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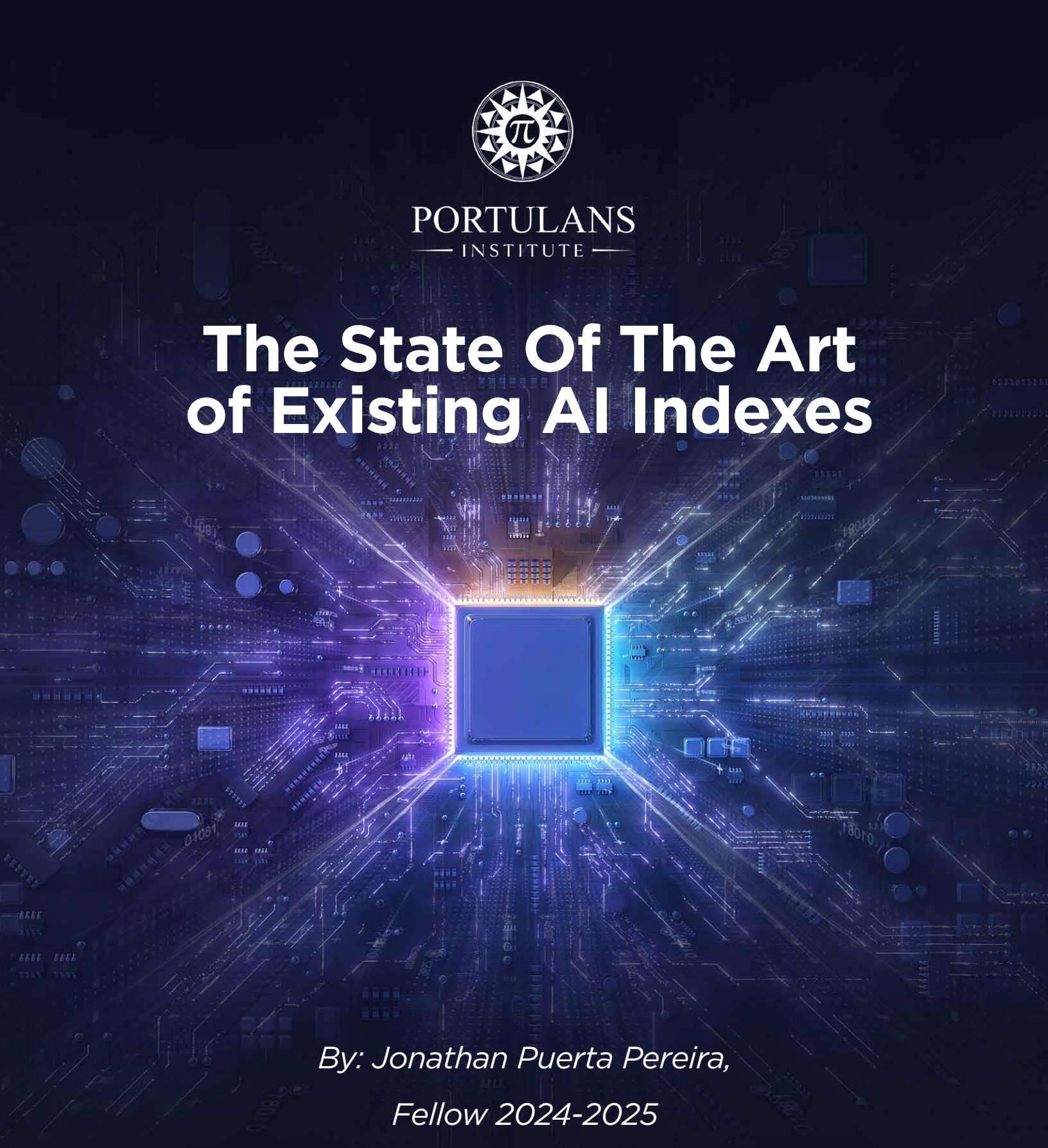
The State Of The Art of Existing AI Indexes



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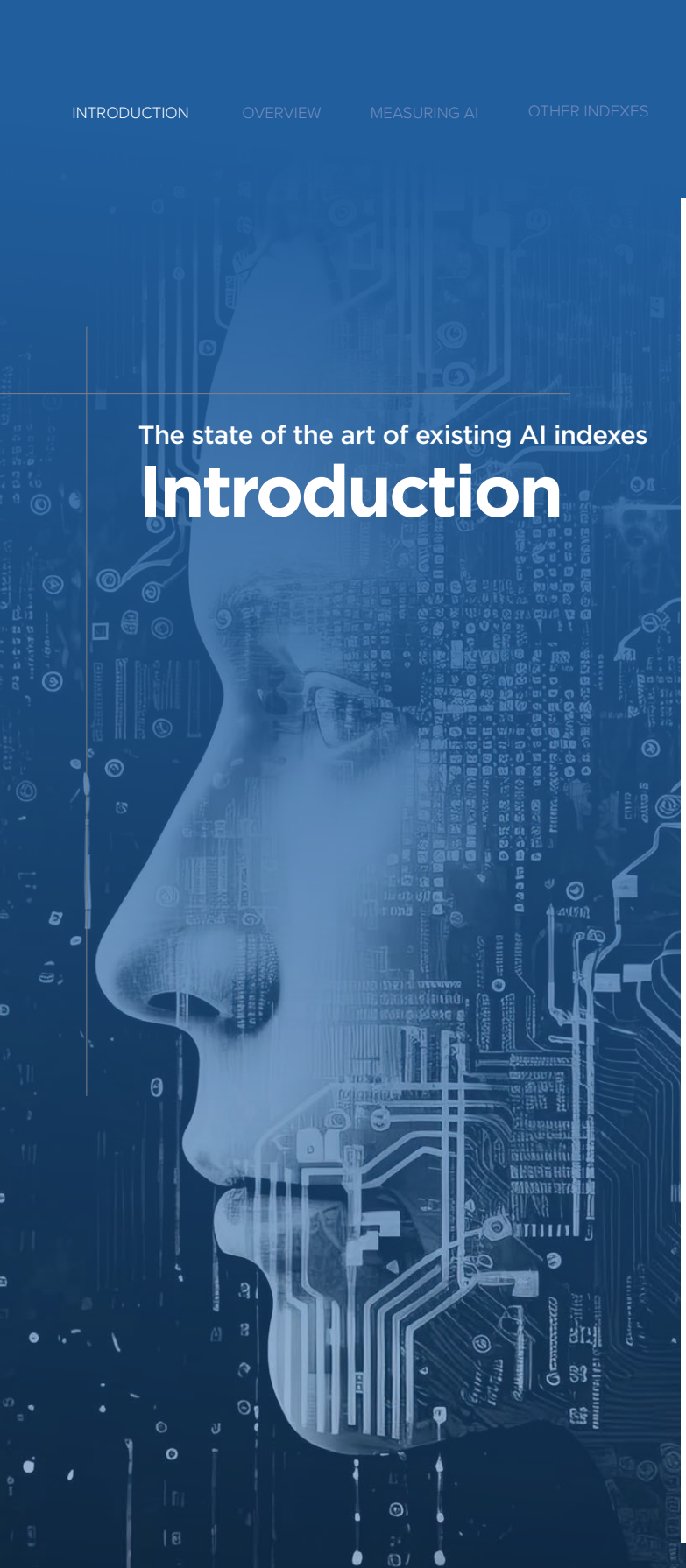

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Introduction

Artificial Intelligence (AI) is now widely recognized as a transformative force reshaping economics and societies. It promises productivity gains, improved well-being and solutions to grand societal challenges[1]. Given its growing impact, there is a pressing need for robust metrics to gauge its development and influence, and in turn inform discussion and decision making around AI. AI indexes have emerged as a response to this need - composite measures that systematically measures and tracks AI across various dimensions over time.

The idea of an AI index was first proposed in research literature. Shoham (2017)[2] was among the first to call for tracking key developments in AI in a factual and objective way. Shoham argued that countries should develop a multifaceted AI index incorporating factors such as investment levels, research output, and technological achievements[3]. This proposal catalyzed efforts at Stanford University resulting in the creation of the One Hundred Year Study on AI (AI100) whose primary proposed dimensions were *volume of AI activity, technological progress, and societal impact*. In late 2017, this effort resulted in the inaugural – an open, not-for-profit effort to aggregate data on AI activity and progress[4].

