OECD Studies on Public Governance

Strategic and responsible use of artificial intelligence in the public sector

from Latin America and the Caribbean

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CAF BANCO DE DESARROLLO DE AMÉRICA LATINA

OECD Studies on Public Governance

Strategic use and responsible of artificial intelligence in the public sector of Latin America and the Caribbean

This document is a report prepared jointly by the OECD and the Andean Development Corporation, approved by the OECD Public Governance Committee through a written procedure on 14 January 2022, and prepared for publication by the OECD General Secretariat. The opinions and arguments expressed herein do not necessarily reflect the official opinions of the members of the Andean Development Corporation.

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Please cite this post as follows:
OECD/CAF (2022),*Strategic and responsible use of artificial intelligence in the public sector in Latin America and the Caribbean*, OECD Public Governance Reviews, OECD Publishing, Paris,https://doi.org/10.1787/5b189cb4-en .

ISBN 978-92-64-72657-4 (print)
ISBN 978-92-64-32102-1 (pdf) ISBN
978-92-64-46863-4 (HTML) ISBN
978-92-64-95508-0 (epub)

OECD Public Governance Studies ISSN
2414-3308 (print)
ISSN 2414-3316 (online)

Published by the OECD in its original English version under the title:
"The Strategic and Responsible Use of Artificial Intelligence in the Public Sector of Latin America and the Caribbean,© OECD/CAF 2022,
OECD Publishing, Paris,https://doi.org/10.1787/1f334543-en ."

Preface

The use of artificial intelligence (AI) in the public sector can have a powerful impact on public policy and services. It has the potential to free up a huge amount of public officials' time and thus allow them to move away from routine activities to focus on high-value tasks. This would increase the efficiency and effectiveness of the public sector. Governments can also rely on AI to improve policy design and make better and more targeted decisions; improve communication with and engagement with citizens and residents; and increase the speed and quality of public services. While the potential benefits of AI for the public sector are significant, achieving them is not easy. The public sector lags behind the private sector in the use of AI, the field is complex and the learning curve is steep. At the same time, the governments' objective, and their context, presents a number of unique challenges.

Governments around the world have shown great interest in overcoming these challenges and are trying to close this gap with the aim of becoming AI competent, which they consider a central aspect of their digital maturity. This trend is reflected by the more than 60 countries that have already developed national AI strategies, most of which include a specific emphasis on public sector AI, as well as the implementation of this technology in the sector both through pilot projects and concrete projects that are reflected in numerous use cases. The OECD closely monitors AI developments around the world through its AI Policy Observatory (*OECD.AI Policy Observatory*,https://oecd.ai), a flagship initiative that closely tracks AI adoption cases globally. The organization also stays informed about specific public sector developments through its Digital Government and Open Data Team (*OECD Digital Government and Data Unit*,https://oe.cd/digitalgov) and its observatory for public sector innovation (*Observatory of Public Sector Innovation*, OPSI, (https://oecd-opsi.org), in collaboration with the working group of senior digital government officials or digital leaders called *Working Party of Senior Digital Government Officials (E-Leaders).*

The Latin American and Caribbean (LAC) region is seeking to tap into the immense potential of AI, including the digital transformation of the public sector. The OECD, in collaboration with CAF, Latin America's development bank, prepared this report to assist national governments in Latin America and the Caribbean in understanding the existing public sector AI activities and capabilities in the region; identifying and adopting specific actions and approaches to improve their capacity to use this emerging technology for efficient, effective and responsive public administration; and, ideally, collaborating across borders towards a regional vision of AI in the public sector. The analysis carried out in the report incorporates an inventory of the strategies and commitments that each country has made regarding AI in the public sector, and reports on their alignment with the OECD Principles on Artificial Intelligence, the first intergovernmental standards in the world on this technology.

This document reflects the first results of a larger and more comprehensive review conducted by the OECD and CAF on digital government in Latin America and the Caribbean, covering topics such as governance, skills and capabilities, the creation of a data-driven public sector, open government data, and innovation and digital capabilities to enhance collaborative GovTech approaches. The review, entitled *Going Digital: The State of Digital Government in Latin America* [The Road to Digitalization: The State of Digital Government in Latin America], is expected to be published this year.

Acknowledgements

This document,*Strategic and responsible use of artificial intelligence in the public sector in Latin America and the Caribbean*, was prepared by the OECD's Public Governance Directorate (GOV), led by Elsa Pilichowski.

This is a report prepared by the OECD's Open and Innovative Government Division (*Open and Innovative Government division*, OIG), led by Barbara-Chiara Ubaldi, Acting Head of Division and Head of the Digital Data and Governance Unit (*Digital Government and Data Unit*) of the OIG, who provided strategic guidance and conducted reviews. The project falls within the OECD's Global Digital Leaders Initiative (*Global E-Leaders Initiative*GELI), aimed at promoting dialogue and cooperation on digital government and public sector data policies among the organization's member countries and partners.

Jamie Berryhill, innovation specialist at the OPSI observatory, and Ricardo Zapata, policy consultant on digital government, wrote the paper. During its preparation, contributions were received from Felipe González-Zapata, Alex Seemann, Jacob Arturo Rivera Perez and Benjamin Welby, policy analysts in the Digital Government and Data unit. The report was reviewed and commented on by OECD colleagues, including Daniel Gerson from the Public Employment and Management unit (*Public Employment and Management Unit*, PEM) of GOV; Paulo Magina, from the public procurement and infrastructure division (*Infrastructure and Public Procurement Division*, IPP) of GOV; Audrey Plonk, of the Digital Economy Policy Division (*Digital Economy Policy Division*, DEP) of the science, technology and innovation directorate (*Science, Technology and Innovation Directorate*, STI); and Karine Perset, Luis Aranda and Laura Galindo-Romero, from the OECD.AI observatory of the STI DEP division. In addition, the specialized knowledge of the working group of high-level digital government officials or digital leaders (*Working Party of Senior Digital Government Officials (E-Leaders).* David McDonald provided editorial assistance.

The project would not have been possible without the invaluable contribution of CAF, the development bank of Latin America. The report was written with the guidance, input and knowledge of Carlos Santiso, Director of State Digital Innovation at CAF; María Isabel Mejía, Senior Executive, State Digital Innovation; Nathalie Gerbasi, Senior Executive, State Digital Innovation; and Martha Rodriguez, consultant, State Digital Innovation. It also had the support of Pablo Sanguinetti, Vice President of Knowledge.

Finally, the OECD-CAF team would like to express its gratitude to the many officials who shared their knowledge of their government's policies, strategies and initiatives aimed at promoting AI in the public sector and who provided input in structured interviews and virtual missions, which also included fact-finding and corroboration missions organised by Costa Rica, the Dominican Republic, Paraguay and Uruguay. We also thank the stakeholders and experts who provided their knowledge through interviews and discussions, and who reviewed and commented on drafts of the report.

Table of contents

FIGURES

TABLES

BOXES

Executive summary

Artificial intelligence is reshaping economies, promising to boost productivity, improve efficiency and reduce costs. Governments are uniquely positioned to address AI, determining national strategic priorities, public investments and applicable regulations. They also recognise the importance and future potential of this technology across many economic sectors: more than 60 countries are developing national AI strategies. Recognising that AI issues transcend borders, countries are increasingly adopting regional approaches, including coordinated action within the European Union (EU) and the African Union, between the Nordic and Baltic states and Arab nations, and within the G7 and G20. The OECD has also strengthened its actions on this technology in recent years, driven by the OECD.AI observatory. Indeed, the OECD Principles on Artificial Intelligence adopted in 2019 constitute the first intergovernmental standards on the subject.

Like governments in other parts of the world, those in the Latin American and Caribbean region are seeking to exploit the immense potential of AI in a strategic and reliable way. Seven countries in the region have already developed or are developing a national AI strategy (Argentina, Brazil, Chile, Colombia, Mexico, Peru and Uruguay), and seven have already signed up to the OECD Principles on Artificial Intelligence (Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico and Peru).

The importance of incorporating AI in the public sector is reflected in most national strategies regarding this technology. In fact, governments are increasingly using AI for innovation and transformation of the public sector, redefining the way they design and deliver policies and services. This report, produced by the OECD in collaboration with CAF, the development bank of Latin America, analyses the strategic and responsible use of AI by the public sector in Latin America and the Caribbean.

Main findings

In the LAC region, seven countries have a national AI strategy. These strategies are characterized by either being specifically oriented to the public sector, or by proposing a broader approach and presenting a section dedicated to this sector. They all tend to emphasize key issues, such as ethics, AI governance, adoption of this technology, intersectoral collaboration and public procurement, skills and capabilities, data and technical infrastructure. They represent an important step forward, but they differ in terms of measures to be taken and enablers to drive progress. While all present actions and objectives, and most establish quantifiable goals, many do not specify timelines, financing mechanisms or monitoring tools.

Countries in the region are also testing various uses of AI in the public sector, such as responding to COVID-19, improving government efficiency and decision-making, enriching relationships with citizens and businesses and the delivery of services,

increasing public safety and security, strengthening public sector integrity and accountability, and improving education systems.

In addition to the application of the OECD Principles on Artificial Intelligence, this international body identified a series of key factors that are critically important to reap the benefits of AI in the public sector while mitigating the risks:

- **Develop a responsible, trustworthy and human-centred approach to the use of AI in the public sector,**that considers data ethics, ensures impartiality and mitigation of bias, contemplates transparency and explainability of algorithms, promotes digital safety and security, establishes accountability mechanisms, and ensures an inclusive and user-centred approach.
- **Developing core governance capabilities**, including leading, coordinating and building support for AI; leading and developing data strategies; creating spaces for experimentation; understanding public sector problems and the potential of AI to solve them; and ensuring future-readiness through preventive governance.
- **Putting key enablers in place**, such as data, financing, internal and external expertise, and digital infrastructure.

Another of the OECD's findings is that the capabilities of countries in the region vary:

- Colombia and Uruguay are emerging as leaders in the LAC region, with a number of well-thought-out strategies and approaches that are, to some extent, already underway.
- Argentina, Brazil, Chile and Peru demonstrated leadership in several areas related to the factors mentioned above and a strong commitment to implementation, although with a lower level of digital maturity than the regional leaders.
- Costa Rica and Mexico also demonstrated strong commitment. However, Costa Rica needs more support and further action in certain areas, while Mexico – the first country in the region to publish a national AI strategy and a regional leader in the past – appears to be unclear about current and future priorities.
- Barbados and Panama, and to a slightly lesser extent the Dominican Republic, Ecuador, Jamaica and Paraguay, demonstrated initial capacity to leverage AI in the public sector, for example through data protection laws and other initiatives. While these actions were not explicitly targeted at AI, they may have positive spillover effects.
- Bolivia, Trinidad and Tobago, and Venezuela need to take important actions and may require support from other countries in the region to advance in exploring the use of AI in the public sector.

Main recommendations

This report formulates**13 recommendations**to national governments in Latin America and the Caribbean in order to maximize the potential positive impacts of the use of AI in the public sector, and to minimize negative or unintended consequences:

1. Explore the development and execution of a**strategy**and a roadmap for AI in the public sector for **Latin America and the Caribbean**through an approach**regional**collaborative.
2. Develop and adopt**national strategies and roadmaps**for AI in the public sector.
3. Prepare a**National data strategy for the public sector**covering various aspects of data and laying the foundations for the application of AI.
4. Explore the possibilities of**cooperate and collaborate at a regional level**to develop AI projects and initiatives in the public sector.

5. Support activities carried out in the field of AI at the national level **subnational** and reflect them in broader AI policies and initiatives.
6. Strengthen the **emphasis on implementation** of AI strategies in the public sector to ensure that the commitments made are fulfilled.
7. Take measures that **support long-term sustainability** of AI strategies and initiatives in the public sector.
8. Put into practice the **OECD Principles on Artificial Intelligence** and set up a national ethics framework for trustworthy AI.
9. Take into account as a central element the considerations on the use of a **Trustworthy AI in the public sector** identified in this report.
10. Arbitrate the means to generate a **sustained leadership capacity** at a central and institutional level that guides and oversees the adoption of AI in the public sector.
11. Use techniques of **early innovation governance** to prepare for the future.
12. Keep in mind **as a central element, considerations on governance** identified in this report.

13. Emphatically take into account **as a central element the critical enablers** of AI in the public sector identified in this report.

1 Introduction

Artificial intelligence (AI) offers enormous potential for innovation across all sectors and industries. In the private sector, it is an intrinsic part of countless technologies and services in the form of algorithms used by mapping apps to avoid traffic, Netflix and Spotify to provide recommendations, and email providers to automatically filter out unwanted messages. The use of AI in the public sector is equally important and perhaps holds greater potential to improve lives and transform society due to the variety of roles played by governments (financier, purchaser, regulator, convener, standard-setting body, custodian and data manager, user and service provider) (OECD, 2019).[1]).

In a study of US public services, it was proposed that AI could free up about a third of civil servants' time, potentially allowing them to shift from routine to high-value tasks (Eggers, Schatsky, & Viechnicki, 2017). [2]). Governments could also use AI to enrich policy design, make better decisions, improve communications and relations with the public, and increase the speed and quality of public services. The potential of AI in the public sector is not lost on government officials. A recent study conducted by Microsoft revealed that two-thirds of public sector organizations consider AI a digital priority (Bertrand, 2020).[3]).

While the potential benefits of AI are significant, achieving them is not easy. Government use of this technology lags behind private sector use. Furthermore, it is a complex field and the learning curve is steep. In the government context, AI has a unique purpose and presents several challenges when compared to that of the private sector. In reality, only 4% of public sector organizations in Western Europe have effectively used AI to achieve a significant degree of organizational transformation (Bertrand, 2020).[3]), which shows the level of difficulty that governments face in adopting technology.

Even though the public sector is lagging behind its private counterpart, governments are looking for ways to catch up. Recent work by the OECD focused specifically on key use cases, opportunities, challenges and other considerations that governments need to understand in order to make strategic use of AI for public sector innovation and transformation:

- In September 2019, the working group of senior digital government officials known as *E-Leaders* (*Working Party of Senior Digital Government Officials*)1, with the support of the government and digital data unit (*Digital Government and Data Unit*)2, released a report on the state of the art of the use of emerging technologies in the public sector entitled *State of the Art in the Use of Emerging Technologies in the Public Sector*3It highlights the key opportunities and challenges posed by the use of AI and other emerging technologies in government, and proposes strategy ideas and practical examples of governments that are incorporating them.

- In November 2019, the OECD Observatory for Public Sector Innovation (*Observatory of Public Sector Innovation*, OPSI)4published the report *Hello World: Artificial Intelligence and its use in the public sector* (whose original title in English is *Hello, World: Artificial Intelligence and its Use in the Public Sectors*), which aims to unravel the technical aspects of AI for public officials. According to this publication, more than 50 countries have developed national AI strategies, with most of them incorporating an emphasis on the public sector. It also presents practical use cases and provides guidance on important considerations for this sector. Since then, and as of mid-2020, there were already more than 60 countries that had national AI strategies (OECD, 2020).[4]).6

- In September 2021, the OECD Infrastructure and Public Procurement Division (*Infrastructure and Public Procurement Division*) published a report on building resilience, which examines how AI and big data analytics are changing the availability and use of information, and creating opportunities to better plan infrastructure investments and extend the life of assets. The publication provides a framework and country examples showing how to mainstream machine technology and digital technology throughout the infrastructure lifecycle, from development to delivery and commissioning, with the aim of increasing its resilience and sustainability (OECD, 2021).[5]).

Such government-oriented efforts led to the OECD's flagship initiative closely monitoring global developments incorporating AI: the OECD Policy Observatory.

OECD AI subject (*OECD.AI Policy Observatory*).[7]This structure capitalizes on the momentum of the 2019 OECD Recommendation on AI (the "OECD Principles on Artificial Intelligence"),[8] principles that 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. So far, 46 countries have committed to adopting them. In June 2019, the G20 introduced human-centred AI principles, which are inspired by the OECD Principles on Artificial Intelligence.

The OECD Principles on Artificial Intelligence are five-part and are based on values that ensure the trustworthiness and human-orientation of AI systems. They are accompanied by five policy recommendations for policymakers to commit to promoting thriving AI ecosystems that respect human rights and democratic values, and benefit societies (Table 1.1).

Table 1.1. The OECD Principles on Artificial Intelligence

	Principle		Extract
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—people, society and planet—and advance global development goals.*
	1.2	Human-centered values and equity	*AI systems should be designed to respect the rule of law, human rights, democratic values and diversity, and include appropriate safeguards to ensure a fair and equitable society.*
	1.3	Transparency and explainability	*AI systems must be governed by transparency and responsible disclosure to ensure that people know when they are interacting with them and can object to the outcomes of that interaction.*
	1.4	Robustness, safety and protection	*AI systems must operate robustly, reliably and securely throughout their lifecycle, and potential risks must be constantly 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 values-based AI principles.*
Policy Recommendations	2.1	Investment in Research and Development	*Governments should facilitate public and private investment in research and development that stimulates innovation in trustworthy AI.*
	2.2	Fostering a digital ecosystem for AI	*Governments should foster accessible AI ecosystems through digital technologies and infrastructure, and mechanisms for sharing data and knowledge.*
	23	Creating an enabling policy environment	*Governments must create a policy environment that paves the way for the implementation of trustworthy AI systems.*
	2.4	Developing human capacity and preparing for the transformation of the labour market	*Governments must train people in AI skills and support workers to ensure an equitable transition.*
	2.5	International cooperation	*Governments should cooperate to share information across countries and sectors, develop standards and work towards responsible governance of AI.*

Source: (OECD, 2019[6]).

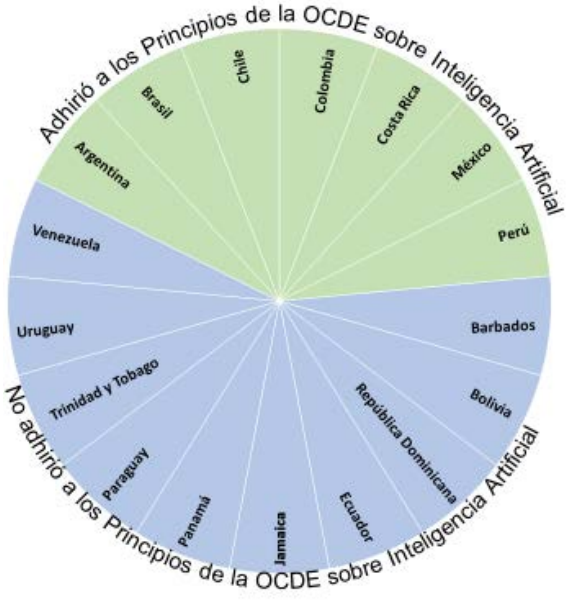
The OECD Principles on Artificial Intelligence underline the development of benchmarks for AI research, development and deployment, and the accumulation of evidence against which progress in its implementation can be assessed. Accordingly, in February 2020 the OECD launched its AI Policy Observatory as a hub to facilitate dialogue and disseminate best practices on AI policies. The Observatory promotes AI policy dialogue and provides access to real-time data and trends on AI development, research, jobs and skills, online search trends and investments. It also provides access to a database of national policies from more than 63 countries and the European Union.[9]provides information on how artificial intelligence impacts different fields of action,

from agriculture to healthcare to finance, and blogs about cutting-edge AI research and policy.[10]

These efforts are closely linked to the work of the OECD Network of Experts on Artificial Intelligence (*OECD AI Network of Experts*), a multi-stakeholder group of experts developing practical guidance for the implementation of the OECD Principles on Artificial Intelligence.[11] In June 2021, the OECD published its first report on the status of implementation of the OECD Principles on Artificial Intelligence from the perspective of national AI policies, entitled *State of implementation of the OECD AI Principles: Insights from National AI Policies* (OECD, 2021[7]). It identifies some of the challenges and related good practices for governments implementing the principles on artificial intelligence, specifically in relation to research and development, with a view to achieving effective policy environments and promoting international cooperation towards achieving trustworthy AI.

Governments in Latin America and the Caribbean (LAC), like their counterparts in the OECD and other countries and regions around the world, have a keen interest in AI and its potential benefits and ramifications. Indeed, a growing number of Latin American and Caribbean countries are developing national strategies on the subject, and seven have already formally adopted the OECD Principles on AI (representing about 85% of the population of the LAC countries included in this analysis) (Figure 1.1), as mentioned later in this document. Moreover, as the cases examined here show, the solutions offered by AI are gradually becoming more accessible to governments, which underlines the need to identify current challenges and develop best practices and standards to increase the positive impact of its application.

Figure 1.1. Adherence of Latin American and Caribbean countries to the OECD Principles on Artificial Intelligence



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

AI is already having a profound impact in the Latin American and Caribbean region. A recent study by the publication *MIT Technology Review* concluded that the region has a robust ecosystem of *Start-ups*, and that almost 80% of the large firms present there have launched AI initiatives and are actively using this technology (MIT Technology Review, 2020).[8]). Without

However, it also revealed that steps taken in this direction are hampered by political instability, lack of political cohesion and limited international collaboration, as demonstrated by low levels of participation in international actions to develop governance mechanisms, ethical frameworks and similar approaches.

These factors also restrict the progress that Latin American and Caribbean governments can make in leveraging AI for innovation and transformation of the public sector. The OECD has also identified other factors that can support or hinder government efforts to achieve sound, effective and reliable AI strategies, projects and initiatives. Governments must take an active role in determining these factors and in harnessing the potential of AI, while managing the related challenges and risks. This report, *Strategic and responsible use of artificial intelligence in the public sector in Latin America and the Caribbean*, was prepared by the OECD in collaboration with CAF, the development bank of Latin America [12]. It seeks to collaborate with governments in the LAC region to achieve this goal by detecting national and regional approaches and trends regarding AI, and identifying how countries are positioned to reap the benefits and mitigate the risks of technology in the public sector.[13]It draws on lessons and knowledge gained from the OECD's broader work on the subject and, for the first time, delves into the scenario, case studies, challenges and considerations regarding AI in the public sector in a given region. The OECD and CAF hope that, armed with this new knowledge and perspective, governments in Latin America and the Caribbean can take steps to develop or modify their existing portfolio of activities in order to strengthen the strategic use of AI at national and regional levels.

To report on these activities, the OECD and CAF have been working together since mid-2020 on:

- conduct in-depth interviews to obtain information from leaders and officials of governments in Latin America and the Caribbean;
- survey the body responsible for digital government activities in each country, which typically has the lead role in deciding how AI and other aspects of digitalisation can be used to transition towards a digital government approach throughout the policy cycle and service lifecycle in the public sector;
- conduct extensive research on a variety of topics related to AI in the public sector in each country.

Each country was also given two review windows of several weeks to examine the initial and near-final findings and provide feedback and complementary information, which were added to the final version. Throughout this work, the OECD and CAF found that a number of CAF member countries have developed, albeit exploratory, but fast-moving portfolios of AI strategies, policies and projects, as well as underlying enablers that act as supporting elements (e.g., guiding criteria, competencies, methods, and infrastructure, among others). They also found that the level of maturity reflected in such actions varies considerably across the region: there are countries that have developed first-rate strategies and initiatives, while others have yet to demonstrate interest or eagerness to incorporate AI in the public sector. The chapters in this document attempt to draw an overview of the current state of play of AI in the public sector in the Latin American and Caribbean region:

- Chapter 2 provides an overview of the status of national AI strategies in countries in the region, highlighting those that include innovation and public sector transformation. It highlights the areas where governments have prioritized these strategies and incorporated action plans to achieve successful implementation.
- Chapter 3 examines current case studies of AI use in Latin American and Caribbean countries. It offers examples of AI project implementation in the public sector, and focuses on the use of AI in the public sector.

in areas such as the response to COVID-19; improving government efficiency; decision-making; integrity; the security and protection provided by the state; and creating a link with citizens and businesses, as well as offering services to them, among others.

- Chapter 4 outlines efforts by Latin American and Caribbean countries to ensure a reliable and ethical approach to AI in the public sector. Ethical principles, frameworks and other mechanisms are assessed and examined, and their alignment with the OECD Principles on Artificial Intelligence is examined. It also analyses the attempts by governments in the region to ensure impartiality and temper bias, and promote transparency and accountability. As a cross-cutting factor, the chapter explores the inclusiveness of countries' AI initiatives by forming teams with diverse members and multiple disciplines, and by emphasizing end users and their needs.

- Chapter 5 addresses the key governance capabilities that the OECD identifies as critically important for governments to successfully implement AI in the public sector. In particular, it focuses on leadership at the highest level regarding this technology, coordination between different government areas, strategic data governance mechanisms, and spaces for AI experimentation. It also assesses whether governments in Latin America and the Caribbean have put in place appropriate mechanisms to enable them to understand public problems and evaluate whether AI may be the best solution to overcome these challenges. Finally, it considers the capacities of Latin America and the Caribbean to anticipate good innovation management in order to capture possible future scenarios and take measures in the present to address them.

- Chapter 6 explores whether Latin American and Caribbean countries currently have the essential enablers for AI in the public sector. It examines government initiatives to provide financing, improve internal human capital capabilities, leverage external capabilities through government partnerships and contracting, and create essential digital infrastructure.

- Chapter 7 offers an overall conclusion and recommendations that Latin American and Caribbean governments can consider as they continue to explore and adopt AI for the public sector.

Throughout this report, the OECD compares the state of play and characteristics of government activities related to AI in the public sector in Latin America and the Caribbean with those of other governments around the world. At the same time, it compares and contrasts the actions implemented and relative capacities of the countries in the LAC region. The graphs developed on the basis of the results of surveys, interviews, research, and validation of the conclusions by the governments indicate the presence of regional leaders in certain areas, as well as countries in which capacities in different fields are not so evident. This is not intended to be a classification, but rather to contribute to identifying the strengths of countries in particular to allow others to draw lessons and practices from them. This work also attempts to identify countries that can benefit from their greater emphasis in certain areas or the support of other countries in the region. On the other hand, it can support the possibility of a regional approach to AI. For example, if Latin American and Caribbean governments were to collaborate on an AI strategy or initiative, those with relative strengths could guide certain components (e.g., Argentina on experimentation, Brazil on interoperability, Chile on mobilizing external knowledge and expertise, Colombia on an ethical and trustworthy approach, Panama on infrastructure guidance, Uruguay on the data-driven strategy, etc.).

The findings presented in this analysis on AI in the public sector are the first results of a larger and more comprehensive OECD and CAF review on digital government in Latin America and the Caribbean, which includes topics such as governance, skills and capabilities, creating a data-driven public sector, open government data, and innovation and

digital capabilities to enhance collaborative GovTech approaches. Such a review, entitled *Going Digital: The State of Digital Government in Latin America* [The Road to Digitalization: The State of Digital Government in Latin America], is expected to be published in 2022.

The release of this report on AI in the public sector in Latin America and the Caribbean, and the broader review on digital government, is particularly timely. In the context of COVID-19, immediate responses to the pandemic accelerated digital transformation and the transition to coronavirus-related elements such as testing, contact tracing, virtual work and education, and the relaunching of the economy. However, over time, it became clear that the COVID-19 crisis also served as a catalyst for innovation in these and many other areas of the public sector (OECD, 2020).[9]). Of particular relevance to this review are the attempts by governments to harness AI in response to the pandemic by creating early warning tools and accelerating medical research aimed at producing treatments, among other objectives (OECD, 2020).[10]). The crisis has once again highlighted the role of the state as an enabler of the economy and society, and has highlighted the need for rapid and effective responses by governments, often through the use of new tools and technologies. Strengthening digital and AI capabilities now at local, national and regional levels will enable governments to be better positioned to respond to current and future shocks and challenges.

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Grades

1 https://oe.cd/eleaders .

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

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

4 OPSI acts as a global forum for public sector innovation, helping governments understand, test and integrate different ways of doing things through the application of new ideas, knowledge, tools and connections. For more information, visit: https://oecdopsi.org .

5 https://oe.cd/helloworld.

6 The OECD Policy Observatory on AI maintains a constantly expanding database of national policies on this topic, which can be consulted at: https://oecd.ai/dashboards .

7 https://oecd.ai.

8 https://oecd.ai/ai-principles An official OECD "Recommendation" is a non-binding legal instrument that is considered by member countries to have strong 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 called "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 is not intended 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 its various technical applications, can find an introduction and guidance on the topic in the report. *Hello World: Artificial Intelligence and its use in the public sector* (https://oe.cd/helloworld).

2 Artificial Intelligence Strategies in Latin America and the Caribbean

Artificial intelligence offers great potential for all sectors in Latin American and Caribbean countries. The public sector is responsible for setting national priorities, investments and regulations and is therefore in a privileged position to adopt AI. Governments can also benefit from the enormous power of AI to innovate and transform the public sector in order to redefine the ways in which it can design and implement policies and deliver services to the population. This innovation and transformation is crucial for governments, which are increasingly faced with greater complexity and demands from their citizens, residents and businesses. This chapter examines the strategic approach that Latin American and Caribbean governments are taking towards AI.

The chapter particularly analyses the growing regional collaboration between a number of Latin American and Caribbean countries to achieve joint objectives in this area, and the development of strategies that articulate national visions on AI. Above all, it addresses the issues presented in Figure 2.1.

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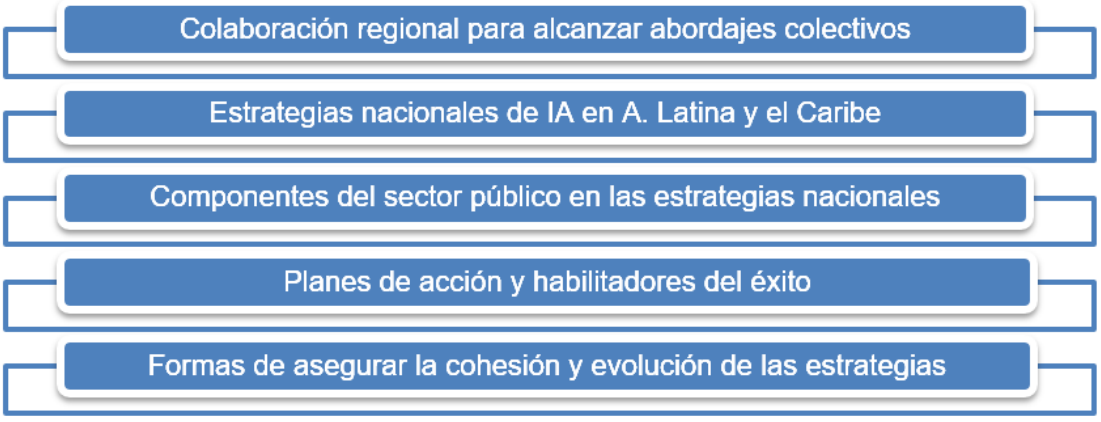

Regional collaboration to achieve collective approaches

Governments around the world are adapting to the new possibilities offered by AI. As part of this process, many have adopted international, often regional, strategies or other commitments regarding AI. For example, in 2018, all member countries of the European Union (EU) signed the declaration of cooperation on artificial intelligence (*Declaration on Cooperation on Artificial Intelligence*)[1], by which they committed to work together to boost European AI capacity and adoption, ensure an appropriate legal and ethical framework, and make AI available and for the benefit of public administrations. The subsequent coordinated plan on artificial intelligence of the European Union (*EU Coordinated Plan on Artificial Intelligence*)[2], which was based on this statement, seeks to "maximise the impact of investments at national and EU level, [and] foster synergies and cooperation across the EU". An analysis of the plan, carried out in 2021[3], presented to the European Commission and the Member States a series of joint actions designed with the aim of making the European Union a world leader in trustworthy AI. In another regional effort, ten governments[4]signed the Declaration on Artificial Intelligence in the Nordic and Baltic region[5], commitment to improve skills development and access to information, and develop ethical guidelines, among other actions. Outside Europe, the Arab Task Force on AI aims to develop a joint framework for capacity building, train young people to compete for jobs involving AI, and establish a common Arab strategy. In turn, the African Union has formed a working group to create a common AI strategy for Africa and raise project initiatives in support of the Sustainable Development Goals (SDGs) (OECD, 2020).[4]).

Such commitments aim to create a collective vision on AI based on the unique contexts, cultures, norms and values of each region. They can also help each country showcase its comparative strengths, while filling gaps elsewhere in the region. Depending on the structure of the agreements, there may be other benefits in achieving economies of scale for public procurement of digital solutions, thereby contributing to efforts to disseminate talent and expertise. They could also pave the way for collaborative projects and approaches at international level. These instruments offer the potential to focus on both

the impacts and considerations of AI for achieving broad economic and social objectives, such as objectives that emphasize innovation and restructuring of the public sector itself.

Currently, national governments in Latin America and the Caribbean do not share strategies, commitments or other agreements that promote a joint vision and a common approach to AI. Such a regional instrument could better harmonize activities in this area and would reflect the OECD Principles on AI, which highlight the critical nature of international cooperation as a key element for the successful development of this technology (OECD, 2019).[6]). While governments in the region still lack a collective vision of AI, they have demonstrated their capacity to coordinate regionally on digital government issues through the Latin American and Caribbean Electronic Government Network (Red GEALC), as outlined in Box 2.1. In addition, all the governments covered in this review are member states of the Inter-American Development Bank (IDB), an institution that has adopted the OECD Principles on Artificial Intelligence as part of its initiative *fAIr LAC*6.7.

The OECD and the IDB jointly produced a report that offers a data science toolbox8for responsible use of AI in public policy, both within and outside the Latin American and Caribbean region. The report uses the AI system lifecycle as a guiding framework to provide technical guidance to public policy teams wishing to use AI technologies to improve their decision-making processes and the outcomes of such processes. At each phase of the AI system lifecycle—planning and design, data collection and processing, model creation and validation, deployment, and monitoring—the toolbox identifies common challenges related to the use of artificial intelligence in public policy contexts, and outlines practical mechanisms to detect and mitigate them (Sanchez Avalos, Gonzalez, and Ortiz, 2021).[11]).

These activities demonstrate the region's ability to collaborate on specific AI issues that transcend its borders, even though governments have yet to agree on a regional approach to the topic.

Box 2.1. GEALC Network

Since 2003, the Latin American and Caribbean e-Government Network (GEALC Network) has brought together authorities from digital government agencies in the LAC region. Its composition makes it a unique instrument for promoting horizontal cooperation, the development of participatory policies on digital government, the training of public officials, and the exchange of solutions and experts among countries in the region. The network allows member countries to share essential knowledge on the development of national strategies on digital government. Its overall objective is to support digital government policies that put citizens at the center, especially in relation to the most vulnerable populations.

Source: www.redgealc.org.

Governments in Latin America and the Caribbean have also demonstrated the capacity to carry out regional collaboration on AI in specific cases and interest in doing so. For example, the IA-CKATHON is a regional hackathon created to explore innovative ideas and novel ways of using AI to improve public services. Originally organized by the *Electronic Government and Information and Knowledge Society Agency (*AGESIC), the digital government body of Uruguay, the initiative was expanded to include Chile, Panama, Paraguay, Peru and the Dominican Republic. Each participating country held its own AI-CATHON and selected a national winner who participated in a grand regional final during the annual GEALC Network assembly. Regional summits and conferences on AI are another example of regional collaboration in Latin America and the Caribbean.

Caribbean. Two events are particularly noteworthy for attracting diverse groups of actors from different disciplines and countries: the Regional Forum on Artificial Intelligence in Latin America and the Caribbean, organized by UNESCO and partners from Brazil in December 2019[9], and the Latin American Artificial Intelligence Summit organized by Latin American researchers belonging to the MIT community in January 2020. An e-book was recently published documenting this summit and providing details about future events.[10]These regional initiatives and networks represent significant steps forward in the dissemination of AI in the public sector and in understanding the challenges and opportunities it poses. Although these are early steps, they chart a course towards greater regional collaboration on strategy and policy.

National AI strategies in Latin America and the Caribbean

While regional strategies can guide collective action, the most comprehensive strategies are at the national level. No fewer than 60 countries around the world have already adopted national strategies and policies defining their strategic vision and approach to AI (OECD, 2019).[1],2020[4]), and many others are actively developing them. Such strategies include priorities and objectives and, in some cases, a roadmap. They also have the potential to collaborate with countries in building common foundations for moving forward on this path, as well as harmonizing the capabilities, standards and structures of the respective AI actors and ecosystems. The design of most national AI strategies was subject to open public consultations involving numerous actors, including key consortia from industry, academia, trade unions and civil society (OECD, 2020).[4]). These initiatives clearly demonstrate that many countries perceive AI as a national priority, and are willing to work openly with a wide variety of stakeholders to build legitimacy and trust.

Seven Latin American and Caribbean countries have developed, or are in the process of developing, a national AI strategy. They are: Argentina, Brazil, Chile, Colombia, Mexico, Peru and Uruguay (Figure 2.2).[11]This trend reveals that such countries are increasingly focused on ensuring their continued competitiveness with their regional and global peers, and have decided to keep up with this rapidly evolving technology, and its potential benefits and risks.

When the Latin American and Caribbean strategies are examined collectively, a number of key themes and objectives emerge. For example, they often seek to catalyze economic development through funding and incentives for research and development, transform the labor market and strengthen talent pools through upgrading programs, and promote strong governance and data sharing, including opening up public administration data. Notably, all strategies include provisions to ensure that AI systems are designed and implemented in an ethical and trustworthy manner (for example, by creating ethics frameworks and governance bodies). A number of strategies also emphasize international collaboration, particularly those of Argentina, Brazil, Chile, and Peru. Some of them include more specialized components, such as Chile's gender perspective in AI research and development. In terms of this report, most importantly, all strategies have a specific orientation toward the use and implications of AI for public sector innovation and restructuring, a topic that we will consider in the next subsection.

Most Latin American and Caribbean countries, including those without a current or planned AI strategy, have published a broader national digital government strategy, or a linked digital agenda or programme. Such initiatives often include components that act as foundational bases for AI (e.g. interoperability, infrastructure, analytical tools and processes, service integration, etc.), although AI is not usually incorporated as a main objective. Similarly, some countries have developed general data strategies (see section

"Key capabilities for strategic data governance"), which, while including basic elements related to AI such as data sharing, are not commonly focused on their specific areas. However, there are indications that other Latin American and Caribbean countries intend to develop national approaches to AI soon. Ecuador, for example, has held meetings with academic institutions, the industrial sector and civil society where joint activities for the development of AI were discussed (Gómez Montoya, 2017).*et al.*, 2020[12]). In Costa Rica, the Government is collaborating with the IDB on a roadmap for the development of a national AI strategy and an accompanying ethical framework (OECD, 2021).[7]). In addition, the Dominican Republic and Panama have stated in interviews with the OECD that their governments have already initiated exploratory discussions about a national approach to AI, although the strategies are not yet formally planned.

Public sector components in national strategies

All seven countries with published or forthcoming national strategies either have a separate strategy for AI in the public sector or place a special emphasis on the topic within a broader strategy (Figure 2.2). This is of fundamental importance as it allows AI to be integrated into policy-making and service design processes.

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Fountain: OECD analysis of AI strategies

However, strategies vary in the extent to which they emphasize public sector restructuring and, in some cases, may no longer be in place:

- Uruguay is the only country in Latin America and the Caribbean that has a specific strategy for restructuring the public sector through AI.
- Argentina, Brazil and Colombia have placed particular emphasis on public sector transformation within a broader comprehensive strategy.[12]
- Peru highlights the public sector as an area of emphasis in its next AI strategy.
- Chile's AI strategy and the associated AI action plan highlight the importance of AI training for the public sector and the adoption of this technology with a view to increasing efficiency and service delivery in this sector. The objective of simplifying public procurement processes is also highlighted. However, the overall emphasis of the strategy is on industry, and less comprehensive attention is devoted to the strategic use of AI in the public sector compared to other strategies in the region.
- Mexico's strategy is not publicly known and therefore could not be analysed. Nevertheless, reports from those involved in its creation indicate that it places considerable emphasis on public sector AI. Mexico was the first country in the region to develop an AI strategy, but it is unclear whether this is still an active policy (Box 2.2).

Box 2.2. Development of the first AI strategy in the Latin American and Caribbean region (Mexico)

In March 2018, Mexico presented the first national AI strategy in the Latin American and Caribbean region. To inform its development, the Government commissioned an assessment to determine its level of readiness for AI. The report, titled *Towards an AI Strategy in Mexico: Taking Advantage of the AI Revolution* The event analyzed the country's opportunities and challenges, and brought together the perspectives of more than 80 leading Mexican experts. The authors offered short-, medium-, and long-term recommendations in a few key areas, including governance and public services, research and development, skills and capabilities, data infrastructure, and ethics and regulations. This activity served as a basis for understanding the country's subsequent activities.

Based on the report, the Presidency, in collaboration with civil society and academia, launched the national AI strategy, focused on five essential measures:

1. **Developing an inclusive governance framework** through the creation of an artificial intelligence subcommittee based on intersectoral participation, with the aim of paving the way for Mexican initiatives on AI and coordinating action throughout the public administration.
2. **Determine the uses and needs of AI in the industry** through a discovery exercise and the identification of best practices in the public sector.
3. Carry out a **public consultation** open about the opportunities and challenges of AI in Mexico.
4. **Supporting Mexico's leadership in AI at international forums**, including the OECD and the G20, and the creation of a working group on emerging technologies within the GEALC Network (Box 2.1).
5. **Promoting continuity through change of governments** working with all stakeholders towards an official national AI policy.

Alongside the strategy, the Government issued two landmark documents on AI ethics: Mexico's official AI general principles and a linked risk assessment tool, inspired by similar successful frameworks developed by the Government of Canada.

To facilitate a more complete understanding of the opportunities and challenges of AI, and to update the vision outlined in the strategy, institutions from industry, civil society, academia and the government created a coalition called IA2030.mx in 2018. One of the coalition's first actions was to call for a national public consultation on AI. The consultation's findings led to the development of a more comprehensive national AI strategy by a series of working groups dedicated to specific topics (e.g. ethics, governance and public services). The strategy, entitled "Mexican National Agenda for Artificial Intelligence," was presented in September 2020.

In December 2018, a new government took office in Mexico, and officials involved in the initial readiness assessment and report on the national AI strategy said that a shift in political priorities had halted much of the country's digital government work. Work on IA2030.mx continues, but current conditions make the status of Mexico's original AI strategy ambiguous. It is also unclear whether the government adopted the IA2030.mx agenda as official policy, although it was included as part of the portfolio of activities submitted to the OECD's AI policy observatory. Neither the OECD nor CAF obtained clarification on this from the Mexican government. Regardless, officials articulated five key lessons from the experience:

1. It is necessary to carry out a**initial assessment**to determine the position of the Government and the ecosystem in relation to AI.
2. Required**multi-stakeholder strategic partnerships**to harmonize efforts across different sectors and ensure that the resulting products are inclusive and representative.
3. It is important**Involve the other powers and levels of Government**to ensure sustainability.
4. It is key to keep at the center of the AI strategy**Human rights and distributed benefits**.
5. **Public and private financing**is essential to achieving robust and sustainable AI strategies.

Fountain: 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 (IA2030Mx Coalition, 2020[13]), OECD.

As with the objectives of broader national strategies, a number of key themes, issues and objectives emerge across all public sector-focused components that the OECD was able to analyse. Seven themes stand out, as indicated in Table 2.1.

Table 2.1. Key themes and issues of the public sector components of national AI strategies

Topic/subject	Description
Reliable and ethical approaches	- Increase public awareness of AI and related digital rights to promote trust. - Adapt AI solutions to the local context and culture. - Provide guidance on the transparent and ethical use of AI in the public sector.
AI Governance	- Define reference frameworks for data and AI governance in the public sector. - Articulate AI leadership and commitments to ensure the strategy remains current. - Define the actors responsible for coordinating AI across the public sector.
Adoption of AI	- Promote the adoption of AI by the public sector through AI-enabled services for citizens, and the execution of strategic and high-impact AI initiatives and pilot projects. - Improve the performance of digital government policies.
Public procurement of AI	- Combine best practices to formulate technical, functional and background requirements for AI procurement in the public sector.
Capacity and competencies of the civil service	- Improve the capacity of the civil service through training and incorporation of personnel for the use and development of AI. - Create spaces to share good practices and experiences in the public sector and with other actors, and prepare public officials for the new work dynamics offered by automated and semi-automated tasks enabled by AI.
Collaboration and ecosystem creation through an intersectoral and cross-border approach	- Identify existing AI ecosystems and related actors across the public, private and non-profit sectors, and across national borders.
Experimentation and testing	- Promote public innovation based on AI mainly through the creation or strengthening of digital innovation laboratories and "isolated spaces" (*sandboxes*).
Infrastructure	- Create supercomputing structures and/or infrastructure to host public and private AI systems.
Data-driven public sector/open government data	- Promote strategic management, leveraging and opening up of government data to develop personalized services, and drive AI in the private sector.

Many of these themes and issues are seen in the strategies of Uruguay and Argentina outlined in Box 2.3.

Box 2.3. Developing AI strategies in the public sector in Uruguay and Argentina

Uruguay: a specific AI strategy for the public sector

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

The strategy seeks to defend a series of fundamental principles: purpose, general interest, respect for human rights, transparency, responsibility, ethics, added value, privacy as a design feature, and security.

With this in mind, it provides four pillars and eight objectives to guide the work of the public sector:

- AI governance in public administration either
  - Objective I: Identify the AI ecosystem in Uruguay.
  - either Objective II: Define an AI governance model for public administration.

- Developing skills for AI either
  Objective III: Generate capacities for the development and use of AI in public
  either administration. Objective IV: Generate a learning space.
- Responsible use
  either Objective V: Generate technical guides for the proper use of AI in public administration.
  either Objective VI: Promote transparency of algorithms.
  either Objective VII: Design specific action plans for strategic sectors.
- Digital citizenship and AI
  eitherObjective VIII: Raise awareness and increase trust among citizens.

Argentina: Emphasis on public sector incorporated into broader AI strategy

The objective of Argentina's National Plan for Artificial Intelligence is to generate policies that contribute to sustainable growth and the improvement of equal opportunities through AI technologies, so that Argentina can position itself as a leader in the region. To achieve this objective, the plan incorporates "implementation in the public sector" as one of eleven strategic axes. The other sections of the document also include commitments that directly impact the restructuring of the public sector.

The strategy sets out four key objectives for the public sector:

1. Generate conditions for the development and use of AI in the public sector to maximize economic impact, with particular focus on building an AI ecosystem.
2. Minimize the risks of developing and implementing artificial intelligence.
3. Promote the development of AI-oriented talent.
4. Promote collaboration within Government and with other sectors in relation to AI.

The lines of action and commitments relevant to the public sector include:

- Data
  either Strengthen incentives and mechanisms for data openness, reuse and sharing in the public, private and academic sectors.
  either Identify and generate mechanisms to make available critical public and private data for the development of AI.
- Implementation in the public sector either
  Increase productivity and efficiency by implementing AI-centric solutions.
  either Optimize public services by using traceable AI systems with sound and transparent logic that does not affect citizens' rights.
  either Define AI purchasing methodologies and processes in the public sector.
- Infrastructure
  either Promote the generation of a *cluster* public supercomputing facility that guarantees international-level processing capacity for public and private users, and seeks to establish cooperation mechanisms to support scientific research in AI and the development of pilots in strategic areas of the public sector.

- AI Innovation Lab either

  Create an AI innovation lab as a public-private organization aimed at open innovation, collaboration between sectors and the development of specific projects.

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

Action plans and enablers of success

A comparative view of the strategies reveals differences between Latin American and Caribbean countries in terms of the existence of action plans and enablers that contribute to driving progress in implementation (Table 2.2). While having these mechanisms does not guarantee successful implementation, they do facilitate improved overall performance, impact and accountability. In particular:

- All strategies analyzed include**Specific objectives and measures**, which is essential.
- Most also include**quantifiable objectives**. For example, Argentina, Chile (through a related action plan) and Colombia present their objectives in a way that makes it possible to measure their progress over time. Uruguay's strategy does not always include quantifiable targets, and leaves some measures open to interpretation. Brazil's strategy is largely devoid of quantifiable targets, with the exception of the goal of implementing AI in a minimum of 12 public services by 2022. Peru's draft strategy, provided to the OECD for scrutiny in May 2021, provides many relevant targets; however, they are often worded in a way that would not allow for measuring progress towards their achievement or fulfillment.

- Chile and Colombia define**responsible actors**linked to each proposed action, which is important to ensure that some person or organization is in charge of implementation and is accountable for its progress and success. Argentina defines responsible actors for each strategic axis, but not for each action.
- In relation to defining**time frames**For the start and completion of proposed actions, Colombia sets clear time frames and Argentina defines them as frameworks for certain actions. Chile establishes time frames for starting the action corresponding to each item, but does not set a completion date. Brazil, Peru and Uruguay generally do not include specific time frames.

- Finally, Colombia's strategy is the only one that clearly indicates**financing mechanisms**(discussed in more detail in the Financing 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 drive implementation

Country	Objectives and actions specific	Goals quantifiable	Actors responsible	Mark temporary	Mechanisms of financing	Instrument of monitoring
Argentina	-	-	-	Partially	-	-
Brazil	- -	--	--	-	--	--
Chili	-	-	-	Partially	-	-
Colombia	-	-	-	-	-	-
Peru	- -	--	--	--	--	--
Uruguay	-	Partially	-	-	-	-

While only seven Latin American and Caribbean countries have developed draft or final versions of their national strategy and the OECD was able to fully analyse six, the themes, objectives, roadmaps and enablers considered in this document may prove to be a valuable reference for other countries when putting together their own strategy. As mentioned above, other Latin American and Caribbean governments indicated to the OECD in interviews held for information that, despite not currently having an AI strategy in place, they are laying the groundwork to develop one in the near future. With the recent launch of the national AI strategy in Brazil, the pace of development in the region appears to be picking up. The countries represented in this section have been regional pioneers from whom others can learn, but they will also need to continually re-examine their progress, iterate and mature the strategy to keep up with technological advances.

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]

Ways to ensure cohesion and evolution of strategies

While the creation of national AI strategies is accelerating both in the region and around the world, governments must be careful to ensure that such strategies are central and integral to the country's digital system. To be successful, they must be aligned and mutually reinforcing with the national digital government strategy (described in depth in *Going Digital: The State of Digital Government in Latin America* [The Road to Digitalization: The State of Digital Government in Latin America], forthcoming), national data strategies (see "Core capabilities for strategic data governance" in Chapter 5), ethical principles and values, and personal data protection policies and laws (see Chapter 4, "Actions to develop a responsible, trustworthy and human-centred approach"). Unless all of these components work together, AI-related activities in the public sector will struggle to move beyond the small pilot stage and add public value. As with AI strategies, only a handful of countries in Latin America and the Caribbean have developed comprehensive national data strategies. Governments in the region therefore have an excellent opportunity to ensure that these highly interrelated and interdependent strategies are compatible from the outset. Countries that already have a strategy in place can also achieve this convergence by ensuring that they remain open to interaction and evolution.

Governments must also ensure that their strategy is not a one-off document. AI is a rapidly evolving technology, and the strategies, policies and projects linked to it must also evolve to remain relevant and applicable. To support governments in their efforts to stay informed about the latest developments, there are countries within and outside the

region that have created dedicated bodies tasked with staying abreast of developments and advising governments on how to respond (see examples in Box 2.4).

Across the world, countries are pursuing different models to ensure policy coherence and effective implementation of national AI policies. These are:

- Assign oversight of the development and implementation of the strategy to an existing ministry or agency.
- Create a new government or coordinating body for AI. Establish expert
- advisory groups on AI.
- Receive information from oversight and consulting bodies for data and AI ethics bodies.

More details about these activities can be found in the recent OECD report on the status of implementation of the OECD Principles on Artificial Intelligence from the perspective of national AI policies entitled*State of implementation of the OECD AI Principles: Insights from National AI Policies*(OECD, 2021[7]).

Box 2.4. Advisory bodies on artificial intelligence

AI Experts Mission (Colombia)

In collaboration with CAF, the IDB, and the World Bank, Colombia created an AI Expert Mission, a multi-stakeholder group made up of ten national and international experts who meet periodically to assess the different dimensions of artificial intelligence and produce concrete recommendations in the short, medium, and long term. The Mission is a necessary mechanism to establish a prospective roadmap to implement an AI policy based on the comprehensive and technical vision of key specialists, and was created with the purpose of complementing and guiding Colombia's progress in this area. It was presented on October 21, 2021.

The Mission's mandate has two main objectives:

1. Generate recommendations for the areas of employment and talent in response to the challenges posed by artificial intelligence, particularly those related to knowledge and gender gaps.
2. Promote the development of technological tools that mitigate the effects of climate change, increase environmental protection and favor the sustainable development of the country. Recommendations are expected on the implementation of AI solutions leading to the achievement of such goals, as well as the generation of the necessary talents and skills.

Artificial Intelligence Advisory Board (Spain)

The Spanish Ministry of Economic Affairs and Digital Transformation created the Artificial Intelligence Advisory Council as a formal independent body to provide theGgovernment analysis, advice and support on AI. The main objectives of the Council are the following:

- Advise and inform the State Secretariat for Digitalisation and Artificial Intelligence on the implementation of government policy on artificial intelligence.
- Evaluate observations and comments, as well as formulate proposals on the National Artificial Intelligence Strategy, in order to draw conclusions that allow the approval of new versions of the Strategy.

- Provide advice on assessing the impact of artificial intelligence on industry, the public sector and society.

The Council is made up of Spanish experts from a variety 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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Sanchez Avalos, R., F. Gonzalez and T. Ortiz (2021), *Responsible use of AI for public policy: Data science toolkit* (*Responsible use of AI for public policy: a data science handbook*), joint IDB-OECD report, http://dx.doi.org/10.18235/0002876 . [11]

Grades

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

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

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

[6] The initiative *fAIr LAC* was created in 2019 with the aim of promoting ethical and responsible use of AI, improving social services and mitigating the growing social inequality in the region. See https://oecd.ai/wonk/idbs-initiative-for-responsible-ethical-ai-in-latin-america-caribbean-fairlac and https://fairlac.iadb.org .

