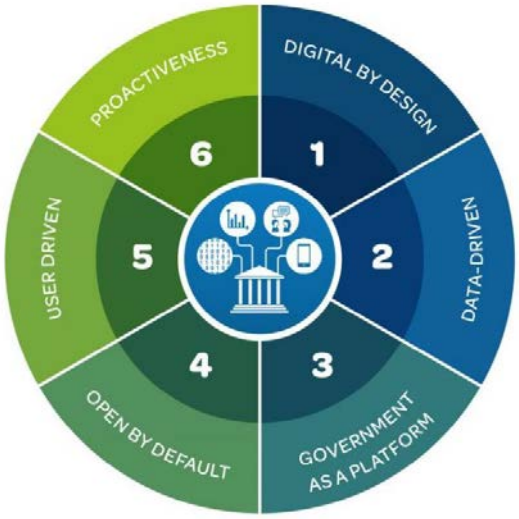
[52] https://oecd-opsi.org/toolkits/australias-bizlab-human-centered-design-curriculum.

5 Building key governance capacities

Beyond building trust in AI in the public sector, governments must take action to ensure they have the necessary governance mechanisms and capacities in place to realise their goals and ambitions. At a foundational level, governments that have achieved high levels of digital maturity in their public sector will be best positioned to reap the benefits of AI in the public sector, while overcoming key challenges and pitfalls. This chapter discusses LAC governments' progress in putting in place foundational governance capacities for AI.

To assist governments in adopting policy actions to achieve digital government maturity, the OECD has developed the Digital Government Policy Framework (DGPF). The DGPF is a policy instrument designed to help governments identify key determinants for the effective design and implementation of strategic approaches to facilitate the transition towards digital maturity in the public sector (see Figure 5.1). Governments and readers of this report are encouraged to explore the DGPF (OECD, 2020[1]) and its associated metrics and rankings in the OECD Digital Government Index (OECD, 2020[2]).

Figure 5.1. The OECD Digital Government Policy Framework



Source: (OECD, 2020[1])

In the context of digital government maturity, countries will need to build support for public sector AI efforts both within and across governments, as well as with other sectors and the public. Building this support is dependent on having solid leadership in place to set a clear direction and narrative for the use of AI in the public sector, as well as co-ordination mechanisms to ensure action towards realising strategies and goals.

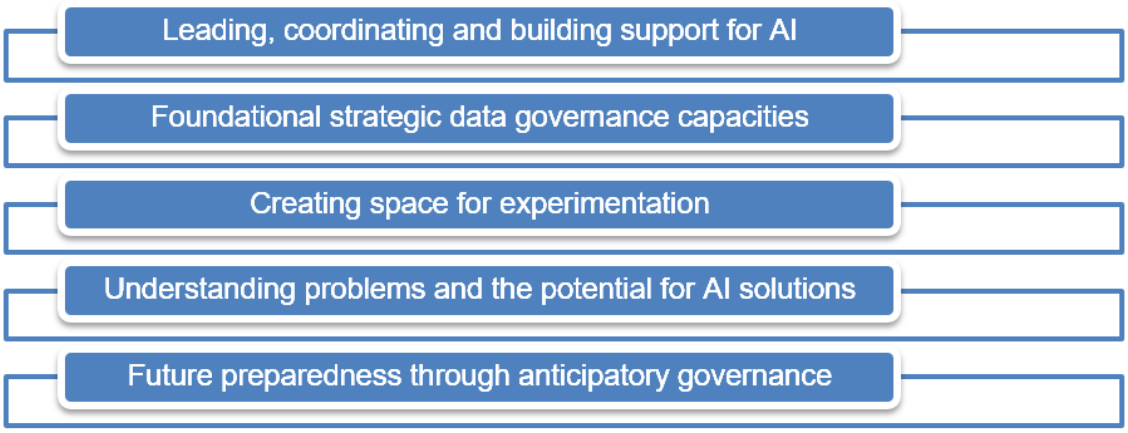
Governments must also consider the foundational elements that make AI-driven innovation possible. Data constitute the fundamental building blocks for AI, and leaderships and a clear strategy enabling governments to access and use robust, accurate data, in a manner that maintains privacy and conforms to societal and ethical norms, is necessary to effectively deploy AI.

Governments need to ensure sufficient space for flexibility and experimentation to facilitate rapid learning. Additionally, they must develop methodologies to determine whether AI is the best solution for a given problem, and provide conduits for identifying and devoting attention to such problems.

Finally, even though the pressing issues of today often take priority, governments need to recognise the significant shifts that AI might bring in the future and explore ways to anticipate these potential changes, especially those that require them to take action today.

Through the lens of the LAC regional context, this chapter explores the most pressing and relevant issues identified in previous OECD work, with the aim of helping LAC government leaders and public servants to maximise the benefits of AI. In particular, it discusses the items presented in Figure 5.2.

Figure 5.2. Issues discussed in Chapter 5



Leading, co-ordinating and building support for AI

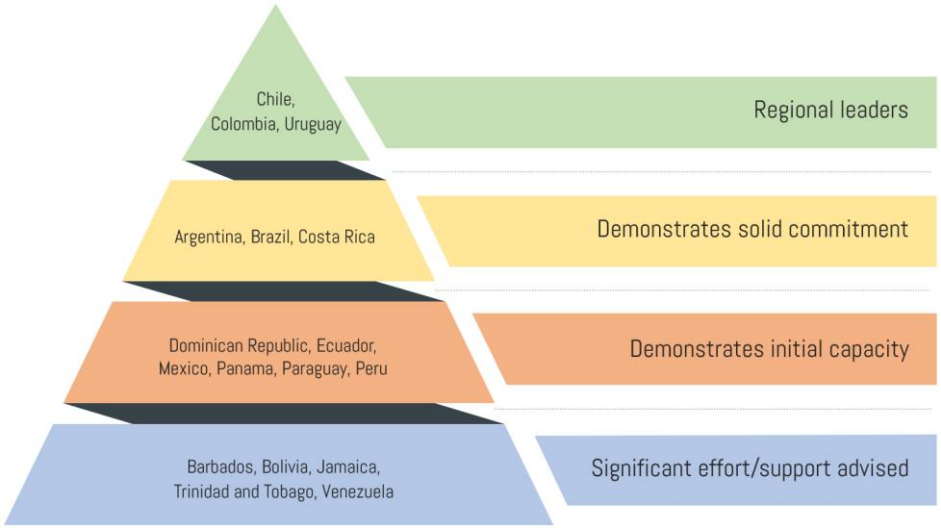
Artificial Intelligence presents a significant opportunity to improve the productivity and quality of public services and government operations. Strong leadership is a critical factor in achieving this objective, and vital to setting the right tone from the highest levels of government and actively communicating the potential benefits of AI in the public sector.

Recent research from the Boston Consulting Group indicates that support for government AI correlates with trust in government, and that "trust in institutions is essential if governments are to gain the support needed to roll out AI capabilities" (Carrasco, Whybrew and Jura, 2019[3]). While putting in place principles and processes to help ensure a trustworthy approach is critical (see previous chapter), solid and effective leadership is an important starting point, as senior leaders can build a cohesive vision for AI and set a "tone at the top" that builds confidence in AI, both within the public sector and beyond. Those at the top also have the power to set a strategic direction that can ripple through levels below, helping to frame the use of AI within the culture at large (OECD, 2017[4]). They can also promote a clear narrative of the benefits of AI to build support within and outside government. As stated in the *OECD Framework for Digital Talent and Skills in the Public Sector* (OECD, 2021[5]), "leadership that creates an environment to encourage digital transformation will communicate a clear vision for digital government, and actively champion its benefits. [Such] leaders will be engaged, visible and approachable, and empower their teams through decentralising decision making".[1]

Central leadership is critical but not enough, however. Formal co-ordination bodies and mechanisms for AI will be needed to avoid siloed approaches and to ensure coherent implementation of the AI strategy and vision.

Leadership and setting a supportive tone at the top

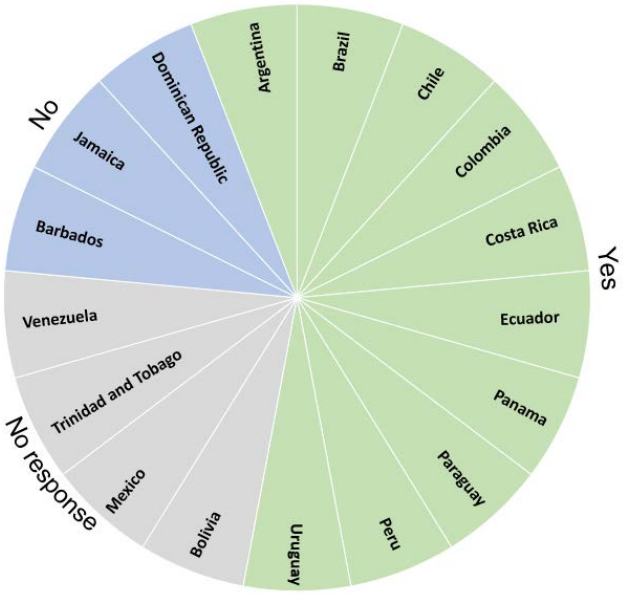
Figure 5.3. LAC regional capacities for AI leadership and setting the right tone at the top



The OECD Recommendation on Digital Government Strategies (OECD, 2014[6]) states that setting clear institutional roles is one of the basic preconditions for sound governance of digital government and sustainably supporting the digital transformation of the public sector. This is especially important at the leadership level. The OECD has previously found that strong support among senior leaders, including political leadership, is the most important enabler for public sector adoption of emerging technologies, including AI (Ubaldi et al., 2019[7]). Solid leadership and governance co-ordination in digital government areas, including emerging technologies such as AI, is critical for enabling a country to move forward together towards common goals.

Among LAC countries, leadership for AI efforts is mixed. The OECD survey of LAC digital government agencies indicates that at least half of countries in the region have identified a specific government organisation to drive these efforts (Figure 5.4). This is promising given that strategies and efforts focused specifically on AI for public sector transformation and innovation are a relatively recent phenomenon worldwide. Improvement in this area is essential if countries want to achieve their AI ambitions. In interviews, officials from several LAC governments told the OECD that a lack of strong leadership hinders the adoption of new technologies.

Figure 5.4. LAC governments that have designated a public sector organisation to lead and co-ordinate AI efforts

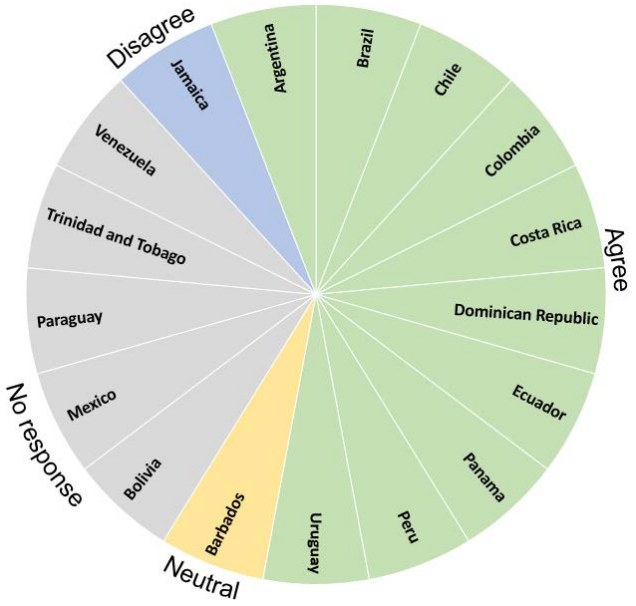


Source: OECD LAC Digital Government Agency Survey (2020).

In addition to ensuring strong leadership is in place, another key factor is how these and other leaders across the public sector set the tone for the exploration and use of AI in the public sector. Sustained and high-level support is necessary to create a stable, enabling environment for AI approaches and solutions to mature. The tone set by the highest levels of government plays a crucial convening role in setting the direction of AI development and its use in wider society. This tone also sends signals to – and provides "top cover" for – public servants at all levels, enabling them to push for innovation and progress.

Among surveyed digital government agency officials, more than half of LAC countries reported agreement that senior leaders express clear support for AI in the public sector (Figure 5.5). These results also indicate a link between designated leadership for AI and opinions on demonstrated support, with the exception of the Dominican Republic. Notably, those countries stating that senior leaders express clear support for AI also have designated organisations responsible for leading AI efforts.

Figure 5.5. Perceptions regarding whether senior government leaders express clear support for AI in the public sector



Source: OECD LAC Digital Government Agency Survey (2020).

The same countries have developed, or are in the process of developing, national AI strategies (see Chapter 2). This is to be expected, as LAC governments that have issued national AI strategies, and/or committed to guiding principles, have already demonstrated their leadership in ways that help align public sector processes and activities towards achieving AI strategies. These strategies represent an opportunity to articulate a compelling vision for how AI can transform public services and operations to benefit citizens, businesses and public servants while maintaining public trust. Some other countries in the region – Costa Rica, the Dominican Republic and Panama – have included goals or ambitions related to emerging technologies in other strategies and policy documents (e.g. their national digital government strategy). This approach also helps to demonstrate leadership and signals the importance of AI, although perhaps to a less visible and targeted extent than dedicated AI strategies.

While instituting these strategies in itself demonstrates a solid level of maturity and advanced thinking, countries differ in the extent to which they demonstrate sustained top-level support for their strategy and for AI. Among the reviewed strategies, those of Brazil, Chile, Colombia and Uruguay have been developed and driven by the highest levels of government. Colombia's strategy is unique in taking the form of a presidentially backed instrument (i.e. a CONPES document),[2] which secures support and funding from all levels of government and assigns responsibility for implementation to the AI Office in the Presidency of the Republic. The extent of sustained top-level support among some of the other strategies is less clear, however. For instance, Argentina's strategy was originally developed by the President's office, but the original document is currently not available on official government websites. The strategy no longer seems a priority, although Argentina officials indicated that it remains in effect.[3] As touched on earlier, Mexico's 2018 strategy, which was put into effect under a previous administration, is no longer publicised on official government websites. It is unclear whether the current administration considers the strategy to be still in effect (see Box 2.2).

Countries inside and outside the region have explored other avenues to ensure leadership and tone-setting for AI in the public sector (Box 5.1). By establishing strong leadership to continuously drive AI efforts, LAC countries could help realise their strategies and goals in a systematic manner across government. Such leadership and strategic visioning is also important for evolving towards a data-driven public sector, which

provides a critical foundation for AI. These aspects are discussed in the *Foundational strategic data governance capacities* section later in this chapter.

Box 5.1. AI leadership and tone-setting efforts

AI Task Force (Colombia)

With the support of CAF, Development Bank of Latin America, the Presidency of the Republic of Colombia is working to design and put in place a task force of experts for AI in Colombia. This office is in charge of fostering the implementation of AI Policy, and will also promote and facilitate the use of AI in the public sector. Its objectives are to:

- Define mechanisms and tools to accelerate the implementation of Colombia's AI strategy/policy and ethical framework.
- Monitor projects in public entities that are using AI systems to provide a more efficient and effective service towards the public.
- Increase international co-operation and co-ordination with governments and international entities to achieve the proper implementation of Colombia's AI strategy.
- Develop mechanisms to foster the access and use of data for the design and development of AI systems.
- Increase collaboration with the private sector and the entrepreneurship ecosystem on subjects related to AI.

Secretary of State for Digitalisation and Artificial Intelligence (Spain)

In 2020, by Royal Decree, the Government of Spain restructured a number of ministerial departments in order to improve efficiency and effectiveness in government operations. As part of this effort, the decree created the Secretary of State for Digitalization and Artificial Intelligence as the highest body under the Ministry of Economic Affairs and Digital Transformation.

The Secretariat's responsibilities include the execution of the country's December 2020 national AI strategy, which consists of six key pillars. These include boosting the use of AI in public authorities and national strategic missions, and establishing an ethical and regulatory framework that guarantees the protection of individual and collective rights. As a consequence of the COVID-19 pandemic, the Secretariat added a Data Office to serve a role similar to that of a Chief Data Officer, and developed Spain's COVID-19 contact-tracing app "Radar Covid".

Ministry of Artificial Intelligence (United Arab Emirates)

The UAE is the only country in the world to have a Ministry for Artificial Intelligence, which leads the country's National Programme For AI. The programme was launched in October 2017 alongside the country's Strategy for AI. To further drive and co-ordinate AI efforts across the public sector, the UAE Council for Artificial Intelligence is tasked with proposing policies to create an AI-friendly ecosystem, advanced research in the sector, and promoting collaboration between the public and private sectors including international institutions to accelerate the adoption of AI.

AI for Humanity (France)

The President of the French Republic launched AI for Humanity, consisting of a national AI strategy, a set of core commitments, and EUR 1.5 million in funding for AI research, companies and projects. The initiative also includes a report commissioned by the Prime Minister that lays out seven foundational

pillars for achieving French AI goals that cut across sectors and mission areas, including public sector transformation.

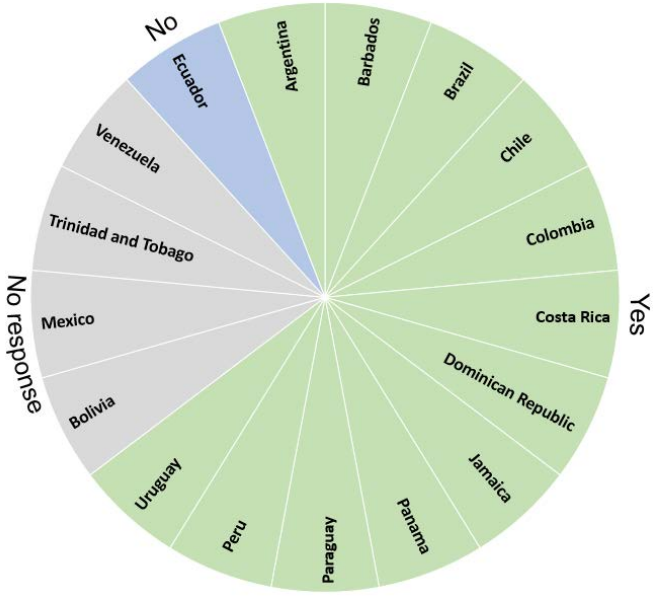
Source: https://oecd-opsi.org/projects/ai/strategies, https://inteligenciaartificial.gov.co, https://ai.gov.ae, www.aiforhumanity.fr, (Ubaldi et al., 2019[7]), https://oecd.ai/dashboards/policy-initiatives/2019-data-policyInitiatives-26722, https://portal.mineco.gob.es/es-es/digitalizacionIA/Paginas/sedia.aspx, www.boe.es/diario_boe/txt.php?id=BOE-A-2020-410 and www.lamoncloa.gob.es/lang/en/presidente/news/paginas/2020/20201202_enia.aspx.

Facilitating cross-government co-ordination

While leadership and strategic vision are critical, so is the ability of public sector organisations and teams to implement their vision in an aligned and coherent manner. All things considered, AI is an advanced approach to developing public policies and services. Co-ordination across government is essential to help overcome bureaucratic legacies, verticality and silos, and to foster horizontality, integration, co-ordination and synergies across and between levels of government (OECD, 2020[1]). This represents a paradigm shift in the governance of digital government and public sector data, and is essential in order to achieve meaningful progress with regard to AI in the public sector.

Among LAC governments, nearly all countries who completed the OECD survey of central digital government agencies indicated that they have a formal public sector body in place to enable inter-institutional co-ordination between ministries/agencies responsible for the implementation of digital government projects (see Figure 5.6). For instance, Brazil has a Special Secretariat for State Modernisation as part of the General Secretariat of the Presidency which, by decree,[4] is explicitly responsible for co-ordinating and monitoring government-wide execution of the national digital government strategy. More lightweight but important mechanisms also exist, such as Paraguay's Digital Strategic Committee.[5] Bolivia's example is interesting in that all branches of government are involved, while the approach taken by Chile involves a mandated network (Box 5.2).

Figure 5.6. Countries have a formal government body to enable inter-institutional co-ordination



Source: OECD LAC Digital Government Agency Survey (2020).

Box 5.2. Examples of digital government co-ordination mechanisms

Council for Information and Communication Technologies (Bolivia)

The Council for Information and Communication Technologies of the Plurinational State of Bolivia (CTIC-EPB) facilitates various working groups within which public institutions interact and debate about ICT initiatives and guidelines in the country. All branches of the state participate in the different working groups, while the Council serves as a co-ordination mechanism for the preparation and implementation of proposals for regulations, standards, protocols, guides, catalogues and other technical mechanisms. The working groups focus on topics such as interoperability, infrastructure, free software, security, software development, open data, electronic government, and experience and user interfaces.

Source: www.ctic.gob.bo.

Digital Transformation Coordinators (Chile)

Under the mandate of the Digital Government Division (DGD), Chile's Digital Government Coordinators assemble institutional delegates to monitor implementation of the Law on Digital Transformation of the State. This approach may serve as a useful model for digital champions in the Chilean public administration as well as a route to engage key stakeholders in what should be understood and owned as a cross-government agenda.

Source: (OECD, 2020[8]).

The existence of such formal co-ordination mechanisms for digital government represents a critical step in ensuring proper, aligned implementation of national digital government strategies and initiatives, including those involving AI. As seen earlier in Figure 5.6, most LAC governments have a public sector organisation responsible for leading and co-ordinating efforts at a central level. Such broader digital government co-ordination mechanisms will be discussed further in the forthcoming report *Going Digital: The State of Digital Government in Latin America*. As with these broader digital initiatives, some countries have also put in place formal mechanisms specifically to co-ordinate their AI strategies and initiatives within and across the public sector. Argentina, for example, has developed an AI Innovation Hub to implement public sector AI projects. Thematic groups are led and governed by a steering body charged with defining goals and metrics to measure progress (Ubaldi et al., 2019[7]). In the case of Colombia, a proposed AI Task Force for the Development and Implementation of AI would be responsible for cross-government co-ordination through interaction with national entities leading AI public policy co-ordination and project implementation.[6] Chile's AI Policy Action Plan calls for the development of an AI Observatory, a platform hosting information on all national public sector AI initiatives, some of which are designated as best practices. While it is unclear whether the observatory would have a formal role in co-ordinating AI efforts, it can serve as a tool to help government facilitate awareness of AI activities and ensure a level of consistency in design and implementation.

The OECD was unable to identify additional formal co-ordination mechanisms tailored for Artificial Intelligence beyond statements assigning responsibility to an existing ministry or office. However, additional examples exist outside the region, such as that of the Select Committee on Artificial Intelligence in the United States (Box 5.3). However, such AI-specific co-ordination bodies and mechanisms are fairly new and the OECD has not yet determined their utility. It may indeed be the case that existing formal co-ordination mechanisms for broader digital government efforts are sufficient to address issues related to AI. Nonetheless, LAC countries may want to explore the potential for cross-government AI co-ordination mechanisms in order to determine whether such an approach is valuable in their specific context.[7]

Box 5.3. Select Committee on Artificial Intelligence (United States)

Over the last few years, the United States has established research institutes and issued regulatory guidance on AI, a national AI strategy and guidelines for the federal government on the use of AI. In 2018, the White House created the Select Committee on Artificial Intelligence to oversee the co-ordination of Federal efforts related to AI research and development (R&D). The Select Committee comprises the most senior R&D officials across the Federal government and represents a whole-of-government approach to AI R&D planning and co-ordination. In early 2021, the committee was expanded and made permanent. It serves as the senior interagency body responsible for overseeing the national AI strategy.

Source: https://trumpwhitehouse.archives.gov/wp-content/uploads/2021/01/Charter-Select-Committee-on-AI-Jan-2021-posted.pdf.

As noted earlier, data are foundational for AI, thus data leadership and co-ordination also play a critical role. These topics are discussed in the *Foundational strategic data governance capacities* section presented later in this chapter. In addition to such formal mechanisms, less formal communities of interest and networks are also vital to supporting co-ordination, breaking down organisational siloes and delivering end-to-end solutions that respond to problems in a holistic manner (OECD, 2020[1]) (OECD, 2020[8]). Such communities and networks are discussed further in the section *Understanding problems and the potential for AI solutions*. Collectively, formal co-ordination mechanisms and communities, and networks foster information exchange, culture change, future-proofing, cross-cutting collaboration and ecosystem building.

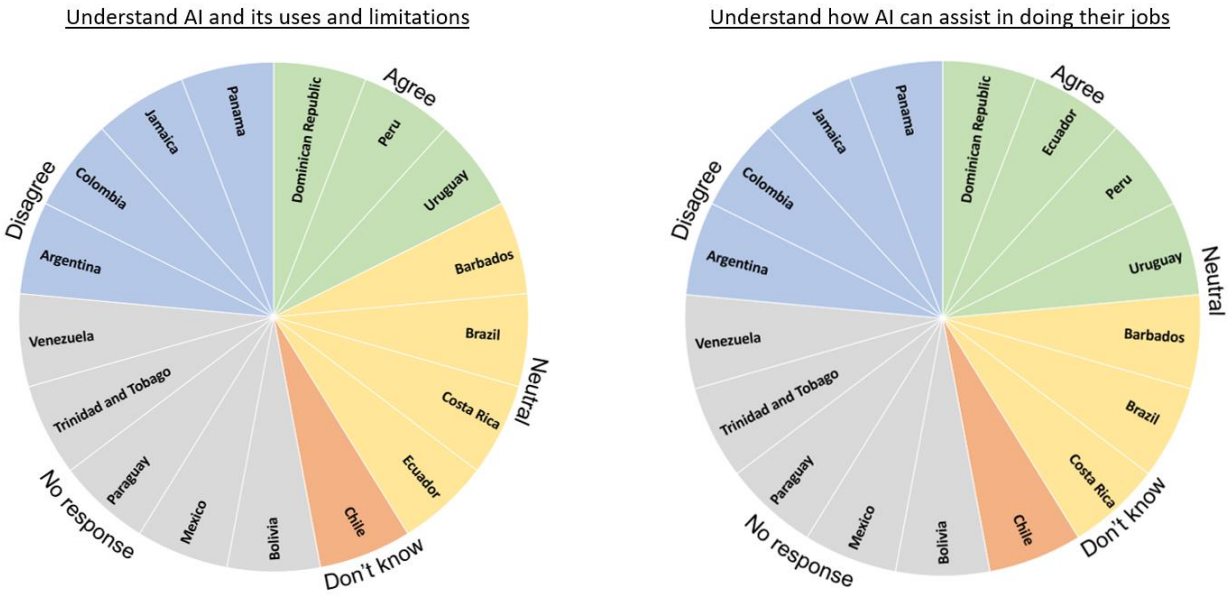
Building internal and external support and legitimacy

Even with solid principles for trustworthy AI (see previous chapter) and strong leadership and co-ordinated practices in place, governments must take action to gain and maintain support and legitimacy both among public servants internally, and with the public externally. This appears to be an area that could use additional attention throughout the LAC region to help ensure that public sector AI efforts are accepted and embraced across and beyond government.

Internally, it is unlikely that AI will replace public sector workers in the near term; however, in Latin America, 30% of the public sector workforce are employed in occupations with a high risk of technological substitution (Weller, Gontero and Campbell, 2019[9]). Fear regarding this possibility can be pervasive among public servants. Securing their support will require a clear narrative and tangible examples demonstrating how AI can assist them to better deliver services, reducing the amount of time they spend on routine tasks and allowing them to focus on higher-value work where they can have the most impact. Steps should also be taken to ensure that public servants understand that AI can assist them, rather than replace or control them. If they feel threatened by the pace of change, their effectiveness can diminish quickly, which can manifest in a variety of ways. For instance, managers could end up thwarting their organisation's innovation capacity by failing to give enthusiasts and change agents the leeway they need to experiment and devise new ways of solving problems (PricewaterhouseCoopers, 2018[10]). If not done well, resistance among public sector workers could slow the deployment of AI, limit its effectiveness and damage morale (Berryhill et al., 2019[11]).

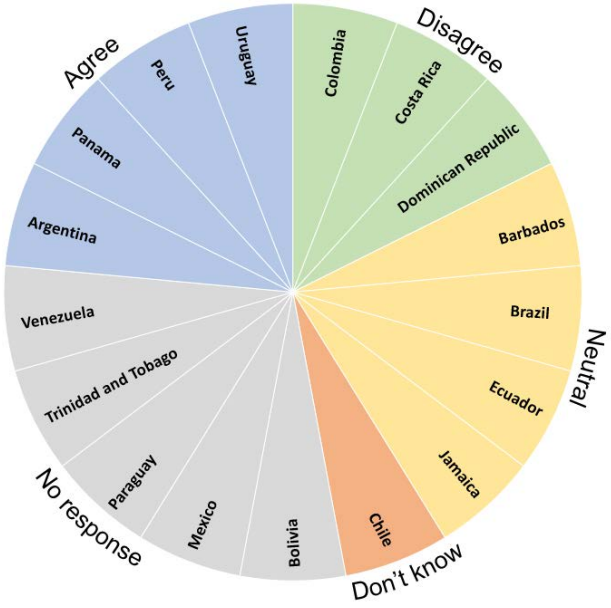
While a handful of LAC countries have put in place national AI strategies and developed or adhered to human-centric principles, there are indications that internal understanding and support for AI in the public sector in many LAC countries has not yet taken root. As shown in Figure 5.7, digital government officials in only a few countries indicated that public servants understand AI, its uses and limitations, and how it can assist them with their work. In addition, results are mixed regarding the extent to which public servants fear that AI may negatively affect their jobs (Figure 5.8).

Figure 5.7. Public servants understand AI, its uses and limitations, and how AI can assist them with their work



Source: OECD LAC Digital Government Agency Survey (2020).

Figure 5.8. Public servants fear that AI and emerging technologies may negatively affect their jobs



Source: OECD LAC Digital Government Agency Survey (2020).