Since the launch of the Stanford AI Index, a number of other major AI index initiatives have emerged globally focusing on specific dimensions of AI, sectors, or regions. Notable examples include Oxford Insights' *AI Readiness Index,* Stanford University's *AI Index Report*, the International Monetary Fund (IMF)'s *AI Preparedness Index,* the *Global AI Index* by Tortoise Media, and the Stanford's Global *AI Vibrancy Tool.*

This report is focused on the principal AI index efforts available nowadays and their methodological design, while deliberately omitting many other smaller or tangential AI index or measurement projects. We examined how each index is constructed, including what indicators are include, the dimensions in which they are grouped, and how they are weighted. It is worth noticing that this report does not attempt to evaluate or compare the numerical results of the indexes, such as country rankings or scores, rather to provide a descriptive overview of the indexes' methodological characteristics and thematic focus areas.

[1] OECD. (2024). Artificial Intelligence in Society. OECD. https://www.oecd.org/en/publications/2019/06/artificial-intelligence-in-society_c0054fa1.html

[2] Shoham, Y. (2017). Towards the AI Index. AI Magazine, 38(4), 71–77. https://doi.org/10.1609/aimag.v38i4.2761

[3] Ibid.

[4] Artificial Intelligence Index, 2017 Annual Report. https://hai.stanford.edu/assets/files/ai-index-2017-annual-report.pdf#:~:text=Created%20and%20launched%20as%20a,Index%2C%20and%20in%20this%20report

2.

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An overview of existing AI indexes

Nowadays, a variety of indexes track national or regional AI progress, each with a different focus and audience. These indexes serve a range of purposes; they inform policymaking, highlight strengths and gaps in national AI ecosystems, and promote transparency and accountability in AI governance.

Despite their varied origins, scopes, and methodologies, we found that most of these indexes can be broadly grouped into two main categories, based on their primary analytical focus. The first category includes those indexes that emphasize the development, adoption, and economic or technical preparedness for AI. They highlight national capacities such as research output, talent and skills, digital infrastructures, and institutional readiness. Indexes in this group generally rely on quantitative indicators that are grouped into certain dimensions and then weighted to generate a general score. The second category includes indexes that focus on AI governance, ethics, and democratic values. These indexes assess whether and how countries are developing policy frameworks that promote responsible AI, uphold human rights, and align with international norms. Indexes in this group tend to emphasize legal, regulatory, and ethical dimensions, offering more qualitative or normative assessments of AI policy landscapes *(Table 1)*.

Table 1: AI indexes categorisation

Category	Index
AI development & adoption	• Global AI Vibrancy Ranking (Stanford University) • Government AI Readiness Index (Oxford Insights) • AI Preparedness Index (IMF) • AI Watch Index
AI governance & responsibility	• Global Index on Responsible AI (Global Center on AI Governance) • AI and Democratic Values Index (Center for AI and Digital Policy)
Both	• AI Index Report (Stanford University) • Global AI Index (Tortoise Media) • Latin American AI Index (ILIA)

Despite this differentiation, there are a few indexes that due to its comprehensiveness cover both categories - measure both the development and adoption as well as the governance and responsibility of AI. These are namely the AI Index Report (Stanford University), the Global AI Index (Tortoise Media), and the Latin American AI Index (ILIA).

Table 2 below presents a full overview of the analyzed index covering their main focus and methodological characteristics, including each index strengths and limitations. The subsections after the table present in detail each index.

Table 2: Overview of existing AI indexes

	AI Index Report	Government AI Readiness Index	AI Preparedness Index	Global AI Vibrancy Tool	Global Index on Responsible AI	Global Artificial Intelligence Index	AI and Democratic Values Index	AI Watch Index	Latin American AI Index (ILIA)
OVERVIEW									
Publisher	Stanford University	Oxford Insights	International Monetary Fund	Stanford University	Global Center on AI Governance	Tortoise Media	Center for AI and Digital Policy	JRC	CENIA & ECLAC
Type	Both	Demand	Demand	Supply	Demand	Both	Demand	Both	Both
Description	Tracking, collecting, distilling, and visualization of data related to AI around nine key topics	Government readiness for AI in public services	Readiness across strategic areas for AI adoption	Cross-country comparisons of AI vibrancy	Responsible AI implementation	Ranking of countries based on investment, innovation, and implementation	Review of AI policies and practices	Performance and positioning of the EU across various dimensions of AI relevant for policymaking	State of advancement of AI in 19 countries in Latin America and the Caribbean
Focus areas	R&D, Technical Performance, Responsible AI, Economy, Science & Medicine, Education, Policy & Governance, Diversity, Public Opinion	AI implementation for public services	Digital infrastructure, human capital/labor, innovation, regulation, ethics	R&D, Responsible AI, Economy, Education, Diversity, Policy, Public Opinion, Infrastructure	Human Rights, Responsible AI Governance, Responsible AI Capacities	National investment, innovation, and implementation of AI	AI policy, human rights, and democratic decision-making	Global AI landscape, industry, Research and Development (R&D), technology, societal impacts	Enabling factors, Research and Development (R&D), Adoption, Governance
Latest update	2025	2024	2023	2023	2024	2024	2025	2021	2024
Update frequency	Annual	Annual	Annual	Annual	Annual	Annual	Annual	NA	Annual
ATTRIBUTES									
Overarching index	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
No. of indicators	63*	39	28	42	19	122	12	22	20
No. of dimensions	8	10	4	8	3	3	NA	5	3
No. of countries	127	193	174	36	138	83	80	27	19
Methodology	Report showing analyses from diverse datasets and benchmarks	The final score is the arithmetic mean of the three pillars. All indicators, dimensions, and pillars are weighted equally	Simple average of the four key dimensions	The AI Vibrancy Index for a country is calculated as the weighted average of the scores of all the pillars	Each pillar is assigned a specific weight and aggregated into an overall score.	A country's total score is the weighted sum of its sub-pillar scores, which are the weighted sum of indicator 'categories' within each sub pillar. Each indicator contributes to an overall category score.	A numeric value of 1.0 is assigned to each Y answer, 0.5 to each P answer, and 0.0 to each N answer. Numbers are then tallied, weighing each metric equally and produced a total score. A top score is 12, a bottom score is 0. Countries are grouped into tiers based on total scores.	Each dimension contains an individual analysis of each indicator. There is no aggregation into a composite index or ranking.	Scoring system from 0 to 100. Relative weights are applied to the reflect the importance of each component. Countries are classified into three groups according to their scores divided into tertiles with respect to the total score.
STRENGTHS & LIMITATIONS									
Strengths	Comprehensive; data-driven and transparent; international scope; collaboration with experts; year-over-year tracking	Focused on public sector readiness; comprehensive	Broad strategic coverage; detailed methodology	Detailed, nuanced comparisons; flexible (e.g., adjustable weights); high number of AI-related indicators	It draws on a large global research network to produce multidimensional data for policymakers	Comprehensive ranking	UN rights-based approach	First approach to profile the EU's AI performance	In-depth country profiles to guide AI strategy in the region, and detailed methodology
Limitations	Reliance on benchmarks	Broad indicators are often used rather than specific AI-related	Broad indicators are often used rather than specific AI-related; several perceptions-based indicators	Limited data coverage in some dimensions	It measures stated commitments and policies (not actual AI deployment). Countries scores depend on available self-reported data.	No flexible weights; great number of non-AI indicators	It may overlook technical or sectoral aspects of AI	EU-centric and latest published data is from 2021	As a recent initiative, it lacks regional and longitudinal depth