[7] The IDB, together with the OECD, also participates in the Globalpolicy.AI initiative. Globalpolicy.AI is an online platform that exists thanks to the ongoing cooperation of eight intergovernmental organizations that have complementary mandates in this area. The platform is a tool for policymakers and the general public to navigate the international AI governance environment and to access knowledge, tools, data and best practices that inform the development of policies on artificial intelligence.

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

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

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

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

[12] For upcoming strategies, this report is based on country responses to survey results, on outlines of draft strategies that are publicly available or provided to the OECD, and/or on public statements regarding the intended content of the future strategy.

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

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

3 Practical cases of AI use in the governments of Latin America and the Caribbean

The development of artificial intelligence strategies in many countries reflects the growing awareness of the enormous potential of applying this technology in the public sector to improve both its internal processes and the way in which the Government interacts with the population and provides services to it. Across the world, and in Latin American and Caribbean countries, national and subnational governments have already designed and implemented numerous AI projects and initiatives.

Previous work by the OECD and research by other organisations has identified key areas where governments are focusing real-world use of AI in the public sector.

Over the past year, all governments have rapidly implemented innovative solutions in response to the COVID-19 crisis.1. Many are using AI to provide personalized solutions and messages to citizens and residents to assist in the response to the pandemic (OECD, 2020).[9]) (OECD, 2020[10]).

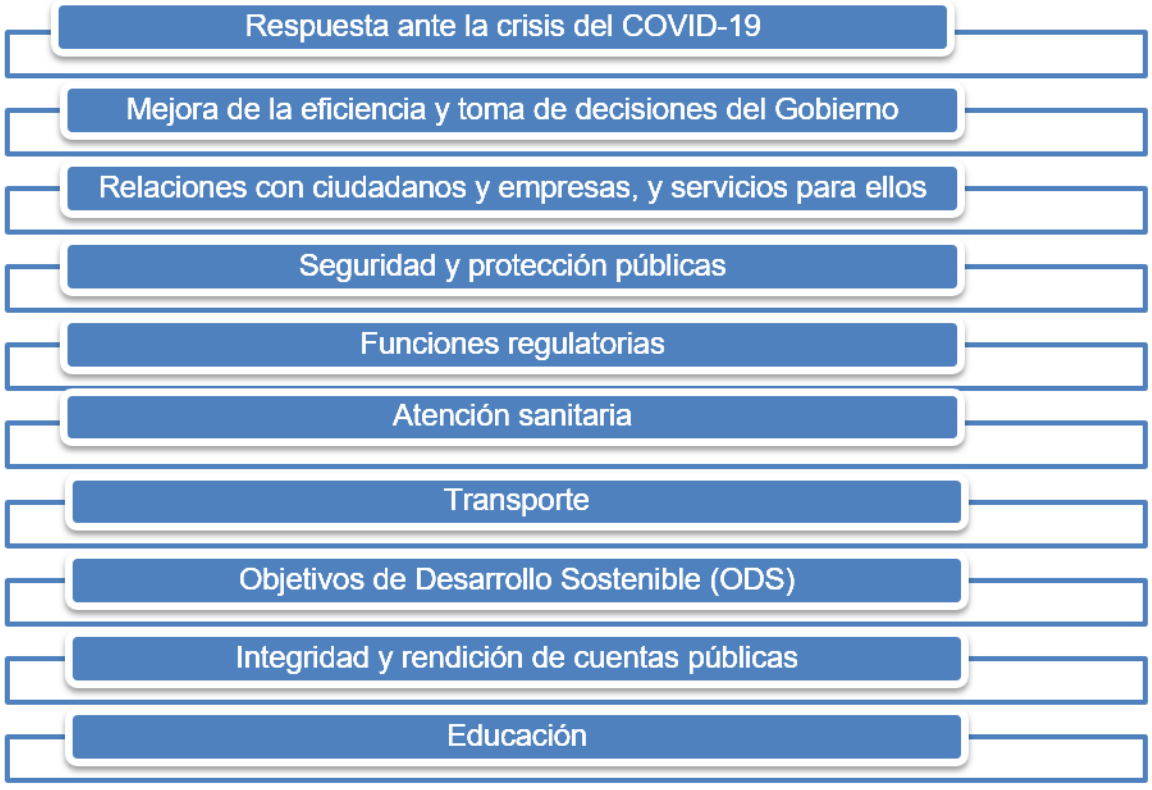
Beyond the immediate needs in times of crisis, the most common and immediate uses of AI in the public sector are to automate simple tasks and guide decisions so that the Government is more efficient and better informed (Ubaldi*et al.*, 2019[14]), (Partnership for Public Service/IBM Center for the Business of Government, 2019[15]Governments have also used AI strategically, in a variety of ways, to improve their relationship with citizens and residents, and the services they provide to them (OECD, 2019).[1]).

Globally, there are a number of topic-specific use cases that have emerged in key application areas of AI in the public sector. In particular, many public sector initiatives have focused on public safety and security, improved regulatory functions, healthcare, and transportation (Ubaldi*et al.*, 2019[14]). Governments have also used AI to address cross-sectoral issues such as the Sustainable Development Goals (SDGs) (OECD, 2019).[1]) (IDIA, 2019[16]).

Research conducted for this report found that the use of AI in Latin American and Caribbean countries generally follows global patterns. However, the review of these activities also identified numerous case studies aimed at increasing public integrity and accountability, and improving education. This trend is in line with two regional priorities: preventing corruption and reducing school dropouts.2Such work is valuable because it demonstrates that greater attention is being paid to these areas than has been observed by the OECD in other regions and countries in relation to AI in the public sector.

This chapter explores a non-exhaustive set of real-world projects that fall within the themes observed. It examines in particular the AI projects in the public sector in Latin America and the Caribbean indicated in Figure 3.1.

Fig



Response to the COVID-19 crisis

Before the world was even aware of the threat of COVID-19, AI systems had detected the outbreak of an unknown type of pneumonia in China. Today, countries are using AI tools to assist in monitoring and predicting the spread of COVID-19 in real time, enabling rapid diagnoses, and finding treatments at a speed and scale never seen before (OECD, 2020).[4]). One of the most evident results of the innovative responses of governments to the pandemic was the rapid acceleration of digital innovation and transformation (OECD, 2020).[17]). During the crisis, AI technologies and tools were used to support the efforts of policymakers, the medical community and society at large to manage each stage of the pandemic and its aftermath (OECD, 2020).[4]). In particular, governments used AI to:

- Understanding the virus and accelerating medical research into drugs and treatments. Detecting
- and diagnosing the virus, and predicting its evolution.
- Help prevent or slow the spread of the virus through surveillance and contact tracing.

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

Governments in Latin America and the Caribbean are also employing or developing the use of AI in a variety of ways that are consistent with and reinforce these themes (Box 3.1).

Box 3.1. AI responses to COVID-19 in Latin American and Caribbean countries

Dr. ROSA and Dr. NICO (Panama)

Dr. ROSA (Automatic Health Operational Response) is a virtual assistant/*chatbot* that works through WhatsApp to perform virtual COVID-19 screening tests. Dr. ROSA asks the user a series of questions and then uses AI algorithms to assess the symptoms. Based on that data, the user can be transferred to a virtual office where they will be assessed by a medical professional who can send an ambulance with specialized personnel to perform a physical observation and provide home care, or can even refer the user to a hospital if necessary. Dr. NICO (Individual Notification of Negative Case Obtained) is a *chatbot* for citizens who have tested negative, providing recommendations on social distancing.

Fountain: 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 to detect epidemic outbreaks (Argentina)

A public-private consortium composed of the Interdisciplinary Center 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 the early detection of epidemic outbreaks. The system will apply AI technology to digital clinical records in the public health subsector and to other relevant data sources. The process will begin with records from two Argentine provinces and will then be extended to the rest of the country. The system also considers the gender perspective when capturing primary data, in order to generate unbiased predictive algorithms. The project is funded by the International Center for Development Research *International Development Research Center*, IDRC, and the Swedish Agency for International Development Cooperation *Swedish International Development Cooperation Agency,* AIDS.

Fountain: 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 case monitoring (Brazil)

In Brazil there are interactive voice response robots (*interactive voice response*, IVR) supported by an artificial intelligence application that conducts telephone interviews with people to gather information about their travel, public transportation use, and recent contacts with individuals who may be infected. The robots then cross-reference the information against a database to assess who else may be at risk. The IVR system asks permission to make follow-up calls every 8, 10, or 12 hours, as needed.

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

Financing AI-powered science, technology and innovation projects to combat COVID-19 (Colombia)

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

- DeepSARS (Bucaramanga) and COVID detection for remote locations (Medellín). This project models and characterizes X-ray sequences, and uses AI techniques to separate and identify different stages in the evolution of respiratory conditions related to COVID-19, in order to contribute to the early diagnosis and rapid treatment of patients.

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

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

Improving Government efficiency and decision-making

In the context of governments, an important and immediately achievable benefit of AI is improving the way public officials perform their tasks. AI offers the potential to help government move from low-value to high-value tasks and focus on core responsibilities by reducing or eliminating repetitive tasks and revealing new insights from data, and improving agencies' ability to accomplish their missions (Partnership for Public Service/IBM Center for the Business of Government, 2019).[15]).

The average public servant spends up to 30% of his or her time on documenting information and other basic administrative tasks (Eggers, Schatsky, & Viechnicki, 2017).[2]). Automating or otherwise avoiding even a fraction of that work would save governments a huge amount of money and refocus civil servants on more valuable tasks, resulting in more engaging, people-oriented work (Partnership for Public Service/IBM Center for the Business of Government, 2019).[15]).

The growing abundance of available data is increasing interest in AI. However, if the volume of data is very large, it may be difficult for the government to extract useful knowledge, a phenomenon known as "information overload" (Speier, Valacich, and Vessey, 1999).[18]). Artificial intelligence can help governments overcome this problem, gain new insights, and generate predictions that enable them to make better policy decisions. For example, in Argentina, the Prometea system reduced the operating time of the justice service, which could be replicated in institutions in the country and abroad. The use of robots to automate repetitive tasks is also an ally of governments in improving efficiency by reducing the processing time of certain public services. Box 3.2 presents more examples of these uses of AI.

Box 3.2. How to make work processes more efficient through the use of AI and automation

Prometea (Argentina)

Prometea is a multi-layered AI system designed to streamline the work of the justice service. It was developed in 2017 jointly by the Public Prosecutor's Office of the Autonomous City of Buenos Aires and the Innovation and Artificial Intelligence Laboratory of the Faculty of Law of the Autonomous City of Buenos Aires.

University of Buenos Aires (IALAB). Prometea aims to free judicial officials from repetitive tasks and allow them to focus their work on complex cases where human labor is necessary. The system acts as a virtual assistant that predicts case solutions (based on previous cases and solutions) and assists in providing the information required to build the case file. Prosecutors then decide whether the predicted solution is worthy of consideration. In Buenos Aires, between October 2017 and mid-2020, Prometea helped resolve 658 cases related to housing rights, work rights, and disability rights. Of the 149 housing protection reports in which the system was used, prosecutors' decisions coincided 90% with those of the system. On average, the system can help prepare 1,000 opinions in 45 business days, compared to the 174 business days that would be needed without this assistance. Currently, the system is used by the Inter-American Court of Human Rights and the Office of the Deputy Attorney General for Administrative and Tax Litigation of the Public Prosecutor's Office of the City of Buenos Aires. However, civil society demands constant monitoring of the implementation of Prometea, as doubts persist about the explainability of its decisions and their repercussions on due process. Other concerns are the degree of responsibility of the actors involved (developers and judges), and how the system's training data and design bias could affect the final results.

Fountain:https://oecd.ai/dashboards/policy-initiatives/2019-data-policyInitiatives-26831 ,https://oecd-opsi.org/wpcontent/uploads/2021/02/Argentina-National-AI-Strategy.pdf andwww.perfil.com/noticias/sociedad/justicia-automatizada-como-trabajo-elsoftware-que-ya-se-usa-en-caba.phtml (Giandana and Morar, 2019[19]).

Laura (Argentina)

Laura is a system developed by the Ministry of Finance of the province of Córdoba to automate tasks in bureaucratic procedures. An example of its application is the verification of pension contributions at the National Social Security Administration (ANSES). Normally, this task would be performed by an official to initiate the provincial retirement process. Instead, Laura connects potential beneficiaries to the ANSES database to verify their retirement status, which includes key data about their salary and social security contributions over the years. This determines which benefits are applicable and the amount of the pension, and makes it possible to detect possible incompatibilities.

Fountain: (Gomez Mont*et al.*, 2020[12]).

How to improve the quality of processes through the use of robots (Uruguay)

In an attempt to simplify and optimize government processes, Uruguay's digital government agency, AGESIC, conducted a study that projected that the implementation of Robotic Process Automation (*Robotics Process Automation*, RPA) could produce savings of between 40% and 75% of civil servants' time. AGESIC launched 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 National Defense, Industry, Energy and Mining, Social Development, and Housing and Territorial Planning. The results of these pilot projects demonstrated a significant reduction in the time that civil servants spend on routine tasks, as well as a zero error rate.

Fountain:www.gub.uy/agencia-gobierno-electronico-sociedad-informacion-knowledge/comunicacion/noticias/pilotos-de-rpaautomatizacion-robotica-de-processes , AGESIC officials.

Tool for the anonymization of legal documents (Argentina)

Within the framework of this GovTech project, Cambá, a technology-based cooperative, has developed a scalable AI system to anonymize judicial documents written in Spanish, under the premise of protecting personal data, and reducing the time of judicial systems and the margin of error.

Fountain:https://www.empatia.la/proyecto/ia2-2 .

Digital Justice (Colombia)

Colombia's Superintendency of Industry and Commerce is launching the digital justice project to digitize the entity's jurisdictional functions and maximize its efficiency. Among its various actions, the project uses AI to optimize the processing of audio recordings of sentences. This process can optimize about 16,500 sentencing reports per year, which represents approximately 5 terabytes of data.

Fountain:https://dapre.presidencia.gov.co/TD/Como-vamos-avanzando-en-la-TD-070421.pdf.

Beyond the automation of repetitive tasks, cases such as the prediction of sentences in lawsuits against the Colombian State show that AI can also increase efficiency by providing more detailed analysis for better decision-making (Box 3.3). The PretorIA case, presented in the same box, provides an example of how public institutions and civil society can interact, listen to fundamental concerns about the implementation of AI, and adapt the technology accordingly. This case highlights the importance of an alert and capable civil society, empowered to collaborate with the public sector in the co-creation of reliable digital public services.

Box 3.3. How to use AI to guide and improve decision making

Pretoria (Colombia)

The Action for Protection (i.e., the constitutional action to protect fundamental rights) is an instrument available to every person in Colombia to demand immediate protection against any violation of fundamental rights resulting from actions or omissions by a public authority or a private individual. As part of its mission, the Constitutional Court selects key tutela cases to set legal precedents on the granting of fundamental rights. However, the Court receives more than 2,000 tutela cases per day. Typically, reading, analyzing, and systematizing the information contained in one of them takes a person 36 minutes, making it humanly impossible to read them all. PretorIA automatically reads and analyzes all the lawsuits, detects and predicts the presence of predefined criteria, and presents reports and statistics in an intuitive manner. The system serves as a tool for judges, ensuring that there is a human being in charge of the decision-making process.

In its initial version, presented in early 2019, the system was an adaptation of Prometea (Box 3.2), but civil society groups warned against its opacity and possible conflict with Colombian laws on data protection and transparency. After several debates,3The Constitutional Court transformed the project by adopting more explainable and transparent technologies. This measure generated the new version of PretorIA, launched in mid-2020, which incorporates topic modeling technology instead of neural networks. The new version is fully explainable, interpretable and traceable (see OECD, 2019).[1] for a review of the networks

(neural and how they limit explainability). The developer, the Innovation and Artificial Intelligence Laboratory of the Faculty of Law of the University of Buenos Aires (IALAB), claims that it is the first predictive AI system in a highest court of justice in the world.

Fountain: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 System for Potential Beneficiaries of Social Programs (SISBEN) is an algorithm that uses primary data from individual surveys on living conditions (for example, income information, access to public services) to create reliable and up-to-date socioeconomic profiles of the Colombian population, which enables the Government to better target its social programs. The system uses the quantile gradient boosting model (*quantile gradient boosting*) machine learning to identify potential beneficiaries. Survey data is compared to other databases to detect inconsistencies. The system rates a person's "prosperity" on a scale from 0 to 100, and government agencies then use this rating to determine whether that person is eligible for social benefits.

Certain questions have arisen about the inherent characteristics of SISBEN. In particular, the system could interfere with people's right to fair treatment and access to information: "People who are rated by an algorithm must have avenues to demand an explanation for the rating they received, the reasons for any type of marking they receive due to inconsistencies, including the databases used and avenues for rebuttal" (López and Castañeda, 2020, p. 14).[20]).

Data from the system has also been used for experimentation. For example, SISBEN data was used to support a business development program using data analytics, in which private participants created an experimental model to measure and detect fraud in the system.

Fountain: (Gomez Mont*et al.*, 2020[12]), (Lopez and Castaneda, 2020[20]).

Predicting sentences in trials against the State (Colombia)

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

Fountain:https://quantil.co/agencia .

Relations with citizens and businesses, and services for them

In addition to using AI to address specific issues, governments are using AI applications in a variety of ways to interact with citizens, residents, and businesses. A popular type of AI being employed in both the public and private sectors, especially in the early stages, is

chatbot. A*chatbot*A simple version uses a rules-based approach to interact with citizens and perform functions such as answering frequently asked questions. More sophisticated versions leverage machine learning to perform more complex and 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. Use of*chatbots*in the public sector

Jaque and the Service Guide (Brazil)

Jaque is an AI-based virtual secretary that guides citizens through the "Service Guide", a digital catalogue that centralizes all information on public services provided by the Government of the State of Alagoas. The Service Guide provides a step-by-step explanation of each service provided by each public agency. It contains information, among others, on the duration of the processes, the necessary documents, the location and hours of operation of the agencies, the availability of services.

The Service Guide is a three-tier system that manages and standardizes information. The first layer is a website that centralizes all information so that it is easily accessible to citizens. The second layer is dedicated to content management and receives information provided by public bodies about their services. The third layer is an open application programming interface (API) from which Jaque extracts information to provide services as a virtual secretary.

Permanent interactions make Jaque more efficient. The government of this state plans to expand the service of*chatbot*to other websites, and even to social networks, thus turning Jaque into an omnipresent avatar of public service.

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

Virtual Assistant AGESIC (Uruguay)

He*chatbot*created by AGESIC, the digital government body of Uruguay, was born in 2018 as a pilot project to experiment and gain experience in the development of AI solutions. This*chatbot*The Citizen Service Center was "trained" with the most frequently asked questions received through the different service channels. The tool not only answers questions, but also performs actions to solve problems, such as recovering the password. Currently, it is part of the Multichannel Citizen Service Strategy, which attempts to bring the State closer to people by eliminating technological and/or accessibility barriers, and providing extensive information on State procedures and services, quality personalized service, as well as support and guidance to carry out online procedures through multiple service channels.

Fountain:www.gub.uy/agencia-gobierno-electronico-sociedad-informacion-knowledge/comunicacion/noticias/primer-chatbot-en-linea-deagesic andwww.gub.uy/agencia-gobierno-electronico-sociedad-informacion-knowledge/politicas-y-gestion/programas/es-atencionciudadania.

AI also enables the delivery of simpler and more personalized services to citizens and businesses. For example, Argentina's Business Opportunities Map and Paraguay's ParaEmpleo use algorithms to scan numerous data sources and compare them to users' needs and characteristics to produce better recommendations. Governments have also made use of AI technologies to better understand the opinions and perspectives of their citizens.

at previously unfeasible scales, through the use of natural language processing (NLP) techniques and clustering techniques in *clusters*, which allow valuable ideas to be extracted from large volumes of information (OECD, 2019)[1]. *Dear Diary*, in Brazil, is a project that reverses these roles and enables citizens to better understand the information published by the State in official journals. Finally, the Colombian Government created a project to improve its relationship with farmers by optimizing soil analysis and providing personalized recommendations regarding their fertilization. These examples are considered in Box 3.5.

Box 3.5. Using AI to better respond to citizens' needs

Business Opportunities Map (Argentina)

The Government of the City of Buenos Aires offers a business overview to entrepreneurs interested in starting or expanding their activities in the city. The Business Opportunities Map requests two pieces of information (geographic area and business category) and provides detailed information about the characteristics of the market in each area with four indicators: the opening and closing of stores, the level of risk, population indicators and real estate indicators. The platform works through an algorithm that collects different data sources and summarizes business opportunities by neighborhood, ultimately allowing direct investments to be made where they are presumed to generate the most value. Predictive models are planned to be included in future versions of the platform.

Fountain: (Ortiz Freuler and Iglesias, 2018[21]), www.Buenosaires.gob.ar/empresas/planifica-tu-emprendimiento/elegi-tu-local/mapa-deoportunidades-comerciales .

ForEmployment (Paraguay)

ParaEmpleo is a national job placement platform that links supply and demand in the labour market in order to speed up the job search and recruitment process. Using deep learning algorithms and knowledge graphs, it suggests the best possible matches between candidates and companies. Users provide their skills, aptitudes, specialisations, language skills, and more to create their profiles. The platform analyses which jobs and skills are most in demand and advises users on how to be more competitive in the labour market by recommending free or paid courses that they can take to increase their chances of being hired. ParaEmpleo has a database of more than 25,000 candidates.

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

Dear Diary (Brazil)

Querido Diário is an upcoming project that will use AI to classify, contextualize and expand information from Brazilian official newspapers in order to make them available on a platform that will allow them to be viewed in an open and user-friendly format. The project is funded by Empathy, an initiative of ILDA (Latin American Open Data Initiative) and the LATAM Digital Center, and is supported by the International Development Research Center (IDRC). *International Development Research Center*, IDRC) and the Inter-American Development Bank (IDB).

Fountain: https://www.empatia.la/proyecto/querido-diario .

Public safety and security

Governments have placed public safety and security at the heart of their consideration of AI use. This area encompasses both physical safety and security and cybersecurity, and can cover a broad range of government responsibility issues such as law enforcement, disaster prevention and recovery, and military and national defence. For example, the state-of-the-art paper on the use of emerging technologies in the public sector entitled *State of the Art in the Use of Emerging Technologies in the Public Sector* points out that, in the field of surveillance, artificial vision and natural language processing systems can work with large amounts of images, texts and discursive forms, to detect possible threats to public safety and order in real time (Ubaldi *et al.*, 2019[14]).

The OECD did not find examples of active use of AI in support of cybersecurity activities by governments in Latin America and the Caribbean. However, Uruguay seems to be moving forward in this direction with its "aiUTEChallenge" within its Cybersecurity Strengthening Programme, which explores the application modalities of AI in combination with monitoring, detection and response to incidents, and digital identification, among others. The country hopes to make concrete developments in these areas in the near future.[4]

While there is not a huge use of AI for cybersecurity, there are many use cases focused on law enforcement and other activities related to the criminal justice system. As a general example, the International Criminal Police Organization (INTERPOL), to which all countries included in the scope of this review belong,[5] uses different types of AI systems for law enforcement and has published the report on artificial intelligence and robotics in law enforcement entitled *Artificial Intelligence and Robotics for Law Enforcement*[6], which analyses the potential of AI in policing and details projects already underway in the real world. Predictive AI systems have gained particular popularity in the region (see the cases in Box 3.6), often among local urban governments. As the examples indicate, AI systems in this field can have some utility, but they also frequently operate in grey areas and present ethical dilemmas that governments must fully consider and assess. Transparency in uses and processes, and explainability of algorithms, are key elements for stakeholders to engage in detecting risks of unequal treatment and seeking solutions. Moreover, as illustrated by the case of Predpol in Uruguay, governments must also consider that the use of AI is not always the best solution and recognise that other technologies with similar effects exist at a lower cost.

Box 3.6. Examples of AI use in law enforcement and criminal justice in Latin America and the Caribbean

Predpol (Uruguay)

In late 2013, the Uruguayan government acquired Predpol, the AI-powered police software that predicts potential crimes in different areas of the country. The system produces detailed, customized maps that highlight areas where data indicates a high probability of crime, thereby enabling more effective deployment of police forces. The predictions it provides are based on data collected by the Ministry of the Interior, although concerns remain about the possibility that historical biases in the criminal justice system bias the information against marginalized groups.[7] How the model was designed was not publicly disclosed, undermining attempts to explain its decisions, although, according to published information, the machine learning algorithm was based on four variables: type of crime, place, date and time at which it was committed. In 2017, the Ministry of the Interior carried out an evaluation: half of the police stations in

Montevideo used Predpol and the other half used a more traditional system of retrospective annual information based on statistical tools created by the Police's Tactical Information Directorate (DIT). The process found no significant differences between the two sets of predictions, so the use of Predpol was discontinued.

Fountain: (Ortiz Freuler and Iglesias, 2018[21]),www.minterior.gub.uy/images/2017/Noviembre/Cmo-evitar-el-delito-urbano.pdf .

Prism (Colombia)

The "Recidivism Risk Profile for Requests for Secure Measures" (PRISMA) is a tool to predict a person's risk of criminal recidivism. The AI system was created to support prosecutors requesting the preventive detention of an individual under investigation by Colombian authorities. It also collects all available information about the person under investigation: the number of previous arrests (the crime and the date), ongoing proceedings in the Accusatory Oral Criminal System (SPOA) and judicial proceedings, and previous instances of imprisonment. Similar criminal classification systems are used around the world, and questions have been raised about their potential for discrimination and bias. For example, civil society organizations and researchers have found that similar algorithms used in the United States of America to predict the likelihood of future criminal behavior have been developed in a way that ensures that black defendants are wrongly identified as future criminals more often than their white counterparts.8However, the researchers also showed that it was possible to address the disparity if algorithms focused on outcome fairness rather than "predictive parity." Because algorithms are proprietary software, it is not always possible to access the source code to understand how decisions are made. Organizations like*Partnership for AI*[The AI Alliance has recommended using risk assessment tools, or setting standards, to mitigate issues of accuracy, bias, explainability, governance, accountability, and others.

Fountain: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-forstandards-in-criminal-justice-risk-assessment-tools .

Surveillance is another area of protection where AI is increasingly being applied worldwide. Facial recognition is used in a number of cities around the world to help locate suspected criminals and combat terrorism (OECD, 2019).[1]), although it has raised numerous controversies. Governments in Latin America and the Caribbean do not seem to make significant use of facial recognition systems using AI; however, this practice is increasing in the region, as is increasing resistance from civil society (Arroyo, 2020).[22]). In some LAC countries, AI is being used experimentally to analyse facial images alongside other videos, images and audio (i.e. voices) to detect criminal activity. The cases of the Command, Control, Communications and Computing Centre (C4) in Bogotá, Colombia, and the ECU 911 in Ecuador (Box 3.7) highlight the two main challenges that governments must face in building trust in these systems: creating the necessary safeguards in the processing of 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 to avoid potential abuses, such as profiling and the persecution of political opponents or protesters.

Box 3.7. Detecting criminal activity through video, images and voice recognition

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

Bogotá's Command, Control, Communications and Computing Center (C4) is testing a predictive security system capable of identifying criminal gangs and their behavior through statistical and trend analysis, and video, image and voice recognition. The system allows investigators to track criminals by filtering certain characteristics between real-time data and historical data, collected through 6,000 video surveillance cameras and voice recordings of emergency calls.

Three facial recognition cameras are currently being tested, but their success in comparing faces depends mainly on the quality of the database. For this reason, the Bogotá government is seeking to enter into an agreement with the National Registry, Colombia's identification institution, to access the biometric data provided by registered persons when obtaining their identity document.

Civil society voices have warned about two problems posed by these technologies. The first, related to technical development, is that the system can produce false positives, which raises the problem of possible discrimination or exclusion of certain populations. The second is that the institutional frameworks to prevent the system from being used in questionable cases (for example, identification and harassment of protesters) are weak or non-existent.

Fountain: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 centers, and more than 3,000 government employees who watch video footage and answer calls. The system's mission is twofold: to identify criminals, and to monitor seismic and volcanic activity. To this end, it uses thermal cameras to monitor snow-covered volcanoes, night-vision drones, an automated platform to send evidence recordings to courts, and an AI research lab. There are plans to add facial recognition to ECU911 on a large scale in major cities and airports, and there are press reports that some cameras in large cities already use this technology to identify missing people and suspected criminals. The system has been the target of criticism in Ecuador, and even *The New York Times* conducted an investigation that revealed that ECU 911 videos are shared with the country's national security agency.

Fountain:www.ecu911.gob.ec ,www.nytimes.com/es/2019/04/24/espanol/america-latina/ecuador-surveillance-security-china.html.

These examples show that governments in Latin America and the Caribbean, like other governments around the world, must be cautious when considering the use of AI in this field and leverage the technology in ways that do not undermine public trust or infringe on civil liberties. Governments need to balance the tensions between applying AI systems (for example, those that use data collection and monitoring) in the public interest and inevitable concerns about "Big Brother" and the risks of infringing rights and freedoms. Chapter 4, "Actions to develop a responsible, trustworthy and human-centred approach", and the OECD report *Embracing Innovation in Government: Global Trends 2020 – Public Provider versus Big Brother* [2020 Global Government Innovation Adoption Trends — The Public Provider vs.

Big Brother]9(OECD, 2020[23]) offer guidance and insights for governments to consider when examining AI in relation to public safety, security, and other objectives.

Regulatory functions

Regulations are understood to be the various instruments through which governments set requirements for citizens and businesses. Such instruments include all laws, official and unofficial orders, subordinate rules, administrative formalities and rules published by non-governmental bodies or autonomous regulatory bodies to which governments have delegated regulatory powers (OECD, 2018). [24]).10

While regulations and other types of rulemaking often target individuals and organizations outside the public sector, AI offers significant opportunities to increase government capacity to improve the design and execution of regulations and effective enforcement activities (OECD, 2018).[25]) (OECD, 2019[26]). For example:

- Regulators could apply machine learning tools to the vast amounts of data at their disposal to predict where they should focus their regulatory activities. Using these tools, they could identify areas, companies and citizens that deserve investigation and inspection.

- Machine learning can be used to more accurately predict the outcome of potential trials, ensuring greater cohesion between the views of courts and regulators.

In this way, regulators could harness the potential of technology to streamline their operations, and reallocate resources from wasteful activities (such as investigating firms that are likely to comply with the law, or pursuing lawsuits that have a high probability of resulting in unfavorable rulings) to activities that more fully achieve their regulatory objectives. Box 3.8 discusses three examples of the use of AI to improve public sector regulatory functions, particularly through increased process efficiency.

Box 3.8. Using AI to enhance regulatory capacity

Increased economic competition (Brazil)

The Administrative Council for Economic Defense (*Administrative Council of Economic Defense,* CADE uses AI to identify competitive dysfunctions in critical market areas. As an agency under the Ministry of Justice, CADE has perfected techniques to detect collusive practices in areas such as gas pricing.

Fountain: (OECD, 2018[27]).

Superintendence of Industry and Commerce (Colombia)

The Superintendency of Industry and Commerce is the regulatory body of the Colombian Government that is in charge of regulating, among others, industrial property and consumer protection. Currently, it applies AI as part of two public services:

- *Patent recognition*: The institution uses AI to speed up examinations carried out in relation to patent applications. The algorithm, which has been trained with the

Historical data on previous patent recognitions is used to recommend the classification and sectorization of patents in process.

- *Scanning in e-commerce*: The institution uses AI to scan the websites of e-commerce stores and identify irregularities that may affect consumer rights.

Fountain: (Presidential Advisory Board for Economic Affairs and Digital Transformation, 2020[28]).

KBoot: Tracking potential tax evaders on Instagram (Colombia)

Medellin's digital economy has grown in recent years and the local treasury department faces the challenge of online sales due to the rise in tax evasion. Initial attempts to identify potential online evaders relied on manual searches and analysis to detect unregistered e-commerce businesses. However, the exponential increase in the use of social media for economic activities made a new approach necessary. In partnership with the government's innovation lab, the treasury worked with a *start-up* local in the development of a *bot* which would automatically extract *hashtags*, keywords and names associated with online sales in Medellin through the procedure called *scraping*.

KBoot, the *bot* Using AI, the agency downloaded relevant data into a database (usernames, number of followers, phone numbers, and number of posts) and the treasury department identified the individuals behind the profile. The procedure involved cross-checking names against its own databases and requiring telephone operators in Medellín to provide information on 9,080 users who had provided a contact number. The agency identified 2,683 people who used Instagram to advertise and sell products. Of these, only 453 were registered with the treasury and 107 had stopped operating, so some 2,230 people who sold merchandise on Instagram were not registered. The government incorporated these companies into the Crecer es Posible program, an initiative of the Chamber of Commerce conceived with the idea of integrating small businesses into the formal economy.

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

Health care

In addition to its applications in responding to COVID-19, AI is being used in a variety of ways across the healthcare sector, and has enormous potential in countries with national health services. AI applications, especially those involving machine learning, can be used to interpret results and suggest diagnoses, as well as predict risk factors, allowing preventive measures to be incorporated (Ubaldi *et al.*, 2019[14]). They can also suggest treatments and collaborate with doctors to create highly individualized treatment plans. When combined with the knowledge of doctors and other healthcare experts, AI can increase accuracy and efficiency, and provide more positive healthcare outcomes.

Box 3.9. The use of AI in public healthcare

Growing up healthy (Argentina)

In Argentina, 30% of women miss important check-ups during pregnancy. The government decided to address this problem by creating a virtual assistant (a *bot*) that uses

Facebook Messenger is a platform that supports women during pregnancy and after childbirth. Crecer con Salud provides personalized information based on the week of gestation and the age of the baby once born. It also sends alerts for prenatal and postnatal check-ups. The Government selected Messenger because, according to internal research, more than 30 million Argentines use this platform, including 90% of pregnant women admitted to maternity hospitals.

Fountain:https://oe.cd/ccs andwww.argentina.gob.ar/salud/crecerconsalud .

AnemiaApp: early detection of anemia (Peru)

Peru's Ministry of Development and Social Inclusion (MIDIS) and the Peruvian University Cayetano Heredia collaborated to develop AnemiaApp, an application that allows for the rapid and timely detection of anemia in children. Based on a low-cost portable system, this mobile application interprets digital images of the individual's eye and analyzes the characteristics of the membrane that covers the outer surface. The results are transmitted to an automatic processing service that uses neural network algorithms to determine the level of hemoglobin and, thus, the presence or absence of anemia. This application is especially used in remote areas that have little access to high-tech medical equipment.

Fountain: (Gomez Mont*et al.*, 2020[12]),https://saluddigital.com/en/big-data/Perú-renueva-metodos-para-detectar-la-anemia .

Detection of 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 media provides a means of detecting them. Psycholinguists have identified a clear connection between language and mood or certain mental disorders. Scientists at the public research center “Laboratory of Language Technologies” of the National Institute of Astrophysics, Optics and Electronics (INAOE) have developed AI algorithms that can analyze huge amounts of text from social media to identify possible disorders. The project, which is funded by the National Council of Science and Technology (Conacyt), the public body in charge of promoting scientific and technological innovation, can help inform decision-making and provide assistance to those facing specific difficulties. At this time, the project is still in the experimental stage, with an open debate about the ethical difficulties it raises.

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

Transport

One of the most publicized applications of AI is autonomous vehicles, such as the self-driving cars being tested by Uber and several major automakers. While government certainly has a role to play in regulating and understanding the implications of these vehicles, these applications appear to present fewer opportunities for innovation for the public sector. Beyond these vehicles, however, governments around the world and in Latin American and Caribbean countries are using AI to transform the way they predict and manage traffic flows (Box 3.10). While all of the broad themes that the OECD has observed globally also appear to be areas of focus for Latin American and Caribbean governments, transport is perhaps the most underrepresented in terms of the initiatives observed.

Box 3.10. Using AI for efficient transport logistics

AI facilitates passenger flow in the CDMX Metro (Mexico)

In 2015, Mexico City's current Secretariat of Science, Technology, and Innovation (SECTEI) and the metro transport system jointly organized a technology innovation competition. The winning group, made up of PhD students from the National Autonomous University of Mexico (UNAM), worked with staff from Line 1 to analyze, with the help of AI, large data sets on passenger flow dynamics. The result was a strategy based on computer simulations using machine learning to reduce the time it took people to board and exit the train. This solution was expanded to 14 other metro stations, reducing delays and increasing passenger flow efficiency by 10-15%.

Fountain: (Martinho-Truswell*et al.*, 2018[29]).

Rural roads and satellite images (Colombia)

The Ministry of Transport and the National Planning Department are preparing a project that uses machine learning algorithms to detect and identify tertiary or rural roads from satellite images. This approach is more efficient in terms of time and resource use than traditional identification methods. The project also marked the launch of the comprehensive strategy for the tertiary network, complemented by a prioritization tool: the policy guidelines for the management of the tertiary network CONPES 3857. The project seeks to identify tertiary roads in 94% of the country's departments.

Fountain:https://oecd.ai/dashboards/policy-initiatives/2019-data-policyInitiatives-26727 andhttps://bit.ly/3KANC3T .

Sustainable Development Goals (SDG)

The adoption of the 2030 Agenda for Sustainable Development marks the commitment of nations around the world to a set of universal, integrated and transformative 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 achieve them by 2030, and many are exploring the possibilities offered by AI to achieve this goal.

An investigation of*McKinsey Global Institute*identified a non-exhaustive set of approximately 160 cases that demonstrate how AI can be used for the non-commercial benefit of society (MGI, 2018)[30]). Of these, 135 mention one of the 17 SDGs. These cases often take the form of private sector initiatives or partnerships between the private sector, the 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 the use of AI to support the SDGs in general.

Box 3.11. ECHO (Colombia)

ECHO is an AI tool that promotes participatory planning and citizen awareness of the SDGs through guided public debate in real time. The system

It translates citizens' problems, concerns and perceptions into the language of the SDGs, allowing people to visualise how the goals relate to their concerns and participate in more informed debates about public policy priorities. The result allows local governments to monitor citizens' perceptions and effective participation.

ECHO uses citizens' voices in guided public debates as input material and converts them to text using automatic speech recognition. The debates take place in controlled interviews with staff who are very familiar with the content of the 2030 Agenda. The tool then uses machine learning to establish the link between the text and the corresponding SDG targets. The resulting information is then validated by staff to produce a definitive analysis. A monitoring and evaluation strategy was also implemented within the framework of this project, using interviews and focus groups with beneficiaries, enumerators and local authorities who provided feedback on the experience. This approach uses observations to determine the actual understanding and learning of the SDGs, and to assess the impact of activities.

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

By 2020, the project was already implemented in Cartagena, Medellín and Montería, having collected more than 13,000 testimonies and prioritised key concerns related to the SDGs according to criteria such as neighbourhood, gender or age. It also made the results collected during 2019 available for use in public policy planning by the new local governments of Cartagena and Medellín in 2020.

Fountain: Officials of the United Nations Population Fund (*United Nations Population Fund*, UNFPA), www.efe.com/efe/espana/destacada/echo-una-herramienta-para-amplificador-la-voz-de-gente-y-translatla-a-los-ods/10011-4111225 and https://whatevercamps.github.io/echo_vis.

In relation to targeted support for specific individual areas, countries in Latin America and the Caribbean are using AI as a tool to address air pollution, a threat common to several cities and regions (for examples, see Box 3.12). These activities are related to SDG 3 (good health and well-being) and 11 (sustainable cities and communities), and indicate concrete progress towards the 2030 goals, as well as potential opportunities to examine the use of AI to support the achievement of other SDGs. Peru's draft national AI strategy includes a specific goal of developing SDG-aligned AI systems, although the latter are not yet being implemented.

Box 3.12. AI experiments to measure and forecast air pollution in the Southern Cone

Air quality predictive model (Chile)

This predictive model is the result of a joint effort between GobLab, from Adolfo Ibáñez University, and the Superintendency of the Environment (SMA) of Chile. It was designed to predict air quality in the cities of Concón, Quintero and Puchuncaví, a region that is constantly affected by high levels of industrial pollution.

The purpose of this public-private partnership is to strengthen the monitoring capabilities of the Environmental Decontamination Plan that is being carried out and to assist the SMA in taking preventive measures such as public alerts to citizens and other public bodies.

Fountain:www.empatia.la/proyecto/ia-para-el-cuidado-de-la-salud/ www.revistaenergia.com/21601 ,www.sustentable.cl/superintendenciadel-medio-ambiente-y-uai-obtienen-fondo-para-desarrollar-modelo-de-inteligencia-artificial andwww.revistaei.cl/2020/08/17/sma-yuniversidad-adolfo-ibanez-obtienen-fondo-para-desarrollar-modelo-de-inteligencia-ambiental.

Satellite monitoring of air quality (Argentina)

This project seeks to develop maps of the daily and monthly surface concentration of small solid particles (such as dust, ash and metal particles) throughout Argentina in order to determine the risk of disease posed to the exposed population. It will combine satellite information into a model *Random Forest*and this will be provided to researchers and environmental authorities. The project was developed by a consortium comprising the National Commission for Space Activities (CONAE), the "Mario Gulich" Institute for Advanced Space Studies (IG, CONAE/UNC), and the Ministry of Environment and Sustainable Development (MAyDS).

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

Integrity and public accountability

One of the most dynamic areas of emphasis in Latin America and the Caribbean is the application of digital technologies to increase transparency and improve accountability for the use of public resources. Governments are using AI to determine patterns of action by public and private actors, detect risks and vulnerabilities in public procurement, and cross-reference information sources to improve auditing and public transparency. Although this category could be considered an expression of improving government efficiency, the emphasis placed on it in the LAC region demonstrates the importance placed on the fight against corruption there.

Corruption and mismanagement of public resources is one of the issues of greatest concern in Latin American and Caribbean countries; the perception of corruption is, on average, higher in Latin America than in most other regions (OECD, 2018).[31]). According to the *Global Corruption Barometer 2019: Latin America and the Caribbean*, 65% of people in these countries think that their government is run by a few private interests and for their own benefit.11This contributes to a general lack of trust. In 2017, the percentage of the LAC population that had little or no trust in their government reached 75%, 20 percentage points higher than in 2010. The most decisive factor in addressing this problem is strengthening public integrity (OECD, 2018).[31]).

In accordance with the OECD Council Recommendation on Public Integrity,12The case studies presented in Box 3.13 address different areas of opportunity to improve public integrity in the region while increasing the efficiency of public resources.

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

Malha Fina de Convênios (Brazil)

Between 2008 and 2018, federal transfers between Brazilian departments worth approximately USD 300 billion were made. After the negotiation and execution phases, each transfer had to undergo an accountability stage before being concluded. If this procedure was not carried out, the contract became a liability. However, the effort involved in an accountability analysis far exceeded the available capacity of the transferring agencies. By 2018, the average duration of the accountability stage exceeded two and a half years. Due to these bottlenecks, more than 15,000 transfer contracts were left pending analysis, representing an equivalent of almost USD 5 billion.

In order to reduce the time and resources allocated to the accountability stage, the Brazilian audit agency (*General Controller of the Union*, CGU) created a predictive model to classify each contract according to the associated risk.*Fine of Agreements*The methodology uses a machine learning algorithm based on the characteristics of more than 61,000 contracts signed between September 2008 and December 2017. The methodology also combines alerts generated during audit logs in the search for predefined patterns that indicate irregularities. If the risk classification does not exceed a previously defined threshold and other characteristics are met, the granting entity is authorized to complete the accountability stage for each contract. In this way, granting entities can carry out this stage in less time using fewer resources.

By 2018, more than 4,000 findings had been reported to federal administrators, which were categorized as follows: (1) conflict of interest, (2) noncompliance with the rule, or (3) failure in financial execution. Some 3,044 contracts were flagged and more than 2,000 agreements were approved by the machine. In total, 15,300 agreements were classified and placed in order of risk priority.

Fountain:Brazilian Government officials,http://plataformamaisbrasil.gov.br/noticias/estudo-sobre-impacto-da-malha-fina-deconvenios-em-prestacao-de-contas-ganha-1-lugar-do-premio-tesouro-nacional , www.opengovpartnership.org/members/Brasil/commitments/BR0019 andhttp://plataformamaisbrasil.gov.br/legislacao/instrucoesnormativas/instrucao-normativa-interministerial-mp-cgu-mf-n-5-de-6-de-novembro-de-2018 .

Better monitoring of public procurement (Brazil)

The Court of Accounts of the Union of Brazil (*Court of Auditors of the Union*TCU uses AI to more deeply analyze the federal government's public procurement processes. Based on information published on Comprasnet, the public procurement portal, the system analyzes the cost of tenders, compares the information with other databases, identifies risks and sends alerts to auditors.

Fountain: (OECD, 2018[27]).

AI to detect fraudulent taxpayer operations (Mexico)

The Tax Administration Service of the Ministry of Finance and Public Credit has tested AI algorithms that automatically identify alterations in the patterns of its records, allowing them to detect companies that commit fraudulent transactions. During a six-month pilot test, 1,200 of these companies were detected and 3,500 transactions were identified.

fraudulent. Without such algorithms, it is estimated that it would have taken 18 months of human work to carry out these analyses.

Fountain: (Martinho-Truswell *et al.*, 2018[29]).

Ocean (Colombia)

The Office of the Comptroller General of the Republic has created a platform to determine the relationships between contractual parties at the national level, and analyze them in order to detect possible cases of corruption. The platform inputs data from public information sources, such as national, territorial and Capital District contracting processes, tax authorities, chambers of commerce, industry and trade data, and information on taxpayers, among others. The platform detects the intervention of "business networks" or networks, a high concentration of contracts with repeat contractors, the awarding of projects to sanctioned companies, and the use of business records of deceased persons. Colombian officials are incorporating AI to automatically debug the platform and minimize errors and technical problems.

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

Education

A priority area for AI in the LAC region is education, especially the prevention of school dropouts. While this issue is related to SDG 4 (quality education), the level of attention it receives at the regional level makes it worthy of separate treatment. Education was also considered a central theme of the Summit on Artificial Intelligence in Latin America organized by Latin American researchers belonging to the MIT community, where participants agreed that AI could catalyze change in the educational system. AI can modify the way teaching is delivered and contribute to better monitoring of students through more personalized learning processes (Anllo *et al.*, 2021). The growing interest in applying AI to education is directly linked to the problem of school dropouts. Only 60% of students complete secondary school, despite it being compulsory in most countries in the region.[13] On the other hand, 36% of girls who drop out of school do so because of pregnancy or childcare, while the main reason for school dropout among young people tends to be economic.

To address the problem, Josephson, Francis and Jayaram (Josephson, Francis and Jayaram, 2018[32]) recommend the use of early warning systems in programmes and schools to identify risk situations in a timely manner and enable targeted and relevant interventions. Most of the case studies presented in Box 3.14 are in line with this recommendation, specifically in the use of AI to prioritise at-risk children who may need special assistance or guidance. However, these profiling activities are not risk-free. One of the first applications of AI in the public sector in the Latin America and Caribbean region was a system to predict teenage pregnancy and school dropouts in the province of Salta, Argentina; however, concerns were raised that it may contribute to the reproduction of bias and unfair or discriminatory treatment. It is therefore essential to consider ethical standards and principles throughout the life cycle of an AI system to ensure that it is reliable, inclusive and safe. This case also shows that multidisciplinary teams with diverse members have the ability to develop more informed, effective and personalized solutions.

Other examples in Box 3.14 relate to professional specialization and increasing the efficiency of public education processes.

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

Prediction of teenage pregnancy and school dropout (Argentina)

In Argentina, the Salta provincial government implemented a system to predict teenage pregnancy and school dropouts using machine learning algorithms trained on data collected in low-income districts of the city of Salta between 2016 and 2017. The variables included personal information about the adolescents (age, ethnicity, country of origin, etc.), their environment (number of people they lived with, availability of hot water, etc.), and whether they had been or were currently pregnant. In 2018, the model assigned a school dropout probability of over 70% to 418 children and adolescents, and identified 250 adolescent women with a pregnancy probability of over 70%. The provincial government therefore implemented a family strengthening scheme to develop human capabilities. While the basic idea was to reinforce the perception about the importance of education, the system sparked strong criticism from academics and activists, particularly in relation to the following elements:

- In terms of *explainability* and *legitimacy*, while the input data (in this case, a private dataset) and output of the model could be known, the people involved were not able to know how or why the system arrived at a certain result because the algorithm was black box. Therefore, the affected populations were being asked to trust an opaque system.

- The researchers also highlighted three problems with the system: *algorithm overstated effectiveness* because it reused training data as assessment data (the Government later stated that it had changed the assessment data sets); *Training data was biased*, since they were limited to the most vulnerable sectors of the population; and the *data was not adequate* to answer the initial question given that the factors that had led to a pregnancy in the past would not necessarily be the same as those that led to pregnancies in the future, due to the influence of other variables that are not fixed.

- Regarding the *core concept*, it was observed that the context of structural social inequality that influences the predicted results was not fully considered.

Fountain: (World Wide Web Foundation, 2018[33]), www.clarin.com/sociedad/salta-usan-inteligencia-artificial-prever-embarazosadolescentes_0_r10wlG6jf.html , https://news.microsoft.com/es-xl/avanza-el-uso-de-la-inteligencia-artificial-en-la-argentina-con-experiences-in-the-public-private-sector-and-ngos and https://liaa.dc.uba.ar/es/sobre-la-prediccion-automatica-de-embarazos-adolescentes .

AI systems in development to prevent school dropouts (Chile, Mexico and Uruguay)

In addition to the example of Argentina cited above, there are other AI systems in the region in the planning or development stage:

- *Chili*: The Ministry of Social Development and Family is developing an early warning system for possible child school dropouts.
- *Uruguay*: AGESIC, Uruguay's digital government agency, is developing a predictive system for preventing school dropouts. The pilot project is part of the Inter-American Development Bank's (IDB) fAIrLAC initiative.
- *Mexico*: The Government of the State of Jalisco and the Tecnológico de Monterrey are designing a system to generate student profiles through the systemic identification of the

factors that have the greatest impact on school dropouts. With the help of AI, the system will analyze the available information to detect patterns associated with previously defined profiles and design more targeted strategies or programs.

Fountain: National Policy on Artificial Intelligence (Preliminary draft/public consultation) (Chile),https://fairlac.iadb.org/piloto/desercion-escolaruruguay ,https://fairlac.iadb.org/piloto/abandono-escolar-jalisco .

***Future Up*(Costa Rica)**

*Future Up*is a pilot skills and training platform that aims to use AI to provide skills development suggestions to participants based on their abilities, interests, and experience. The system makes it easy for users to understand which skills they should emphasize and flags potential funding programs for them if investment is needed.

Fountain:https://fairlac.iadb.org/piloto/future-up .

Assignment of students to educational institutions (Ecuador)

The Inter-American Development Bank (IDB) is working on a pilot project to develop a platform that will allow for the centralized assignment of students. The platform will provide information on the available educational offerings and families will be able to select their preferences from a prioritized list. The assignment will be made through an algorithm that will operate under certain prioritization criteria defined by the public authority, through which vacancies will be assigned randomly in the event that demand exceeds supply.

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

All of these cases demonstrate the growing interest of governments in Latin America and the Caribbean in exploring the possibilities offered by AI in the public sector, and in implementing AI-driven processes and services to achieve more efficient, effective and responsive management. As in other regions and countries around the world, many of the uses currently detected are early-stage pilot projects or already operational AI systems that tend to use simple but proven techniques. Several, however, demonstrate an increasing level of sophistication in terms of machine learning techniques and algorithms. This trend is likely to continue, as some governments in Latin America and the Caribbean seek to achieve the objectives set out in their national AI strategies, while others are developing them. This growing desire to take advantage of the opportunities presented by AI and the increased sophistication in terms of what governments in the LAC region are trying to achieve with the technology also brings with it a number of challenges that will need to be overcome and responsibilities that will need to be assumed. As these examples show, some governments in the region have already faced ethical dilemmas and civil society counterattacks that occur as new approaches are adopted. The OECD encourages public sector experimentation and adoption of AI as long as it is done reliably and ethically, with the right investments and enablers needed to achieve successful and sustainable results. The following chapter provides guidance on how governments in Latin America and the Caribbean can achieve these results, and to what extent such enablers already exist in the region.

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Grades

1 The OECD OPSI Observatory report on innovative responses to the COVID-19 crisis entitled *Innovative Responses to the COVID-19 Crisis*, part of the series of reports on global trends in the adoption of innovation in government in 2020 *Embracing Innovation in Government: Global Trends 2020*, provides a detailed exposition of this topic. See: https://oe.cd/c19-innovation .

2 The OECD report *Integrity for good governance in Latin America and the Caribbean* revealed that there is a perception that in Latin America the level of corruption is higher than in most regions (OECD, 2018 [31]). On the other hand, only 60% of students complete their studies in the region, despite the fact that secondary education is compulsory in most countries in this region (CAF, 2018). [82]).

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

4 For more information, see www.gub.uy/agencia-gobierno-electronico-sociedad-informacion trabajo/comunicacion/noticias/inteligencia-artificial-cibersecurity .

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 (USA), arrests of black and low-income people for marijuana possession by local police over a three-year period (2015-2018) were eight times higher than arrests of white people, while studies show that use of the substance 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's Public Governance Directorate and its Regulatory Policy Division assist governments in fulfilling their mission through the use of regulations, laws and other instruments that improve social and economic outcomes, as well as the quality of life for 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-caribbeanespecially-a .