Such indications early in the development and deployment of AI policies and initiatives are to be expected. However, they imply that more efforts may be needed in LAC governments to ensure public servants understand AI and how it can help them in their work, thereby increasing the likelihood that will adopt the technology, as appropriate. The OECD identified a number of relevant digital and AI upskilling efforts underway in LAC countries (see the section on *Enhancing internal expertise and human capital* in Chapter 6) that can assist in this regard, but these largely emphasise technical skills, and often target

certain types of employees, as opposed to broadening understanding of the benefits of AI across the public sector. Communications and educational campaigns to help dispel AI rumours and myths and explain how AI can be a positive force in the daily lives of public servants can also be of assistance. For AI and other digital government priorities, a communication strategy on actions and decisions that will foster the move toward digital government is a prerequisite for successful implementation of policies and strategies (OECD, 2018[12]). While some countries hint at this (e.g. Peru's draft national AI strategy refers to the development of online courses to help public servants understand the use and benefits of AI, and Chile's AI strategy pledges to promote AI success stories in the public sector), the OECD was unable to identify any active campaigns for AI among LAC governments. Box 5.4 provides an example from Canada of an initiative designed to broaden understanding of the benefits of technology among public servants.

Box 5.4. Digital Foundations (Canada)

The Canada School of Public Service's Digital Academy offers training for officials at all levels of seniority and with differing levels of specialist expertise. The training explores real-life challenges and problems using a mix of events, online learning and podcasts (these "busrides.ca" are designed to give quick introductions to topics related to government digital services). The "Digital Foundations" tier of learning opportunities is targeted at all public servants and levels of expertise. It aims to provide timely information on the digital world that will affect how public servants do their jobs and even live their lives.

Source: www.csps-efpc.gc.ca/About_us/Business_lines/digitalacademy-eng.aspx.

Building support *externally* among the public is also important. This is perhaps especially true in the LAC region, where a recent survey of over 150 000 people found that 49% of respondents are worried that AI will be harmful – the highest regional rate in the world (Neudert, Knuutila and Howard, 2020[13]). LAC governments should ensure consistent messaging from the top that communicates to citizens, residents and businesses the importance and potential benefits of public sector AI solutions and services. Likewise, governments should articulate limiting factors and risks, alongside their strategies to overcome them (e.g. instituting ethical principles and safeguards such as those discussed in the previous chapter). This should form part of organised and targeted strategic communications campaigns.

As with digital strategies more broadly, a core argument for promoting such communication and dialogue is encouraging ownership and, above all, support among the population, making them a key player in driving the country's strategy through informed demand (OECD, 2018[12]). For this communication to be effective, it is recommended to focus on channels commonly used by citizens, such as social networks, using them to communicate key messages to the public. Physical workshops and demonstrations within ministries and local communities to stimulate ongoing engagement and participation can also play a useful role (OECD, 2020[8]). In addition to communicating strategy opportunities and challenges, LAC governments should identify opportunities to inform the public about progress in terms of service design and delivery efforts.

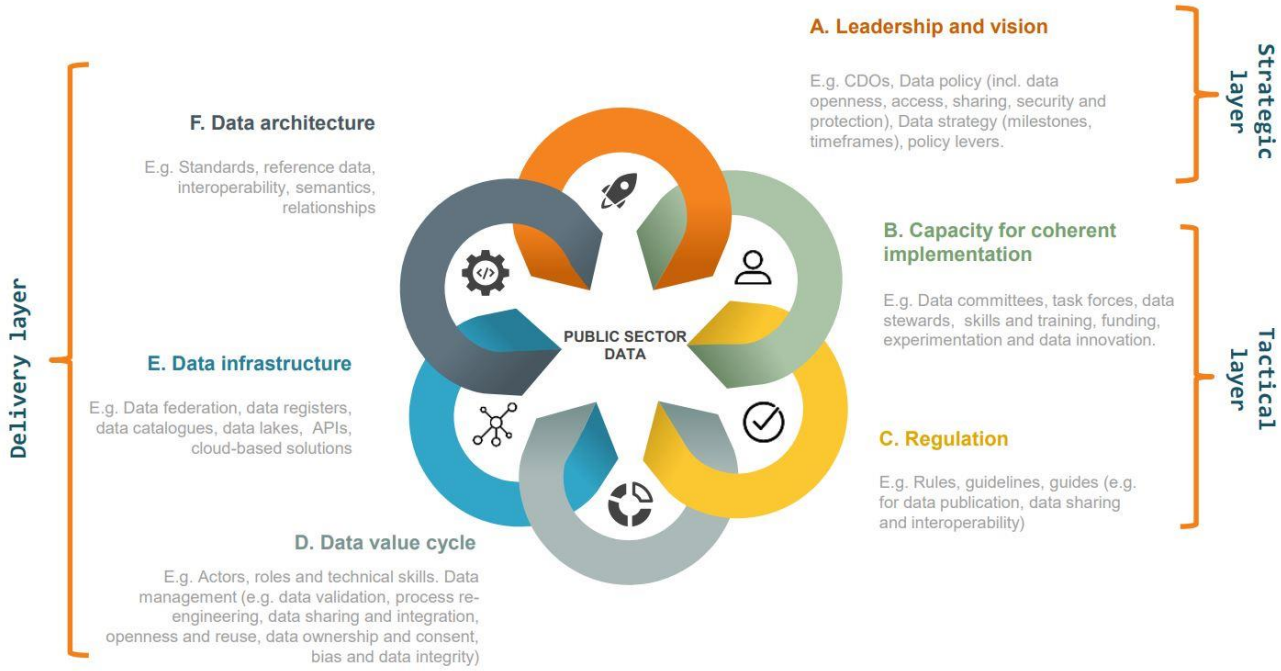
While the OECD has identified a number of positive efforts to engage citizens and obtain their input (see the section on *Leveraging external expertise through partnerships and procurement* in Chapter 6) and seek input from end users (see section on *Ensuring an inclusive and user-centred approach* in Chapter 4), there are limited examples of external communications campaigns associated with public sector AI strategies, principles or initiatives. Brazil's national AI strategy is notable for its inclusion of an action item to "Create awareness campaigns on the importance of preparing for the development and ethical use of AI" targeted at the general population. Chile's strategy includes an objective to "make the use of AI visible in the industry" through co-ordinated dissemination among ministries, although the strategy is aimed at the private sector and not the public at large. The OECD does not consider this to be a deficiency, as such

approaches are very new.[8] However, over time, LAC governments should seek to create such communications strategies and campaigns. These should be incorporated into or consistent with broader communications strategies for digital government efforts.

Foundational strategic data governance capacities

AI governance and co-ordination must consider data governance, as data are the foundational building blocks for modern AI systems. The forthcoming review, *Going Digital: The State of Digital Government in Latin America*, due to be published in 2022, will contain an in-depth exploration of LAC government capacities and practices around a data-driven public sector, including data governance, which underpins the readiness of the public sector to adopt data-driven approaches (Figure 5.9). It will also discuss issues relating to commons standards and interoperability between different IT systems, which were among the challenges most often cited to the OECD by public officials in terms of pursuing emerging technologies (Ubaldi et al., 2019[7]). Finally, the review will analyse LAC government Open Government Data (OGD) policies and initiatives directed towards increasing the openness, usefulness and reusability of government data, which can serve as fuel for AI in all sectors.

Figure 5.9. Data governance in the public sector



Source: (OECD, 2019[14]).

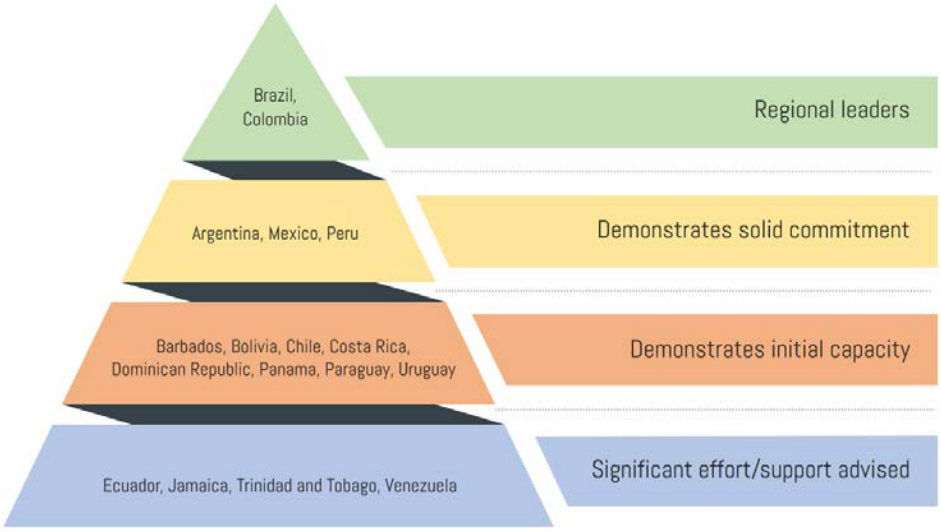
As the forthcoming report covers data in depth, this AI review focuses its attention on a critical high-level prerequisites within the strategic layer of data governance of importance to AI, namely: the extent of formal data leadership in LAC countries and the existence of data strategies.[9] Chapter 6 also discusses relevant issues that support government data capacities, including data literacy and skills (see "Enhancing internal expertise and human capital") and infrastructure components important for AI development (see "Infrastructure").

Globally, many governments still lack a strategic approach for the development of data-driven public sectors, and dedicated public sector data policies, or strategies and leadership (e.g. Chief Data Officers), remain largely absent across countries (OECD, 2020[2]). As discussed in this section, this is also true for LAC countries. The lack of a strategic vision, as well as formal roles and responsibilities for coherent design and implementation of data-driven public sector projects, represents a major challenge to building a national approach for the exploration and use of AI for public sector innovation and transformation. LAC governments that want to advance in exploring and adopting AI in the public sector will need to ensure they have solid fundamental data capacities to support their ambitions.

Data leadership

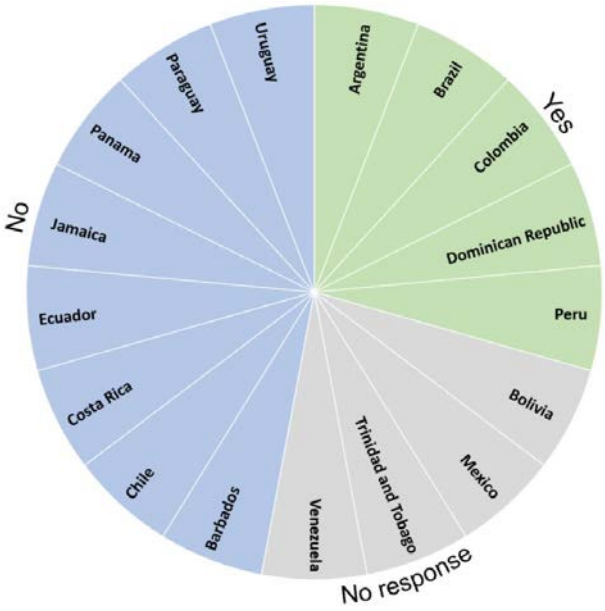
Data leadership is critical to ensure that the data-driven conversation across the public sector has strategic direction and purpose, and to guarantee coherent implementation across government as a whole and within individual organisations (OECD, 2019[14]). Good data governance can help to extract value from data assets, enabling greater data access, sharing and integration at the organisational level and beyond, and increasing overall efficiency and accountability.

Figure 5.10. LAC region capacities data leadership



Most governments in the LAC region have not formalised a data leadership position, such as a Chief Data Officer (or similar position with sufficient political and administrative influence) (see Figure 5.11). These formalised leadership roles assume responsibility for stewarding the development of a national data strategy, and could provide LAC public sectors, and the public at large, with clarity about how governments are approaching ethics, interoperability, access, availability, governance, analytics and other issues (OECD, 2020[8]).

Figure 5.11. LAC countries having a national Chief Data Officer (or comparable role)



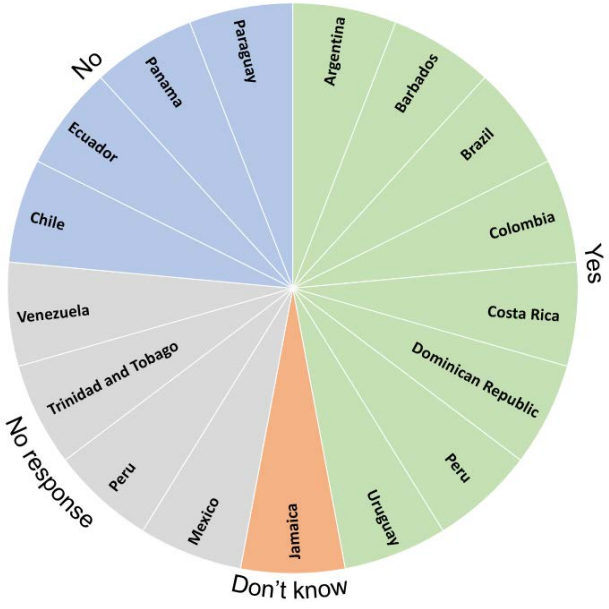
Source: OECD LAC Digital Government Agency Survey (2020), country comments to draft report.

About half of OECD countries have put in place a Chief Data Officer (OECD, 2018[12]), with numbers trending upwards over time. These numbers indicate that LAC countries lag somewhat behind the OECD average. OECD research has found that countries that do have Chief Data Officers appear to benefit from them significantly. For instance, the top-ranking countries in the OECD's OURdata Index have prioritised the establishment of the position/functions of a Chief Data Officer (OECD, 2018[15]). Previous OECD work has also recommended the creation of central Chief Data Officer positions in LAC countries, including in Chile (OECD, 2020[8]) and Panama (OECD, 2019[16]), in line with the specific national context and public sector culture. The OECD has also recommended that Chief Data Officers have a strategic vision of data governance enabling the co-ordination of public entities towards synchronised and well-structured policy goals covering the entire government data value chain (OECD, 2018[17]) While five countries indicated in the survey that they have national Chief Data Officers, the OECD was unable to find evidence to confirm such a role for Colombia, but was able to identify other examples in the LAC region:

- Both Brazil and Peru have mandated a national chief data officer by decree (OECD, 2018[15]). However, in the case of Peru, the OECD has recommended that the country formalise and strengthen the position of Government Chief Data Officer (OECD, 2019[18]).
- Colombia does not have a central role with the name "Chief Data Officer". According to Colombia officials, the country's Vice Minister of Digital Transformation role is comparable to the role of a Government Chief Information Officer. The government is currently designing and implementing its National Data Infrastructure Plan. As part of this plan, Colombia will "Formally define the role of Chief Data Officer in the organisational structure of public entities". In addition, as part of developing the governance model for Data Infrastructure, Colombia is defining a number of roles, including that of a National Chief Data Officer.
- While not formally called a "Chief Data Officer", Argentina and Mexico have comparable de facto positions in place (OECD, 2019[14]). Previous OECD work has indicated that a more official structure may work better, and has recommended that Argentina take additional steps with regard to formalising data governance structures (OECD, 2019[14]).

Even though few governments appear to have a central Chief Data Officer, most of the countries that responded to the OECD survey indicated that they have a dedicated department or unit responsible for providing support for the strategic use of data (Figure 5.12). For instance, Colombia's Data Exploitation Policy indicates that responsibility for leading data efforts is shared between MinTIC and the National Planning Department, but designates a specific institution for each objective (Government of Colombia, 2018[19]). Similar responsibilities in the Dominican Republic are held by the Department of Standardisation, Regulations and Technical Audit in the Presidential Office of Information and Communication Technologies (OPTIC).[10] This represents an important step even if the authority is not vested in a single leader, as is the case in many of the countries.

Figure 5.12. Existence of a dedicated department or unit within the central/federal government responsible for providing support for the strategic use of data within the public sector

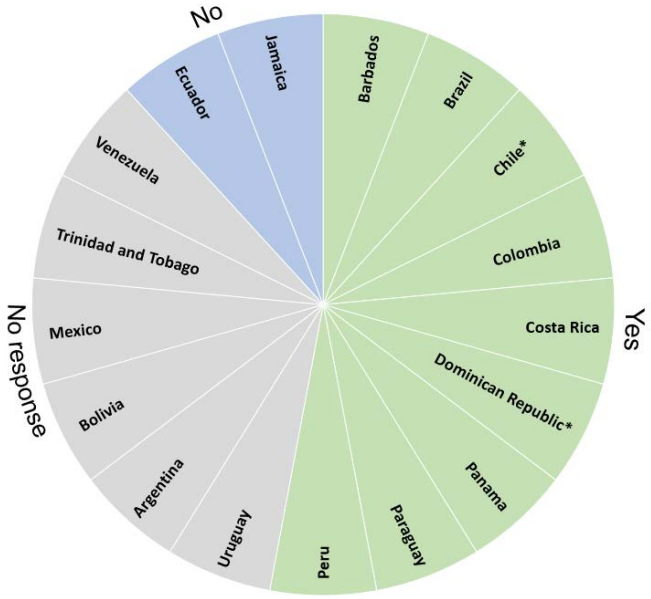


Source: OECD LAC Digital Government Agency Survey (2020).

Finally, the importance of data leadership is not limited to the central level. When done successfully, it takes the form of Institutional Chief Data Officers (iCDOs), or "data stewards". Central Chief Data Officers and iCDOs go hand-in-hand, ensuring the strategic implementation of data strategies, policies and governance, in the process maximising the potential for data, including for AI (OECD, 2018[15]). Under the oversight of a Chief Data Officer, the development of country and institutional data strategies should empower a network of iCDOs and data professional communities of practice to identify priorities for resolving some of the most pressing data issues (OECD, 2019[16]). Results from the 2016 OECD Open Government Data Survey suggest that the impact of a chief data officer in the central or federal government is strengthened by the existence of institutional chief data officers in each ministry and/or agency (OECD, 2018[15]).

Among LAC countries, a majority of governments surveyed indicated that digital leadership positions exist at the institutional level (Figure 5.13). Overall, the LAC region appears to follow a pattern that the OECD has identified in other areas. Somewhat counter-intuitively, governments often seek to solidify data leadership at the organisational level before putting in place national leadership in the form of a Chief Data Officer.

Figure 5.13. Public sector organisations have a data leadership position



Note: * indicates that public sector organisations have put in these roles as part of their data capability, while the rest indicate a more formal specific government provision mandating these roles. Panama initially indicated "No", but their response was changed to yes by the OECD due to detailed information documented as part of an earlier review (OECD, 2019[16]).
Source: OECD LAC Digital Government Agency Survey (2020).

Examples of these positions in the LAC region include the following:

- Argentina, like many OECD countries, lacks an explicit formal requirement to appoint iCDOs for central/federal line ministries and agencies. This leaves digital governance at the ministry level somewhat inconsistent, with some ministries having iCDOs in place to positive effect, while others do not. To the extent that they exist, these roles have largely focused on complying with data publication regulations (OECD, 2019[20]).
- In Colombia, Decree 415/2016 orders all public institutions to designate a Director of Information Technologies and Systems, which also serves as an institutional data steward (i.e. iCDO) (see Box 5.5).
- Costs Rica's law[11] mandates institutional data leadership; however, this role appears to be limited to access to information policy and addressing related requests and complaints.
- In Panama, as of 2019, ten institutions have an iCDO with six of these focused only on open data. A further 21 institutions were planning to introduce an iCDO in the near future (OECD, 2019[16]).
- Paraguay's Information Security Governance Model[12] designates an Information Security area in all government institutions, with relevant objectives, roles, competencies and responsibilities. However, these efforts focus on data security and not necessarily strategic access, use and sharing of data.
- In Peru, "Digital Government Leaders" are in charge of co-ordinating objectives, actions and measures for digital transformation and the deployment of digital government at the institutional level, in accordance with policies and guidelines issued by the Presidency of the Council of Ministers, through the Government and Digital Transformation Secretariat.

- Uruguay's data protection law requires that each public institution have a Personal Data Protection Delegate responsible for its implementation. However, this individual does not appear to have the full role of an iCDO and the OECD could not find evidence of this role in the country.

Box 5.5. The role of institutional data stewards in Colombia

In Colombia, Decree 415/2016 mandates all public institutions to designate a Director of Technologies and Information Systems at managerial level, a role which will also serve as an institutional data steward. Among others, the main responsibilities of the iCDOs are to:

- Focus on creating public value by ensuring the necessary abilities and technology services are present in public service institutions to advance the digital transformation, organisational efficacy and government transparency.
- Ensure the implementation and maintenance of the institution's IT enterprise architecture in conformity with central guidelines, the e-government strategy and vision, the needs of the digital transformation and the specific available legal framework for that institution or policy sector.
- Identify opportunities for the adoption of new technological trends with the potential to produce positive impacts at the national and sectoral level.
- Lead the procurement process of technology goods and services.
- Co-ordinate with other stakeholders in the public and private sectors, civil society and academia on the design and implementation of IT policies and the collection of evidence-based data.
- Design information management strategies that guarantee the relevance, quality, opportunity, security and exchange of efficient flows of public sector information within and between public sector institutions.
- Propose and roll out strategic actions to promote open government through the publication and interoperability of government data, with a view to enhancing civic participation, collaboration between stakeholders and public sector transparency.
- Appoint public servants responsible for leading the development, roll out and maintenance of information systems and digital services in accordance with the Central Strategic Plan for Information and Telecommunications Technology.
- Promote and facilitate the use and adoption of information technology, data systems and digital information services by public servants, citizens and other stakeholders.
- Promote the effective use of right to access by all people to information and telecommunications technology, within the limits established by the Constitution and Colombian law.

Source: Colombian Government (2016), Decree 415/2016, https://normograma.mintic.gov.co/mintic/docs/decreto_0415_2016.htm, (OECD, 2018[12]).

In addition to formalised central and institutional leadership of data, LAC governments appear to be positioning themselves for stronger leadership governance in other ways:

- In its national AI strategy, Argentina has committed to building a "comprehensive, predictable and stable governance framework for both public and private sector data". This will include a collaboration between the *Agencia de Acceso a la Información Pública* (AAIP) and the National Observatory of Artificial Intelligence to design rules for co-operation in terms of data.

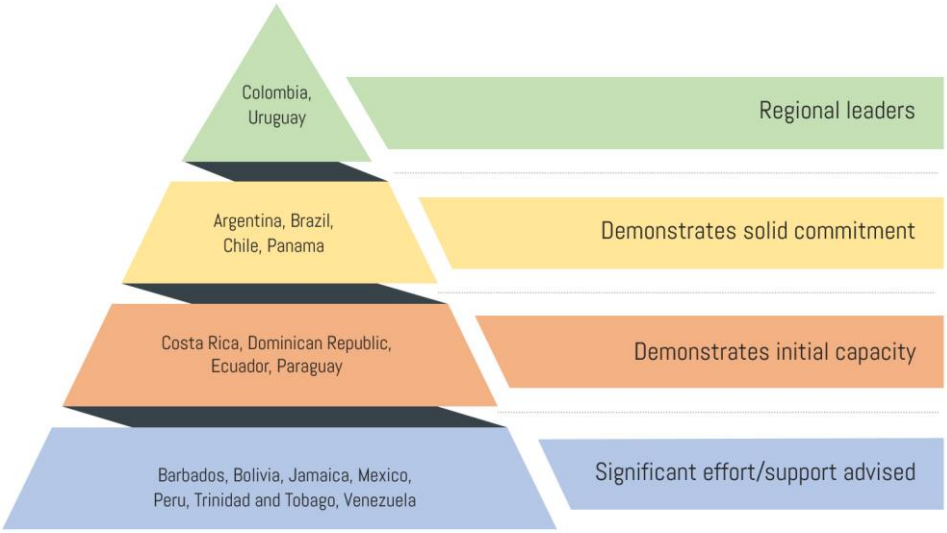
- In Bolivia, the Council for Information and Communication Technologies facilitates a Data Working group where public institutions from all levels interact, debate and establish guidelines in the field of data access and management in the state.[13]
- Chile's national AI strategy and action plan include a dedicated focus on data as an "enabling factor" and prescribe actions for the public, private and academic sectors. Regarding the public sector, it proposes the creation and consolidation of an adequate data governance structure to promote greater availability of quality data.
- Peru's Digital Government Law[14] put in place a Governance and Data Management Framework of the Peruvian State with "technical and regulatory instruments that establish the minimum requirements that Public Administration entities must implement to ensure a basic and acceptable level for the collection, processing, publication, storage and opening of the data that it administers". As a complement, it charges the Government and Digital Transformation Secretariat to issue guidelines and guides to ensure the quality of the data, its security and ethical use.[15]

The efforts discussed here illustrate the progress being made in several LAC countries to instil national, central and institutional leadership for data. However, they also reflect a number of gaps that need to be addressed in order to make progress with AI. A number of instances also arose where a LAC government reported the existence of a leadership position on the OECD survey, but which could not be verified. This may indicate a lack of formalisation of roles and responsibilities in the country.

Data strategy

Along with solid data leadership, a sound data strategy is important to allow governments to put in place a systemic foundation for AI data capacity. A clear data strategy that enables governments to access rich, accurate and useful data; maintains privacy; and conforms to societal and ethical norms will be a necessary pre-condition to effective deployment of AI. In the LAC region, governments have made significant progress in this area in recent years.

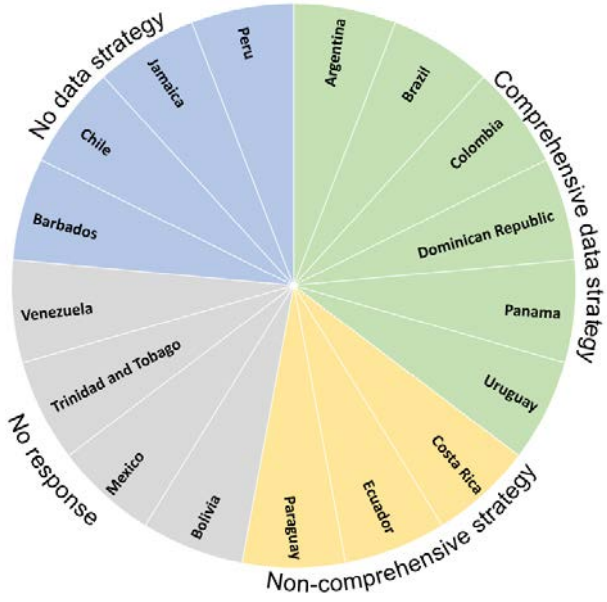
Figure 5.14. LAC region capacities for taking a strategic approach to data use in the public sector



Among LAC governments, six have affirmed the existence of a single national data strategy covering different aspects (e.g. open government data, data sharing within the public sector, data ethics, protection and security, etc.), while another three report the existence of a somewhat less comprehensive national

strategy focused on data for AI or the internal management of data (e.g. data cataloguing, generation, sharing and use within the public sector) (Figure 5.15).

Figure 5.15. LAC countries having a formal data strategy



Source: OECD LAC Digital Government Agency Survey (2020).

These positive results demonstrate the growing priority that LAC governments place on leveraging data as an asset and advancing towards becoming a data-driven public sector. However, the OECD was not always able to obtain sufficient evidence to support these results, and was able to confirm the existence of data strategies just for Colombia and Uruguay. A deeper review of each of these strategies is beyond the scope of this review; however, there are some indications that countries' comprehensive strategies may not cover all aspects of the OECD's framework for a data-driven public sector (OECD, 2019[14]), or if they do, perhaps in a way that is not immediately clear. For instance, in a recent review, the OECD found that Panama's strategy focused mainly on open government data, with less emphasis on other valuable aspects of data (OECD, 2019[16]). Similarly, Argentina, Brazil, the Dominican Republic and Panama indicated in the OECD survey results that their open data strategies and practices constituted more comprehensive strategies, although their contents are more narrowly focused on open data. Some countries pointed to information-sharing rules or exchange platforms (Brazil, Dominican Republic).

It may be the case that an amalgamation of disparate policies and procedures is sufficient to address all the issues relevant for a national data strategy. However, this approach is less useful when developing an aligned systemic approach to building a data-driven public sector. All LAC countries, including those that have stated that they have comprehensive strategies in place, would benefit from ensuring that their national strategies are strategic and clear, and that they are aligned with the OECD's framework for a data-driven public sector (OECD, 2019[14]).

In general, the OECD could find only one clear and dedicated, albeit not very detailed, data strategy for any of the LAC countries in this review (Uruguay, see Box 5.6). Colombia appears to have the elements of a solid national data strategy in place, although they are separated into discrete components, namely the Data Exploitation Policy,[16] the open data policy,[17] the Infrastructure Governance Model for the Development of Emerging Technologies,[18] the National Data Infrastructure Plan[19] and the Interoperability Framework.[20] The latter of these elements has a broader scope covering aspects such as data

governance, data architecture, citizen-centred design, service design, information security, collaboration, data use and re-use, and other relevant topics. The country's AI strategy also includes measures that support the task of expanding data infrastructure and the creation of data trusts, which forms part of the Data Exploitation Policy.

Finally, while some governments do not currently have a data strategy in place, there are indications that such strategies are under development. Chile, for instance, is developing a national data strategy (OECD, 2020[8]) that will draw on the OECD's framework for a data-driven public sector (OECD, 2019[14]). The strategy will have a strong focus on advancing interoperability and data-sharing in the public sector and preparing the administration for the advent of increasingly sophisticated data-processing capabilities, such as AI (OECD, 2019[21]), points which are reiterated in the country's AI strategy and action plan.

Box 5.6. Uruguay's Data Policy for Digital Transformation

The Government of Uruguay has developed a data strategy that promotes data as a critical asset for all government operations and advocates a systems approach to data collection, management and governance. Uruguay has also launched an interoperability platform to facilitate and promote government digital services and improve integration between public sector organisations.

The policy breaks down general principles for data management in the central administration, as well as principles associated with managing data through their life cycle.

General principles:

- Principle 1: Data as assets.
- Principle 2: Data responsibility.

Principles associated with the data life cycle:

- Principle 3: Generation.
- Principle 4: Efficiency.
- Principle 5: Quality.
- Principle 6: Access to data.
- Principle 7: Share and use.
- Principle 8: Open data.
- Principle 9: Data protection (includes Legality, Veracity, Purpose, Prior informed consent, Data security, Reservation, Responsibility).
- Principle 10: Safety.
- Principle 11: Preservation.

The policy does not provide a tremendous amount of detail about how each principle is to be achieved, but envisions them as a collective foundation for a subsequent data action plan.