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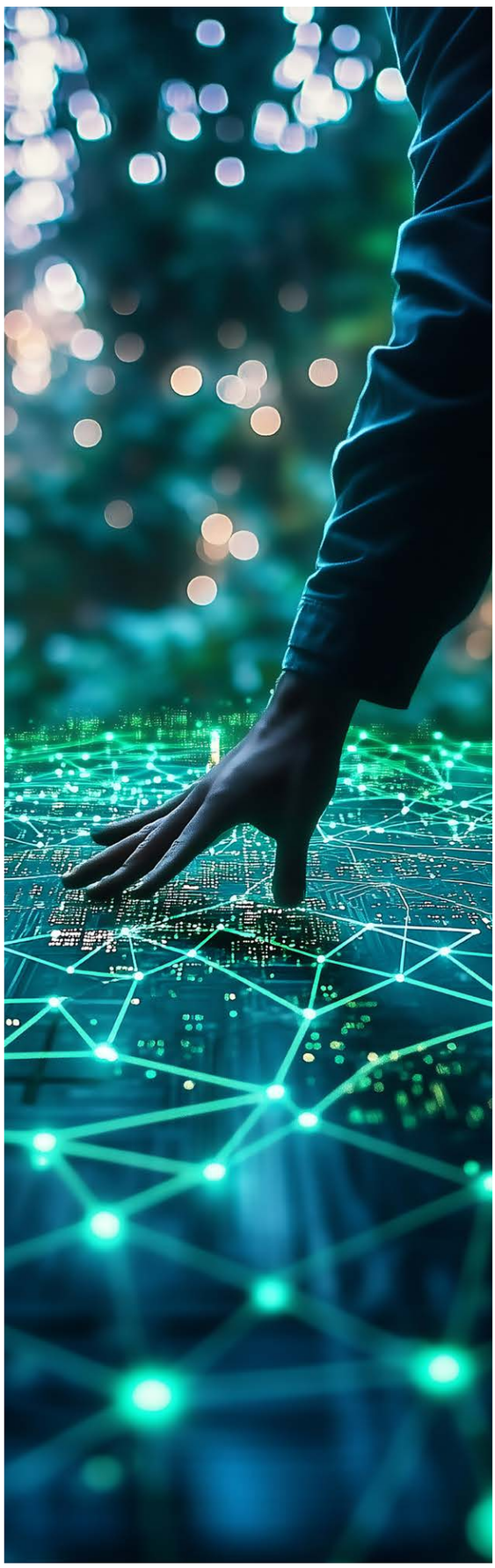
2.2.1. AI Index Report

The *AI Index Annual report* by Stanford University tracks, collates, distills, and visualizes data related to AI around nine key topics. Its mission is to provide unbiased, rigorously vetted, and globally sourced data for policymakers, researchers, journalists, executives, and the public to develop a deeper understanding of the complex field of AI.

Table 3: Stanford's AI Index Report structure

Dimension	Sub-dimension
R&D	Publications
	Patents
	Frontier AI Research
	AI Conferences
	Open-Source AI Software
Technical Performance	Language
	Image and Video
	Speech
	Coding
	Mathematics
	Reasoning
	AI Agents
	Robotics and Autonomous Motion
Responsible AI	Assessing Responsible AI
	RAI In Organizations and Businesses
	RAI in Academia
	RAI Policymaking
	Privacy and Data Governance
	Fairness and Bias
	Transparency and Explainability
	Security and Safety
	Special Topics on RAI
Economy	Jobs
	Investment
	Corporate Activity
	Robot Deployments
Science and Medicine	Notable Medical and Biological AI Milestones
	Protein Sequence Analysis; Research and Publication Trends; Image and Multimodal AI for Scientific Discovery
	Clinical Care - Imaging
	Clinical Care - Non-Imaging
	Ethical Considerations
	AI in Physics, Chemistry, and Other Scientific Domains
Policy and Governance	AI and Policymaking
	Public Investments in AI
Education	K-12 CS and AI Education
	Postsecondary CS and AI Education
Public Opinion	Public Opinion
	US Policymaker Opinion



Source: Own elaboration based on the AI Index Report.

2.2.2. Government AI Readiness Index

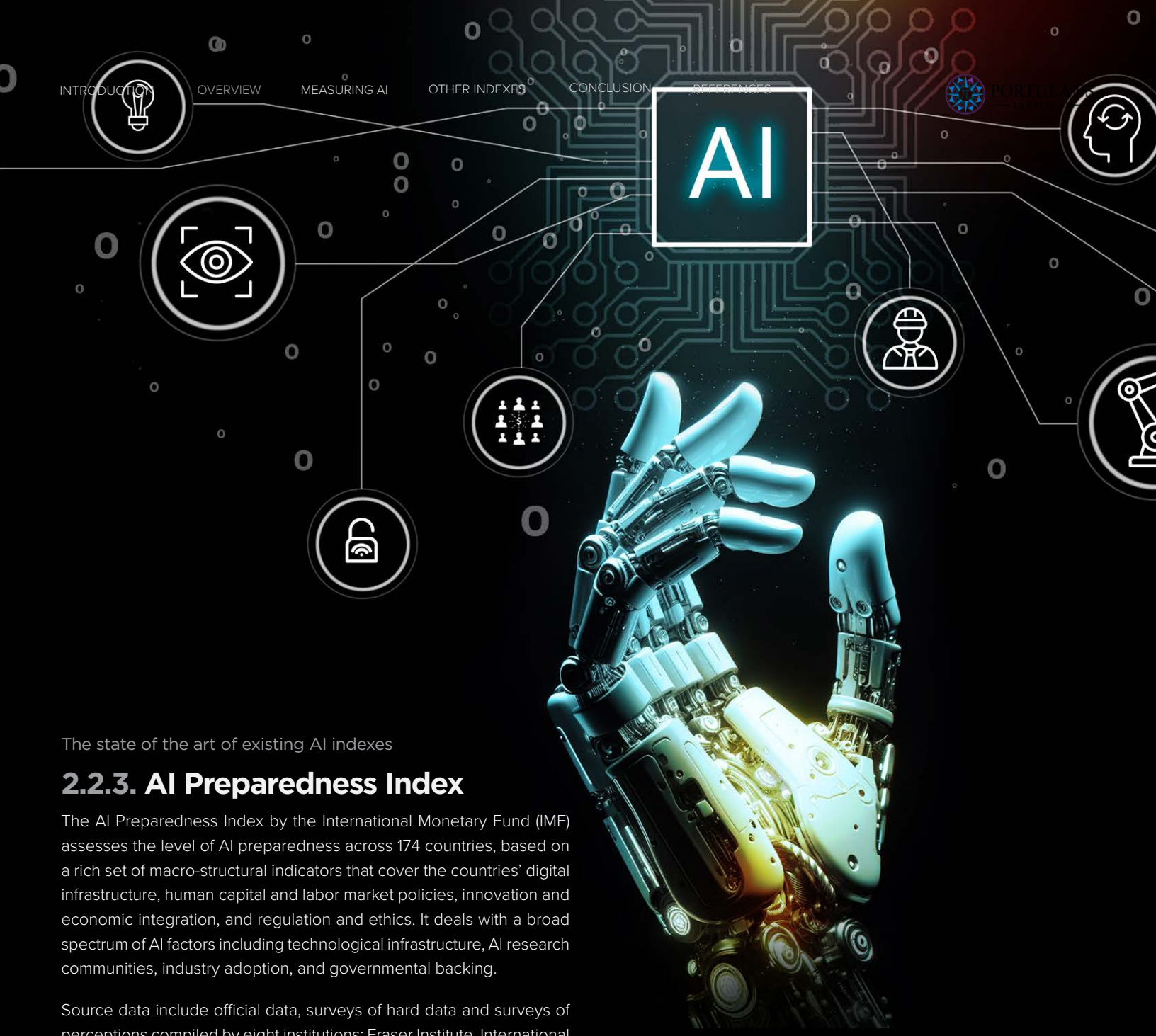
The Government AI Readiness Index by Oxford Insights assess the AI readiness of **188 countries.** It reached its 7th edition in 2024, and fundamentally it tries to answer *"how ready are governments to implement AI in the delivery of public services?".* It examines **40 indicators** across **10 dimensions,** which make up **three pillars**: *Government, Technology Sector*, and *Data & Infrastructure.* According to the index authors, these three pillars are crucial for facilitating AI readiness within a country.

