WORLD
ECONOMIC
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Blueprint for Intelligent Economies:
AI Competitiveness through Regional Collaboration

WHITE PAPER

JANUARY 2025

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Foreword

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Artificial intelligence (AI) is set to fuel the Fourth Industrial Revolution, drive economic growth and spur innovation across all industries and societies. While the promise of AI is becoming a reality in certain regions, many nations with limited access to energy-intensive AI infrastructure, advanced computing capability, high-quality data and AI skills risk missing out on the economic and societal benefits promised by the age of intelligence.

In 2024, the AI Governance Alliance, part of the World Economic Forum's Centre for the Fourth Industrial Revolution, introduced the AI Competitiveness through Regional Collaboration Initiative to promote a holistic approach to creating more equitable and responsible AI economies and societies. It aims to facilitate prosperous, inclusive, secure and sustainable intelligence-driven economies while mitigating the widening gap in access to AI technologies through collaborative action.

Our white paper, *Blueprint for Intelligent Economies: AI Competitiveness through Regional* *Collaboration*, outlines the opportunities that governments, enterprises, academia and wider civic society can harness to achieve a successful AI revolution. Given that aspirations and resources in the field of AI vary significantly, the blueprint provides guidance for nations and regions at any level of digital and AI maturity.

We have chosen to spotlight three strategic objectives – building sustainable AI infrastructure, curating diverse and high-quality datasets, and establishing guardrails for ethics, safety and security. Each spotlight illustrates a range of challenges and the potential capabilities required by key actors in the AI ecosystem globally.

We invite you to explore this blueprint and participate in the next phase of our work, which will centre on regional challenges. We thank those who have contributed to this report and look forward to continuing our collaborative efforts to realize the economic and societal benefits of AI for all.

Executive summary

This blueprint outlines a holistic and collaborative approach to creating inclusive growth through intelligent economies.

Artificial intelligence (AI) has the potential to profoundly transform economies and societies for the benefit of all, provided it is developed and implemented in a responsible and equitable manner. It can enhance productivity, facilitate the creation of innovative business models and assist in addressing important development challenges.

The integration of AI with quantum computing, biotechnology, robotics, spatial intelligence and other emerging technologies will create the foundations for new intelligent economies. Despite the significant technological advancements in AI, these innovations are not equally accessible to much of the world and risk widening the current digital divide.

This white paper, Blueprint for Intelligent Economies: AI Competitiveness through Regional Collaboration, encompasses every stage of the AI journey: innovation, development, deployment and adoption of AI for the benefit of all. The blueprint is organized into three interconnected layers: building the foundations, growing new intelligent economies and putting people at the heart. Beneath each layer is a set of strategic objectives, capabilities and initiatives for delivering growth through inclusive AI.

The aim of this report is to assist nations and regions, irrespective of their AI maturity level, in identifying the necessary capabilities to advance their AI development. The blueprint provides practical guidance and examples of initiatives that are already proving successful in addressing common challenges.

The successful implementation of an AI strategy does not depend on the simultaneous achievement of all outlined strategic objectives and capabilities. Approaches taken by each country and region will vary depending on unique challenges, existing resources (natural, human and financial), current AI capabilities (connectivity, compute, data infrastructure, AI innovation and talent) and the ambition of leaders to prioritize AI as a lever for transformational impact.

International consultation and collaboration between stakeholders will be required to facilitate global trade across the AI value chain and secure cross-border data flows. Approved international or regional frameworks for AI safety, standards, ethical AI guardrails and data governance will contribute to promoting the development of inclusive AI models and applications.

Close collaboration between national and regional governments, global AI leaders, enterprises, small businesses, academia, civil society and end users is essential. Public-private partnerships (PPPs) and academic collaboration are particularly important ways to accelerate the development of successful and agile national AI ecosystems. Such cooperation is crucial for creating initiatives and solutions that address the needs of local end users and key industry sectors, as well as encouraging the growth of domestic AI innovators.

To aid this collaboration, the blueprint is grounded in observations from existing national strategies and insights gathered from interviews with a diverse array of stakeholders, including public sector representatives, AI industry leaders, infrastructure providers and non-profit organizations operating across various regions.

The findings presented herein will serve as the foundation for strategic pilot projects at the regional level during the next phase of the Forum's AI Competitiveness through Regional Collaboration Initiative.