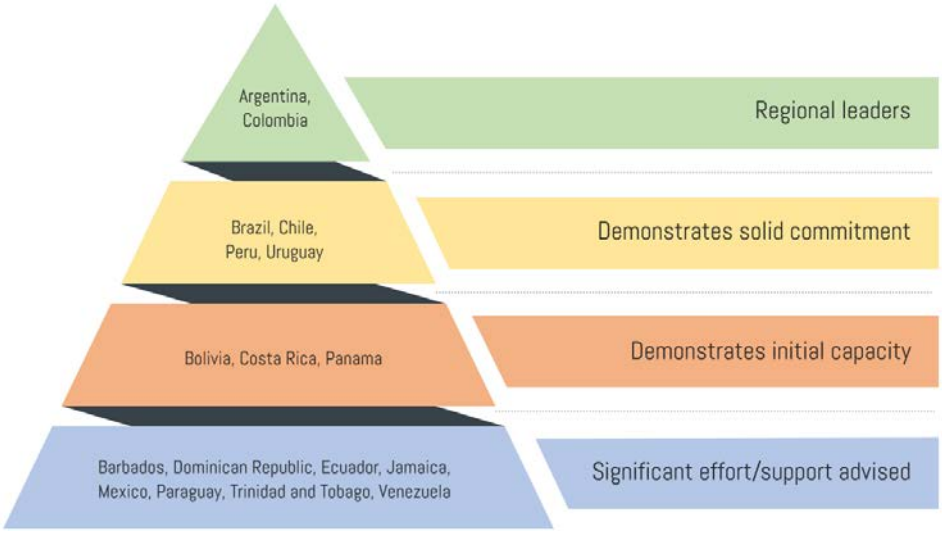
Source: www.gub.uy/agencia-gobierno-electronico-sociedad-informacion-conocimiento/comunicacion/noticias/uruguay-politica-datos-para-transformacion-digital.

LAC governments would benefit from building high-level strategies, and detailed and flexible action plans to achieve them. A good example of this approach from outside the region can be found in the United

States Federal Data Strategy and Roadmap, as detailed as a case study in the report *Hello, World: Artificial Intelligence and its Use in the Public Sector* (Berryhill et al., 2019[11]).

Creating space for experimentation

Figure 5.16. LAC region capacities for experimenting with AI



Governments need to carve out time and space for experimentation to explore AI in the public sector, as both experimentation and iterative learning are crucial to developing AI capacity in the public sector. If practitioners do not have the freedom to explore new ways of developing and delivering services, the potential for AI in the public sector is unlikely to be realised. In addition to helping to identify new possibilities and approaches, controlled environments for AI experimentation and testing facilitate the timely identification of potential technical flaws and governance challenges. In so doing, they can also highlight public concerns especially through testing under quasi real-world conditions (OECD, 2017[22]). Such environments include innovation centres, labs and sandboxes. Experiments can operate in "start-up mode" whereby they are deployed, evaluated and modified, and then be scaled up or down, or abandoned quickly (OECD, 2020[23]).

A number of LAC governments have already developed strong capacity for experimentation in general, including through innovation and experimentation labs. Some successful examples of this approach include Argentina's LABgobar,[21] Brazil's GNova lab[22] and Chile's Laboratorio de Gobierno (LabGob).[23] Although these labs are not focused specifically on AI, they demonstrate national investment in fostering systemic capacities for experimentation and innovation, including digital innovation. Consistent with OECD observations globally, a number of LAC governments have developed, or are in the process of developing, labs and pilot processes for AI experimentation which are either dedicated to AI efforts or involve a broader portfolio of digital government efforts that integrate AI. Such efforts include the following:

- As called for in the country's national AI strategy, Argentina has developed an AI Innovation Lab to bring together multiple stakeholders to experiment with and develop AI projects in a variety of areas (see Box 5.7). It also calls for the creation of eight new multi-disciplinary AI research labs.
- Bolivia's 2020 *Plan for the Strengthening of the Open and Participative Government*[24] proposes the creation of an Innovation and Technological Research Laboratory to "generate solutions to the needs of Bolivians, through the promotion and development of free knowledge, innovation and

digital research; reducing the digital divide and guaranteeing digital inclusion to build technological sovereignty in the country".

- Brazil's national AI strategy proposes the creation of data experimentation spaces for AI, while the national digital strategy underlines the need for a lab to experiment with data and emerging technologies.
- Colombia has developed an Emerging Technologies Handbook[25] that proposes pilot tests as part of the design phase for emerging technology projects. It has also established a Centre for Digital Public Innovation,[26] which promotes digital public innovation and co-creation through the use of emerging technologies in projects that seek to advance the Sustainable Development Goals (SDGs). Finally, the country has also built MiLAB,[27] a public innovation laboratory that promotes collaboration and open innovation to test, strengthen and monitor the implementation of GovTech solutions, which may involve AI-driven solutions.
- Costa Rica has declared its intention to build a National Laboratory for Artificial Intelligence (LaNIA), which will search for solutions to national problems with the support of AI through international co-operation and interaction between the public and private sectors.[28] While experimentation could occur in such a lab, it appears that LaNIA will focus more on research, data sharing, ecosystem building and the creation of technology products.
- Peru has issued a resolution[29] for the establishment of a Government and Digital Transformation Laboratory, which will operate as a platform for cross-sector experimentation and co-design for digital innovation and the use of emerging technologies, including AI, among other things. In an interview with the OECD, Peruvian officials stated that the lab is being implemented with support from CAF, and will also emphasise the creation of a cross-sector ecosystem.
- Uruguay has built the *Laboratorio de Innovación Social en Gobierno Digital* (Social Innovation in Digital Government Lab)[30] as a co-design and experimentation space for digital public service solutions.

Box 5.7. Artificial Intelligence Innovation Lab (Argentina)

The Laboratorio de Innovación e Inteligencia Artificial (Artificial Intelligence and Innovation Lab – IALAB) is an initiative of the Law School of the University of Buenos Aires. In serves to incubate AI initiatives, conduct applied research, and engage in multidisciplinary development of high impact and scalability solutions.

Source: https://ialab.com.ar.

In some instances, it may be necessary to sequester AI efforts for the purposes of experimentation, as some types of innovation have the potential to subvert existing paradigms. Very new ideas generally do not cohabit well with existing reporting structures, processes, workflows and rules, as the specific details of how the idea will work in practice still need to be teased out. Thus, some efforts, including AI projects with high disruptive potential or in environments with complex or unclear rules, may need to be sheltered from other processes and have their own autonomy. Otherwise, the pressures of tangible existing priorities are likely to cannibalise necessary resources, or the concept may collide with rules that have not taken its possibilities into account.

A number of governments are seeking to promote this approach through the creation of "sandboxes". This allows them to conduct experimentation in set-aside safe spaces that help to foster innovation, while also learning about new approaches and how to handle them. Sandboxes may relax certain rules or regulations

based on a number of conditions (e.g. time-bound, limited number of participants) (Eggers, Turley and Kishani, 2018[24]). Sandboxes can also assist in enhancing data security and privacy, as they represent a supervised safe space where data can be separated from other functions and networks (CIPL, 2019[25]). In these safe spaces, officials can learn more about the data, the potential for AI, the types of sensitivities involved, and the methods needed to protect them and ensure the protection of individuals' privacy. While often geared towards the private sector (e.g. regulatory sandboxes), sandboxes are increasingly being considered for AI in the public sector.

There are a few examples of such public sector-focused sandboxes throughout the world, notably in Estonia, Finland and Lithuania.[31] However, some LAC countries are developing sandboxes related to AI in the public sector, making them early pioneers in exploring such mechanisms:

- Argentina's national AI strategy calls for the development of a sandbox for emerging technologies, including AI, in order to circumvent unnecessary bureaucracy for actors involved in digital innovation efforts. The strategy envisions allowing experimentation with proposed systems in real-life situations, allowing officials to analyse the benefits and disadvantages. The sandbox would provide a conduit to discuss and validate practices with the country's AI Ethics Committee and regulatory bodies.
- Brazil's national AI strategy includes an action item to create regulatory AI sandboxes that could be used by both the public and private sector.
- Chile's AI strategy and action plan call for study of the feasibility of regulatory sandboxes, although it is unclear whether such research would promote experimentation with AI in the public sector.
- Colombia's national AI strategy calls for developing test beds and sandboxes for GovTech projects, which may include AI-driven projects, as well as similar mechanisms for FinTech, HealthTech and AgriTech. The first use case is now in place, which serves as a FinTech regulatory sandbox.[32] The country has also developed a "Privacy by Design and Default in AI" sandbox.[33] In addition, to help guide its sandbox efforts related to regulatory experimentation, Colombia has designed and solicited public feedback on a "Conceptual Model for the Design of Regulatory Sandboxes and Beaches in AI".[34] Although these initial efforts do not specifically involve AI in the public sector (i.e. they are often geared to supporting private sector efforts), their existence implies that the other proposed sandboxes will take shape. Looking more specifically at efforts aimed at public sector transformation, Colombia has created a Data Sandbox (Box 5.8), "a collaborative space [where] the country's public entities can conduct experimentation, testing and development of analytics and Big Data pilot projects." While AI is not explicitly mentioned, it appears that such a sandbox could be used to test AI projects, which generally involve the use of significant amounts of data and data analytics techniques. According to Colombian Ministry of Information and Communications Technologies (MinTIC) officials, in an interview with the OECD, Colombia has a set goal to build up the country's data and AI ecosystem by ensuring that all ministries and sectors have access to a sandbox for piloting and experimentation.
- Peru's 2021 draft national AI strategy calls for the creation of regulatory sandboxes where AI-based ventures can be tested to ensure ethical and responsible usage.

Box 5.8. Data Sandbox (Colombia)

Colombia's 2018 Data Exploitation Policy (CONPES 3920) called for the creation of a Data Sandbox to serve as a collaborative space where public sector entities could conduct experimentation, testing and development of analytics and big data pilot projects. The Data Sandbox is intended to help agencies explore data and information and generate new knowledge. In using the sandbox, public servants are

expected to better understand and learn how to use data analytics technologies, as well as improve their abilities to explore, process, model and visualise large volumes of data.

Each pilot project lasts between one and four months, and usually proceeds as follows:

1. The initiating public entity must apply to use the sandbox and assemble a team (two to six people) to develop the project and define its goals, objectives, scope, schedule and expected results.
2. The Ministry of Information and Communications Technologies (MinTIC) evaluates each application. If the proposed pilot is deemed sound and the sandbox has capacity, MinTIC approves the project, invites the public entity into the sandbox and provides advice regarding the proposed methodological approach. The public entity can then begin executing its project plan.
3. The sandbox operating team monitors the development and execution of the pilot and provides guidance and support to the public entity along the way.
4. As results become known, the public entity engaging in the pilot and the data sandbox operating team work together to validate and publish them on Colombia's open data portal (https://herramientas.datos.gov.co/es/usos). This step is important, as it allows others to re-use algorithms, data and the resulting project outputs.
5. Once the project is complete, the public entity team exits the sandbox, which frees up capacity for other pilots. The sandbox team and the public entity team create results dissemination pieces and share them through website articles, webinars and Facebook Live sessions, etc.

Source: https://gobiernodigital.mintic.gov.co/692/articles-160200_info_ciclo_vida_proyecto.pdf and https://colaboracion.dnp.gov.co/CDT/Conpes/Econ%c3%b3micos/3920.pdf.

LAC country efforts to develop labs, pilots, sandboxes and other mechanisms and conduits for experimentation demonstrate growing regional maturity in regard to exploring and implementing AI in the public sector. As many of these efforts are pledges and commitments for building out such mechanisms, it will be important for the countries involved to maintain progress and momentum to ensure that their potential does not fizzle out.

While the countries discussed above have demonstrated solid progress in this area, a number of other countries have not yet planned or implemented efforts. In particular:

- Barbados, Chile, Costa Rica, Ecuador, Jamaica and Paraguay indicated in their survey responses that guidance or mechanisms specifically for experimenting with AI have yet to be established. OECD research was consistent with these responses and for digital government more broadly.
- In their survey responses, the Dominican Republic and Panama affirmed the existence of guidance or mechanisms for AI experimentation, but did not provide supporting details. In conducting its own research for this review, the OECD could not identify any planned or ongoing initiatives in this area. However, for Panama, the national digital government strategy[35] does include promising provisions for experimentation in FinTech, which may provide competencies for experimentation that can be applied to other areas.
- Bolivia, Mexico, Trinidad and Tobago, and Venezuela did not respond to the survey, and the OECD was unable to identify any planned or ongoing initiatives in this area.

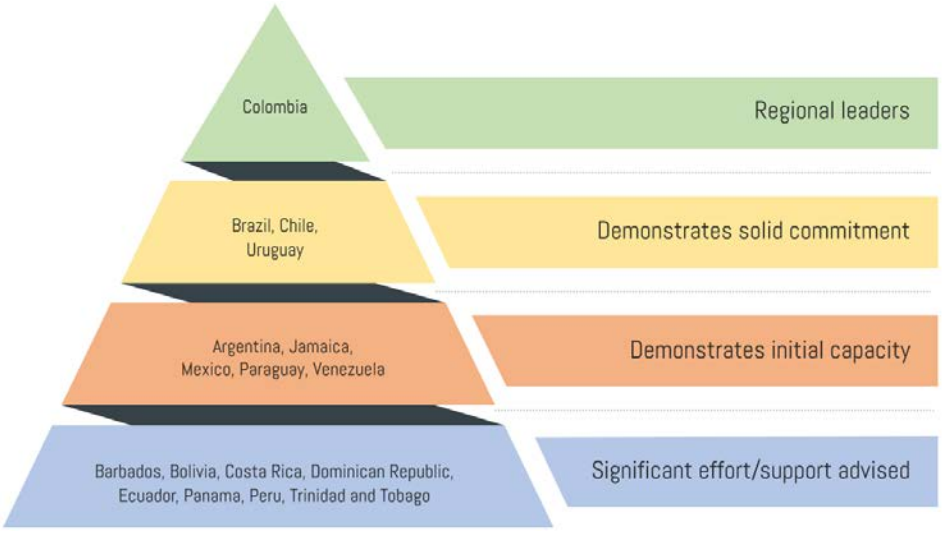
Action among LAC countries in terms of actively promoting experimentation more generally, as well as with a focus on AI, appears to be accelerating. Beyond building new structures, processes and capacities for experimentation, governments may also need to consider whether any underlying issues might prevent

them from evolving a culture of innovation. For instance, in Panama, it is generally accepted among the central digital government agency and the ecosystem of digital government stakeholders that an updated legal and regulatory framework is necessary to install a culture of innovation and experimentation and to enhance digital government in the country (OECD, 2019[16]). Such underlying and systemic challenges will be discussed in more depth in the forthcoming report *Going Digital: The State of Digital Government in Latin America*.

Understanding problems and the potential for AI solutions

When properly designed and implemented, AI systems can make a positive contribution to government activities throughout the policy cycle – from agenda-setting and policy formulation to implementation and evaluation. However, AI is not always the best solution and in many cases is neither appropriate nor necessary. For many public sector digital challenges, the most appropriate solutions are often simple but effective uses of existing technologies and improved interoperability, including legacy systems. The importance of understanding and defining the problem at hand is an important aspect of exploring digital options and alternatives in general, and constitutes a critical component of step 1 of the UK's Digital Buying Guide, which emphasises the need to "develop a deep understanding of your users *and the problem you're trying to solve* for them".[36] This helps ensure the existence of a valid need for the solution that government is building or procuring.

Figure 5.17. LAC region capacities for understanding problems and determining whether AI solutions are a good fit



In OECD fact-finding interviews with senior LAC government officials, one of the most repeatedly cited challenges related to pursuing *problem-driven* exploration of AI. This was especially true of the most digitally mature governments; and while a number of other governments had not recognised the issue, the OECD was able to detect its presence based on conversations. This is not unusual among governments worldwide. A common issue with emerging technologies, such as those in the field of AI, is the risk that people start with solutions and *then* look for problems for the technology to solve. In general, governments should seek to understand and focus on the outcomes that both they and their citizens want to achieve, and the problems that get in the way. Governments must therefore have processes in place to help them become aware of and understand these problems.

An important element in this regard is the need for governments to understand their users, and their needs and challenges, and how public services may fit into their lives. This a significant cross-cutting factor discussed in the *Ensuring an inclusive and user-centred approach* section of Chapter 4. Governments can adopt a number of different approaches to identify and understand problems, which can also help them determine the optimal solutions. One such approach is training, such as Colombia's course on problem definition for public services, developed in collaboration with SAP (see Box 5.9).

Box 5.9. Training on problem definition (Colombia)

The Government of Colombia has worked with SAP to develop a training course specifically on problem definition in public services. It seeks to change the mindset of public servants with a view to re-orienting them to first consider and fully understand the problem(s) at hand before prematurely identifying solutions. Over 8 000 people have taken the course to date.

Source: Government of Colombia officials.

The OECD report *Hello, World: Artificial Intelligence and its Use in the Public Sector* (Berryhill et al., 2019[11]) identified other useful efforts in this regard:

- Challenges and prizes enable experts both inside and outside government to flag problems and indicate potential solutions. Through such programmes, governments may also raise known problems, which can be validated by those proposing to address them.
- Communities of interest and networks allow for collaboration and the sharing of expertise across organisational boundaries and the identification of collective or common problems.
- Central funds with bottom-up proposals can help to identify problems which could be solved through the application of AI or other technological (or non-technological) solutions.

Governments do not necessarily need to leverage all three approaches, though as discussed elsewhere in this report, such mechanisms are useful beyond their application for problem identification. Additional approaches also likely exist that can be used to surface key public sector problems and determine whether AI may be an optimal solution. The key point is that governments need to consciously put in place ways to scan for, elevate and consider problems and various alternatives for addressing them.

In terms of **challenges and prizes**, for the most part, LAC governments indicated to the OECD that they rarely or never pursue challenge or prize programmes for digital government initiatives. Only Argentina, Brazil, Colombia, Jamaica and Uruguay indicated that they use such mechanisms for AI. Through research, the OECD was also able to identify relevant efforts, though not always scoped specifically to AI, by Mexico and Paraguay. For these countries, such efforts took the form of:

- Hackathons (Argentina,[37] Colombia,[38] Jamaica[39] and Paraguay).[40]
- Innovation awards that recognise success in digital innovation, including AI (Brazil[41] and Colombia).[42]
- Challenges that encourage or incentivise entrepreneurs and others to validate public problems and generate ideas for solutions (Colombia,[43] Mexico,[44] Paraguay[45] and Uruguay).[46]

Such efforts represent positive steps towards increasing AI maturity. Some of the most promising from a problem-identification point of view appear to be the INDIGO Digital Government Innovation Awards and the "Bank of Challenges for Public and Private Entities" from Colombia, Brazil's Public Sector Innovation Competition, Mexico's Public Challenges and Paraguay's InnovandoPy, as these programmes focus on initiatives that have demonstrated an ability to surface or validate core public sector problems that can

potentially be replicated or scaled (see Box 5.10). Other examples, while valuable in their own way and for other purposes, appear to be directed more narrowly towards generating *solutions* to known problems, as opposed to also uncovering or better understanding the nature of *problems* to be solved.

Box 5.10. Examples of challenge-type initiatives that can help surface problems

Bank of Challenges (Colombia)

As part of its Data Science 4 All (DS4A) initiative, Colombia's Ministry of Information and Communications Technologies (MinTIC) has actively provided free training to over 1 000 Colombians on a variety of data science topics, including big data tools, data transformation and visualisation, machine learning techniques and design of experiments. The training curriculum, developed by industry partner Correlation ONE, is 40% theoretical and 60% practical, with the latter incorporating real-world public sector cases and challenges, proposed by trainees who must identify and apply solutions.

The selection process for candidates for the practical components of the curriculum involved an open call launched by MinTIC to collect "real and identified problems" in public entities and private companies that could potentially be addressed through data science, including but not limited to AI. The goal was to develop a "Bank of Challenges for Public and Private Entities" that could be incorporated into the training curriculum by MinTIC and Correlation ONE.

Teams of five to seven DS4A participants were assembled, and each selected a challenge from the Bank for which they worked on developing data science solution(s) over the course of 11 weeks. To help them identify applicable solutions, the teams worked closely with the public or private entity that submitted the challenge and received guidance from expert instructors. At the end of the process, each team submitted a functional solution, a 10-20-page report detailing their methods and results, and a 10-minute presentation summarising the project. In addition to surfacing public and private sector problems, and potential corresponding solutions, the programme also facilitated networking among participants and public and private entities to promote recruitment and employment opportunities.

Public Sector Innovation Contest (Brazil)

Since 1996, Brazil's National School of Public Administration (ENAP) has organised an annual Public Sector Innovation Competition. The initiative seeks to reward public servants who have committed to achieving better results and are dedicated to rethinking daily activities through small or large innovations that generate improvement in the management of organisations and public policies. The competition awards public servants who have identified a public sector problem, and developed a successful solution, and winning initiatives are documented in ENAP's Institutional Repository (https://repositorio.enap.gov.br), which allows public sector problems to be better understood across government, alongside details on solutions that can help address them.

Potential candidates who would like to nominate their work (or the work of their team) must answer the following questions:

- What was the nature of the problem?
- What was the implemented innovation?
- What were the objectives of the innovation process?
- What were the main results obtained by the innovation?
- How did the innovation process identify the needs of users/citizens?
- What were the main factors that contributed to the success of the innovative practice?

- What problems were encountered and what were the applied solutions?

The Innovation Contest is not specific to problems related to digital government, but problems surfaced and solutions identified may draw on different types of technology, including AI.

Public Challenges/Challenge Mexico (Mexico)

The Mexican Public Challenges (*Retos Públicos*) initiative aimed to build a collaborative ecosystem for the development of data solutions (applications) for "public challenges". Through requests for proposals posted on the central open data portal, the Chief Data Officer (CDO), in co-operation with various state secretariats, invited non-government stakeholders to propose projects. Public institutions defined the challenges and the winners received public funding to develop the project. One of the most valuable elements of such an initiative is the clarity of vision it gives public institutions about the (value) problem they are trying to address in collaboration with stakeholders.

Towards the end of 2016, the Public Challenges initiative transitioned into Challenge Mexico (*Reto México*) (https://retomexico.org). Challenge Mexico is an open innovation platform that enables multiple stakeholders to create prototypes and jointly design solutions to address public policy challenges. The initiative aims to develop scalable and replicable projects with a view to medium-term sustainability. While Public Challenges centred on co-designed solutions for public sector challenges, Challenge Mexico widened the collaboration approach to incorporate the needs of the private sector.

InnovandoPy (Paraguay)

InnovandoPy is an initiative of the Ministry of Information Technologies and Telecommunications (MITIC). Operational since 2015, it seeks to identify innovative technology-based ideas, inspire and motivate young entrepreneurs, bring together public and private sector actors, promote collaboration in digital projects and promote entrepreneurship in the country. Its activities include:

- **Innovando Start-ups**: an accelerator where young entrepreneurs present their innovative ideas related to problems and solutions in both the public and private sectors. In the most recent accelerator cycle in 2019, dozens of start-ups submitted ideas, resulting in ten top ideas that received intensive mentoring to further work out their concepts, including structured problem identification, customer needs exploration, costing evaluation and product development. These ten start-ups then presented their proposals to a jury of both public and private sector leaders. Of these, four start-ups were selected as winners of a cash prize to help them advance in their solutions.
- **Hackathons:** competitive development marathons for citizen-centred apps based on open government data. The most recent 2019 edition, the IAackaton, was focused specifically on using AI to solve public sector problems in categories including reliable digital government (security and confidence in digital government services), smart government (evidence-based decisions and predictive analytics) and open government (transparency, participation and collaboration).
- **Ideathons**: events dedicated specifically to ideation and thinking of new ways to address public sector problems. The 2019 edition convened people to discuss problems and ideas related to mobility, smart cities and renewable energy.

Source: www.mintic.gov.co/portal/inicio/Sala-de-Prensa/Noticias/145965:MinTIC-abre-convocatoria-para-solucionar-retos-de-entidades-publicas%20-and-companies-in-digital-transformation (OECD, 2018[15]), (OECD, 2018[12]), https://inovacao.enap.gov.br and www.innovando.gov.py.

When it comes to **communities of interest and networks**, Brazil, Chile, Colombia and Uruguay all indicated that they have specific initiatives in place aiming at developing communities of practice, networks and other opportunities to promote data and digital competencies for public servants. Such efforts were supported by OECD research, as discussed below. Jamaica and Panama also indicated that such initiatives are underway, but in conducting research, the OECD was unable to identify support. The rest of the countries responded "don't know" or did not respond, and the OECD was unable to identify specific examples. Such communities and networks can serve as an excellent forum for raising or identifying issues that AI has the potential to address. Examples of such communities and networks include the following:

- Brazil's National Digital Government Network[47] encompasses all levels of government and aims to promote collaboration, exchange of ideas and the creation of innovative initiatives related to digital transformation of the public sector. Meanwhile, the country's System for the Administration of Information Technologies Resources (SISP), the main institutional digital government co-ordination mechanism in Brazil, contributes to knowledge exchange, peer-to-peer learning and promoting innovation among its members through a virtual community where members are invited to interact and share knowledge (OECD, 2018[26]). The Brazilian Association of State ICT Entities (ABEP)[48] also exists to connect state-level public technology officials.
- Chile's Network of Public Innovators, part of LabGob, connects over 14 000 public servants and other relevant actors (see Box 5.11). The OECD has previously found that LabGob has a successful history of collaborative work with other teams and organisations across the Chile public administration. The main thing these successful collaborations have in common is the determination to develop a common approach and strategy for diagnosing and addressing problems (OECD, 2019[21]). The country's AI strategy and roadmap also call for encouraging the creation of user communities in areas of public interest.
- In Colombia, the ICT Ministry co-ordinates RED CIO,[49] a network that assembles CIOs around the country via online chats to discuss collaborative work in the region. The programme aims to facilitate communication between those responsible for technology in public entities, with a view to developing a community of collaboration among participants, improving the efficient and safe provision of digital services to citizens, and leveraging the state's digital transformation. This strategy is complemented by CIO SUMMIT,[50] a face-to-face and virtual space for collaborative work. Public CIOs converge to learn about the main advances in the sector, share successful experiences and work to understand the direction technology is taking in the public sphere. The country also hosts a Seal of Excellence (*Sello de Excelencia*) programme, an expert community of public and private actors that collaborates to evaluate digital government services and award seals to top-quality programmes mainly in services, open data, smart cities, IT management and citizen participation. RED CIO is complemented by a network led by the Presidential Office for Economic Affairs and Digital Transformation, in which not only CIOs participate, but also co-ordinators promoting digital transformation at a higher level. Finally, while not co-ordinated by the central government, the country's Colombia.AI initiative is a successful "community of volunteer experts, trainees and enthusiasts of machine learning working to disseminate knowledge about data science and AI. Through free monthly discussions and workshops, Colombia.AI shares knowledge, teaching and experiences about technologies that exploit the power of data. Its purpose is to unite the industry and academia to support the growth and development of AI in Colombia. This community currently has over 5 700 members in two cities, Bogotá and Barranquilla" (Gómez Mont et al., 2020[27]).
- Uruguay is establishing Knowledge Centres (*Centros de Conocimientos*)[51] to enhance collaboration with the intention of improving the professional development of members, generating opportunities to build relationships, enable reflection, mobilise resources around members and disciplines, and promote training, research and innovation.

These networks can contribute to many crucial digital government and AI efforts, both directly and indirectly. To help ensure such communities and networks are useful for problem identification, LAC governments should ensure that mechanisms exist to surface challenges and problems among participants, as well as conduits for raising identified problems with decision makers who can consider them and, if needed, take action. Such communities and networks do not need to be specifically focused on AI, and in fact, more general groups can help surface a broader base of problems. However, governments may want to develop additional emergent technology or AI-focused communities and networks, or ensure that general communities and networks include individuals with AI expertise, in order to help identify links between problems and AI approaches that may constitute an optimal solution.

Box 5.11. Network of Public Innovators (Chile)

Established in 2015, Chile's Network of Public Innovators *(Red de Innovadores Públicos)* is a community of Chilean public servants from all levels of government who are motivated to seek tools, experiences and approaches that can facilitate innovation with a view to improving public services.

The strategy is threefold:

1. **Collective learning** collectively constructs the competencies needed to innovate in the public sector based on the knowledge and approaches of each participant.
2. **Making public innovations visible** involves communicating and disseminating the initiatives under consideration, as well as motivating others to innovate in the public sector.
3. **Connecting those motivated to innovate** involves the use of meetings to build networks among public servants, find common ground, encourage collaboration and increase social capital. Public servants participate in different activities across the country and connect through a social network for public innovators in the Government of Chile.

The Network has grown to 14 000 members and has been developed with the active participation and contributions of a diverse set of actors with different roles and experiences. Consisting mainly of public servants, it also includes entrepreneurs, academics, students, and citizens. Members work together to improve public services in a manner consistent with the Network's five key principles:

1. Focus on people.
2. Systemic approach.
3. Co-creation.
4. Experimentation.
5. Focus on experience.

National meetings of public innovators and in-person activities promote co-operation among Network members, while a digital platform allows for connecting, communicating, collaborating and sharing. Focus areas are both digital and non-digital in nature. In evaluating the impact of the Network, the government noted that it allows public servants from the same region and across the country to connect in order to discuss public sector innovation, problems they face and potential solutions already implemented elsewhere. The government also found that the Network has the potential to help achieve a key innovation imperative of LabGob: ensuring that Chilean public sector institutions approach their problems in a more systematic manner.

Source: www.lab.gob.cl/iniciativas/red-de-innovadores-publicos and https://innovadorespublicos.cl, and https://oecd-opsi.org/wp-content/uploads/2019/03/HR-and-Leadership-Catalyst-for-Innovation-Capabilities.pdf.

Finally, in terms of the availability of **central funds for bottom-up proposals**, LAC governments have not generally developed such mechanisms. The Pact for the Digital Transformation of Colombia (Box 5.12) represents the best example of this concept. The country has also instituted a Science, Technology and Innovation Fund targeted at sub-national governments for ICT and other purposes, whereby sub-national governments can submit proposals for solutions to address public problems in their area, according to officials interviewed by the OECD. In Uruguay, the National Research and Innovation Agency (ANII) has established a Sectoral Education Fund, which solicits bottom-up proposals. This smaller, more targeted fund is dedicated to financing research projects on teaching and learning assisted by digital technologies, including addressing problems associated with COVID-19.[52] One of its primary "research lines" is scoped around the use of data and AI.