Table 4:Government AI Readiness Index structure

Dimension	Sub-dimension	Indicators
GOVERNMENT PILLAR		
Vision	Does the government have a vision for implementing AI?	National AI strategy
Governance & Ethics	Are there the right regulations and ethical frameworks in place to implement AI in a way that build trust and legitimacy?	• Data protection and privacy legislation • Cybersecurity • Regulatory quality • Ethical AI principles (alignment with OECD AI Principles) • Accountability
Digital Capacity	What is the existing digital capacity within the government?	• Online services • Foundational IT infrastructure • Government support fo AI adoption • Public sector AI skills development
Adaptability	Can the government change and innovate effectively?	• Government effectiveness • Government's responsiveness to change • Procurement data
TECHNOLOGY SECTOR PILLAR		
Maturity	Does the country have a technology sector capable of supplying governments with AI technologies?	• Number of AI unicorns • Number of non-AI technology unicorns • Value of trade in ICT services (per capita) • Value of trade in ICT goods (per capita) • Computer software spending
Innovation Capacity	Does the technology sector have the right conditions to support innovation?	• Time spent dealing with government regulations • VC availability • R&D spending • Adoption of AI for innovation • AI research papers
Human Capital	Does the technology sector have the right conditions to support innovation?	• Time spent dealing with government regulations • VC availability • R&D spending • Adoption of AI for innovation • AI research papers
Human Capital	Does the technology sector have the right conditions to support innovation?	• Time spent dealing with government regulations • VC availability • R&D spending • Adoption of AI for innovation • AI research papers
DATA & INFRASTRUCTURE PILLAR		
Infrastructure	Does the country have a good technological infrastructure to support AI technologies?	• Telecommunications infrastructure • Supercomputers • Broadband quality • 5G infrastructure • Adoption of key technologies (AI, big data, VR and AR)
Data Availability	Is there good availability of data that could be used to train AI models?	• Open data • Data governance • Mobile-cellular telephone subscriptions • Households with internet access
Data Representativeness	Is the data available likely to be representative of the population as a whole?	• Gender gap in internet access • Mobile device affordability

Source: Own elaboration based on Government AI Readiness Index.

To calculate the total score of a country, the index takes the arithmetic mean of each dimension, and then takes the arithmetic mean of each pillar. The final score is the arithmetic mean of the three pillars. All indicators, dimensions, and pillars are weighted equally.



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2.2.3. AI Preparedness Index

The AI Preparedness Index by the International Monetary Fund (IMF) assesses the level of AI preparedness across 174 countries, based on a rich set of macro-structural indicators that cover the countries' digital infrastructure, human capital and labor market policies, innovation and economic integration, and regulation and ethics. It deals with a broad spectrum of AI factors including technological infrastructure, AI research communities, industry adoption, and governmental backing.

Source data include official data, surveys of hard data and surveys of perceptions compiled by eight institutions: Fraser Institute, International Labor Organization, International Telecommunication Union, United Nations, United Nations Conference on Trade and Development; Universal Postal Union, World Bank, and World Economic Forum.

The index is the sum of four key dimensions: digital infrastructure, human capital, technological innovation, and legal frameworks. Each dimension is computed by normalizing and averaging a rich set of sub-indicators including the presence of relevant digital infrastructure, human capital investment, STEM expertise, labor and capital mobility, a vibrant R&D ecosystem, and the adaptability of legal frameworks to digital business models. The result is a scale from 0 to 1, with higher values representing more favorable AI preparedness.

Table 4: Government AI Readiness Index structure

Dimension	Indicators
1. FOUNDATIONAL AI PREPAREDNESS	
I. Digital Infrastructure	
Accessible, affordable, and secured internet access	• Estimated internet users per 100 inhabitants [UN] • Number of main fixed telephone lines per 100 inhabitants [UN] • Number of mobile subscribers per 100 inhabitants [UN] • Number of fixed broadband subscriptions per 100 inhabitants [UN] • Number of wireless broadband subscriptions per 100 inhabitants [UN] • Cost of internet access (% of monthly GNI per capita) [ITU] • Secure internet servers per 1 million people [WB]

Mature e-commerce infrastructure	• Private sector's e-commerce business environment
	  • Postal reliability index [UPU]
	  • Use of mobile phone for online transactions (% of population ages 15+) [WB]
	• Public sector's online services infrastructure [UN]

II. Human Capital and Labor Market Policies	
Education and digital skills	• Human capital index (i.e., mean years of schooling, expected years of schooling, gross enrolment ratio, adult literacy) [UN] • Public education expenditure (10-year average; %GDP) [WB] • Skillset of graduates (proxy for quality of education) [WEF] • Digital skills among active population (e.g., computer skills, basic coding, etc.) [UN] • Number of STEM graduates (10-year average; % of total graduates) [WB] • Number of female STEM graduates (10-year average; % of STEM graduates) [WB]
Labor market flexibility and policies	• Flexibility of wage determination (centralized vs individual firm level) [WEF] • Pay and productivity (i.e., extent to which wages are market determined) [WEF] • Internal labor market mobility [WEF] • Active labor market policies (e.g., skills matching, retraining) [WEF] • Social protection (% of population covered by social protection schemes) [ILO]
2. SECOND-GENERATION AI PREPAREDNESS	
III. Innovation and Economic Integration	
Innovation	• R&D spending per unite of GDP [WB] • Frontier technology readiness (i.e., AI related R&D activity: number of scientific publications, number of patents on frontier technologies) [UNCTAD] • Domestic credit to private sector (%GDP) [WB]
Economic integration	• Mean tariff rate [FI] • Non-tariff barriers [FI] • Free movement of capital and people (average of three indicators: financial openness, capital controls, freedom of foreigners to visit) [FI]
IV. Regulation and Ethics	
Strong legal frameworks and enforcement mechanisms	• Legal framework's adaptability to digital business models [WEF] • Government effectiveness, and voice and accountability [WB & UN]

Note: Data source for each indicator is shown is square bracket. FI = Fraser Institute; ILO = International Labor Organization; ITU = International Telecommunication Union; UN = United Nations; UNCTAD = United Nations Conference on Trade and Development; UPU = Universal Postal Union; WB = World Bank; WEF = World Economic Forum.

Source: own elaboration.

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2.2.4. Global AI Vibrancy Tool

The Global AI Vibrancy Tool by Stanford University offers a robust and versatile platform for assessing and comparing AI vibrancy across countries. By incorporating a comprehensive set of indicators across various dimensions, it provides a nuanced a dynamic understanding of AI development.

It provides a comprehensive global ranking of countries for each year from 2017 to 2023., along with detailed-specific comparisons to see how each country performs relative to others. The ranking includes a default weighting schema based on the Stanford University's AI Index team's assessment of various pillars and indicators.

Table 6: Global AI Vibrancy Tool structure

Pillar	Indicators
R&D	• AI Journal Publications • AI Conference Publications • AI Journal Citations • AI Conference Citations • AI Patents Grants • Notable Machine Learning Models • Academia-Industry Mode Production Concentration • Foundation Models • Foundation Models Datasets • Foundation Models Applications • Open Access Foundation Models • AI GitHub Projects • AI GitHub Projects Stars
Responsible AI	• AAAI Conference Submissions on RAI Topics • AIES Conference Submissions on RAI Topics • FAccT Conference Submissions on RAI Topics • ICLR Conference Submissions on RAI Topics • ICML Conference Submissions on RAI Topics • NeurIPS Conference Submissions on RAI Topics
Economy	• Total AI Private Investment • Total AI Merger/Acquisition Investment • Total AI Minority Stake Investment • Total AI Public Offering Investment • Newly Funded AI Companies • Relative AI Skill Penetration • AI Hiring Rate YoY Ratio • AI Talent Concentration • AI Job Postings (% of Total) • Net Migration Flow of AI Skills
Education	• AI Study Programs in English • AI Study Programs in English Penetration
Diversity	• AI Talent Concentration Gender Equality Index
Policy and Governance	• National AI Strategy Presence • AI Legislation Passed • AI Mentions in Legislative Proceedings
Public Opinion	• Social Media Share of Voice on AI • AI Social Media Posts • AI-Related Social Media Conversations Net Sentiment
Infrastructure	• Parts Semiconductor Devices Exports • Supercomputers • Compute Capacity (Rmax) • Internet Speed

Source: own elaboration based on Global AI Vibrancy Tool.

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2.2.5. Global Index on Responsible AI

The Global Index on Responsible AI is a multidimensional tool measuring progress towards responsible AI in 138 countries and jurisdictions. The index defines 'responsible AI' as:

"The design, development, deployment and governance of AI in a way that respects and protects all human rights and upholds the principles of AI ethics through every stage of the AI lifecycle and value chain. It requires all actors involved in the national AI ecosystem to take responsibility for the human, social and environmental impacts of their decisions. The responsible design, deployment, and governance of AI are proportionate to the purpose of its use and meet the technological needs of the individuals and societies it seeks to serve."