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

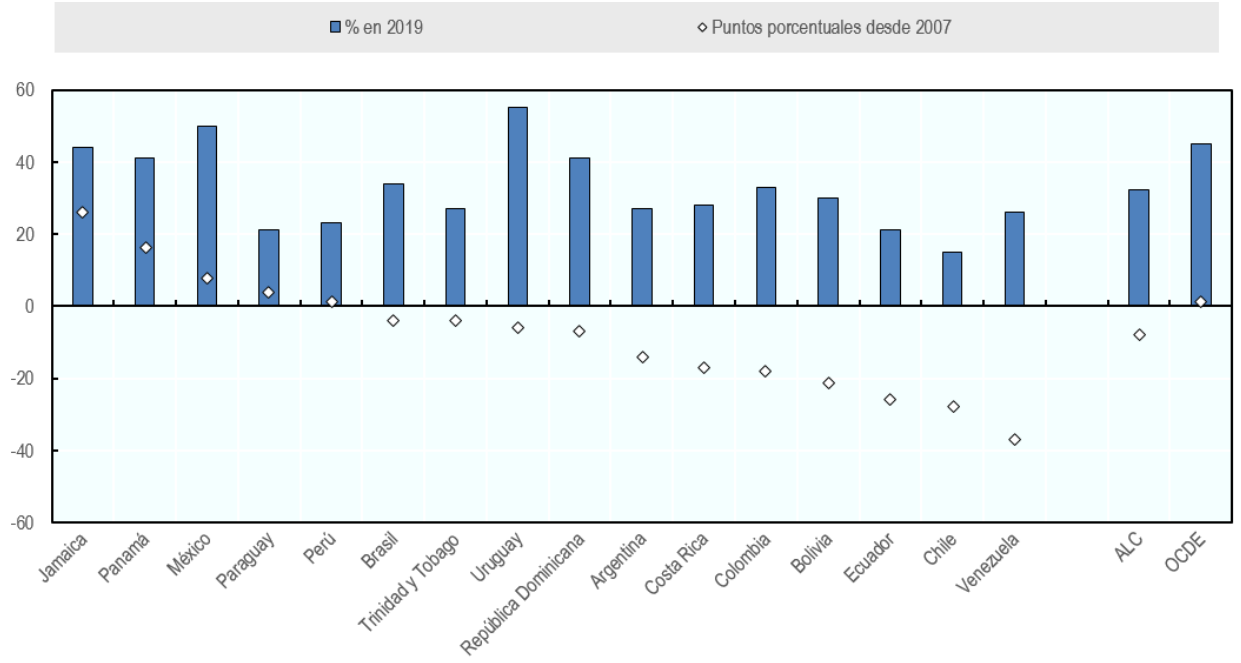
[13]www.caf.com/es/knowledge/visions/2018/08/el-alto-costo-del-abandono-escolar-en-america-latina .

4 Actions to develop a responsible, reliable and human-centred approach

As demonstrated by the case studies presented in Chapter 3, there is great potential for the use of AI applications in the public sector in Latin America and the Caribbean. However, the use of AI also poses many challenges and has implications that government leaders and public servants in this region must consider in order to determine if and how the technology can help them solve problems and achieve their objectives. This chapter explores how LAC governments are building principles and taking steps to ensure the adoption of a responsible, trustworthy, and human-centered approach to AI.

Low and often declining levels of trust in governments in the region (Figure 4.1) demonstrate that governments need to take a strategic and responsible approach to AI in the public sector. Such an approach must inspire public confidence in the trustworthy, ethical and impartial use of AI, and in the centrality of citizens' needs and concerns in government decisions and actions regarding this technology.

Figure 4.1. Declining trust in government in many Latin American countries

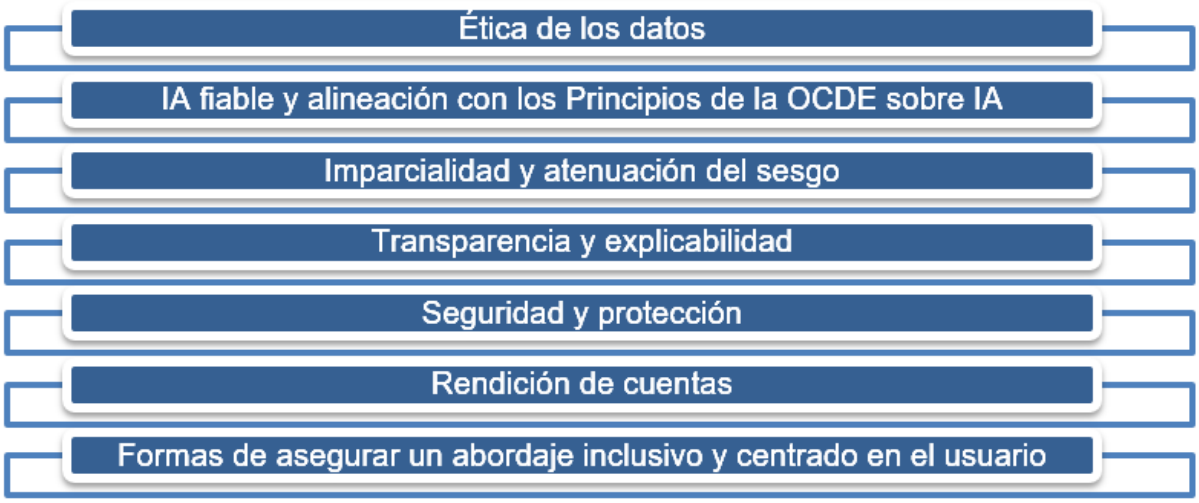


Note: The data refer to the percentage of people who answered "yes" to the question about whether they trust the national government. No data is available for Barbados, Trinidad and Tobago's data is from 2017 rather than 2019, and Jamaica and Trinidad and Tobago's data is from 2006 rather than 2007.
Fountain: Gallup World Poll.

To achieve these goals, governments in Latin America and the Caribbean must develop an approach to AI design and implementation that is responsible, trustworthy, and human-centered, in order to identify trade-offs, mitigate risk and bias, and ensure actions and processes that are open and accountable. They must also create diverse and multidisciplinary teams that are geared toward collaborating on these determinations and promoting the development of effective and ethical AI initiatives and projects for the public sector. Finally, an essential aspect of addressing these and other considerations is for Latin American and Caribbean countries to understand the needs of their population, and to emphasize the users and people who may be affected by AI systems throughout their life cycle.[1]

This chapter considers these issues within the LAC regional context with the aim of helping government leaders and officials maximize the benefits of AI while mitigating and minimizing its potential risks. All the topics in this chapter are indicated in Figure 4.2.

F



Data ethics

Most modern AI systems have been built on data. However, the availability, quality, integrity and relevance of data are not sufficient to ensure the impartiality and inclusiveness of policies and decisions, or to reinforce their legitimacy and public trust. Constant convergence with shared values and ethical principles, and their observance in the management and use of data, are essential to: 1) increase openness and transparency; 2) encourage public engagement and ensure trust in policymaking, public value creation, service design and delivery; and 3) balance the needs to provide timely and reliable data (OECD, 2020).[34]). In order to assist countries in carrying out a detailed analysis of the considerations related to the management and use of data, the OECD has developed the principles of good practice regarding data ethics in the public sector (*Good Practice Principles for Data Ethics in the Public Sector*) (Box 4.1). Since data forms the foundation of AI, data ethics, by extension, is essential to the trustworthy design and implementation of this technology. The forthcoming review entitled *Going Digital: The State of Digital Government in Latin America* [The Road to Digitalization: The State of Digital Government in Latin America] will provide a broader discussion on data ethics in Latin American and Caribbean countries. In line with the above, this section will focus more specifically on the issues related to trustworthy and ethical AI.

Box 4.1. *OECD Good Practice Principles for Data Ethics in the Public Sector* [OECD Principles of Good Practice on Data Ethics in the Public Sector]

Governments need to prepare to address and manage issues and concerns related to data corruption; biases in its generation, selection and use; inappropriate use and abuse of data; and unintended negative outcomes arising from its increased use. The OECD Digital Government and Data Task Force and its working group of senior digital government officials or digital leaders called *Working Party of Senior Digital Government Officials (E-Leaders)* have completed guiding principles to support ethical use of data in the

digital government projects, products and services, in order to ensure that they are worthy of citizens' trust. These principles are the following:

- Manage data with integrity.
- Know and observe, at all levels of Government, the relevant provisions regarding reliable access to data, its exchange and use.
- Incorporate ethical considerations about data into government, organizational and public sector decision-making processes.
- Monitor and retain control over incoming data, particularly data intended to inform the development and training of AI systems, and take a risk-based approach to decision automation.
- Be specific about the purposes for which the data is used, particularly in the case of personal data.
- Define limits on access, sharing and use of data. Be clear,
- inclusive and open.
- Publish open data and source code.
- Increase control of individuals and groups over their data.
- Be accountable and proactive in risk management.

Fountain:(OECD, 2021[35]).

Trustworthy AI and alignment with the OECD Principles on Artificial Intelligence

Ensuring trustworthy and ethical practices is critical, as the application of artificial intelligence means that governments will deploy systems with varying degrees of autonomy. If they are to realize the potential opportunities and efficiencies of AI in the public sector, governments must ensure that actions to examine and adopt this technology place ethical decisions regarding the well-being of citizens at the forefront. Trust in government institutions will depend on their ability to be competent and effective in carrying out their mandates, and to consistently operate on the basis of a set of values that reflect citizens' expectations of integrity and impartiality (OECD, 2017).[36]).

The use of AI in support of public administration should be framed by strong transparency and ethical requirements that complement relevant existing regulations (for example, in relation to data protection and privacy), and that address concerns about potential bias in results and other problems resulting from opaque procedures with AI policies and uses. The OECD Division on Digital Economy Policies2The OECD Directorate for Science, Technology and Innovation has developed the OECD Principles on Artificial Intelligence, which include the development of a reference framework on the life cycle of an AI system (OECD, 2019).[37]). The OECD Digital Economy Policy Committee has been working since 2019 to implement the OECD Artificial Intelligence Principles in line with the mandate received from the OECD Council. The Committee also launched the AI Policy Observatory and engaged a large network of AI experts to analyse and develop good implementation practices on the Principles.

This section of the report draws on the OECD Principles on Artificial Intelligence to assess how Latin American and Caribbean countries are addressing issues of trust, impartiality and accountability in the development and use of AI systems.

At the same time, it examines the existing mechanisms that address these concerns throughout the life cycle of the AI system. As such, the analysis considers how countries respond to the ethical questions raised by the design and application of AI and related algorithms.

Many national governments have assessed the ethical concerns raised by AI systems and applications, particularly regarding inclusion, human rights, privacy, impartiality, transparency and explainability, accountability, and safety and security. Several countries around the world are signatories to international AI guiding principles. As mentioned in the Introduction, 46 countries have signed up to the OECD Principles on Artificial Intelligence (Box 4.2), of which seven are in LAC. Recently, the G20 adopted the G20 Principles on Artificial Intelligence,[3] taken directly from the OECD Principles. Three Latin American and Caribbean countries—Argentina, Brazil, and Mexico—have committed to these principles through their participation in the G20. Some countries have also designed their own principles. Adhering to or otherwise stating clear principles regarding AI represents a positive step toward international cooperation, and toward achieving an environment and culture aligned with the societal goals and values formulated in the Principles. Table 4.1 provides a summary of the governments in Latin America and the Caribbean that adhere to the OECD Principles on Artificial Intelligence and those of the G20, and indicates which countries have established principles of their own.

Box 4.2. OECD Principles on Artificial Intelligence

The OECD Principles on Artificial Intelligence support innovative and trustworthy AI that 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).[6]). The Principles set standards for AI that are practical and flexible enough 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 and value-based principles**for responsible stewardship of trustworthy AI:

- AI must benefit people and the planet by promoting 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 should incorporate appropriate safeguards – for example, allowing human intervention where necessary – with a view to ensuring a fair and equitable society;
- There must be transparency and responsible disclosure of AI systems to ensure that people understand their results and can challenge them;
- AI systems must operate in a robust, safe and secure manner throughout their lifecycle, and potential risks must be continuously assessed and managed;
- Organizations and individuals that develop, deploy or operate AI systems must be held accountable for their proper functioning, in accordance with the aforementioned principles.

In line with these values-based principles, the OECD also provides**Five recommendations to governments**:

- Facilitate public and private investment in research and development to drive innovation in trustworthy AI;

- Promote accessible AI ecosystems, with digital infrastructure and technologies, and mechanisms for the exchange of knowledge and data;
- ensuring a public policy environment that paves the way for the deployment of trusted AI systems;
- train and empower people in AI skills and support workers to make an equitable transition;
- cooperate across borders and sectors to advance responsible stewardship of trustworthy AI.

In early 2020, the OECD convened a multi-stakeholder and multi-disciplinary network of AI experts (ONE AI) to develop a practical guide to implementing the Principles (OECD, 2019).[6]). The Policy Working Group on AI prepared a report on the status of implementation of the OECD Principles on Artificial Intelligence from the perspective of national AI policies entitled*State of Implementation of the OECD Principles on AI: Insights from National AI Policies*(OECD, 2021[7]).The report presents good practices and lessons learned on the implementation of the five recommendations for policymakers contained in the OECD Principles on Artificial Intelligence.

*Fountain:*https://oecd.ai andhttps://oecd.ai/network-of-experts.

Table 4.1. Establishment of principles on artificial intelligence in Latin American and Caribbean countries, and adherence

	Principles of the OECD on Artificial intelligence	G20 Principles on Intelligence Artificial	Beginning specific to each country
Argentina	✓	✓	
Barbados			
Brazil	✓	✓	
Bolivia			
Chili	✓		✓
Dominican Republic			
Colombia	✓		✓
Costa Rica	✓		
Ecuador			
Jamaica			
Mexico	✓	✓	✓
Panama			
Paraguay			
Peru	✓		
Trinidad and Tobago			
Uruguay			✓
Venezuela			

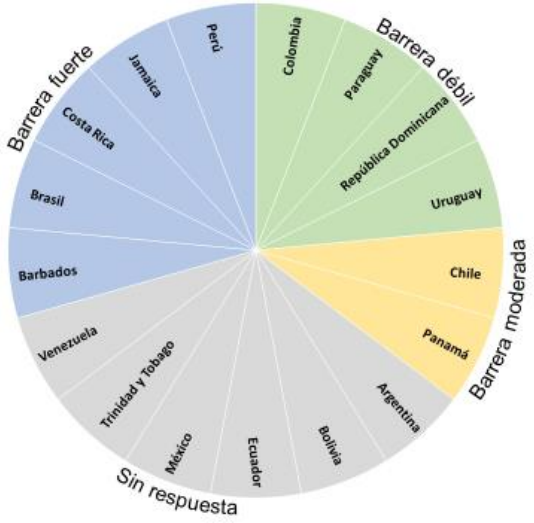
*Fountain:*Survey of digital government agencies in Latin America and the Caribbean conducted by the OECD (2020); https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0449 ;https://oecd.ai .

Committing to or adhering to ethical principles is likely a necessary but not sufficient condition for trustworthy AI deployment. For principles to have maximum impact on behaviour, they must be enforceable, and embedded in the processes and institutions that shape decision-making within government. The OECD said the absence of standards

and common frameworks is the most often cited obstacle by digital government officials in their work related to AI and other emerging technologies, largely due to growing concerns about fairness, transparency, data protection, privacy and legal accountability/responsibility (Ubaldi *et al.*, 2019[14]). Of 11 respondents to the OECD survey of digital government agencies, seven Latin American and Caribbean countries reported that insufficient guidance on the ethical use of data is a strong or moderate barrier to data-driven policymaking, service design and delivery, and organizational management (Figure 4.3). Among these countries, several adhered to the OECD principles and/or created their own principles. While the responses emphasize the ethical use of data, they can serve as an indirect measure of AI ethics. The case studies considered in the previous chapter also show that public data and AI developments have encountered ethical objections that could be mitigated or clarified by the availability of ethical guidance, standards, and/or frameworks to support the application of the general principles. The sections below discuss the main instruments and initiatives that contribute to developing responsible, trustworthy, and human-centered approaches to AI in the public sector.

Figure 4.3. Insufficient guidance on ethical use of data is a barrier to improving policy formulation.

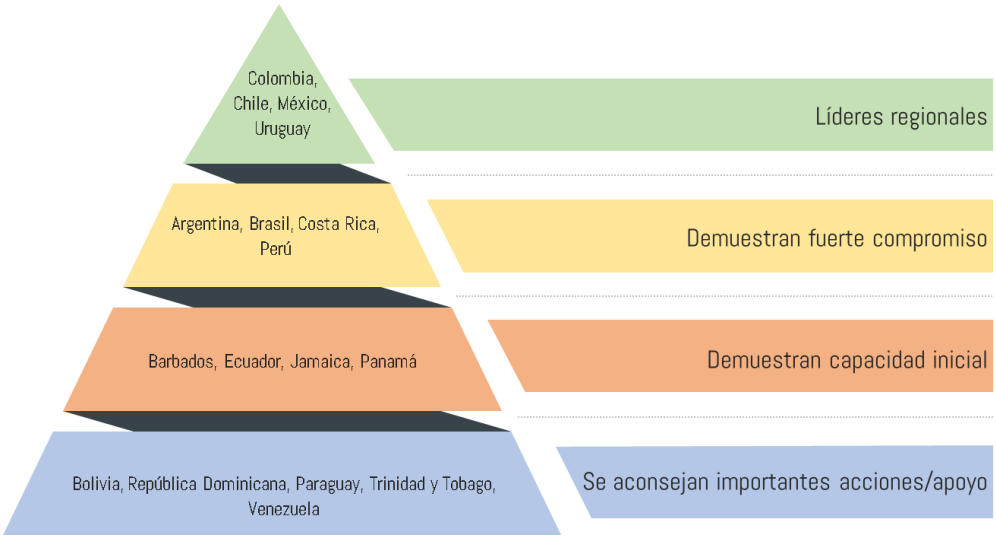
organizational management



Fountain: Survey of digital government agencies in Latin America and the Caribbean conducted by the OECD (2020).

Frameworks and mechanisms for reliable and ethical AI in the public sector of Latin American and Caribbean countries

Figure 4.4 **n of LAC**



Note: All countries that adhere to the OECD Principles on Artificial Intelligence are listed in the "Showing strong commitment" category or in a higher category.

As can be seen in Table 4.1, of the 17 Latin American and Caribbean governments included in this study, five have developed or are in the process of developing their own guiding principles for the study and use of AI. All of these activities began in recent years, indicating a recent and accelerated emphasis on the topic, especially in terms of ensuring reliable and ethical policies and systems. Below is a brief description of how this area has evolved:[4]

- In 2018, Mexico published 14 principles for the development and use of AI, thus becoming the first country in the region to create enabling frameworks for this technology, with special emphasis on the public sector.
- In 2019, Uruguay adopted nine general principles as part of its AI strategy to guide the digital transformation of the Government and provide a framework for its use in the public sphere.
- In 2020, both Colombia and Chile issued consultation documents on draft principles to guide their activities in the field of AI. Colombia published the Ethical Framework for Artificial Intelligence, resulting from commitments included in its 2019 AI strategy, and is currently organizing expert roundtables to receive comments and develop a final version.[5]Chile also includes ethics as a sub-axis of its AI policy.
- In 2021, Brazil committed to developing ethical principles to govern the design and implementation of AI systems in its national AI strategy. While Brazil's AI strategy places particular emphasis on ethics, the scope and content of the country's own ethical principles have not yet been disclosed.

In addition to the principles that specifically refer to AI, Barbados, Brazil, Jamaica, Panama and Peru have recently enacted data protection laws that better align those countries with the OECD Principles on Artificial Intelligence, as they include the principles and rights of transparency, explainability and impartiality in relation to the collection and processing of data. Brazilian data protection legislation also includes principles of security and

accountability. Such standards can contribute to the reliable and ethical design and use of AI systems, and represent a step forward in creating a legal and regulatory framework to support and guide AI progress. Several countries in Latin America and the Caribbean stated that such updates were essential in light of new technologies. For example, in Panama, a consensus was reached among all public sector organizations interviewed in November 2018 during an OECD fact-finding mission that the legal and regulatory framework needed to be updated to reflect technologies such as AI and data analytics (OECD, 2019).[38]).

As set out in Annex B,6LAC countries that develop their own principles largely address the same topics as the OECD Principles, albeit in greater detail and with more precision to highlight local priorities and the specific context of each. For example, when considering how countries align with OECD Principle 1 on "inclusive growth, sustainable development and well-being", they generally cover inclusion, social benefit and general interest, but also highlight particular topics. Uruguay states that AI technological development should aim to complement and add value to human activities; Mexico considers that measuring impact is essential to ensure that AI systems achieve the objectives for which they were designed; Peru plans to create a unit dedicated to monitoring and promoting 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 (covering sustainable growth and environmental protection), multidisciplinarity as a default approach to AI, and the global impact and reach of AI systems.

When considering data protection legislation in countries without AI-specific principles, there is clear convergence with Principle 2 (human-centred values and fairness) and OECD Principle 3 (transparency and explainability). In line with new developments elsewhere in the world (e.g. the General Data Protection Regulation in Europe), the latest data protection laws in Latin America and the Caribbean include safeguards to avoid bias and inequity, and promote the explainability of automated decision-making. This is the case in Barbados, Brazil, Ecuador, Jamaica, Panama and Peru. However, these data protection laws do not specifically apply to AI and overlook certain aspects that more nuanced and specific instruments, such as the ethical principles and frameworks for AI, aim to address. For example, these laws generally do not provide options to object to or appeal decisions made on the basis of automated processes, nor do they consider how AI developments might support or hinder the achievement of societal goals. Furthermore, because they place an emphasis on data protection, they are limited in scope when it comes to considering derivative uses of data, such as machine learning algorithms. There may be an opportunity to review current data protection laws in light of the growing range of ways in which data can be used for purposes such as algorithms and automated decision-making. This implies the potential need to update or supplement current legislation (for example, with AI-specific frameworks) to capture the new opportunities and challenges posed by AI technologies.

Colombia's Ethical Framework for Artificial Intelligence is a good example in the region (Box 4.3), as it explicitly touches on all areas included in the OECD Principles on Artificial Intelligence, to which Colombia has adhered, while also grounding this framework in the country's context and culture. Outside the LAC region, Spain's Digital Rights Charter provides a robust human-centred mechanism in a way that is relevant and appropriate for the country, and seeks to "transfer the rights 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).[39]) (Box 4.4). While it goes beyond artificial intelligence, the Charter includes important principles and requirements that revolve exclusively around public rights.

Box 4.3. Ethical Framework for Artificial Intelligence in Colombia

The Ethical Framework for AI was designed in response to the ethical implications arising from the growing implementation of artificial intelligence technologies in Colombia and to initiate a debate about the limits on their use sought by society. The framework refers to the moral problems related to data (generation, registration, adaptation, processing, dissemination and use), algorithms and their related practices (responsible innovation, programming, piracy and professional codes).

The Framework consists of nine principles and nine AI implementation tools for governments and private entities. The table below illustrates how the implementation tools (rows) interact with the principles (columns).

	Transparency	Explanation	Privacy	Human control	Security	Responsibility	Non-discrimination	Inclusion	Rights of the youths	Social benefit
Evaluating algorithms	-	-	-	-	-	-	-	-	-	-
Audit of algorithms	-	-	-		-					
Data cleansing			-		-	-	-			
Smart explanation	-	-					-			
Evaluating legitimacy	-			-			-	-	-	-
Sustainable system design					-	-				
Risk management			-	-	-	-				
Differential policy			-		-					
Codes of conduct	-	-	-	-	-	-	-	-	-	-
Research on AI ethics	-	-	-	-	-	-	-	-	-	-
Privacy Impact Assessments			-		-		-			
Approaches to data ethics			-	-	-	-	-	-		
Storage of personal data			-							
Strengthening business ethics	-	-	-	-	-	-	-	-	-	-

Several versions of the Ethical Framework were submitted for consultation through the activation of a multi-sector debate and suggestions that were incorporated into the latest version of the document.

The final version of the Ethical Framework was presented on October 12, 2021 and can be consulted at this link:https://bit.ly/3EC7wJy .

Fountain:(Spanish Guide, 2020[40]).

Box4.4.Digital Rights Charter (Spain)

The Spanish Ministry of Economic Affairs and Digital Transformation and its Secretary of State for Digitalisation and Artificial Intelligence (Box 5.1) developed a Digital Rights Charter to fulfil one of the commitments of 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 the data on which they are based. The most relevant of these appear in Article 25, “Rights in relation to artificial intelligence”:

- Artificial intelligence must ensure a focus on the person and their inalienable dignity, pursue the common good and ensure compliance with the principle of non-maleficence.
- In the development and life cycle of artificial intelligence systems: either
  - The right to non-discrimination, regardless of its origin, cause or nature, must be guaranteed in relation to decisions, use of data and processes based on artificial intelligence.
  - either Transparency, auditability, explainability, traceability, human supervision and governance conditions will be established. In any case, the information provided must be accessible and understandable.
  - either Accessibility, usability and reliability must be guaranteed.
- Individuals have the right to request human supervision and intervention and to challenge automated decisions made by artificial intelligence systems that have effects on their personal and financial sphere.

Fountain: https://bit.ly/39eHh0Q and https://bit.ly/3wnB5f1.

In addition to developing principles on artificial intelligence, some countries in Latin America and the Caribbean are seeking complementary approaches to ethical and trustworthy AI, although perhaps doing so in a less explicit, detailed or mature way than described above:

- Argentina's AI strategy includes a cross-cutting axis of "Ethics and Regulation" in which it commits to: "Ensure the development and implementation of AI in accordance with ethical and legal principles, in accordance with the 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, promoting transparent, unbiased, auditable, robust systems that promote social inclusion. Although the strategy does not define an ethical framework, it creates two bodies responsible for directing the design of such instruments: the National Observatory on Artificial Intelligence, and the AI Ethics Committee.[7] Argentina also commits to "promote guidelines for the development of trustworthy AI that promote, whenever appropriate, human determination at some stage of the process, the robustness and explainability of the systems." It also considers the importance of "a risk management scheme that takes into account issues of security, protection, as well as transparency and responsibility when appropriate and beyond the rights and regulations in force that protect the well-being of people and the planet." Finally, it recognizes that it may not be appropriate to use AI systems if standards regarding transparency, permeability, scalability, explainability, bias mitigation, responsibility, reliability, and impact on equity and social inclusion are not met.
- As noted above, Brazil is committed to developing AI principles in its AI strategy. The strategy itself also focuses on ethics, and weaves together considerations that emerge throughout the document. For example, it includes a cross-cutting thematic axis on legislation, regulation and ethical use, and commits to sharing the benefits of AI development to the greatest extent possible, and promoting equal development opportunities across regions and industries. It also includes measures aimed at developing ethical, transparent and responsible AI; ensuring diversity in AI development teams in terms of gender, race, sexual orientation and other sociocultural aspects; and commits to developing techniques to detect and eliminate bias, among other actions listed in Annex B.

- Chile's AI policy includes a section dedicated to ethical considerations and measures, with related actions detailed in the policy's action plan. Specific activities include, among others, conducting an ethics study, developing a risk-based system for classifying AI systems, securing an agreement on national best practices, and creating an institution to oversee AI systems. It is worth noting that the policy and Action Plan also call for adapting the school curriculum by including an ethics of technology.

- In its digital strategy, Panama plans to enter into a cooperation agreement with IPANDETEC (Panamanian Institute of Law and New Technologies) with the aim of promoting human rights in the digital context.[8]
- Peru's 2021 national AI strategy project includes a cross-cutting pillar on ethics, and the strategic objective of being a regional leader in the responsible use of data and algorithms. It also commits to the application in the country of the OECD Principles on Artificial Intelligence, to which Peru adheres, and to the creation of a unit to monitor and promote the responsible and ethical use of AI in the country. The Project also contemplates the adoption of "ethical guidelines for a sustainable, transparent and replicable use of AI with clear definitions on responsibilities and data protection." Likewise, the Digital Trust Framework provides for the ethical use of AI and other data-intensive technologies, as indicated below: "Article 12.2 – Public entities and private sector organizations promote and ensure the ethical use of digital technologies, the intensive use of data, such as the Internet of Things (IoT), artificial intelligence, data science, analytics and big data processing."[9]However, although Peru adheres to the OECD Principles on Artificial Intelligence, it does not explain what is meant by ethics, nor does it provide a more precise set of applicable principles, implying that these principles may serve as a criterion.

In the quest to apply and operationalize the general principles and ensure a uniform approach in the public sector, only Mexico and Uruguay have issued guidelines for assessing the impact of algorithms in public administration. AGESIC, Uruguay's digital government agency, has developed an Algorithmic Impact Study (EIA) model consisting of a set of questions that can be used by project managers in the public sector to assess and discuss the risks of systems that use 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 guidance was developed by the country's previous administration and it is unclear whether it still enjoys the highest level of support for its implementation. Box 4.5 provides more information on both guidance.[10]These mechanisms can support the realization of many aspects of creating a reliable approach, including the points discussed later in this section.

Box 4.5. Current guidelines for assessing the impact of algorithms on public administrations in Latin America and the Caribbean

Algorithmic Impact Study Model (Uruguay)

AGESIC, the digital government body of Uruguay, designed the Algorithmic Impact Study (EIA) as a tool to analyze automated decision support systems that use machine learning. Aimed at project managers or teams leading AI projects, the EIA has been designed to identify key aspects of the systems that deserve more attention or treatment. The model consists of a questionnaire that evaluates different aspects of the systems, including:

them, the algorithm they are based on, 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;
- on the decision;
- Impact assessment of automated decision system: either
  - About the data:
    - source of automated decision system data;
    - types of data of the automated decision system; data
  - either subjects of the automated decision system;
  - either measures to reduce and mitigate the risks of the automated decision system:
    - data quality;
    - procedural impartiality.

Impact analysis guide for the development and use of systems based on Artificial Intelligence in the Federal Public Administration (Mexico)

The Impact Analysis Guide is a tool designed to determine the social and ethical scope of AI systems developed by the Federal Government, and to define safeguards according to their potential impacts. It is based on Canada's automated decision-making directive called *Directive on Automated Decision Making* and its related algorithmic impact assessment.

The guide presents an initial questionnaire that analyzes five dimensions:

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

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

Based on the total score and the resulting impact on each dimension, the guidance assigns a "total impact" to the system on a scale of 1 to 4. At each level, the system must meet a number of requirements before, during, and after implementation. For example, if two or more dimensions of AI systems, including socioeconomic scope, have high or very high impact, they are assigned to level IV. Level IV systems must meet the following requirements:

- Before implementation:
  - either register the system with the Digital Government Unit (UGD), and include a clear and complete description of its function, objectives and expected impact;

either submit a report to the UGD detailing ethical concerns, risks and possible unplanned uses of the system;
either allocate resources to investigate the impact and implications of using the system.

- During implementation: either

  conduct quarterly testing of system and model robustness, reliability and integrity;

  either publish information (variables, metadata) about the data used in training an algorithm and the methodology for designing the model;
  either communicate to the user and the public a clear and complete description of the model and its expected impact.

- After implementation: either

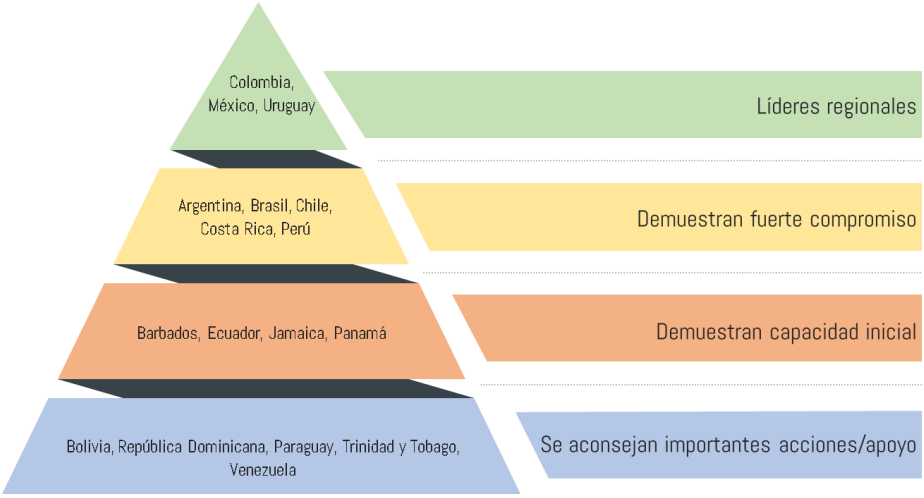
  Provide a plausible, clear and timely explanation to users about how and why the decision was made (include variables, logic and technique);
  either publish information on the effectiveness and efficiency of the system every six months.

Fountain:(AGESIC, 2020[41]), (Coordination of the National Digital Strategy, 2018[42]).

Impartiality and bias mitigation

Although data and algorithms are at the heart of modern AI systems, they can create new challenges for policymakers. If data is insufficient, it leads to AI systems that recommend bad decisions. If data reflects social inequities, applying AI algorithms can reinforce them, and distort policy issues and preferences (Pencheva, Esteve, & Mikhaylov, 2018).[43]). If an AI system is trained on data from a subset of the population whose characteristics differ from those of the entire population, the algorithm may provide biased or incomplete results. As such, AI tools may reinforce existing forms of discrimination, such as racism and sexism.11

Figure 4.5. Capacities of the Latin American and Caribbean region to establish safeguards against SES



*Note:*All countries that adhere to the OECD Principles on Artificial Intelligence are listed in the "Showing strong commitment" category or above.

All Latin American and Caribbean countries that have signed up to the OECD Principles on Artificial Intelligence have demonstrated a strong commitment to impartiality, non-discrimination and harm prevention (Principle 2). This Principle has also been the subject of particular attention in the data protection principles and laws self-defined by countries in the region. Some of the most explicit aspects of such principles are indicated below:

- As part of its Ethical Framework for Artificial Intelligence, Colombia developed a monitoring dashboard that is freely available to all citizens. This dashboard or *dashboard* provides information on the use of AI systems throughout the country and the application of ethical principles of artificial intelligence in projects carried out by public entities.

- Colombia, Mexico and Uruguay have established a clearer role for humans in maintaining control of AI systems, resolving dilemmas and correcting their course when necessary.

- Uruguay's Principle of General Interest coincides with OECD Principles 1 and 2. The first part of the principle sets a social objective, namely, protecting the general interest and ensuring inclusion and equity. The second part states that "to achieve this, specific work must be done to reduce the possibility of unwanted biases in the data and models used that may negatively impact people or encourage discriminatory practices."
- Chile's Inclusive AI Principle states that artificial intelligence should not discriminate against or harm any group, and underlines the consideration of children and adolescents, and the need for a gender perspective, which can be compared to the gender sub-axis of the country's National Artificial Intelligence Policy. Chile's AI strategy and action plan call for ongoing cross-sectoral debate on bias, as well as the development of recommendations and standards on bias and transparency of algorithms.
- The data protection legislation of Barbados, Brazil, Jamaica, Panama and Peru includes safeguards against automated decision-making and profiling that may harm the data subject or violate his or her rights. The right not to be subject to automated decision-making is a shared vision of these countries that may be applicable when automated data processing leads to decisions based on an individual's performance at work, aspects of his or her personality, health status, creditworthiness, trustworthiness and conduct, among others, or that define them. In the case of Ecuador, despite not having the same legal status as data protection legislation, the right not to be subject to automated decision-making is a shared vision of these countries that may be applicable when automated data processing leads to decisions based on an individual's performance at work, aspects of his or her personality, health status, creditworthiness, trustworthiness and conduct, among others, or that define them.**Guide for the processing of personal data in public administration** stipulates that the processing of personal data by the central public administration may not give rise to discrimination of any kind (Article 8).

In addition to the aspects covered by specific principles and country-specific data protection laws, Latin American and Caribbean countries are creating safeguards against bias and inequity. Activities showing high potential include:

- Argentina's AI strategy recognizes the risk of bias in AI systems as part of its diagnosis of the cross-cutting axis "Ethics and Regulation," although it does not explain what the specific measures would be.
- Brazil's national AI strategy includes steps to develop techniques to identify and mitigate algorithmic bias, ensure data quality in training AI systems, allocate funds to projects that propose solutions compatible with impartiality and non-discrimination, and implement actions to support diversity in AI development teams. It also commits to developing approaches that reinforce the role of humans based on risk.

- Chile's AI policy proposes the creation of new institutions capable of establishing precautionary measures regarding AI. The proposal is to promote research on bias and inequity, while a gender-specific element assesses how to reduce gender-related bias, and highlights the production of biased data and development teams with little diversity. Among others, relevant measures are the following:
  - either Actively promote equal access, participation and development of women in AI-related industries and areas;
  - either work with research centres to promote gender-sensitive research in AI-related fields;
  - either establish evaluation requirements throughout the life cycle of AI systems to avoid gender discrimination.
- The Center for the Fourth Industrial Revolution of Colombia, created by the government and the World Economic Forum (WEF), leads a project that seeks to generate comprehensive and practical strategies aimed at gender neutrality in artificial intelligence systems and the data that feed them.12

- Peru's 2021 draft national AI strategy envisions collaboration between public sector organizations to conduct an impact study on algorithmic bias and identify ways to mitigate it in algorithms involving the classification of people. However, the scope of this undertaking appears limited to private sector algorithms. Furthermore, the strategy provides that, in the public sector, in all cases of AI use for the classification of people (to provide benefits, offer opportunities, or impose sanctions), a socioeconomic impact study must be conducted to ensure equity.

- Uruguay has published two important instruments that address the issue of bias and inequity. The framework for data quality management13The Algorithmic Impact Assessment (AIA) model includes a set of tools, techniques, standards, processes and good practices related to data quality. More specifically related to AI, the Algorithmic Impact Assessment (AIA) model (Box 4.5) asks questions to assess and consider the impacts of automated decision systems. The section "Measures to reduce and mitigate the risks of the automated decision system" (p. 8) includes several questions that aim to mitigate bias. The sections on "Social impact" (p. 4) and "Automated decision system impact assessment" (p. 6) aim to guide development teams in assessing whether their algorithms could lead to unfair treatment.

It should not be taken for granted that AI bias is an unavoidable barrier. Improving the data input, introducing bias adjustments, and removing bias-causing variables can produce fairer and more accurate AI applications. As considered above, new data protection laws and codified principles are impacting the way AI systems process personal data. Laws are one option to address these issues and mitigate the risks they entail. Developing laws in this area may be a particularly useful approach in Latin American and Caribbean countries, where the OECD has noted strong legal guidance and attention to compliance with the exact letter of the law (OECD, 2018).[27]) (OECD, 2019[38]). While such an approach can foster trust, it can also become outdated very quickly, hampering innovation or discouraging officials from exploring new perspectives. Another approach is to create agile frameworks that adopt the necessary safeguards for the use of data-intensive technologies but remain adaptable and promote experimentation.

Going forward, Latin American and Caribbean governments will need to combine general principles with specific controls, evolving frameworks and guidance mechanisms to ensure that the implementation of AI is in line with principles and standards. The algorithmic impact assessments mentioned above represent a step in the right direction (Box 4.5). There are countries outside the

The region also developed some examples that go beyond the commitments and principles of the strategies. For example, the UK government recognises that data on issues that disproportionately affect women are either never collected or are of poor quality. In an attempt to reduce gender bias in data collection, it has created a government portal dedicated to gender data (OECD, 2019).[44]).14The existence of an independent entity also facilitates progress, especially in relation to testing ideas, setting strategies and measuring risks, as in the case of the data ethics advisory group.*Data Ethics Advisory Group*from the New Zealand government (Box 4.6).

Box 4.6. New Zealand: Data Ethics Advisory Group

To balance increased access to and use of data with appropriate levels of risk mitigation and caution, New Zealand's government data management authority established the Data Ethics Advisory Group, whose primary purpose is to assist the New Zealand Government in understanding, advising and commenting on new and emerging uses of data.

To ensure that the advisory group fulfils its mandate, the authority has appointed seven independent experts from different areas related to data use and ethics, including experts in privacy and human rights law, technology and innovation.

The group considers and provides feedback only on issues and initiatives relating to the use of data, and not on broader digital solutions provided by public bodies. Appropriate use of data algorithms (for example, how to avoid algorithmic bias), and the proper implementation of data governance initiatives are examples of topics on which feedback can be sought from this advisory group.

Fountain:(OECD, 2019[44]),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 has proven particularly controversial in relation to bias is facial recognition. These systems can have an inherent technological bias (for example, when based on race or ethnicity) (OECD, 2020).[45]). As discussed in Chapter 3 of this report, facial recognition represents a very small but growing group of AI use cases in Latin American and Caribbean governments. As an example, Ecuadorian officials told the OECD that they are exploring an easy-to-recognize ID program for accessing digital services. Governments and other organizations are designing frameworks and principles to guide third parties as they explore this complex field. Latin American and Caribbean countries may find it useful to refer to*Safe Face Pledge*, which places emphasis on facial biometrics (Box 4.7).

Box 4.7. Safe Face Pledge

*Safe Face Pledge*It was a joint project of*Algorithmic Justice League*and*Center on Privacy & Technology* from Georgetown University Law School in Washington, DC. The project was intended to provide a means for organizations to make public commitments to mitigate the abuse of facial analysis technology. Its main commitments were fourfold:

- **S**show the value of life, dignity and human rights: either
  - Do not contribute to applications that put human lives at risk. Do not
  - either facilitate secret and discriminatory government surveillance.
  - either Mitigate law enforcement abuse. Ensure
  - either that the law is enforced.
- **TO**embroidering harmful bias:
  - either Implement internal bias assessment processes and support independent evaluation.
  - either Where available, introduce models to the market for comparative evaluation.
- **F**facilitate transparency:
  - either Increase public awareness about the use of facial analysis technology. Enable
  - either external analysis of facial analysis technology in the market.
- **AND**incorporate commitments into business practices: either
  - Modify legal documents to reflect the value of life, dignity and human rights.
  - either Interact with stakeholders.
  - either Provide details about the implementation of*Safe Face Pledge*.

*Safe Face Pledge*It ended in February 2021, but its general principles remain in force.

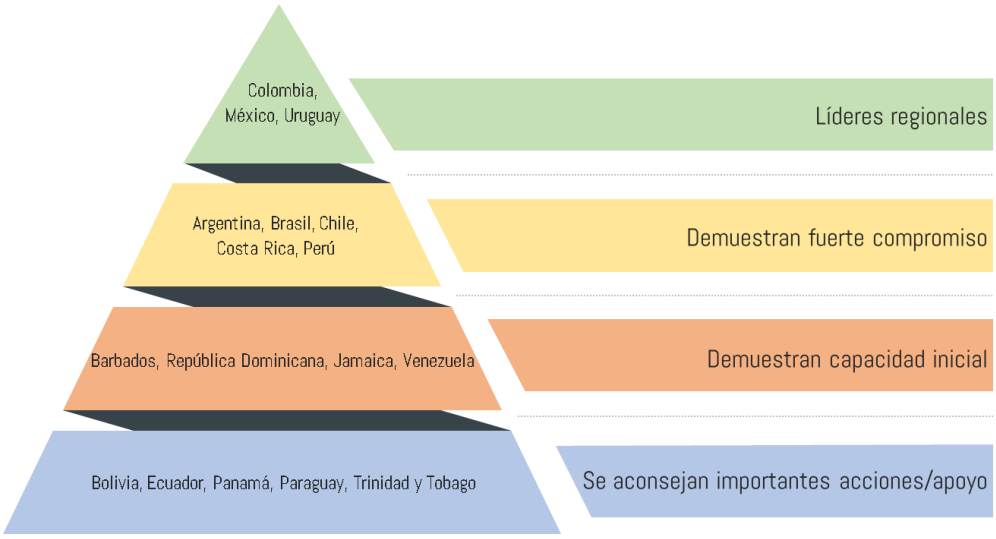
Fountain:www.safefacepledge.org/pledge.

Other factors are also related to mitigating bias and ensuring fairness. In the field of AI, if teams working on product ideas and designs have diverse members and are inclusive, they can help prevent or eliminate potential bias from the outset (OECD, 2019).[1]), particularly those related to discrimination generated by data and algorithms. The section "Ways to ensure an inclusive and user-centred approach" later in this chapter explores this topic in more depth.

Transparency and explainability

An important component of a trustworthy AI system is the ability to explain its decisions and its transparency for the purposes of external evaluation (OECD, 2019).[1]). In the case of PretorIA (Colombia) (Box 3.3), the Constitutional Court decided that the top priority for this new system would be explainability, on the grounds that it could influence judicial outcomes through interventions in the process of selecting claims. Conversely, in Salta, Argentina, the algorithm designed to predict teenage pregnancy and school dropouts (Box 3.14) was more opaque, creating uncertainty about how it arrived at its conclusions. This contributed to civil society scrutiny and a lack of trust in the years that followed. Overall, as part of the analysis of these case studies, this study found little information available about the implementation, scope, status and internal operation of AI systems in the public sector.

Figure 4.6. Capabilities for considering the explainability of AI systems and automated decision making



Note: All countries that adhere to the OECD Principles on Artificial Intelligence are listed in the "Showing strong commitment" category or above.

Countries in Latin America and the Caribbean are working in different ways to ensure the transparency of AI systems and their decisions. Those that have developed ethical principles and frameworks for AI are generally strongly aligned with OECD Principle 3 (transparency and explainability). The Uruguayan principles represent a small exception in this case, as they consider transparency but do not mention explainability. However, by including the phrase "active transparency" in the wording, the principle could be open to a broader interpretation. However, Uruguay's Algorithmic Impact Study does consider explainability. Other initiatives include:

- Colombia's Ethical Framework for Artificial Intelligence includes two important implementation tools: an "algorithm assessment," which allows for the development of a constant mapping of public sector AI programs to assess how ethical principles are applied, and an "intelligent explanation" model, which consists of providing comprehensible information to citizens about AI systems.
- Mexico's AI principles require that users be informed of the AI system's decision-making process, as well as the expected benefits and potential risks of using these systems. They also promote transparency by publishing information that allows users to understand the system's training method and decision-making model, as well as the results of its evaluations.

The most recent data protection legislation also expands traditional access rights by requiring greater transparency about the methods and processes of automated decision-making. In Barbados and Jamaica, the right of access includes the right to be aware of the existence of automated decisions as well as algorithmic processes. Barbados expands this right to include "the significance and the intended consequences." Brazil grants access to information about the modalities, timing, and results of the processing of personal data. Where automated decision-making occurs, individuals have the possibility of accessing information about criteria and procedures, while respecting trade and industrial secrets.

Countries are also developing approaches to increase transparency and accountability beyond formal laws and frameworks. These approaches include:

- As part of its cross-cutting axis "Ethics and Regulation", Argentina's AI strategy establishes that "developments that tend towards Explainable Artificial Intelligence (*Explainable AI*either*XAI*), in which the result and the reasoning by which an automated decision is reached can be understood by humans." However, no specific measures are indicated.

- Brazil's national AI strategy commits to funding projects that support transparency and creating oversight mechanisms for public scrutiny of AI activities.

- The national strategy and action plan on AI in Chile makes a series of considerations regarding the transparency and explainability of AI systems, especially regarding the development of standards and good practices that can be adapted as the concept becomes better understood over time, the promotion of new explainability techniques, and the conduct of research in this area. The process includes the establishment of transparency standards and recommendations for critical applications.
- The Dominican Republic created a digital government guide[15]which includes a provision on the documentation and explainability of digital government initiatives, software, services, among others. However, specific guidelines on algorithmic transparency and explainability are not provided.
- Peru's draft national AI strategy envisages the development of a registry of AI algorithms used in the public sector and the datasets underlying AI systems in that sector. It is unclear whether the registry will be open to the public.
- Uruguay's AI strategy promotes algorithm transparency through two interrelated measures: "defining standards, guidelines and recommendations for the impact analysis, monitoring and auditing of decision-making algorithms used in public administration" and "establishing standards and procedures for the dissemination of the processes used for the development, training and implementation of AI algorithms and systems, as well as the results obtained, promoting the use of open source codes and data."
- Venezuela's Infogovernment Law defines a principle of technological sovereignty, which mandates that all software adopted by the State must be open and auditable. For example, Article 35 states the following: "Licenses for computer programs used in the Public Power must allow access to the source code and the transfer of associated knowledge for its comprehension, 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 of these commitments have not been put into practice in an enforceable way. Box 4.8 provides an example from outside the Latin America and Caribbean region, showing how one government addressed this challenge.

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

Etalab, a task force within the French Prime Minister's office, has developed 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. It consists of three elements:

- **Contextual elements**These elements emphasize the nature of algorithms, the way in which they can be used in the public sector, and the distinction between automated decisions and those cases in which algorithms function as decision support tools.

- **Ethics and responsibility regarding the use of algorithms to increase transparency**This element includes public information about the use of algorithms; how to ensure that decision-making is fair and impartial; and the importance of transparency, explainability and trust.

- **Legal framework for transparency of algorithms**, which includes the EU General Data Protection Regulation (GDPR) and national legislation. This includes a set of rules applicable to administrative decision-making processes on the specific information that must be published about public algorithms.

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

1. **Recognition**: Agencies are required to inform interested parties when an algorithm is used.

2. **General explanation**: Agencies must explain clearly and comprehensibly how an algorithm works.

3. **Individual explanation**: Agencies must provide a tailored explanation for a specific outcome or decision.

4. **Justification**: Agencies must justify why an algorithm is used and the reasons for choosing a particular one.

5. **Publication**: Organizations must publish source code and documentation, and inform interested parties if the algorithm was created by a third party.

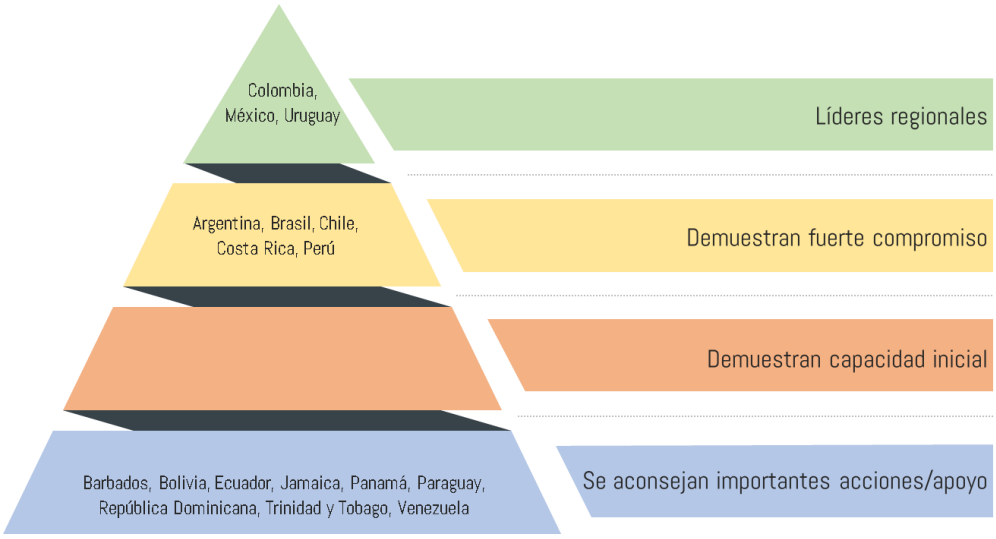
6. **Allow challenge**: Agencies should provide ways to debate and appeal algorithmic processes.

Fountain: 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/algorithmmes-publics and www.europeandataportal.eu/fr/news/enhancing-transparency-through-open-data ; www.etalab.gouv.fr/algorithmmes-publics-etalab-publie-un-guide-a-lusage-des-administrations (OECD, 2019)[1]).

Safety and protection

This section examines how and to what extent countries in Latin America and the Caribbean are establishing measures for the development and use of safe and secure AI systems. As outlined in the OECD Principles on Artificial Intelligence, artificial intelligence systems should be robust, secure and protected at all times, so that under normal or foreseeable conditions of use, or in the event of abusive use or unfavourable conditions, they can function appropriately and do not pose an excessive security risk.[17]These AI systems may involve the application of a risk management approach, such as the development of an algorithmic impact assessment process that ensures traceability of processes and decisions, and that clarifies the (appropriate) role of humans in such systems (OECD, 2019).[1]).[18]

Figure 4.7. Capabilities to promote the safety and security of AI systems in the public sector



Note: All countries that adhere to the OECD Principles on Artificial Intelligence are listed in the "Showing strong commitment" category or above.

The adherence of Latin American and Caribbean countries to the OECD Principles on Artificial Intelligence can be interpreted as a firm commitment to safety and security. Countries in the region are also taking additional measures to ensure that AI systems are safe and secure. Those that have developed national AI strategies and country-specific AI principles often underline the safety, security and robustness of AI systems in these principles. For example:

- In its AI strategy, Argentina is committed to creating an ethical framework with a risk management scheme that takes into account issues of security, protection, transparency and responsibility, with the aim of protecting the well-being of people and the planet.
- Chile's AI policy incorporates an orientation towards AI security through risk and vulnerability assessments, and through the improvement of cybersecurity, with the specific objective of "positioning AI as a relevant component in the field of cybersecurity and cyberdefense, promoting secure technological systems."
- Colombia's Ethical Framework for Artificial Intelligence proposes security mechanisms such as the immutability, confidentiality and integrity of basic data, and the establishment of codes of conduct and risk systems to identify possible negative impacts. The Framework states that "artificial intelligence systems must not cause harm to the physical and mental integrity and health of the human beings with whom they interact."
- The Impact Analysis Guide for the Development and Use of Systems Based on Artificial Intelligence in the Federal Public Administration of Mexico[19]provides a detailed set of security principles related to risk and uncertainty mitigation, design and deployment phases, and mechanisms for protecting user data.
- Uruguay's AI principles state that "AI developments must comply, from their design, with the basic principles of information security." The Uruguayan Algorithmic Impact Assessment model helps establish a risk-based approach to AI security and protection and also includes guidelines to clarify the role of humans in algorithmic decision-making.

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

Uruguay's Algorithmic Impact Assessment model enables digital government teams to assess the role of humans in algorithmic decision-making, thereby driving ethical debate on this point. Although the model does not clarify the appropriate role of humans in decision-making, its guiding questions enable public sector teams to assess existing or proposed algorithms in light of the principles of safety and accountability (see next section), and decide which features to incorporate. The following selected questions from the Algorithmic Impact Assessment model relate to safety and accountability:

Impact assessment of automated decision-making system

1. Will the system only be used to assist in making 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 impartiality

1. Does the audit trail show who the authorized decision maker is? (Yes or no)
2. Is there a process for granting, monitoring, and revoking system access permissions? (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)

Fountain:(AGESIC, 2020[41]).

Brazil is the only country in Latin America and the Caribbean that does not have its own AI principles, but includes objectives in other laws aligned with the OECD Principles on Artificial Intelligence. In particular, the national data protection law incorporates a "prevention principle" that calls for measures to prevent harm caused by the processing of personal data. In addition, the recent national AI strategy commits to acting to ensure human review and intervention in high-risk activities, and also commits to directing funds towards projects that support accountability in AI systems.