Aside from these two efforts, the OECD was unable to identify solid instances of central funds with bottom-up proposal processes that could be well suited to surfacing problems that AI (or other digital solutions) might be able to solve. In addition to the Colombian example, Box 5.12 provides two other examples of a central fund from outside the region. In addition to surfacing problems and solutions, competitive centralised funds provide incentives for public institutions to comply with new standards and guidelines, and to align their efforts with the government's strategic objectives (OECD, 2019[21]).

Box 5.12. Examples of central funds with bottom-up proposals

Pact for the Digital Transformation of Colombia

The Pact is a central fund and bundle of strategies with a budget totalling USD 5.2 billion (equivalent) dedicated to bringing Internet access to low-income households and improving the interactions between public entities and citizens. Two of its key commitments are:

- To "promote a State policy for digital transformation and the use of the fourth industrial revolution, through the interoperability of platforms, contact through the single state portal, use of emerging technologies, digital security, training in digital talent, and promotion of the entrepreneurship ecosystem".
- To "promote the digital transformation of public administration through the massive digitization and automation of procedures".

The Pact and its funding lines and action items were developed in an open and participatory manner. Roundtable discussions and regional workshops were held to learn about the aspirations and needs of different territories. The government then launched a digital platform where citizens could submit proposals. The government placed additional emphasis on ensuring that proposals benefited from the input of underrepresented populations, such as Indigenous peoples and Roma or Gypsy populations.

While the Pact is scoped very broadly, the problems and solutions it identifies have the potential to – explicitly may – result in AI solutions.

Portugal INCoDe.2030

In Portugal, the government has launched a National Digital Competency Initiative, "Portugal INCoDe.2020", which will invest EUR 10 million over three years. The goal of the funding is to spur the use of data science and AI in the public sector. Interested teams in government can apply for funding through open and competitive Call for Tender processes. Some of the first projects awarded funding are to develop AI-based models to predict the risk of long-term unemployment and to detect abnormal patters in antibiotic prescription. As of August 2019, 44 projects had been submitted and approved under the programme. Portugal's Programme in Data Science and Artificial Intelligence in Public Administration (Box 6.10) is part of this initiative.

Technology Modernization Fund (United States)

The United States Government's Technological Modernization Fund (TMF) is a fairly new funding model for technology modernisation projects. Government agencies can submit proposals for funding and technical expertise to a TMF Board consisting of senior government IT leaders. Each proposal must clearly 1) describe how the project fulfils the agency's mission, 2) identify the problem this project solves and 3) explain how successful execution of this project solves the problem.

The Board assesses the proposals based on:

- Their impact on the agency mission (improving outcomes for users and security).
- Feasibility (including agency capability).
- Generation of opportunities (potential cost savings and service quality improvements).
- Common solutions (replacement of insecure, outdated systems with scalable platforms that could be used by other organisations).

Through the submission and review of bottom-up proposals, the TMF enables the government to identify key public sector problems. It also enables efforts to be focused on areas where they can achieve maximum public benefit, by prioritising technology solutions to improve delivery of mission-critical services and projects that can serve as common solutions and/or inspire reuse. While its remit is broader than AI, US officials have encouraged agencies to submit proposals for modernisation projects driven by emerging tech.

Source: www.dnp.gov.co/DNPN/Plan-Nacional-de-Desarrollo/Paginas/Pactos-Transversales/Pacto-transformacion-digital-de-Colombia/Transformacion-digital.aspx, www.dnp.gov.co/DNPN/Paginas/Plan-Nacional-de-Desarrollo-ABC.aspx, https://tmf.cio.gov, https://digital.gov/event/2018/05/22/an-overview-technology-modernization-fund-tmf and www.incode2030.gov.pt.

Among other benefits, such challenge programmes, communities and funds can help governments identify problems that AI may be able to solve. Once problems are known and understood, governments can evaluate them in order to devise an optimal solution, which may or may not involve AI. Careful analysis of the capabilities of specific AI tools is necessary to determine whether they should form part or all of the solution to a specific challenge. A rigorous focus on using AI only when it is likely to provide the best solution to a specific problem will reduce the risk of inappropriate adoption in areas where it will not add value. Once such guidance and mechanisms are in place, governments can *identify problems* and *then* determine whether AI (or another tool) is the best solution (Mulgan, 2019[28]). This is a crucial but often overlooked component of success for AI in the public sector.

Governments may employ a variety of methods to determine whether or not AI is the best solution to a particular issue. In the case of AI in the public sector, the OECD and a number of governments have found the "Three V's" framework, originally suggested by consulting firm Deloitte (Schatsky, Muraskin and Gurumurthy, 2015[29]), to be particularly helpful. Under this framework, government problems that would benefit from an AI-based solution answer affirmatively to three questions:

- Is it **viable**? You should understand the scope and limits of the technology and then assess if the solution is viable.
- Is it **valuable**? Just because something can be automated does not mean that it should be. How much value would automation add? Would it deliver value to the community as well as to your organisation's operations? What would be the knock-on effects? Can you make the outcomes fair and ethical?
- Is it **vital**? Is your proposed implementation unworkable without AI?

Among LAC countries, only Colombia and Uruguay appear to have considered guidance on evaluating public sector problems in order to determine whether AI is the best solution. While Colombia seems to have guidance in place (see Box 5.13), Uruguay's AI strategy commits to "develop technical guides for problem selection, as well as the design and implementation of AI-based solutions". The strategy further notes that, "These guidelines should consider, among other aspects, the relevance of the use of AI services in the cloud, the identification of appropriate tools for different cases of application, protection and data privacy, etc." The Dominican Republic also indicated the existence of such guidance in the survey; however, the OECD was unable to identify supporting evidence. Such guidance can help address deficiencies reported by governments. For instance, in interviews with the OECD, officials from Chile reported that a lack of clarity regarding the use and functionality of certain technologies leads to the application of technologies that are not suitable for the problem at hand.

Box 5.13. Guidance in determining whether AI is an appropriate solution for a problem (Colombia)

The Government of Colombia has issued an *Emerging Technologies Handbook*, which offers guidance to national and territorial government entities on the use and adoption of new technologies and tools. The Handbook seeks to help public servants connect their needs and problems to appropriate innovative or emerging solutions, and also documents international use cases of how others have leveraged such technologies to respond to key problems.

Among other steps to help public servants explore and implement emerging technologies, the Handbook provides guidance on:

- **Identification of emerging technology use cases.** This guidance helps public servants identify possible technology applications that may apply to their problems or objectives, and then prioritise potential approaches to determine a solution. There is a core focus on the needs and problems to be addressed, which the Handbook states helps to "avoid the temptation to experiment with new technologies that will ultimately not lead to tangible improvements in the creation of value".
- **Viability verification**. This guidance helps public servants think through the potential benefits to be achieved and the efforts that the public entity must be willing to make to achieve them. This makes for good practice and helps avoid "implementation for the sake of implementation".

In addition to the *Emerging Technologies Handbook*, the government has issued a broader *Digital Government Handbook*. This Handbook requires that public servants justify the selection and use of any technology based on the specific needs of key stakeholders. It states, "before designing and developing a project that incorporates the use of technology, the entity must ask itself: What is the specific need or problem that it wants to solve? How does the use of technology support or provide the solution to the problem or need identified?"

Source: https://gobiernodigital.mintic.gov.co/692/articles-160829_Guia_Tecnologias_Emergentes.pdf and https://gobiernodigital.mintic.gov.co/692/articles-160829_Guia_Tecnologias_Emergentes.pdf.

All of these activities can be helpful for surfacing problems and matching them to relevant digital or non-digital solutions, including AI. However, governments can only do this satisfactorily if they have a solid understanding of their users' needs and seek to be responsive to them. This is discussed further in the next section.

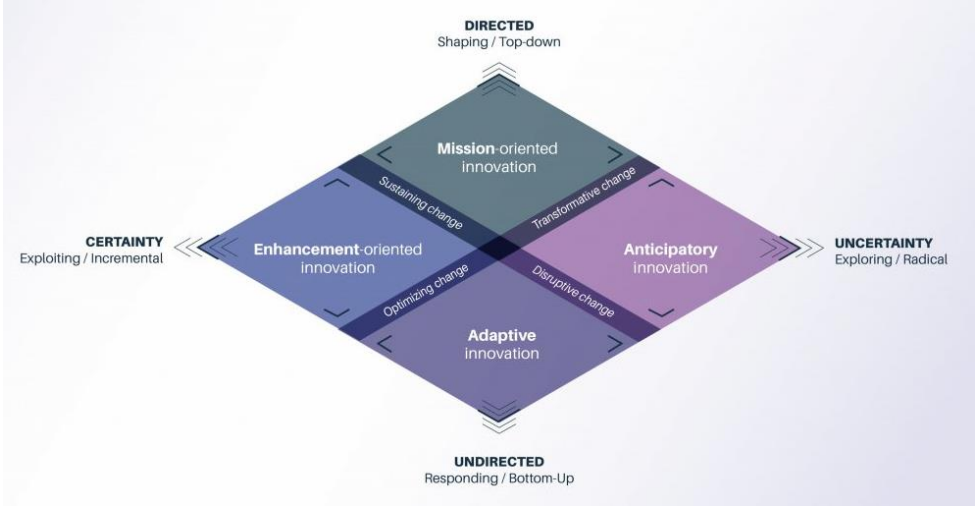
Future preparedness through anticipatory governance

The impact of AI and other fast-paced innovations is hard to predict. Nonetheless, it is clear that they will have a profound impact not only which public services are offered (and how), but also how services are consumed. Such innovations are not contained to the realm of technology, but can transform societies as a whole, producing tectonic shifts in public values (e.g. transparency, privacy and accountability) associated with both public and private services. This has important implications for governments, who are called upon to proactively adapt to high levels of uncertainty linked to unforeseen events and new opportunities. Traditional approaches, based on targeted interventions in specific policy areas, have proven inadequate to address the scale and complexity of emerging challenges. However, while not all crises can be foreseen, governments can work in new ways to recognise early signals and be prepared (Tõnurist and Hanson, 2020[30]).

While AI is clearly beginning to transform public sector operations in the LAC region, and LAC governments have developed numerous strategies and initiatives to leverage its potential, there is still much to learn about this technology, and much that remains unknown about how it will evolve both in the region and globally. There are also a number of major unknowns that will only be resolved over time as the technology develops and its potential uses are experimented with and explored. Waiting until those unknowns are resolved is a luxury most governments are unable to afford, as this would signify being a technology-taker rather than an option-shaper, a choice that could imply significant costs and disadvantages.

There are ways to manage these unknowns and uncertainties, however. Through its work with countries worldwide, OPSI has identified four primary facets to public sector innovation and has developed a model to help governments achieve a portfolio approach to innovation (Figure 5.18). One of these four facets is *anticipatory innovation*. This term refers to detecting weak signals and engaging with them before a new course or paradigm is locked in. Anticipatory innovation is the most underdeveloped facet of innovation in governments today, and perhaps the most difficult. It is sometimes viewed as too "forward thinking" – either overtly disconnected from the apparent core business of an organisation or simply misunderstood. It can also challenge values by calling into question the current state of things, including peoples' beliefs and assumptions about how the world works.

Figure 5.18. Facets of public sector innovation



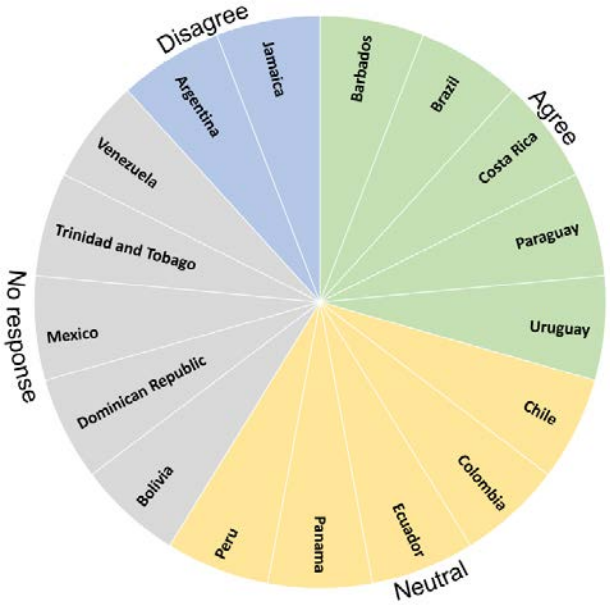
Source: https://oe.cd/innovationfacets.

One of the most challenging aspects of anticipatory innovation is convincing government leaders and public servants that it works and can be meaningful, even if the results may not be as immediate or clear as identifying cost savings (enhancement-oriented innovation) or achieving a major and ambitious goal (mission-oriented innovation). However, governments are increasingly recognising the importance of anticipatory thinking, especially in light of recent events such as the ongoing COVID-19 crisis, which came as a surprise to most and continues to shock systems and governments around the world. Many are seeking out weak signals, innovating to predict and explore potential futures, and some are converting predictions into action in order to more actively shape them.

An underlying principle of anticipatory innovation is that, if there are multiple possible futures, but no certainty as to which one will occur or even whether one might be more preferable or desirable, then it becomes risky to over-invest in any one set of assumptions about the future. In a context of high uncertainty, there is value in building foresight abilities, flexibility and agility into systems and processes and keeping alive a range of different options, so that it is possible to shift or pivot to alternatives as more is learned about what is needed. This suggests that governments need to get better at engaging with weak signals that indicate how the future may play out at an earlier stage. This will enable them to understand where and when to best intervene, without waiting for processes and trends to become locked in, and thus expensive and difficult to shift. The "future of work" represents such an unknown that governments are working to better understand, brace for and shape the outcome.[53]

In the LAC region, digital government representatives from a handful of countries indicated that they believe their public service is prepared to deal with increasing change and disruptive technologies (Figure 5.19). As whown on earlier in Figure 5.8, only a few countries were of the opinion that public servants fear AI and emerging technologies may negatively affect their jobs.

Figure 5.19. The public service is prepared to deal with increasing change and disruptive technologies



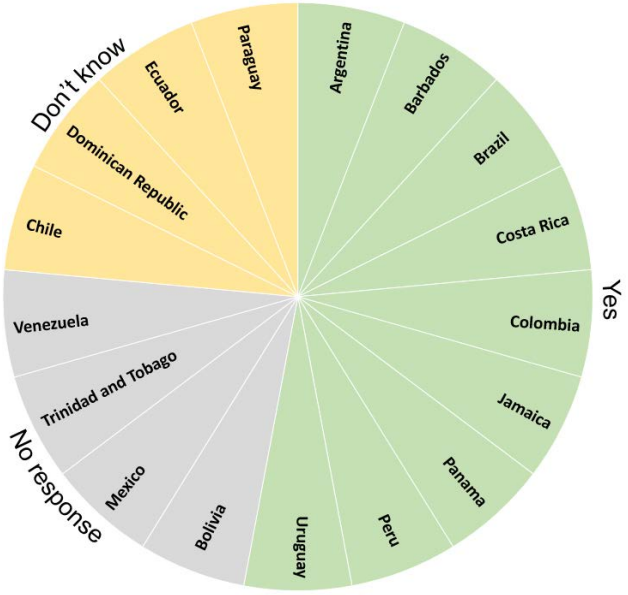
Source: OECD LAC Digital Government Agency Survey (2020).

This represents a fair degree of confidence and optimism. Such sentiment can be positive, but in general, there is much more that can be done to ensure governments are informed about potential future trajectories when it comes to AI, and that such information is actionable. This is not a LAC-specific challenge, as

anticipatory innovation concepts are relatively new and practically no governments today are mature in this area.[54]

One of the key elements of anticipatory innovation is picking up on weak signals through data. The emergence of new methodologies such as big data analytics and AI has increased the feasibility of such ventures. The depth and breadth of the data available to governments is growing at an almost exponential rate, paralleled by the evolution of increasingly powerful tools able to make sense of this information. As the OECD report *The Path to Becoming a Data-Driven Public Sector* (OECD, 2019[14]) argues, good data coupled with ethical and smart applications of such data can help create more anticipatory public sectors, as governments are better able to forecast what lies beyond their horizons. Armed with enhanced visibility of these signals, prediction and modelling techniques underpinned by data act as support mechanisms for governments, allowing them to detect potential social, economic or nature-related developments, and thus better assess the need to intervene, design suitable policy measures and anticipate their expected impacts with greater precision (OECD, 2019[14]). The OECD survey of LAC digital government agencies shows that many LAC countries are leveraging these approaches (Figure 5.20), in most cases to support evidence-based policy making and the design and delivery of public services. For instance, Panama's National Institute of Women (Instituto Nacional de La Mujer, INAMU) has developed a system of indicators against which measurements are regularly taken in order to provide an analytical basis for the creation of public policy (OECD, 2019[16]). In another example, the city of Cali, Colombia uses Internet of Things (IoT) sensor data to predict risk of flooding (OECD, 2018[12]).

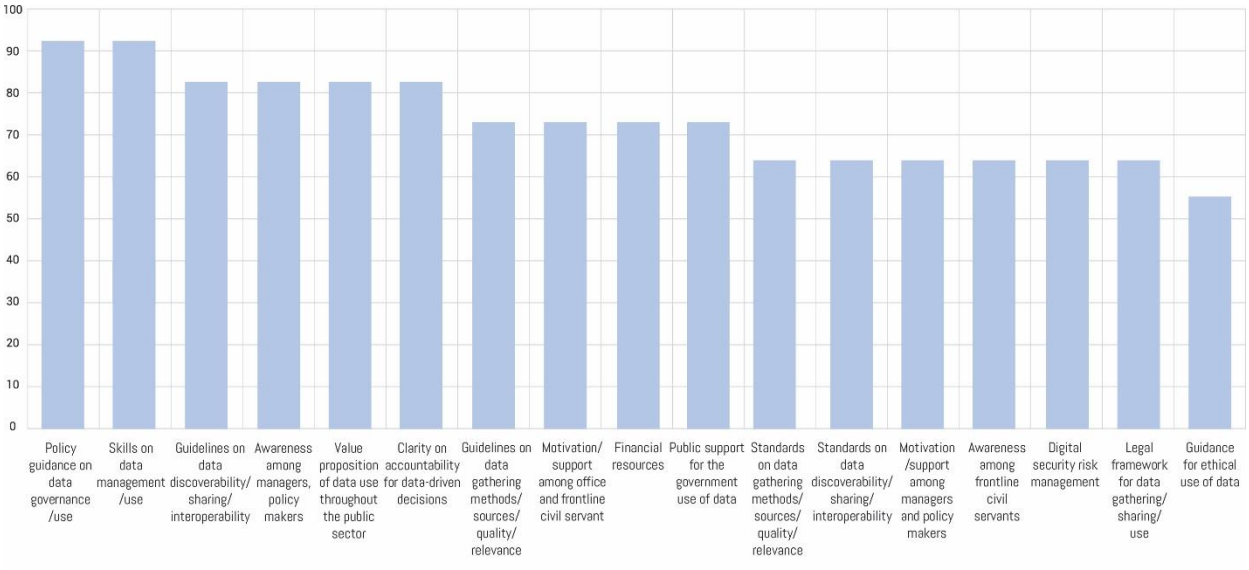
Figure 5.20. Countries that use data to anticipate and plan government interventions



Source: OECD LAC Digital Government Agency Survey (2020).

However, the survey also indicates some potential challenges in this area. Of the countries who responded to relevant survey questions,[55] a majority answered that they face many moderate or strong barriers in their efforts to use data for the purposes of anticipation and planning (Figure 5.21).[56]

Figure 5.21. Deficiencies expressed by a majority of LAC countries for using data for anticipation



Source: OECD LAC Digital Government Agency Survey (2020).

A common approach used worldwide to provide a strategic direction for anticipatory capacity is to build organisations with a mandate to explore potential futures, and to install agile processes that allow government to act on weak signals and make changes today to shape tomorrow (see the example in Box 5.14). The OECD has identified a few LAC government initiatives that seek to bring about a future-oriented and agile environment that can assist them in coping with and adapting to future changes and shifts:

- In Brazil, the Centre for Management and Strategic Studies (CGEE),[57] an organisation linked to MCTIC, has a mandate to anticipate futures through different predictive and prescriptive policy initiatives (Tõnurist and Hanson, 2020[30]). The Brazilian National Development Bank (BNDES), while not related to digital government or AI per se, also engages in futures exploration (Tõnurist and Hanson, 2020[30]), further demonstrating the underlying interest in – and the existence of related competencies to – a future-informed approach.
- Chile's national AI strategy includes several components that seek to make it more future-fit. The strategy seeks to instil "permanent exercises of anticipation", and to build prospective, future-oriented agendas on AI ethics and AI regulation (seeking to implement "a permanent and agile review and update of regulations, so that it is possible to keep up with the speed of progress").[58] It also calls for the development of an institutional framework that is sufficiently agile and general to respond to changes and the rapid development of technology. In addition, the strategy underlines the need for future-oriented labour policies as part of a pledge to actively detect the most vulnerable occupations, anticipate the creation of new jobs by AI, and support workers in the transition to new occupations, while minimising their personal and family negative impacts. The associated action plan calls for the creation of a "Future Team" to develop anticipatory methodologies that will help prepare for emerging technologies.
- In Colombia, the proposed *Task Force for the Development and Implementation of AI*[59] includes a "visionaries team" capable of looking to the future and anticipating technological development, to the extent possible.[60] This prospective role is also a function of *Colombia's AI Experts Mission.*[61]
- In Mexico, the government has established "Datalab" as a specialist data laboratory to focus on strengthening anticipatory governance approaches, with a view to generating data-based predictions about populations at risk of disease, zones with emerging environmental problems and future arising conflicts, among others (OECD, 2018[17]).

- Uruguay's National Digital Agenda[62] affirms that the country "has the conditions to address current challenges and anticipate future challenges of the information and knowledge society, and thus contribute to accelerating its social and economic development". Its national digital government strategy commits to actions to "exploit existing information and use it to move towards a more proactive attitude that anticipates the needs of citizens and prevents problems".

Box 5.14. Policy Horizons Canada

Policy Horizons Canada is a national government organisation that conducts foresight, with a mandate to help the Government of Canada develop future-oriented policy and programs that are more robust and resilient in the face of disruptive change on the horizon. It has built up distributed capabilities in the use of foresight knowledge and insights. The organization uses foresight methodologies to produce research, products, experiences, training programmes and communications to help federal government policy makers and operations designers create more resilient policies and programmes. This is achieved by providing policy makers with a rich view of possible futures and working with policy makers to help them understand and shape plans relative to these possibilities.

Issues are sourced from individuals working across government at all levels and in all departments, although those selected for deeper study are determined by the team to be most relevant across the broad government landscape. Once the research agenda has been determined, it is validated by a steering committee of deputy ministers that meets quarterly. The committee also reviews work in progress and helps guide the department's future operational plans.

Policy Horizons provides foresight services across the federal landscape. To this end, they convene and support a network of foresight practitioners throughout the government, with the goal of ensuring that as many public servants as possible can make use of the insights they have derived from their own projects, as well as foresight methodologies generally to fulfil their agencies' missions. This network currently consists of approximately 80 people from across the federal government who support individuals within their own agency in applying foresight insights and methodologies. Policy Horizons also has a formal partnership with Canada's School of Public Service, an agency with a mission to educate and support public servants in advancing their career, and to provide foresight materials and training to public servants.

Source: (Tõnurist and Hanson, 2020[30]).

These types of efforts represent positive initial steps and commitments for the region. The OECD OPSI has found that while governments around the world are making progress in building capacity to perceive weak signals and use them to inform decision making, they have not yet built the systemic foundations necessary to achieve the full potential of anticipatory, future-informed innovation. To advance progress in this area, OPSI has developed a new action-oriented research focus on anticipatory innovation governance (AIG) (Tõnurist and Hanson, 2020[30]).[63] AIG is a meeting ground where knowledge about plausible futures becomes actionable through innovation. It embodies a broad-based capacity to actively explore options as part of broader anticipatory activities, with the aim of spurring innovations connected to uncertain futures in the hope of shaping the former through innovative practice.

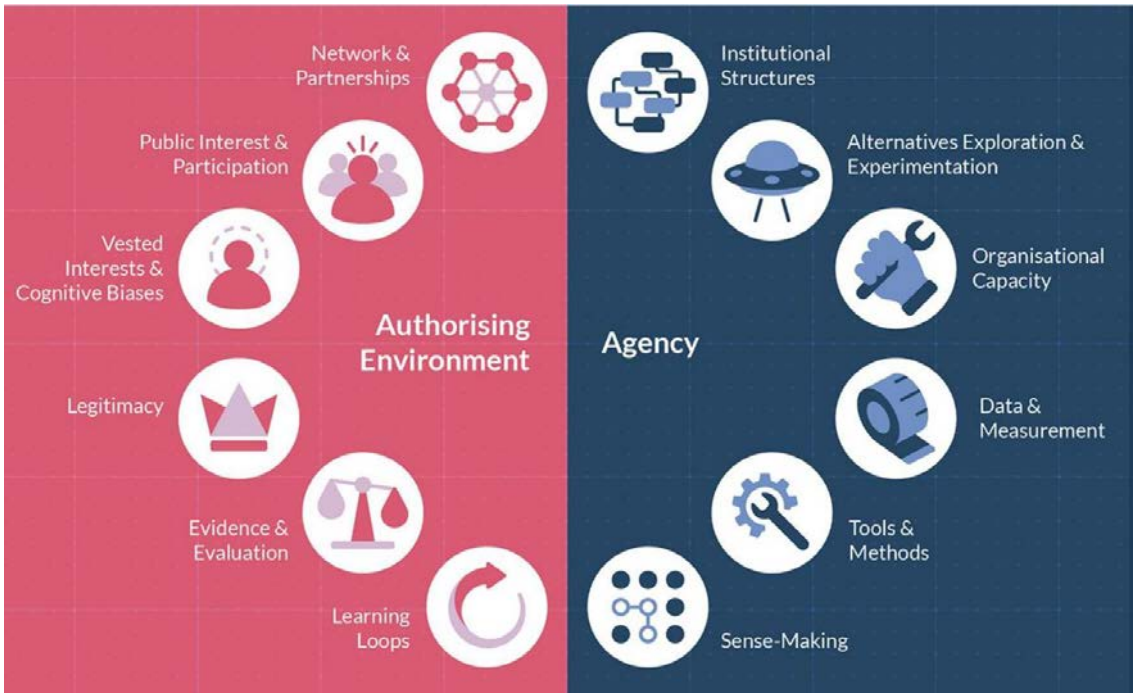
OPSI's work with governments has uncovered two key core components that underpin AIG efforts and can help make them a reality:

1. Building on the **agency** of actors within the governance process. Agency involves the exploration of alternatives, tools and methods, institutional structures, organisational capabilities, and the availability of data and resources for innovation.

2. Creating an **authorising environment** in which anticipatory processes can thrive. The authorising environment will involve issues such as legitimacy, vested interests, public interest and participation, networks and partnerships, evidence and evaluation, and learning loops.

As seen in Figure 5.22, each approach captures a variety of specific mechanisms of AIG. In addition, AIG calls for a new approach to policy making based on continuous foresight scanning and feedback loops (Table 5.1).

Figure 5.22. Mechanisms of anticipatory innovation governance



Source: (Tõnurist and Hanson, 2020[30]).

Table 5.1. New policy-making approach for anticipatory innovation governance

	Traditional policy making	Anticipatory Innovation Governance
Evaluation approach	Evaluation as the last stage of an often multi-year policy cycle.	Continuous evaluation and assessment; exploring future effects (e.g. changes in public values, ethics, intergenerational fairness)
Policy cycle	Long research and drafting cycles, with policy implementation conducted accordingly.	Recognition that case-effect relationships are impossible to know in advance, and that the policy implementation itself changes the problem space.
Research and analysis approach	Exploring the problem space through research and analysis.	Exploring the problem space through small-scale real-world experiments and innovation.
Research and analysis focus	Research and analysis focused on what has happened.	Research and model development focused on a range of possible futures.
Participation	Policy domain experts and primary affected population.	System of related policy areas and affected populations, which changes over time.

AIG does not mean predicting the future, but rather asking questions about plausible futures and then acting upon them by creating room for innovation (e.g. through regulation), or building out the mechanisms of AIG to explore different options in government itself. Most governments today do not have a system in place for anticipatory innovation governance (such mechanisms are usually siloed under specific policy fields or functions, such as foresight). This is the case with LAC countries as well as most other governments around the world. Over time, as LAC governments continue to mature in regard to known factors than can contribute to successful and trustworthy AI adoption in the public sector, it would serve them well to begin focusing on potential future effects. The OECD report *Anticipatory Innovation Governance: Shaping the future through proactive policy making* can help them to get started.[64]

Because AI presents tremendous unknowns for the future of all sectors, this section has focused on anticipatory innovation, which is one of the four primary facets of innovation identified by OPSI (Figure 5.18). However, the three other facets are also relevant to digital innovation. The forthcoming report *Going Digital: The State of Digital Government in Latin America*, expected to be published in 2022, will cover digital innovation more broadly than just AI, as well as LAC governments' relative strengths and weaknesses in regard to managing a portfolio of innovation.

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Notes

[1] See (OECD, 2021[5]) for additional relevant material, including skills and competencies for digital government leadership. See also the *OECD Recommendation on Public Service Leadership and Capability* (OECD, 2019[31]) for information on how countries can instil values-driven culture and leadership, and ensure skilled and effective public servants, and responsive and adaptive public employment systems.

[2] The National Council for Economic and Social Policy (CONPES, in Spanish) "is the highest national planning authority [in Colombia] and serves as an advisory body to the Government in all aspects related to the economic and social development of the country. To achieve this, it co-ordinates and guides the agencies in charge of economic and social management in the Government, through the study and approval of documents on the development of general policies" (Source: www.dnp.gov.co/CONPES/Paginas/conpes.aspx).

[3] Based on responses gathered through the OECD survey and data collection exercises related to the OECD.AI Policy Observatory https://oecd.ai/dashboards/policy-initiatives/2019-data-policyInitiatives-24309.

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[7] A full review of broader co-ordination mechanisms is beyond the scope of this review. As the OECD has not yet determined the utility of AI-specific co-ordination mechanisms for AI in the public sector, no categorisation or visualisation of capacities is provided for this subject.