It measures 19 thematic areas of responsible AI across three (3) dimensions: Human Rights and AI, Responsible AI Governance, and Responsible AI Capacities. Each thematic area assesses the performance of three (3) different pillars of the responsible AI ecosystem: Government Frameworks, Government Actions, and Non-State Actors' Initiatives.

Source: own elaboration based on Global AI Vibrancy Tool.

Table 7: Global Index on Responsible AI

	Dimension		
	Responsible AI Governance The degree to which country-level governance regimes uphold effective and rights-preserving practices in responsible AI	***Human Rights*** The extend to which countries are taking steps to protect, promote, and respect key human rights implicated by AI	***Responsible AI Capacities*** The extent to which the key state capacities required to advance responsible AI exist and are being met and promoted
Pillars	**Thematic Areas**		
Government Frameworks National or federal laws, regulations, policies, strategies, and/or guidelines that address the implications of AI with respect to a particular thematic area	National AI Policy Impact Assessments Human Oversight and Determination Responsibility and Accountability Proportionality and Do No Harm Public Procurement Transparency and Explainability Access to Remedy and Redress Safety, Accuracy and Reliability	Gender Equality Data Protection and Privacy Public Participation and Awareness Bias and Unfair Discrimination Children's Rights Labor Protection and Right to Work Cultural and Linguistic Diversity	Competitions Authorities Public Sector Skills Development International Cooperation
Government Actions Actions by national or federal government that involve the development or implementation of government frameworks, or government-led initiatives which advance action within the identified thematic area, even in the absence of a government framework			
Non-State Actors Actors outside government (universities, civil society organizations, and private sector entities) who are actively working on issues related to AI within the thematic area			

Source: own elaboration based on Global Index on Responsible

The resulting country level scores derived from a comprehensive assessment of country commitments to the responsible development of AI with a human rights focus, complemented with robust secondary data sources. Index scores are derived from primary data gathered across the three pillars. Each thematic area is scored on each pillar, scaled to a 0-100 range, and averaged to compute pillar scores. The scores from the primary data are then adjusted using a coefficient built from secondary data for each country, which accounts for the effectiveness of Government Frameworks, Government Actions, and the enabling environment for Non-State Actors. Each pillar is assigned a specific weight and aggregated into an overall score which, allows a comparative assessment of efforts made by countries to promote responsible AI and to rank them accordingly.

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2.2.6. Global Artificial Intelligence Index

The Global AI Index by Tortoise Media benchmarks 83 nations on their level of investment, innovation, and implementation of AI. It scores countries on AI capacity based on 122 different indicators grouped into three pillars of analysis: Implementation, Innovation, and Investment. Together, these pillars cover talent, infrastructure, operating environment, research, development, commercial ecosystem and government strategy.

The index looks at national *AI capacity* through both absolute ('scale') and relative ('intensity') measures, with the final index scores representing a combination of the two. 'Scale' measures a nation's absolute AI capacity, showing its output on the global stage, while 'intensity' measures AI capacity relative to the size of a country's population or economy.

Table 8: Global Artificial Intelligence Index structure

Pillars	Sub-pillars	Measures
Implementation	**Talent:** Focuses on the availability of skilled practitioners in AI solutions.	• AI-related activity on online software development platforms • AI scientists and professionals
	Infrastructure: Assesses the reliability and scale of access infrastructure, from electricity and internet to supercomputing capabilities.	• National supercomputing capacity • Involvement in the highly complex global semiconductor manufacturing process • Access to and usage of high-end GPU chips for large-scale AI training
	Operating environment: Focuses on the regulatory context and public opinion in AI.	• AI in legislation • Public trust in AI • AI labor mobility
Innovation	**Research:** Looks at the extent of specialist research and researchers, including numbers of publications and citations in credible academic journals.	• Activity and impact in AI research publications and academic conferences • Quality of educational institutions • Development of novel AI architectures and systems through building large-scale AI models
	Development: Focuses on the development of fundamental platforms and algorithms upon which innovative AI projects rely.	• Training, development, and publication of open-source large-scale AI models • Application of existing AI technology across industries through patents
Investment	**Government strategy:** Gauges the depth of commitment from national governments to AI; investigating spending commitments and national strategies.	• AI companies • AI private investment • Acquisitions of AI startups
	Commercial: Focuses on the level of startup activity, investment, and business initiatives based on AI.	

Source: own elaboration based on Global Artificial Intelligence Index.

The index follows the measured countries over time to track who is 'leading' and who is 'failing' on the "global AI race", being the 2024 update the fifth iteration of the index. Ranking changes across iterations of the index reflect both the latest available data and updates to the methodology over time.

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2.2.7. AI and Democratic Values Index

The AI and Democratic Values Index (AIDVI) is a comprehensive review of AI policies and practices worldwide prepared by the Center for AI and Digital Policy. It provides the basis to compare national AI policies, to assess progress, and to identify emerging trends. The AIDV is based on detailed narrative reports, combined with a methodology that produces ratings and rankings from national AI policies and practices.

It focuses on human rights, rule of law, and democratic governance metrics. Its primary metrics are the endorsement and implementation of the *OECD/G20 AI Principles* and the *UNESCO Recommendation on the Ethics of Artificial Intelligence*. Opportunities for the public to participate in the formation of national AI policy, adoption of the right to algorithmic transparency, and the creation of independent agencies to address AI challenges are also among the metrics. While patents, publications, investment, and employment are important metrics for the AI economy, these are not considered here.

It has been published since 2021 and reached its fifth edition in 2025. The last edition covered 80 countries and includes the 2023 Global Privacy Assembly Resolution on Generative AI. It is the result of the work of more than 500 AI policy experts.

The AIDV identifies 12 factors to assess national AI policies and practices. These reflect well-known frameworks for **AI policy** *(e.g., the OECD/G20 AI Principles)*, **human rights** *(e.g., the Universal Declaration for Human Rights)*, and **democratic decision-making** *(transparency, public participation, and access to policy documents).*

Table 9: AI and Democratic Values Index structure

AI and Democratic Values Index Metrics	
1.	Endorsement of the *OECD/G20 AI Principles*
2.	Implementation of the *OECD AI Principles*
3.	Endorsement of the *Universal Declaration for Human Rights*
4.	Implementation of the *Universal Declaration for Human Rights*
5.	Establishment of a process for meaningful public participation in the development of a national AI policy
6.	Materials about the country's AI policies and practices readily available for the public
7.	Existence of an independent (agency/mechanism) for AI oversight
8.	Inclusion of "Fairness", *"Accountability", "Transparency", "Rule of Law,* and *"Fundamental Rights"* as goals in the national AI policy
9.	Establishment by law of a right to *Algorithmic Transparency*
10.	Endorsement of the Council of *Europe AI Treaty*
11.	Implementation of the *UNESCO Recommendation on the Ethics of AI*
12.	Endorsement of the 2018 GPA Resolution on AI and Ethics, the 2020 GPA Resolution on AI and Accountability, the 2022 GPA Resolution on AI and Facial Recognition, and the 2023 GPA Resolution on Generative AI Systems

Source: own elaboration based on AI and Democratic Values Index.

A numeric value of 1.0 is assigned to each metric if the answer is "Yes" (Y) , 0.5 is the answer is "Partly" (P), and 0.0 if the answer is "No" (N). Numbers are then tallied, weighing each metric equally, and produced a total score. A top score is 12, a bottom score is 0. Countries are grouped into tiers based on total scores, being five tiers in the 2025 edition: tier 1 (high) to tier 5 (low).

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2.2.8. AI Watch Index

The AI Watch Index by the European Commission's Joint Research Center (JRC) provides a structured set of quantitative indicators on the performance and positioning of the EU across various dimensions of AI relevant for policymaking. Although its geographical focus is the EU27, it also provides comparison with major worldwide AI powerhouses such as the US and China.