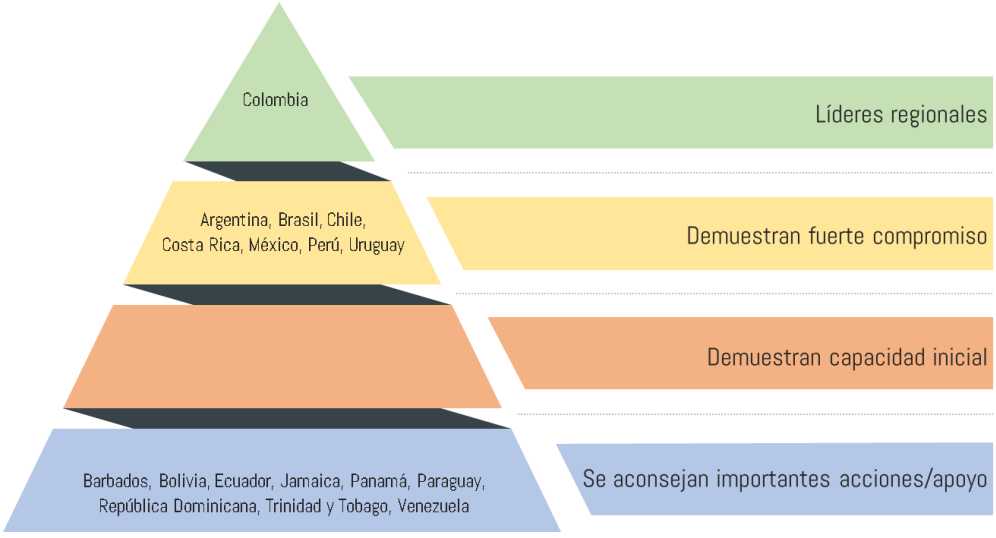
Accountability

This section examines the extent to which accountability mechanisms exist and function in Latin American and Caribbean countries to ensure the correct and appropriate functioning of the public administration.

systems. The**accountability**It is an important principle that runs through the others and refers to the expectation that organizations or individuals ensure the proper functioning, throughout their life cycle, of the AI systems they design, develop, operate or implement, in accordance with the applicable roles and regulatory frameworks, and demonstrate this through their actions and decision-making processes."[20]For example, accountability measures can ensure that documentation on key decisions is provided throughout the AI system's lifecycle and that audits are conducted where warranted. OECD work found that, in the public sector, this involves developing open and transparent accountability structures, and ensuring that those subject to AI-enabled decisions can consult and challenge them (as shown in Box 4.8) (OECD, 2019).[1]).

For governments in Latin America and the Caribbean, it is essential that the necessary guidelines, frameworks or codes be developed on the path towards AI for all organizations and stakeholders concerned, in order to guarantee responsible development and application of artificial intelligence.

Figure 4.8. Capacities of the Latin American and Caribbean region to promote accountability and



Note: All countries that adhere to the OECD Principles on Artificial Intelligence are listed in the "Showing strong commitment" category or above.

The adherence of Latin American and Caribbean countries to the OECD Principles on Artificial Intelligence can be interpreted as a firm commitment on this issue. Countries in the region are also taking steps to ensure accountability of AI systems, but to a somewhat lesser extent when compared to other issues discussed in other sections of this chapter. Only Colombia, Mexico and Uruguay have incorporated accountability into their national AI strategies or principles, although in most cases there is no clear evidence of its implementation. The following examples are particularly noteworthy:

- One of the goals of Chile's national AI strategy is to "develop the requirements to ensure the agile development and use of AI," which includes the creation of an institution to oversee AI systems at different stages of their life cycle. It also requires organizations to have clearly defined roles and responsibilities to ensure lines of accountability.

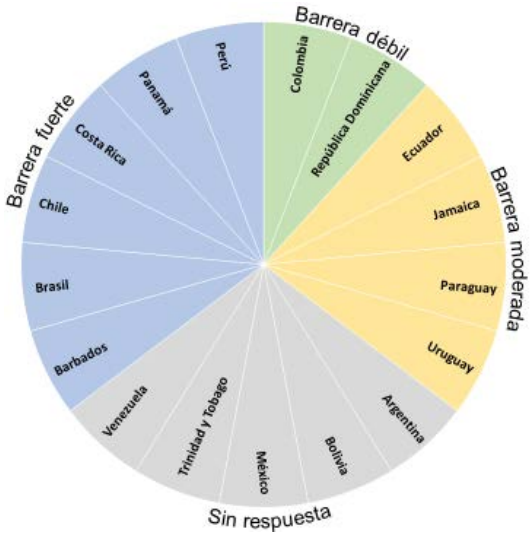
- The Ethical Framework for Artificial Intelligence in Colombia states that "there is a duty to respond for the results produced by an artificial intelligence system and the impacts it may generate." It also establishes an obligation of responsibility on the part of the entities that collect and process the data, and those who use the algorithms, and recommends defining clear responsibilities for the design, production and implementation chain of AI systems.

- Mexico's AI Principles incorporate accountability by highlighting the importance of determining responsibilities and obligations throughout the lifecycle of an AI system.
- Peru's 2021 draft national AI strategy envisages the adoption of ethical guidelines that include a clear definition of responsibilities.
- Uruguay's AI principles include a requirement that for AI-based technological solutions, there must be a clearly identified person who is responsible for the actions resulting from the solutions.

Brazil is the only country in Latin America and the Caribbean that does not have its own AI principles, but includes objectives in other laws aligned with the OECD Principles on Artificial Intelligence. In particular, the national data protection law incorporates a "prevention principle" that calls for measures to prevent harm caused by the processing of personal data. In addition, the recent national AI strategy commits to acting to ensure human review and intervention in high-risk activities, and also commits to directing funds towards projects that support accountability in AI systems.

The common absence of legal or methodological guidance on accountability is consistent with the majority perception in Latin American and Caribbean countries that the lack of clarity on checks and balances/accountability for data-driven decisions represents a strong or moderate barrier to data use in the public sector (Figure 4.9).

Figure 4.9. Lack of clarity on checks and balances/accountability for data-driven decisions



Source: Survey of digital government agencies in Latin America and the Caribbean conducted by the OECD (2020).

Finally, monitoring during the implementation phase is essential to ensure that AI systems operate in accordance with the OECD Principles on Artificial Intelligence, and that organizations are held accountable for this. In relation to the issue of security and

In addition to the protection discussed in the previous subsection, such monitoring should ensure that risks are mitigated and unintended consequences are identified. A different approach will be needed to focus attention on AI systems that pose the greatest risks, for example, when they influence resource allocation or have other important consequences for citizens (Mateos-Garcia, 2018).[46]). For the most part, Latin American and Caribbean countries have not developed such monitoring mechanisms, with the exception of the activities carried out by Colombia (Box 4.10). Such mechanisms may represent the next stage of development for regional leaders, once attempts to create ethical frameworks and the contributions that enable them have been consolidated.

Box 4.10. Monitoring AI in Colombia

Colombia is developing artificial intelligence tools that can be applied to public policies to monitor the implementation of i) national AI policies, ii) emerging good practices to implement the OECD recommendations to Governments on AI, and iii) AI projects in the public sector:

- SisCONPES is a tool that monitors the execution of each line of action of the national AI strategy. It reports on progress and challenges of implementation to the entities that lead the implementation of the strategy, especially the Presidency of the Republic.

- A follow-up plan to monitor the implementation of the OECD Principles on Artificial Intelligence and identify good practices coincides with the specific measures implemented by the Colombian Government in relation to the OECD recommendations.
- The GovCo Dashboard monitors the execution of AI projects in the public sector. This dashboard includes a description of each project, and highlights the mechanisms for using AI and the progress of each project.
- A*dashboard*or dashboard to monitor the ethical framework of artificial intelligence, a publicly accessible tool with which citizens have the possibility of deepening their learning about the use of AI systems in the State and the application of the ethical principles of artificial intelligence in relevant projects. This dashboard can be consulted athttps://inteligenciaartificial.gov.co/en/dashboard-IA .

The Presidency and the AI Office also use these AI tools applied to public policies to evaluate resource allocation and policy implementation.

Fountain:(OECD, 2021[7]), Colombian officials.

Ways to ensure an inclusive and user-centred approach

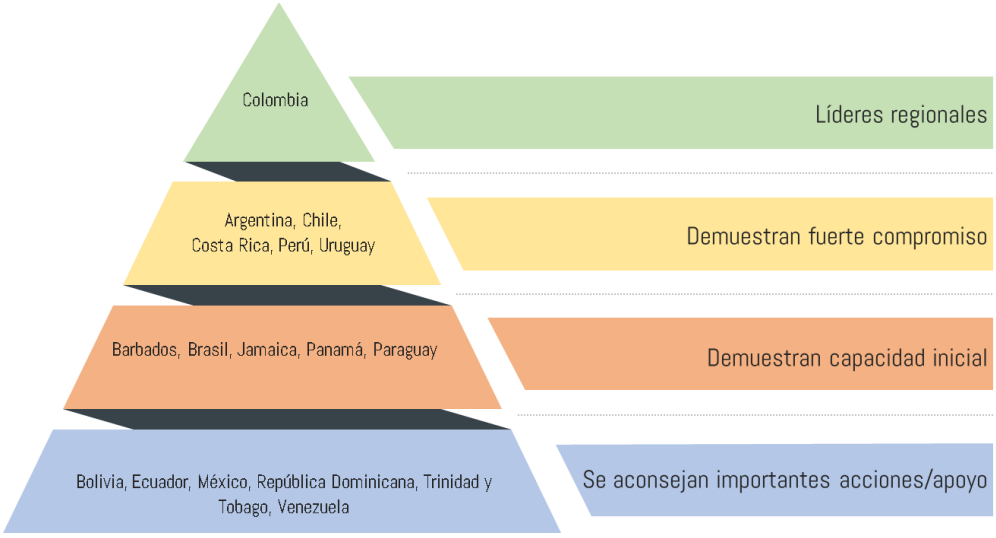
Inclusive

A critically important cross-cutting factor for many of the considerations discussed in this and the next chapter is ensuring representation of diverse perspectives.**multidisciplinary**(different educational backgrounds, professional experience and level, skill sets, among others),[21]
as well as**various**(different genders, races, ages, socioeconomic backgrounds, among others), united in an environment**inclusive**where their opinions are valid. This factor is essential for AI initiatives to be effective and ethical, successful and fair. It underpins initiatives ranging from broad national strategies to small individual AI projects, and everything in between.

The recent *OECD Framework for Digital Talent and Skills in the Public Sector* [Framework for digital talent and skills in the public sector] (OECD, 2021[47]) argues that the creation of multidisciplinary and diverse teams is a precondition for digital maturity and the achievement of a digitally enabled state.

Developing AI strategies, projects, and other initiatives is an inherently multidisciplinary process. Moreover, multidisciplinarity is one of the most important factors for the success of innovation projects, especially those that require technology. Engaging in such projects requires consideration of technological, legal, ethical, and political issues and constraints. Obviously, AI activities must be technologically feasible, but at the same time, they must be acceptable to a variety of stakeholders (including the public) and permissible under the law.

Figure 4.10. Capacities of the Latin American and Caribbean region to guide the creation of m teams



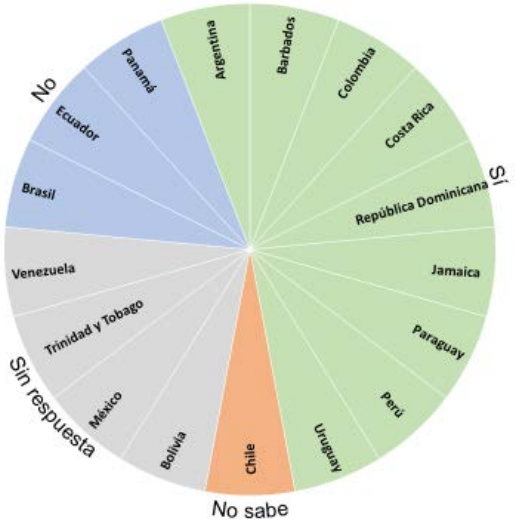
Many Latin American and Caribbean countries have adopted a multidisciplinary approach (Table 4.2 for examples of participating professions) as a criterion for developing digital projects, services, and strategies (Figure 4.11). However, there is little guidance on including multiple disciplines, specifically in the design and development of AI. This trend demonstrates that there is initial competence and commitment, but also indicates that specific guidance on AI may be needed as countries continue to adopt and design these systems. Currently, Colombia is the only country that offers guidance on this topic for the development and use of AI and other emerging technologies. In their strategies, Argentina, Brazil, and Uruguay recognize the importance of multidisciplinarity for the development of AI in the public sector, but do not offer specific guidance or methods. Other countries promote the multidisciplinary approach through innovation labs, statements about their digital strategies, and/or empirically, although not specifically on AI.

Table 4.2. Professions participating in a multidisciplinary team

Digital professionals	Non-digital professionals
User-centered design	Law, politics and theme
Product and delivery	Strategy and governance
Service ownership	Start-up and acquisition
Data	Human resources
Technologists	Operations and customer service
	Psychologists and sociologists

Fountain:(OECD, 2021[47]).

Figure 4.11. Use of multidisciplinary teams for the delivery of digital, data and technology projects in the d countries



Source: Survey of digital government agencies in Latin America and the Caribbean conducted by the OECD (2020).

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

- In relation to AI, the*Guide with general guidelines for the use of emerging technologies* proposes two measures. The first is the participation of non-technical members in the execution of the project, who work "closely with the owners of the service" (p. 11) and not only at the engineering level. The second is the definition of a pilot project evaluation team composed of internal and external actors (p. 9).[22]Furthermore, the "Task Force for the Development and Implementation of Artificial Intelligence in Colombia" states that multidisciplinarity is an important consideration when creating an internal AI working group. The working group structure proposed by the document comprises an AI policy expert, a data scientist, an ethicist, an internationalist, and researchers.[23]
- With reference to digital projects in general, the*Digital Government Manual*states that developers must "with the participation of all" (p. 32) and, more specifically, they must work to generate integration and collaboration between all responsible areas; seek collaboration with other entities; identify the project manager and assemble multidisciplinary teams that participate in the design, construction and start-up, testing and operation of the project; and establish alliances between different actors.[24]

- Finally, the Digital Transformation Framework for the State states the following: "It is important to highlight 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 the objective of "forming interdisciplinary and multisectoral teams that allow the approach to the AI phenomenon with a plural representation of knowledge and interests" (p. 192). This section also recognizes that "bias can even be unconscious for those who develop these systems, to the extent that they transfer their worldview to both the selection of training data and 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 consider these methodological, anthropological and inclusion aspects" (p. 189).

One of the four "cross-cutting principles" of Chile's national AI strategy is "inclusive AI." According to it, all actions related to AI must be addressed in an interdisciplinary manner. The strategy also recommends reforming educational programs to incorporate different AI concepts from the perspective of various disciplines.

Brazil's national AI strategy addresses the multidisciplinary nature of AI and the importance of a multidisciplinary approach, but does not indicate measures to be taken in support of such an approach.

Uruguay's strategy recognizes the importance of training officials in multidisciplinary contexts to develop skills that allow them to "understand all the difficulties, challenges and impacts that arise when using AI in public administration services and processes" (p. 12). In fact, the strategy itself was developed by a multidisciplinary team that included representatives from the fields of technology, law, sociology and medicine, among others. In short, the strategies of Latin American and Caribbean countries that make specific reference to multidisciplinarity for the purpose of developing AI provide general models applicable to any project of this nature. Working from the existing pool of practical cases and lessons, the next step for policymakers in the region could be to provide guidance or methods for including other disciplines in order to address the main issues that have arisen in specific areas of interest.

Although not strictly referring to AI, Latin American and Caribbean countries have also developed a considerable set of practices and guidelines to include multidisciplinarity in the development of digital government projects. This is pertinent because guidelines and initiatives focused on broader digital government activities should also be applied to AI-related projects in the public sector. We can cite the following examples:

- LABgobar, Argentina's public innovation laboratory, has created the "Public Policy Design Academy." The work carried out in the laboratory has two main purposes: 1) to identify and strengthen communities of practice with specific themes through various approaches that motivate action, participation and collaboration; and 2) to train multidisciplinary teams of officials from different ministries through the executive program Emerging Innovators, with real challenges that participants must solve by applying innovation tools.[26]

- He*Public Sector Modernization Program*[Barbados' Public Sector Modernisation 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, the Chilean Government Laboratory recommends forming "a multifunctional work team composed of representatives from all divisions related to the initial problem or opportunity" and provides guidance for carrying it out.[28]
- Costa Rica's National Code of Digital Technologies recommends creating multidisciplinary teams as part of its standards for digital services, which include specific roles: *Product owner*, *project manager*, implementation manager, technical architect, digital support lead, user experience designer, user researcher, content designer, developer *back-end* and developer *front-end*.[29]

- Jamaica matured a multidisciplinary experience as part of its COVID-19 CARE programme. Several government agencies were involved in developing an online system for receiving grant applications, automated validations and payment processing.[30]
- Panama's Digital Agenda 2020 was designed by a multidisciplinary team (p. 2).
- In the development of the Accounting portal of Paraguay (https://rindiendocuentas.gov.py), for transparency and accountability, several teams from across the public administration participated.[31]
- The Government and Digital Transformation Laboratory of Peru includes, among its objectives, the "transfer of knowledge in Agile Methodologies in the public sector and promoting the creation of multidisciplinary teams" for the co-creation of digital platforms and solutions.[32] In addition, all public entities are mandated to create a digital governance committee composed of a multidisciplinary team that includes, at a minimum, the director of the entity, the digital governance leader, the Information Security Officer and representatives from the areas of IT, human resources, citizen services, and the areas of legal affairs and planning.[33]

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

These activities reveal that the creation of multidisciplinary teams has been a recurring practice in most Latin American and Caribbean governments when offering digital solutions. However, in many of the initiatives, the OECD was unable to determine the process of creating the teams and how the different participating disciplines contributed to achieving the final objective. It was also difficult to verify the composition of the current AI use case development teams. As part of transparency measures to increase trust and confidence (see chapter "Actions to develop a responsible, reliable and human-centred approach"), it could be a good practice for Latin American and Caribbean countries to provide more information on the composition of the team when offering AI solutions. As an example, Box 4.11 presents two non-AI cases in which several disciplines contribute to the delivery and governance of digital services.

Box 4.11. Multidisciplinary teams to improve digital public services

The following two cases do not relate to AI initiatives. However, they provide excellent examples of multidisciplinary approaches that could also be applied to AI, at a strategic level.

Redesign of the disability certification process (Argentina)

In Argentina, about 3 million people are affected by some form of disability. To certify the disability, the Medical Evaluation Board (JME) issues a Unique Disability Certificate (CUD), which grants these people access to rights and benefits provided by the Government.

The process of obtaining a CUD was long and difficult. Since there was no digital support, it could take up to seven months, with a number of intermediate steps, many of which required the user to personally visit a public office. Not only was the delivery time slow, but the process itself added inconvenience and complexity to the lives of people who needed more support.

Having identified the need to transform the service, the National Agency for Disability connected with the Mi Argentina team, the platform for providing relevant services for citizens. This multidisciplinary team was composed not only of engineers and software designers, but also psychologists, political scientists, anthropologists and sociologists. Working together, the team dedicated itself to simplifying and speeding up the procedure, and to accompanying people throughout the process.

To this end, the team interviewed people with disabilities, their families, and healthcare workers. As they gained insight into the challenges these individuals faced, they identified opportunities to streamline the process and design a one-step, online approach. Today, the new process for applying for a CUD guides citizens through the application requirements rather than requiring them to attend an in-person meeting to establish the necessary documentation.

Fountain:(OECD, 2020[48]).

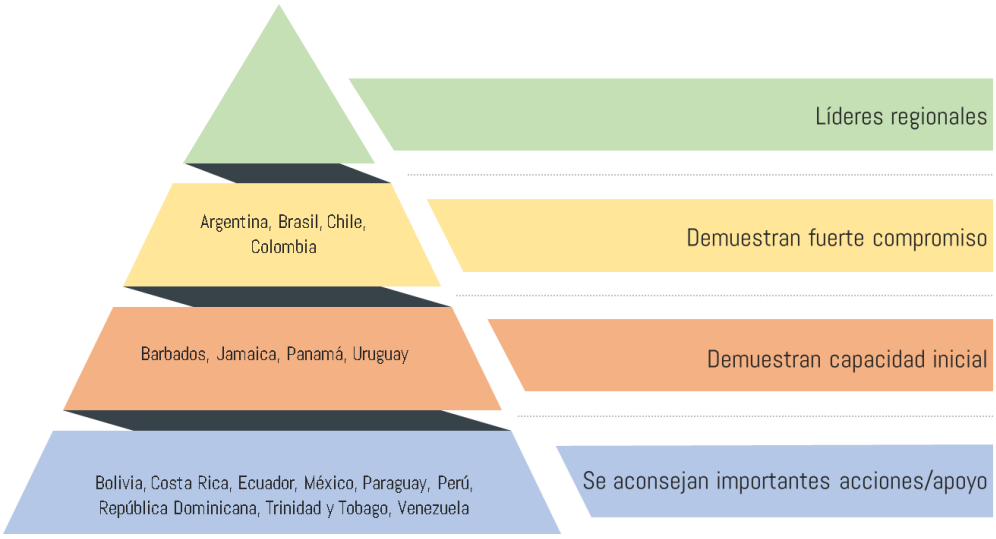
The Open Data Working Group (Uruguay)

In order to implement an open data policy, coordinate the actions of different actors and create a collaborative work environment for public entities, civil society and academic institutions in the area of active transparency, Uruguay created the Open Data Working Group, a multidisciplinary entity composed of representatives of several non-technological institutions in the public sector. Its main members are the Ministry of Social Development, Management and Evaluation; the Faculty of Engineering (University of the Republic, Uruguay); the National Institute of Statistics; the Open Government Network (Civil Society); the Municipality of Montevideo and the digital agency, AGESIC.

*Fountain:*www.gub.uy/agencia-gobierno-electronico-sociedad-informacion-knowledge/comunicacion/publicaciones/grupo-trabajo-datosabiertos .

Another important concept parallel to that of multidisciplinarity is that of**diversity**This generic concept recognizes that people, similar in many cases, have different life experiences and characteristics, such as gender, age, race, ethnicity, physical abilities, culture, religion and beliefs (Balestra and Fleischer, 2018). [49]). Such elements produce important and unique values, preferences, characteristics and beliefs in each individual, shaped by the norms and behaviors they experienced over time. In the field of AI, diverse teams can better consider the needs of different users and help avoid or eliminate potential biases from the start (OECD, 2019).[50]), as diverse representation in the ideation and design of a product helps minimize the chances of data bias and algorithmic discrimination. As mentioned above, this benefit can only be achieved in a diverse setting.*inclusive*, where everyone's opinions are valued and where everyone feels safe to express them.

Figure 4.12. LAC region's capabilities to establish AI team building guidelines with

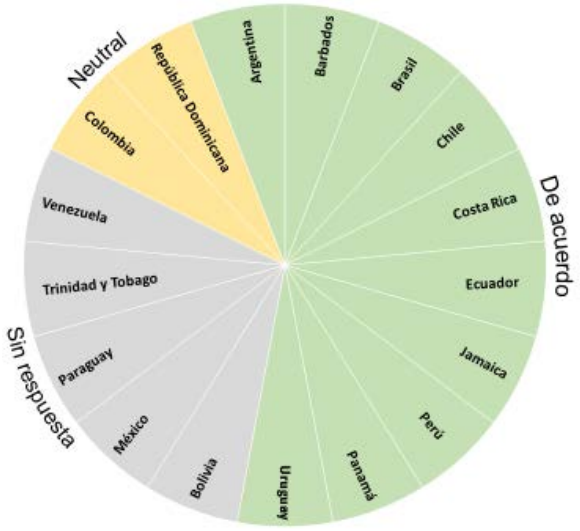


Source: OECD analysis based on research, surveys and interviews with Latin American and Caribbean countries.

Globally, a lack of racial and gender diversity persists in AI research and personnel despite its recognized importance (NSTC, 2016).[51]). However, many countries in the LAC region have a perception that public sector digital teams have diverse members and reflect the broader society (Figure 4.13). Given the scope of this study, it was not possible to assess the actual diversity of such teams, but guidance and methods to ensure diversity are largely lacking in Latin American and Caribbean countries. Although the AI strategies of Argentina, Brazil, Chile and Colombia highlight the importance of diversity in AI development, there are very few examples of specific initiatives and guidance being developed that make diversity a key factor in the composition of AI teams. One example of this is the proposed design for the AI team. *Task Force* in AI in Colombia, which considers the inclusion of different origins in the composition of its teams.[35] Among the issues evaluated in this chapter and the next, diversity was the least addressed in Latin American and Caribbean countries.

The perception in Latin American and Caribbean countries that their digital teams are diverse, coupled with limited guidance in this regard, create a somewhat contradictory scenario and may indicate blind spots regarding potential problems. It is also true that they may indicate that teams are indeed diverse, but without more solid guidance such diversity may be fleeting and susceptible to change. Countries should consider adopting a general guideline by assessing the state of diversity of their digital teams and recognizing its importance in strategies or guidelines. As already noted, existing experience in the LAC region could lead to guidance tailored to the area of interest and contexts where team diversity has proven to be an important element in AI development.

Figure 4.13. In the public sector of my country, digital teams often have diverse members and reflect the



Source: Survey of digital government agencies in Latin America and the Caribbean conducted by the OECD (2020).

In its AI strategy, Argentina recognizes the importance of "a plural representation in the development of these [AI] technologies," and "the inclusion of professionals who consider (...) methodological, anthropological and inclusion aspects" (p. 189). Its main concern is to address bias throughout the development process, including the selection of training data, the design of algorithms and the final result. There are more specific instructions about diversity in terms of the composition of the AI Ethics Committee, "a multidisciplinary and multisectoral, independent entity, made up of professionals from different areas of knowledge and members of the community, balanced in age, sex and ethnic and cultural origin." The Committee also underlines the need to "ensure that its members have a constant link with civil society organizations focused on these issues and access to external consultants with specific knowledge if necessary for particular cases."

Brazil's AI strategy commits to encouraging a diverse composition of its AI development teams in relation to gender, race, sexual orientation and other sociocultural aspects.

Chile's AI Policy highlights the importance of having diverse and inclusive teams, particularly from a gender and sexual diversity perspective. To promote equality in the implementation of AI systems, the policy also stresses the importance of developing AI in an inclusive way, incorporating the perspectives of indigenous groups, people with special needs, and the most vulnerable.

Finally, Colombia's Ethical Framework for Artificial Intelligence project states, as part of its principle of non-discrimination, that "a diverse group of the population must participate in the design and impact matrices must be generated that allow for early identification of any type of discrimination and timely correction of the same."

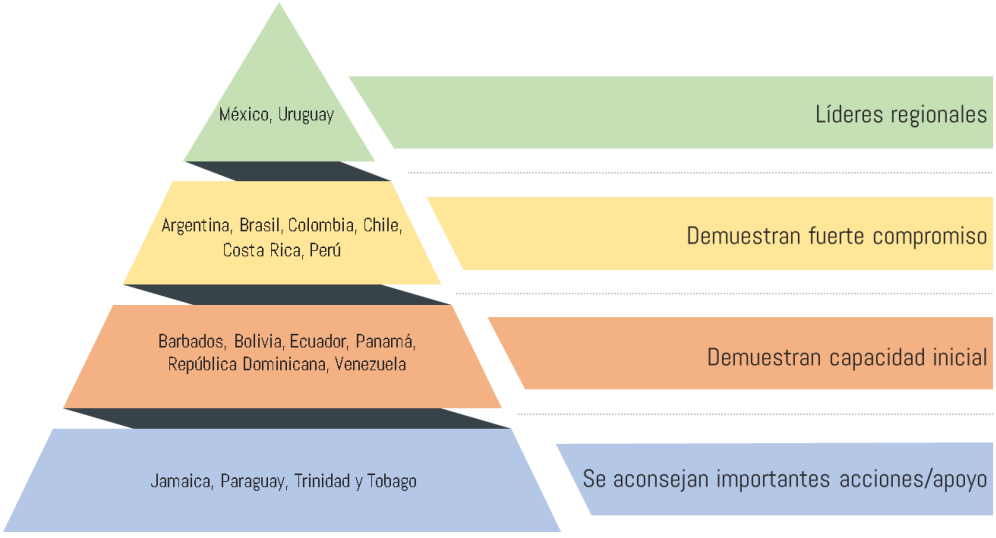
User-centric

Each national approach must operate within its own unique context, as well as its own culture and norms. Governments should engage in deliberative dialogue with their citizens, residents, businesses, officials, and other parties who may interact with or be impacted by an AI solution, to more clearly understand their perspectives, values, and needs (Balaram,

Greenham and Leonard, 2018[52]). Users of public services may be waiting for effective engagement and assurances that will allow them to clarify how the use of AI will impact the services they rely on. In some cases, citizens may also become co-creators of public services that use AI, a process that involves significant user participation (Lember, Brandsen, & Tõnurist, 2019).[53]). Finally, AI offers the possibility of collaborating with governments in their move towards proactive public services, which anticipate and manage user needs before they arise (for example, filling out a form) (Scholta*et al.*, 2019[54]), which would not be possible without a greater understanding of such needs.

Unless they engage with potential users (both within and outside of government, as appropriate), officials will not be able to accurately determine what problems exist and whether a potential AI application or alternative will meet basic needs. This engagement will become increasingly important and must be incorporated as an integral part of national strategies and overall direction. Officials must also be empowered to engage with users.

Figure 4.14. LAC region capacities aimed at establishing guidelines and methods for understanding



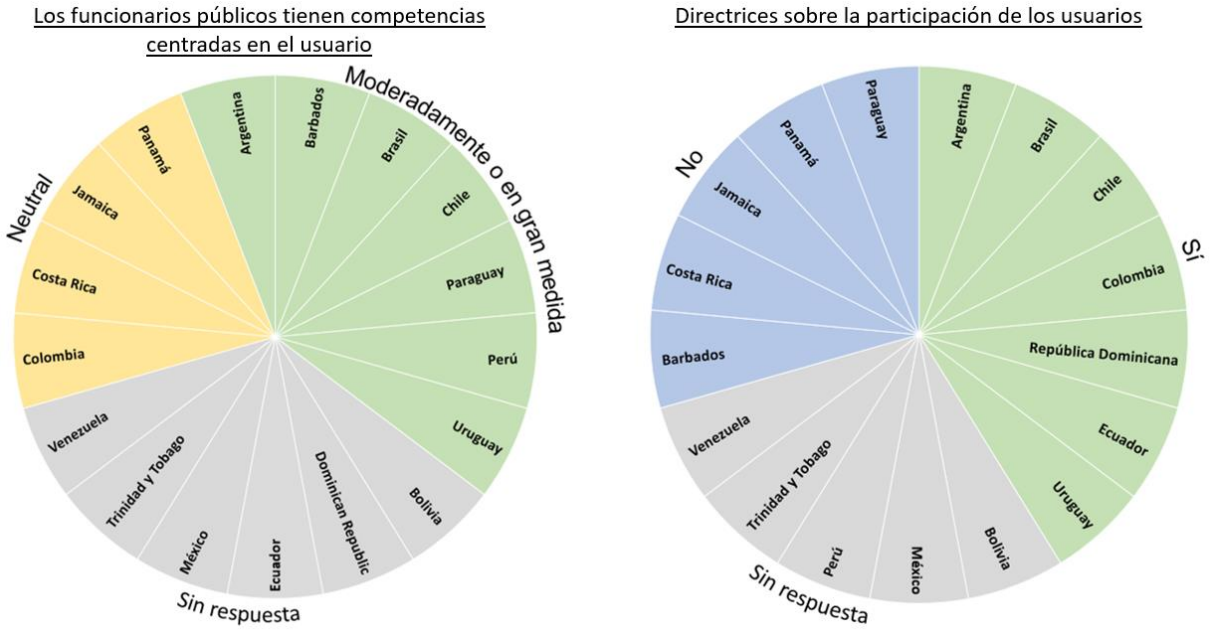
In the LAC region, countries have developed two complementary approaches to design digital public services according to user needs. The first is a*user oriented*which puts emphasis on understanding and co-designing public services. The second is an approach *informed of the user*which puts emphasis on adapting and designing services according to requests, response rates, usability and measured satisfaction. The OECD Digital Government Policy Framework recommends that policy processes, products and outcomes are not only informed but also shaped by citizens' decisions, preferences and needs through participatory and collaborative mechanisms (OECD, 2020).[55]). This type of approach is designed to allow the voice of the population to be heard in the development of public policies. To this end, governments can establish new forms of partnership with the private sector and the third sector, acquire ideas through collaboration between the public administration and society as a whole, and make use of methodologies such as user research, usability design (UX) and human-centred design to create and improve public services (OECD, 2020).[56]).

The difference between the two approaches is illustrated by the case of Panama, where the OECD found greater emphasis on the digitalisation of existing processes and procedures, and less attention to trying to understand user needs and reorient services accordingly.

> *The predominant themes of provision in Panama focus on the digitalization and/or automation of existing processes rather than on users and their needs. For this reason, there is a greater emphasis on the technologies that can be used than on the restructuring of underlying services. This leads to a proliferation of applications and different technologies to solve different problems from a technological point of view instead of considering indispensable political measures (...) that reflect the diversity of the country's population and better meet its needs (OECD, 2019).[38]).*

In Latin American and Caribbean countries, the perception that officials have the skills to focus on users is generally positive. In addition, half of the countries that responded to the survey confirmed that there are guidelines to encourage user participation in the process of designing services and policies. Figure 4.15 illustrates the growing inclusion of user perceptions and needs in the design of digital services in the region. Although there is little evidence specifically demonstrating the development of user-centered AI, current work reveals a solid basis for expanding guidance and specialized professional knowledge to better understand users and take their needs into account when designing AI systems.

Figure 4.15. Perception that officials have the skills to focus on the user and



*Note:*Regarding user-centred skills, no country indicated "to some extent" or "not at all". *Fountain:*Survey of digital government agencies in Latin America and the Caribbean conducted by the OECD (2020).

Mexico and Uruguay are the only two countries in the LAC region that explicitly consider the indications regarding user-centredness for the development of AI within their technology impact assessment guides (Box 4.5). The Impact Analysis Guide for the Development and Use of Systems Based on Artificial Intelligence in the Federal Public Administration of Mexico asks whether: "the system was consulted or tested with interest groups and/or vulnerable groups" (Coordinación de la Estrategia Digital Nacional, 2018, p. 8).[42]) to assess whether the system meets the needs of users. In another approach to this aspect, Uruguay's Algorithmic Impact Study model seeks to determine whether or not there is "a mechanism to collect feedback from system users" (AGESIC, 2020, p. 11).[41]).

Several countries in Latin America and the Caribbean have developed user-oriented capabilities that focus in particular on human-centered design methodologies, although they are not exclusive to the field of AI:

- One of the objectives of LABgobar, Argentina's public innovation laboratory, is to design user-centered policies and services. To this end, it carries out ethnographic research focused on studying the habits and behaviors of citizens in their interactions with the State, and provides methodologies to incorporate the points of view, feelings, and voices of the population in decision-making, in order to draw the attention of the institutional actors responsible for implementing public policies.[36]

- The National Directorate of Digital Services within Argentina's Secretariat of Government Modernization established a set of principles to investigate user needs, advise public sector organizations, and design solutions. The first principle is the following: "We prioritize the needs of citizens: We constantly talk to citizens, observe their contexts, understand what they need beyond what they say."[37]
  This entity also created the "Code of good practices in the development of public software", which compiles various methodologies and prerequisites for understanding user needs (Box 4.12).
- Brazil's national digital government strategy also includes a principle focused on citizen needs.[38] This objective is supported by the *Design Thinking Toolkit for Government* [[Government Design Thinking Toolbox] developed by the Federal Audit Court's Innovation Lab, which provides guidance on end-user involvement in the early stages of service design with a view to disseminating and using the relevant techniques in public institutions. The tool *Design Thinking Toolkit* It consists of five stages: empathy, (re)definition, ideation, prototyping and testing. Each stage is explained and accompanied by a set of tools.[39] The federal government has also created a team dedicated to collecting information on the quality and adequacy of digital public services through the use of 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 LabGob, Chile's Government Laboratory, support the orientation of different types of government projects. Among these principles is in particular the "Focus on users" principle, to understand the needs, assets, motivations and capabilities of citizens as agents of the innovation process (Box 5.11). In addition, LabGob has developed a set of guidelines entitled "How can we facilitate face-to-face spaces through public innovation?" so that public sector organizations can obtain external opinions, including those of users (Box 6.7). Previously, the OECD had drafted a series of recommendations for Chile, which the country is currently evaluating, on, among other things, how to become more citizen-oriented by discovering the needs of users (OECD, 2020).[48]).

- Colombia has three relevant instruments aimed at understanding user needs. The emerging technologies guide does not define specific guidelines, but rather emphasizes the need to consider "User Experience" as part of the solution architecture (p. 10). It also suggests including users in pilot project evaluation teams (p. 9).[92] Another document, the Digital Government Manual, recommends: "Identify the problem or need and the actors related to the project" (p. 31). Finally, the Guide to Characterizing Citizens, Users and Interest Groups, which is not limited to digital government services, offers general guidelines for characterizing users of all government projects that involve external actors: "characterizing refers to the need or problem that the project involves, the need or problem that the project involves, and the need or problem that the project involves" (p. 31).

identify the particularities (characteristics, needs, interests, expectations and preferences) of the citizens, users or interest groups with which an entity interacts, in order to segment them into groups that share 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 them gain insight into how to innovate policies and services from a user perspective, and to foster an ecosystem of innovators in public departments.[41]
- The National Code of Digital Technologies of Costa Rica lists 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-centered procedure that must be considered when designing and acquiring digital services. This procedure includes understanding the needs of users, conducting ongoing user research, having a multidisciplinary team, using agile methodologies, iterating to continuously improve, conducting user tests, and collecting data and performance indicators, among others.

- Peru's Government and Digital Transformation Laboratory also uses user-centered methodologies to design public services in line with the "Digital Agenda for the Bicentennial."[43]
  Furthermore, the "Guidelines for the Formulation of the Digital Government Plan" include, among its principles, the importance of a design focused on the needs and demands of the citizen, worded as follows: "it is necessary for public entities to make use of reference frameworks on innovation, agile, or others focused on the citizen experience, and investigate and analyze their behaviors, needs and preferences" (p. 35).[44]Peru has also developed a digital volunteering programme to enable the academic world, the private sector, civil society and citizens to participate in various projects for the design, redesign and digitalisation of public policies and services.[45]In an interview with the OECD, Peruvian officials said they are working to change public sector mindsets and cultures through this orientation, with the goal of ensuring a continued emphasis on basic user needs based on research, interviews, and testing with rapid development prototypes and minimum viable products, all of which involve user participation.

- In Uruguay, the Digital Government Social Innovation Laboratory provides co-creation and participation methodologies to find the best way to deliver public services (Box 4.12). The process consists of four stages: understanding, empathizing, co-creating and experimenting.

Box 4.12. Methodologies for understanding user needs

Code of good practices for the development of public software (Argentina)

The National Office of Information Technologies, which is part of the Secretariat for Public Innovation, has developed a "Code of good practices in the development of public software." The first article of the code requires officials to understand the real contexts and needs of users in order to take advantage of the functions of the digital systems they are designing, and to better evaluate development priorities. The Code provides a set of ideal and minimum good practices, as well as guidance for taking the first steps:

Ideals

- 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 objective data collection and analysis, including A/B testing, service usage metrics, and usability testing.
- Design software taking into account the entire user experience, including actions performed outside of digital systems.
- Evaluate the service with the W3C consortium tools.

Minimum

- Comply with accessibility regulations to ensure equal opportunities and treatment for all people.
- Know the standards of the National Directorate of Digital Services.
- Investigate the type of devices from which citizens access the site, in order to harmonize the design and development of the interface with the user experience.

Where to start

- Consult the Technological Decalogue "Know Your Project".
- Consult the Technological Decalogue "Ensure that your solutions are accessible".
- Create a user story map to understand the experience of frequent users.

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

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

The Digital Government Social Innovation Lab provides Uruguayan public institutions with co-creation and participation methodologies to find better ways to provide public services. Among the different methodologies offered, the two templates presented below can be used to better understand the needs of users:

"Actions with actors" template

This template seeks to understand expectations, opportunities and risks associated with a given stakeholder. Development teams are asked to complete a sheet of the template with the following information and discuss it in the group. The key outcome is to define actions in relation to:

- the**expectations/motivations**of a particular actor; the
- **risks/fears**of a particular actor;
- the**opportunities**–Once expectations and fears have been discussed, teams must identify an opportunity for which they must provide a response;
- **actions to take**.

"User Typology" Template

This template seeks to identify the different types of users of a particular service and, thus, generate a solution that addresses all of them. Teams must answer the following questions/tasks:

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

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

Fountain:www.gub.uy/agencia-gobierno-electronico-sociedad-informacion-knowledge/tematica/metodologias-lab.

Countries in Latin America and the Caribbean are also adapting and designing services based on user requests, response rates, and measured satisfaction. Although the examples mentioned below relate to user-centered methodologies, they mostly put emphasis on measurement and, for that reason, fall into the category of user-informed approaches rather than prioritizing a broader understanding of their needs.

- Barbados has implemented a usability testing program for its electronic records and document management system.[46]
- In Brazil, in accordance with 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 the objective of assessing satisfaction with digital services, Brazil aims to standardize satisfaction assessment, increase user satisfaction with public services, and improve the perception of usefulness of public information. Second, the strategy states that agencies will conduct, by 2022, at least one hundred experience surveys with real users of public services. Third, the strategy commits to implementing a mechanism to personalize the offer of digital public services based on the user profile.[47]This approach is in line with the digital services dashboard offered as part of Brazil's single-window portal,[48]which provides general satisfaction indicators, including a user evaluation of the information and services, and the average waiting time.

- Ecuador has published the*Open Data Guide*((in consultation), a document that provides guidance for selecting and prioritizing open data demands, creating an inventory of the most requested information, promoting citizen participation to better define the public's needs regarding open data, and evaluating the perception and reuse rate of published data sets.[49]

- Uruguay evaluates the response of citizens 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. There are different focus groups made up of prioritized segments of the population, previously identified in quantitative studies. Monitoring strategies and indicators include a satisfaction survey, studies of the general population that measure the level of satisfaction, and surveys of the population that measure the level of satisfaction.

completion of online procedures and satisfaction in this regard, and platform interoperability indicators.[50]

- The Venezuelan Infogovernment Law includes general guidelines on the design of ICT initiatives based on accessibility and usability conditions. Article 15 states: "In the design and development of systems, programs, equipment and services based on information technologies, considerations of accessibility and usability must be taken into account 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 help governments continue to develop their human-centered design competencies, the Australian Government's BizLab kindly provided OPSI with its human-centered design curriculum. Editable source files were provided and made available in OPSI's tool browser.[52]

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[1](OECD, 2019[37]) presents a common conception of what constitutes an AI system, as well as a conceptual framework detailing the stages of the system's life cycle.

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

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

[4]See Appendix B for sources and details.

[5]For example, the OECD participated in the expert roundtable on international best practices and the expert roundtable on youth issues organised by the institution.*Berkman Klein Center for Internet and Society*from Harvard University. A summary of the discussions can be found at:https://cyber.harvard.edu/story/2021-01/summary-reportexpert-roundtable-colombias-draft-ai-ethical-framework .

[6]Annex B presents general information on some of the mechanisms aligned with the OECD Principles on Artificial Intelligence implemented by governments in Latin America and the Caribbean. Please note that the seven countries in the LAC region that officially adhere to the OECD Principles on Artificial Intelligence are considered fully aligned. Therefore, the Annex shows areas where they further strengthen their commitment to the development of country-specific principles.

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

[8]See initiative 5.7 of the Digital Agenda 2020.

[9]https://www.gob.pe/institucion/pcm/normas-legales/395322-007-2020 .

[10]Outside the Latin America and Caribbean region, the directive on automated decision-making (*Directive on Automated Decision Making*) from Canada and its algorithmic impact assessment (*Algorithmic Impact Assessment*) linked represent the most finished example of this approach. For more information, you can visitwww.tbs-sct.gc.ca/pol/doc-eng.aspx?id=32592, In addition to consulting the practical case available in the OECD report entitled*Hello world: Artificial intelligence and its use in the public sector*(OECD, 2019[1]).

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

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

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

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

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

[16]http://www.asambleanacional.gob.ve/leyes/sancionadas/ley-de-infogobierno .

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

[18]This section does not consider broader cybersecurity and information security activities that do not directly relate to AI in the public sector.

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

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

[21]These people could include policy analysts and advisors, field experts, user experience designers, software developers, and lawyers. Depending on the AI system and the relevant applications, there may also be professionals such as sociologists, psychologists, physicians, or others with knowledge and experience in fields with which an AI initiative may interact (Whittaker *et al.*, 2018[83]).

[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]Article 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 andhttps://oecdopsi.org/innovations/design-academy-for-public-policy-labgobar.

[27]https://www.gtai.de/:PRO202001315003.

[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.

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[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]https://guias.servicios.gob.pe andwww.peru.gob.pe/normas/docs/Anex_I_Lineamientos_PGD.pdf

[45]www.gob.pe/8257 .

[46]Survey of digital government agencies in Latin America and the Caribbean conducted by the OECD (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 .

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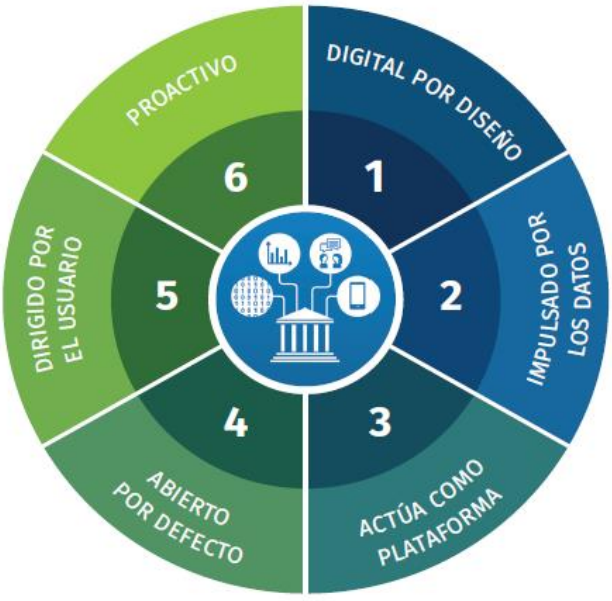
5 Building key governance capabilities

Beyond building trust in AI within the public sector, governments must take steps to ensure they have sufficient governance mechanisms and capabilities in place to achieve their goals and aspirations. At a fundamental level, those that have achieved high levels of digital maturity in their public sector will be better positioned to reap the benefits of AI in this sector, while overcoming its main challenges and pitfalls. This chapter analyses the progress of LAC governments in building the foundations and governance capabilities for AI.

To assist governments in taking policy measures leading to digital government maturity, the OECD has developed the "OECD Framework for Digital Government" (*Digital Government Policy Framework*, DGPF). The DGPF is a policy instrument designed to assist governments in identifying the key determinants of designing and implementing effective strategic approaches that facilitate the transition to digital maturity in the public sector (Figure 5.1). Governments and readers of this report are encouraged to explore the DGPF (OECD, 2020).[55]), and their associated metrics and classifications in the*Digital Government Index*of the OECD (OECD, 2020[34]).

Figure 5.1. Framework d



Fountain:(OECD, 2020[55]).

In the context of digital government maturity, countries will need to build support for AI activities in the public sector, both within and across government, as well as within other sectors and the public. Building this support will depend on having the leadership to set a clear direction and narrative on the use of AI in the public sector, and having coordination mechanisms in place to ensure action is taken to achieve the proposed strategies and objectives.

Governments must also consider the building blocks that make AI-driven innovation possible. Data is the fundamental building block of AI, and effective use requires leadership and a clear strategy to enable government access to and use of robust and accurate data in a way that maintains privacy and respects social and ethical norms.

Governments need to ensure that they have enough room for flexibility and experimentation to facilitate rapid learning. They also need to develop methodologies to determine whether AI is the best solution to a given problem, and provide ways to identify and address it.

Finally, while urgent issues of the moment are often given precedence, governments must recognise the significant changes AI may bring about in the future and explore ways to anticipate them, especially if those potential changes require action today.

From the perspective of the context of the Latin American and Caribbean region, this chapter examines the most pressing and relevant issues identified in previous OECD work, with the aim of collaborating with leaders and government officials in Latin America and the Caribbean to maximize the benefits of AI. The points presented in Figure 5.2 are addressed in particular.

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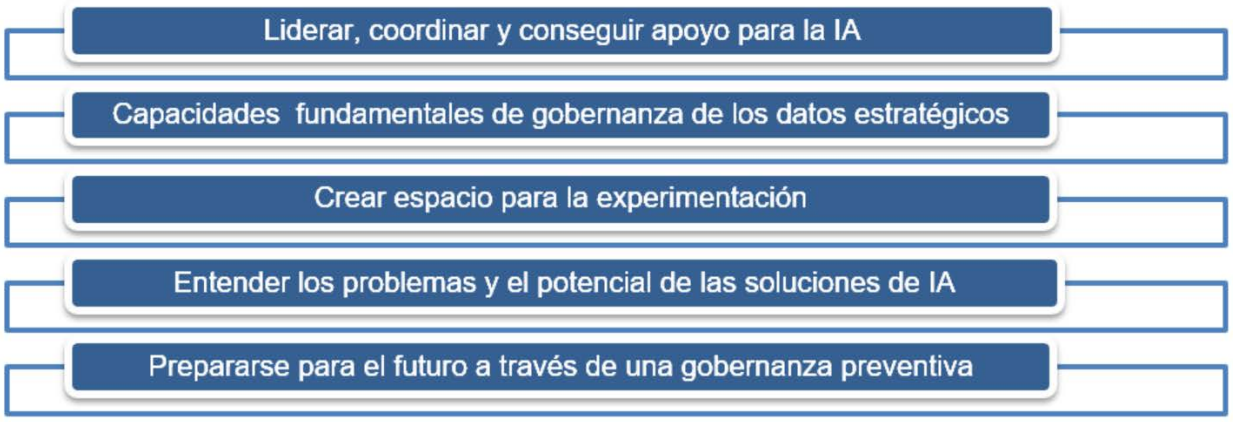


Leading, coordinating and enlisting support for AI

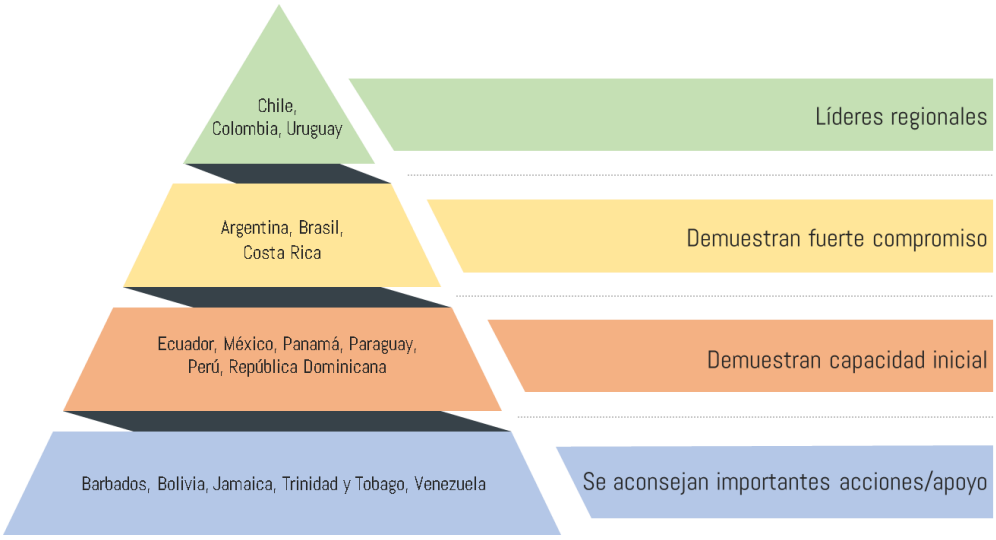
Artificial intelligence presents an immense opportunity to improve the productivity and quality of public services and government operations. A crucial factor in achieving this goal is strong leadership, which is vital to setting the tone from the highest levels of government and actively communicating the potential benefits of AI in the public sector.

A recent investigation of the *Boston Consulting Group* indicates that support for AI in the Government is correlated with the trust placed in it, and that "trust in institutions is essential if governments wish to obtain the necessary support to deploy AI capabilities" (Carrasco, Whybrew and Jura, 2019).[57]). While establishing principles and processes to help ensure a trustworthy approach is essential (see previous chapter), strong and effective leadership is an important starting point, as senior leaders can build a cohesive vision for AI and "set the tone from the top" to generate trust in the technology, both in the public sector and beyond. Those at the highest level also have the power to set a strategic direction that can ripple downwards, helping to frame the use of AI within the broader culture (OECD, 2017).[58]). At the same time, they can promote a clear discourse on the benefits of AI to gain support within and outside government. As expressed in the OECD publication on the framework for digital talent and skills in the public sector *Framework for Digital Talent and Skills in the Public Sector* (OECD, 2021[47]), leadership that creates an environment that encourages digital transformation will communicate a clear vision of digital government and actively advocate for its benefits, and such leaders will be engaged, visible and accessible, and will empower their teams through decentralized decision-making.1

However, central leadership is indispensable but not sufficient. Formal AI coordination bodies and mechanisms will be needed to avoid siloed approaches and ensure coherent implementation of AI strategy and vision.