[8] Accordingly, no categorisation or visualisation of capacities is provided for this subject.

[9] For a background discussion on the importance of data for AI systems, see the "Data as fuel for AI" section of *Hello, World: Artificial Intelligence and its Use in the Public Sector* (https://oe.cd/helloworld).

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[31] Additional details about these sandboxes can be found in the OECD report *Hello, World: Artificial intelligence and its use in the public sector* (https://oe.cd/helloworld, available in English and Spanish). A follow-up review of these efforts in January 2021 indicates that they are still under development.

[32] www.colombiafintech.co/novedades/superfinanciera-lanza-sandbox-para-el-desarrollo-de-fintech.

[33] https://oecd.ai/dashboards/policy-initiatives/2019-data-policyInitiatives-26973.

[34] https://dapre.presidencia.gov.co/AtencionCiudadana/convocatorias-consultas/consulta-200820-regulatory-sanboxes-beaches-ia.

[35] https://innovacion.gob.pa/documentosaig/agenda-digital.

[36] The *Digital Buying Guide* was created by the UK Government Digital Service (GDS) with the support of the OECD and other organisations. See www.digitalbuyingguide.org.

[37] www.argentina.gob.ar/buscar/hackaton, as well as hackathons focused on FinTech, HealthTech and AgroTech.

[38] https://mintic.gov.co/portal/inicio/Sala-de-Prensa/Noticias/104274:Solidity-los-ganadores-de-la-convocatoria-Reto-Lab-del-MinTIC-en-tecnologias-tipo-blockchain.

[39] https://gojcodefest.com.

[40] https://hackathon.innovando.gov.py.

[41] https://inovacao.enap.gov.br.

[42] https://premiosindigo.mintic.gov.co/685/w3-propertyvalue-40447.html.

[43] www.mintic.gov.co/portal/inicio/Sala-de-Prensa/Noticias/145965:MinTIC-abre-convocatoria-para-solucionar-retos-de-entidades-publicas%20-and-companies-in-digital-transformation.

[44] https://retomexico.org.

[45] www.innovando.gov.py.

[46] www.smarttalent.uy/innovaportal/v/50206/1/innova.front/desafio-inteligencia-artificial.html.

[47] www.gov.br/governodigital/pt-br/transformacao-digital/rede-nacional-de-governo-digital.

[48] See https://abep-tic.org.br and www.facebook.com/abep.tic.

[49] https://gobiernodigital.mintic.gov.co/portal/Iniciativas/Red-CIO.

[50] https://mintic.gov.co/portal/inicio/Sala-de-Prensa/Noticias/6095:Desde-ya-haga-su-preinscripcion-al-CIO-SUMMIT.

[51] https://centrodeconocimiento.agesic.gub.uy/sobre-el-centro.

[52] See www.anii.org.uy/apoyos/investigacion/73/fondo-sectorial-de-educacion-inclusion-digital.

[53] The OECD estimates that 14% of jobs in member countries are at high risk of being automated by AI, and that automation will radically change the tasks that need to be performed in 32% of jobs. See www.oecd.org/future-of-work for the OECD's efforts on the future of work.

[54] Due to this finding, the OECD did not deem it appropriate to include a visualisation of the relative capacities of LAC countries for this section.

[55] The survey question was, "How strong are the following specific barriers to using data for improved policy making, service design and delivery and organisational management?", with a specific focus on "anticipation and planning". The countries that responded to these questions were Barbados, Brazil, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, Jamaica, Panama, Paraguay and Uruguay. Argentina completed the survey, but did not provide responses to these questions.

[56] The categories for which the majority of countries did not indicate moderate or strong barriers were: insufficient IT infrastructure (36%) and insufficient data storage capacities (27%).

[57] www.cgee.org.br.

[58] www.oecd.ai/dashboards/policy-initiatives/http:%2F%2Faipo.oecd.org%2F2021-data-policyInitiatives-24840.

[59] https://inteligenciaartificial.gov.co/en/mission.

[60] See p. 54, https://dapre.presidencia.gov.co/TD/TASK-FORCE-DEVELOPMENT-IMPLEMENTATION-ARTIFICIAL-INTELLIGENCE-COLOMBIA.pdf.

[61] This organisation seeks to advise the national government on the formulation of AI policies and provide state-of-the-art information on the development of AI. See the conceptualization document under consultation: https://dapre.presidencia.gov.co/AtencionCiudadana/convocatorias-consultas/consejo-internacional-de-inteligencia-artificial-para-colombia.

[62] www.gub.uy/agencia-gobierno-electronico-sociedad-informacion-conocimiento/politicas-y-gestion/programas/agenda-digital-del-uruguay.

[63] https://oe.cd/AIG.

[64] www.oecd-ilibrary.org/governance/anticipatory-innovation-governance_cce14d80-en.

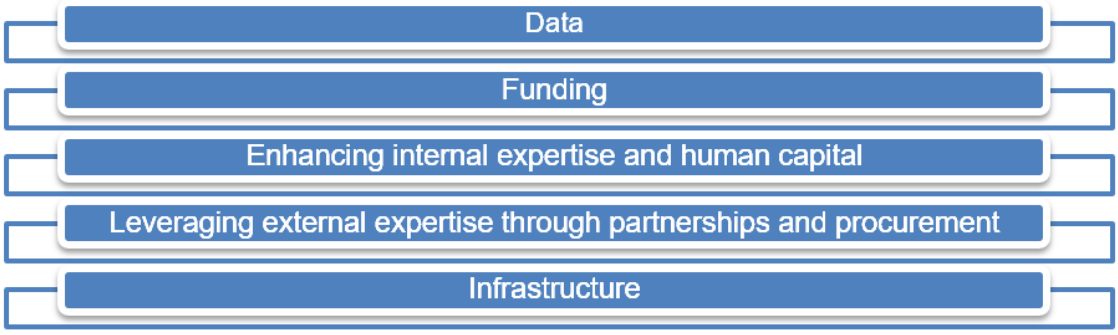
6 Putting in place key enablers for AI in the public sector

AI strategies, principles and governance mechanisms are not enough to bring about meaningful progress in achieving AI goals. To make these things tangible, governments will need to ensure that adequate resources and other enablers are provided or otherwise accessible. This chapter explores the extent to which LAC governments are putting in place these resources and enablers.

Financial resources are a pre-requisite, and must to be addressed. Likewise, governments will need access to talent, essential products, services and infrastructure in both the public and other sectors. This involves evaluating ways to build up internal capacity as well as outsource talent and development to the private sector or other external partners. Regardless of approach, it is important that public servants have, at a minimum, a baseline level of data literacy and understanding of data science and related tools, as these become increasingly pervasive and, to some extent, obligatory to the future of governing. Thus, special attention should be paid to providing opportunities for public servants to develop these capacities, as well as to consider which competencies might be expected in the future. Finally, governments need appropriate digital infrastructure, such as cloud solutions that allow public institutions to access infrastructure, platforms, software and other services at low cost.[1] This section explores the extent to which LAC governments have put in place these key enablers, and identifies areas where further efforts are needed.

In particular, this chapter discusses the items presented in Figure 6.1.

Figure 6.1. Issues discussed in Chapter 6



Data

Most AI projects involve data as a critical input and enabler. This is especially true of Machine Learning projects where the objective is to learn from the data. However, not all data are equal and steps must be taken to ensure that the data used for an AI project is accurate, reliable and appropriate for the task at hand. Even when AI could be a solution to governmental problems, lack of basic data management techniques and government structures may limit its potential as an enabler for AI.

This report would be remiss if it did not stress the critical nature of data as perhaps the most critical enabler of AI. However, the forthcoming review, *Going Digital: The State of Digital Government in Latin America*, due to be published in 2022 will contain an in-depth exploration of LAC government capacities and practices around a data-driven public sector. Among other topics, the review will discuss data governance and issues relating to commons standards and interoperability between different IT systems, and will analyse LAC government Open Government Data (OGD) policies and initiatives directed towards increasing the openness, usefulness and reusability of government data, which can serve as fuel for AI across all sectors.

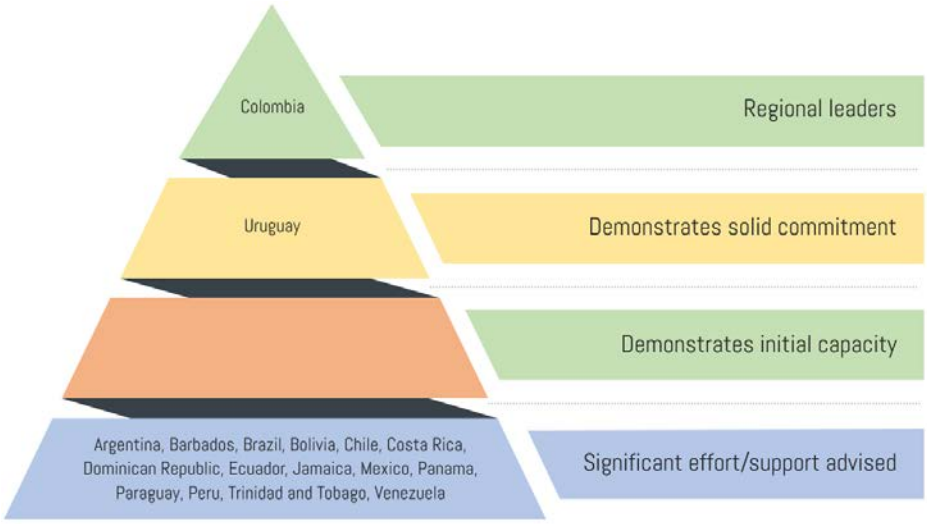
As the forthcoming report covers data in depth, this AI report does not include a dedicated analysis of data as a key enabler beyond issues related to the strategic layer of data governance (see the *Foundational strategic data governance capacities section* of Chapter 5), supporting data literacy and skills (see the *Enhancing internal expertise and human capital* section later in this chapter) and data infrastructure components important for AI development (see the *Infrastructure section later in this chapter*).

In addition, the published OECD report *Hello, World: Artificial Intelligence and its Use in the Public Sector* (Berryhill et al., 2019[1]) includes an in-depth discussion of the importance of data for AI systems (see the *Data as fuel for AI* section) and an overview of ways in which governments are securing the ethical collection, access to and use of quality data (see Chapter 4).

Funding

Funding and financing mechanisms are an important consideration for public sector applications of AI. Even simple initiatives need access to some level of funding and financial support to make the transition from concept to implementation. The availability and nature of this financing can contribute greatly to the eventual success of AI-based innovation (Berryhill et al., 2019[1]).

Figure 6.2. LAC regional capacities for funding AI efforts



Note: This figure focuses on government capacities to consider and commit to dedicated funding specific for public sector AI efforts. It does not focus on individual public sector organisations seeking to fund public sector AI projects out of regular ICT budgets.

In interviews with LAC countries, a number stated that AI efforts were funded out of normal IT budgets, generally the budgets of individual institutions. This practice is common globally, including among LAC countries. However, the existence of dedicated AI funding mechanisms, or broader cross-cutting digital funding opportunities that can be used for AI, may assist in ensuring that the multitude of needs and demands government agencies face on a regular basis do not crowd out opportunities for AI exploration, experimentation and implementation. In addition, centralised or cross-cutting (rather than institution-specific) funding pathways can help identify common needs and potential synergies, as well as mitigate duplication and overlap.

As touched on earlier in this report, several LAC countries have developed funding approaches or mechanisms beyond traditional budget allocations that can help promote AI in the public sector:

- As discussed in Chapter 2, Colombia's national strategy[2] is unique in the region in that it provides for an explicit funding mechanism to support AI objectives and initiatives. It secures funding from various public sector institutions, generally at the national level. The strategy also explicitly shows funding amounts, where the money comes from (generally the general national budget) and where it flows to. In addition, as touched on in the *Understanding problems and the potential for AI solutions* section of Chapter 5, Colombia's Pact for the Digital Transformation of Colombia, carves out a central fund of USD 5.2 billion (equivalent) to address major digital challenges in the country, including through the use of emerging technologies (see Box 6.1). The potential for funding public sector AI initiatives represents one of many avenues for funding digital projects. The country's Digital Government Policy (Decree 620 of 2020) also provides for a Single Fund for ICTs to finance the implementation and operation of cross-cutting digital citizen services, including digital interoperability services and digital authentication. However, these efforts do not appear to be related to AI at present. Finally, Colombia's Science, Technology and Innovation Fund is allocated 10% of the income of the General System of Royalties to finance projects that "increase the scientific, technological, innovation and competitive capacity of the regions", including ICT projects that contribute to social progress, economic dynamism, sustainable growth and wellbeing.[3]
- As mentioned in the *Understanding problems and the potential for AI solution* section of Chapter 5, Uruguay's Sectoral Education Fund is dedicated to financing research projects on teaching and learning assisted by digital technologies, and includes a primary "research line" scoped around the

use of data and AI. According to their survey responses, Uruguay has also obtained financing for AI projects through arrangements with the Inter-American Development Bank (IDB) and CAF.

- Venezuela's Info-Government law[4] establishes an interesting funding model whereby the National Fund for Science, Technology and Innovation allocates at least 2% of the resources from contributions for science, technology and innovation, to finance programmes and promote plans to consolidate the national industry of information technologies. Subsequent iterations of this model are not specifically dedicated to AI, or even specifically to public sector programmes. Similar to Colombia's Science, Technology and Innovation Fund, this is an interesting approach to building a central fund for promoting digital initiatives, and may warrant further study.

In spite of these efforts, compared to other parts of the world dedicated funding options for AI in the public sector do not appear to have a focus in LAC countries. Where normal budgeting processes operate, and for most of the examples above, AI represents just one of many possible options for allocating funding. In the absence of dedicated funding, LAC countries may face difficulties in converting strategies and stated aspirations into real, concrete AI initiatives due to competing priorities. Some examples of dedicated funding for AI in the public sector from outside the region are presented in Box 6.1, which also provides details of regional funding mechanisms offered by CAF and the IDB which may help LAC governments seize opportunities for AI in the public sector.

Box 6.1. Examples of dedicated funding for AI in the public sector

Dedicated funding as part of a national AI strategy (Spain)

Spain's national AI strategy has pledged EUR 600 million in AI investments through 2025, which the country estimates will also serve to mobilise EUR 3.3 billion in private investments. Of this amount, 275 million will be allocated to technological development of AI, 133 million to integrating AI into all economic sectors, 100 million specifically for AI in the public sector, 42 million to promoting talent development, another 42 million for data platforms and 8 million to develop a normative ethical framework that reinforces the rights of citizens.

AI and quantum computing research institutes (United States)

The United States government has announced over USD 1 billion in funding for the establishment of 12 new AI and quantum information science (QIS) research institutes to be housed in Federal government agencies. The institutes, to be established over the course of several years, will serve as a place where "the Federal government, private sector, and academia will come together to drive transformative AI and quantum breakthroughs."

Funding national AI strategy implementation (Estonia)

From 2019 to 2021, the Estonian government funded the implementation of the country's national AI strategy, "KrattAI", with EUR 10 million.

Funding to launch key AI-enabled public services (Finland)

In April 2019, the Government of Finland published *AuroraAI – Towards a Human-Centric Society*, which provides a five-year (2019-23) implementation plan for the country's national digital government strategy, AuroraAI. One action item is to allocate EUR 100 million in funding, spread across 2020-23, to launch 10-20 services focused on life events and business practices.

Regional funding for the strategic use of AI in LAC (CAF)

CAF, Development Bank of Latin America**,** is leading an initiative to promote the strategic use of data and AI in the public sector of its 19 member countries. The organisation solicited proposals from its members focused mainly on projects that had moved beyond design and piloting and were close to implementation. The process yielded 89 proposals from 11 countries. The main issues raised by the proposals related to citizen services, online procedures, purchases and contracts, disease management, the environment, and urban mobility and planning. CAF then evaluated the proposals against pre-identified criteria: relevance, impact, efficiency and effectiveness, potential to combat corruption, ability to empower citizens to contribute to solving public problems, scalability, replicability and the potential to link with other initiatives. To date, CAF has delivered approximately USD 800 000 (equivalent) in funding through non-reimbursable technical co-operation grants.

Source: www.energy.gov/articles/white-house-office-technology-policy-national-science-foundation-and-department-energy, https://ati.ec.europa.eu/news/estonian-public-services-age-artificial-intelligence, CAF officials and www.caf.com/es/actualidad/noticias/2020/06/cierra-la-convocatoria-de-caf-para-desarrollar-un-proyecto-de-datos-e-ia-en-una-ciudad-latinoamericana.

Enhancing internal expertise and human capital

In addition to funding, other critical enablers for AI in the public sector include access to human capability and capacity. Governments can obtain the necessary human capital *internally* through innovative approaches to training and recruiting in new talent.[5] In addition, they can augment in-house human capital through *external* arrangements brought about through procurement or partnership, as discussed in the next section. In order to realise the potential of AI in the public sector, governments will likely need to pursue a mix of approaches.

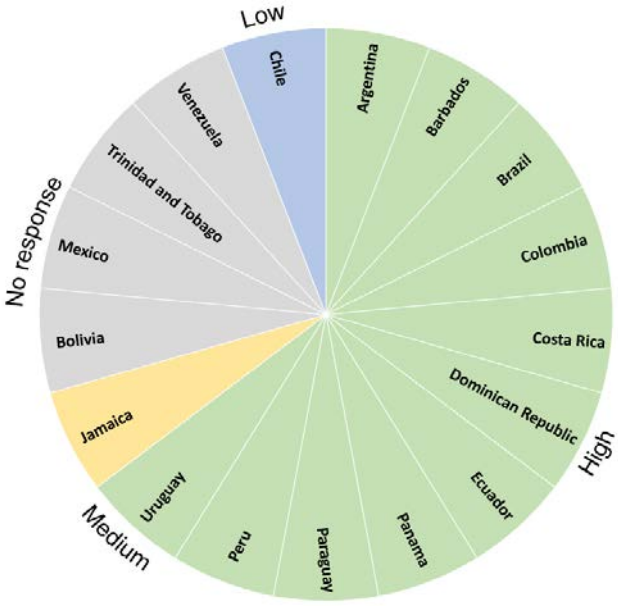
Figure 6.3. LAC regional capacities for bolstering internal human capital for AI

The potential for widespread AI transformation is likely to have substantial implications for the skills required to effectively deliver public services. These needs have been further emphasised by the COVID-19 crisis, with OECD research finding that a key public sector outcome of the pandemic has been the "rapid acceleration of digital innovation and transformation", with digital skills a vital component to keeping up and shifting to new environments and ways of working (OECD, 2020[2]). Given the critical and foundational nature of digital skills in the public service, the OECD Public Governance Committee's (PGC) Working

Party of Senior Digital Government Officials (E-Leaders) (supported by the Digital Government and Data Unit), in co-ordination with the Working Party on Public Employment and Management (PEM) and the Observatory of Public Sector Innovation (OPSI), has developed a new digital skills and talent framework for the public service. The aim is to shift from a sole focus on technology towards a mindset and culture, supported by technical skills, capable of designing government services that are more open, collaborative, inclusive, innovative and sustainable (OECD, 2021[3]). Findings show that AI-related skills, such as the use of data and technology in a trustworthy manner, are critical.

Within the LAC region, as discussed above (Figure 5.7), only a couple of surveyed countries (Dominican Republic and Uruguay) indicated their agreement that their public servants understand AI and its uses and limitations. This hints at a deficit of AI skills among current public servants. Fortunately, most LAC governments confirmed that improving the digital skills and competencies of public servants was a high priority (Figure 6.4).

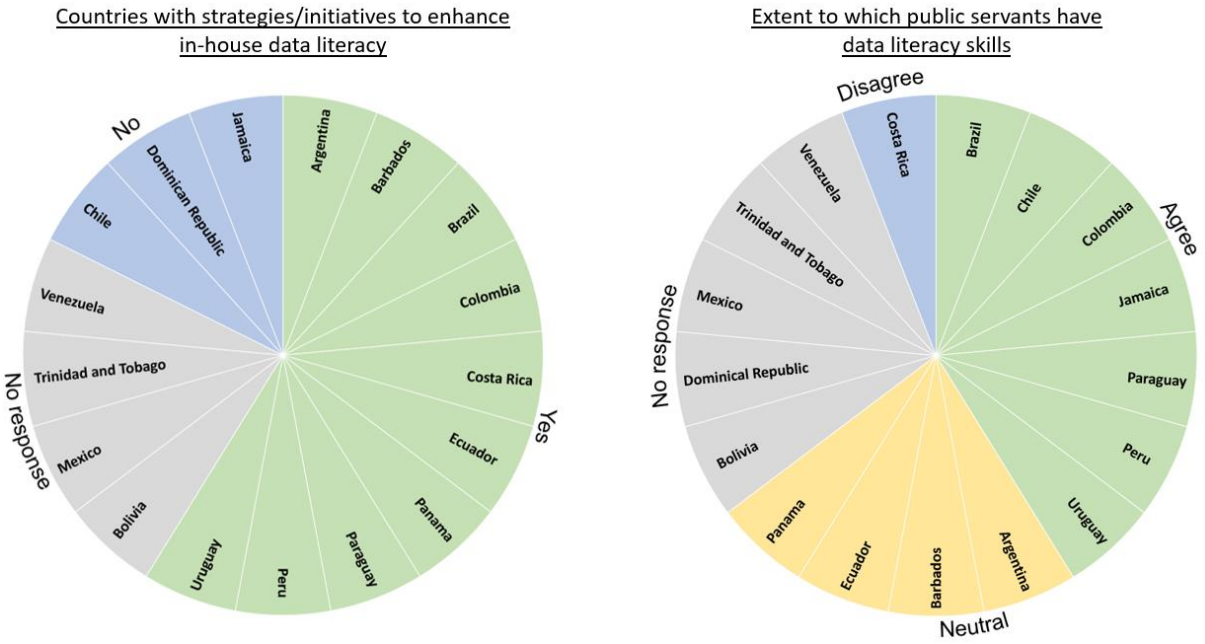
Figure 6.4. Priority given to improving the digital skills and competencies of public servants



Source: OECD LAC Digital Government Agency Survey (2020).

This high level of priority can be observed in a number of LAC countries which have made significant efforts in recent years to enhance the data literacy and associated skills of public servants. Such skills serve as a solid foundation for subsequent AI-focused upskilling. Countries surveyed also reported positive opinions regarding the digital literacy of public servants. Figure 6.5 illustrates these points.

Figure 6.5. Countries have initiatives to enhance in-house data literacy and public servants have data literacy skills



Source: OECD LAC Digital Government Agency Survey (2020).

Some examples of data literacy efforts include the following:

- Argentina's National Institute of Public Administration (INAP) offers a number of courses for public servants aimed at promoting data literacy, including on database management, big data and data visualisation.[6] In addition, the country's Secretariat of Public Employment has developed a series of data skill development programmes that target different groups of public sector employees (e.g. young officials, senior leaders) (OECD, 2019[4]). LABgobar also works to develop more technical data skills among public servants (OECD, 2019[5]).
- The Barbados Learning and Development Directorate[7] has co-ordinated a variety of virtual courses[8] related to data literacy, available to public servants as well as members of the public. Relevant courses include database concepts, database systems, and algorithms and programming concepts.
- The Brazil national AI strategy includes an action item to encourage public agencies to implement a training programme for its workforce on new technologies. In addition, the country's National School of Public Administration[9] offers courses on data literacy and data science aimed specifically at public servants. Such courses include data governance, data science, regression analysis and data protection.[10]
- Colombia has developed training courses on a number of topics related to open data. Examples include training on what types of data to publish and how, using and exploiting data on the government's open data portal, and data accessibility and security. Training courses are aimed at different audiences, including public servants, national and sub-national levels of government, journalists and civil society representatives. The country publishes a dataset of their open data training offerings on the open data portal.[11] In addition, the government's experimental *Catalizadores de la innovación* (Catalysts of Innovation)[12] programme, developed in co-ordination with UNDP, selects public servants for training in the use of tools and methodologies for innovation

which they must apply to solve a challenge with the support of ICT. This training and the resulting solutions may involve data and emerging technologies, including AI. Another relevant programme linked indirectly with public sector data literacy efforts is the ICT Mission 2022, which seeks to train 100 000 Colombian youth and adults in programming (including public servants).[13] According to officials, those who finish the training have an opportunity to become public servants or contractors for the different entities of the Colombian state.

- According to Panama's Agenda Digital 2020, the country is building out a new e-learning programme for 80 public sector organisations on opening up data, and is training a number of officials on data governance.

While efforts to instil solid data literacy skills in public servants appear to be moving in the right direction for many LAC governments, more needs to be done to build on these skills and provide specific upskilling on AI and associated topics (e.g. machine learning and AI ethics), as these involve unique nuances, opportunities, challenges and risks. This challenge extends beyond LAC countries, with initiatives to develop, motivate and deploy internal public sector talents for AI still largely inadequate at the global level (Ubaldi et al., 2019[6]). Indeed, emerging technology skills shortages are often cited by government officials as an obstacle, in interviews with the OECD, with regard to the exploration and use of such technologies, including AI.

Some LAC governments appear to be making progress in this area by committing to or developing capacity building programmes for public servants. In particular:

- Argentina's national AI strategy (Government of Argentina, 2019[7]) recognises that "the use of AI requires that public institutions redefine part of their management schemes and strategies based on new technologies. With the introduction of intelligent systems, the need to reconvert roles and tasks of public employees is generated." The strategy includes a key goal for "Dissemination and training of Officials and Agents of the National Public Service in the use and exploitation of AI in Government Services and Solutions." It also commits to developing AI-oriented talent and technical capabilities in AI in both the public and private sectors. Efforts in this area are already underway, with INAP offering face-to-face and online training sessions on AI (OECD, 2019[4]).
- As part of its Public Sector Modernization Programme,[14] Barbados commits to develop a public sector training plan and training and upskilling for public sector employees, including in disruptive technologies. In their response to the digital government agency survey, Barbados officials stated that the government is now placing additional emphasis on strengthening skills related to emerging technologies and other priority areas (e.g. cloud computing, cybersecurity).
- Chile's national AI strategy and action plan, launched in October 2021, call for training efforts to upskill public servants and members of the public alike. Such efforts include training, incentives and new management structures to further the use of AI in the public sector. The action plan proposes the creation of a dedicated management programme and states that the government is already working with the IDB's fAIr LAC initiative (see Chapter 2) to train public officials on AI.
- Colombia's Digital Talent programme offers training on AI to public servants and citizens alike, and has trained thousands of individuals in AI skills (see Box 6.2).[15] In addition to creating its own training programmes, the Colombia government has created a Call for Digital Transformation fund to finance external training opportunities for public servants in subjects such as AI and machine learning.[16] Finally, as touched on earlier, the country's Catalysts of Innovation helps selected public servants improve their ICT skills in ways that can enhance AI capabilities.
- Peru's draft national AI strategy for 2021 states that the country will promote courses or diplomas in programming and AI for officials of public sector organisations, and also plans to develop online courses for public officials on the adoption, use and benefits of AI. The draft also states that Peru will create a decentralised National Centre for Innovation and AI as an accelerator and facilitator

of AI research and development in all regions of the country, although it is unclear whether this includes the use of AI in the public sector.

- Uruguay delivers training courses for public servants in a variety of subjects, including AI, on its virtual educational platform, according to officials who responded to the digital government agency survey.

Box 6.2. Training thousands of public servants and citizens in AI (Colombia)

The Colombian Ministry of Information and Communications Technologies (MinTIC) has developed a Digital Talent Strategy in order to address the challenges of the Fourth Industrial Revolution. The principal objective of the strategy is to accompany citizens throughout their life cycle, starting with education in digital skills at an early age, followed by training for students at public schools and public and private universities, and then skilling and reskilling for professionals in areas linked to the digital creative industries, industries 4.0 and information technologies.

In 2019, as part of its digital skills training strategy, the country developed a suite of online courses on topics related to digital transformation and AI. The courses were made available to over 25 000 Colombians (public servants and members of the public), with 12 000 training slots specifically reserved for Colombians seeking to train as AI professionals. Since then, the efforts have expanded, with plans to train over 50 000 Colombians in digital skills, including those important for AI. The training courses include a particular emphasis on upskilling Colombians currently experiencing unemployment.

Source: https://mintic.gov.co/portal/inicio/Sala-de-Prensa/Noticias/106989:Mas-de-25-000-colombianos-podran-formarse-gratis-en-Inteligencia-Artificial-y-habilidades-para-la-transformacion-digital-gracias-a-MinTIC, www.talentodigital.gov.co and www.oecd.ai/dashboards/policy-initiatives/http:%2F%2Faipo.oecd.org%2F2021-data-policyInitiatives-26076.

These efforts are commendable and may be of particular importance for technical skills needed for specific roles. Where a more general AI-focused skillset is needed to educate a broader swath of public servants, LAC governments may be able to leverage existing third-party solutions at no cost. In particular, many citizens and public servants around the world have benefited from the free AI training curriculum *Elements of AI* (Box 6.3), and over 15 000 people have participated in the Artificial Intelligence Multidisciplinary Training Programme developed by the University of Buenos Aires Innovation and Artificial Intelligence Laboratory (IALAB), which CAF has supported with scholarships (Box 6.4).

Box 6.3. Elements of AI

Elements of AI is a freely available online training course that was developed jointly by the University of Helsinki and Reaktor, a consultancy and agency services organisation. Its curriculum is devoted to AI concepts, their societal implications and the building of AI systems.

Unlike most AI courses, Elements of AI is designed to be broadly accessible and requires no previous technical skills. It combines theory with practical exercises, all of which can be performed at the participant's convenience. The first part, "Introduction to AI", helps participants to understand the nature of AI, what is and is not possible, and how it affects everyday lives – with no complicated maths or programming required. Importantly, it also covers the societal implications of AI, such as data bias and the potential for algorithmic discrimination, and seeks to explain how to rectify these issues, while suggesting ways to help safeguard data. The second part of the course, "Building AI", launched at the

end of October 2020, and allows students to dive deeper into the world of AI and learn about the algorithms that make the creation of its systems possible. Once students have understood the basics, they can start to explore the fundamentals of coding AI systems using the programming language Python. Each exercise gives users a choice of three levels of difficulty:

- Easy – no coding at all.
- Medium – students modify code that is provided to them.
- Difficult – students write new code from scratch.