The index is composed of 22 indicators organized around five dimensions: i) Global view on the AI landscape, ii) Industry, iii) Research & Development (R&D), iv) Technology, and v) Societal aspects

Table 10: AI Watch Index structure

Dimension	Description	Sub-dimension	Indicators
Global view on the AI landscape	Provides the basis for understanding the global landscape of AI and covers general aspects of tis composition and geographical distribution, areas of AI specialization, and AI investments in the EU.	*AI activity*	• AI economic players • AI players intensity
		AI areas of strength	• AI areas of specialization: comparative advantage in a thematic area • AI thematic hotspots • EU's comparative advantage in industrial robotics' trade
		AI investments	• AI investments in the EU
Industry	Presents AI firms' profiles and includes a focus on robotics startups, in order to understand the characteristics of the AI industry.	*Industry*	• AI firms' profile • Robotics start-ups in the EU
Research and Development (R&D)	Elaborates on the EU's capabilities and strengths in research, covering various aspects of R&D activity (e.g., patenting, publications and EU funded projects) and network of collaborations.	*R&D activity*	• AI players in AI R&D • AI R&D activity score
		Network of collaborations	• AI R&D collaborating countries • Peer-to-peer collaborations • Strategic position in the network f collaborations
Technology	Analyses AI as a general-purpose technology, in aspects such as technological enablers, performance of AI and standardization.	*Performance of AI*	• Performance of AI research
		Standardization	• Standardization activity engagement

Source: own elaboration based on Global Artificial Intelligence Index.

The index was published in the context of the AI Watch, the European Commission's knowledge service to monitor the development, uptake and impact of AI for Europe, launched in December 2018. It is developed by the JRC in collaboration with the Directorate-General for Communications Networks, Content and Technology (DG CONNECT).

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2.2.9. Latin American AI Index

The *Latin American AI Index (ILIA)* is an index that provides quantitative and qualitative data on the state of advancement of AI in 19 countries in Latin America and the Caribbean, and identifies achievements, gaps, and opportunities for improvement in AI ecosystems. The index groups countries into three categories according to their degree of maturity: Pioneers, Adopters or Explorers - being Pioneers countries in the top third of the total.

It is structured around three (3) dimensions: *i) Enabling Factors; ii) Research, Development and Adoption (R+D+A); and iii) Governance.* These areas provide a comprehensive perspective on the progress of AI in each country and are composed, in turn, of sub-dimensions, indicators and sub-indicators.

Table 11: Latin American AI Index structure

Dimension	Description	Sub-dimension	Indicators
Enabling Factors	Measures the progress of those conditions and technological elements that serve as the foundation for AI ecosystems to develop effectively	*Infrastructure*	• Connectivity
		Data	• Data Barometer
		Human Talent	• AI Literacy • Professional Training in AI • Advanced Human Talent
R+D+A	Analyzes the advance on research, innovation and adoption of AI in the public, private, and academic sectors, as well as the degree of integration of AI systems in each one of these sectors.	*Research*	• Research
		Innovation and Development (R&D+A)	• Innovation • Development
		Adoption	• Industry • Government
Governance	Measures the degree of maturity of the institutional environment responsible for driving public policy, regulation and a sustainable ethic towards AI.	*Vision and Institutionality*	• AI Strategy • Society's Involvement • Institutionality
		International Linkage	• Standard Definition Participation • International Organisms Participation
		Regulation	• AI Regulations • Cybersecurity • Ethics and Sustainability

Source: own elaboration based on the Latin American AI Index.

The ILIA is a public good promoted by CENIA and ECLAC and supported by entities such as CAF, IDB, OAS and UNESCO.

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Measuring AI: why, how, what, and who

AI holds enormous power to transform business, government and society. Measuring AI means measuring factors such as access to computing infrastructure, cutting-edge technology development and investment. The measurement of these factors remains a conceptual and methodological challenge due to the cross-cutting nature of AI, which intersects with diverse areas such as R&D, data infrastructure, regulation, ethics, and talent.

In economics and statistics, to make sense of complex phenomena, composite indexes have emerged as an effective analytical tool. They allow aggregation of heterogenous indicators into a single, interpretable measure that captures a broader phenomenon[5]. In other words, indexes take a domain that is complex and hard to grasp and extract from it a simple core that captures its essence, providing a meaningful, accurate picture of the domain in question and tracking its changes over time. This enables practitioners to "see the forest for the trees", policy makers to decide on policy, business executives to plan strategy, and the general public to understand a domain that affects them profoundly.

In the context of AI, building a composite index means consolidating data on areas such as research, infrastructure, data, talent, and policy frameworks, and simplifying the multidimensional nature of AI into traceable numbers and scores. However, the importance of an AI index is not only simplification, but the ability to facilitate comparison and monitoring. As Shoham's noted in the foundational proposal for an AI Index, without measurement, efforts to assess progress in AI risk remaining anecdotal or biased[6]. Indexes provide a shared empirical basis that enables policymakers to benchmark national performance, identify strategic gaps, and align investments accordingly. Moreover, indexes enable structured debate around normative questions in AI governance. By integrating indicators related to ethical principles, legal safeguards, and democratic values, some indexes not only quantify capability but also assess whether AI development aligns with broader societal goals. [7]

In consequence, AI indexes act as a form of "infrastructural knowledge" – they produce visibility, comparability, and accountability in a domain that is often opaque[8]. When grounded in transparent methodology and critical reflection, they can become powerful instruments for guiding strategy, regulation, and public understanding in an era of rapid AI transformation.

[5] OECD. (2008). Handbook on Constructing Composite Indicators: Methodology and User Guide. OECD Publishing. https://doi.org/10.1787/9789264043466-en

[6] Shoham, Y. (2017). Towards the AI Index. AI Magazine, 38(4), 71–77. https://doi.org/10.1609/aimag.v38i4.2761

[7] Jobin, A., Ienca, M., & Vayena, E. (2019). The global landscape of AI ethics guidelines. Nature Machine Intelligence, 1(9), 389–399. https://doi.org/10.1038/s42256-019-0088-2

[8] Merry, S. E. (2011). Measuring the World: Indicators, Human Rights, and Global Governance. Current Anthropology, 52(S3), S83–S95. https://doi.org/10.1086/657241

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3.1. How to measure AI: Methodologies

Overall, the analyzed AI indexes use composite multi-dimensional methods, combining quantitative and qualitative data from various sources. The typical approach is to define several pillars or dimensions and aggregate indicators within each of these. For instance, the IMF's AI **Preparedness Index** is computed as the simple average of four key dimensions - *digital infrastructure, human capital, technological innovation, and legal frameworks - each backed by a rich set of sub-indicators.*[9]

Data sources can include hard metrics, such as research publications, patents, hardware, capacity, investment flows, and AI-related job postings, and even expert surveys. For example, the **AI and Democratic Values Index** uses expert assessments of countries' AI policies against OECD/UNESCO standards.

Many indexes also normalize data (e.g., per capita) to allow fair cross-country comparisons. For instance, Tortoise Media's **Global AI Index** explicitly balances absolute versus relative indicators to capture both the scale and intensity of AI capacity.[10]

Finally, many of the indexes' initiatives publish their methodologies and data for transparency purposes. Stanford's **AI Vibrancy Tool** provides for example a methodological paper with its complete indicator list and allows interactive exploration.[11]

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[9] International Monetary Fund (IMF). AI Preparedness Index Methodology. https://www.imf.org/external/datamapper/AIPINote.pdf#:~:text=the%20AIPI%20is%20derived%20as,indicators%20compiled%20by%208%20institutions

[10]Alexi Mostrous, Cesareo, S., & White, J. (2024, September 19). The Global Artificial Intelligence Index 2024. Tortoise Media. https://www.tortoisemedia.com/2024/09/19/the-global-artificial-intelligence-index-2024

[11]Fattorini, L., Maslej, N., Perrault, R., Parli, V., Etchemendy, J., Shoham, Y., & Ligett, K. (2024). The Global Vibrancy Tool 2024. Stanford.edu. https://hai.stanford.edu/research/the-global-ai-vibrancy-tool-2024

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3.2. What to measure: Key measurement dimensions

Despite their varying scopes and purposes, the AI indexes analyzed in this report converge around a set of core measurement areas or dimensions. These dimensions try to cover the foundational components and impact areas of AI – ranging from research capabilities and infrastructure to ethical governance and policy readiness. Certainly, certain areas are more prominent in specific indexes than others depending on the scope and purpose of the index, as described in the categorization explain before – Development & Adoption vs Governance & Responsibility. For example, while the **Stanford AI Index Report** emphasizes areas such as research output, talent mobility, and technological advancement, indexes such as the **Global Index on Responsible AI** or the **AI and Democratic Values Index** focus more heavily on governance structures, legal safeguards, and alignment with human rights principles. Moreover, the same dimension may appear under different labels across the indexes, reflecting divergent conceptualizations or institutional priorities. For instance, R&D can appear as "innovation capacity", "scientific advancement", or "knowledge production", depending on the index, even though they often measure similar indicators such as publication output, patents, or public R&D investment.