1 A blueprint for intelligent economies

Creating resilient ecosystems will require strategic planning to identify and develop vital AI capabilities.

1.1 Unpacking the blueprint

The purpose of the blueprint is to act as a framework for strategic decision-making, providing common terminology and objectives that can be used to shape collaborative action. The layers of the blueprint work together in a logical architecture to harness the power of AI and other emerging technologies to create innovative intelligent economies. Beneath each of the three layers is a set of nine strategic objectives and enabling capabilities, which should guide the collaboration required by key stakeholders.

FIGURE 1 | **A blueprint for intelligent economies**

Putting people at the heart of intelligent economies

Strategic objectives	Elevate human potential	Establish guardrails for ethics, safety and security
Capabilities	– AI awareness and literacy – Personalized and inclusive education – Workforce training and support – Talent attraction and retention – Lifelong learning	– Ethical guardrails – Responsible use guardrails – Safety and security standards – AI regulations – Legal frameworks

Growing new intelligent economies

Strategic objectives	Accelerate deployment of embedded intelligence	Ignite an AI-powered industrial revolution	Cultivate ecosystems of entrepreneurship
Capabilities	– AI enhanced experiences – AI agents in workflows – AI in robotics – AI in devices – AI and emerging technologies	– AI adoption in key sectors – AI adoption in public services – Reimagined value chains – Pioneering AI disruptors – Continuous business model change	– Innovation hubs and incubators – AI entrepreneurship networks – Collaborative R&D – Communities of open innovation – Cooperation on global challenges

Building the foundations for intelligent economies

Strategic objectives	Build sustainable AI infrastructure	Curate diverse, high-quality datasets	Develop responsible AI models	Harness channels of AI investment
Capabilities	– Sustainable and responsible green energy – Secure networks and resilient AI supply chains – General access to high-speed connectivity – Access to scalable and affordable compute – Access to AI-ready devices	– Available and accessible data – Diverse and inclusive data – Data ownership and sharing – Data protection and privacy – Data life cycle management	– Self-governance – Multilingual – Inclusive design – Transparency and explainability – Open innovation	– AI investment partnerships – Public-private partnerships – AI infrastructure funds – Regional investment pools – Multi-fund management

1.2 | Key stakeholders collaborating to deliver intelligent economies

Governments play a pivotal role in the AI ecosystem. Success in the AI revolution is closely tied to political intent; higher ambitions are likely to attract both public and private investment. As custodians of national interests, governments shape markets through policy-setting, regulatory frameworks, incentives, funding initiatives and public-private partnerships (PPPs).

Large enterprises are at the forefront of AI advancements across various sectors of the economy, often with limited governmental involvement. However, collaboration with the public sector, academia and other stakeholders is essential for inclusive AI growth. AI offers significant opportunities for enterprises to transform products and services, enhance experiences and revamp entire value chains. Large businesses have a responsibility to promote AI adoption within their workforce through partnerships with the government.

Small- and medium-sized enterprises (SMEs) form the backbone of every economy, and their rapid adoption of AI can significantly boost growth and prosperity. However, many SMEs tend to be slow technology adopters and often lack early insight into the benefits and return on investment of AI. Conversely, tech start-ups are often the first adopters of AI and play a crucial role in shaping national AI inclusivity and data diversity, stimulating entrepreneurial talent and local innovation.

Academia plays a crucial role in AI development and adoption. This spans from pioneering research in AI ethics to the development of AI education programmes created in partnership with government and industry partners. Its function is essential in bridging the gap between academic research and large-scale practical application.

Civic society is an essential ally in ensuring AI development aligns with societal values and wider societal benefits. Organizations can identify potential inequalities exacerbated by AI, push for mitigating measures, hold governments and businesses to account, and encourage grassroots innovation in AI applications that address local challenges.

1.3 | Blueprint layers and strategic objectives

The blueprint is organized in layers, each containing a set of strategic objectives. The purpose of each strategic objective is to highlight five capabilities that support AI initiatives at a national, regional and global level.

Building the foundations for intelligent economies

This layer of the blueprint covers the foundations upon which the new economic activities will be built. These include access to sufficient and sustainable energy resources to support the significant expansion of compute infrastructure, access to high-quality data, responsible AI models and efficient capital investment channels needed by intelligent economies.

Build sustainable AI infrastructure: This objective is focused on building and maintaining the foundational infrastructure for modern digital networks, ensuring that AI technology is powered in an environmentally responsible and sustainable manner while being accessible and inclusive.