The initiative launched with the objective of training 1% of Finland's population. Having achieved this goal, it now aims to train 1% of all European citizens. The course is open to anyone in the world, with translations underway in the 24 official EU languages (English, Spanish, Portuguese and others are already available). To date, 530 000 students from 170 countries have signed up.

Source: www.elementsofai.com and https://trends.oecd-opsi.org/trend-reports/upskilling-and-investing-in-people.

Box 6.4. Artificial Intelligence Multidisciplinary Training Programme

The Innovation and Artificial Intelligence Laboratory (IALAB) at the University of Buenos Aires has developed the Artificial Intelligence Multidisciplinary Training Programme as a means to advance the AI ecosystem in Latin America.

The training programme is oriented around several training profiles, including full-stack programmer, data lead, AI project manager and AI programmer. The core of the course consists of four modules:

1. Start Coding – 150 hours on relevant programming languages, such as JavaScript, React, React Native and Node.js.
2. Governance of Data, Information and Knowledge – 120 hours on processes, functions, policies, standards and measurements that help ensure the effective and efficient use of information.
3. Algorithmic Governance – 60 hours on global, ethical, legal, technical and operational guidance for achieving the traceability and auditing of AI systems.
4. AI Design, Programming and Deployment – 200+ hours on applying automation techniques and AI systems adapted to organisational challenges.

The programme is a self-paced virtual course, with synchronous tutorials and asynchronous communication with participants and professors also available.

CAF has supported the programme by providing full sponsorships for 150-500 hours of training spanning both theoretical and practical aspects of AI, with efforts including special targeting of public servants.

So far, more than 15 000 people have participated in the programme, including mainly public officials, small and medium enterprises, and women in the region. IALAB has set a goal to reach 50 000 participants by the end of 2022.

Source: https://ialab.com.ar/programa-de-formacion-multidisciplinario-de-inteligencia-artificial and www.caf.com/es/actualidad/convocatorias/2021/08/programa-de-formacion-multidisciplinario-de-inteligencia-artificial.

In looking to infuse the public sector with the right skills and expertise, LAC government efforts to enhance in-house AI capacity through strategic recruitment are significantly less pronounced than those related to upskilling existing public servants. While there is evidence of multi-disciplinarity and diversity-based initiatives to promote inclusive hiring and recruitment (see section on *Ensuring an inclusive and user-centred approach* in Chapter 4), the OECD could find little evidence among LAC governments of targeted recruitment of individuals with AI skills and expertise. Argentina's national AI strategy hints at this with an action item to create an "Expert Technical Team" on AI, which will act as an internal consulting body that public sector organisations can consult on the design and implementation of AI projects. Where the government expects to source these experts from is not explicitly stated in the strategy, however.

Beyond a specific focus on AI, there appears to be little explicit effort dedicated to recruiting technical talent with broader or other digital skills. Some exceptions do exist, such as Brazil, whose national digital government strategy includes an objective to expand the workforce by 2 000 professionals by 2022, including through recruitment efforts. Brazil has also established streamlined hiring processes for some 400 temporary officials, in order to catalyse digital government, according to officials interviewed by the OECD. In Argentina, the recent government identified recruitment of new talent as a top priority and opted for temporary employment models that provide higher compensation, compared to market costs, as a means to attract new talent, and counterbalance the salary gap between the public and private sectors (OECD, 2019[4]). Globally, there has been a significant push to couple the upskilling of existing employees with focused efforts to attract digital experts to the public service (see Box 6.5). LAC governments should explore ways to make public service attractive to talented individuals in other sectors as well as options to incentivise highly skilled individuals to join the public service. They may also want to explore hiring mechanisms that can streamline and quicken hiring processes for positions with in-demand AI skills.

In seeking to recruit new types of talent, governments will also need to reshape roles and job profiles, which will necessitate identifying competitive pay and conditions, while remaining within the constraints of existing public sector pay arrangements. As this may represent an obstacle to bringing digital government skills in-house, governments might consider procuring expertise from the private sector (OECD, 2020[8]). They may also need to seek changes to existing laws, policies and practices. For instance, flexibly hiring mechanisms may require changes in legislation in some countries.

Box 6.5. Recruiting technical talent in government

Tours of duty (United States)

Hiring staff for shorter periods of time can sometimes be quicker and easier for governments than recruiting permanent staff. This type of non-permanent hiring may be a good fit for digital innovation projects, where such arrangements can allow for a regularly refreshed pool of talent with modern digital skills and abilities. The US government, for example, has introduced the concept of "tour of duty hiring".

According to US documentation, "By leveraging temporary tour-of-duty employment opportunities (also known as details), Federal agencies can tap into new talent willing to serve their country. Using flexible hiring authorities allows agencies to recruit executives, entrepreneurs, technologists, and other innovators willing to enter government service for a short period." The documentation also outlines several potential models and checklists for project leaders to consider.

Tour of duty hiring has been used to recruit technologists for the United States Digital Service (USDS), and the 18F and Presidential Innovation Fellows (PIF) programmes, among others.

Joint Centre of Excellence for AI (France)

In March 2018, President Emmanuel Macron presented a strategy and vision to make France a leader in AI. The strategy was informed by the March 2018 report, *For a Meaningful Artificial Intelligence:*

Towards a French and European Strategy, commissioned by the French Prime Minister. The report noted that, "not all administrations possess the same level of maturity in terms of reflecting on the usage of AI in their specialist areas and their implementation processes. A major difficulty resides in the capacity to source the right skills for keeping up with the pace of innovation, identifying their applicability, and potentially transforming them into an initial proof of concept." Among numerous commitments and proposals, the report includes an action item to create "a Joint Centre of Excellence for AI at the State level to help recruit AI talent and to serve as an advisor and lab for public policy design". Such a centre was intended as a temporary measure, as over time other public sector organisations would become more capable of identifying needed AI skills and recruiting needed talent.

The OECD was unable to find evidence that Joint Centre has been fully implemented. However, it represents a promising model for recruitment and expertise specifically related to AI.

Source: https://github.com/GSA/innovation.gov/issues/25, https://oecd-opsi.org/wp-content/uploads/2019/05/implementation-with-EC-cover-1.pdf, www.aiforhumanity.fr/pdfs/MissionVillani_Report_ENG-VF.pdf and www.oecd.ai/dashboards/policy-initiatives/http:%2F%2Faipo.oecd.org%2F2021-data-policyInitiatives-25374.

Many LAC countries have actively demonstrated a high level of commitment to upskilling public servants in subjects beyond the data literacy and AI upskilling efforts discussed here, In particular, major training and recruitment initiatives are focused on broader or other specific digital transformation and innovation skills. In fact, most LAC countries have specific provisions in their digital government strategy, or other targeted initiatives, related to strengthening the digital transformation capabilities of public servants. The forthcoming report *Going Digital: The State of Digital Government in Latin America* will cover these topics in depth, including strengths and weaknesses related to digital skills and capacities in the region, and will provide recommendations for improvements in this area. Many LAC governments have also developed upskilling efforts related to AI and other digital skills for the broader public. Such actions, while much needed, generally fall outside the scope of the OECD's digital government work, which focuses on public sector transformation.

Moving forward, LAC governments need to ensure that public servants at all levels possess appropriate AI skills and capacities, as current efforts tend to maintain a focus on technical staff. Of critical importance is a technologically literate senior leadership cadre, with a strategic understanding of what AI can do and the types of problems it can address, able to champion the deployment of AI in government (Agrawal, Gans and Golbfarb, 2018[9]).[17] Managers of AI-enabled services will require deeper technical expertise, even if the services are delivered by external contractors, in order to negotiate effective contracts and assess whether specific AI approaches are fit for purpose. Crucially, both senior leaders and managers will need to be equipped to manage change.

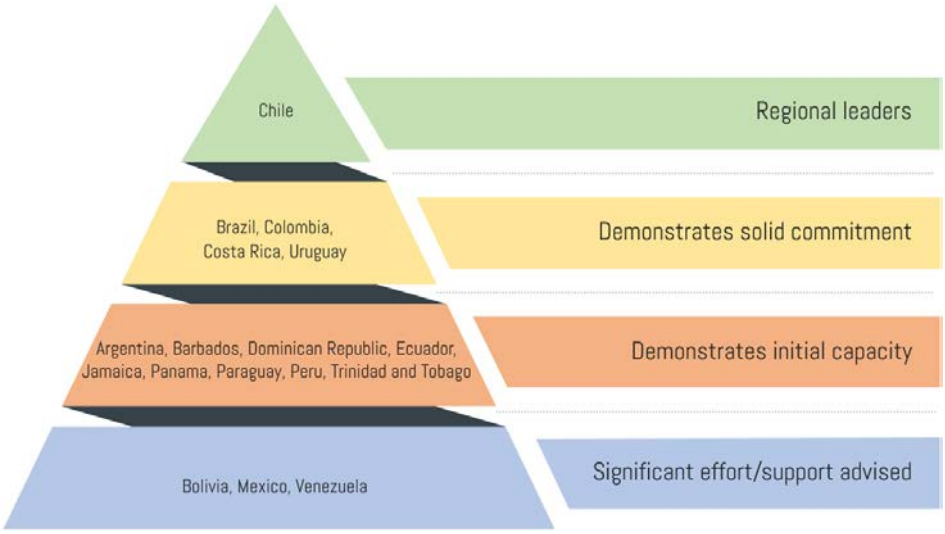
In addition, as LAC governments mature in this area and continue to build up in-house AI skillsets and recruit individuals with AI knowledge and expertise, they will need to consider long-term needs for AI skills and capacities. Governments should bear in mind that AI will continue to change the dynamics of work and the requirements for success in the public sector for the foreseeable future. This underscores the need for lifelong learning and growth. Governments will therefore need to develop lifelong learning programmes, and iterate and adapt these programmes over time. Canada's Future Skills initiative, as detailed in the OECD report *Hello, World: Artificial Intelligence and its Use in the Public Sector* provides an interesting approach that could be useful for public sector capacities, as well the broader society and economy.[18]

Leveraging external expertise through partnerships and procurement

In many instances, AI skills and expertise are not readily available in government, and upskilling and recruiting programmes to import such talent can require significant investments in time and may encounter

bureaucratic hurdles. In addition to building internal capacity, governments may draw upon the private sector (e.g. large firms or innovative GovTech startups), academic and civil society actors, as well as the public in order to leverage their expertise and resources.

Figure 6.6. LAC regional capacities for leveraging external expertise and insights for AI



Many LAC governments are well-positioned to bring in external knowledge and insights through open processes for the design and development of their digital policies and services, which should also apply to those related to AI (see Table 6.1 and Table 6.2).

Table 6.1. Public organisations involving external actors in service design and development

	Private sector	Academia	Civil society
Argentina	✓	✓	✓
Barbados	✓	✓	✓
Brazil	✓	✓	✓
Chile			
Colombia	✓	✓	✓
Costa Rica	✓	✓	✓
Dominican Republic	✓	✓	✓
Ecuador			
Jamaica	✓	✓	
Panama	✓		
Paraguay	✓	✓	✓
Peru	✓	✓	✓
Uruguay	✓	✓	✓

Note: Data are not available for Bolivia, Mexico, Trinidad and Tobago, and Venezuela due to a lack of survey responses. "Private sector" includes countries who answered affirmatively to "private sector" and/or "GovTech start-ups and entrepreneurs".
Source: OECD LAC Digital Government Agency Survey (2020), corrections from Colombia dated 2 December 2021.

Table 6.2. Methods used to engage external stakeholders in digital service and policy design

	Design sessions	Focus groups	Public consultations	Social media	Wiki approaches
Argentina			✓	✓	✓
Barbados	✓	✓		✓	
Brazil	✓		✓		
Chile	✓	✓			
Colombia	✓	✓	✓	✓	
Costa Rica			✓	✓	
Dominican Republic		✓	✓	✓	
Ecuador			✓		
Jamaica		✓			
Panama	✓				
Paraguay					
Peru	✓	✓	✓	✓	
Uruguay	✓	✓	✓		

Note: Data are not available for Bolivia, Mexico, Trinidad and Tobago, and Venezuela due to a lack of survey responses.
Source: OECD LAC Digital Government Agency Survey (2020), corrections from Colombia dated 2 December 2021.

These efforts are commendable and can result in completely new concepts and insights being introduced into the public sector. For instance, in the Dominican Republic, more than 80% of new digital services were initially suggested by the general public, according to digital government agency officials. Some countries are setting up formal structures to capture such insights and views, such as Uruguay, which has committed in its national digital government strategy to developing an online catalogue of public participation instances, including feedback and satisfaction scores. The country has also committed to implementing citizen innovation funds and a sustainable process of co-creation between government and civil society representatives, entrepreneurs and companies. Colombia has also built a forum structure for capturing citizen views through its Crystal Urn programme (Box 6.6), with specific attention to enhancing government transparency. The Governments of Uruguay[19] and Chile[20] organized a multi-stage public consultation process to generate initial thinking specifically on national AI priorities and needs through roundtable discussions, webinars and other outreach activities, and then obtain feedback on the draft text of the strategy. Chile's LabGob provides guidance and methods on how to harness external insights (see Box 6.7). Other governments, such as Costa Rica,[21] have also issued solid guidance on the topic, although such guidance is somewhat less detailed in walking a public servant through processes step-by-step.

Box 6.6. The Crystal Urn (Colombia)

The Crystal Urn (*Urna de Cristal*) is a Colombian government initiative launched in 2010 to promote electronic citizen participation and government transparency, which has since evolved into an open government portal. The initiative consists of a multichannel platform integrating traditional communication media (television and radio) with digital media (social networks, SMS and websites). These channels are made available to all national and territorial government entities to facilitate the creation of participative forums at all levels, with a view to improving relations between citizens and the state. Through the portal, Colombians can influence the decisions of leaders and become informed about government results, progress and initiatives. They can also transmit their concerns and proposals

directly to government institutions, and participate and interact with state management, services and public policies. This creates a binding relationship between citizens and the state.

Source: (OECD, 2018[10])

Box 6.7. Guidance on harnessing external expertise and insights (Chile)

Chile's LabGob has developed a series of documents entitled *Allowed to Innovate: Guidelines to Transform the Chilean State*, which help to guide public servants in understanding innovation and using innovative practices to drive better outcomes for government. Within this series, two documents help public servants engage with and gain thoughts and expertise from external actors and groups.

The first, "How Can We Solve Problems through Competitions and Open Innovation?", seeks to promote open innovation processes in the public sector and make "a commitment to the collective intelligence that resides in entrepreneurs, academics, SMEs, students, NGOs, public servants and any citizen, no matter how far". The document also highlights the potential of open innovation to provide government with access to ideas and solutions about which it was previously unaware.

In seeking to systematise the experience of open innovation, the guidance provides methodologies, models, tools and case studies for open processes to leverage external expertise. It also details guidance to help public servants work through the eight phases of an open innovations process or competition:

1. Initial exploration.
2. Call for strategy and design.
3. Diffusion and application period.
4. Initial filtering and selection.
5. Accelerated incubation.
6. Communication and final evaluation.
7. Piloting and evaluation.
8. Implementation.

The second document, "How Can We Facilitate Face-to-Face Spaces for Public Innovation?", is based on lessons derived from co-design workshops held over 2015-2018. The document provides practical information on how to structure face-to-face session and workshops, and outlines key roles and responsibilities for such sessions and actionable guidance divided into eight phases:

1. Define a purpose.
2. Define an audience.
3. Workshop design.
4. Management and logistics.
5. Initial preparation.
6. Workshop execution.
7. Evaluation.

8. Systemisation and analysis.

This guidance is adaptable and could be used in a variety of settings and countries in order to obtain insights and views from external actors, including stakeholders and users.

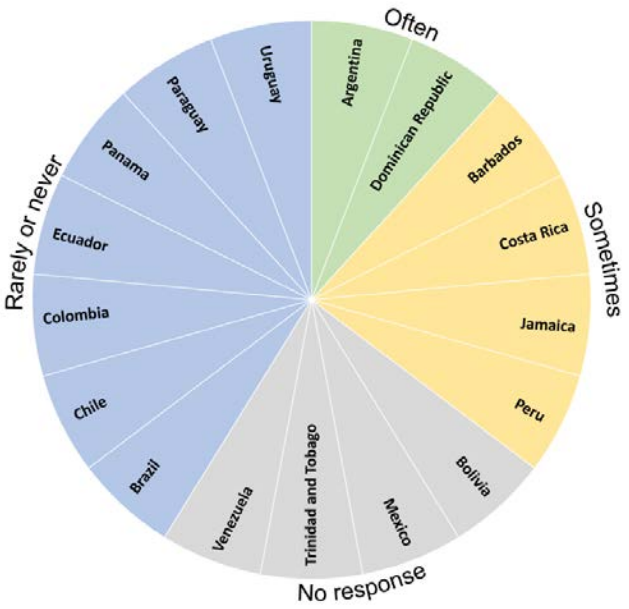
Source: https://innovadorespublicos.cl/documentation/guide and https://innovadorespublicos.cl/documentation/publication/39.

With regard to AI policies and services in particular, many governments around the world have identified a need to engage in more dynamic, specific, targeted arrangements with actors or organisations in other sectors in order to drive progress. This need is especially acute when dealing with new topics such as emerging technologies. In such cases, governments may not be able to create public value without external involvement, and the transformational potential of and outcomes of AI policies, initiatives and solutions will need to be co-produced. Strategic relationships with other sectors are essential to achieve a common direction, tap into new abilities and expertise in leading-edge practices, and strengthen public perceptions and trust. Each sector has unique strengths and competencies, and the biggest digital innovation successes occur when they come together.

The most common types of arrangements identified by the OECD involve cross-sector partnerships and collaboration (e.g. public-private partnerships), and public procurements for private sector expertise (Berryhill et al., 2019[1]). Working beyond governmental boundaries is critical in this regard. The OECD has previously found that engagement with the private sector is one of the most important enablers for public sector adoption of emerging technologies, including AI (Ubaldi et al., 2019[6]). Moreover, working with civil society and academic institutions can allow governments to tap into insights and specialised skills in many related areas. Challenges and prizes, as discussed earlier in the *Understanding problems and the potential for AI solutions* section in Chapter 5, is one way to kick-start these types of arrangements. Governments in the LAC region have also undertaken other types of action to support these collaborations, to varying degrees.

In regard to cross-sector partnerships and collaboration, LAC governments do not seem to leverage public-private partnerships on a frequent basis (Figure 6.7). While many LAC governments have developed and demonstrated competencies for engaging external actors in activities such as consultations, in order to solicit ideas and feedback on proposals, they have yet to build out to a significant degree cross-sector partnerships and collaborations that are more formalised, hands-on, engaged and mutually beneficial.

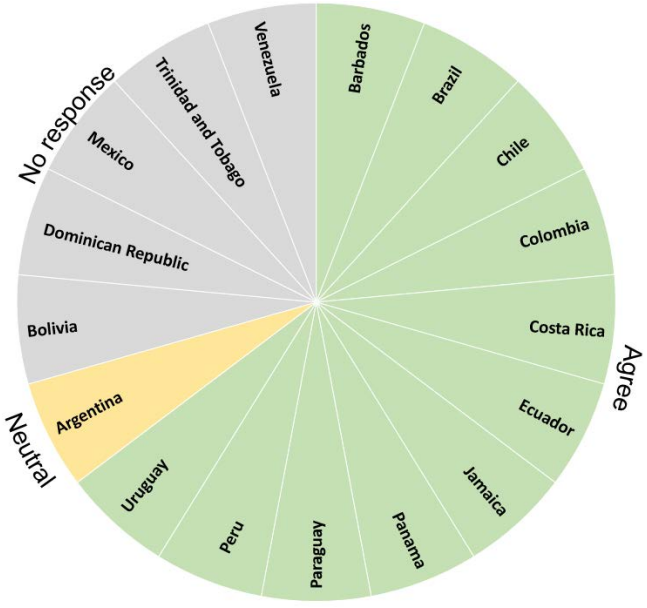
Figure 6.7. LAC governments indicate that they leverage public private partnerships



Source: OECD LAC Digital Government Agency Survey (2020).

In regard to AI, governments can benefit greatly from ongoing, active cross-sector partnerships in which each sector has a concrete role and contributions. While survey results indicate a lighter touch with cross-sector collaboration, they also indicate that the environment of many LAC countries may welcome a stronger emphasis on cross-sector partnerships and allow for success (Figure 6.8).

Figure 6.8. Digital government agencies support the government's ability to partner with other sectors (private, non-for-profit, citizens)



Source: OECD LAC Digital Government Agency Survey (2020).

Although efforts in these areas are not strongly pronounced, LAC governments have initiated a number of solid initiatives in relation to AI. For instance, as previously identified by the OECD (Ubaldi et al., 2019[6]), countries such as Chile and Panama have promoted public-private collaboration through a series of Memoranda of Understanding (MoU) to implement pilot experiences in the fields of Big Data, Cloud Computing and AI. Additional relevant efforts are underway including hackathons and challenge initiatives, as discussed in the *Understanding problems and the potential for AI solutions* section of Chapter 5. Efforts in the region include the following:

- Argentina has hosted a number of cross-sector hackathons, some of which have produced AI-enabled solutions.[22] The country's national AI strategy also promotes research, development and innovation initiatives aimed at basic and applied science in AI, both in the public sector and the private. Previous OECD work has found a need for creating stronger bridges, partnerships and synergies between the public and private sectors (OECD, 2019[4]), indicating room for additional growth in this area.
- Brazil's national AI strategy includes an action item to "establish connections and partnerships between the public sector, the private sector and scientific and universities in favour of advancing the development and use of AI". In addition, the country's national digital government strategy, under an objective on emerging technologies, calls for at least six research, development and innovation partnership projects involving central government organisations, private sector companies and third sector organisations by 2022. The strategy also calls for formal collaborative partnership arrangements with institutions representing the ICT industry, although these are scoped broadly and may or may not include AI-related collaboration. In addition, Brazil has announced its intention to establish eight applied AI research centres to be co-funded by the government and private sectors, hosted by established academic institutions, and focused on health, agriculture, industry and smart cities.[23] Finally, the strategy calls for cross-sector partnerships to host "datathons" and hackathons in order to help identify solutions for public sector challenges, which may be focused on or otherwise result in AI-enabled solutions.
- Chile's Data Observatory (DO) is a public-private partnership "created to help close gaps in technological development and increase the role of [the] country in the fourth industrial revolution". The Observatory represents one of the strongest public-private partnerships in the region (see Box 6.8). The country's AI strategy and action plan also calls for the promotion of public-private partnerships for infrastructure and the development of good practices for the ethical use of AI.
- In Colombia, a Digital Government Directorate has been created under MinTIC to "promote public-private partnerships for IT adoption processes", among other things. Also in Colombia, the CAOBA Alliance is the "first public-private partnership that promotes Big Data and data analytics in Colombia." The Alliance consists of 11 representatives from the country's academic, public and private sectors (OECD, 2018[10]). Resulting outputs have not focused on AI, but this appears feasible, as data and analytics constitute the foundation of many AI systems. Recent OECD work found that "new approaches to public-private partnerships related to ICT must be developed to create and develop new business models and define and provide innovative digital services" (OECD, 2018[10]).
- As touched on earlier in this report, Costa Rica is developing a National Laboratory for Artificial Intelligence (LaNIA) specifically aimed at searching for cross-sector solutions to national problems with the support of AI. Its goals will be to create an ecosystem, strengthen trust, and promote research and education in AI.
- Ecuador is exploring public-private partnerships for an AI-enabled identity programme, according to officials interviewed by the OECD.

- In 2020, Jamaica's GOJ CodeFest hackathon brought together the public sector and academia to design and develop solutions in a number of areas, yielding winning solutions that use basic AI functionality.[24]
- Previous OECD work has documented Panama's willingness to further its role in government innovation through a multi-stakeholder approach and partnering with academic and private sectors (OECD, 2019[11]). This effort is not related to AI, but is indicative of a solid foundation in this area that could also serve AI efforts well. This work also identified additional opportunities for research, education and private sectors, demonstrating additional room for growth.
- As touched on earlier, Paraguay's InnovandoPy initiative seeks to identify innovative technology ideas, inspire and motivate young entrepreneurs, bring together public and private sector actors, promote collaboration in digital projects, and promote entrepreneurship in the country. Its activities include a start-up accelerator, hackathons for citizen-centred apps and "ideathons" for generating innovative ideas (see Box 5.10).
- Over the last few years, Peru has taken strategic steps to build connections across sectors to promote collaboration, partnerships and the co-creation of public services. Its recent draft national AI strategy calls for the promotion of public-private partnerships (and procurement processes, as relevant to the next section) geared towards the installation of AI-relevant infrastructure of benefit to all sectors. This was preceded by the passing of the Government and Digital Transformation Secretariat resolution 003-2019-PcM/Segdi[25] to strengthen ties across sectors, and the creation of a Digital Transformation Lab, with support from CAF, to build a collaborative ecosystem. Peru has also passed a Regulation of the Digital Government Law in 2021 that seeks to further promote cross-sector collaboration.[26] As yet, these efforts do not appear to have produced AI partnerships, but they can serve as a solid foundation in the future. Finally, the country has developed an excellent practice for the development of key strategies through an open co-design process. For example, the National Digital Transformation Policy and Strategy was co-designed with the public and private sectors, civil society, academia and the public.[27]

Box 6.8. Data Observatory (Chile)

As described in the Inter-American Development Bank (IDB) report *Artificial Intelligence for Social Good in Latin American and the* Caribbean, Chile's Data Observatory (DO) is a "non-profit organization created in 2020 to leverage the benefit obtained from data on the environment and other unique public data that are generated within the country and have global value". The report further explains that the "Data Observatory co-ordinates academia, the public sector, industry and civil society in global partnerships so as to generate useful solutions and capabilities in data science and related technologies that yield returns to the different sectors of the economy. Specifically, the observatory centres on four lines of work:

1. Collect datasets of global value and make them available to the public in an open manner.
2. Design and implement solutions to acquire, analyse, explore, visualise and offer access to these datasets and maximise their full exploitation.
3. Contribute to the development of talent related to the implementation of these actions, and provide hands-on learning based on materials and courses.
4. Invest in creating networks that facilitate technology transfer and associativity among people who work in different fields but who share functional similarities in terms of their work with data.

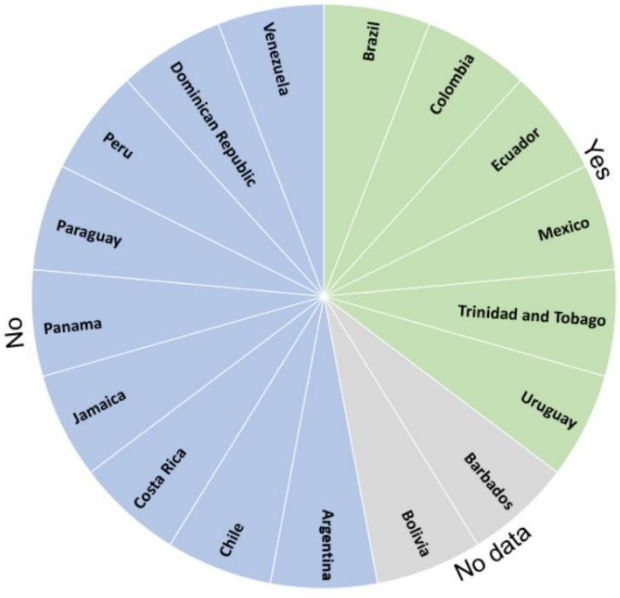
One of the observatory's most noteworthy projects aims is to harness AI to explore solutions for phenomena related to climate change such as the extreme events produced by desertification and sea level changes, among others."

Source: (Gómez Mont et al., 2020[12]), www.dataobservatory.net and https://oecd.ai/en/dashboards/policy-initiatives/http:%2F%2Faipo.oecd.org%2F2021-data-policyInitiatives-26733.

While these efforts demonstrate growing capacity to leverage external expertise through cross-sector collaboration, most represent early-stage commitments (rather than fully implemented approaches), ad-hoc solutions, relatively passive consultations, or efforts that are broader than, or not related to, AI. With the potential exception of Chile's Data Observatory, the OECD was unable to identify systems-wide approaches that bring together multiple sectors to collaborate continuously on AI efforts.[28] Such approaches scoped for AI are fairly new worldwide, so the current status among LAC governments matches expectations and, overall, constitutes a positive trend for the region. The United Kingdom's Alan Turing Institute and its Public Policy Programme represent perhaps the most successful systematic mechanism for cross-sector partnership and collaboration in this regard, with a specific focus on AI in the public sector.[29]

In addition to cross-sector collaboration and partnerships, another way that governments can leverage external expertise is through **public procurement**.[30] While building up in-house AI expertise can be challenging, as discussed above, so can obtaining expertise externally, due to cumbersome procurement processes. In the LAC region, only a handful of countries have an ICT procurement strategy in place (Figure 6.9). Such strategies are broader than just AI, but they can put in place positive practices and purchasing arrangements that can help leverage external expertise in many digital government domains, including emerging technology.[31]

Figure 6.9. Existence of an ICT procurement strategy in LAC countries



Source: (OECD, 2019[11]).

Given the relative uncertainty of the field of Artificial Intelligence and the lack of existing mature markets for AI in the public sector, procuring expertise and services is not as simple as obtaining expertise related

to more traditional or known technologies. Accordingly, governments may need to develop flexible, agile procurement processes (and subsequent implementation processes) tailored for AI needs, and build longer-term, collaborative relationships with commissioned delivery partners (OECD, 2017[13]). They may also wish to adopt innovative procurement approaches to foster innovation and the creation of deep and competitive markets for AI goods and services.