Leadership and creating a positive climate of support from the highest levels

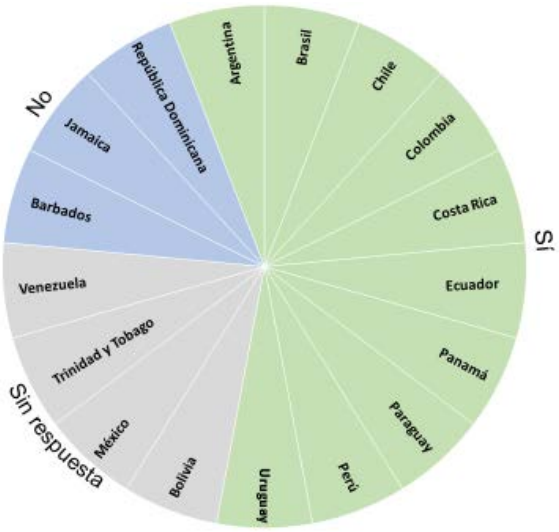
Figure 5.3. Regional capacities in Latin America and the Caribbean for leadership and creating a climate for



The OECD Recommendation on Digital Government Strategies (OECD, 2014)[59]) states that establishing clear institutional roles is one of the basic prerequisites for good governance of digital government and sustainable support for the digital transformation of the public sector. This is especially important at the leadership level. In previous analysis, the OECD had observed that strong support from senior officials, including the political elite, is the main enabler of the adoption of emerging technologies, including AI, by the public sector (Ubaldi*et al.*, 2019[14]). Strong governance leadership and coordination in the areas of digital government, including emerging technologies such as AI, are essential for a country to make consolidated progress towards achieving common goals.

Leadership in AI activities is uneven across Latin American and Caribbean countries. The OECD survey of digital government agencies in Latin America and the Caribbean indicates that at least half of countries in the region have identified a specific government organization that is driving such activities (Figure 5.4). This is promising, given that strategies and activities that place a specific emphasis on AI for public sector restructuring and innovation are a relatively recent phenomenon globally. Improvement in this area is essential for countries to achieve their AI aspirations. During interviews with the OECD, officials from several Latin American and Caribbean governments expressed that the lack of strong leadership hinders the adoption of new technologies.

Figure 5.4. Governments of Latin America and the Caribbean that have designated a public sector organization to manage

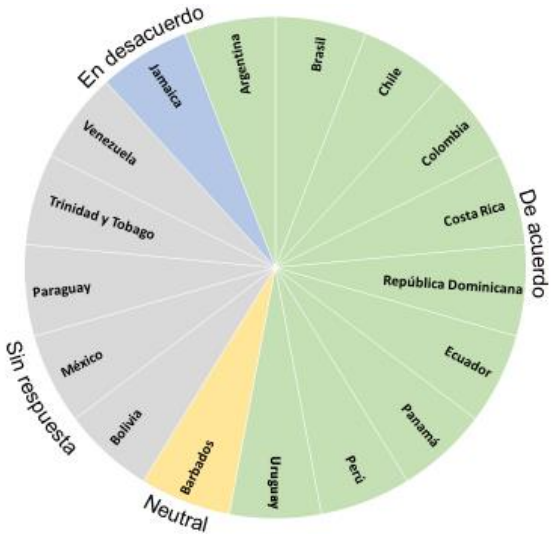


*Fountain:*Survey of digital government agencies in Latin America and the Caribbean conducted by the OECD (2020).

In addition to ensuring strong leadership, another key factor is how these and other leaders across the public sector create an enabling environment for the exploration and use of AI in the public sector. Sustained, high-level support is needed to create a stable and suitable environment for AI strategies and solutions to mature. The atmosphere created by the highest levels of government plays a crucial convening role in setting the direction of AI development and its use by society at large. This atmosphere also sends signals and provides "top-level cover" to officials at all levels, enabling them to support innovation and progress.

Among the digital government agency officials surveyed, more than half of Latin American and Caribbean countries reported that senior leadership expressed clear support for AI in the public sector (Figure 5.5). These results also reveal a link between the authorities designated for AI and the opinions on the support demonstrated, with the exception of the Dominican Republic. It is worth mentioning that the countries that reported that their top leaders expressed clear support for AI have also designated organizations responsible for conducting such activities.

Figure 5.5. Perceptions about whether senior government officials express clear support for AI in the sector



*Fountain:*Survey of digital government agencies in Latin America and the Caribbean conducted by the OECD (2020).

The same countries have already developed, or are in the process of developing, national AI strategies (see Chapter 2). This is to be expected, as Latin American and Caribbean governments that have published national AI strategies and/or committed to the guiding principles have already demonstrated their protagonism in ways that contribute to aligning public sector processes and activities with the achievement of AI strategies. These strategies represent the opportunity to articulate a compelling vision of how AI can transform services and operations for the benefit of citizens, businesses and officials, while maintaining public trust. Other countries in the region —Costa Rica, the Dominican Republic and Panama— have included goals or aspirations related to emerging technologies in other strategies and policy documents (for example, their national digital government strategy). This approach also helps to demonstrate ownership and signal the importance of AI, although perhaps to a less visible and less specific extent than AI-specific strategies.

While instituting these strategies in itself demonstrates a strong level of maturity and forward thinking, countries differ in the extent to which their senior leadership has demonstrated sustained support for these strategies and AI. Among the strategies analyzed, those of Brazil, Chile, Colombia, and Uruguay have been developed and driven by the highest levels of government. Colombia's strategy is unique in that it is an instrument endorsed by the country's presidency (i.e., a CONPES document),[2]This guarantees its support and funding from all levels of government and assigns responsibility for its implementation to the artificial intelligence office of the Presidency of the Republic. In contrast, it is less clear that some of the other strategies have sustained support at the highest level. For example, Argentina's strategy was originally developed by the Presidency of the Nation, but the original document is currently not listed on official government websites. The strategy no longer appears to be a priority, even though Argentine officials indicated that it remains in effect.[3]As mentioned above, the 2018 Mexico strategy put into effect by the previous administration is no longer publicized on official government websites. It is unclear whether the current administration considers it still applicable (Box 2.2).

Countries within and outside the region have explored other avenues to ensure leadership and create an enabling climate for AI in the public sector (Box 5.1). By establishing a strong leadership that steadily drives AI activities, countries in the LAC region could meet their goals.

systematically implement their strategies and objectives across government. Such strategic direction and vision is also important for evolving towards a data-driven public sector, underpinned by artificial intelligence. These aspects are considered in the section “Key capabilities for strategic data governance” later in this chapter.

Box 5.1. Leadership and creating an enabling climate for AI

Task Force on AI (Colombia)

With the support of CAF, Latin America's development bank, the Presidency of the Republic of Colombia is working on the design and implementation of an AI working group in Colombia. This office will be in charge of promoting the implementation of AI policy and will also encourage and facilitate its use in the public sector. Its objectives are the following:

- Define mechanisms and tools to accelerate the implementation of Colombia's AI strategy/ policy and ethical framework.
- Ensure the monitoring of projects of public entities that are using AI systems to provide a more efficient and effective service to citizens.
- Increase international cooperation and coordination with governments and international entities to ensure the proper implementation of Colombia's AI strategy.
- Develop mechanisms to promote access to and use of data for the design and development of AI systems.
- Increase collaboration with the private sector and the entrepreneurship ecosystem on AI-related issues.

State Secretariat for Digitalisation and Artificial Intelligence (Spain)

In 2020, by Royal Decree, the Government of Spain restructured a number of ministerial departments to increase the efficiency and effectiveness of government operations. As part of this task, the decree created the State Secretariat for Digitalisation and Artificial Intelligence as a senior body within the Ministry of Economic Affairs and Digital Transformation.

The Secretariat's responsibilities include the implementation of the country's national AI strategy as of December 2020, which consists of six backbone axes. These include promoting the use of AI in public power and in national strategic missions, and establishing an ethical and regulatory framework that guarantees the protection of individual and collective rights. As a result of the COVID-19 pandemic, the Secretariat added the Data Office to provide services similar to those of a Chief Data Officer (Chief Data Officer).*Chief Data Officer*) and developed a mobile app called**Covid Radar**for contact tracing.

Ministry of Artificial Intelligence (United Arab Emirates)

The UAE is the only country in the world with a Ministry of Artificial Intelligence, which leads the National AI Programme. The programme was established in October 2017 alongside the country’s AI strategy. To drive and coordinate AI activities across the public sector, the AI Council was tasked with proposing policies to create an AI-friendly ecosystem, encourage advanced research in the sector, and promote collaboration between the public and private sectors, including international institutions, to accelerate AI adoption.

AI for Humanity (France)

The President presented "AI for Humanity", which consists of a national AI strategy, a set of core commitments and EUR 1.5 million in funding for AI research, businesses and projects. The initiative also includes a report commissioned by the Prime Minister that sets out seven key pillars for achieving French AI objectives, which cut across sectors and mission areas, including the restructuring of the public sector.

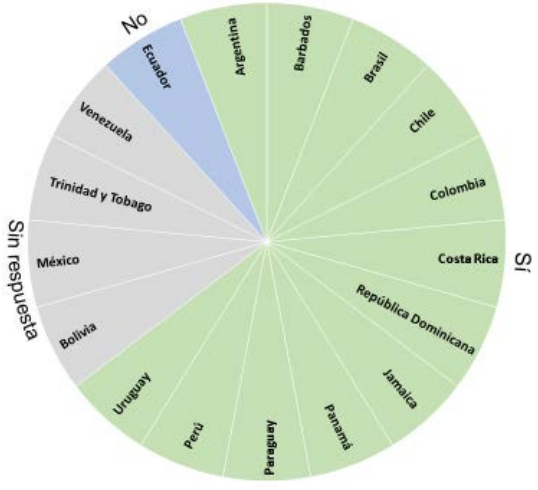
*Fountain:*https://oecd-opsi.org/projects/ai/strategies ,https://inteligenciaartificial.gov.co ,https://ai.gov.ae ,www.aiforhumanity.fr , (Ubaldi *et al* ., 2019[14]),https://oecd.ai/dashboards/policy-initiatives/2019-data-policyInitiatives-26722, https://portal.mineco.gob.es/eses/digitalizacionIA/Paginas/sedia.aspx ,www.boe.es/diario_boe/txt.php?id=BOE-A-2020-410 andhttps://bit.ly/3sptxqL .

Facilitate coordination across the government

Just as leadership and strategic vision are essential, so is the ability of public sector organizations and teams to realize their vision in an aligned and coherent way. Ultimately, AI is a cutting-edge approach to developing public policies and services. Coordination across government is essential to overcome bureaucratic legacy, verticality and silos, and encourage horizontality, integration, coordination and synergies across and between levels of government (OECD, 2020).[55]). This represents a paradigm shift in digital government and public sector data governance, and is essential to achieving significant AI advancement in the public sector.

Among LAC governments, almost all countries that completed the OECD survey of central digital government bodies indicated that they have a formal public sector body that allows for inter-institutional coordination between ministries/bodies responsible for implementing digital government projects (Figure 5.6). For example, Brazil has a special secretariat for state modernization within the general secretariat of the presidency. By decree,4This secretariat is explicitly responsible for coordinating and monitoring the execution of the national digital government strategy across the Government. There are also other, more lightweight but equally important mechanisms, such as the Digital Strategic Committee of Paraguay.5The example of Bolivia is interesting because it involves all the powers of the State, while Chile's approach involves a network by mandate.

Figure 5.6. Countries that have inter-institutional to coordination



*Fountain:*Survey of digital government agencies in Latin America and the Caribbean conducted by the OECD (2020).

Box 5.2. Examples of digital government coordination 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 discuss ICT initiatives and guidelines in Bolivia. All branches of government participate in the various working groups and the Council acts as a coordination mechanism for the development and implementation of proposed 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, e-government, and user experience and interfaces.

Fountain: www.ctic.gob.bo .

Digital Transformation Coordinators (Chile)

Under the mandate of the Digital Government Division (DGD), the Digital Transformation Coordinators bring together institutional delegates to monitor the implementation of the State Digital Transformation Law. This approach can be a useful model for digital champions in the Chilean public administration, as well as a route to interact with key stakeholders on what should be understood as an intergovernmental agenda, which they should also take ownership of.

Fountain: (OECD, 2020[48]).

The existence of these formal digital government coordination mechanisms is a critical step to ensure the correct and aligned implementation of national digital government strategies and initiatives, including those involving AI. As shown in Figure 5.6, most governments in Latin America and the Caribbean have a public sector organization responsible for leading and coordinating activities at the central level. Such broader digital government coordination mechanisms will be considered in greater depth in the next report. *Going Digital: The State of Digital Government in Latin America* [The Road to Digitalization: The State of Digital Government in Latin America]. As with these broader digital initiatives, some countries have established formal mechanisms specifically to coordinate their AI strategies and initiatives across the entire public sector. For example, Argentina has developed a *Hub* AI innovation to execute public sector AI projects. There are thematic groups led and governed by a governing body in charge of defining objectives and metrics to measure progress (Ubaldi *et al.*, 2019[14]). In the case of Colombia, a Task Force for the development and implementation of AI would be responsible for intergovernmental coordination through interaction with national entities that direct the coordination of public policies and the execution of AI projects.[6] The action plan linked to Chile's AI policy calls for the development of an AI observatory, a platform that hosts information on all national public sector AI initiatives, some of which are designated as best practices. While it is not clear whether the observatory will have a formal role in coordinating AI activities, it can be a tool to help the government facilitate awareness of AI activities and ensure a uniform level in their design and implementation.

The OECD was unable to identify other formal coordination mechanisms tailored to AI beyond statements assigning responsibility to an existing ministry or office. However, there are examples outside the region, such as the US Select Committee on AI.

United States (Box 5.3). However, such AI-specific bodies and coordination mechanisms are fairly new and the OECD has not yet determined their utility. It may be that existing formal coordination mechanisms for broader digital government activities are sufficient to address AI-related issues. Nevertheless, Latin American and Caribbean countries could explore the potential of intergovernmental AI coordination mechanisms to determine whether such an approach is appropriate within their contexts.[7]

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

In recent years, the United States has established research institutes and issued regulatory guidance on AI, as well as developed a nationwide AI strategy and guidelines for the federal government to use AI. In 2018, the White House created the Select Committee on Artificial Intelligence to oversee the coordination of federal activities related to AI research and development (R&D). The Select Committee is comprised of the highest-level R&D officials from across the federal government and represents the whole-of-government perspective on AI R&D planning and coordination. In early 2021, the Committee was expanded and made permanent. It is the senior interagency body charged with overseeing the national AI strategy.

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

As noted above, data is the foundation of AI, and for this reason, data governance and coordination also play a crucial role. The section "Key strategic data governance capabilities" later in this chapter addresses how to address these issues. In addition to these formal mechanisms, less formal communities of interest and networks are also vital to support coordination, break down silos within the organization, and deliver end-to-end solutions that holistically address problems (OECD, 2020).[55]) (OECD, 2020[48]). These communities and networks are considered in more depth in the section "Understanding the problems and potential of AI solutions." Together, formal coordination mechanisms and communities and networks promote information sharing and culture change, prevent technology obsolescence, and enable cross-sector collaboration and ecosystem building.

Consolidate internal and external support and legitimacy

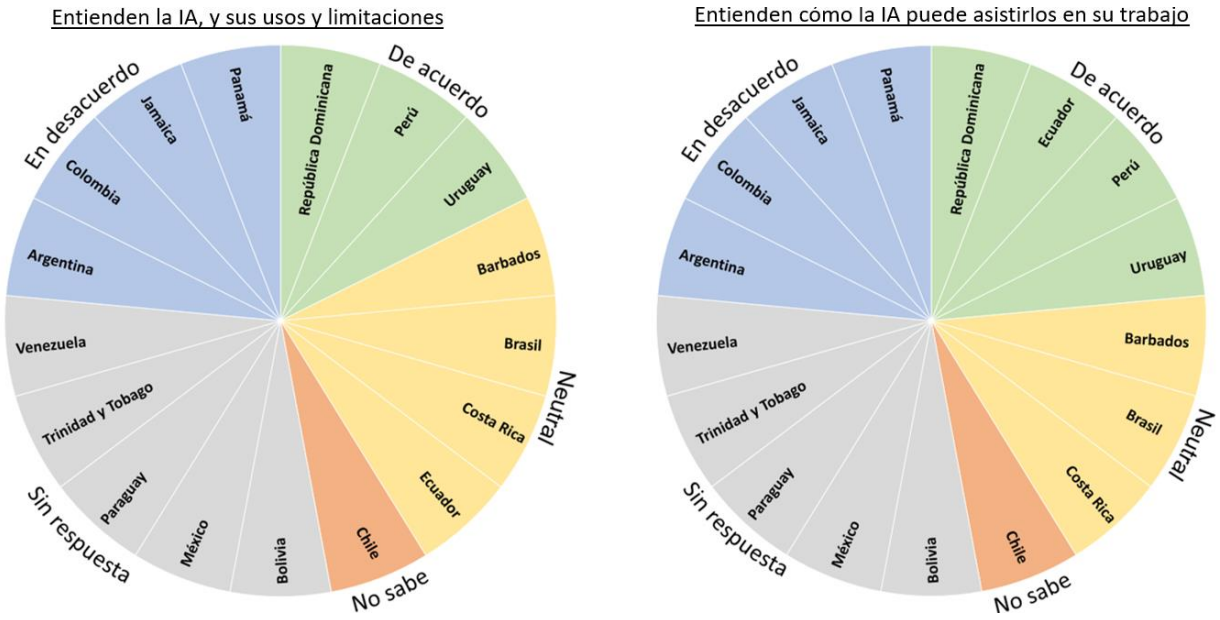
Even with strong principles for trustworthy AI (see previous chapter), strong leadership and coordinated practices, governments must take steps to gain and maintain support and legitimacy both internally among officials and externally with the public. This appears to be an area that could use more attention across the LAC region to ensure that public sector AI activities are accepted and adopted within the government as a whole and beyond.

Internally, AI is unlikely to replace public sector workers in the short term; however, in Latin America, 30% of public sector staff work in occupations with a high risk of technological substitution (Weller, Gontero, & Campbell, 2019).[60]). Fear of this possibility may be widespread among officials. Securing their support will require a clear narrative and tangible examples of how AI can assist them in improving service delivery, reducing the time they spend on routine tasks and allowing them to focus on higher-value tasks, where they can have the greatest impact. Steps will also need to be taken to ensure that officials understand that AI can assist them rather than replace or control them. If they feel threatened by the speed of change, its effectiveness can quickly decline and this can be a challenge.

This will manifest itself in a variety of ways. For example, managers may end up frustrating their organization's capacity for innovation if they do not give enthusiastic change agents the space they need to experiment and conceive of new modes of problem solving (PricewaterhouseCoopers, 2018).[61]). If not done well, resistance among public sector workers can delay the deployment of AI, limit its effectiveness and affect motivation (OECD, 2019).[1]).

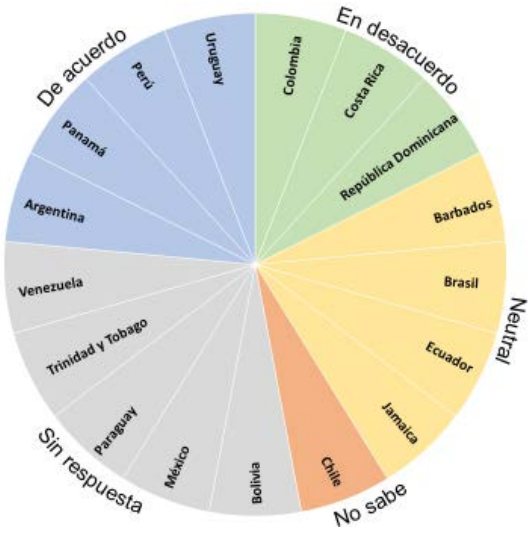
While a handful of countries in Latin America and the Caribbean have implemented national AI strategies and have developed or adhered to human-centered principles, there are indications that understanding of and internal support for AI in the public sector in many of these countries is not yet entrenched. As shown in Figure 5.7, digital government officials in only a few countries indicated that public employees understand AI, its uses and limitations, and how it can assist them in their tasks. Furthermore, results regarding the extent to which they fear that AI could impact their jobs are mixed (Figure 5.8).

Figure 5.7. Officials understand AI, its uses and limitations, and how it can help them in their



*Fountain:*Survey of digital government agencies in Latin America and the Caribbean conducted by the OECD (2020).

Figure 5.8. Officials fear that AI and emerging technologies will negatively impact their jobs



*Fountain:*Survey of digital government agencies in Latin America and the Caribbean conducted by the OECD (2020).

Such signs are to be expected early in the development and implementation of AI policies and initiatives. However, they imply that LAC governments may need to do more to ensure that public officials understand AI and how it can help them in their tasks, in order to increase the likelihood of their adoption on a case-by-case basis. The OECD identified a number of professional specialization activities in digital and AI skills underway in Latin American and Caribbean countries that can help in this regard (see the section "Increasing internal expertise and human capital" in Chapter 6), although they mostly emphasize technical skills and are often targeted at certain types of employees, rather than being aimed at broadening understanding of the benefits of AI across the public sector. Communication and educational campaigns can also help dispel rumours and myths about AI, and explain how it can be a positive force in the daily lives of public servants. With regard to AI and other digital government priorities, a communication strategy about the measures and decisions that will promote the evolution towards digital government is a prerequisite for successful implementation of policies and strategies (OECD, 2018).[62]). Although there are some countries that hint at it (for example, Peru's draft national AI strategy mentions the creation of online courses for public servants to understand the use and benefits of AI, and Chile's AI strategy commits to promoting successful experiences in the public sector), the OECD was unable to identify active AI campaigns among governments in Latin America and the Caribbean. Box 5.4 provides an example from Canada of an initiative designed to broaden understanding of the benefits of the technology among public servants.

Box 5.4. Digital Foundations (Canada)

The Canada School of Public Service's Digital Academy offers training for civil servants of all levels and with different levels of specialized technical knowledge. Training examines real-life challenges and problems through a combination of events, online learning and*podcasts*(These "busrides.ca" are intended to provide a quick introduction to topics related to the Government's digital services. The level*Digital Foundations* [Digital Foundations] of learning opportunities is aimed at all officials and

levels of specialized knowledge. The goal is to provide timely information about the digital world that will change the way public servants perform their jobs and even live.

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

Create support*externally*The public's perception of AI is also important. This is perhaps particularly true in the LAC region, where a recent survey of over 150,000 people found that 49% of respondents (the highest regional percentage in the world) feared that AI would harm them (Neudert, Knuutila, & Howard, 2020).[63]LAC governments must ensure that there is consistent messaging from the highest levels communicating to citizens, residents and businesses the importance and potential benefits of public sector AI-enabled solutions and services. They must also communicate the limiting factors and risks, along with strategies to overcome them (for example, by establishing ethical principles and safeguards such as those discussed in the previous chapter). This should be part of organized and targeted strategic communications campaigns.

As with digital strategies in a broader sense, a central argument for promoting communication and dialogue is to encourage appropriation and, above all, support from the population, making it a key agent in driving the country's strategy through informed demand (OECD, 2018).[62]). For communication to be effective, it is recommended to focus on channels commonly used by citizens, such as social media, to convey key messages to the public. Face-to-face workshops and demonstrations in ministries and local communities to stimulate ongoing participation and engagement can also play a useful role (OECD, 2020).[48]). In addition to communicating the opportunities and challenges of the strategy, LAC governments should identify opportunities to inform the public about progress in service design and delivery activities.

Although the OECD has identified a number of positive actions aimed at engaging with and obtaining feedback from citizens (see the section "Leveraging external expertise through partnerships and procurement" in Chapter 6) and seeking input from end-users (see the section "Ways to ensure an inclusive and user-centred approach" in Chapter 4),,Examples of external communication campaigns related to public sector AI strategies, principles or initiatives are limited. Brazil's national strategy is notable for including the action item "Create awareness campaigns on the importance of preparing for the ethical development and use of AI", targeting the general public. Chile's strategy includes the goal of "making the use of AI visible in industry" through coordinated outreach across ministries, even though the strategy targets the private sector and not the general public. The OECD does not consider this to be a deficiency, as these approaches are quite new.8However, over time, it is advisable for governments in Latin America and the Caribbean to create such communication campaigns and strategies, and to incorporate them into or align them with broader communication strategies about digital government activities.

Core capabilities for strategic data governance

AI governance and coordination must consider data governance, which is the cornerstone of modern AI systems. The forthcoming report,*Going Digital: The State of Digital Government in Latin America*[The Road to Digitalization: The State of Digital Government in Latin America], scheduled for publication in 2022, will present an in-depth examination of the capabilities and practices inherent to a data-driven public sector, including governance of

data, which underpins public sector readiness to adopt such approaches in LAC governments (Figure 5.9). It will also consider issues related to common standards and interoperability between different information systems, which officials most frequently cited before the OECD as challenges to implementing emerging technologies (Ubaldi*et al.*, 2019[14]). Finally, the report will analyze the open government data policies and initiatives of Latin American and Caribbean governments aimed at increasing the openness, usefulness and reuse of government data, which can serve as input for AI in all sectors.

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Fountain:(OECD, 2019[44]).

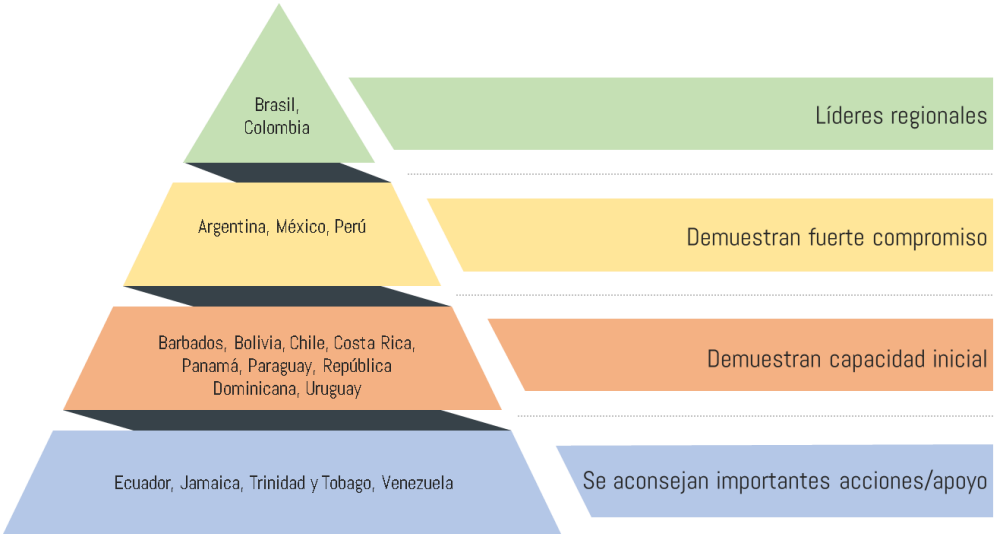
As the forthcoming report covers data in depth, this AI briefing focuses on critical high-level requirements within the strategic layer of data governance relevant to AI, namely: the degree of formal data leadership in LAC countries, and the existence of related strategies.9Chapter 6 also considers issues of interest that support data governance capabilities, including computer literacy and data skills (see “Scaling up internal expertise and human capital”) and infrastructure components that are important for AI development (see “Infrastructure”).

Many governments around the world still lack a strategic approach to building a data-driven public sector, and in general, data-specific policies in this sector or strategies and leadership (e.g. Chief Data Officers) are remarkably scarce across countries (OECD, 2020).[34]). As discussed in this section, this also applies to countries in Latin America and the Caribbean. The lack of a strategic vision, as well as formal roles and responsibilities for the coherent design and implementation of data-driven public sector projects, represents a major challenge in creating a national approach to exploring and using AI for public sector innovation and restructuring. Governments in Latin America and the Caribbean that wish to advance the exploration and adoption of AI in the public sector will need to ensure that they have strong fundamental data capabilities to support their aspirations.

Data Leadership

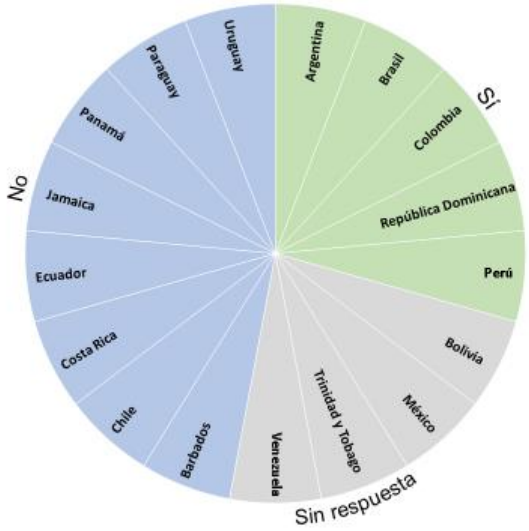
Data leadership is essential to ensure that the data-driven conversation across the public sector has strategic direction and purpose, and to ensure consistent implementation across government and within individual organisations (OECD, 2019).[44]). Good data governance can enable you to extract value from data assets, increase access to data, share and integrate data within and outside the organization, and improve overall efficiency and accountability.

Figure 5.10. Data leadership capabilities in the Latin America and Caribbean region



Most LAC governments have not formalized a data leadership position such as Chief Data Officer (or similar position, with sufficient political and administrative clout) (Figure 5.11). These established leadership roles assume responsibility for overseeing the development of a national data strategy and could provide clarity to the LAC public sector and the general public on how governments address ethics, interoperability, access, availability, governance, analytics, and other related issues (OECD, 2020). [48]).

Figure 5.11. Existence of a Chief Data Officer position (or similar role) in Latin American and Caribbean countries



Fountain:Survey of digital government agencies in Latin America and the Caribbean conducted by the OECD (2020), country comments on the draft report.

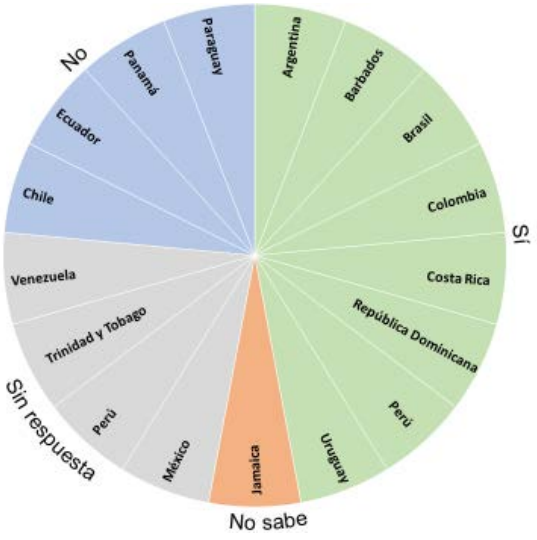
Around half of OECD countries have appointed a Chief Data Officer (OECD, 2018).[62]), and the trend is for this percentage to grow over time. In Latin American and Caribbean countries, this number is slightly behind the OECD average. OECD research found that those countries that do have a Chief Data Officer appear to have reaped significant benefits. For example, countries ranking high on the OECD OURdata Index have prioritized the creation of the role/functions of a Chief Data Officer (OECD, 2018).[64]). In previous work, the OECD also recommended the creation of Chief Data Officer positions in Latin American and Caribbean countries, including Chile (OECD, 2020).[48]) and Panama (OECD, 2019[38]), in line with the specific national context and public sector culture. It also recommended that Chief Data Officers have a strategic vision of data governance to enable coordination of public entities towards synchronized and well-structured policy objectives, covering the entire government data value chain (OECD, 2018).[65]). While five countries indicated in the survey that they have national Chief Data Officers, the OECD found no evidence to confirm this in the case of Colombia, but was able to identify other examples in the LAC region:

- In Brazil and Peru, the national Data Director was mandated by decree (OECD, 2018).[64]). However, in the case of Peru, the OECD recommended that the country formalize and strengthen the position of Government Data Director (OECD, 2019).[66]).
- Colombia does not have a position called “Chief Data Officer” at the national level. According to Colombian public servants, the role of the country’s Vice Minister of Digital Transformation is similar to that of a Government IT Director. The Government is currently designing and implementing a National Data Infrastructure Plan, as part of which the role of the Chief Data Officer will be “formally defined.”*Chief Data Officer*in the organizational structure of public entities”. In addition, the development of the governance model for the data infrastructure includes the definition of several roles, including that of the national Data Director (OECD, 2018). [62]).

- Although they are not formally called “Chief Data Officer”, Argentina and Mexico do in fact have similar positions (OECD, 2019).[44]In previous work, the OECD indicated that a more formal structure would work better, and recommended that Argentina take additional steps to formalize data governance structures (OECD, 2019).[44]).

Although few governments appear to have a national Chief Data Officer, most countries responding to the OECD survey indicated that they have a department or unit exclusively responsible for supporting the strategic use of data (Figure 5.12). For example, Colombia's Data Exploitation Policy indicates that the MinTIC and the National Planning Department share responsibility for leading data-related activities, but designates a specific institution for each objective (Government of Colombia, 2018).[67]). The Department of Standardization, Regulations and Technical Audit of the Presidential Office of Information and Communication Technologies (OPTIC) of the Dominican Republic has similar responsibilities (OPTIC). 10This represents an important step, even if authority does not rest with a single leader, as is the case in many countries.

Figure 5.12. Existence of a specialized department or unit in the central/federal government responsible for providing support public

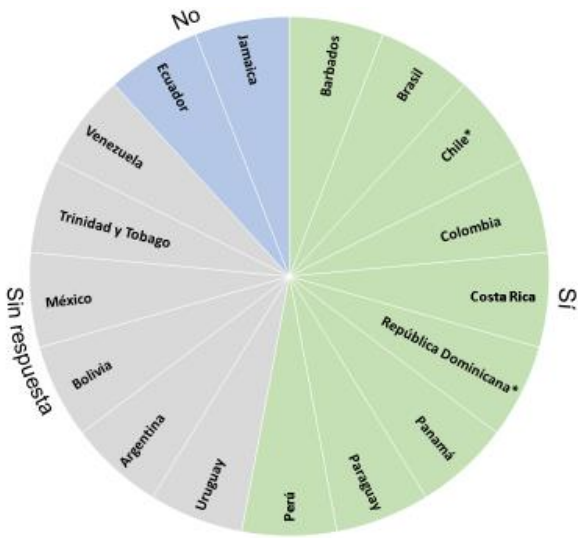


*Fountain:*Survey of digital government agencies in Latin America and the Caribbean conducted by the OECD (2020).

Finally, the importance of data leadership is not limited to the national level. If successfully implemented, this leadership takes the form of institutional Chief Data Officers (CDOs).*Institutional Chief Data Officers*, iCDOs), or “data stewards”. National and institutional Chief Data Officers work in parallel, as they ensure the implementation of data strategies, policies and governance in a process that maximizes their potential, including in relation to AI (OECD, 2018).[64]). Under the supervision of a Chief Data Officer, the development of institutional and country data strategies should empower a network of institutional data managers and communities of data professionals to identify priorities to solve some of the most pressing problems in this field (OECD, 2019).[38]). The results of the 2016 OECD Open Government Data survey suggest that the existence of institutional data directors in each ministry and/ or agency reinforces the impact of a Chief Data Officer in central or federal government (OECD, 2018).[64]).

Among Latin American and Caribbean countries, the majority of surveyed governments 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 counterintuitively, governments often seek to consolidate data leadership at the organizational level before establishing national leadership in the form of a Chief Data Officer.

Figure 5.13. Public sector organizations with a leadership position on data



Note: * indicates that public sector organizations have implemented these roles as part of their data capability, while the remainder indicate a more specific government provision mandating such roles. Panama initially indicated "No," but the OECD changed this response to "Yes" due to detailed information that had been documented as part of a previous analysis (OECD, 2019).[38]). *Fountain:* Survey of digital government agencies in Latin America and the Caribbean conducted by the OECD (2020).

Examples of these positions in the Latin American and Caribbean region include the following:

- In Argentina, as in many OECD countries, there is no explicit formal requirement to appoint institutional data directors in the relevant ministries and agencies of central/national government. This makes digital governance at the ministerial level somewhat inconsistent; some ministries have institutional data directors with positive effect, and others do not. Where they exist, these roles have largely placed an emphasis on compliance with data publication rules (OECD, 2019).[68]).
- In Colombia, Decree 415/2016 orders all public institutions to appoint a Director of Information Technology and Systems who also acts as institutional data manager (i.e., iCDO) (Box 5.5).
- Costa Rican legislation[11] mandates the creation of an institutional data leader; however, this role appears to be limited to information access policy and handling related requests and complaints.
- In Panama, as of 2019, ten institutions had an iCDO and six of them focused exclusively on open data. Another 21 institutions planned to incorporate an iCDO in the short term (OECD, 2019).[38]).

- Paraguay's Information Security Governance Model[12] designates an information security area in all government institutions, with well-defined objectives, roles, competencies and responsibilities. However, these activities place emphasis on data security and not necessarily on strategic access to, use of and sharing of data.

- In Peru, digital government leaders are in charge of coordinating objectives, actions and measures for digital transformation and the deployment of digital government at the institutional level, in accordance with the policies and guidelines issued by the Presidency of the Council of Ministers through the Secretariat of Government and Digital Transformation.
- Uruguay's data protection law requires that every public institution have a personal data protection officer responsible for its enforcement. However, this person does not appear to fully fulfil the role of an institutional Chief Data Officer, and the OECD found no evidence that such a role exists in the country.

Box 5.5. The role of institutional data managers in Colombia

In Colombia, Decree 415/2016 orders all public institutions to appoint a Director of Information Technology and Systems at the management level, a role that must also serve as an institutional data manager. Among others, the responsibilities of institutional data directors are the following:

- Place emphasis on generating public value by ensuring that public service institutions have the technology capabilities and services necessary to drive digital transformation, organizational effectiveness and State transparency.
- Ensure the implementation and maintenance of the entity's IT business architecture in accordance with the central guidelines, the e-government strategy and vision, the digital transformation needs and the specific legal framework of the entity or sector.
- Identify opportunities to adopt new technological trends that generate a positive impact on the sector and the country.
- Lead the acquisition processes for technology goods and services.
- Generate spaces for articulation with other institutional actors in the public and private sectors, academia and civil society on the design and implementation of policies that address information technology and evidence-based data collection.
- Design information management strategies to ensure the relevance, quality, timeliness, security and efficient flow of public sector information within and between institutions in the sector.
- Propose and implement actions to promote the open government strategy through interoperability and openness of government data, with the aim of facilitating civic participation, collaboration between interested parties and transparency in the public sector.
- Designate the public servants responsible for leading the development, implementation and maintenance of information systems and digital services in accordance with the provisions of the Strategic Plan for information and communications technologies.
- Promote and facilitate the use and appropriation of technologies, information systems and digital services by public servants, citizens and other interest groups.

- Promote the effective use of the right of access of all persons to information and communications technologies, within the limits established by the Colombian Constitution and law.

Fountain: Colombian Government (2016), https://normograma.mintic.gov.co/mintic/docs/decreto_0415_2016.htm , (OECD, 2018[62]).

In addition to formalized data leadership at the central and institutional level, LAC governments appear to be positioning themselves for stronger leadership governance in other ways:

- In its national AI strategy, Argentina has committed to "generating a stable and predictable governance framework, covering both public and private sector data." This includes collaboration between the Public Information Access Agency and the National Artificial Intelligence Observatory to design the proposed rules for cooperation in terms of data.

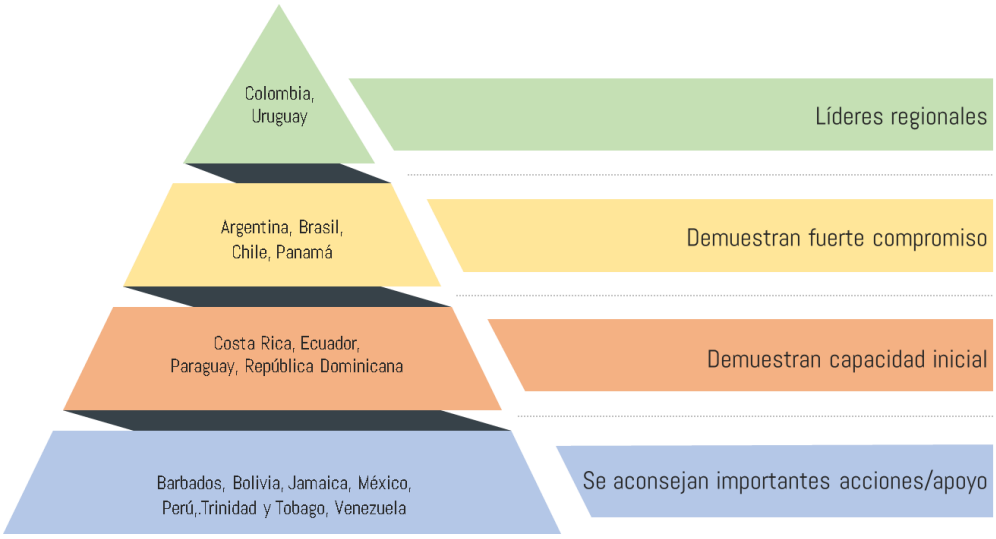
- In Bolivia, the Plurinational Committee on Information and Communication Technologies facilitates a Data Working Group where public institutions at all levels interact, debate and establish guidelines in the field of access to and management of data in the State.[13]
- Chile's national AI strategy and action plan include a specific emphasis on data as an "enabling factor," and set out actions for the public, private, and academic sectors. In relation to the public sector, they propose creating and consolidating an appropriate data governance structure that will increase the availability of quality data.
- Peru's Digital Government Law[14] created a Peruvian State Data Governance and Management Framework 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 they manage." As a complement, it tasks the Secretariat of Government and Digital Transformation with issuing guidelines and guides to guarantee the quality of the data, its security and ethical use.[15]

The activities considered here illustrate the progress made in several Latin American and Caribbean countries to inspire data leadership at national, central and institutional levels. However, they also show gaps that need to be addressed in order to move forward on AI. Some LAC governments reported in the survey the existence of a leadership position within the government. However, it was not possible to verify this assertion. This may reveal the lack of formalization of roles and responsibilities in the country.

Data strategy

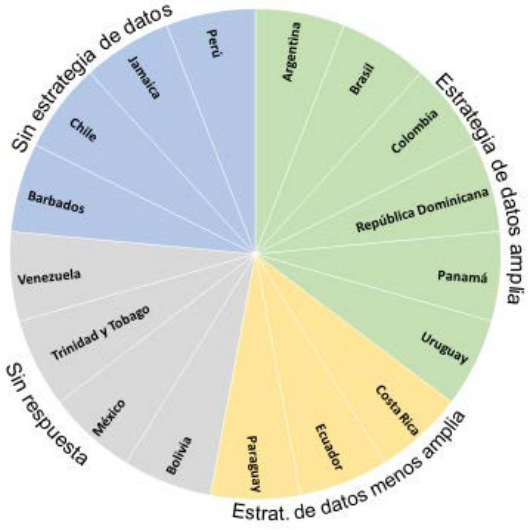
Along with strong data leadership, it is important to have a solid ad hoc strategy that allows governments to build a systemic foundation for AI data capabilities. A clear data strategy through which governments can access rich, accurate and useful data, maintain privacy, and observe ethical and social norms is certainly a necessary condition for the effective deployment of AI. In the LAC region, governments have made significant progress in this area in recent times.

Figure 5.14. Capabilities for adopting a strategic approach to data use in the public sector in the region



Six Latin American and Caribbean governments reported having a single national data strategy covering different aspects (e.g., open government data; data sharing within the public sector; data ethics, protection and security), while three others reported having a somewhat less comprehensive strategy, with an emphasis on data for AI or internal data management (e.g., cataloging, generating, sharing and using data within the public sector) (Figure 5.15).

Figure 5.15. Latin American and Caribbean countries with a formal data strategy



*Fountain:*Survey of digital government agencies in Latin America and the Caribbean conducted by the OECD (2020).

Such positive results demonstrate the increasing priority that governments in Latin America and the Caribbean are placing on leveraging data as an asset and on moving towards a data-driven public sector. However, the OECD was not always able to obtain sufficient evidence to support such results, and was only able to confirm the existence of data strategies in Colombia and Uruguay. A more in-depth analysis of each of the strategies is beyond the scope of this report.

report. However, there are some indications that countries' broad strategies may not cover all aspects of the OECD framework for a data-driven public sector (OECD, 2019).[44]) or that, if they do cover them, it may not be in a way that is immediately clear. For example, in a recent analysis, the OECD found that Panama's strategy placed the main emphasis on open public data and that it placed less emphasis on other valuable aspects of data (OECD, 2019).[38]). Similarly, OECD survey results in Argentina, Brazil, the Dominican Republic and Panama indicated that their open government data strategies and practices constitute broader strategies, even though their content is more narrowly focused on open data. Some countries pointed to information-sharing standards or platforms (Brazil, Dominican Republic).

It may be that a combination of disparate policies and procedures is sufficient to address all the issues of interest for a national data strategy. However, it is not as useful when developing an aligned systemic approach to creating a data-driven public sector. All Latin American and Caribbean countries, including those that reported having comprehensive strategies, would benefit from ensuring that their national strategies are relevant and clear, and that they are compatible with the OECD framework for a data-driven public sector (OECD, 2019).[44]).

Overall, in this report, the OECD was able to find only one clear and specific, albeit not very detailed, data strategy among Latin American and Caribbean countries (Uruguay, Box 5.6). Colombia appears to have established the elements of a solid national data strategy, albeit separated into discrete components, namely the National Data Exploitation Policy,16open data policy17, the Data Infrastructure Governance Model for the Development of Emerging Technologies,18the National Data Infrastructure Plan19and the Interoperability Framework20The latter has a broader scope, covering aspects such as data governance, data architecture, citizen-centred design, service design, information security, collaboration, data utilisation and re-use, and other topics of interest. The country's AI strategy also includes measures supporting the task of extending data infrastructure and the creation of data trusts, which are part of the Data Exploitation Policy.

Finally, while some governments do not currently have an established data strategy, there are indications that they are developing one. Chile, for example, is developing a national data strategy (OECD, 2020).[48]) inspired by the OECD framework for a data-driven public sector (OECD, 2019)[44]). The strategy will place great emphasis on promoting interoperability and data sharing in the public sector, and on preparing the administration for the advent of increasingly sophisticated processing capabilities, such as AI (OECD, 2019).[69]), points that are reiterated in the country's AI strategy and action plan.

Box 5.6. Data policy for Uruguay's digital transformation

The Government of Uruguay has developed a data strategy that promotes data as essential assets for all government operations and supports a systemic approach to data collection, management and governance. It also introduced an interoperability platform to facilitate and promote digital government services, and increase integration between public sector organizations.

The policy outlines general principles for data management in central administration, as well as principles associated with data management throughout its life cycle.

General principles

- Principle 1: Data as an asset 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: Sharing and use
- Principle 8: Open data
- Principle 9: Data protection (including legality, veracity, purpose, prior informed consent, data security, confidentiality, responsibility).
- Principle 10: Security
- Principle 11: Preservation

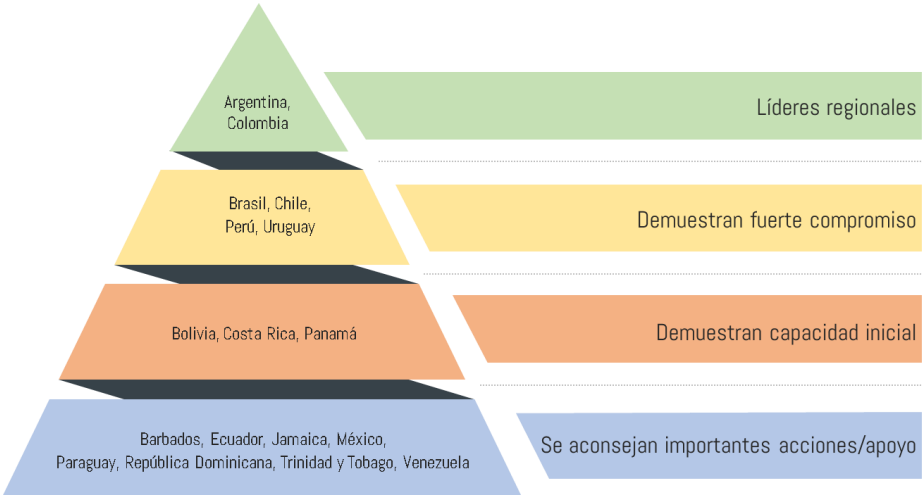
The policy does not provide a great deal of detail about how each principle will be achieved, but rather conceives of them as the collective foundations of a subsequent plan of action.

*Fountain:*www.gub.uy/agencia-gobierno-electronico-sociedad-informacion-knowledge/comunicacion/noticias/uruguay-politica-datos-paratransformacion-digital.

The creation of general strategies and detailed and flexible action plans to achieve them would benefit governments in Latin America and the Caribbean. A good example of this approach, outside the region, is provided by the United States Government's data strategy and roadmap as a case study in the report. *Hello world: Artificial intelligence and its use in the public sector*(OECD, 2019[1]).

Creating space for experimentation

Figure 5.16. C



Governments need to make 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 this sector. If practitioners are not free to explore new ways of developing and delivering services, the potential of AI in the public sector is unlikely to be realised. In addition to enabling the identification of new possibilities and approaches, controlled environments for AI experiments and trials facilitate the timely identification of potential technical flaws and governance challenges. In doing so, they can also highlight public concerns, particularly through testing in near-real-world conditions (OECD, 2017).[70]). Such environments include innovation centres and laboratories and "isolated spaces" (*sandboxes)* Experiments can operate in "start-up mode" for deployment, evaluation and modification, and then quickly expanded, reduced or abandoned (OECD, 2020).[71]).

A number of governments in Latin America and the Caribbean have already developed a strong capacity for experimentation in general, including through innovation and experimentation laboratories. Successful examples of this approach include Argentina's LABgobar,[21]Brazil's GNova laboratory[22] and the Government Laboratory (LabGob) of Chile.[23]While these labs are not specifically AI-oriented, they demonstrate that the country is investing in fostering systemic capacities for experimentation and innovation, including digital innovation. In line with OECD observations globally, a number of LAC governments have developed or are in the process of developing pilot labs and processes for AI experimentation, either as exclusive activities or as part of a broader portfolio of digital government initiatives that include AI. These activities include:

- As required by the country's national strategy, Argentina has established an AI Innovation Lab that brings together many stakeholders to experiment and develop AI projects in a variety of areas (Box 5.7). It also calls for the creation of eight new multidisciplinary AI research labs.

- The 2020 Open and Participatory Government Strengthening Plan[24]Bolivia proposes the creation of a Laboratory for Innovation and Technological Research to "propose 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 highlights the need for a laboratory to experiment with data and emerging technologies.
- Colombia has developed a guide to emerging technologies[25]which proposes pilot tests as part of the design stage of emerging technology projects. It has also created a Digital Public Innovation Centre[26]to promote such innovation and co-creation through emerging technologies in projects that aim to advance the Sustainable Development Goals (SDGs). Finally, the country also established MiLAB,[27]a public innovation lab that fosters collaboration and open innovation to test, strengthen and monitor the implementation of GovTech solutions, which may incorporate AI-driven solutions.
- Costa Rica has declared its intention to establish a National Laboratory of Artificial Intelligence (LaNIA) to promote the search for solutions to national problems with the support of AI through interaction between the public and private sectors, and international cooperation.[28]Although there may be laboratory experimentation, LaNIA's project seems to place more emphasis on research, data sharing, generating an ecosystem and creating technological products.

- Peru published a resolution[29]establishing a Government and Digital Transformation Laboratory that will function as a platform for intersectoral experimentation and co-design for digital innovation and the use of emerging technologies that include, among others:

others, AI. In an interview with the OECD, Peruvian officials said that the laboratory is being launched with support from CAF, and that it will also focus on creating an intersectoral ecosystem.

- Uruguay created the Laboratory for Social Innovation in Digital Government[30] as a space for co-design and experimentation for digital public service solutions.

Box 5.7. Innovation and Artificial Intelligence Laboratory (Argentina)

The Artificial Intelligence and Innovation Laboratory (IALAB) is an initiative of the Faculty of Law of the University of Buenos Aires. Its role is to incubate AI initiatives, conduct applied research and participate in the multidisciplinary development of high-impact and scalable solutions.

Fountain: https://ialab.com.ar .

In some cases, it may be necessary to isolate AI activities for the purposes of experimentation, as certain types of innovation have the potential to disrupt existing paradigms. Very new ideas often do not fit well with existing structures, processes, workflows, and hierarchical norms because the specifics of how they will work in practice have not yet been worked out. For this reason, some activities, including AI projects that have high disruptive potential or are intended for environments with complex or unclear norms, may need to be isolated from other processes and given their own autonomy. Otherwise, the pressures of existing, tangible priorities are likely to cannibalize the necessary resources, or the concept may clash with norms that have not taken the potential of these projects into account.

Some governments are trying to promote such an approach through the creation of “isolated spaces” (*sandboxes*), allowing them to experiment in safe, reserved spaces conducive to fostering innovation while learning about new approaches and how to manage them. These isolated spaces may relax rules or regulations under certain conditions (e.g., having set deadlines, a limited number of participants) (Eggers, Turley, & Kishani, 2018).[72]). They can also help increase data security and privacy because they provide a secure, supervised space where data can be separated from other functions and networks (CIPL, 2019).[73]). In these safe spaces, officials can learn more about data, the potential of AI, the types of sensitivities involved, and the methods needed to protect them and ensure that individuals' privacy is protected. While these spaces are often geared toward the private sector (e.g., regulatory sandboxes), they are increasingly being considered for the purposes of AI in the public sector.

There are few examples in the world of this type of isolated spaces (*sandboxes*) with an emphasis on the public sector, and are found mainly in Estonia, Finland and Lithuania.[31] However, some countries in Latin America and the Caribbean are developing these spaces in relation to AI in the public sector, which makes them pioneers in the exploration of such mechanisms:

- Argentina’s national AI strategy envisions the development of a “sandbox” for emerging technologies, including AI, to avoid unnecessary bureaucracy for actors engaged in digital innovation activities. The strategy envisions allowing experimentation with proposed systems, in real-life situations, so officials can analyze the benefits and drawbacks. The “sandbox” would provide a means to discuss and validate practices with the country’s AI ethics committee and regulatory bodies.

- Brazil's national AI strategy includes an action point to create regulatory "sandboxes" for AI that could be used by both the public and private sectors.