Curate diverse, high-quality datasets: This objective is focused on the curation of available, accessible, diverse and inclusive high-quality data that considers the needs, characteristics, and cultures of a population and their languages. It also covers the creation of data governance, data protection and privacy frameworks.

Develop responsible AI models: This objective encompasses the development of open-source or closed models, foundational large language, or smaller and tailored domain-specific models. It also explores the creation of AI model self-governance and regulation.

Harness channels of AI investment: This objective is the key enabler of the foundational layer. Significant amounts of capital will need to be raised and efficiently channelled into impactful AI projects. New capabilities, such as public-private investment partnerships and the creation of specific AI infrastructure development funds, will be needed.

Growing new intelligent economies

This layer of the blueprint builds upon the capabilities of the foundational layer to reimagine the core activities undertaken in every sector of new AI economies. Core value chains in all sectors will be transformed by embedding intelligence within applications, workflows, devices and robotics – fundamentally changing how work is done.

Accelerate deployment of embedded intelligence: This objective encourages the automation of manual workflows through the accelerated deployment of AI in application workflows, physical devices, and robotics and the integration of AI with other advanced technologies. AI agents with embedded intelligence will offer the possibility of orchestrating complex activities.

Ignite an AI-powered industrial revolution: This objective refers to the need to prioritize the adoption of AI in sectors and public services. Sectors like healthcare, finance, advanced manufacturing, food and agriculture, and sustainable and responsible energy can enable downstream benefits to other sectors of the economy.

Cultivate ecosystems of entrpreneurship: This objective promotes the creation of AI innovation hubs, incubators and international entrepreneurial ecosystems, supported by venture funding and scale-up capital, all of which are key to nurturing new networks of innovators.

Putting people at the heart of intelligent economies

This layer of the blueprint shapes the direction of new intelligent economies. It encompasses the introduction of essential guidelines, policies and regulations that will shape and govern all the activities of the new intelligent economies, as well as the skills and workforce training required to drive human potential.

Elevate human potential: This objective focuses on empowering individuals through accessible high-quality education, skill development and workforce training. These initiatives ensure that communities and societies have the lifelong learning opportunities necessary to thrive amid the significant opportunities and disruptive changes brought about by AI.

Establish guardrails for ethics, safety and security: This objective refers to the importance of designing a future where the impact of AI on economies and wider society is guided by strong ethical guardrails, and safety and security controls.
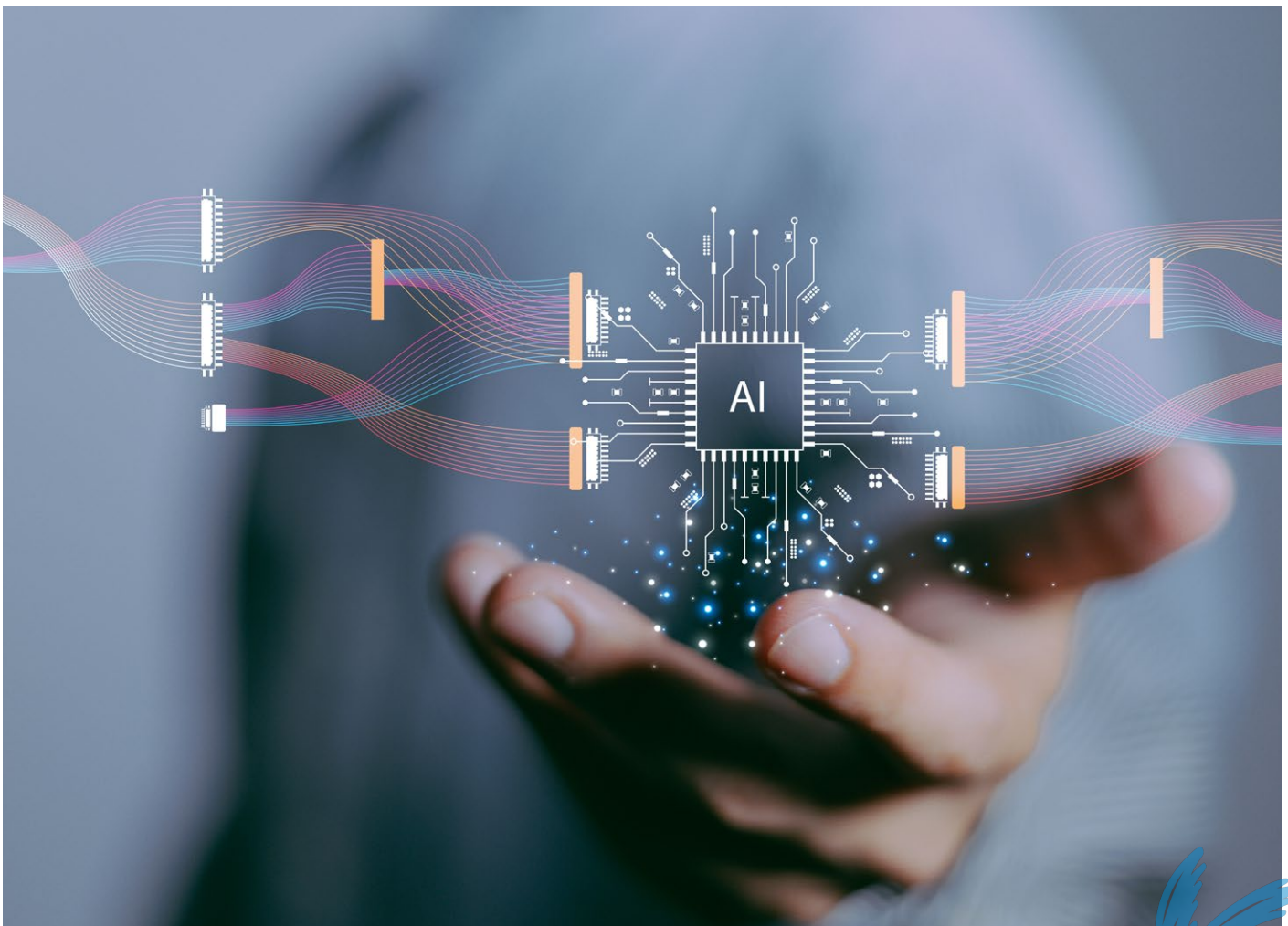
2 Spotlight on three strategic objectives