Among LAC governments, there do not appear to be any mechanisms or processes tailored to procuring expertise and services for AI in the public sector. Such procurement mechanisms and processes are worthy of exploration, and LAC governments could look at the strong example provided by Canada's Source List for inspiration (see Box 6.9). Portugal's Programme in Data Science and Artificial Intelligence in Public Administration represents another positive example that brings together the concepts of public cross-sector partnerships and public procurement (Box 6.10). While these have not resulted in AI-specific approaches, several countries have developed other procurement elements that could support successful procurement related to AI in the public sector:

- Brazil's national digital government strategy includes a number of objectives to create mechanisms to centralise purchases of ICT technologies, including a virtual marketplace for digital solutions. Although not explicitly stated, such mechanisms could allow for centralised vetting and purchases of AI expertise and solutions, an approach that has proven successful in other countries.
- One of the key actions of Chile's AI strategy and action plan is the modernisation of public procurement for AI. The country has also issued a new Public Procurement Innovation Directive (see Box 6.11). While not specific to AI, the Directive lays out solid mechanisms and processes that can facilitate innovative approaches to securing all sorts of goods, expertise and services, including those related to AI.
- Trinidad and Tobago's National Information and Communication Technology Company Limited (iGovTT), a public company that serves as the implementation arm of the Ministry of Public Administration and Digital Transformation, provides public sector organisations with an interesting procurement-as-a-service model that provides expert assistance to agencies to facilitate successful procurement processes.[32]
- Uruguay has issued a presidential decree that puts in place special contracting regimes and procedures in order to stimulate innovative technological developments in the public sector.[33]

Box 6.9. The Government of Canada's AI Source List for the promotion of innovative procurement

The Government of Canada has created an AI Source List with 73 pre-approved suppliers "to provide Canada with responsible and effective AI services, solutions and products". The framework allows government agencies to expedite procurement from firms that have demonstrated their capability to provide quality AI goods and services.

The framework requires suppliers to demonstrate competence in AI ethics, as well as implementation and access to talent. Firms that responded to the "Invitation to Qualify" had to prove to an interdisciplinary panel that they satisfied these requirements. The framework has three bands with escalating requirements. The lowest band has less stringent requirements, making it easier for small start-ups to qualify, thereby driving innovation and creating a deeper market.

The framework supports mission-driven and iterative innovation by allowing multiple firms to be commissioned to develop early-stage services to address a problem. This enables effective information sharing and an agile approach to mitigate the uncertainty of potentially disruptive approaches.

The process of establishing and maintaining this list of AI service providers is also an important way for the Government of Canada to build longer-term relationships with private companies. This dialogue

facilitates the development of shared expectations and mutual understanding about potential challenges relevant to public sector organisations.

Source: https://oecd.ai/en/dashboards/policy-initiatives/http:%2F%2Faipo.oecd.org%2F2021-data-policyInitiatives-24197, www.tpsgc-pwgsc.gc.ca/app-acq/cral-sarc/iava-aipv-eng.html, https://buyandsell.gc.ca/procurement-data/tender-notice/PW-EE-017-34526 and https://buyandsell.gc.ca/cds/public/2018/09/21/5e886991ecc74498b76e3c59a6777cb6/ABES.PROD.PW_EE.B017.E33817.EBSU001.PDF

Box 6.10. Programme in Data Science and Artificial Intelligence in Public Administration (Portugal)

As part of the Portugal INCoDe.2030 initiative (see Box 5.12), the country's Foundation for Science and Technology developed the Programme in Data Science and Artificial Intelligence in Public Administration to support new data science and AI innovation projects that involve partnerships between public administration and non-business scientific institutions. The objective of the programme is to leverage the large amounts of data available to the public administration in order to produce scientific knowledge that can assist evidence-based decision making and public policy making.

Portugal allocated EUR 3.5 million for the initiative and solicited proposals for projects. All proposals were required to be joint in nature, including at least one scientific institution and one public sector institution. Qualifying projects needed to have a duration of 24-36 months, and each could receive a maximum of EUR 300 000.

The government's Administration of Modernisation (AMA) also issues a list of topics of particular interest for proposals, including fraud detection, analysis of mobility patterns, forecasting emergency and medical services, optimisation of digital services, chatbots for local administrations and municipal self-service dashboards, among others. AI projects that have received awards include the use of AI to enhance medical skin scanning (EUR 299 000), forecasting hospital emergency room usage (EUR 283 000) and a land feature recognition system (EUR 125 000).

Source: https://oecd.ai/dashboards/policy-initiatives/2019-data-policyInitiatives-24551, www.fct.pt/apoios/projectos/concursos/datascience/2018/index.phtml.pt and www.fct.pt/apoios/projectos/consulta/areas.phtml.pt?idElemConcurso=12344.

Box 6.11. Public Procurement Innovation Directive (Chile)

The Public Procurement Innovation Directive was created by ChileCompra in co-ordination with LabGob and the Ministry of Economy, Development and Tourism, in order to help public servants leverage more innovative and user-centred approaches to public procurement, and to more effectively and efficiently meet the needs and demands for new products, goods or services. Its overarching goals are to incorporate innovation throughout the procurement process, better allow public servants to leverage public procurement as a strategic tool to solve real problems, and to better meet the needs and expectations of users.

To achieve these aims, the Directive provides practical guidance, recommendations and tools in line with five phases:

1. **Plan**. Identify innovative public purchasing opportunities.
2. **Explore**. Describe the initial needs, convene a work team, listen, empathise and look at the environment.
3. **Define.** Reformulate the purchase need, manage risk and define evaluation criteria.
4. **Invite and adjudicate.** Evaluate the proposals received and make selection(s).
5. **Afterwards:** Reflect, replicate.

The Directive underwent public consultation including with those mostly likely to be impacted. Some 221 responses were received and evaluated prior to finalisation of the Directive.

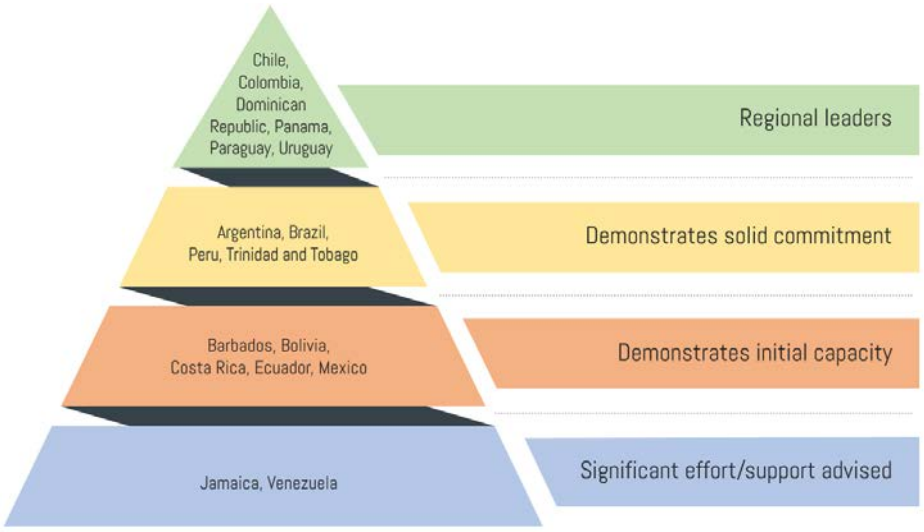
Source: www.chilecompra.cl/wp-content/uploads/2018/08/20180614-DIRECTIVA-CPI.pdf

Many LAC governments demonstrate a high level of commitment to developing efficient and effective systems for public procurement of external digital expertise, goods and services in ways that are less clearly related to or otherwise supportive of AI. For instance, a number of LAC countries have developed national procurement strategies, centralised procurements of commodity solutions, put in place review systems to vet large or complex purchases, added procurement competencies to their staff competency frameworks, leveraged economies of scale to drive down prices and issued other guidance to enhance ICT commissioning. Such efforts fall largely outside the scope of this AI review; however, the forthcoming report *Going Digital: The State of Digital Government in Latin America* will discuss these issues in depth.

Infrastructure

Finally, governments will need to consider their current technical infrastructure needs against their ambitions, and ensure that the necessary modern infrastructure is in place to allow progress in the exploration of AI. Legacy technologies and infrastructures are often insufficient for disruptive technologies and techniques, such as Machine Learning, and the OECD has previously noted that governments in many cases struggle to adopt proven technologies such as cloud computing, which are important for AI progress (Berryhill et al., 2019[1]).

Figure 6.10. LAC regional infrastructure capacities for AI in the public sector



The topic of infrastructure and overcoming legacy technology is immense, and extends far beyond AI. While a comprehensive review of infrastructure capacities among LAC governments is beyond the scope of this report, the OECD has identified surface summary-level information on public sector infrastructure capacities and a number of specific instances in which LAC governments are positioning themselves to ensure the necessary infrastructure exists to explore and implement AI-driven solutions (Table 6.3).

Table 6.3. Existence of infrastructure available to central government institutions

	Shared ICT infrastructure (e.g. shared data centres)	Shared cloud services	Common data architecture or infrastructure	Common interoperability framework	Shared technology services (e.g. joint software development, common platforms)
Argentina	✓	✓	✓	✓	✓
Barbados	✓				✓
Brazil	✓	✓	✓	✓	✓
Chile				✓	✓
Colombia	✓	✓	✓	✓	✓
Costa Rica	✓	✓			
Dominican Republic	✓	✓	✓	✓	
Ecuador	✓	✓	✓	✓	✓
Jamaica	✓				✓
Panama	✓	✓	✓	✓	✓
Paraguay	✓	✓	✓	✓	✓
Peru		✓	✓	✓	
Uruguay	✓	✓	✓	✓	✓

Note: Data are not available for Bolivia, Mexico, Trinidad, and Tobago and Venezuela due to a lack of survey responses.
Source: OECD LAC Digital Government Agency Survey (2020), follow-up with government officials.

Such identified initiatives include the following:

- As a strategic objective for 2021, Argentina is investing USD 5.8 million (equivalent) to create a national public cloud infrastructure in order to help consolidate data from across the state and

allow the public sector to become more agile.[34] Public sector organisations will be able to self-manage their own computing, connectivity and storage use through the cloud.

- The Public Sector Modernisation Programme in Barbados has committed to improving core ICT infrastructure and upgrading its central data centre to better equip the government to support new technologies and approaches.[35] The country is also in the process of implementing the X-Road,[36] a free and open source data exchange layer originally created by the Government of Estonia and successfully replicated by a number of governments around the world.
- Brazil's national digital government strategy includes initiatives to optimise the infrastructure of at least 30 government data centres and migrate services from no less than 20 agencies to the cloud by 2022. This is a step in the right direction, as previous OECD work has found that the absence of important key enablers, such as shared infrastructure like shared data centres, can lead to the duplication of public efforts for the development of a digital government (OECD, 2018[14]). The country's efforts in this area are still fairly new, however, and the government will need to maintain a close focus on implementation. As such efforts are strengthened, Brazil demonstrates strong promise to become a regional leader in interoperability and cross-border collaboration. Given the political and economic relevance of Brazil in the region, as well as its experience in promoting interoperability across different federation levels, previous OECD work has recommended that the country may be well placed to lead and actively support other LAC countries' efforts in the area of cross-border service delivery.
- Bolivia has put in place an interoperability platform to enable data sharing across public sector institutions.[37] It has also issued guidelines and documented good practices related to implementing and maintaining data centres,[38] though these tend to deal with basic operational considerations rather than ensuring the existence of capabilities to support modern and emerging technologies across government in an optimised manner.
- The Government of Chile is continuing to expand and modernise digital infrastructure, laying the foundations for the digital transformation of the economy and society. The country's new national AI strategy considers infrastructure to be a key enabling factor for AI, and incorporates an objective to convert Chile into a global hub for technical infrastructure for the southern hemisphere. It also calls for the creation of public-private partnerships to ensure that the necessary infrastructure for AI is in place. The Chilean procurement authority (ChileCompra) has developed a digital marketplace with framework agreements that aim to simplify the process of ICT acquisition for some forms of procurement, including data centres (OECD, 2019[15]). In addition, as a relevant part of its state modernisation efforts, Chile has been working on a number of digital infrastructure projects, including an interoperability framework and platform that fosters data sharing within the administration (OECD, 2019[15]). The adoption of Chile's interoperability infrastructure is advancing slowly, however, and is not yet widely used (OECD, 2020[8]), with officials interviewed by the OECD citing interoperability challenges, but it appears to have solid potential for growth if prioritised by the government.
- Colombia has established framework purchase agreements with numerous vendors and has developed an impressive centralised "virtual store" that allows for public sector organisations to easily purchase a variety of goods and services, including for infrastructure, such as public and private cloud services.[39] This appears to represent solid progress, as previous OECD work found little evidence of a culture of shared resources and infrastructure, or the promotion of integrated digital government solutions (OECD, 2018[10]). A more mature version of such a store could function similarly to the United Kingdom's Digital Marketplace (see Box 6.12), which has proven highly successful. Indeed, Colombia is currently developing a conceptualisation document for the implementation of data marketplaces.[40]

- Costa Rica's Digital Technologies National Code[41] provides guidance on using cloud services; however, the OECD could find no evidence that the country has built out or otherwise provides for cloud infrastructure. It appears that this guidance is perhaps intended to guide public sector use of third-party cloud services.
- The Dominican Republic has developed a government-wide private cloud (OPTICLOUD)[42] for use by public sector organisations. The country has also developed a state data centre[43] that allows for the protection and processing of information from public institutions with a high level of security.
- Ecuador has developed an interoperability platform[44] that enables public sector institutions to share and exchange data in interoperable forms across systems. The platform is rooted in Ecuador's interoperability law which compels public sector organisations to take steps to ensure interoperability of data. In 2020, the country initiated a systems migration plan[45] to consolidate public sector data into a shared central data centre. However, in an interview with the OECD, Ecuador officials said that this centre is still conceptual and that rules and processes for its development need to be determined prior to implementation.
- Through its National Development Plan[46] (2019-2024), Mexico is pushing for greater efficiency and momentum in the use of shared ICT infrastructure.
- Panama has developed common government private cloud infrastructure for use across government.[47] In a fact-finding meeting with the OECD, Panama officials stated that one of their top priorities now is interoperability and alignment of data processes, and that an interoperability platform has been developed with step-by-step guidance for public organisations on how to access the platform. At present, ten public entities are already using the platform. Previous OECD work also identified that infrastructure associated with storing and managing data is a strength in Panama's public sector (OECD, 2019[11]).
- Paraguay's NUBE PY (Paraguay Cloud)[48] private cloud initiative provides infrastructure-as-a-service (IaaS) and a pool of resources to public sector organisations across the county. The country also has an Information Exchange System[49] interoperability platform to help public sector institutions share interoperable data based on standards set by government.
- As touched on in the previous section, Peru's draft national AI strategy calls for the creation of public-private partnerships to ensure the installation of necessary AI-relevant infrastructure (data centres and the cloud) of benefit to all sectors. In addition, since 2011, Peru has had a National Interoperability Platform[50] that allows for data exchange across public sector organisations. The country's 2018 Digital Government Law[51] allowed for advances in this area through the creation of relevant digital service and data interoperability infrastructure at the institutional level (OECD, 2019[16]). Also in 2018, Peru's Supreme Decree 033-2018-PCM launched a new GOB.PE portal[52] and mandated that digital services (at present and in the future) be digitalised, with all supporting systems, infrastructure and data participating in the interoperability platform (OECD, 2019[16]).[53] In 2020, through a decree instituting a Digital Trust Framework,[54] the country also committed to building a shared National Data Centre that will allow public servants across the public sector, at the national level, to co-operatively and collaboratively use data across government. The Data Centre is also intended to co-ordinate actions with public entities, academia, civil society and the private sector.
- Trinidad and Tobago has developed a solid Cloud Computing Consideration Policy[55] to promote wider adoption of the cloud in a manner that meets national rules and standards. In addition to helping clear a path to procurement of cloud services from the public sector, the policy also commits to developing a government-wide National Hybrid Cloud (GovNeTT NG) for instances in which public sector organisation needs a higher set of controls than available through public cloud

offerings from industry. In addition, iGovTT, a public company for digital government implementation, provides a centralised data centre access and administration services.[56]

- Uruguay has designed and developed the Cloud of the Presidency Office, which offers infrastructure/platform/software as a service (IaaS, PaaS and SaaS) to all its agencies. Currently, the cloud host more than 3 500 virtual machines. In 2018, working together with the state-owned telecommunications company (ANTEL), a government cloud service was launched to provide services to the public sector (Ubaldi et al., 2019[6]).

Box 6.12. The United Kingdom's Digital Marketplace

The United Kingdom has been developing ways to reframe its existing approaches to contracting and supplier relationships, in particular regarding access to cloud-based services and the skills and capabilities required for digital transformation.

Two units within the Cabinet Office, the Government Digital Service and the Crown Commercial Service, have worked together to redesign procurement frameworks (G-Cloud and Digital Outcomes and Specialists) in order to simplify the application process for suppliers, and improve the quality of resources available to government buyers. These interactions are handled through the government's Digital Marketplace.

The Digital Marketplace provides government buyers with access to framework agreements with suppliers from which public sector organisations can buy without launching a tender or competitive procurement process.

For the G-Cloud framework the services include the following:

- **Infrastructure as a service (IaaS**) refers to the provisioning of fundamental computing services (processing, storage etc.) for the user to run software.
- **Platform as a service (PaaS**) relates to the provisioning of platform services to enable a user to deploy user-built or acquired applications.
- **Software as a service (SaaS)** concerns the provisioning of a provider's software as a cloud service.
- **SCS – Specialist Cloud Services** typically refers to consultancy in the cloud domain. The Digital Marketplace frameworks are refreshed every six months to ensure public institutions have access to the latest innovations available whether from large, established suppliers or new, SMEs entering the market for the first time.

Furthermore, the Digital Marketplace allows public institutions to access suppliers who can help them design, build and deliver digital products using an agile approach through the Digital Outcomes and Specialists (DOS) dynamic framework. To become part of the DOS supplier list, suppliers must provide either outcome-based services (covering user experience and design, performance analysis and data, security, service delivery, service development, support and operations, testing and auditing or user research) or individual capabilities in one of these areas.

Source: www.gov.uk/government/collections/digital-marketplace-buyers-and-suppliers-information (OECD, 2019[15]).

Overall, consideration for appropriate infrastructure to support AI and other modern technological initiatives appears to be a relative strength in the LAC region. Many implemented programmes provide infrastructure that can serve as a foundation for AI in the public sector, while a number of solutions that governments have committed to build out in the near future have tremendous potential. It is important to note, however,

that successful adoption of cloud computing and other infrastructure solutions can only take place with careful consideration of data governance and ownership arrangements, exit clauses and ease of supplier change (OECD, 2019[15]). In addition, having infrastructure in place is only valuable if the underlying legal and regulatory framework fosters its use for AI. One of the common themes from the AI Latin American SumMIT was that antiquated laws hindered access to and use of this infrastructure for AI (Anllo et al., 2021).[57]

As an additional consideration, it is important to note that this section focuses on types of infrastructure needed for AI for public sector innovation and transformation, and not necessarily for infrastructure to support broader economic and societal success in AI. For example, one theme that emerged from the SumMIT was that connectivity infrastructure to close the digital divide is critical to national and regional progress in AI (Anllo et al., 2021), though such infrastructure is not strictly related to the scope of this review. Finally, this section has focused mainly on the availability of AI-supporting infrastructure at the central government level, with less consideration for sub-national levels of government. Some of these items are touched on earlier in this report, and will be discussed in more depth in the forthcoming report *Going Digital: The State of Digital Government in Latin America.*

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Notes

[1] Cloud computing refers to Internet-based remote computing that provides users with on-demand access to infrastructure (data centres/storage), services and applications. The economies of scale achieved through the cloud allow organisations to avoid costly infrastructure development and focus on core business operations while access storage and services at a cost tailored to their workload and needs.

[2] https://colaboracion.dnp.gov.co/CDT/Conpes/Econ%C3%B3micos/3975.pdf.

[3] See https://minciencias.gov.co/ocad_fctei/fondo-fctei-sgr/que-es.

[4] www.conatel.gob.ve/ley-de-infogobierno.

[5] For key themes in innovative efforts to upskill citizens and public servants, see the OECD Observatory of Public Sector Innovation (OPSI) report *Embracing Innovation in Government: Global Trends 2021 – Upskilling and Investing in People* (https://trends.oecd-opsi.org/trend-reports/upskilling-and-investing-in-people).

[6] See https://capacitacion.inap.gob.ar/cursos for a full list of courses.

[7] http://training.gov.bb.

[8] https://tridentlearning-m2.remote-learner.net.

[9] www.enap.gov.br.

[10] See www.escolavirtual.gov.br/curso/270, https://suap.enap.gov.br/portaldoaluno/curso/917, https://suap.enap.gov.br/portaldoaluno/curso/862, https://suap.enap.gov.br/portaldoaluno/curso/460 and www.escolavirtual.gov.br/curso/153.

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[12] www.catalizadores.gov.co/655/w3-channel.html.

[13] www.misiontic2022.gov.co/portal.

[14] See www.gtai.de/resource/blob/214860/d0599cb76af4c3f5c85df44bfff72149/pro202001315003-data.pdf.

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[16] https://portal.icetex.gov.co/Portal/Home/HomeEstudiante/fondos-en-administracion-Listado/convocatoria-transformacion-digital-2020-1.

[17] See the OECD report *Leadership for a High Performing Civil Service* for a discussion specific to leadership capabilities that are necessary to respond to complex policy challenges. While not specifically digital skills, they serve as a foundation for leadership capacity that benefits many cross-cutting fields and approaches. See www.oecd-ilibrary.org/governance/leadership-for-a-high-performing-civil-service_ed8235c8-en.

[18] See https://oecd-opsi.org/wp-content/uploads/2019/11/AI-Report-Online.pdf (p. 126).

[19] www.gub.uy/participacionciudadana/consultapublica.

[20] www.minciencia.gob.cl/noticias/ministerio-de-ciencia-abre-consulta-publica-para-la-politica-nacional-de-inteligencia-artificial.

[21] https://bit.ly/3sPyvOx, www.presidencia.go.cr/comunicados/tag/dialogo.

[22] www.argentina.gob.ar/noticias/hackaton-agro-todos-juntos-para-mejorar-la-produccion-agropecuaria-y-pesquera and www.argentina.gob.ar/noticias/nuestro-primer-hackaton.

[23] https://oecd.ai/dashboards/policy-initiatives/2019-data-policyInitiatives-26771.

[24] See http://gojcodefest.com and https://jis.gov.jm/educational-solution-takes-top-prize-at-codefest-2020.

[25] www.gob.pe/institucion/pcm/normas-legales/308608-003-2019-pcm-segdi.

[26] www.gob.pe/13326-reglamento-de-la-ley-de-gobierno-digital.

[27] www.gob.pe/10522-estrategias-de-co-diseno-para-la-politica-y-estrategia-nacional-de-transformacion-digital.

[28] The OECD Observatory of Public Sector Innovation (OPSI) has identified a growing trend in governments building out systemic “collaborative infrastructure” to support cross-government, cross-sector and international collaboration. For more details and case studies, see the 2020 report *Embracing Innovation in Government: Global Trends 2020 – Seamless Government* (https://trends.oecd-opsi.org/trend-reports/seamless-government) (OECD, 2020[17]).

[29] See the in-depth case study on the Public Policy Programme in the 2019 OECD report *Hello, World: Artificial intelligence and its use in the public sector* (https://oe.cd/helloworld, available in English and Spanish).

[30] The OECD, through its Working Party of Senior Digital Government Officials (E-Leaders) (www.oecd.org/governance/eleaders), has developed the ICT Commissioning Playbook. It focuses on ICT procurement reform and its part in the wider digital transformation of the public sector in countries around the world. The goal of the Playbook is to show how traditional procurement can evolve towards agile procurement. While not exclusive to AI, such principles and practices can help support public servants in designing and executing successful AI procurements. See https://playbook-ict-procurement.herokuapp.com.

[31] In discussing public procurement related to AI, it is important to distinguish (1) embedding AI in procurement processes (e.g. the automation of tasks, identifying corruption, etc.) and (2) procuring AI expertise to support the adoption of AI in the public sector. This section focuses specifically on the second of these concerns. The OECD has issued a highly relevant report on *Public Procurement for Innovation: Good Practices and Strategies* to provide guidance to help governments leverage the power of public procurement to support innovation (OECD, 2017[13]).

[32] www.igovtt.tt/our-services/#service-4.

[33] www.impo.com.uy/bases/decretos/191-2019.

[34] See www.telam.com.ar/notas/202101/540302-el-gobierno-nacional-destina-500-millones-para-crear-la-nube-publica-de-arsat.html.

[35] See www.gtai.de/resource/blob/214860/d0599cb76af4c3f5c85df44bfff72149/pro202001315003-data.pdf.

[36] https://x-road.global.

[37] https://bit.ly/3I2ddBD.

[38] www.ctic.gob.bo/wp-content/uploads/2019/10/LINEAMIENTOS-Y-BUENAS-PRACTICAS.pdf.

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[48] www.mitic.gov.py/viceministerios/tecnologias-de-la-informacion-y-comunicacion/servicios/nube.

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[52] www.gob.pe.

[53] See also www.gob.pe/institucion/pcm/normas-legales/108986-033-2018-pcm.

[54] www.gob.pe/institucion/anpd/normas-legales/2018534-07-2020.

[55] https://data.gov.tt/fr/dataset/draft-cloud-computing-policy.

[56] www.igovtt.tt/our-services/#service-3.

[57] As discussed in the closing remarks, available at www.youtube.com/watch?v=tzf14FXajCc.

7 Conclusion and recommendations

This report makes 13 key recommendations to LAC national governments to maximise positive potential impacts of the use of AI in the public sector, and to minimise negative or otherwise unintended consequences. This chapter presents these recommendations for their consideration.

As seen throughout this report, governments in the LAC region have made tremendous progress in strategizing for and experimenting with AI in the public sector. In order to ensure that these efforts are informed, trustworthy and enhance public value, the right factors and capacities must be in place to ensure a strong foundation on which to build out AI efforts and ambitions. In particular, governments need to:

- **Develop a responsible, trustworthy and human-centric approach**, including through data ethics, ensuring fairness and mitigating bias, providing for transparency and the explainability of algorithms, promoting safety and security, putting in place accountability mechanisms, and ensuring an inclusive and user-centred approach.
- **Build key governance capacities**, including through leading, co-ordinating and building support for AI; data leadership and strategy; creating space for experimentation; understanding public sector problems and the potential for AI solutions, and ensuring future preparedness through anticipatory governance.
- **Put in place key enablers**, including data, funding, internal and external expertise, and digital infrastructure.

The volume of considerations that public officials must take into account may seem overwhelming. However, governments around the world and in the LAC region have devised approaches to addressing them in their own context. While countries in the region vary significantly in their current capacities for AI in the public sector, and in their digital maturity more generally, the potential for adoption of AI for public sector innovation and transformation remains significant across the board. As with other regions around

the world, opportunities also exist to create a united regional approach to AI, with each country making contributions based on their own comparative strengths.

To help governments in the region seize this potential, this report makes 13 key recommendations.

Recommendations

Recommendations for adopting a strategic approach to AI in the public sector

In order to maximise the positive potential impact of the use of AI in the public sector, and to minimise negative or otherwise unintended consequences, national governments in the LAC region should:

1. **Explore the collaborative development and execution of a LAC regional strategy and roadmap for AI in the public sector.**
    a. Work with other national governments in the region to identify a collective forum for strategy development, such as the Electronic Government Network of Latin America and the Caribbean (GEALC Network).
    b. Explore leveraging third-party support for co-ordinating and facilitating strategy and roadmap development, such as by the OECD, CAF or the IDB.
    c. Include a commitment and deadline for the national government of each regional adherent to develop their own national strategy and roadmap for AI in the public sector.
    d. Ensure all participating countries have a voice in the design and implementation of the LAC regional AI strategy and roadmap.
    e. Include collective commitments, objectives and goals in a manner that is high-level and open to be adapted by each country relative to their own unique context and AI aspirations as part of their national strategy for AI in the public sector.
    f. Continue co-operation among LAC countries after the regional strategy is issued in order to help ensure implementation, monitor progress and promote regional collaboration.
    g. Create a mechanism for the understanding and documentation of AI use cases in the public sector in the region, and the continuous sharing of good practices and lessons. Consider the OECD.AI Policy Observatory and GlobalPolicy.AI as outlets for sharing and co-operation.
2. **Develop and adopt a national strategy and roadmap for AI in the public sector, for countries that have not done so already.**
    a. Move forward with developing a national strategy for AI in the public sector, even if a LAC regional strategy is not yet in place.
    b. Strive for alignment between the national strategy for AI in the public sector and the LAC regional public sector AI strategy.
    c. Ensure the public sector AI strategy is aligned with and contributes to the economic and societal goals and objectives of existing and future national AI strategies.
    d. Consider in the public sector AI strategy's development and implementation the need to reassess existing legal and regulatory frameworks to address the social, ethical and legal challenges related to the strategic and responsible use of AI in the public sector.
    e. Adopt a collaborative and inclusive approach, both inside government and with the broader digital ecosystem and the public, in the development of the public sector AI strategy and the related and resulting policies and initiatives.

f. Include in the strategy or roadmap clear objectives and specific actions, measurable goals, responsible actors, time frames, monitoring instruments, and funding mechanisms, as appropriate.