- Chile's AI strategy and action plan call for studying the feasibility of regulatory "sandboxes," though it is unclear whether such research would promote AI experimentation in the public sector.
- Colombia's national strategy on AI calls for the development of testbeds and "sandboxes" for GovTech projects, which may include AI-driven projects, as well as similar mechanisms for FinTech, HealthTech and AgriTech. The first case study is already underway, serving as a FinTech regulatory "sandbox."[32]The country has also developed a "sandbox" on "privacy by design and by default in AI."[33]
  In addition, to assist in guiding the activities on "isolated spaces" related to regulatory experimentation, Colombia has designed and requested public participation through comments and observations on a "*Conceptual Model for the Design of Regulatory Sandboxes & Beaches in AI*".[34]While these initial efforts do not specifically contemplate AI in the public sector (i.e., they are typically geared toward supporting private sector activities), their existence implies that the other proposed "sandboxes" will take shape. Looking more closely at efforts to restructure the public sector, Colombia has created the environment*Data Sandbox*(Box 5.8), "a space for collaboration [where] the country's public entities can carry out experimentation, testing and the development of pilot projects for analytics and*Big Data*". Although there is no explicit mention of AI, it appears that such a "sandbox" could be used to test AI projects, which typically involve the use of large amounts of data and data analytics techniques. According to officials from Colombia's Ministry of Information and Communications Technology (MinTIC) in an interview with the OECD, Colombia has set a goal of building the country's data and AI ecosystem, and ensuring that all ministries and sectors have access to a "sandbox" for pilot projects and experimentation.

- Peru's draft national AI strategy for 2021 calls for the creation of regulatory "sandboxes" in which AI-based ventures can be tested to ensure their ethical and responsible use.

Box 5.8. Data Sandbox (Colombia)

Colombia's 2018 National Data Exploitation Policy (CONPES 3920) required the creation of a*Data Sandbox*that would serve as a space for collaboration where public sector entities could carry out experimentation, testing and development of pilot projects for analytics and big data.*Data Sandbox* aims to assist organizations in exploring data and information, and generating new knowledge. Using the "isolated space" (*sandbox*), public servants are expected to understand and learn to better use data analytics technologies, while improving their skills to explore, process, model and visualize large volumes of data.

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

1. The initiating public entity must request the use of the "isolated space" and form a team (between two and six people) to develop the project and define its goals, objectives, scope, plan and expected results.

2. The Ministry of Information and Communications Technology (MinTIC) evaluates each application. If the proposed pilot project is deemed sound and the “sandbox” has capacity, the MinTIC approves the project, invites the public entity to enter the “sandbox” and provides advice on the proposed methodological approach. The public entity can then begin implementing its project plan.
3. The sandbox operational team oversees the development and implementation of the pilot project, providing guidance and support to the public entity throughout the process.
4. As the results become known, the public entity participating in the pilot project and the operational team of the data "isolated space" work together to validate and publish them on the Colombian open data portal (https://herramientas.datos.gov.co). This step is important as it allows others to reuse the project's algorithms, data, and results.
5. Once the project is complete, the public entity team exits the sandbox, freeing up capacity for other pilot projects. The sandbox team and the public entity team create dissemination pieces of the results and communicate them through web articles, webinars, Facebook Live sessions, and more.

Fountain:https://gobiernodigital.mintic.gov.co/692/articles-160200_info_ciclo_vida_proyecto.pdf andhttps://bit.ly/3se5hIh .

The efforts of LAC countries to develop laboratories, pilot projects, “sandboxes,” and other mechanisms and means of experimentation demonstrate the growing regional maturity in terms of exploring and implementing AI in the public sector. Since many of these initiatives involve undertaking obligations and commitments to create such mechanisms, it will be important for the countries involved to maintain progress and momentum in order to ensure that their potential does not fade away.

While the countries mentioned above have demonstrated solid progress in this area, others have not yet planned or implemented any management. In particular:

- Barbados, Chile, Costa Rica, Ecuador, Jamaica and Paraguay indicated in their survey responses that specific guidelines and mechanisms for experimenting with AI have not yet been established. The OECD research provided results consistent with these responses and with respect to digital government in general.
- In their survey responses, the Dominican Republic and Panama claimed the existence of guidelines or mechanisms for AI experimentation, but did not provide supporting details. Conducting its own research for this review, the OECD was unable to identify any planned or ongoing initiatives in this area. However, in the case of Panama, the national digital government strategy[35]includes promising provisions for experimentation in FinTech, which could generate skills 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.

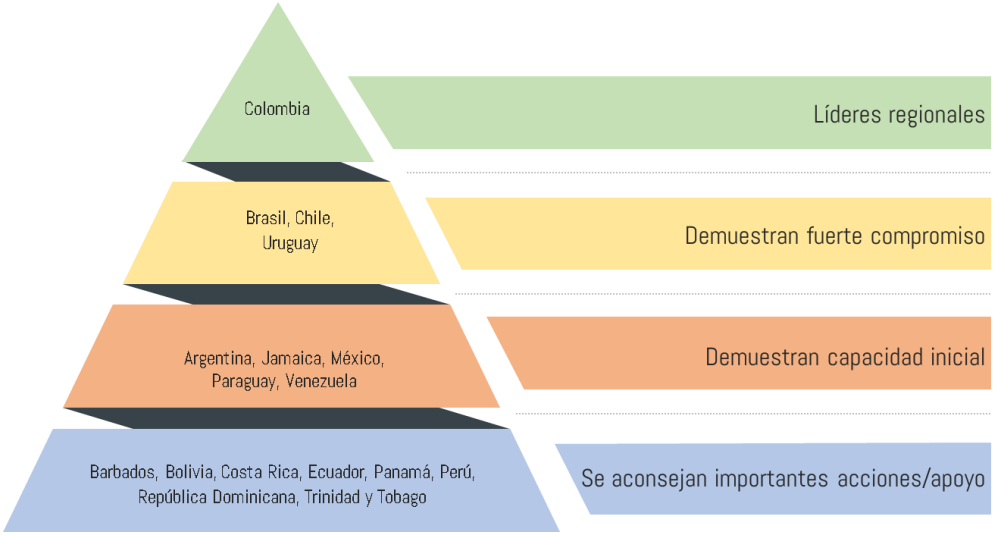
Action among LAC countries to actively promote experimentation, in general and also with AI in particular, appears to be accelerating. Beyond creating new structures, processes and capabilities for experimentation, governments may also need to consider the possible existence of underlying problems that prevent them from evolving towards a culture of innovation. For example, in Panama, it is generally accepted among actors in the central digital government body and the digital government ecosystem that an updated legal and regulatory framework is necessary to install a culture of innovation and experimentation, and to expand the

digital government in the country (OECD, 2019[38]). These underlying and systemic challenges will be explored in greater depth in the forthcoming report.*Going Digital: The State of Digital Government in Latin America*[The road to digitalization: the state of digital government in Latin America.

Understanding the problems and potential of 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 it is neither appropriate nor necessary. For many digital challenges in the public sector, the most appropriate solutions often consist of simple but effective use of existing technologies and improved interoperability, including with 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 is a critical component of Step 1 of the**Guide to digital purchases** from the UK, which emphasizes the following need: "Develop a deep understanding of your users and the problem you are trying to solve for them."[36]This helps ensure that there is a valid need for the solution the government is building or acquiring.

Figure 5.17. LAC region's capabilities to understand problems and determine whether to solve them



In interviews conducted by the OECD with senior government officials in LAC to obtain information, one of the most frequently mentioned challenges was related to conducting problem-oriented AI exploration. This was especially true for the more digitally mature governments. Also, while some other governments had not recognized the problem, the OECD was able to detect it from the conversations. This is not unusual for governments around the world. A common problem with emerging technologies, such as those in the field of AI, is the risk of starting from solutions and*then*Identify the problems that technology needs to solve. In general, governments should seek to understand and focus on the outcomes that they and their citizens want to achieve, and the problems that stand in the way. In other words, governments should have processes in place that enable them to become aware of and understand these problems.

An important element in this regard is the need for governments to understand their users, to know their needs and challenges, and to understand how public services can be tailored to their lives. This is an important cross-cutting factor that is discussed in the section "Ways to ensure an inclusive and user-centred approach"from Chapter 4. Governments can take a number of different approaches to identifying and understanding problems, which can also help them choose optimal solutions. One such approach is training, such as the course on defining problems in public services in Colombia, developed in collaboration with SAP (Box 5.9).

Box 5.9. Training on problem definition (Colombia)

The Colombian government has worked with SAP to develop a specific training course on problem definition in public services. Its aim is to change the mindset of public servants in order to reorient them to first consider and fully understand the problem or problems before prematurely identifying solutions. To date, more than 8,000 people have taken the course.

Fountain: Officials of the Government of Colombia.

The OECD report*Hello world: Artificial intelligence and its use in the public sector*(OECD, 2019[1]) identified other useful actions in this regard:

- Challenges and prizes allow experts, both inside and outside government, to highlight problems and suggest possible solutions. Through these programmes, governments can also raise known problems, which can be validated by those proposing to address them.

- Communities of interest and networks enable collaboration and the sharing of specialized knowledge across organizational boundaries, as well as the identification of collective or common problems.
- Central funds with proposals for participatory approaches help identify problems that could be solved by applying AI or other technological (or non-technological) solutions.

Governments do not necessarily need to take advantage of all three approaches, although, as discussed elsewhere in this review, beyond their application to identifying problems, they are useful mechanisms. There are likely other approaches that can be used to uncover key challenges facing the public sector and determine whether AI might be an optimal solution. The key point is that governments need to consciously put in place ways to explore, raise and consider problems and the various alternatives to address them.

In terms of**challenges and prizes**, for the most part, LAC governments told the OECD that they rarely or never undertake challenge or prize programmes for digital government initiatives. Only Argentina, Brazil, Colombia, Jamaica and Uruguay indicated using such mechanisms for AI. Based on the research, the OECD was also able to identify related activities on the part of Mexico and Paraguay, although not always specifically related to the field of AI. In the case of these countries, such activities took the form of:

- hackathons (Argentina,[37]Colombia,[38]Jamaica[39]and Paraguay)[40];
- Innovation awards in recognition of achievements in digital innovation, including AI (Brazil)[41]and Colombia)[42];

- challenges that encourage or incentivize entrepreneurs, among others, to validate public problems and generate ideas for their solution (Colombia,[43] Mexico,[44] Paraguay[45] and Uruguay[46]).

These efforts represent positive steps toward increasing AI maturity. Some of the most promising, from a problem identification perspective, appear to be Colombia's INDIGO Digital Government Innovation Awards and Public and Private Entities Challenge Bank, Brazil's public sector innovation contest, Mexico's Public Challenges, and Paraguay's InnovandoPy, as these programs focus on initiatives that have demonstrated their ability to surface or validate core public sector problems that could be replicated or amplified (Box 5.10). Other examples, while valuable in their own way and for other purposes, appear to be more narrowly oriented toward generating insights. *solutions* for already known problems, rather than also discovering or trying to better understand the nature of the *issues* that needs to be resolved.

Box 5.10. Examples of challenge initiatives that help bring issues to light

Challenge Bank (Colombia)

As part of its data science training initiative *Data Science 4 All* (DS4A [Data Science for All], Colombia's Ministry of Information and Communications Technologies (MinTIC) has actively provided free training to more than 1,000 Colombians on a variety of data science-related topics, including big data tools, data transformation and visualization, machine learning techniques, and experiment design. The training plan, developed by *Correlation ONE*, a partner in the sector, comprises 40% theoretical training and 60% practical training. The latter includes real cases and challenges in the public sector proposed by the apprentices, who must identify and implement solutions.

The candidate selection process for the practical part of the training plan included an open call launched by the MinTIC to collect "real and identified problems" of public entities and private companies that could be addressed from data science, including, among others, AI. The objective was to develop a "Bank of Challenges for Public and Private Entities" that MinTIC and *Correlation ONE* could be incorporated into the training plan.

Teams of five to seven DS4A participants were formed, and each team selected a Bank challenge and worked on developing a data science solution or solutions over 11 weeks. The teams worked closely with the public or private entity that presented the challenge and received guidance from expert trainers to help identify applicable solutions. At the end of the process, each team presented a working solution, a 10- to 20-page report detailing methods and results, and a 10-minute presentation summarizing the project. In addition to bringing to light public and private sector problems and potential solutions, the program also facilitated engagement between participants and public and private entities to promote staffing and employment opportunities.

Public Sector Innovation Competition (Brazil)

Since 1996, the National School of Public Administration (ENAP) of Brazil has organized an annual competition for innovation in the public sector. The initiative seeks to reward public servants who are committed to achieving better results, and are dedicated to rethinking daily activities and contributing small or large innovations that generate improvements in the management of organizations and public policies. The competition rewards officials who identify a problem in the public sector and develop a satisfactory solution, and the winning initiatives are included in the ENAP institutional repository (https://repositorio.enap.gov.br), with which the entire Government can

gain a better understanding of public sector problems and detailed information on solutions that can help address them.

Potential candidates who wish to propose their work (or that of their team) must answer the following questions:

- What was the nature of the problem?
- What was the innovation applied?
- What were the objectives of the innovation process?
- What were the main results obtained through 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
- solutions were applied?

The innovation contest does not specifically address issues related to digital government: the problems that come to light and the solutions that are identified can draw on different types of technology, including AI.

Public Challenges/Mexico Challenge (Mexico)

The Mexican initiative Retos Públicos aimed to build a collaborative ecosystem for the development of solutions that use data (applications) for "public challenges". Through calls for tenders published on the central open data portal, the Director of Data (*Chief Data Officer*, CDO), in collaboration with several State secretariats, invited non-governmental 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 provides to public institutions on the (value) problem they are trying to address in collaboration with stakeholders.

Towards the end of 2016, the Public Challenges initiative became the Mexico Challenge (https://retomexico.org). Reto México is an open innovation platform that allows multiple actors to prototype 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 Retos Públicos focused on co-designed solutions for public sector challenges, Reto México broadened the collaborative approach and incorporated the needs of the private sector.

InnovandoPy (Paraguay)

InnovandoPy is an initiative of the Ministry of Information Technology and Telecommunications (MITIC). In operation since 2015, it seeks to identify innovative ideas that use technology, inspire and motivate young entrepreneurs, connect the private sector with the public, promote collaboration in digital projects and encourage entrepreneurship in the country. Some of its actions are:

- **Innovating*Startups***: an accelerator where young entrepreneurs present their innovative ideas on problems and solutions related to both the public and private sectors. In the most recent cycle of the accelerator, in 2019, dozens of*startups* They submitted ideas, from which ten top ideas received intensive mentoring to further elaborate the concept, including structured problem identification, customer needs exploration, cost assessment, and product development. These ten top ideas were then*startups*They presented their proposals to a jury composed of leaders from the public and private sectors. Four of them were selected as prize winners.**in**cash as a contribution to further their solution.

- **Hackathons:**Competitive marathons for the development of citizen-centric and data-driven applications for open government. The latest edition, in 2019, the IAackathon, specifically placed emphasis on the use of AI to solve public sector problems in categories such as trustworthy digital government (protection and trust in digital government services), smart government (evidence-based decisions and predictive analytics) and open government (transparency, participation and collaboration).
- **Ideathons:**events specifically dedicated to devising and thinking about new ways of addressing public sector problems. The 2019 edition called for debate on problems and ideas related to topics such as mobility, smart cities and renewable energy.

Fountain: www.mintic.gov.co/portal/inicio/Sala-de-Prensa/Noticias/145965:MinTIC-abre-convocatoria-para-solucionar-retos-de-entidades-publishes%20-and-companies-in-digital-transformation (OECD, 2018[64]), (OECD, 2018[62]), https://inovacao.enap.gov.br and www.innovando.gov.py.

As regards the**communities of interest and networks**, Brazil, Chile, Colombia and Uruguay reported that they have specific initiatives in place that aim to develop communities of practice, networks and other opportunities for promoting data and digital skills for public servants. Such actions were supported by OECD research, as discussed below. Jamaica and Panama also reported having similar initiatives underway, but the OECD found no supporting information when researching. The remaining countries responded that they did not know or did not respond, and the OECD was unable to identify specific examples. Communities and networks of this type can be an excellent forum for raising or identifying issues that AI has the potential to address. Examples of such communities and networks include:

- Brazil's national digital government network[47]It encompasses all levels of government and aims to promote collaboration, the exchange of ideas and the creation of innovative initiatives related to the digital transformation of the public sector. Meanwhile, the country's Information Technology Resources Management System (SISP), the main institutional mechanism for coordinating digital government in Brazil, contributes to the exchange of knowledge, peer learning and promoting innovation among its members through a virtual community that invites its members to interact and share knowledge (OECD, 2018).[27]). The Brazilian Association of State ICT Entities (ABEP)[48]It also aims to connect public officials in the technology field at the state level.

- The Chilean Public Innovators Network, part of LabGob, connects more than 14,000 public servants and other related actors (Box 5.11). The OECD had previously verified that LabGob has a successful track record of collaborative work with other teams and organizations in the Chilean public administration. The main common point of these collaborative actions is the determination to develop a common approach and strategy to diagnose and address problems (OECD, 2019).[69]). The AI strategy and roadmap in that country also calls for creating user communities in areas of public interest.
- In Colombia, the ICT Ministry coordinates the CIO NETWORK[49], a network that brings together information technology directors (*Chief Information Officer*-CIO) from all over the country, through online chats to discuss collaborative work in the region. The program seeks to facilitate communication between those responsible for technology areas in public entities, in order to develop a community of collaboration between participants, improve the efficiency and security of the provision of digital services to citizens and enhance the digital transformation of the State. This strategy is complemented by the CIO SUMMIT[50], a face-to-face and virtual collaborative work space. Public sector CIOs meet to learn about the main

The CIO Network is a network of experts that collaborates in the evaluation of digital government services and awards seals to the highest quality programs, mainly in the areas of services, open data, smart cities, IT management and citizen participation. The CIO Network is complemented by a network led by the Presidential Council for Economic Affairs and Digital Transformation, in which not only CIOs participate, but also coordinators who promote digital transformation at a higher level. Finally, although it is not coordinated by the central government, the initiative is also a network of experts that collaborates in the evaluation of digital government services and awards seals to the highest quality programs, mainly in the areas of services, open data, smart cities, IT management and citizen participation.*Colombia.IA* Colombia.AI is a successful "community of volunteer experts, apprentices, and machine learning enthusiasts working to spread knowledge about data science and AI. Through free monthly debates and workshops, Colombia.AI shares knowledge, teaching, and experiences about technologies that capitalize on the power of data. Its purpose is to unite the worlds of industry and academia to support the growth and development of AI in Colombia. This community currently has more than 5,700 members in two cities: Bogotá and Barranquilla (Gómez Mont et al., 2020).[12]).

- Uruguay is creating Knowledge Centers[51]that foster collaboration, with the aim of improving the professional development of its members; generate opportunities to build relationships; enable reflection; mobilize resources around members and disciplines; and promote training, research and innovation.

These networks can contribute both directly and indirectly to many of the core activities linked to digital government and AI. In order for such communities and networks to be effective in identifying problems, LAC governments must ensure that mechanisms are in place to make the challenges and problems visible to participants. At the same time, governments must have vehicles to bring the identified problems to the attention of decision-makers for appropriate action if necessary. These communities and networks do not need to have a specific focus on AI. In fact, groups with more general objectives can help to bring to light a broader range of problems. However, governments may prefer to create other communities and networks, with an emphasis on emerging technology or AI, or to arrange for the means for communities and networks with general objectives to include AI experts who can help find the links between the identified problems and the AI approaches that may constitute an optimal solution.

Box 5.11. Public Innovators Network (Chile)

Created in 2015, the Chilean Public Innovators Network is a community of Chilean public servants from all levels of government, motivated to seek tools, experiences and approaches that facilitate innovation with a view to improving public services.

This is a triple strategy:

1. **Learning collectively** to jointly build the skills necessary to innovate in the public sector, through the knowledge and approaches that each participant contributes.

2. **Making public innovations visible** through communicating and disseminating the initiatives under consideration, as well as motivating others to innovate in the public sector.

3.**Connecting motivations to innovate**through meetings aimed at generating networks between public servants in order to find common ground with peers, foster collaboration and increase social capital. Public servants participate in different activities throughout the country, and connect through a social network for public innovators of the Government of Chile.

The Network has grown to nearly 14,000 members today, and has been developed with the active participation and contributions of a diverse set of actors bringing different roles, experiences and approaches. While it is primarily made up of public servants, its ranks also include entrepreneurs, academics, students, social leaders and citizens. Members work together to improve public-facing government services, in line with the Network's five key principles:

1. the focus on people;
2. the systemic approach;
3. co-creation;
4. experimentation;
5. the focus on experience.

National meetings of public innovators and face-to-face activities promote cooperation between members of the Network, while a digital platform allows them to connect, communicate, collaborate and exchange. Areas of interest are both digital and non-digital in nature. In assessing the impact of the Network, the Government noted that it allows public servants from the same region and from across the country to connect to discuss innovation in the public sector, the problems they face and possible solutions already applied 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 address their problems in a more systematic way.

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

Finally, as regards the availability of**central funds with proposals for participatory approaches**, in general, LAC governments have not developed such mechanisms.*Pact for the Digital Transformation of Colombia*(Box 5.12) is the best example of this concept. The country has also instituted a Science, Technology and Innovation Fund for ICT and other purposes for subnational governments, through which such governments have the possibility to present proposals for solutions to public problems in their area, according to officials interviewed by the OECD. In Uruguay, the National Agency for Research and Innovation (ANII) has created a Sectoral Fund for Education, which receives proposals for participatory approaches. This smaller and more specific fund is dedicated to financing research projects on digital technology-assisted teaching and learning, including addressing problems associated with COVID-19.[52]One of its main "lines of research" is in the field of data use and AI.

Apart from these two initiatives, the OECD was unable to identify strong examples of central funds proposing participatory approaches, truly suited to identifying problems that AI (or other digital solutions) could solve. Apart from the Colombian example, two other examples of central funds from outside the region are mentioned in Box 5.12. In addition to bringing problems and solutions to light, competitive centralized funds are an incentive for public institutions to comply with new standards and guidelines, and to align their efforts with government strategic objectives (OECD, 2019).[69]).

Box 5.12. Examples of central funds with proposals for participatory approaches

Pact for the Digital Transformation of Colombia

The Compact is a central fund and a package of strategies that has allocated a budget of USD 5.2 billion (its equivalent) dedicated to bringing Internet access to low-income households and improving the interaction between public entities and citizens. Two of its key commitments are the following:

- "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 entrepreneurial ecosystem";
- "to promote the digital transformation of public administration through the digitalization and massive automation of procedures."

The Pact, as well as its funding lines and action points, were developed in an open and participatory manner. Regional round tables and workshops were held to learn about the aspirations and needs of the different territories. The Government then launched a digital platform where citizens could submit proposals. The Government placed additional emphasis on ensuring that the proposals were enriched by the contribution of less represented sectors, such as indigenous peoples and Roma or gypsy populations.

Although the Compact is very broad in scope, the problems and solutions it identifies have the potential to give rise—explicitly—to AI solutions.

Portugal INCoDe.2030

In Portugal, the government has launched a National Digital Competence Initiative, "*Portugal INCoDe.2020*", which will invest €10 million over the next three years. The aim of the funding is to stimulate the use of data science and AI in the public sector. Interested government teams can apply for funding through open and competitive call for tender processes. Some of the first projects to receive funding aim to develop AI-based models to predict the risk of long-term unemployment and detect abnormal patterns in antibiotic prescribing. As of August 2019, 44 projects had been submitted and approved under the programme. Portugal's programme on data science and artificial intelligence in public administration (Box 6.10) is part of this initiative.

Technology Modernization Fund (United States)

The U.S. Government's Technology Modernization Fund (TMF) is a new model for funding technology modernization projects. Government agencies can submit proposals for funding and technical expertise to a TMF Board comprised of senior government IT leaders. Proposals must clearly: 1) describe how the project addresses the agency's mission, 2) identify the problem that the project solves, and 3) explain how the project, if properly executed, will solve the problem.

The Board evaluates proposals based on:

- its impact on the agency's mission (improves user and safety outcomes);
- viability (including the capacity of the unit);

- the generation of opportunities (potential cost savings and improvements in service quality);

- common solutions (replacing insecure and outdated systems with scalable platforms that could be used by other departments).

Through the submission and review of proposals for participatory approaches, the TMF allows the government to identify key public sector issues. It also enables the government to focus its efforts on areas where it can achieve the greatest public benefit, prioritizing technology solutions to improve service delivery and mission-critical projects that can serve as common solutions and/or inspire reuse. While its scope is broader than AI, U.S. officials have encouraged agencies to submit proposals for modernization projects driven by emerging technology.

Fountain:https://bit.ly/3MQ8eXp ,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, these challenge programs, communities, and funds can help governments identify problems that AI can solve. Once the problems are known and understood, governments can assess them to come up with an optimal solution, which may or may not involve the use of AI. Careful analysis of the capabilities of specific AI tools is necessary to determine whether they should be taken partially or fully as the solution to a specific challenge. A rigorous approach to using AI only when it is likely to provide the best solution to a specific problem will reduce the risk of applying it inappropriately in areas where it does not add value. Once these mechanisms and guidelines are clearly established, governments will be able to *identify the problems*and*then*determine whether AI (or another tool) is the best solution (Mulgan, 2019[74]). This is a crucial component of AI success in the public sector, yet it is often overlooked.

Governments can apply a variety of methods to determine whether or not AI is the best solution to a particular problem. In the case of AI in the public sector, the OECD and several governments have found the "three Vs" framework, originally suggested by the consultancy Deloitte, to be particularly useful (Schatsky, Muraskin, & Gurumurthy, 2015).[75]). According to this framework, the use of AI-based solutions could be beneficial for certain government problems, if the answer to the following three questions is affirmative:

- Is**viable**To determine whether the solution is viable, it is first necessary to understand the scope and limits of the technology.
- Is**valuable**Just because something can be automated doesn't mean it's worth doing. How much value would automation bring? Would it bring value to both the community and your organization's operations? What impacts would it have? Would the outcomes be fair and ethical?

- Is**vital**Would the execution of your proposal be unfeasible without AI?

Among LAC countries, only Colombia and Uruguay appear to have considered having guidance on how to assess public sector problems to determine whether AI is the best solution. While Colombia appears to have active guidance (Box 5.13), Uruguay's AI strategy consists of a commitment to "develop technical guides for problem selection, as well as the design and implementation of AI-based solutions." The strategy further notes that "these guides should consider, among other aspects, the relevance of using AI services in the cloud, the identification of appropriate tools for different application cases, data protection and privacy, etc." The Dominican Republic also mentioned in the survey the existence of technical guidelines for assessing public sector problems to determine whether AI is the best solution.

such guidance; however, the OECD was unable to identify evidence to support this. Such guidance helps to address the shortcomings identified by governments. For example, in interviews with the OECD, Chilean officials stated that a lack of clarity on the use and functionality of certain technologies leads to the application of technologies that are not appropriate for the problem at hand.

Box 5.13. Guidance for determining whether AI is the right solution for a given problem (Colombia)

The Government of Colombia has published a *Guide with general guidelines for the use of emerging technologies*, which provides guidance to national and territorial government entities on the use and adoption of new technologies and tools. The Guide seeks to guide public servants on how to connect their needs and problems to appropriate innovative or emerging solutions, and explains specific cases in which governments from different parts of the world have made use of the new tools of the digital world to respond to key problems.

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

- **Identifying use cases for emerging technologies.** These guidelines enable public servants to identify potential technological applications that can be applied to their problems or objectives and then to prioritise possible approaches to achieve a solution. It focuses on the needs and problems to be addressed, which, according to the Guide, helps to "avoid the temptation to experiment with new technologies that will ultimately not lead to tangible improvements in value creation."
- **Feasibility check**. It guides public servants to think about the benefits they seek to achieve and the efforts that the public entity must be willing to make to achieve them. This practice is a good control to avoid “implementing for the sake of implementing.”

In addition to the Guide *with general guidelines for the use of emerging technologies*, the Government has published a *Digital Government Manual* broader. This manual requires public servants to justify the selection and use of any technology based on the specific needs of key stakeholders. It states that "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 a solution to the identified problem or need?"

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

All of these activities can be useful in bringing a problem to light and linking it to relevant digital or non-digital solutions, including AI. However, governments can only do this successfully if they have a solid understanding of their users’ needs and are intent on responding to them. This is discussed in more detail in the next section.

Preparing for the future through preventive governance

The impact of AI and other fast-paced innovations is difficult to predict. However, it is clear that they will have a profound impact not only on what public services are delivered (and how), but also on how services are consumed. These innovations are not limited to the realm of information technology.

Not only do they transform technology, but they can transform society as a whole, while producing tectonic shifts in public values (e.g. transparency, privacy and accountability) associated with public and private services. This has major implications for governments, which are required to proactively adapt to high levels of uncertainty linked to unforeseen events and new opportunities. Traditional approaches – targeted interventions in specific policy areas – have proven inadequate to address the scale and complexity of new challenges. However, while not all crises can be foreseen, governments can devise new ways to recognise early signs and prepare (Tõnurist and Hanson, 2020).[76]).

While it is clear that AI is beginning to transform public sector operations in the LAC region, and that governments in the region have developed numerous strategies and initiatives to harness 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 for these unknowns to be resolved is a luxury that most governments cannot afford, as it would mean being a technology taker rather than a choice maker – a choice that could entail significant costs and downsides.

However, there are ways to manage these unknowns and uncertainties. Through its work with countries around the world, OPSI has identified four primary facets of innovation in the public sector, and has developed a model to assist governments in achieving a portfolio approach to innovation (Figure 5.18). One of these four facets is the*early innovation*. This term refers to detecting and interacting with weak signals before a new direction or paradigm is set. Anticipatory innovation is the most underdeveloped facet of innovation in today's governments, and perhaps the most difficult. It is sometimes considered too "advanced," either because it is blatantly disconnected from an agency's core business or because it is simply misunderstood. It can also challenge values by questioning the status quo, including people's beliefs and assumptions about how the world works.

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Fountain:https://oe.cd/innovationfacets .

One of the most challenging aspects of anticipatory innovation is convincing government leaders and public servants that it works well and can be insightful, even if the results are not as immediate or clear as identifying cost savings (improvement-oriented innovation) or achieving a big, ambitious goal (mission-oriented innovation). However, governments are increasingly recognizing the importance of anticipatory thinking, especially in light of recent events such as the current COVID-19 crisis, which took most by surprise, and which continues to shock systems and governments around the world. Many are looking for weak signals, innovating to predict and explore possible futures, and some are turning predictions into actions, to more actively shape them.

An underlying principle of anticipatory innovation is that if there are multiple possible futures, but there is no certainty about which one will materialise or even whether one might be more convenient or desirable than another, then it is risky to overinvest in any one set of assumptions about the future. In a context of high uncertainty, it is valuable to build foresight, flexibility and agility into systems and processes, and to keep a range of different options alive, so that it is possible to change or pivot to alternatives as more is known about what is needed. This suggests that governments need to improve their ability to pick up, early on, on weak signals about how the future might play out. This will enable them to know where and when to best intervene, without waiting for processes and trends to become entrenched, which would then be costly and difficult to change. The “future of work” represents such a large unknown that governments are working to better understand, prepare for and shape the outcomes.[53]

In the LAC region, digital government representatives from a handful of countries said they believe their public service is prepared to cope with increasing change and disruptive technologies (Figure 5.19). As already mentioned in Figure 5.8, only a few countries felt that public servants fear that AI and emerging technologies could affect their jobs.

Figure 5.19. Management of disruptive technologies

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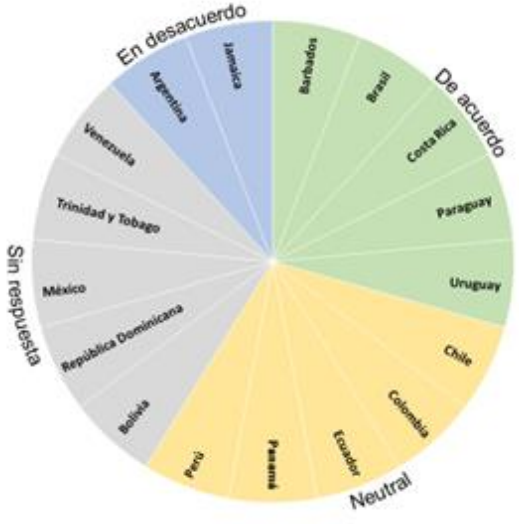


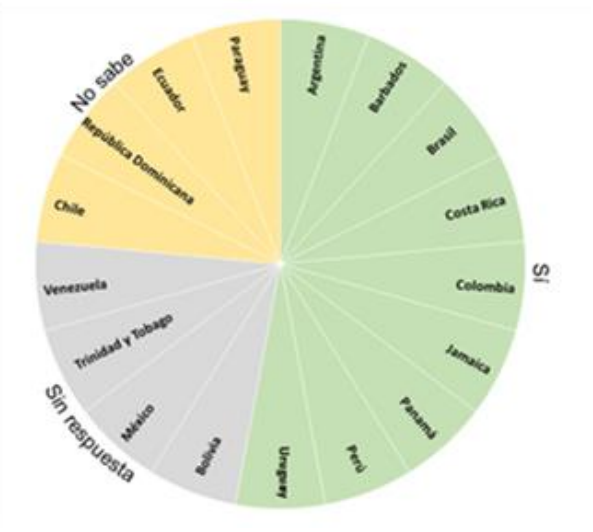
Source: Survey of digital government agencies in Latin America and the Caribbean conducted by the OECD (2020).

This represents a good degree of confidence and optimism. This feeling may be positive, but, in general, there is much more that can be done to ensure that governments are informed.

on possible future trajectories in AI, and that such information is actionable. This is not a specific challenge for LAC, as the concepts of early innovation are relatively new and almost no current government is mature in this area.[54]

One of the key elements of early innovation is the capture of weak signals through data. The emergence of new methodologies, such as big data analytics and AI, has increased the viability of such ventures. The sheer scope of data available to governments is growing at an almost exponential rate, in parallel with the evolution of ever more powerful tools capable of making sense of this information. As the OECD report on the path to becoming a data-driven public sector puts it, *The Path to Becoming a Data-Driven Public Sector* (OECD, 2019[44]), good data combined with ethical and smart applications can foster the creation of more anticipatory public sectors, as governments are better able to forecast beyond their horizons. Armed with greater visibility of these signals, data-driven prediction and modelling techniques become support mechanisms for governments by allowing them to detect potential social, economic or nature-related developments, and thus better assess the need to intervene, design appropriate policy measures and more accurately anticipate expected impacts (OECD, 2019).[44]). The OECD survey of digital government agencies in LAC shows that many countries in the region are leveraging these approaches (Figure 5.20), in most cases to support evidence-based policymaking and the design and delivery of public services. For example, the National Institute for Women (INAMU) in Panama developed a system of indicators against which periodic measurements are made in order to provide an analytical basis for the creation of public policies (OECD, 2019).[38]). In another example, the city of Cali (Colombia) uses data from Internet of Things (IoT) sensors to predict flood risk (OECD, 2018).[62]).

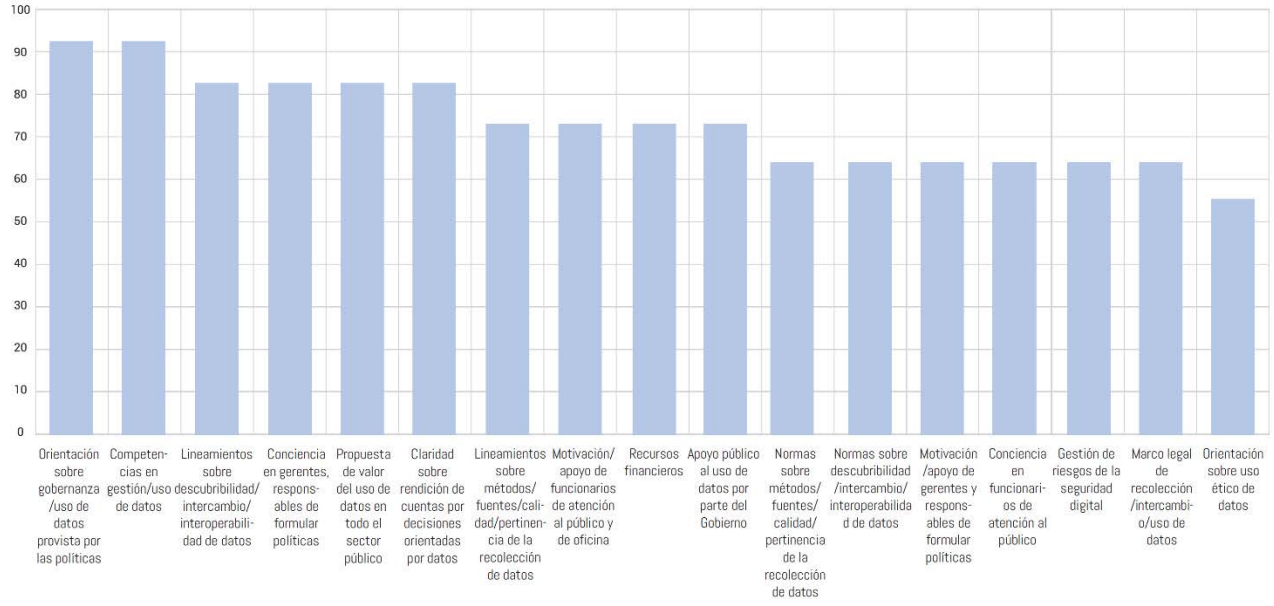
Figure 5.20. Countries that use **government entions**



Fountain: Survey of digital government agencies in Latin America and the Caribbean conducted by the OECD (2020).

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

Figure 5.21. Deficiencies expressed by most LAC countries regarding the use of d



Source: Survey of digital government agencies in Latin America and the Caribbean conducted by the OECD (2020).

A common approach used around the world to give strategic direction to anticipatory capacity is to create organisations with a mandate to explore possible futures, and to put in place agile processes that enable government to act on weak signals and make changes today that shape tomorrow (see example in Box 5.14). The OECD has identified a few LAC government initiatives that seek to create an agile and future-oriented environment that will help them cope with and adapt to future changes and transformations:

- In Brazil, the CGE strategic management and studies center,[57]an organization linked to the MCTIC, has the mandate to anticipate the future through different predictive and prescriptive policy initiatives (Tõnurist and Hanson, 2020).[76]). Brazil's national development bank, BNDES, while not related to digital government or AI*per se*, is also dedicated to exploring possible future scenarios (Tõnurist and Hanson, 2020[76]), further demonstrating the underlying interest in a future-based approach and the existence of related competencies.

- Chile's national AI strategy includes several components that seek to make it more fit for the future. It aims to infuse ongoing anticipation exercises, and develop a foresight agenda on ethical and regulatory aspects of AI (to carry out "a permanent and agile review and update of the regulation so that it is possible to respond to the speed of its advances").[58]It also envisages the development of an institutional framework that is sufficiently agile and comprehensive to respond to changes and rapid technological advances. In addition, the strategy underlines the need for future-oriented labour market policies as part of a commitment to actively identify the most vulnerable occupations, anticipate the creation of new AI jobs and support workers in transitioning to new occupations, while minimising their personal and family costs. The related action plan calls for the creation of a “Future Team” to develop anticipatory methodologies to support readiness for emerging technologies.

- In Colombia, the proposal *Task Force for the Development and Implementation of AI*[59] It includes a "team of visionaries" capable of looking to the future and anticipating technological developments as far as possible.[60] This forward-looking role is also a function of the International Artificial Intelligence Council.[61]
- In Mexico, the government has created *Datalab*, a data laboratory focused on strengthening anticipatory governance approaches, in order to generate data-driven predictions about populations at risk of disease, areas with emerging environmental problems and future conflicts that may arise, among others (OECD, 2018).[65]).
- The *Uruguay Digital Agenda*[62] It states 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 for "the use of existing information, by adopting a proactive attitude, with the capacity to anticipate people's needs or prevent problems."

Box 5.14. Policy Horizons Canada

Policy Horizons Canada is a national government organization that leads foresight efforts, with a mandate to support the Government of Canada in developing future-oriented policies and programs that are more robust and resilient in the face of disruptive changes ahead. It has built distributed capacity in the use of foresight knowledge and insights. The organization uses foresight methodologies applied to research, products, experiences, training programs and communications to assist federal government policymakers and operational designers in creating more resilient policies and programs. It does this by providing policymakers with a broad view of possible futures, and by working with them to help them understand and plan for those possibilities.

Topics are drawn from individuals working at all levels and sectors of government, and the team selects those for further study as being most relevant to the broader government landscape. Once a research agenda is confirmed, it is validated by a steering committee of deputy ministers that meets quarterly. The committee also reviews ongoing work and helps guide the department's future operational plans.

Policy Horizons provides foresight services across the federal government by convening and supporting a network of foresight professionals across government to ensure that as many public servants as possible can make use of the insights that have emerged from their own projects, as well as foresight methodologies that are generally aimed at fulfilling the missions of their agencies. This network currently consists of approximately 80 individuals from all sectors of the federal government, who support individuals within their own departments in applying foresight insights and methodologies. *Policy Horizons* It is also formally associated with the civil service school *Canada's School of Public Service*, an organization whose mission is to train and support public servants to advance in their careers, and to provide them with prospective materials and training.

Fountain: (Tõnurist and Hanson, 2020[76]).

These types of activities represent initial steps and positive commitments for the region. The OECD OPSI has found that while governments around the world are making progress in their ability to perceive weak signals and use them to inform decision-making, they have not yet built

the systemic foundations necessary to harness the full potential of early and foresight innovation. In order to move forward in this direction, OPSI has developed a new line of action-oriented research, focused on the governance of early innovation (*anticipatory innovation governance*, AIG) (Tõnurist and Hanson, 2020[76]).63The AIG project provides a meeting ground where knowledge about plausible futures can be turned into action through innovation. It embodies a broad-based capacity to actively explore options, as part of a broader system of anticipatory actions, in order to stimulate innovations related to uncertain futures, with the hope of shaping the former through innovative practice.

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

1. Build from the**management**of the actors within the governance process. Management involves the exploration of alternatives, tools and methods, institutional structures, organizational capacities, and the availability of data and resources for innovation.
2. Create a**authorization environment**in which anticipatory processes flourish. The authorising environment includes issues such as legitimacy, vested interests, public interest and participation, networks and alliances, evidence and evaluation, and learning loops.

As shown in Figure 5.22, each approach captures a number of mechanisms specific to the AIG project. In addition, this project calls for a new approach to policy making, based on continuous exploration of foresight and feedback loops (Table 5.1).

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Fountain: (Tõnurist and Hanson, 2020[76]).

Table 5.1. New approach to policy development for early innovation governance

	Traditional policy making	Governance of early innovation
Evaluation approach	Evaluation as the final stage of an often multi-year policy cycle.	Ongoing evaluation and assessment; exploration of future effects (e.g., changes in public values, ethics, intergenerational equity)
Policy cycle	Long cycles of research and writing, and consequently, implementation, of policies.	Recognition that case-effect relationships are impossible to know in advance, and that the application of policies itself modifies the scope of the problem.
Research and analysis approach	Exploring the scope of the problem through research and analysis.	Exploring the problem scope through innovation and small-scale experiments in the real world.
Emphasis on the research and analysis	Research and analysis with emphasis on what happened.	Research and development of models with an emphasis on a range of possible futures.
Stake	Policy experts and key affected population.	System of related policy areas and affected populations that changes over time.

Fountain: (Tõnurist and Hanson, 2020[76]).

The AIG project does not predict the future, but asks questions about plausible futures and then acts accordingly by creating space for innovation (for example, through regulation), or by generating mechanisms of its own to explore different options within the government itself. Currently, most governments lack a governance system for advance innovation (these mechanisms are often isolated in specific areas or for specific policy functions, such as foresight). This is the case for LAC countries, as well as for most governments in the world. Over time, as they mature in terms of the factors that are known to contribute to successful and reliable adoption of AI in the public sector, it would be useful for LAC governments to begin to put emphasis on possible future effects. The OECD report *Anticipatory Innovation Governance: Shaping the future through proactive policy making* [Anticipatory Innovation Governance: Shaping the Future through Proactive Policymaking] can help you get started.[64]

Since AI presents huge unknowns for the future of all industries, this section has focused on anticipatory innovation, which is one of the four main facets of innovation identified by OPSI (Figure 5.18). However, the other three facets are also relevant to digital innovation. The forthcoming report *Going Digital: The State of Digital Government in Latin America* [The Road to Digitalization: The State of Digital Government in Latin America], expected to be published in 2022, will address digital innovation beyond AI, as well as the relative strengths and weaknesses of LAC governments in managing a portfolio of innovation projects.

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OECD (2020), *OECD Competition Assessment Toolkit competence)*, https://www.oecd.org/competition/assessment-toolkit.htm . [71]

OECD (2020), *The OECD Digital Government Policy Framework: Six dimensions of a Digital Government* [OECD Digital Government Policy Framework: Six dimensions of digital government, OECD Publishing, https://doi.org/10.1787/f64fed2a-en . [55]

OECD (2021), *The OECD Framework for Digital Talent and Skills in the Public Sector* [Frame for digital talent and skills in the public sector], OECD Publishing, https://dx.doi.org/10.1787/4e7c3f58-en . [47]

OECD (2021), *Recommendation of the Council on Broadband Connectivity* [Recommendation of the Broadband Connectivity Council] *[OECD/LEGAL/0322]*, https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0322 . [95]

PricewaterhouseCoopers (2018), *Leadership challenges in digital transformation - R&D Report Performed by PwC for KS* [Leadership challenges in digital transformation: Research and development report by PwC for KS], PwC/KS, https://www.ks.no/contentassets/9d43020d433c4aecaa5369cb42634af9/lederutfordringer-idigitale-omstillingsprosesser_english.pdf . [61]

Schatsky, D., C. Muraskin and R. Gurumurthy (2015), *Cognitive technologies: The real business opportunities* [Cognitive technologies: real opportunities for companies], https://www2.deloitte.com/us/en/insights/deloitte-review/issue-16/cognitivetechnologies-business-applications.html . [75]

Tõnurist, P. and A. Hanson (2020), *Anticipatory Innovation Governance: Shaping the future through proactive policy making* [Anticipatory Innovation Governance: Shaping the Future through Proactive Policymaking, OECD Publishing, https://doi.org/10.1787/cce14d80-en . [76]

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Weller, J., S. Gontero and S. Campbell (2019), *Technological change and employment: a perspective Latin American. Risks of technological substitution of human labor and challenges of generating new jobs*, https://www.cepal.org/es/publicaciones/44637- technological-change-employment-latin-american-perspective-risks-replacement . [60]

Grades

[1] See (OECD, 2021[95]) for further material on this subject, including skills and competencies for digital government leadership. See also the OECD Recommendation on Leadership and Capacity in the Public Service (OECD, 2019[100]) to learn how countries can build a values-driven culture and leadership, ensure knowledgeable and effective public servants, and have responsive and adaptable public employment systems.

[2] The National Council for Economic and Social Policy (CONPES) "is the highest national planning authority [in Colombia] and acts as an advisory body to the Government on all aspects related to the country's economic and social development. To achieve this, it coordinates and guides the agencies responsible for economic and social direction 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 collected during the OECD survey and data collection exercises related to the OECD AI Policy Observatory https://oecd.ai/dashboards/policy-initiatives/2019-data-policyInitiatives-24309 .

[4]https://ddsa.com.br/decree-no-10-3322020-brazilian-digital-government-strategy .

[5]www.mitic.gov.py/noticias/el-poder-ejecutivo-crea-comite-estrategico-digital-para-desarrollar-plannacional-de-tics .

[6]See chapter 5 of the document *Task Force for the development and implementation of artificial intelligence in Colombia* https://dapre.presidencia.gov.co/TD/TASK-FORCE-DEVELOPMENT-IMPLEMENTATION-ARTIFICIAL-INTELLIGENCE-COLOMBIA.pdf .

[7]A comprehensive review of broader coordination mechanisms is beyond the scope of this review. As the OECD has not yet determined the utility of specific coordination mechanisms for AI in the public sector, no categorisation or visualisation of capabilities is provided on this topic.

[8]Therefore, no categorization or visualization of capabilities is provided for this topic.

[9]For a background analysis of the importance of data for AI systems, see the “Data: The Food of AI” section of *Hello World: Artificial Intelligence and its use in the public sector* (https://oe.cd/helloworld).

[10]https://optic.gob.do/departamento-de-estandarizacion-normativas-y-auditoria-tecnica .

[11]https://bit.ly/3oaliw4 .

[12]www.mitic.gov.py/noticias/se-aprob-el-modelo-de-gobernanza-de-security-de-la-informacion-enel-estado .

[13]www.ctic.gob.bo/datos-abiertos .

[14]www.gob.pe/institucion/pcm/normas-legales/289706-1412 .

[15]www.datosabiertos.gob.pe/%C2%BFqu%C3%A9-es-gobernanza-de-datos .

[16]https://colaboracion.dnp.gov.co/CDT/Conpes/Econ%c3%b3micos/3920.pdf .

[17]https://herramientas.datos.gov.co/sites/default/files/Guia%20de%20Datos%20Abiertos%20de%20Colombia.pdf .

[18]https://inteligenciaartificial.gov.co/en/publication/8 .

[19]The CONPES 4023 public policy document of 2021 establishes the implementation mechanism of the country's data infrastructure governance model with the perspective of facilitating the effective use and exchange of data through emerging technologies such as big data and artificial intelligence. See https://mintic.gov.co/portal/inicio/Sala-de-prensa/179710:MinTIC-publica-paracomentarios-borrador-del-Plan-Nacional-de-Infraestructura-de-Datos).

[20]See https://colaboracion.dnp.gov.co/CDT/Conpes/Econ%c3%b3micos/3920.pdf , https://herramientas.datos.gov.co/sites/default/files/Guia%20de%20Datos%20Abiertos%20de%20Colom bia.pdf and http://lenguaje.mintic.gov.co/marco-de-interoperability , respectively.

[21]www.argentina.gob.ar/jefatura/innovacion-publica/laboratoriodegobierno .

[22]https://gnova.enap.gov.br .

[23]www.lab.gob.cl .

[24]https://digital.gob.bo/wp-content/uploads/2020/07/PLAN-PARA-EL-FORTALECimiento-DEL-GOBIERNO-ABIERTO-Y-PARTICIPATIVO-2020-Documento.pdf .

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

[26]https://centrodeinnovacion.mintic.gov.co .

[27]https://innpulsacolombia.com/milab .

[28]www.micit.go.cr/noticias/transformacion-digital-potenciando-las-sinergias-campos-como-lainteligencia-artificial .

[29]www.gob.pe/8256 .

[30]www.gub.uy/agencia-gobierno-electronico-sociedad-informacion-knowledge/lab .

[31]More details on these "isolated spaces" 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 languages). A follow-up review of these efforts, in January 2021, indicates that they are still in 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 Shopping Guide was created by the UK Government's Digital Service, *Government Digital Service* (GDS), with the support of the OECD and other organizations. See www.digitalbuyingguide.org .

37 www.argentina.gob.ar/buscar/hackaton , as well as hackathons with an emphasis on FinTech, HealthTech and AgroTech.

38 https://mintic.gov.co/portal/inicio/Sala-de-Prensa/Noticias/104274:Solidity-los-ganadores-de-laconvocatoria-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-parasolucionar-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://centrodecimiento.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 type of tasks that will need to be performed in 32% of jobs. See www.oecd.org/future-of-work to learn about the OECD's proposals on the future of work.

54 Due to this finding, the OECD has not considered it appropriate to include a visualization of the relative capabilities of LAC countries in this section.

55 The survey question asked the extent to which specific barriers were an impediment to using data to improve policy development, service design and delivery, and organizational management. Particular attention was paid to forecasting and planning. Respondents to these questions were: Barbados, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Jamaica, Panama, Paraguay, and Uruguay. Argentina completed the survey but did not respond to these questions.

56 The categories in which most countries did not indicate moderate or strong barriers were: insufficient IT infrastructure (36%) and insufficient data storage capacity (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 organization aims to advise the national government on AI policy formulation and provide cutting-edge information on AI development. See the concept paper under consultation:

https://dapre.presidencia.gov.co/AtencionCiudadana/convocatorias-consultas/consejo-internacional-deinteligencia-artificial-para-colombia .

[62]www.gub.uy/agencia-gobierno-electronico-sociedad-informacion-knowledge/politicas-ygestion/programas/agenda-digital-del-uruguay .

[63]https://oe.cd/AIG .

[64]www.oecd-ilibrary.org/governance/anticipatory-innovation-governance_cce14d80-en .

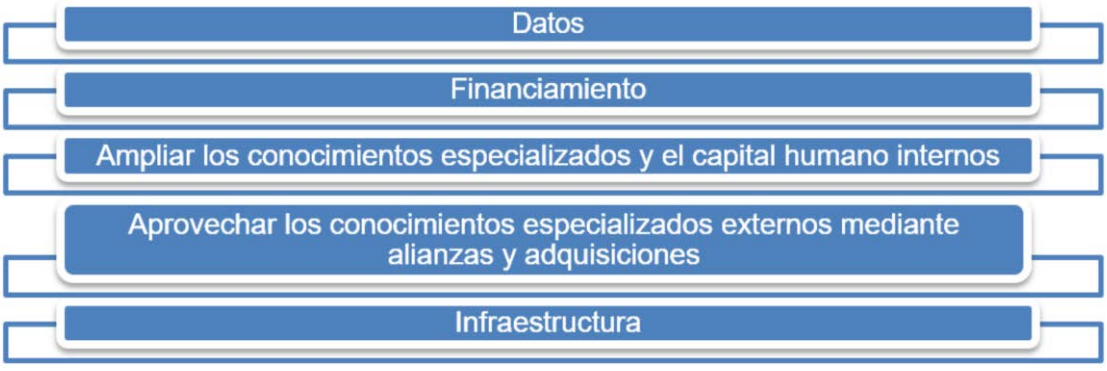
6 Incorporating key AI enablers in the public sector

AI strategies, principles and governance mechanisms are not sufficient to achieve significant progress in achieving AI goals. To make them tangible, governments need to ensure the provision or availability of adequate resources and other enablers. This chapter explores the extent to which LAC governments are implementing these resources and enablers.