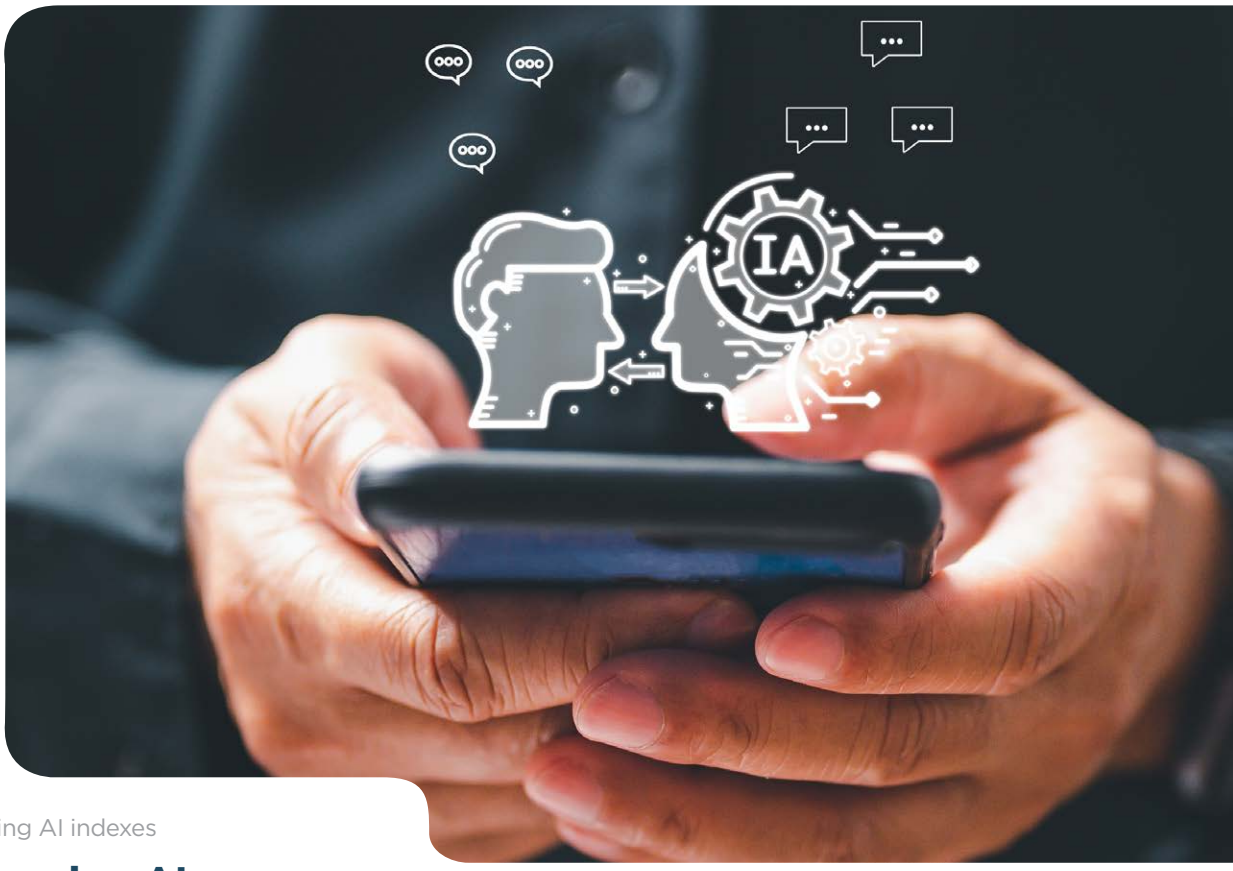
The table below provides an overview of the most common dimensions across the nine indexes analyzed in this report, highlighting how each area is conceptualized and operationalized through the use of certain indicators *(Table 12)*.

Table 12: AI Indexes measurement areas

Measurement area	Description	Indicators
Enabling Factors	R&D is the foundation of AI advancement. It drives the creation of new algorithms, models, and technologies that in turn foster AI innovation. At the same time, national innovative capacity - i.e. the long-term ability to produce and commercialize innovative technology - is significantly influenced by R&D efforts.	E.g., Patenting activity, journal publications
Adoption & Economic Impact	It refers to the degree to which AI technologies are being integrated into public services, industry operations, and society at large. It aims to reflect the real-world use of AI and its contribution to economic growth, competitiveness, and productivity.	E.g., AI adoption in government or industry, data readiness, legal environment, labor market conditions, AI-related firms, startup counts, venture capital investment
Talent & Education	This dimension captures the availability, quality, and mobility of individuals with the skills needed to research, develop, and apply AI technologies. A skilled workforce is essential not only for building AI systems but also for ensuring that AI is integrated effectively into economic and institutional structures.	E.g., Growth of AI-related degree programs, AI-related job postings
Ethical, Social Diversity, Democratic & Responsible AI Indicators	Diversity in AI means accommodating and working with a wide range of perspectives which can potentially reduce biases in AI systems. Additionally, building AI systems that adhere to ethical standards is essential for preventing harmful AI applications and gaining public trust on AI. Responsible AI covers several dimensions including data governance, explainability, fairness, privacy, security, safety, and transparency.	E.g., Gender, ethnicity, socioeconomic diversity within the AI community, fairness, transparency
Policy & Governance	Policy and governance frameworks set the base for AI ecosystems, influencing everything from innovation and ethical standards to investments and education. This dimension aims to capture a government's ability to design, coordinate, and implement AI policies. It emphasizes institutional capacity, inter-agency coordination, resource allocation, and stakeholder inclusion.	E.g., Number of AI-related legislation, strategies, and legislative mentions, dedicated institutions or task forces.
Infrastructure & Resources	Robust infrastructure is a critical prerequisite for advancing AI research and deployment. It includes computational resources, data availability, and network connectivity. This dimension aims to reflect whether a country has the technological and organizational environment needed to support AI systems at scale.	E.g., Number of supercomputers, compute capacity, high-speed internet coverage, cloud infrastructure.

Source: own elaboration.

By identifying and comparing these dimensions, it is possible to better understand not only how AI is being measured across different contexts, but also which dimensions are prioritized, and which might be overlooked, in the current landscape of AI indexes.



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3.3. Who is measuring AI

The global landscape of AI measurement is led by a different institutions, including universities, multilateral organizations, think tanks, and private sector actors. Academic institutions have played a central role in advancing the measurement of AI. Stanford University, through its Institute for Human-Centered AI (HAI), has led significant efforts such as the **Ai Index Report** and the **Global AI Vibrancy Tool**, which aggregate vast quantities of data on several dimensions. Similarly, regional academic-policy collaborations like CENIA and ECLAC have produced the **Latin American AI Index (ILIA)**, which seeks to inform AI governance in Latin America by focusing on enabling conditions and public capacity in the region. Multilateral organizations and policy think tanks are also active in AI measurement. The **Government AI Readiness Index** by Oxford Insights and the **AI Preparedness Index** developed by the IMF both stem from broader concerns about state capacity and its digital transformation. Meanwhile, initiatives oriented towards governance and human rights have emerged primarily from civil society and advocacy networks. The AI and Democratic Values is produced by the Center for AI and Digital Policy (CAIDP), a non-profit organization advocating for ethical and accountable AI systems. Similarly, the **Global Index on Responsible AI**, created by the Global Center on AI Governance, offers an independent, multi-stakeholder assessment framework grounded in international human rights principles. These initiatives are often supported by philanthropic funding or research consortia.