3. **For countries that have not done so already, develop a national public sector data strategy covering the different aspects of data, to serve as a foundation for progress of AI use.**
    a. Ensure the strategy is clear, aligned with the OECD's framework for a data-driven public sector (OECD, 2019[1]), and includes all relevant aspects (e.g. data governance, public sector data assets and data sharing, data security and privacy, data infrastructure, data skills, fostering demand for data-driven decision-making, prioritisation of data investments and making public sector data open by default).
    b. Strive for alignment with the national strategy AI in the public sector, the broader national AI strategy and the regional AI strategy for AI in the public sector.
    c. Consider the need to reassess existing legal and regulatory frameworks to address the opportunities and challenges associated with leveraging data for AI in the public sector and secure alignment with relevant data protection laws.
    d. Develop the strategy and all related and resulting policies and initiatives in an open and inclusive manner, both inside government and with the broader digital ecosystem, including the public.
    e. Include clear objectives and specific actions, measurable goals, responsible actors, time frames, monitoring instruments, and funding mechanisms, as appropriate.
4. **Explore regional co-operation and collaboration for public sector AI projects and initiatives.**
    a. Pinpoint specific public sector problems that could benefit from cross-border collaboration using AI in the public sector, and establish methods and processes for regional collaboration to address them.
    b. Regional leaders (as identified in this report) should identify ways to assist and share lessons and insights in areas important for exploring and adopting AI in the public sector with countries that have less developed capacities in these areas.
    c. Countries that have been identified in this report as having limited capacities in certain areas should take actions to enhance their capacities through increased attention and resources (e.g. training of civil servants, staffing, funding).
    d. Consider leveraging external expertise, such as through procurement or partnering with inter-governmental organisations, especially for areas in which no countries have been identified as regional leaders in this report.
    e. Seek out replication of proven models and ideas from others, so long as they are openly and appropriately adapted to each country's own context and values.
5. **Support AI efforts within the public sector at sub-national level and account for them in broader AI policies and initiatives.**
    a. Promote experimentation and adoption of AI at sub-national (e.g. local) levels, where governments are closer to citizens and their needs.
    b. Consider developing AI hubs in cities across the region to focus on AI adoption in the public sector at the local level.
    c. Explore how existing or new AI principles, guidelines and other tools can be used to ensure AI in the public sector is pursued in an informed and trustworthy manner at the sub-national level.
    d. Empower sub-national and local leaders to have a voice in areas related to national and regional considerations for AI in the public sector (e.g. standards-setting groups, networks, strategy design and implementation working groups, etc.).

e. Facilitate dialogue and the sharing of good practices at the sub-national level.

6. **Strengthen the overall focus on implementation to ensure pledges, commitments, and strategic objectives are realised.**
    a. Ensure the establishment of adequate processes and mechanisms to convert high-level objectives and commitments into real, implementable initiatives through a sustained focus on each item and accountability measures that ensure progress is made.
    b. Look into the development of benchmark mechanisms to monitor public sector AI implementation in public institutions and lay the foundations for an impact evaluation mechanism.
7. **Take steps to ensure the long-term sustainability of public sector AI strategies and initiatives.**
    a. Push for ways to help ensure long-term viability of their public sector AI strategies, such as through legislative change and culture shifts.
    b. Seek to ensure any new legislation related to AI in the public sector is future-proof, flexible and enables experimentation and innovation.

Recommendations for promoting a responsible, trustworthy and human-centric approach to AI

8. **Implement the OECD AI Principles and develop a detailed and actionable national ethical framework for trustworthy AI, for countries that have not done so already.**
    a. Implement the OECD AI Principles, which explicitly invites current non-adherents, including OECD non-member countries, to take note of the principles and adhere to them.[1]
    b. Develop a national-level framework that is in alignment with the OECD AI Principles as well as the country's context and norms in order to enable the development and implementation of trustworthy AI systems by public sector organisations. As seen in this report, such a framework can be embedded within a national AI strategy or developed as an independent document. Explore leveraging ongoing OECD work on the classification of AI systems, risk impact assessments and tools for trustworthy AI.
    c. Explore the potential for developing practical instruments to help guide the implementation of the framework in the public sector, including through AI impact assessments, and establish an approach to AI implementation that takes into account various trade-offs and alternatives to using AI in the public sector.
    d. Ensure the development of the framework and any associated policies and instruments is done in an open and inclusive manner, both inside government and with the broader digital ecosystem, including the public.
9. **Ensure a focus on considerations for the use of trustworthy AI in the public sector as identified in this report, taking into account countries' relative strengths and gaps in different areas.**
    a. Put in place mechanisms and capacities to support:
        i. The inclusion of perspectives that are multi-disciplinary (different educational backgrounds, professional experiences and levels, skillsets, etc.) and diverse (different genders, races, ages, socioeconomic backgrounds, etc.) in a setting where their opinions are valued in the design and implementation of public sector AI strategies and initiatives (including AI-enabled projects).
        ii. The practical implementation of ethical frameworks that safeguard against bias and unfairness, foster transparent and explainable AI systems, ensure robust,

safe and secure processes, and establish clear accountability structures and clear roles and responsibilities for humans when it comes to AI use and AI-enabled decision-making in the public sector.

Recommendations for building key governance capacities to support AI in the public sector

10. **Provide for sustained leadership capacity at the central and institutional levels to guide the development and ongoing implementation and oversight of public sector AI and data strategies and related initiatives.**
    a. Ensure senior political and government career leadership is actively involved in and supports the development and implementation of the national public sector AI strategy.
    b. Put in place a Government Chief Data Officer (GCDO) or equivalent position responsible for developing and iterating upon a government data strategy and building the public sector ability to extract value from its data (including open government data, advanced analytics, algorithms and artificial intelligence).
    c. Install institutional Chief Data Officers (iCDOs) or data stewards at each major public sector organisation to connect the strategic vision of the central government with data management practices at the institutional level and promote inter-institutional data co-ordination.
    d. Ensure the GCDO and iCDOs have knowledge, skills and abilities relevant to AI in the public sector (e.g. data science, machine learning, trustworthy AI, etc.) and/or put in place positions with such skills to work in close co-ordination with the GCDO and iCDOs.
11. **Leverage anticipatory innovation governance techniques in the public sector to prepare for the future.**
    a. Ensure strategies, roadmaps, and implementations are flexible and leave options open for the future.
    b. Take into account the needs of sub-national government and local communities and strive for alignment between national frameworks for AI in the public sector and things that have a local impact.
    c. Explore the potential for applying OECD Anticipatory Innovation Governance frameworks and approaches to public sector AI efforts (Tõnurist and Hanson, 2020[2]).
    d. Equip public servants and citizens with the tools and capabilities to adapt to the changes that AI, including in the public sector, may bring in the future (including through the promotion of digital literacy and enhanced preparedness for the future of work).[2]
12. **Ensure a solid focus on governance considerations identified in this report, taking into account countries' relative strengths and gaps in different areas.**
    a. Put in place mechanisms and capacities to support:
        i. Cross-government co-ordination for promoting strategic alignment synergies across public sector organisations that can support a purpose-oriented, problem-driven and trustworthy adoption of AI in the public sector, including through formal mechanisms (e.g. committees, councils, ethics boards) as well as less formal ones (e.g. communities of interest, networks).
        ii. Internal and external communications to share the uses and benefits of AI in the public sector to both build trust among citizens as well as secure buy-in among public servants.

iii. Exploration and experimentation with different AI methods and approaches and data in an environment where public servants can take controlled risks (e.g. sandboxes and labs relevant to AI in the public sector).

iv. The systemic identification and understanding of public sector problems and the evaluation of multiple technology options to determine the needs and how AI can assist.

Recommendations for putting in place key AI enablers

13. Ensure a solid focus on the critical enablers for AI in the public sector as identified in this report, taking into account countries' relative strengths and gaps in different areas.

a. Put in place mechanisms and capacities to support:

i. Access to accurate, reliable and appropriate data, and the provision of government data to fuel AI in all sectors.

ii. The provision of funding for public sector AI exploration and implementation.

iii. Bringing about the right expertise in government through upskilling and recruitment.

iv. Clearing a path for accessing external expertise and services through procurement and partnerships.

v. Access to the digital infrastructure necessary for AI in the public sector, such as hybrid cloud, computing power and interoperability services.

References

OECD (2019), *The Path to Becoming a Data-Driven Public Sector*, OECD Digital Government Studies, OECD Publishing, Paris, https://dx.doi.org/10.1787/059814a7-en. [1]

Tõnurist, P. and A. Hanson (2020), "Anticipatory innovation governance: Shaping the future through proactive policy making", *OECD Working Papers on Public Governance*, No. 44, OECD Publishing, Paris, https://dx.doi.org/10.1787/cce14d80-en. [2]

Notes

[1] For more information, visit https://OECD.AI/ai-principles or contact ai@oecd.org.

[2] See www.oecd.org/future-of-work for the OECD's efforts related to the future of work.

Annex A. Relevant aspects of LAC national AI strategies

Table A A.1. Aspects of national AI strategies related to public sector transformation

Country	Strategy status	Relevant aspects
Argentina	Completed in 2019	• Title: *AI National Plan.* • Promotes and encourages the adoption of AI for an agile, efficient and modern State, capable of delivering measures relevant to growth and development objectives, guaranteeing solutions to the needs of citizens by providing more and better services, and acting as a key factor in the promotion of AI-based technology and the transformation of the country. • Among its specific objectives it seeks to: increase the State's productivity and efficiency through targeted AI solutions; use traceable AI systems with well-founded and transparent logics; and ensure standardised, efficient and successful AI purchasing and implementation processes. • Further information: https://oecd.ai/dashboards/policy-initiatives/2019-data-policyInitiatives-24309, https://uai.edu.ar/ciiti/2019/buenos-aires/downloads/B1/JA-Plan-Nacional-IA.pdf and https://ia-latam.com/portfolio/plan-nacional-de-ia-gobierno-de-argentina.
Brazil	Completed in 2021	• Title: *Brazilian Artificial Intelligence Strategy.* • Brazil defined three thematic axes for the strategy (legislation, regulation and ethical use; AI governance; international aspects) and six vertical axes, including application in the public sector. The strategy also includes six key objectives, including the development of ethical principles for Brazil, removed barriers to AI innovation and cross-sector co-operation, among others. The strategy also reaffirmed Brazil's commitment to the OECD AI Principles and uses the principles as a foundation for the strategy. The strategy commits to actions to structure AI governance and ecosystems to support all sectors, establish cross-sector partnerships and publish open government data. • Specific to the public sector axis, it commits to implementing AI in 12 public services by 2022, incorporate AI into policy making, implement spaces for data and AI experimentation, and a number of actions to ensure ethical and accountable use of AI in the public sector. • Further information: https://www.gov.br/mcti/pt-br/acompanhe-o-mcti/transformacaodigital/inteligencia-artificial.
Chile	Completed in 2021	• Title: *AI National Policy* (and associated *AI Action Plan*). • Promotes the adoption of AI in the State at a level equal to or higher than the OECD average. In includes cross-cutting principles on wellbeing/human rights, sustainable development, inclusive AI, and participation in the global AI ecosystem. It also includes policy axes focusing on enabling factors (talent, infrastructure, data); development and adoption (e.g. research, innovation, public services) and ethics, regulatory aspects, and socioeconomic effects. • Further information: https://oecd.ai/en/dashboards/policy-initiatives/http:%2F%2Faipo.oecd.org%2F2021-data-policyInitiatives-24840, www.minciencia.gob.cl/area-de-trabajo/participa-y-contribuye-con-la-politica-nacional-de-inteligencia-artificial, https://minciencia.gob.cl/areas-de-trabajo/inteligencia-artificial/politica-nacional-de-inteligencia-artificial/plan-de-accion.
Colombia	Completed in 2019	• Title: *Digital Transformation and AI National Policy* (Conpes 3975). • Understands the digital transformation of the State as an enabler to increase social and economic value. Although the strategy includes other topics, public sector transformation actions are among the most numerous ones. Includes three relevant action lines: improving the performance of the digital government policy to adopt AI; promoting digitally based innovation in the public sector; and executing high-impact initiatives in areas like citizen services, healthcare, justice, taxes, infrastructure and national archives. • Further information: https://oecd.ai/dashboards/policy-initiatives/2019-data-policyInitiatives-26728.
Mexico	Completed in 2018 under a previous administration.	• Title: *IA-MX 2018.*[1] • It includes three relevant actions for the public sector: developing an AI subcommittee to promote multi-sectoral dialogue and approaches; identifying best practices in government; and promoting the

	However, the document is not publicly available and the OECD is unable to determine whether it is still in effect.	international leadership of Mexico in international forums. This has led the country to participate in the creation of the Working Group on Technological Change in relation to the Sustainable Development Goals within the United Nations (UN) and the Working Group for Emerging Technologies in the GEALC Network (Latin America and Caribbean Network for the Development of Digital Governments) (Zapata and Gomez-Mont, 2020[1]). • Other public sector recommendations are found among two relevant documents that the Mexican Government has endorsed as part of their AI efforts:[2] clarifying the strategic vision on the development and use of AI in the public sector; defining a clear governance framework including an AI Steering Committee and Emergent Technology Innovation teams in selected Ministries; developing guidelines for smart AI procurement, taking a portfolio approach to develop and procure AI products and services in government; and creating co-ordination mechanisms among cybersecurity incident response teams. • Further information: https://oecd.ai/dashboards/policy-initiatives/2019-data-policyInitiatives-26703.
Peru	First draft provided for OECD review in May 2021.	• Title: *National Strategy for Artificial Intelligence*. • Expected to cover the period 2021-2026 and to be updated every two years to reflect evolution in technology. • Focuses on strategic axes related to training, economic models, technological infrastructure, data, ethics, and collaboration. • It includes a strategic objective to promote the incorporation of AI in public sector operations and citizen-facing services.
Uruguay	Completed in 2019	• Title: AI Strategy for the Digital Government. • Uruguay's strategy is fully dedicated to public sector transformation. Its main purpose is promoting and strengthening AI's responsible use in the public administration. • It includes a set of 9 principles and its commitments are structured in in four pillars: AI governance in public administration; skills development for AI; AI use and adoption; and digital citizenship and AI. • Further information: Box 2.3, https://oecd.ai/dashboards/policy-initiatives/2019-data-policyInitiatives-26477.

Source: OECD review of national AI strategies.

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Martinho-Truswell, E. et al. (2018), *Towards an AI Strategy in Mexico: Harnessing the AI Revolution*, http://go.wizeline.com/rs/571-SRN-279/images/Towards-an-AI-strategy-in-Mexico.pdf. [2]

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Notes

[1] It was not possible to access the original document of the Mexican AI Strategy, but general public information on the Government's website is still available: www.gob.mx/epn/es/articulos/estrategia-de-inteligencia-artificial-mx-2018.

[2] See (Martinho-Truswell et al., 2018[2]) and (Coalición IA2030Mx, 2020[3]).

Annex B. Examples of LAC AI instruments aligned with OECD AI values-based principles

Table A B.1. Examples of LAC AI instruments aligned with OECD AI principle #1

	Reviewed Instrument	OECD Principle: Inclusive growth, sustainable development and well-being
Chile	AI Policy and Action Plan (2021)	• **AI for sustainable economic development**: the incorporation of technology as an axis of the sustainable development of the country. (...) The policy and the actions derived from it must promote an AI that does not harm our environment and that, as far as possible, contributes to preserving and improving it. • **AI in society** – all policies and actions related to AI must be approached in an interdisciplinary way, enhancing the contribution of the different areas of knowledge. [AI Policy] actions should integrate collective intelligence and feeling through open processes of deliberation. The actions derived from the Policy will seek to develop each region departing from its reality. • **Globalised AI** – the Policy and the actions derived from it should consider how they are inserted in the international context and promote participation in bilateral and multilateral spaces of which our country is a part.
Brazil	Brazilian Artificial Intelligence Strategy (2021)	• **AI for sustainable economic development:** Strategy includes significant discussion on the importance of the topic and lists some relevant initiatives. Key goal to "Promote sustained investments in research and development in AI". Establish partnerships across sector to encourage training and to consider the new realities of the labour market. • **AI in society**- Action to create awareness campaigns on the importance of preparing for the development and ethical use of AI. • **Social benefit** – Commitments to "Share the benefits of AI development to the greatest extent possible and promote equal development opportunities for different regions and industries." And to develop educational programmes at all levels. • **Globalised AI** – Inclusion of a cross-cutting thematic axis on "international aspects".
Colombia	AI Ethical Framework (2021)	• **Inclusion**: "active participation of historically marginalized and diverse populations in the design, development, implementation, and evaluation of artificial intelligence systems used in Colombia" (p.37). This principle is also applied to data (representative data), algorithms (avoiding privileging specific groups), and practices. • **Prevalence of the rights of children and adolescents.** • **Social benefit**: "artificial intelligence systems implemented in Colombia must allow or be directly related to an activity that generates a clear and determinable social benefit" (p.40). Goals should be linked to recognised social ends, contextualised to Colombian main social challenges.
Mexico	AI Principles	• **Seek social welfare** as the main goal of AI implementation, focusing efforts on generating a positive impact that contributes to solving public problems. • **Have an inclusive approach** that encourages vulnerable groups to access the benefits associated with the use of these systems. • **Monitor and evaluate the impacts** of AI implementation to ensure that it fulfils the purpose for which it was designed.
Uruguay	AI Strategy	• **Purpose**: AI must enhance the capabilities of human beings, complementing them as much as possible, aiming to improve the quality of people s life, facilitating processes and adding value to human activity. • **General interest**: AI-based solutions promoted by the State should tend to **protect the general interest, guaranteeing inclusion and equity**. For this, work must be carried out specifically to reduce the possibility of unwanted biases in the data and models used that may negatively impact people or favour discriminatory practices.

Source: OECD review of national AI principles and related instruments.

Table A B.2. Examples of LAC AI instruments aligned with OECD AI principle #2

	Reviewed Instrument	OECD Principle: Human-centred values and fairness
Barbados	Data Protection Act (2019)	• **Fairness of Processing:** personal data shall be processed lawfully, fairly and in a transparent manner in relation to the data subject. • **Right to prevent processing likely to cause damage or distress.** • **Automated individual decision-making, including profiling:** the data subject has the right not to be subject to a decision based solely on automated processing, including profiling, which produces legal effects concerning him or similarly significantly affects him.

Brazil	Brazilian Artificial Intelligence Strategy (2021)	• **Non-discrimination.** Action to direct funds towards that aim to apply ethical solutions, mainly in the fields of equity/non-discrimination (fairness). Action in public procurement to include criteria related to the incorporation of ethical principles related to equity and non-discrimination.
		• **Diversity.** Action to stimulate the diverse composition of AI development teams with regards to "gender, race, sexual orientation and other socio-cultural aspects".
		• **Human-centred AI**. Action to promote means to observe AI systems and how they promote human rights, democratic values and diversity. Action for human review and for human intervention in high-risk situations. In the public sector, establish mechanisms for prompt investigation of complains about violations of rights.
		• **Other strategic actions**.
		  ○ Action to stimulate partnerships with corporations researching ethical AI technologies.
		  ○ Action to create open multi-sectoral spaces for the discussion and definition of ethics principles.

Brazil	General Law on the Protection of Personal Data (2018)	• **Non-discrimination:** impossibility of processing for unlawful or abusive discriminatory purposes.
		• The law includes two other related rights:
		  ○ Every natural person has ensured the ownership of his personal data and guaranteed the **fundamental rights of freedom, intimacy and privacy**, in accordance with this Law.
		  ○ The data subject has the right to **request the review of decisions taken solely on the basis of automated processing of personal data affecting his interests**, including decisions to define his personal, professional, consumer and credit profile or aspects of his personality.

Chile	AI Policy and Action Plan (2021)	• **People-centred AI**: AI should contribute to people's well-being and avoid direct or indirect harm. • **Inclusive AI**: AI must not arbitrarily discriminate or be used to the detriment of any group, should incorporate a gender perspective, ad should consider children and teenagers.
Colombia	AI Ethical Framework (2021)	• **Privacy**: "Artificial intelligence must be preceded by a respect for the privacy of individuals and their private sphere that prevents the use of information that they have not authorized and profiling" (p.31). • **Human control of decisions of an AI system (human-in-the-loop and human-over-the-loop):** humans having control of data collection, decision making and systems that interact with citizens. The principle suggests a strict standard while AI technology matures in the country (p. 32). • **Non-discrimination**: "Artificial intelligence systems cannot have outcomes or responses that under-mine the well-being of a specific group or limit the rights of historically marginalize populations" (p.36). This principle is applied to data, algorithms and practices.
Ecuador	Guide for the Processing of Personal Data in the Central Public Administration	• **Non-discrimination**: personal data treatment cannot originate discrimination of any kind (see section 8).
Jamaica	Data Protection Act (2020)	• **Rights in relation to automated decision-making**: "An individual is entitled, at any time (…) to require the data controller to ensure that **no decision by which this section applies is based solely on the processing, by automatic means, of personal data** in respect of the data subject for the purpose of evaluating matter relating to the data subject (e.g. the individual's performance at work, creditworthiness, reliability or conduct).
Panama	Data Protection Law (2019)	• "The owner of the data has the **right not to be the subject of a decision based solely on the automated processing of their personal data**, which produces negative legal effects or is detrimental to a right, whose purpose is to evaluate certain aspects of their personality, status health, job performance, credit, reliability, behaviour, characteristics or personality, among others."
Peru	First draft provided for OECD review in	• **Non-discrimination:** Draft commits that public bodies will develop an impact study on achieving less bias in the use of algorithms for the classification of people in the private sector (e.g. AI systems that

	May 2021.	classify people for providing benefits, opportunities or sanctions). All AI use cases of this type would need to undergo a socioeconomic impact study to guarantee equity.
Mexico	AI Principles	• **Protect the will and freedoms of people** in the implementation of AI, seeking respect for the integrity and the right to self-determination of individuals. • **Prioritise safety, integrity and human dignity** in the design and application of AI tools, evaluating and monitoring the factors that may impact on it. To promote equality by reducing the possibility of discriminatory biases in the data and models used. • **Promote justice** by offering human-operated mechanisms to review, appeal, and correct decisions or actions taken by AI-based systems. • **Ensure privacy** by incorporating, from the design, consent mechanisms and personal control over the use of data.
Uruguay	AI Strategy	• **General interest**: AI-based solutions promoted by the State should tend to protect the general interest, guaranteeing inclusion and equity. For this, work must be carried out specifically to **reduce the possibility of unwanted biases in the data and models used that may negatively impact people or favour discriminatory practices.** • **Respect for Human Rights**: Any technological solution that uses AI must respect Human Rights, individual freedoms and diversity. • **Ethics**: When the application and/or development of AI-based solutions present ethical dilemmas, they must be addressed and resolved by human beings. • **Privacy by design**: AI solutions should contemplate people s privacy from their design stage. Personal Data Protection principles in force in Uruguay are considered components of this document.

Source: OECD review of national AI principles and related instruments.

Table A B.3. Examples of LAC AI instruments alignedwith OECD AI principle #3

	Reviewed Instrument	OECD Principle: Transparency and explainability
Barbados	Data Protection Act (2019)	• **On Transparent information**: "The data controller shall take appropriate measures to provide any information (...) relating to processing to the data subject in a concise, transparent, intelligible and easily accessible form, using clear and plain language," (p. 37). • **Right of Access**: where personal data of the data subject is being processed, [the data subject has the right] to **request from, and to be given (...) a description of (...) the existence of automated decision-making**, including profiling, referred to in section 18 and, at least in those cases, **meaningful information about the logic involved, as well as the significance and the envisaged consequences** of such processing for the data subject.
Brazil	Brazilian Artificial Intelligence Strategy (2021)	• **Transparency**. Action to direct funds projects supporting transparency, and to stimulate transparency and responsible disclosure. Enable supervisory mechanisms for public scrutiny on AI activities. Action in public procurement to include criteria related to the incorporation of ethical principles related to transparency. • **Public scrutiny** – Commitment to enable supervisory mechanisms for public scrutiny on AI activities • **Access**. Commitment to stimulate disclosure of open source data and code.
Brazil	General Law on the Protection of Personal Data (2018)	• **Free access**: guarantee, to the holders, of easy and free consultation **on the form and duration of the processing**, as well as on the completeness of their personal data; • **Transparency**: guarantee, to holders, clear, accurate and easily accessible information **on the performance of the treatment** and its agents of treatment, in the light of trade and industrial secrets; • The controller shall provide, whenever requested, clear and appropriate information regarding the **criteria and procedures used for the automated decision**, in compliance with trade and industrial secrets.
Chile	AI Policy and Action Plan (2021)	• **Safe AI**: Due to the close dependence that exists between algorithm training and the use of data for it, transparency and explicability become relevant elements for the conception of a safe AI.
Colombia	AI Ethical Framework (2021)	• **Transparency**: "openness to provide meaningful and understandable information about the design, operation, and impact of artificial intelligence systems" (p.29). Considers the sources of information, the model behind the algorithms, algorithm accuracy, and information about the design and development teams. • **Explanation**: "Both for the developers and users of the system and for those individuals who may be affected by its decisions and results. The information should be easily accessible and

		understandable, in order to promote active citizen participation in the design, implementation and evaluation of AI systems" (p.30). Thus, it refers to accessible information over the importance of data for the system, how it is collected, the purposes for data collection, algorithms' initial objectives and expected and obtained results, and roles of the people involved.
Jamaica	Data Protection Act (2020)	• **Rights of access to personal data**: "an individual is entitled (…): -to be informed by the data controller, free of charge, whether personal data of which that individual is the personal data subject are being processed by or on behalf of that data controller; -if personal that are being processed as described in paragraph (a), to be given by the data controller, free of charge, a description of: personal data of which that individual is the data subject; **the purposes for which personal data are being, or are to be, processed**; and the recipients or classes of recipients to whom they are, or may be, disclosed; (...). -where the processing of personal data by automatic means of which that individual is the data subject: is for the purpose of evaluating matters related to that individual (such as, for example, individual's performance at work, creditworthiness, reliability or conduct), and has constituted or is likely to constitute the sole basis for any decision significantly affecting the individual, **to be informed by the data controlled, upon payment of the prescribed fee, of the logic involved in that decision-taking**."
Mexico	AI Principles	• **Explain to users** who interact with AI-based services, the decision process that the system makes about them, the expected benefits and the potential risks associated with their use. • **Foster openness and trust** by sharing as much information as possible to the public, preserving the required confidentiality, which allows understanding the training method and the decision-making model of the system. • **Publish the results of the system evaluations**, trying to include versions aimed at different audiences.
Peru	First draft provided for OECD review in May 2021.	• **Transparency:** Draft commits to implementing a platform that will serve as a registry of AI algorithms and associated data in the public sector.
Uruguay	AI Strategy	• **Transparency**: AI solutions used in the public sphere must be transparent and comply with the regulations in force. This transparency must: -Make available the algorithms and data used for training the solution and its implementation, as well as the tests and validations performed. -Explicitly make visible, through active transparency mechanisms, all those processes that use AI, either in the generation of public services or in support of decision-making processes.

Source: OECD review of national AI principles and related instruments.

Table A B.4. Examples of LAC AI instruments alignment with OECD AI principle #4

	Reviewed Instrument	OECD Principle: Robustness, security and safety

Brazil	Brazilian Artificial Intelligence Strategy (2021)	• **Security**. Inclusion of a strategic axis on public security.
		  ○ Commitment to develop techniques to identify and mitigate algorithmic bias and ensure data quality for training of AI systems.
		  ○ Promotion of voluntary standards to manage AI risks.
		  ○ Action to conduct impact analyses on AI uses that directly affect the public.
		  ○ Commitment to implement a privacy and data protection sandbox for AI systems aimed at public security.

Brazil	General Law on the Protection of Personal Data (2018)	• **Prevention**: adoption of measures to prevent the occurrence of damage due to the processing of personal data.
Chile	AI Policy and Action Plan (2021)	• **Safe AI**: -Integrity, quality and security of the data. -Risk and vulnerability assessments. -Cybersecurity: confidentiality, integrity and protection of data, algorithms, processes and practices.
Colombia	AI Ethical Framework (2021)	• **Security**: "Artificial intelligence systems must not affect the integrity and physical and mental health of the human beings with whom they interact" (p. 34). This principle includes measures such as immutability, confidentiality and integrity of base data, and establishment of codes of conduct and systems of risk to establish possible affectations.

Mexico	AI Principles	• **Mitigate situations of risk and uncertainty** on an ongoing basis and generate response strategies to the effects derived from the use of AI. • **Prioritise safety, integrity and human dignity** in the design and application of AI tools, evaluating and monitoring the factors that may impact on it. • **Establish solid mechanisms for the protection of user data**, especially sensitive attributes, and notify about possible eventualities in their handling.
Uruguay	AI Strategy	• **Security**: AI developments must comply, from their design, with the basic principles of information security. The guidelines and regulations related to cybersecurity in force in Uruguay that apply to the development of AI are considered components of this document.

Source: OECD review of national AI principles and related instruments.

Table A B.5. Examples of LAC AI instruments alignment with OECD AI principle #5

	Reviewed Instrument	OECD Principle: Accountability
Brazil	Brazilian Artificial Intelligence Strategy (2021)	• **Accountability.** Action to direct funds to projects supporting accountability. Commitment to encourage accountability practices for AI.
Brazil	General Law on the Protection of Personal Data (2018)	• **Responsibility and accountability**: demonstration by the agent of the adoption of effective measures capable of proving observance of and compliance with the rules of protection of personal data and even the effectiveness of such measures.
Colombia	AI Ethical Framework (2021)	• **Responsibility**: "There is a duty to respond for the results produced by an artificial intelligence system and the affectations it generates" (p.33). Responsibility from entities that collect and process data, and people who design an algorithm. It also suggests defining clear responsibilities on the chain of design, production and implementation.
Mexico	AI Principles	• **Determine clear responsibilities and obligations** of different actors regarding the process of design, development, implementation and use of technology.
Peru	First draft provided for OECD review in May 2021.	• **Responsibility:** Draft commits that the country will adopt ethical guidelines for sustainable, transparent and replicable use of AI with clear definitions of responsibilities and data protection.
Uruguay	AI Strategy	• **Responsibility**: Technological solutions based on AI must have a clearly identifiable person responsible for the actions derived from the solution actions.

Source: OECD review of national AI principles and related instruments.

OECD Public Governance Reviews

The Strategic and Responsible Use of Artificial Intelligence in the Public Sector of Latin America and the Caribbean

Governments can use artificial intelligence (AI) to design better policies and make better and more targeted decisions, enhance communication and engagement with citizens, and improve the speed and quality of public services. The Latin America and the Caribbean (LAC) region is seeking to leverage the immense potential of AI to promote the digital transformation of the public sector. The OECD, in collaboration with CAF, Development Bank of Latin America, prepared this report to help national governments in the LAC region understand the current regional baseline of activities and capacities for AI in the public sector; to identify specific approaches and actions they can take to enhance their ability to use this emerging technology for efficient, effective and responsive governments; and to collaborate across borders in pursuit of a regional vision for AI in the public sector. This report incorporates a stocktaking of each country's strategies and commitments around AI in the public sector, including their alignment with the OECD AI Principles. It also includes an analysis of efforts to build key governance capacities and put in place critical enablers for AI in the public sector. It concludes with a series of recommendations for governments in the LAC region.

PRINT ISBN 978-92-64-39887-0
PDF ISBN 978-92-64-89869-1