Financial resources are an essential prerequisite. Governments must also have access to talent and essential products, services and infrastructure both in the public sector and beyond. This means assessing ways to increase internal capacity, as well as outsourcing talent and development to the private sector or other external partners. Whatever approach is taken, it is important that public servants have at least a basic level of computer literacy, and an understanding of data science and related tools, as these are becoming increasingly ubiquitous and, to some extent, mandatory for governing in the future. Particular attention must therefore be paid to providing opportunities for public servants to develop these capabilities, as well as considering what skills are expected for the future. Finally, governments need adequate 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 these key enablers in place, and identifies areas where further efforts are required. In particular, it analyses the elements presented in Figure 6.1.

Figure



Data

In most AI projects, data is a critical input and enabler. This is especially true in machine learning projects, where the goal is to learn from data. However, not all data is created equal, and there are steps that must be taken to ensure that the data used for an AI project is accurate, reliable, and appropriate for the task at hand. Even in cases where AI could be a solution to governance problems, a lack of basic data management techniques and governance structures can limit its potential as an AI enabler.

It would be a remiss of this report not to highlight the critical importance of data as perhaps the single most important enabler of AI. That said, the forthcoming report, *Going Digital: The State of Digital Government in Latin America* [The Road to Digitalization: The State of Digital Government in Latin America], expected to be published in 2022, will contain an in-depth exploration of LAC governments' capabilities and practices around a data-driven public sector. Among other topics, it will address data governance and issues related to common standards and interoperability between different IT systems, and will analyze LAC governments' open government data (OGD) policies and initiatives aimed at increasing openness, utility, and transparency.

repurposing government data, which can serve as fuel for AI across all sectors.

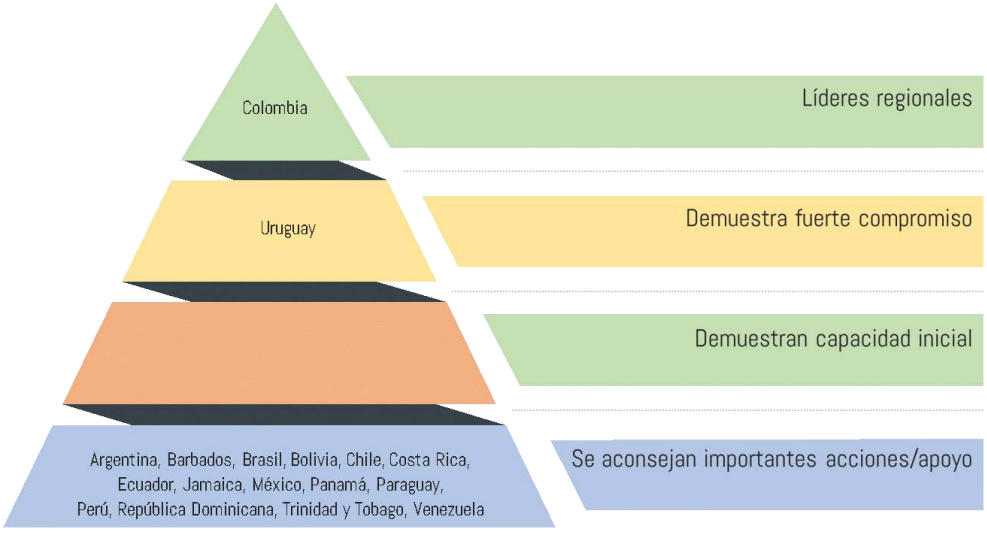
As the forthcoming report deals with the topic of data in depth, this report does not include an exhaustive analysis of data as a key enabler, beyond issues related to the strategic layer of data governance (see section “Data governance: a key enabler” in the report).“Core capabilities for strategic data governance”from Chapter 5), support for data literacy and skills (see section “Scaling up internal expertise and human capital” later in this chapter) and data infrastructure components important for AI development (see section “Infrastructure” later in this chapter).

In addition, the published OECD report*Hello world: Artificial intelligence and its use in the public sector*(OECD, 2019[1]) includes an in-depth treatment of the importance of data for AI systems (see section “Data: fueling AI”) and an overview of ways in which governments can ensure ethics in terms of the collection, use and access to quality data (see Chapter 4).

Financing

Funding and financing mechanisms are an important aspect for AI applications in the public sector. Even the simplest initiatives need a certain level of funding and financial support to make the transition from conceptual to implementation. The availability and nature of this funding can greatly contribute to the ultimate success of AI-based innovation (OECD, 2019).[1]).

Figure 6.2.



Note: This figure emphasises the Government's capabilities to specifically consider and commit to funding public sector AI activities. Individual public sector bodies seeking to fund public sector AI projects from their regular ICT budget line are not taken into account.

In interviews with LAC countries, several of them stated that AI activities were funded from the regular IT budget, usually from the budget of each department. This practice is common around the world, including in LAC countries. However, the existence of specific funding mechanisms for AI, or funding opportunities, is not yet fully understood.

Broader and cross-cutting digital approaches that can be used for AI can help ensure that the myriad needs and demands that government agencies regularly face do not crowd out opportunities for AI exploration, experimentation, and implementation. In addition, centralized or cross-cutting (rather than institution-specific) funding streams can help identify common needs and potential synergies, as well as reduce duplication and overlap.

As already mentioned in this report, several LAC countries have developed approaches or financing mechanisms outside of traditional budget allocations that can contribute to promoting AI in the public sector:

- As discussed in Chapter 2, Colombia's national strategy[2]The Colombian Digital Transformation Pact is unique in the region in terms of the explicit funding mechanism it provides to support AI objectives and initiatives. This strategy guarantees funding from various public sector institutions, usually at the national level. It also explicitly sets out the amounts of funding, where the money comes from (usually from the nation's general budget), and where it is going to go. In addition, as mentioned in the "Understanding the Problems and Potential of AI Solutions" section of Chapter 5, Colombia's Digital Transformation Pact allocates a central fund of USD 5.2 billion (its equivalent) to address the country's main digital challenges, including through emerging technologies (Box 6.1). The possibility of financing AI initiatives in the public sector represents one of the many avenues for financing digital projects. The country's Digital Government Policy (Decree 620 of 2020) also provides for a Single Information and Communications Technology Fund to finance the implementation and operation of transversal digital services for citizens, including digital interoperability and digital authentication services. However, these initiatives do not appear to be related to AI at present. Finally, Colombia's Science, Technology and Innovation Fund has allocated 10% of the revenues from the General Royalties System to finance projects that "increase the scientific, technological, innovative and competitive capacities of the country's regions," including ICT projects that contribute to social progress, economic dynamism, sustainable growth and social well-being.[3]

- As mentioned in the "Understanding the Problems and Potential of AI Solutions" section of Chapter 5, Uruguay's Education Sector Fund is dedicated to funding research projects related to teaching and learning assisted by digital technologies, and includes a main "line of research" aimed at the use of data and AI. According to the survey responses, Uruguay has also obtained funding for AI projects through agreements with the Inter-American Development Bank (IDB) and CAF.
- The Venezuelan Infogovernment Law[4]establishes an interesting financing model under which the National Fund for Science, Technology and Innovation allocates at least 2% of the resources from contributions to science, technology and innovation to finance promotion programs and plans to consolidate the national information technology industry. Subsequent iterations of this model are not specifically related to AI, or even specifically to public sector programs. As in the case of Colombia's Fund for Science, Technology and Innovation, this is an interesting approach to the creation of a central fund for the promotion of digital initiatives, and may merit further analysis.

Despite all these activities, compared to other parts of the world, specific funding options for AI in the public sector do not seem to be a central focus in Latin American and Caribbean countries. Allocating funds for AI represents only one of many possible options where normal budgeting processes operate, and in most of the examples above. In the absence of a specific funding source, LAC countries may have difficulty translating stated strategies and aspirations into real initiatives.

and specific to AI due to competing priorities. Box 6.1 presents some examples of specific financing for AI in the public sector from outside the region, and provides details on regional financing mechanisms offered by CAF and the IDB that can assist LAC governments in taking advantage of opportunities in AI for the public sector.

Box 6.1. Examples of specific funding for AI in the public sector

Specific funding as part of a national AI strategy (Spain)

As part of its national AI strategy, Spain has pledged to allocate EUR 600 million for AI investments by 2025, which the country estimates will also serve to mobilise EUR 3.3 billion in private investment. Of this amount, EUR 275 million will be allocated to AI technological development, EUR 133 million to the integration of AI across all economic sectors, EUR 100 million specifically for AI in the public sector, EUR 42 million to promote talent development, EUR 42 million for data platforms and EUR 8 million to develop a regulatory ethical framework that strengthens citizens' rights.

AI and quantum computing research institutes (United States)

The U.S. government has announced more than $1 billion to fund the creation of 12 new AI and quantum information science research institutes to be established within federal government agencies. The institutes, which will be created over the course of several years, will serve as the place where the federal government, the private sector, and academia will come together to drive transformative advances in AI and quantum.

Funding for the implementation of the national AI strategy (Estonia)

From 2019 to 2021, the Government of Estonia allocated EUR 10 million to the implementation of the country's national AI strategy,**KrattAI**.

Financing the start-up of key AI-enabled public services (Finland)

In April 2019, the Government of Finland published*AuroraAI – Towards a Human-Centric Society* [AuroraAI - Towards a Human-Centric Society] provides a five-year implementation plan (2019-23) for the national digital government strategy, AuroraAI. One of the measures to be taken is the "allocation of funding of €100 million spread over the period 2020-23, to launch between 10 and 20 services around life events and business practices".

Regional financing for the strategic use of AI in LAC (CAF)

CAF, the 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 organization requested proposals from its members with a focus on projects that had already passed the design and testing stage and were close to implementation. The process resulted in 89 proposals from 11 countries. The main issues raised in the proposals were related to citizen services, online procedures, procurement and contracts, disease management, the environment, and urban mobility and planning. CAF then evaluated the proposals based on certain pre-established criteria: relevance, impact, efficiency and effectiveness, potential to combat corruption, ability to empower citizens to contribute to solving public problems, scalability, replicability, and potential to link with other initiatives.

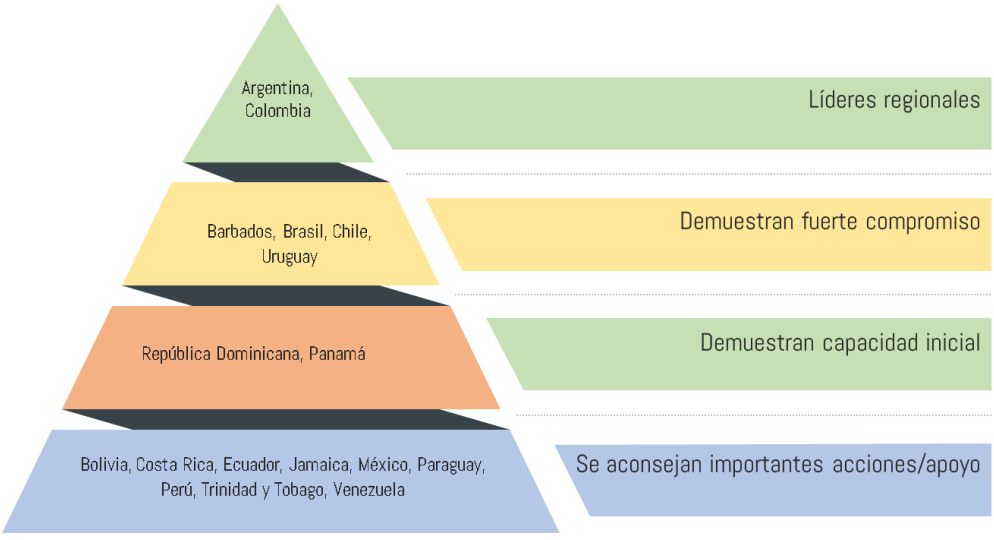
To date, CAF has provided approximately USD 800,000 (its equivalent) in financing funds, through non-reimbursable technical cooperation grants.

Fountain: 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, www.caf.com/es/actualidad/noticias/2020/06/cierra-la-convocatoria-de-caf-para-desarrollar-un-proyecto-de-datos-e-ia-en-una-ciudadlatinoamericana . CAF officials and

Expand internal expertise and human capital

In addition to funding sources, other key enablers for AI in the public sector are the skills and capabilities of the human element. Governments can secure the necessary human capital *internally*, through innovative training strategies and the incorporation of new talents.[5] In addition, internal human capital can be increased through agreements *external* procurement or partnership, as discussed in the next section. To harness the potential of AI in the public sector, governments will likely need to apply a combination of approaches.

Figure 6.3. LAC region's capacity to strengthen its internal human capital for AI

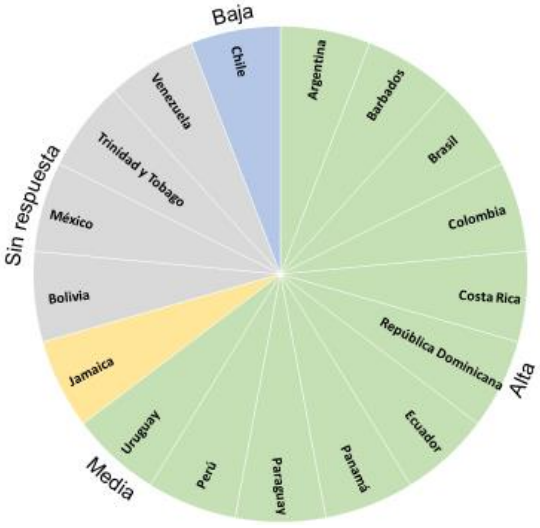


The widespread transformational potential of AI is likely to have huge implications for the skills required for effective delivery of public services. These needs have been further accentuated by the COVID-19 crisis, according to OECD research which found that a key consequence of the pandemic in the public sector has been the **Rapid acceleration of innovation and digital transformation**, which made digital skills a vital component to keep up with new environments and ways of working, and to relocate accordingly (OECD, 2020).[17]). Given the critical and fundamental nature of digital skills in public administration, the working group of senior digital government officials known as e-government leaders (*Working Party of Senior Digital Government Officials (E-Leaders)*) of the public governance committee (*Public Governance Committee*, PGC) of the OECD (with the support of the digital data and governance unit [*Digital Government and Data Unit*]), in coordination with the working group on public employment and management (*Working Party on Public Employment and Management*, PEM) and the observatory for public sector innovation (OPSI), has developed a

new digital skills and talent framework for the civil service. The aim is to move from a sole emphasis on technology to a mindset and culture, supported by technical skills, capable of designing more open, collaborative, inclusive, innovative and sustainable government services (OECD, 2021).[47]). The results show that AI-related skills, such as using data and technology reliably, are essential.

Within the LAC region, as discussed above (Figure 5.7), only a couple of countries surveyed (Dominican Republic and Uruguay) expressed agreement that their public servants understand AI, its uses and limitations. This would indicate a skills deficit regarding AI among public servants in office. Fortunately, most LAC governments confirmed that improving the digital skills and abilities of public servants was a high priority (Figure 6.4).

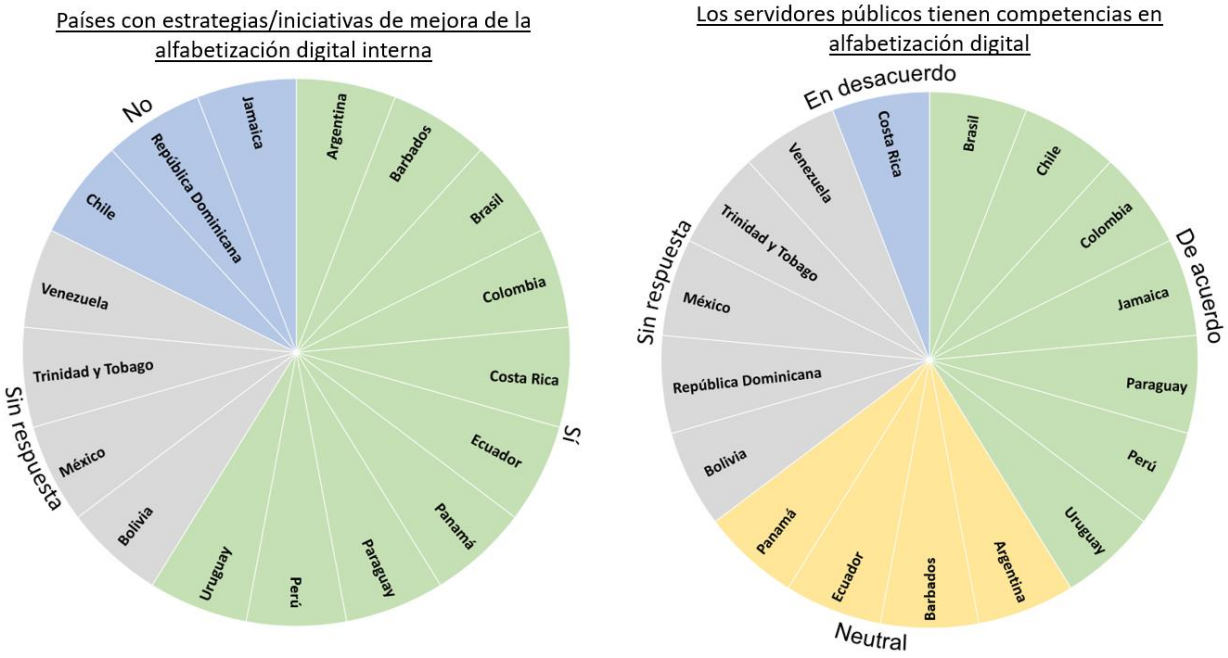
Figure 6.4. Priority assigned to improving the digital skills and abilities of public servants



Fountain: Survey of digital government agencies in Latin America and the Caribbean conducted by the OECD (2020).

This high level of priority can be observed in several LAC countries that have made significant efforts in recent years to expand digital literacy and other associated skills among public servants. Such skills provide a solid foundation for further AI-oriented professional specialization. The surveyed countries also expressed positive views on the digital literacy of public servants. Figure 6.5 illustrates these points.

Figure 6.5. Countries with initiatives to improve internal and server digital literacy



Fountain: Survey of digital government agencies in Latin America and the Caribbean conducted by the OECD (2020).

As an example of some digital literacy efforts we mention the following:

- Argentina's National Institute of Public Administration (INAP) offers a series of courses for public servants aimed at promoting digital literacy, including courses on database management, big data, and data visualization.[6]On the other hand, the Secretariat of Public Management and Employment of that country has developed a series of digital skills development programs aimed at different groups of public sector workers (for example, young officials, senior managers) (OECD, 2019).[68]). LABgobar also works to train public servants in other more technical digital skills (OECD, 2019)[44])

- The Barbados Learning and Development Authority[7]has coordinated a variety of virtual courses[8] related to digital literacy, available to both public servants and the general population. The most relevant courses deal with database concepts, database systems, and algorithms and programming.
- As part of its national AI strategy, Brazil includes an action point to encourage public bodies to launch a training program on new technologies for their staff. On the other hand, the national school of public administration in that country[9]offers digital literacy and data science courses aimed specifically at public servants. These courses include topics such as data governance, data science, regression analysis and data protection.[10]

- Colombia has developed training courses on a range of topics related to open data. Examples include training on what types of data to publish and how to do so, on the use and exploitation of data in the Government's open data portal, and on accessibility and digital security. The training courses are targeted at different audiences, such as public servants, national and subnational levels of government, journalists and civil society representatives. The country publishes a set of open data on its open data portal.

data from its open data training offering.[11]On the other hand, the government's experimental program Catalysts of Innovation[12], developed in coordination with UNDP, selects public servants to be trained in the use of innovation tools and methodologies that they must apply to solve a specific challenge with the support of ICTs. This training and the resulting solutions may include data and emerging technologies, such as AI. Another important programme indirectly linked to the management of digital literacy in the public sector is the TIC Mission 2022, which aims to train 100,000 Colombian youth and adults (including public servants) in programming.[13] According to officials, those who complete the training have the opportunity to become public servants or contractors for different departments of the Colombian State.

- According to Panama's Digital Agenda 2020, the country is developing a new e-learning program for 80 public sector agencies on data openness, and is training a number of officials in data governance.

While efforts to train public servants in strong digital literacy skills appear to be moving in the right direction for many LAC governments, more needs to be done to hone these skills and provide specific professional expertise on AI and related topics (e.g. machine learning and AI ethics), as these skills pose unique opportunities, challenges and risks. This challenge extends beyond LAC countries, as efforts to develop, motivate and recruit internal AI talent in the public sector remain largely lacking worldwide (Ubaldi, *et al.*, 2019[14]). Indeed, skills shortages in emerging technologies are often cited by government officials in interviews with the OECD as an obstacle 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 development programmes for public servants. In particular:

- Argentina's National AI Plan (Government of Argentina, 2019)[77]) recognizes that "the use of AI requires public institutions to redefine part of their management schemes and strategies based on new technologies. With the introduction of intelligent systems, there is a need to reconvert roles and tasks of public employees." The key objective of the strategy is the following: "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 promoting the development of talent and technical capabilities oriented towards AI in both the public and private sectors. Activities in this area are already underway through the INAP's offer of face-to-face and online training sessions on AI (OECD, 2019).[68]).

- As part of its public sector modernization program,[14]Barbados is committed to developing a public sector training plan and to providing vocational training and specialization, including in disruptive technologies, for public sector employees. In its response to the survey of digital government agencies, Barbados officials stated that the Government is currently placing a greater 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, include professional specialization training activities for both public servants and the general public. These activities include training, incentives, and new management structures that encourage the use of AI in the public sector.

The action plan proposes the creation of a specific management program and states that the Government is already working with the initiative.*fAIr LAC*from the IDB (see chapter 2) to train public officials in AI.

- Colombia's Digital Talent program offers AI training for both public servants and citizens in general, and has already trained thousands of people in AI skills (Box 6.2).[15]In addition to creating its own training programs, the Colombian government has created a fund for the Digital Transformation call to finance external training opportunities for public servants in topics such as AI and machine learning.[16]Finally, as mentioned above, the country's Innovation Catalysts help selected public servants improve their ICT skills in ways that they can apply to their AI capabilities.

- Peru's draft national AI strategy for 2021 states that the country will promote programming and AI courses or diplomas for public agency officials, 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 decentralized national AI and innovation center as an accelerator and facilitator of AI research and development across all regions of the country, although it is unclear whether this includes the use of AI in the public sector.

- According to officials who responded to the survey of digital government agencies, Uruguay offers training courses for public servants on various topics, including AI, through its virtual education platform.

Box 6.2. Training thousands of public servants and citizens in AI (Colombia)

The Ministry of Information and Communications Technology (MinTIC) of Colombia has developed the Digital Talent strategy to face the challenges of the fourth industrial revolution. The main objective of this strategy is to accompany citizens throughout their life cycle, starting with education in digital skills at an early age, followed by training students in public schools and in public and private universities, and then training in skills and updating professionals in areas linked to digital creative industries, industries 4.0 and information technologies.

In 2019, as part of its digital skills training strategy, Colombia developed a set of online courses on topics related to digital transformation and AI. The courses were made available to more than 25,000 Colombians (public servants and the general population), and 12,000 training slots were reserved specifically for Colombians seeking to train as AI professionals. Efforts have since expanded, and there are plans to train more than 50,000 Colombians in digital skills, including those that are important for AI. The training courses place particular emphasis on the professional specialization of Colombians who are currently unemployed.

Fountain: https://mintic.gov.co/portal/inicio/Sala-de-Prensa/Noticias/106989:Mas-de-25-000-colombianos-podran-formarse-gratis-en-Artificial Intelligence and skills for digital transformation thanks to MinTIC , www.oecd.ai/dashboards/policy and www.gobiernodigital.gov.co and initiatives/http:%2F%2Faipo.oecd.org%2F2021-data-policyInitiatives-26076.

These efforts are commendable and may be of particular relevance in terms of the technical skills needed for specific functions. In cases where the AI skills required are of a more general nature, for the training of a broader spectrum of civil servants,

Governments in LAC can take advantage of existing outsourced solutions at no cost. In particular, many citizens and public servants around the world have already benefited from the free AI training program *Elements of AI*[Elements of AI] (Box 6.3), and more than 1,500 people participated in the Multidisciplinary Training Program in Artificial Intelligence of the Innovation and Artificial Intelligence Laboratory (IALAB) of the University of Buenos Aires, for which CAF awarded scholarships (Box 6.4).

Box 6.3. AI elements

Elements of AI is a free online course created by the University of Helsinki and Reaktor, a consulting services organization and agency. Its curriculum covers AI concepts, its societal implications, and building AI systems.

Unlike most AI courses, Elements of AI is designed to be broadly accessible and requires no prior technical skills. It combines theory with practical exercises, which can be completed at the learner's convenience. The first part, "Introduction to AI," is intended to help learners understand the nature of AI, what is and isn't possible, and how AI affects everyday life, without requiring complicated math or programming skills. Importantly, it also addresses 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 in late October 2020, and allows students to delve deeper into the world of AI and gain knowledge of the algorithms that make building AI systems possible. Once students have grasped the basic fundamentals, they can begin exploring the fundamentals of coding AI systems using the Python programming language. Each exercise offers users three difficulty levels to choose from:

- easy: no coding required at all;
- Medium: Students modify the code provided to them; Hard:
- Students write new code from scratch.

The initiative was launched with the aim 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, and is being translated into the 24 official EU languages (it is already available in English, Spanish and Portuguese, among others). To date, 530,000 students from 170 countries have signed up.

Fountain:www.elementsofai.com andhttps://trends.oecd-opsi.org/trend-reports/upskilling-and-investing-in-people .

Box 6.4. Multidisciplinary Training Program in Artificial Intelligence

The Artificial Intelligence and Innovation Laboratory (IALAB) of the University of Buenos Aires developed the Multidisciplinary Training Program in Artificial Intelligence with the aim of promoting the AI ecosystem in Latin America.

This program is aimed at various training profiles, such as programmer*full-stack*, data lead, AI project manager and AI programmer. The core part of the course consists of

four modules:

1. Start Coding: 150 hours on the necessary programming languages, such as JavaScript, React, React Native and Node.js.
2. Data, Information and Knowledge Governance: 120 hours on processes, functions, policies, standards and measurements that ensure the effective and efficient use of information.
3. Algorithm governance: 60 hours dedicated to providing global, ethical, legal, technical and operational guidance to achieve traceability of artificial intelligence systems and their auditing.
4. AI Design, Programming and Deployment: more than 200 hours dedicated to how to apply automation techniques and AI systems adapted to the problems presented by the organization.

The program is a self-guided virtual course: it offers synchronous tutorials, asynchronous communication with participants, and availability of teachers.

CAF supported the program through full sponsorship of 150-500 hours of theoretical and practical training on AI, including specific activities for public employees.

So far, the programme has attracted over 15,000 participants, including mainly public officials, small and medium-sized businesses, and women from the region. IALAB has set a goal of reaching 50,000 participants by the end of 2022.

Fountain:https://ialab.com.ar/programa-de-formacion-multidisciplinary-de-inteligencia-artificial and www.caf.com/es/actualidad/convocatorias/2021/08/programa-de-formacion-multidisciplinary-de-inteligencia-artificial .

In seeking to bring the right skills and expertise into the public sector, LAC governments' efforts to internally increase AI capabilities through the addition of strategic personnel are considerably lower than those aimed at the professional specialization of incumbent public servants. Although there is evidence of multidisciplinary and diversified initiatives to promote inclusive staffing and recruitment (see section "Information Technology and Information Technology"), there is a growing number of efforts to increase AI capabilities by incorporating strategic personnel into the public sector.Ways to ensure an inclusive and user-centred approach",In Chapter 4, the OECD found few cases of targeted recruitment of individuals with specialized AI skills and knowledge among LAC governments. Argentina's national strategy on artificial intelligence comes close to addressing this issue with the proposal to create a technical team with expertise in this technology that acts as an internal advisory body that public sector organizations can turn to for answers to questions about the design and execution of AI projects. Where the government hopes to obtain these experts is a point that is not explicitly stated in the strategy.

Beyond a specific focus on AI, there appears to be little explicit action dedicated to recruiting technical talent with broader digital or other skills. There are some exceptions, such as Brazil, whose national digital government strategy includes a goal of expanding the workforce by 2,000 professionals by 2022, including through recruitment actions. According to officials interviewed by the OECD, Brazil has also simplified the onboarding process for around 400 temporary staff, in order to catalyse digital government. In Argentina, the new government has identified recruiting new talent as a top priority, opting for temporary employment models that offer higher remuneration, relative to market values, as a way to attract new talent, and neutralise the wage gap between the public and private sectors (OECD, 2019).[68]). Globally, there has been a significant trend towards combining professional specialization of employees in functions with efforts that emphasize attracting digital experts to public activity (Box 6.5). LAC governments should explore ways to make public service attractive to companies.

talented individuals from other sectors, as well as ways to incentivise highly qualified individuals to join the civil service. They could also explore mechanisms to simplify and speed up the recruitment process for vacant positions requiring AI skills.

Recruiting new types of talent forces governments to redesign positions and job profiles, which necessarily requires establishing competitive salaries and conditions, always within the limitations of current public sector wage agreements. Since this can be an obstacle to incorporating digital government skills internally, governments could consider hiring experts from the private sector (OECD, 2020).[48]). They may also need to make changes to existing laws, policies and practices. For example, in some countries, changes to legislation may be needed to make staff recruitment arrangements more flexible.

Box 6.5. Recruitment of technical talent in public administration

Tours of duty (USA)

Hiring staff for shorter periods of time can be faster and easier for governments than hiring permanent staff. This type of non-permanent hiring can be a good option for digital innovation projects, as such arrangements allow for regular staff renewal with talents that possess up-to-date digital skills and competencies. For example, the US government has introduced the concept of target-based hiring.*tour of duty*.

According to US documentation, taking advantage of the opportunities offered by the objective-based contracting modality*tour of duty*((also known as special assignments), federal agencies can benefit from new talent willing to serve their country. The application of flexible staffing authorities allows agencies to recruit executives, entrepreneurs, technologists and other innovators willing to enter the civil service on a short-term basis. The documentation also outlines several possible models and checklists for project leaders to consider.

The objective-based contracting modality*tour of duty*has been used to recruit technologists for the United States digital service (*United States Digital Service*, USDS), and the 18F and 18F programs *Presidential Innovation Fellows*(PIF), among others.

Joint Centre of Excellence for AI (France)

In March 2018, President Emmanuel Macron presented a vision and strategy to make France a leader in AI. The strategy was based on the March 2018 report,*For a Meaningful Artificial Intelligence*: *Towards a French and European Strategy*[For meaningful artificial intelligence: towards a French and European strategy], commissioned by the French Prime Minister. The report noted that not all administrations have the same level of maturity in terms of thinking about the use of AI in their areas of expertise and their implementation processes. One of the main difficulties lies in the ability to obtain the right skills to keep pace with innovation, identify their applicability and potentially transform them into an initial proof of concept. Among numerous commitments and proposals, the report includes an action point regarding the creation of a Joint Centre of Excellence for AI at state level, which would help recruit AI talent, and serve as an advisor and laboratory for the design of public policies. This centre was conceived as a temporary measure, as, over time, other public sector bodies would become more capable of identifying AI skills and recruiting the necessary talent.

The OECD has not been able to find evidence that this Joint Centre has been fully implemented. However, it represents a promising model for recruitment and skills specifically in AI.

Fountain:https://github.com/GSA/innovation.gov/issues/25 ,https://oecd-opsi.org/wp-content/uploads/2019/05/implementation-with-ECcover-1.pdf,www.aiforhumanity.fr/pdfs/MissionVillani_Report_ENG-VF.pdf andwww.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 the professional specialization of public servants, beyond the efforts on digital literacy and professional specialization in AI discussed here. In particular, major training and recruitment initiatives emphasize broader or more specific competencies in digital transformation and innovation. Indeed, most Latin American and Caribbean countries include, in their digital government strategy, or in other specific initiatives, special provisions on strengthening the digital transformation capabilities of public servants. The forthcoming report *Going Digital: The State of Digital Government in Latin America* [The Road to Digitalization: The State of Digital Government in Latin America will address these issues in depth, including strengths and weaknesses related to digital skills and capabilities in the region, and present recommendations for improvement in this area. Many LAC governments have also undertaken professional specialization activities in AI and other digital skills for the general public. Such actions, while much needed, are generally outside the scope of the OECD's work on digital government, which emphasizes the transformation of the public sector.

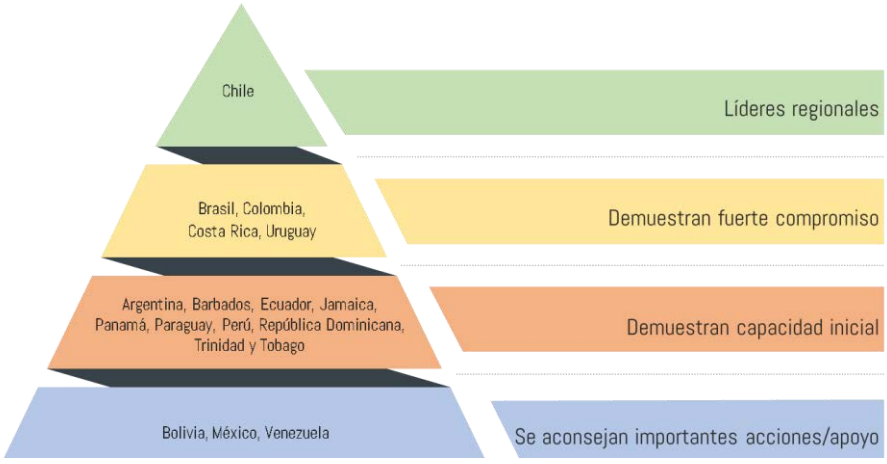
Looking ahead, LAC governments need to ensure that public servants at all levels have the right AI skills and capabilities, as current efforts tend to place the emphasis on technical staff. It is vitally important to have a senior leadership cadre that is technologically savvy and has a strategic understanding of what AI can do, and the types of problems it can address, capable of supporting the deployment of AI in government (Agrawal, Gans, & Golbfarb, 2018).[78]).17Those responsible for AI-enabled services will require deeper expertise, even if the services are provided by external contractors, as they will need to negotiate effective contracts and assess whether the specific AI approach is fit for purpose. It is essential that both senior leaders and managers are equipped to manage change.

Furthermore, as governments in the region mature in this area and continue to build AI competency cores internally, and hire AI-trained and skilled individuals, they will need to consider other long-term needs for AI skills and capabilities. Governments need to keep in mind that AI will continue to change the dynamics of work and the requirements for the public sector to function well for the foreseeable future. This underscores the need for lifelong learning and growth. Governments will therefore need to develop lifelong learning programs, and iterate and adapt these programs over time. The Future Skills Initiative *Future Skills* from Canada, as detailed in the OECD report *Hello world: Artificial intelligence and its use in the public sector*, offers an interesting approach that could be useful for public sector capabilities, as well as for society and the economy in general.18

Leveraging external expertise through partnerships and acquisitions

In many cases, AI skills and expertise are not easily found in government, and recruitment and training programs to import such talent often require a significant investment of time and may also encounter bureaucratic hurdles. In addition to promoting the development of these capabilities internally, governments can turn to the private sector (e.g., large companies or *startups* innovative GovTech), to civil society and academic actors, as well as to the general public, to benefit from their expertise and resources.

Figure 6.6. Capabilities of the LAC region to leverage specialized knowledge and perspectives and



Many LAC governments are well prepared to incorporate, through open processes, external knowledge and perspectives to design and develop their digital policies and services, which should also be applied to AI-related issues (Table 6.1 and Table 6.2).

Table 6.1. Public bodies that include external actors to design and develop services

	Private sector	Academy	Civil society
Argentina	✓	✓	✓
Barbados	✓	✓	✓
Brazil	✓	✓	✓
Chili			
Colombia	✓	✓	✓
Costa Rica	✓	✓	✓
Dominican Republic	✓	✓	✓
Ecuador			
Jamaica	✓	✓	
Panama	✓		
Paraguay	✓	✓	✓
Peru	✓	✓	✓
Uruguay	✓	✓	✓

Note: Data is not available for Bolivia, Mexico, Trinidad and Tobago, and Venezuela due to lack of survey responses. "Private sector" includes countries that answered affirmatively to "private sector" and/or "startups and GovTech entrepreneurs."
Source: Survey of digital government agencies in Latin America and the Caribbean conducted by the OECD (2020), corrections for Colombia dated December 2, 2021.

Table 6.2. Methods for attracting external stakeholders to participate in the design of digital services and policies

	Design sessions	Focus groups	Public consultations	Social networks	Wiki Approaches
Argentina			✓	✓	✓
Barbados	✓	✓		✓	
Brazil	✓		✓		
Chili	✓	✓			
Colombia	✓	✓	✓	✓	
Costa Rica			✓	✓	
Republic Dominican		✓	✓	✓	
Ecuador			✓		
Jamaica		✓			
Panama	✓				
Paraguay					
Peru	✓	✓	✓	✓	
Uruguay	✓	✓	✓		

Note: No data is available for Bolivia, Mexico, Trinidad and Tobago, and Venezuela due to lack of survey responses. *Fountain*: Survey of digital government agencies in Latin America and the Caribbean conducted by the OECD (2020), corrections for Colombia dated December 2, 2021.

These efforts are commendable, and can lead to the incorporation of completely new concepts and perspectives in the public sector. For example, in the Dominican Republic, more than 80% of new digital services were initially suggested by the general public, according to officials in digital government departments. Some countries are establishing formal structures to capture these perspectives and views, such as Uruguay, which has committed in its national digital government strategy to develop an online catalogue of public participation opportunities, including feedback and satisfaction ratings. The country has also committed to launching citizen innovation funds and a sustainable co-creation process between government and civil society representatives, entrepreneurs and businesses. Colombia has also created a forum structure to capture citizens' views through its Urna de Cristal programme (Box 6.6), with a particular focus on increasing government transparency. Governments in Uruguay and Colombia have also created a forum structure to capture citizens' views through its Urna de Cristal programme (Box 6.6), with a particular focus on increasing government transparency.[19]and Chile[20]organized a multi-stage public consultation process to generate initial thinking specifically on national AI priorities and needs, through roundtables, webinars and other outreach activities, and then to obtain feedback on the draft strategy text. Chile's LabGob offers guidance and methods on how to benefit from external perspectives (Box 6.7). Other governments, such as Costa Rica,[21]They have also published solid guidance on the topic, although this guidance is somewhat less detailed in the step-by-step instructions that guide public servants through the processes.

Box 6.6. The Crystal Urn (Colombia)

The 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 multi-channel platform that integrates traditional media (television and radio) with digital media (social networks, SMS and websites). These channels are made available to all government entities, national and territorial, to facilitate the creation of participatory forums.

at all levels, with the aim of improving relations between citizens and the State. Through the portal, Colombians can influence the decisions of their rulers and be informed about the results, progress and initiatives of the Government. 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 link between citizens and the State.

Fountain: (OECD, 2018[62]).

Box 6.7. Guidance on how to capitalize on expertise and perspectives from external sources (Chile)

The LabGob of Chile has prepared a series of documents entitled*Innovation Allowed: Guidelines for Transforming the Chilean State*, which aim to help public servants understand what innovation is and how to implement innovative practices to generate better government outcomes. Within this series are two documents that public servants can use to support them in taking advantage of and participating in the reflections and specialized knowledge of external actors and groups.

The first, "How can we solve public problems through Open Innovation Competitions?", seeks to promote open innovation processes in the public sector and to make "a commitment to the collective intelligence that resides in entrepreneurs, academics, SMEs, students, NGOs, public officials and any citizen, no matter how far away they are." The document also highlights the potential of open innovation to facilitate the administration's access to ideas and solutions that were previously unknown to it.

In seeking to systematize the experience of open innovation, the guide offers methodologies, models, tools and case studies for open processes to take advantage of external expertise. It also offers guidance to help public servants work through the eight stages of an open innovation process or competition:

1. initial exploration;
2. strategy and design of the call;
3. dissemination and application period;
4. selection filter;
5. accelerated incubation;
6. Communication packaging and final evaluation;
7. piloting and evaluation;
8. implementation.

The second document, “How can we facilitate face-to-face spaces through public innovation?”, is based on class material from co-design workshops held during the period 2015-2018. The document provides practical information on how to structure face-to-face sessions and workshops, and lists key roles and responsibilities for such sessions with practical guidance divided into eight steps:

1. Definition of a purpose.
2. Definition of a target audience.

3. Workshop design.

4. Management and logistics.

5. Initial preparation.

6. Execution of the workshop.

7. Evaluation.

8. Systematization and analysis.

This guide is adaptable and could be used in a variety of settings and countries to gain insights and perspectives from external stakeholders, including stakeholders and users.

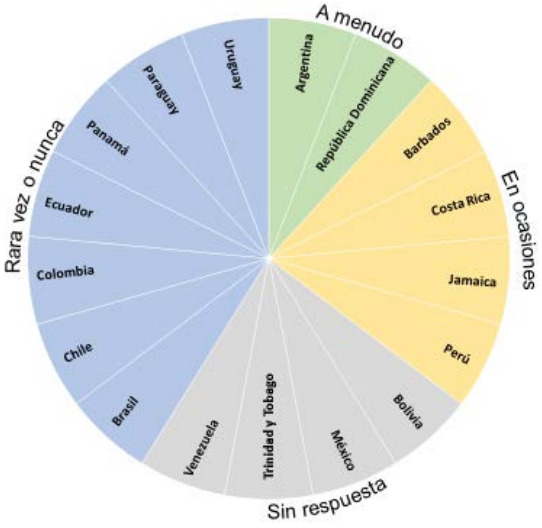
Fountain:https://innovadorespublicos.cl/documentation/guide/ andhttps://innovadorespublicos.cl/documentation/publication/39 .

When it comes to AI policies and services in particular, many governments around the world have identified a need for more dynamic and targeted engagement with actors or organisations from other sectors to drive progress. This need is particularly acute when it comes to new topics, such as emerging technologies. In these cases, governments may not be in a position to create public value without external engagement, and the transformative potential and outcomes of AI policies, initiatives and solutions need to be co-produced. Strategic relationships with other sectors are essential to chart a common course, access new skills and expertise in cutting-edge practices, and strengthen public perception and trust. Each sector has unique strengths and competencies, and the greatest successes in digital innovation come when these are pooled together.

The most common types of arrangements that the OECD has identified include cross-sector alliances and collaborations (e.g. public-private partnerships), and public procurement of private sector expertise (OECD, 2019).[1]). In this sense, working across the boundaries of the public sphere is essential. The OECD has previously noted that engagement with the private sector is one of the most important enablers for the adoption, by the public sector, of emerging technologies, including AI (Ubaldi*et al.*, 2019[14]). In addition, working together with civil society and academic institutions allows governments to connect with specialized perspectives and expertise from many related areas. Challenges and prizes, as discussed above in the section “Understanding the problems and potential of AI solutions” in Chapter 5, are one way to put these types of arrangements in motion. Governments in the LAC region have also undertaken, to varying degrees, other types of actions to support these forms of collaboration.

In terms of alliances and intersectoral collaboration, LAC governments do not seem to be taking advantage of public-private partnership opportunities very often (Figure 6.7). While many LAC governments have developed and demonstrated the ability to involve external actors in certain activities, such as consultations, in order to receive input and comments on proposals, they are still largely lacking in instituting more formal, practical, committed and mutually beneficial intersectoral alliances and collaborations.

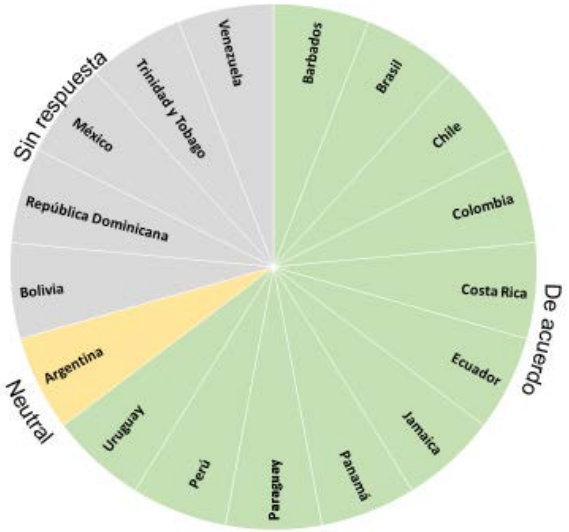
Figure 6.7. Governments public-private partnerships



Fountain: Survey of digital government agencies in Latin America and the Caribbean conducted by the OECD (2020).

When it comes to AI, governments have the potential to benefit greatly from active and ongoing cross-sector partnerships in which each sector has a specific role and contribution. While the survey results indicate that cross-sector collaboration is somewhat moderate, they also indicate that the environment in many LAC countries would welcome greater emphasis on these partnerships and enable their successful outcomes (Figure 6.8).

Figure 6.8. Digital government agencies support the public sector's ability to partner with other sectors



Fountain: Survey of digital government agencies in Latin America and the Caribbean conducted by the OECD (2020).

Although efforts in these areas are not very marked, LAC governments have initiated a series of solid initiatives in relation to AI. For example, as previously identified by the OECD (Ubaldi *et al.*, 2019[14]), countries such as Chile and Panama have promoted public-private collaboration through a series of Memoranda of Understanding to implement pilot experiences in the fields of

Big data, cloud computing and AI. Other relevant activities are underway, including hackathons and challenge initiatives, as discussed in the "Understanding the Problems and Potential of AI Solutions" section of Chapter 5. Some of these activities in the region include:

- Argentina has organized several intersectoral hackathons, some of which have resulted in solutions made possible by AI.[22]The national AI strategy also seeks to promote research, development and innovation initiatives, aimed at basic and applied science in AI, in both the public and private sectors. Previous OECD work has identified the need to create stronger bridges, alliances and synergies between the public and private sectors (OECD, 2019).[68]), indicating that there is still room for further growth in this area.
- In Brazil, its national AI strategy includes an action point that consists of establishing connections and partnerships between the public sector, the private sector, and scientists and universities, in order to advance the development and use of AI. In addition, the country's national digital government strategy, within the framework of an objective on emerging technologies, proposes, by 2022, at least six research, development and innovation partnership projects, involving central government agencies, private sector companies and third sector organizations. The strategy also contemplates formal collaboration agreements with institutions representing the ICT industry, although its scope is broad and may or may not include collaborations related to the field of AI. In addition, Brazil has announced its intention to create eight AI applied research centers, which will be co-financed by the government and the private sector, housed in established academic institutions and dedicated to healthcare, agriculture, industry and smart cities.[23]Finally, the strategy envisages the creation of cross-sectoral associations to organise data-athons and hackathons to find solutions to public sector challenges, with an emphasis on those that include or enable the use of AI.

- He*Data Observatory*(Chile's AI Observatory is a public-private partnership created to help "close gaps in technological development and increase Chile's role in the fourth industrial revolution." The observatory represents one of the strongest public-private partnerships in the region (Box 6.8). The country's AI strategy and action plan also include the promotion of public-private partnerships aimed at infrastructure and the development of good practices for the ethical use of AI.
- In Colombia, a Digital Government Directorate has been created under the Ministry of ICT to, among other things, promote public-private alliances for IT adoption processes. Also in Colombia, the CAOBA Alliance is the "first public-private alliance for the use of Big Data technologies and*Data Analytics*". The Alliance is made up of 11 representatives from the country's academic, public and private sectors (OECD, 2018).[62]). The results obtained do not put the emphasis on AI, but this seems feasible, since data and analytics underpin many AI systems. Recent work by the OECD found that new approaches to ICT-related public-private partnerships need to be developed in order to create and develop new business models, and define and deliver innovative digital services (OECD, 2018).[62]).

- As mentioned in this report, Costa Rica is developing a National Artificial Intelligence Laboratory (LaNIA) specifically aimed at finding intersectoral AI-supported solutions to national problems. Its objectives are to create an ecosystem, reinforce trust, and promote research and education in AI.
- According to officials interviewed by the OECD, Ecuador is exploring public-private partnerships for an AI-enabled identity program.

- In 2020, the hackathon *CodeFest* The Government of Jamaica's AI Initiative brought together the public sector and academia to design and develop solutions in a range of areas, resulting in the awarding of solutions that utilise core AI functionality.[24]
- Previous OECD work has documented Panama's willingness to boost its role in government innovation, through a multi-stakeholder approach and partnership with the academic and private sectors (OECD, 2019).[38]). This project is not AI-related, but it indicates that there is a strong foundation in this area, which could also be useful for AI efforts. This work also identified other opportunities for research, education, and the private sectors, showing that there is still room for growth.

- As already mentioned, Paraguay's InnovandoPy initiative seeks to identify innovative technological ideas, inspire and motivate young entrepreneurs, bring together public and private sector actors, promote collaboration on digital projects and encourage entrepreneurship in the country. Its activities include a startup accelerator, a *startups*, *hackathons* for citizen-centric applications and *ideatons* to generate innovative ideas (Box 5.10).
- In recent years, Peru has taken strategic steps to build connections across sectors to promote collaboration, partnerships, and co-creation of public services. Its recent draft national AI strategy envisages the promotion of public-private partnerships (and public procurement processes, discussed in the next section) aimed at installing AI infrastructure that benefits all sectors. This was preceded by the approval of the Digital Government Secretariat Resolution No. 003-2019-PCM/SEGDI[25]
  to strengthen links between sectors, and the creation of a digital transformation laboratory, with the support of CAF, to build a collaborative ecosystem. Peru also approved a Regulation of the Digital Government Law in 2021 that seeks to further promote intersectoral collaboration.[26] So far, these efforts do not seem to have generated AI-related partnerships, but they can serve as a solid foundation going forward. Finally, the country has accumulated excellent practice in developing key strategies, through an open co-design process. For example, the National Digital Transformation Policy and Strategy was co-designed by the public sector, the private sector, civil society, academia and citizens.[27]

Box 6.8. Data Observatory (Chile)

As described in the Inter-American Development Bank (IDB) report, *Artificial intelligence at the service of social good in Latin America and the Caribbean*, he *Data Observatory* (DO) of Chile is a "non-profit organization founded in 2020 to enhance the benefit obtained from environmental data and other public data of global and unique value that are being generated in the country." The report further explains: "It articulates academia, the public sector, industry and civil society in global alliances to generate solutions and capabilities in data science and related technologies that are useful and have returns in various sectors of the economy." In particular, the observatory focuses on four lines of work:

1. Acquire globally valuable data sets and make them publicly available in an open manner.
2. Design and execute solutions to acquire, analyze, explore, visualize and provide access to these data sets and maximize their full exploitation.
3. Contribute to the development of talent related to the implementation of these actions, and provide practical learning based on materials and courses.

4. Invest in the creation of networks that facilitate the transfer of technology and partnerships between people who work in different fields but who share similar functions in terms of working with data.

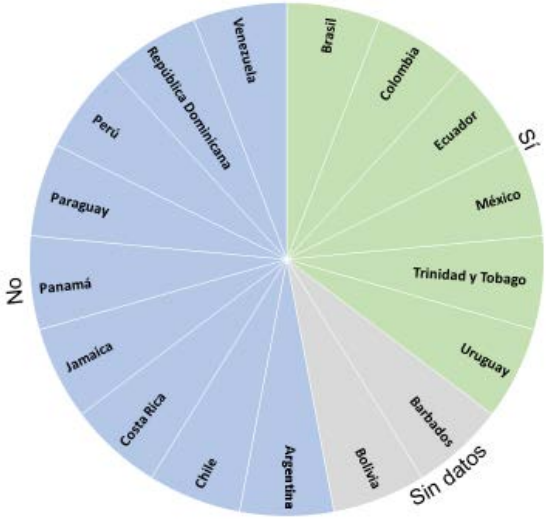
One of the observatory's most notable projects aims to leverage AI to explore solutions to climate change-related phenomena such as extreme events caused by desertification and sea level changes, among others.

Fountain: (Gomez Mont *and* *to the,* 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 a growing capacity to leverage external expertise through cross-sector collaboration, most are early-stage commitments (rather than fully implemented approaches), solutions *ad hoc*, relatively passive consultations, or efforts that encompass more than AI or are unrelated to it. With the possible exception of*Data Observatory*In Chile, the OECD was unable to identify system-wide approaches that brought together multiple sectors to collaborate on an ongoing basis on AI efforts.[28] These types of approaches applied to AI are fairly new worldwide, so the current situation of LAC governments is in line with expectations and, in general, constitutes a positive trend for the region. The Alan Turing Institute of the United Kingdom and its public policy program represent perhaps, in this sense, the most successful systematic mechanism in terms of alliance and intersectoral collaboration, with a particular emphasis on AI in the public sector.[29]

In addition to cross-sector collaboration and partnerships, another way governments can leverage external expertise is through**public procurement process**.[30]While building AI expertise internally can be challenging, so can sourcing such expertise externally, due to cumbersome procurement processes. In the LAC region, only a few countries have an ICT procurement strategy (Figure 6.9). Such strategies cover more than just AI, but can establish positive procurement practices and procedures through which external expertise could be leveraged in many digital government domains, including emerging technology.[31]

Figure 6.9. Advertising strategy



Fountain: (OECD, 2019[38]).

Given the relative uncertainty of the field of Artificial Intelligence and the lack of mature AI markets in the public sector, acquiring expertise and services in this field is not as straightforward as acquiring expertise in more traditional or better-known technologies. As a result, public administrations are likely to need to develop flexible and agile procurement processes (and subsequent implementation processes) tailored to the needs of AI, and to establish long-term collaborative relationships with delivery partners (OECD, 2017).[79]). They may also seek to adopt novel procurement approaches to foster innovation, and the creation of deep and competitive markets for AI goods and services.