This diversity of actors brings both strengths and challenges to global AI governance. On one hand, it enriches the landscape with multiple perspectives; from academic and policy, to human rights; reflecting the plural interests affected by AI. On the other hand, the lack of coordination across these initiatives may lead to fragmentation, inconsistent methodologies, and competing narratives about AI progress. As AI becomes more globally contested and strategically significant, efforts to harmonize indicators, share data, and promote transparency in measurement practices will be essential to support coherent and inclusive frameworks at the international level. Nevertheless, in the current AI landscape, these actors constitute and increasingly formal and institutionalized field of AI measurement,

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Other indexes

Beyond the nine core indexes analyzed in this report, several other AI benchmarking and assessment tools have emerged, often targeting specific domains, industries, or capabilities. Although the fall outside the scope of this analysis, their development reflects the expanding ecosystem of AI measurement initiatives.

AILuminate Benchmark v.1.1 [12]

Developed by MLCommons in collaboration with industry, academia, and civil society, this index focuses on AI safety by measuring risk and reliability in large language models (LLMs). It evaluates systems across multiple hazard dimensions such as misinformation, privacy, self-harm, testing for robustness and compliance.

Anthropic Economic Index [13]

This index investigates AI's real-world economic effects by analyzing anonymized usage data from its own Claude LLM. By mapping usage patterns across occupational categories, the index tracks whether AI is primarily used to augment human work or fully automate tasks. Among its results, it provides uses of AI by job type, depth of AI use within occupations, AI use and salary, and automation vs augmentation.

Evident AI Index [14]

Evident Insights offers sectoral indexes assessing AI maturity in financial services. The Evident AI Banking Index ranks the top global banks across dimensions such as talent, innovation, and leadership, while the AI Insurance Index benchmarks major insurers on internal practices and AI scaling. Both rely exclusively on publicly available data, providing external and transparent sector assessments.

AWS Generative AI Adoption Index [15]

Amazon Web Services (AWS) publishes periodic indices derived from surveys of IT decision-makers across major economies. The GenAI Adoption Index presents insights on generative AI uptake, enterprise readiness, and attitudes toward emerging models such as LLMs.

OECD AI Capability Indicators [16]

Release in May 2025, the OECD's AI Capability Indicators present a novel, human-centric measurement framework. Experts evaluate AI's performance in nine domains and rate systems on a five-point scale toward human-equivalent capability: Language; Social Interaction; Problem Solving; Creativity; Metacognition and Critical Thinking; Knowledge, Learning and Memory; Vision; Manipulation; and Robotic Intelligence. Developed over five years, the indicators draw on a large network of AI researchers, psychologists and other experts, and aim to provide policy makers with an evidence-based framework to understand AI capabilities and compare them to human abilities.

These evolving indexes reflect growing specialization in AI measurement efforts, from safety and economic impact to sectoral maturity and cognitive capacity. They demonstrate how the AI measurement ecosystem is becoming increasingly granular, target, and evolving from global benchmarking toward domain-specific frameworks.

[13] https://mlcommons.org/ailuminate/

[14] https://www.anthropic.com/news/the-anthropic-economic-index

[15] Generative AI Adoption Index. (2025, May 6). US Press Center. https://press.aboutamazon.com/aws/2025/5/generative-ai-adoption-index?utm_source=chatgpt.com

[16] OECD (2025), Introducing the OECD AI Capability Indicators, OECD Publishing, Paris, https://doi.org/10.1787/be745f04-en.

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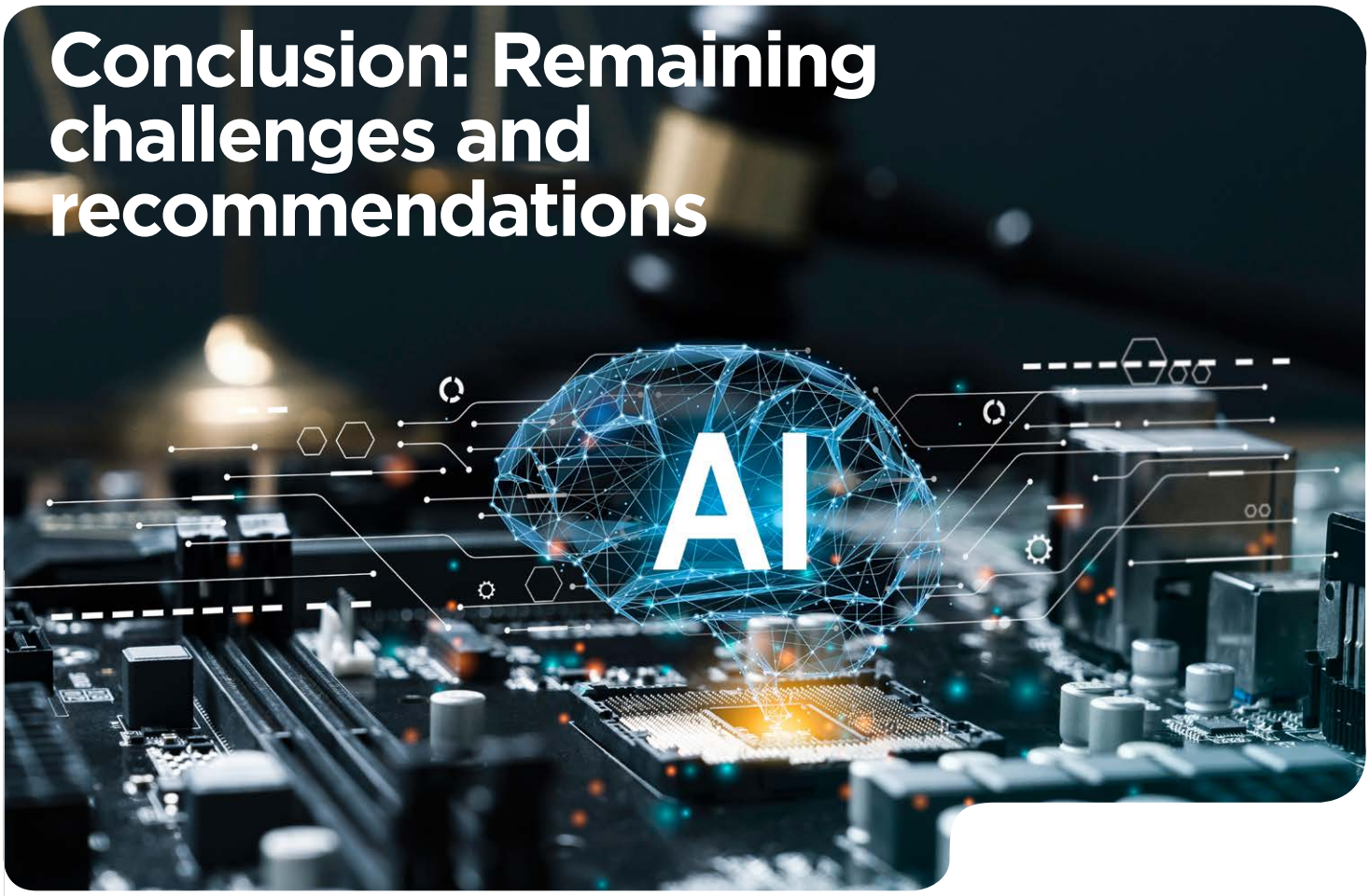
Conclusion: Remaining challenges and recommendations



This report has mapped the current AI measurement ecosystem by analyzing the methodological focus and thematic priorities of nine notable indexes. Together, these tools represent a growing global effort to quantify AI's development, diffusion, governance, and societal impact. They offer structured analysis and reporting to support public debate, guide policy, and enable international comparisons. However, while these indexes contribute to greater visibility and accountability of the AI ecosystem, important questions remain about what exactly should be measures, how it should be measured, and to what end.

One central challenge is the absence of a widely accepted definition of AI. How AI is defined has profound implications for what is consider AI progress, which technologies are included in measurement efforts, and how trends in R&D, investment and labor are interpreted. Globally, the OECD's definition of AI is considered the most accepted one, but not all the indexes analyzed rely on it for their measurement efforts. [17]

[17] OECD. (2024b). Explanatory memorandum on the updated OECD definition of an AI system. https://www.oecd.org/content/dam/oecd/en/publications/reports/2024/03/explanatory-memorandum-on-the-updated-oecd-definition-of-an-ai-system_3c815e51/623da898-en.pdf

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