Among LAC governments, there does not seem to be any mechanism or process tailored to the acquisition of AI expertise and services for the public sector. These are worth exploring, and in this regard, LAC governments could draw inspiration from the strong example of Canada's vendor listing. *Source List*" (Box 6.9). Portugal's data science and artificial intelligence programme in public administration is another positive model that brings together the concepts of cross-sector public partnerships and public procurement (Box 6.10). While these cases have not generated specific AI approaches, some countries have worked on other elements of procurement that could contribute to the success of these AI-related processes in the public sector:

- Brazil's national digital government strategy includes a number of goals to create mechanisms to centralize the purchasing of information and communication technologies, with a virtual marketplace for digital solutions. Although not explicitly stated, these mechanisms would allow for centralized pre-selection and purchases of expertise and AI solutions, an approach that has been successful in other countries.
- One of the key actions of Chile's AI strategy and action plan is the modernization of AI-related public procurement. Chile has also issued a new Innovation Directive for Public Procurement (Box 6.11). Although not specific to AI, the Directive sets out robust mechanisms and processes that can facilitate the adoption of innovative approaches to acquiring all types of goods, expertise and services, including those related to AI.

- The*National Information and Communication Technology Company Limited*(Trinidad and Tobago's iGovTT, a public company that acts as the executive arm of the Ministry of Public Administration and Digital Transformation, provides public sector organizations with an interesting procurement-as-a-service model (*procurement-as-a-service*) which provides departments with specialized assistance to achieve good results in their contracting processes.32

- Uruguay has issued a presidential decree establishing special procurement regimes and procedures to stimulate innovative technological advances in the public sector.33

Box 6.9. The Government of Canada's AI Source List to promote innovative procurement

The Government of Canada has created a list of 73 pre-approved providers of responsible and effective AI products, services and solutions. This framework allows government agencies to expedite the procurement of companies that have demonstrated their ability to deliver quality AI goods and services.

Suppliers must prove competence in AI ethics, as well as their ability to execute and their access to digital talent. Companies that responded to the call for qualification had to demonstrate to an interdisciplinary panel that they met these requirements. The framework includes three

bands with tiered requirements. The lowest band has less stringent requirements, making it easier to qualify for *startups* small and therefore drives innovation and creates a deeper market.

This allows for iterative, mission-driven innovation, as it allows multiple companies to be tasked with developing early-stage services to address a given problem. This enables effective information sharing and an agile approach to reduce uncertainty in 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 long-term relationships with private companies. This dialogue fosters shared expectations, and increases mutual understanding of the potential challenges facing public sector agencies.

Fountain: 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://bit.ly/3vOnPAR .

Box 6.10. Data science and artificial intelligence programme in public administration (Portugal)

Within the framework of Portugal's INCoDe.2030 initiative (Box 5.12), Portugal's Foundation for Science and Technology developed the Data Science and Artificial Intelligence in Public Administration programme to support new innovation projects in data science and AI, involving partnerships between public administration and non-commercial scientific institutions. The aim of the programme is to take advantage of the vast amount of data available to public administration to produce scientific knowledge to support evidence-based decision-making and the development of public policies.

Portugal allocated EUR 3.5 million to the initiative and called for project proposals. All proposals had to be of a joint nature, and include at least one institution from the scientific field and one from the public sector. To qualify, projects had to last between 24 and 36 months, and each would receive a maximum of EUR 300,000.

The Government's Administrative Modernization Agency (AMA) also publishes a list of topics of special interest in terms of proposals, including fraud detection; analysis of mobility patterns; the prospects of medical and emergency services; optimization of digital services; *chatbots* for local governments, and self-service municipal dashboards. Among the AI projects that have been awarded are: Using AI to enhance skin scanning in teledermatology (EUR 299,000), identifying and predicting demand in hospital emergencies (EUR 283,000) and a ground-based recognition system (EUR 125,000).

Fountain: 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. Innovation Directive for Public Procurement (Chile)

The Innovation Directive for Public Procurement was created by**ChileCompra**in coordination with the Government Laboratory (LabGob) and the Ministry of Economy, Development and Tourism, in order for public officials to use more innovative and user-centred approaches related to the purchasing processes of the different public bodies, and to meet the needs and demands for new products, goods or services more effectively and efficiently. Its general objectives are to incorporate innovations in the purchasing processes, to allow all public servants to make better use of public procurement as a strategic tool to solve real problems, and to better meet the needs and expectations of users.

To achieve these objectives, the Directive presents guidelines, recommendations and practical online tools, in five steps:

1.**Plan**. Identify innovative public procurement opportunities.

2.**Explore.**Describe the initial needs, assemble a work team, listen, empathize and analyze the environment.

3. Define. Reformulate the purchasing need, manage risk and define evaluation criteria.

4. Call and award. Evaluate the proposals received and select the winner or winners.

5. At the end: Reflect, reply.

This Directive was submitted to public consultation, including all those who could be more directly affected by its application. Some 221 responses were received, which were evaluated before finalising the Directive.

Fountain:www.chilecompra.cl/wp-content/uploads/2018/08/20180614-DIRECTIVA-CPI.pdf.

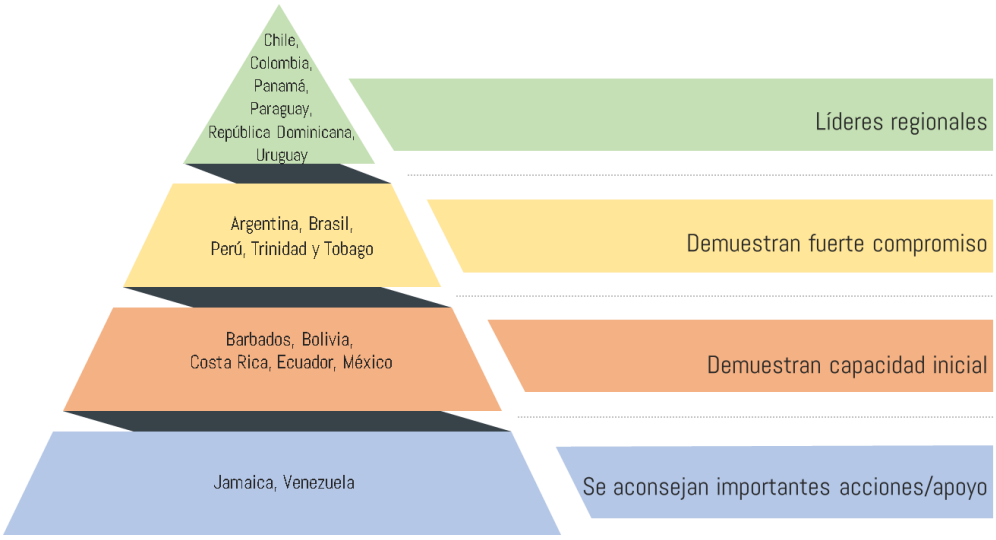
Many LAC governments demonstrate a high level of commitment to developing efficient and effective systems for public procurement of external digital know-how, goods and services in ways that are not as clearly related to or directly supportive of AI. For example, several LAC countries have developed national procurement strategies, centralized procurement of commodity solutions, put in place review systems to vet large or complex purchases, incorporated procurement competencies into their staff skill profiles, leveraged economies of scale to drive down prices, and published other guidance to scale up ICT deployment. These efforts are largely outside the scope of this AI brief; however, the forthcoming report will provide a detailed discussion of the issues raised by the LAC countries. *Going Digital: The State of Digital Government in Latin America*[The Road to Digitalization: The State of Digital Government in Latin America] will analyze these topics in depth.

Infrastructure

Finally, governments will need to consider their current technical infrastructure needs in relation to their aspirations, and ensure they have the modern infrastructure necessary to be able to advance AI exploration. Legacy technologies and infrastructure are often insufficient for disruptive technologies and techniques, such as machine learning, and the OECD has already

It has been noted that governments are, in many cases, struggling to adopt already proven technologies, such as cloud computing, which are important for the advancement of AI (OECD, 2019).[1]).

Figure 6.10. AI infrastructure capabilities in the public sector in the LAC region



The topic of infrastructure and moving beyond legacy technology is vast, and goes far beyond AI. While a comprehensive review of LAC governments' infrastructure capabilities is beyond the scope of this report, the OECD has collected some general synthetic information on public sector infrastructure capabilities and a number of specific cases where LAC governments are preparing to ensure the availability of the necessary infrastructure to explore and implement AI-driven solutions (Table 6.3).

Table 6.3. Infrastructure available to central government institutions

	ICT Infrastructure shared (by example, centers of shared data)	Cloud Services shared	Architecture or infrastructure of data in common	Framework of interoperability in common	Shared technology services (development) software suite, common platforms)
Argentina	✓	✓	✓	✓	✓
Barbados	✓				✓
Brazil	✓	✓	✓	✓	✓
Chili				✓	✓
Colombia	✓	✓	✓	✓	✓
Costa Rica	✓	✓			
Republic Dominican	✓	✓	✓	✓	
Ecuador	✓	✓	✓	✓	✓
Jamaica	✓				✓
Panama	✓	✓	✓	✓	✓
Paraguay	✓	✓	✓	✓	✓
Peru		✓	✓	✓	
Uruguay	✓	✓	✓	✓	✓

Note: No data is available for Bolivia, Mexico, Trinidad and Tobago, and Venezuela due to lack of survey responses. *Fountain*: Survey of digital government agencies in Latin America and the Caribbean conducted by the OECD (2020), follow-up with government officials.

Among the initiatives identified are the following:

- As a strategic objective for 2021, Argentina is investing USD 5.8 million (its equivalent) to create a national public cloud infrastructure aimed at consolidating data from across the country and gaining agility in the public sector.[34]Public sector organizations will be able to make computing, connectivity and storage resources available through the public cloud in a self-managed manner.

- Barbados' public sector modernization programme has committed to improving core ICT infrastructure and upgrading its central data centre to better equip the Government to support new approaches and technologies.[35]This country is also in the process of applying*X-Road*[36], a free and open source data exchange layer originally created by the Government of Estonia and successfully replicated by several governments around the world.

- In the case of Brazil, the national digital government strategy includes initiatives to optimize the infrastructure of at least 30 government data centers and migrate the services of no less than 20 agencies to the cloud by 2022. This is a step in the right direction, since, according to previous work by the OECD, the absence of important key enablers, for example, shared infrastructure such as shared data centers, can duplicate public efforts for the development of a digital government (OECD, 2018).[27]). However, the country's efforts in this area are still fairly new, and the Government will need to maintain a consistent emphasis during the implementation phase. As such efforts gain strength, Brazil shows strong promise as a regional leader in terms of interoperability and cross-border collaboration. Given Brazil's political and economic relevance in the region, as well as its experience in promoting interoperability at all federal levels, previous OECD work has suggested that the country may be well positioned to actively lead and support other LAC countries' efforts in cross-border service delivery.

- Bolivia has launched an interoperability platform to enable data exchange between public sector institutions.[37]It has also published certain guidelines and good practices for the implementation and maintenance of data centers,[38]Although these documents are more about basic operational considerations and do not guarantee that support capabilities for modern emerging technologies are in place across government and in an optimized manner.

- The Chilean government continues to expand and modernize digital infrastructure, allowing it to lay the foundations for the digital transformation of the economy and society. The country's new national AI strategy considers infrastructure to be a key enabler for this technology, and incorporates the goal of making Chile a global hub of technical infrastructure for the southern hemisphere. It also calls for the creation of public-private partnerships to ensure the availability of the infrastructure necessary for AI. The Chilean procurement and contracting authority (**ChileCompra**) has developed a digital market with framework agreements aimed at simplifying the ICT procurement process for some public procurement modes, including data centres (OECD, 2019).[69]). Furthermore, as an important part of its state modernization efforts, Chile has been working on a number of digital infrastructure projects, including an interoperability framework and a platform that encourage data sharing within the administration (OECD, 2019). [69]). However, the adoption of Chile's interoperability infrastructure is progressing slowly and is not yet widely used (OECD, 2020).[48]Officials interviewed by the OECD cite interoperability issues, but such infrastructure appears to have solid growth potential if the government prioritizes it.

- Colombia has entered into framework procurement agreements with numerous suppliers, and has developed an impressive centralized "virtual store" that allows public sector agencies to easily acquire a variety of goods and services, including infrastructure services such as public and private cloud services.[39]This seems to indicate solid progress, as previous OECD work found little evidence revealing a culture of resource and infrastructure sharing, or the promotion of integrated digital government solutions (OECD, 2018).[62]). A more mature version of this type of store could operate in a similar way to the UK digital marketplace (Box 6.12), which has proven to be very successful. Indeed, Colombia is currently working on a conceptualisation document for creating data-sharing marketplaces.[40]

- The National Code of Digital Technologies of Costa Rica[41]provides guidance on the use of cloud services; however, the OECD was unable to find evidence that the country has created or otherwise provided cloud infrastructure. It would appear that these guidelines are intended to guide the public sector in the use of cloud services provided by third parties.
- The Dominican Republic has developed a private cloud for the entire government (OPTICLOUD)[42] , which is available for use by public sector bodies. This country has also developed a State Data Center[43]which allows information from public institutions to be protected and processed with a high level of security.
- Ecuador has developed an interoperability platform[44]that allows public sector institutions to share and exchange data in interoperable ways between systems. The platform has its roots in Ecuador's interoperability law, which requires public sector bodies to take measures that ensure data interoperability. In 2020, the country initiated a system migration plan[45]to consolidate public sector data in a shared central data centre. However, in an interview with the OECD, Ecuadorian officials said that this centre is still conceptual, and that standards and processes for its development need to be established before implementation.

- Through its National Development Plan[46](2019-2024), Mexico is striving for greater efficiency and momentum in the shared use of ICT infrastructure.
- Panama has developed a common private government cloud infrastructure for use in all areas of government.[47]In a briefing with the OECD, Panamanian officials said that one of their top priorities now is interoperability and alignment of data processes, and that an interoperability platform has been developed, with a step-by-step guide on how to access the platform, for public bodies. Ten public entities are now using the platform. In previous work, the OECD also noted that the infrastructure associated with data storage and management is a strength of Panama's public sector (OECD, 2019).[38]).

- The private cloud initiative PY CLOUD[48]Its purpose is to offer, at the level of Infrastructure as a Service (IaaS), a Pool of resources to the Public Institutions of the Paraguayan State. This country also has an interoperability platform for the Information Exchange System[49], which acts as a channel between State institutions and organizations to share interoperable data in accordance with standards established by the Government.
- As mentioned in the previous section, Peru's draft national AI strategy envisages the creation of public-private partnerships to ensure the installation of the necessary infrastructure for AI (data centres and the cloud) for the benefit of all sectors. In addition, since 2011, Peru has had a National Interoperability Platform[50]which allows for the exchange of data between public sector bodies. The country's 2018 Digital Government Act[51]It allowed progress in this area with the creation of an infrastructure for interoperability of digital services and data at an institutional level (OECD, 2019).[66]). Also in 2018, Peru's Supreme Decree 033-2018-PCM launched a new portal, Gob.pe[52], and decreed the

digitalisation of public services (existing and future) so that all supporting systems, infrastructure and data participate in the interoperability platform (OECD, 2019)[66]).[53]In 2020, through a decree approving the Digital Trust Framework,[54]The country also committed to creating a National Data Sharing Centre, which will enable public servants across the sector, nationwide, to use data in a cooperative and collaborative manner. The Data Centre also aims to coordinate actions with public entities, academia, civil society and the private sector.

- Trinidad and Tobago has developed a robust policy regarding cloud computing[55]to promote the expansion of cloud use, while complying with national rules and standards. As well as aiming to make it easier for the public sector to acquire cloud services, this policy also commits to developing a national hybrid cloud for the whole of government (GovNeTT NG) for cases where a public sector body needs a more stringent set of controls than is available through the industry's public cloud. In addition, iGovTT, a public enterprise for the implementation of digital government, provides centralised services for access to and management of the data centre.[56]

-Uruguay has designed anddeveloped the **Cloud of Presidency**, that offers infrastructure/platform/software as a service (IaaS, PaaS and SaaS) to all its agencies. Currently, the cloud hosts more than 3,500 virtual machines. In 2018, in collaboration with the state telecommunications company (ANTEL), a government cloud service was launched to provide services to the public sector (Ubaldi*et al.*, 2019[14]).

Box 6.12. The UK digital market

The UK has been developing ways to rethink its current approaches to procurement and supplier engagement, particularly in relation to access to cloud-based services, and the skills and capabilities needed for digital transformation.

Two sectors of the British Ministry of the Presidency or*Cabinet Office*, the Government's digital service and the Crown's commercial service, have worked together to redesign the procurement framework agreements (*G-Cloud*[G-cloud] and*Digital Outcomes and Specialists*[[Results and Digital Specialists]) to simplify the supplier application process and improve the quality of resources available to government buyers. These interactions are managed through the Government Digital Marketplace.

The digital marketplace gives government buyers access to framework agreements with suppliers, through which public sector bodies can purchase without the need for a tender or other competitive procurement process.

In the case of the frame*G-Cloud*, the services included are the following:

- **Infrastructure as a Service (IaaS)**: refers to the provision of fundamental computing services (processing, storage, etc.) for the user to run software.
- **Platform as a Service (PaaS)**: refers to the provision of platform services that enable the user to install user-created or purchased applications.
- **Software as a Service (SaaS)**: refers to the delivery of software from a vendor as a cloud service.

- **SCS -*Specialist Cloud Services*(specialized cloud services)**: Typically refers to cloud-specific consulting services. Digital market frameworks are updated every six months to ensure that public institutions have access to the latest innovations available, whether from large, established vendors or new SMEs entering the market for the first time.

In addition, the digital marketplace allows public institutions to access suppliers that can collaborate in the design, construction and delivery of digital products through an agile approach via the dynamic DOS framework (*Digital Outcomes and Specialists*). To be included in the DOS vendor list, you must provide outcome-based services (covering user experience and design, performance and data analysis, security, service delivery, service development, support and operations, testing and auditing, or user research) or offer specific skills in one of these areas.

Fountain:www.gov.uk/government/collections/digital-marketplace-buyers-and-suppliers-information (OECD, 2019)[69]).

Overall, having adequate infrastructure to support AI and other modern technological initiatives seems to be a relatively strong consideration in the LAC region. Many of the programmes implemented provide infrastructure that can underpin AI in the public sector, and governments have committed to building a number of solutions in the near future that have enormous potential. However, it should be noted that for the adoption of cloud computing and other infrastructure solutions to be successful, careful consideration must be given to data governance and ownership arrangements, exit clauses, and ease of switching providers (OECD, 2019).[69]). On the other hand, having infrastructure has value only if the underlying legal and regulatory framework encourages its use for AI. One of the common themes at the Latin American AI Summit organized by Latin American researchers belonging to the MIT community, the Latin American AI Summit, was that outdated laws hinder access to such infrastructure and its use for artificial intelligence (Anllo*et al.*, 2021).57

As a further consideration, it is important to note that this section places emphasis on the types of infrastructure needed for AI aimed at innovation and public sector restructuring, and not necessarily on infrastructure to support the broader economic and societal success of AI. For example, one theme that emerged at SumMIT was that connectivity infrastructure to bridge the digital divide is critical to national and regional progress on AI (Anllo*et al.*, 2021), although such infrastructure is not strictly related to the scope of this review. Finally, this section has focused primarily on the availability of AI-supporting infrastructure at the central government level, with less consideration given to subnational levels of government. Some of these points have been mentioned 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*[The road to digitalization: the state of digital government in Latin America.

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Grades

1 Cloud computing refers to Internet-based remote computing that provides users with access to infrastructure (data centers/storage), services, and applications on demand. The economies of scale achieved through the cloud allow organizations to avoid costly infrastructure development and focus on core business operations, while accessing 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 https://minciencias.gov.co/ocad_fctei/fondo-fctei-sgr/que-es .

4 www.conatel.gob.ve/ley-de-infogobierno .

5 On key issues regarding innovative efforts for the professional specialization of citizens and public servants, see the OECD Observatory for Public Sector Innovation (OPSI) report on Global trends in the adoption of innovation in government 2021 which focuses on professional specialization and investment in people: *Embracing Innovation in Government: Global Trends 2021 – Upskilling and Investing in People*. (https://trends.oecdopsi.org/trend-reports/upskilling-and-investing-in-people).

6 In https://capacitacion.inap.gob.ar/cursos a complete list of courses can be seen.

7 http://training.gov.bb .

8 https://tridentlearning-m2.remote-learner.net .

9 www.enap.gov.br .

10 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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17 See the OECD report *Leadership for a High Performing Civil Service* [Leadership for a High-Performance Public Administration] on a specific analysis of the leadership capabilities needed to respond to complex policy challenges. Although they are not specifically digital skills, they provide a basis for leadership capabilities that are beneficial in many fields and transversal approaches. See www.oecd-ilibrary.org/governance/leadership-for-a-highperforming-civil-service_ed8235c8-en .

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29 For further information, see the public policy program case studies 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 group of senior digital government officials (e-leaders) (www.oecd.org/governance/eleaders), has produced an ICT enablement handbook that emphasizes ICT procurement process reform and its role in achieving a broader digital transformation of the public sector in countries around the world. The handbook aims to show how the traditional procurement process can evolve into an agile procurement process. While not unique to AI, these principles and practices can help public servants design and execute successful procurement processes in the AI space. Seehttps://playbook-ictprocurement.herokuapp.com .

31 When analyzing AI-related procurement processes, it is important to distinguish between (1) incorporating AI into procurement processes (e.g. automating tasks, identifying corruption) and (2) acquiring AI expertise for the purpose of supporting AI adoption.

technology in the public sector. This section focuses specifically on point two. The OECD published a closely related report on public procurement for innovation, which analyses good practices and strategies entitled *Public Procurement for Innovation: Good Practices and Strategies* in order to guide governments to harness the power of public procurement to support innovation (OECD, 2017[79]).

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7 Conclusion and recommendations

This report makes 13 key recommendations to LAC national governments to maximize the potential positive impacts of using AI in the public sector and minimize negative or unintended consequences. These recommendations are presented in this chapter for consideration.

As discussed throughout this report, governments in Latin America and the Caribbean have made immense progress in designing strategies and experimenting with AI in the public sector. To ensure that these actions are well-informed, reliable and increase public value, there must be factors and capabilities in place to provide a solid foundation on which to build AI-related activities and aspirations. In particular, governments need to:

- **Develop a responsible, reliable and human-centered approach**, which includes data ethics, ensures impartiality and bias mitigation, considers transparency and explainability of algorithms, promotes safety and security, institutes accountability mechanisms, and applies an inclusive and user-oriented approach.
- **Building key governance capabilities**, which include leading, coordinating and building support for AI; designing a data leadership and strategy; creating spaces for experimentation; understanding public sector problems and the potential of artificial intelligence to solve them; and preparing for the future through preventive governance.
- **Activate key enablers**, including data, financing, internal and external expertise, and digital infrastructure.

The volume of elements that public servants must take into consideration can be overwhelming. However, governments around the world and those in the LAC region have devised approaches specific to their context. While countries in the region vary greatly in terms of their capabilities regarding AI for the public sector, and more broadly, their digital maturity, the potential for adopting AI for innovation and restructuring of the public sector remains substantial overall. As seen in other regions of the world, there are also opportunities in Latin America and the Caribbean to create a joint regional approach to AI, with each country making its contribution based on its own comparative strengths.

In order to assist governments in the region to take advantage of this potential, 13 main recommendations are presented:

Recommendations

Recommendations for a strategic approach to AI in the public sector

To maximize the potential positive impact of using AI in the public sector, and minimize negative or unintended consequences, national governments in the LAC region should:

1. **Explore collaborative actions in LAC to develop and implement a regional strategy and roadmap on 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 Latin American and Caribbean e-Government Network (GEALC Network).
   b. Explore ways to leverage third-party support to coordinate and facilitate the development of the strategy and roadmap, such as the OECD, CAF or the IDB.
   c. Include a commitment and timeline for the national government of each regional adherent to develop its own national strategy and roadmap on AI in the public sector.

d. Ensure that all participating countries have a voice in the design and implementation of the LAC regional AI strategy and roadmap.

e. Include collective, open and general commitments, objectives and goals, so that they can be adapted by each country according to the uniqueness of its own context and its aspirations regarding AI, as part of its national strategy on artificial intelligence in the public sector.

f. Continue cooperation among Latin American and Caribbean countries after the publication of the regional strategy to strengthen implementation, monitor progress and promote regional collaboration.

g. Create a mechanism to understand and document practical cases of AI in the public sector in the region, and maintain the continuous exchange of lessons learned and good practices. Take into consideration the policy observatory *OECD.AI Policy Observatory* and the *Globalpolicy.AI* as channels of exchange and cooperation.

2. Develop and adopt a national strategy and roadmap on AI in the public sector, for countries that have not yet done so.

a. Advance the development of a national AI strategy in the public sector, although a regional strategy for Latin America and the Caribbean is not yet in place.

b. Seek to align the national AI strategy for the public sector with the regional AI strategy for the public sector in Latin America and the Caribbean.

c. Ensure that the public sector AI strategy is aligned with and contributes to the achievement of the economic and social goals and objectives of current and future national AI strategies.

d. Consider, as part of the development and implementation of the AI strategy in the public sector, the need to re-evaluate existing legal and regulatory frameworks to address social, ethical and legal challenges related to the strategic and responsible use of AI in the public sector.

e. Take a collaborative and inclusive approach, both within Government and with the broader digital ecosystem and the general public, to the development of the public sector AI strategy and associated and resulting policies and initiatives.

f. Include in the strategy or roadmap clear objectives and specific actions, quantifiable goals, responsible actors, deadlines, monitoring instruments and financing mechanisms, as appropriate.

3. Develop a national data strategy for the public sector covering all aspects related to data and serving as a basis for advancing the use of AI, in the case of countries that have not yet done so.

a. Ensure that the strategy is clear, aligned with the OECD framework for the data-driven public sector (OECD, 2019)[44]), and that includes all relevant aspects (e.g. data governance, data sharing and public sector data assets, data security and privacy, data infrastructure, data competencies, fostering demand for data-driven decision-making, prioritising data investments, and openness by default for public sector data).

b. Seek to align the national AI strategy for the public sector, the broader national AI strategy and the regional AI strategy for 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 ensure that they are aligned with relevant data protection laws.

d. Develop the strategy, and all related and resulting policies and initiatives, in an open and inclusive manner, both within Government and with respect to the broader digital ecosystem and the general public.

e. Include clear objectives and specific actions, quantifiable targets, responsible actors, timelines, monitoring instruments and financing mechanisms, as appropriate.

4. Explore regional cooperation and collaboration on projects and initiatives related to AI in the public sector.

a. Identify specific public sector challenges that could benefit from cross-border collaboration on the use of AI in the sector, and establish regional collaboration methods and processes to address them.

b. Identify ways in which regional leaders (as defined in this report) can provide assistance to countries with less developed capabilities in these areas, and exchange lessons and perspectives with them on important areas for exploring and adopting AI in the public sector.

c. Take steps to ensure that countries identified in this report as having limited capacities in certain areas improve this situation by paying more attention to these limitations and increasing resources (e.g. training of civil servants, staffing, financing).

d. Consider leveraging external expertise, for example through acquisition or partnerships with intergovernmental organizations, especially in areas where no country is identified as a regional leader according to this report.

e. Attempt to replicate models and ideas that have worked for others, as long as they are adapted to the context and values of each country in an open and appropriate manner.

5. Support AI efforts within the public sector at the subnational level, and take them into account in broader AI policies and initiatives.

a. Promote AI experimentation and adoption at the subnational (e.g. local) level, where governments are closer to citizens and their needs.

b. Consider developing AI hubs in cities across the region to emphasize AI adoption in the public sector at the local level.

c. Explore how existing or emerging AI principles, guidelines and other tools can be applied to ensure that AI in the public sector is used in an informed and reliable manner at the subnational level.

d. Empower subnational and local leaders to have a voice in areas related to national and regional considerations on AI in the public sector (e.g., standards-setting groups, networks, strategy design and implementation working groups).

e. Facilitate dialogue and exchange of good practices at the subnational level.

6. Strengthen the overall emphasis on implementation to ensure that promises, commitments and strategic objectives are met.

a. Ensure the establishment of appropriate processes and mechanisms to translate general objectives and commitments into real and executable initiatives, through sustained attention to each of them and accountability measures that guarantee progress.

b. Examine the development of benchmark mechanisms that monitor the application of AI for the public sector in public institutions, and that lay the foundations for an impact assessment mechanism.

7. Adopt measures to ensure the long-term sustainability of AI strategies and initiatives for the public sector.

a. Promote ways to help ensure the long-term viability of AI strategies for the public sector, such as legislative and cultural changes.

b. Seek to ensure that any new AI-related legislation for the public sector is adaptable to future changes, flexible, and allows for experimentation and innovation.

Recommendations to promote a responsible, trustworthy and human-centered approach to AI

8. Implement the OECD Principles on AI and develop a detailed and enforceable national ethical framework for trustworthy AI, for countries that have not already done so.

a. Implement the OECD Principles on Artificial Intelligence, which explicitly invites non-OECD countries, including non-OECD members, to take note of the principles and adhere to them.[1]

b. Develop a national-level framework that is aligned with the OECD Principles on Artificial Intelligence, as well as the country context and standards, to enable the development and implementation of trustworthy AI systems by public sector bodies. As seen in this report, such a framework can be integrated into a national AI strategy, or developed as a stand-alone document. Explore leveraging ongoing OECD work on AI system classification, risk impact assessment and tools for trustworthy AI.

c. Examine the potential for developing practical tools to support the implementation of the framework in the public sector, including through AI impact assessments, and an approach to the application of AI, taking into account different trade-offs and alternatives for using AI in the public sector.

d. Ensure that the framework and associated policies and instruments are developed in an open and inclusive manner, both within Government and with respect to the broader digital ecosystem and the general public.

9. Ensure emphasis on considerations for the use of trustworthy AI in the public sector, as defined in this report, with attention to the respective strengths and weaknesses of each country in different areas.

a. Materialize mechanisms and capabilities that provide support to:

i. The inclusion of multidisciplinary perspectives (different training environments, professional level and experience, skill sets, among others) and diverse (different genders, races, ages, socioeconomic backgrounds, among others) in an environment in which their opinions are valued in the design and implementation of strategies and initiatives.
AI for the public sector (including AI-enabled projects).

ii. The practical implementation of ethical frameworks that protect against bias and inequity; foster transparent and explainable AI systems; ensure robust, safe and secure processes; and establish clear accountability structures, as well as unambiguous roles and responsibilities for humans, when it comes to the use of AI and AI-enabled decision-making in the public sector.

Recommendations for building key governance capabilities to support AI in the public sector

10. Have sustained leadership capacity at central and institutional levels to drive the development, ongoing implementation and oversight of public sector AI and data strategies and related initiatives.

a. Ensure that senior political and career leaders in government roles are actively involved in and supportive of the development and implementation of the national AI strategy for the public sector.

b. Appoint a Government Chief Data Officer (GCDO) or equivalent role, responsible for developing and replicating a government data strategy, and building the capacity within the public sector to extract value from its data (including open government data, advanced data analytics, algorithms and artificial intelligence).

c. Appoint Chief Digital Officers or Chief Data Officers (iCDOs), or institutional data managers in each of the most relevant public sector bodies, responsible for connecting the central government's strategic vision with data management practices at the institutional level, and promoting inter-institutional coordination of data.

d. Ensure that the GCDO and iCDOs have the relevant knowledge, competencies and skills for AI in the public sector (including data science, machine learning, trustworthy AI) and/or create jobs requiring such competencies to work in close coordination with the GCDO and iCDOs.

11. Leverage early innovation governance techniques in the public sector to prepare for the future.

a. Ensure that strategies, roadmaps and implementation are flexible and leave options open for the future.

b. Take into account the needs of subnational governments and local communities, and seek to align the national framework for AI in the public sector with local impacts.

c. Explore the potential of applying the OECD's early innovation governance frameworks and approaches to public sector AI efforts (Tõnurist and Hanson, 2020)[76]).

d. Equip public servants and citizens with tools and capabilities to adapt to the changes that AI, including in the public sector, may bring about in the future (including through the promotion of digital literacy and better preparation for the work of the future).2

12. Ensure emphasis on the governance considerations mentioned in this report, with attention to the respective strengths and weaknesses of each country in different areas.

a. Materialize mechanisms and capabilities that provide support to:

i. Intergovernmental coordination to promote strategic alignment synergies across public sector bodies that support the adoption of trustworthy, goal-oriented and problem-driven AI in the public sector, including both formal mechanisms (e.g. commissions, boards, ethics committees) and 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, in order to generate trust among citizens and ensure adherence by public servants.

iii. Exploring and experimenting with different methods, approaches and data for working with AI, in an environment where public servants can take controlled risks (e.g. AI-related "sandboxes" and labs in the public sector).

iv. Systemic identification and understanding of public sector problems and evaluation of multiple technological options to determine what the needs are and how AI can help.

Recommendations for establishing the main enablers of AI

13. Ensure emphasis on critical enablers of AI in the public sector, as defined in this report, with attention to each country's respective strengths and weaknesses in different areas.

a. Materialize mechanisms and capabilities that provide support to:

i. Access to accurate, reliable and appropriate data, and the provision of governance data to drive AI across all sectors.

ii. The provision of funding for the exploration and application of AI in the public sector.

iii. The acquisition of appropriate specialized knowledge within the government, through professional specialization and recruitment.

iv. Facilitating access pathways to third-party expertise and services through acquisition processes and partnerships.

v. Access to the digital infrastructure needed for AI in the public sector, such as hybrid cloud, computing power and interoperability services.

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[1] For more information, visit https://OECD.AI/ai-principles or communicate through ai@oecd.org .

[2] See www.oecd.org/future-of-work for information on OECD activities related to the future of work.

Annex A. Relevant aspects of national strategies on AI in LAC

Table A A.1.Aspects of national AI strategies related to public sector transformation

Country	State	Relevant aspects
Argentina	Completed in 2019	- Title: National Plan for Artificial Intelligence - To promote, through the adoption of Artificial Intelligence, an agile, efficient and modern State that promotes measures relevant to growth and development objectives, guarantees solutions to citizens' needs by providing more and better services and acting as a key player in promoting AI-based technology and the transformation of the country. - The plan's specific objectives include: increasing the productivity and efficiency of public administration through specific solutions; using traceable AI systems with sound and transparent logic; and ensuring standardized, efficient and successful AI purchasing and implementation processes. - More 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 andhttps://ia-latam.com/portfolio/plan- national-of-the-government-of-argentina.
Brazil	Completed in 2021	- Title: Brazil's National Strategy on AI - 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, such as developing ethical principles for Brazil, removing barriers to AI innovation, and cross-sector cooperation, among others. It also reaffirms Brazil's commitment to the OECD Principles on AI and uses the principles as the basis of the strategy. It commits to carrying out actions to structure AI governance and ecosystems with the aim of supporting all sectors, establishing cross-sector partnerships, and publishing government data. - Specifically in the public sector, it is committed to applying AI in 12 public services by 2022, incorporating AI into policymaking, implementing spaces for experimentation with data and AI, and carrying out a series of actions to ensure the ethical and responsible use of AI in the public sector. - More information:https://www.gov.br/mcti/pt-br/acompanhe-o-mcti/transformacaodigital/inteligencia-artificial.
Chili	Completed in 2021	- Title: National Artificial Intelligence Policy (and associated AI Action Plan) - Promote the adoption of AI in public administration at a level equal to or higher than the OECD average. It includes cross-cutting principles on well-being/human rights, sustainable development, inclusive AI and participation in the global AI ecosystem. It also includes policy axes emphasizing enabling factors (talent, infrastructure, data); development and adoption (e.g. research, innovation, public services) and ethics, regulatory aspects, and social and economic impacts. - More information:https://oecd.ai/en/dashboards/policy-initiatives/http:%2F%2Faipo.oecd.org%2F2021-datapolicyInitiatives-24840 ,www.minciencia.gob.cl/area-de-trabajo/participa-y-contribuye-con-la-politica-nacional-deinteligencia-artificial, https://minciencia.gob.cl/areas-de-trabajo/inteligencia-artificial/politica-nacional-de-inteligenciaartificial/plan-de-accion.

Colombia	Completed in 2019	- Title: National Policy for Digital Transformation and Artificial Intelligence (Conpes 3975) - It understands the digital transformation of the State as an enabler to increase the generation of economic and social value. Although the strategy includes other topics, the actions to transform the public sector are among the most numerous. Three important lines of action are included: improving the performance of the digital government policy to address the adoption of AI; promoting ICT-based innovation in the public sector; and executing high-impact initiatives in areas such as citizen services, health, justice, taxes, infrastructure and national archives. - More information:https://oecd.ai/dashboards/policy-initiatives/2019-data-policyInitiatives-26728.
Mexico	Completed in 2018 under a Government previous. No However, the document It is not available publicly Hey, the OECD has not could determine if you continue in force.	- Title: IA-MX Strategy 2018.[1] - It contemplates three main actions for the public sector: creating an AI subcommittee to promote dialogue and multi-sectoral approaches; identifying best government practices; and promoting Mexico's international leadership 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 at the United Nations (UN) and the Working Group on Emerging Technologies of the GEALC Network (E-Government Network of Latin America and the Caribbean) (Zapata and Gomez-Mont, 2020[80]). - Other recommendations for the public sector can be found in two documents that the Mexican government has ratified as part of its efforts regarding AI: clarifying the strategic vision on the development and use of AI in the public sector; defining a clear governance framework that includes an AI steering committee and teams dedicated to innovation in emerging technologies in certain ministries; developing guidelines for smart AI contracting, with a portfolio approach that allows for the development and acquisition of AI products and services in public administration; and creating coordination mechanisms between cybersecurity incident response teams. - More information:https://oecd.ai/dashboards/policy-initiatives/2019-data-policyInitiatives-26703.
Peru	First project delivered for review of the OECD in May 2021	- Title: National Artificial Intelligence Strategy - It is proposed for the period 2021-2016 and can be updated every 2 years in accordance with new technological - advances. It is oriented towards strategic axes related to training, economic models, technological infrastructure, data, ethics and collaboration. - Its strategic objective is to promote the incorporation of artificial intelligence in public bodies' operations and services to citizens.
Uruguay	Completed in 2019	- Title: Artificial Intelligence Strategy for Digital Government - Uruguay's strategy is fully focused on the transformation of the public sector. The overall objective of the strategy is to promote and strengthen the responsible use of AI in the Public Administration. - It includes a list of 9 principles and its lines of action are structured according to four pillars: AI governance in public administration; capacity building for AI; use and application of AI; digital citizenship and AI. More - information: Box 2.3,https://oecd.ai/dashboards/policy-initiatives/2019-data-policyInitiatives-26477.

Fountain: OECD analysis of national AI strategies.

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[1]The original document of the Mexican strategy on AI has not been accessible, but public information remains available on the Government website:www.gob.mx/epn/es/articulos/estrategia-deinteligencia-artificial-mx-2018 .

Annex B. Examples of AI instruments in LAC aligned with the OECD principles on values-based AI

Table A B.1.Examples of AI instruments in LAC aligned with OECD principle #1 on AI

	Instrument analyzed	OECD Principle: Inclusive growth, sustainable development and well-being
Chili	National Policy of AI and Plan of action (2021)	- **AI for sustainable economic development:** the incorporation of technology as a key element of the country's sustainable development. (...) The policy and the actions that arise from it must promote AI that does not harm the environment and, as far as possible, contributes to preserving and improving it. - **AI in society:** Any policy and action related to AI must be addressed in an interdisciplinary manner, enhancing the contribution of the various areas of knowledge. The actions that arise [from the AI Policy] must integrate collective intelligence and feeling through open deliberation processes. The actions that arise from the Policy will seek to develop each region from the perspective of its reality. - **Globalized AI:** The Policy and the actions derived from it must consider how they fit into the international context and promote participation in bilateral and multilateral spaces of which our country is a part.
Brazil	Strategy Brazilian from intelligence artificial (2021)	- **AI for sustainable economic development:** The strategy includes a notable treatment of the importance of the topic and lists some of the relevant initiatives. Key objective: "Promote sustained investments in AI research and development." Establish sector alliances to promote training and take into account the new realities of the labor market. - **AI in society:** act to create awareness campaigns on the importance of preparing for the ethical development and 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.” Also, develop educational programs at all levels. - **Globalized AI:** inclusion of a cross-cutting thematic axis on "international aspects".
Colombia	Ethical Framework for Intelligence Artificial (2021)	- **Inclusion:** "active participation of historically marginalized populations and diverse populations in the design, development, implementation and evaluation of artificial intelligence systems used in Colombia" (p. 35). This principle also applies to data (representative data), algorithms (so as not to privilege 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. 38). The objectives must be linked to socially recognized purposes within the context of Colombia's main social challenges.

Mexico	Principles on AI	- **Seeking social welfare**as the main goal of AI implementation, focusing efforts on generating a positive impact that contributes to solving public problems. **Have an** - **inclusion approach**that promotes access by vulnerable groups to the benefits associated with the use of these systems. - **Monitor and evaluate impacts**of AI implementation to ensure that it fulfills the purpose for which it was designed.
Uruguay	AI Strategy	- **Purpose:**AI must enhance human capabilities, complementing them in every way possible, aiming to improve people's quality of life, facilitating processes and providing added value to human activity. - **General interest:**State-driven AI-based solutions should aim to **general interest, guaranteeing inclusion and equity.**To do this, specific work must be done to reduce the possibility of unwanted biases in the data and models used that could negatively impact people or encourage discriminatory practices.

Fountain: OECD analysis of national AI principles and related instruments.

Table A B.2.Examples of AI instruments in LAC aligned with OECD principle #2 on AI

	Instrument analyzed	OECD Principle: Human-centred values and equity
Barbados	Protection Act of data (2019)	- **Equity in data processing**: personal data will be processed in accordance with the law and in a fair and transparent manner in relation to the data subject. Right to - prevent processing when it may cause damage or harm. - **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 her or may similarly significantly affect him or her.
Brazil	Strategy Brazilian from intelligence artificial (2021)	- **Non-discrimination:**Action to direct funds, for this purpose, towards the implementation of ethical solutions, mainly in the field of equity/non-discrimination (impartiality). Action in public procurement to include criteria related to the incorporation of ethical principles relating to equity and non-discrimination. - **Diversity:**action to encourage diversity in the composition of AI development teams in terms of "gender, race, sexual orientation and other sociocultural aspects." - **Human-Centered AI:**Action to promote means of observing AI systems and how these systems promote human rights, democratic values and diversity. Action to promote human review and human intervention in high-risk situations. In the public sector, establish mechanisms for prompt investigation of allegations of rights violations. - **Other strategic actions** either Action to encourage partnerships with companies engaged in ethics research in AI technology. either Action to create open multi-sector spaces in which ethical principles are treated and defined.
Brazil	General law of protection of personal data (2018)	- **Non-discrimination:**impossibility of processing data for illegal or abusive discriminatory purposes. - The law includes two other related rights:

		either Every natural person is guaranteed ownership of his or her personal rights and is protected **the fundamental rights of freedom, intimacy and privacy**, in accordance with the terms of this law. either The data subject has the right to request a review of decisions taken solely on the basis of automated processing of personal data, which affect his or her interests, including decisions aimed at defining his or her personal, professional, consumer and credit profile, or aspects of his or her personality.
Chili	National Policy of AI and Plan of action (2021)	- **People-centric AI:** AI must contribute to the comprehensive well-being of people and avoid harming them directly or indirectly. - **Inclusive AI:** AI should not arbitrarily discriminate or be used to the detriment of any group. It should be developed with a gender perspective and with special consideration for girls, boys and adolescents.
Colombia	Ethical Framework for Intelligence Artificial (2021)	- **Privacy:** "Artificial intelligence must be preceded by a respect for people's privacy and their private sphere that prevents the use of information that they have not authorized and the profiling of individuals through this technology" (p. 29). - **Human control of decisions specific to an artificial intelligence system (*Human-in-the-loop* and *Human-over-the-loop*):** that humans have full control over data collection, decision-making, and the systems that interact with citizens. This principle suggests a greater level of autonomy once a higher level of maturity of AI technology has been achieved in the country (p. 31). - **Non-discrimination:** ""Artificial intelligence systems cannot have results or responses that threaten the well-being of a specific group or that limit the rights of historically marginalized populations" (p. 34). This principle applies to data, algorithms, and practices.
Ecuador	Guide for the Treatment of Personal Data in the Administration Central Public	- **Non-discrimination:** The processing of personal data may not give rise to discrimination of any kind (see section 8).
Jamaica	Protection Act of data (2020)	- Rights relating to automated decision-making: Every individual has the right, at any time (...) to require the data controller to ensure that no decision to which this section applies is based solely on the automated processing of personal data concerning the data subject, for the purpose of assessing matters relating to the data subject (for example, his or her performance at work, creditworthiness, reliability or conduct).
Panama	Law On Protection of Personal Data (2019)	- "The owner of the personal data has **right not to be subject to a decision based solely on the automated processing of your personal data**, which produces negative legal effects or causes detriment to a right, the purpose of which is to evaluate certain aspects of your personality, health status, job performance, credit, reliability, conduct, characteristic or personality, among others."
Peru	First project delivered for review of the OECD in May of 2021	- **Non-discrimination:** The project commits to public bodies carrying out an impact study to reduce bias in the use of algorithms for classifying people in the private sector (for example, AI systems that classify people to grant them benefits, opportunities or sanctions). All such AI use cases would have to undergo a socio-economic impact study to ensure fairness.
Mexico	Principles on AI	- **Protecting the will and freedoms of the people** in the implementation of AI, seeking respect for the integrity and right to self-determination of individuals. - **Prioritize safety, integrity and human dignity** in the design and application of AI tools, evaluating and monitoring the factors that may impact it.

		- **Promoting 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. - **Ensuring privacy**by incorporating, from the design, mechanisms of consent and personal control over the use of data.
Uruguay	AI Strategy	- **General interest:**State-driven AI-based solutions must serve the general interest, ensuring inclusion and equity. To do this, work must be done specifically to**reduce the possibility of unwanted biases in data and models used that may negatively impact people or encourage 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 presents ethical dilemmas, these must be addressed and resolved by humans. - **Privacy by design:**AI solutions must take into account, from the outset, the privacy of individuals. The Personal Data Protection principles in force in Uruguay are considered components of this document.

Fountain: OECD analysis of national AI principles and related instruments.

Table A B.3.Examples of AI instruments in LAC aligned with OECD principle #3 on AI

	Instrument analyzed	OECD Principle: Transparency and explainability
Barbados	Protection Act of data (2019)	- **On transparent information:**The data controller shall take appropriate measures to provide all information (...) relating to the processing to the data subject in a concise, transparent, intelligible and easily accessible form, using clear and plain language (p. 37). - **Right of access:**At the time of processing the personal data of the owner, [the owner of the data has the right] to**request**given that**be delivered to him**(...)**a description of**(...) **the existence of automated decision making**, including profiling, as referred to in Article 18 and, at least in those cases,**significant information about applied logic**,**as well as the importance and expected consequences**of such treatment for the data owner.
Brazil	Strategy Brazilian from intelligence artificial (2021)	- **Transparency:**action to fund projects that support transparency, and encourage transparency and responsible disclosure. Enable oversight mechanisms for public scrutiny of AI activities. Action on public procurement to include criteria related to the incorporation of ethical principles relating to transparency. **Public scrutiny:**commitment to enable oversight mechanisms for public scrutiny of AI activities. - **Access:**commitment to encourage the dissemination of open source data and code.
Brazil	General law of protection of personal data (2018)	- **Free access:**guarantee, to the holders, of an easy and free consultation**on the form and duration of treatment,**as well as the integrity of your personal data. **Transparency:** - guarantee, to the holders, clear, precise and easily accessible information about the**carrying out the treatment**and its treatment agents, respecting commercial and industrial secrecy.

		- Whenever requested, the data controller must provide clear and adequate information about the**Criteria and procedures used for automated decision-making**, respecting commercial and industrial secrets.
Chili	National Policy of AI andPlan of action (2021)	- **Safe AI:**Due to the close dependence that exists between the training of algorithms and the use of data for this, transparency and explainability become relevant elements for the conception of a safe AI.
Colombia	Ethical Framework for Intelligence Artificial (2021)	- **Transparency:**""openness to provide meaningful and understandable information about the design, operation, and impact of artificial intelligence systems" (p. 27). It considers the sources of information, the model with which the algorithms are used, the accuracy of the algorithms, and information about the teams and people involved in the design and development. - **Explanation:**""both for developers and users of the system and for those individuals who may be affected by its decisions and results. Information must be easily accessible and understandable, in order to promote active participation of citizens in the conception, implementation and evaluation of AI systems" (p. 27). In this way, it refers to the fact that information about the importance of the data for the system, how it is collected, the purposes of doing so, the initial objectives of the algorithms, and the expected and obtained results, as well as the roles of the people involved, must be accessible.
Jamaica	Protection Act of data (2020)	- **Rights of access to personal data:**A person has the right to: - be informed by the data controller, free of charge, as to whether personal data of which he/she is the data subject are being processed by said controller or on his/her behalf; - receive, free of charge, from the data controller and if the data processing is as described in point a), a description of the personal data of which he/she is the owner,**the purposes for which the personal data are being or will be processed**, and the recipients or classes of recipients to whom they will or may be disclosed; -**be informed by the data controller, upon payment of the prescribed fee, of the logic that has been applied in making a decision**where the processing, by automated means, of personal data concerning that individual is intended to assess matters relating to the individual (for example, his or her performance at work, creditworthiness, reliability or conduct) and has constituted or is likely to constitute the only information used to make a decision significantly affecting the individual.
Mexico	Principles on AI	- **Explain to users**that interact with AI-based services, the decision-making process that the system makes about them, the expected benefits and the potential risks associated with their use. - **Fostering openness and trust**by sharing as much information as possible with the public, while preserving the required confidentiality, to enable an understanding of the training method and the decision-making model of the system. - **Publish the results of system evaluations**trying to include versions aimed at different audiences.
Peru	First project delivered for review of the OECD in May of 2021	- **Transparency:**The project is committed to implementing a platform that acts as a registry for AI algorithms and associated data in the public sector.
Uruguay	AI Strategy	- **Transparency.**AI solutions used in the public sphere must be transparent, complying with current regulations. This transparency must:

		either Make available the algorithms and data used for training the solution and its implementation, as well as the tests and validations carried out. either Explicitly make visible, through active transparency mechanisms, all those processes that use AI, whether in the generation of public services or in supporting decision-making.

Fountain: OECD analysis of national AI principles and related instruments.

Table A B.4.Examples of AI instruments in LAC aligned with OECD principle #4 on AI

	Instrument analyzed	OECD Principle: Robustness, Safety and Security
Brazil	Strategy Brazilian from intelligence artificial (2021)	- **Security:**inclusion of a strategic axis on public security. either Commitment to developing techniques to identify and mitigate algorithmic biases and ensure data quality for training AI systems. either Promotion of voluntary standards to manage AI risks. either Action to conduct impact analyses on uses of AI that directly affect the public. either Commitment to implement a "sandbox" (*sandbox*) data protection and privacy for AI systems intended for public safety.
Brazil	General law of protection of personal data (2018)	- **Prevention:**adoption of measures to prevent harm caused by the processing of personal data.
Chili	National Policy of AI andPlan of action (2021)	- **Safe AI:** either Data integrity, quality and security. either Risk and vulnerability assessments. either Cybersecurity: confidentiality, integrity and protection of data, algorithms, processes and practices.
Colombia	Ethical Framework for Intelligence Artificial (2021)	- **Security:**""Artificial intelligence systems must not generate impacts on the physical and mental integrity and health of the human beings with whom they interact" (p. 32). This principle includes measures such as the immutability, confidentiality and integrity of the source data, and the creation of codes of conduct and risk systems that allow for the identification of possible impacts.
Mexico	Principles on AI	- **Mitigate situations of risk and uncertainty**continuously and generate response strategies to the effects derived from the use of AI. - **Prioritize safety, integrity and human dignity**in the design and application of AI tools, evaluating and monitoring the factors that may impact it. **Establish** - **robust mechanisms for protecting 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 AI development are considered components of this document.

Fountain: OECD analysis of national AI principles and related instruments.

Table A B.5.Examples of AI instruments in LAC aligned with OECD principle #5 on AI

	Instrument analyzed	OECD Principle: Responsibility
Brazil	Strategy Brazilian from intelligence artificial (2021)	- **Accountability:**funding action for projects that support responsibility and accountability. Commitment to incentivize AI-related responsibility and accountability practices.
Brazil	General law of protection of personal data (2018)	- **Responsibility and accountability:**demonstration by the agent of the adoption of effective measures capable of demonstrating observance and compliance with the rules for the protection of personal data and even the effectiveness of such measures.
Colombia	Ethical Framework for Intelligence Artificial (2021)	- **Responsibility:**"There is a duty to respond for the results produced by an artificial intelligence system and the impacts it may generate" (p. 33). Responsibility of the entities that collect and process data, and of the people who design an algorithm. It also suggests establishing clear responsibilities in the design, production and implementation chain.
Mexico	Principles on AI	- **Determine responsibilities and obligations**clear understandings from different actors regarding the process of design, development, implementation and use of technology.
Peru	First project delivered for review of the OECD in May of 2021	- **Responsibility:**The project commits to ensuring that the country will adopt ethical guidelines for the use of AI in a sustainable, transparent and replicable manner, with clear definitions regarding responsibility and data protection.
Uruguay	AI Strategy	- **Responsibility:**AI-based technological solutions must have a clearly identifiable person responsible for the actions derived from the operation of the solution.

Fountain: OECD analysis of national AI principles and related instruments.

OECD Studies on Public Governance

Strategic and responsible use of artificial intelligence in the public sector in Latin America and the Caribbean

Governments can use artificial intelligence (AI) to design better policies, make more accurate and targeted decisions, and improve communication with citizens and the quality of public services. The Latin American and Caribbean (LAC) region is seeking to harness the 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 understand the baseline of strategic actions and capabilities for AI in the public sector; identify specific approaches and actions to use this technology in building efficient, effective and responsive governments; and promote collaboration in the search for a regional vision for AI in the public sector. This report incorporates an assessment 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 the efforts made to build key capabilities.

governance and putting in place critical AI enablers in the public sector. It concludes with a series of recommendations for LAC governments.

PRINTED ISBN 978-92-64-72657-4
PDF ISBN 978-92-64-32102-1

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