This section explores the three strategic objectives commonly prioritized in all geographic regions.

While all nine strategic objectives must be considered holistically to drive an effective AI strategy, feedback from government, enterprises and academic stakeholders involved in the development of this white paper identified three that are the most often prioritized within national AI programmes: building sustainable AI infrastructure, curating diverse and high-quality datasets, and establishing guardrails for ethics, safety and security.

This section provides a comprehensive analysis of these three objectives, including an outline of the key challenges, necessary enablers and examples of practical decisions that stakeholders can make.

2.1 Build sustainable AI infrastructure

Delivering sustainable and resilient AI infrastructure will require significant investment and cross-sector collaboration to create scalable, secure and environmentally responsible systems. The challenges are complex and multifaceted, requiring new capabilities involving the coordination of efforts at global, regional and national levels.

TABLE 1 **Key challenges in building sustainable AI infrastructure**

Key challenges	Examples of successful initiatives
High energy consumption and environmental impact	**Advanced energy programmes to power data centres:** Collaborative agreements between data centre firms and energy providers can support the deployment of sustainable energy such as wind, solar or nuclear to power the massive demands for compute. **Energy efficient AI model development:** Organizations are complementing large models with smaller sector-specific models trained on narrow datasets to optimize energy consumption during large language model (LLM) training. **AI optimized energy consumption:** Use AI to optimize energy management by predicting consumption patterns, forecasting demand requirements and automating distribution.
Significant scale of investments required	**Regional sharing of AI infrastructure:** Data centre capacity is being shared between countries via regional clusters and arrays. **Incentives for private sector investment:** Governments are introducing tax incentives and financial grants and creating the wider enabling environment (through AI national strategies, regulatory reforms, capacity building, etc).
Non-secure and non-resilient AI supply chains	**International trade corridors:** Trade agreements between international partners, bilateral or multilateral agreements, and lists of trusted suppliers are enabling resilient and diverse AI supply chains. **National AI clusters:** Governments are facilitating the development of clusters that enable the research, design and manufacturing of AI critical hardware to stay onshore. **AI cloud resources:** Collaboration with home-grown technology firms and global leaders of cloud infrastructure are contributing to creating trusted national sovereign clouds.
A growing digital gap	**Partnerships with network providers:** Some markets are now providing access to emerging high-speed and full coverage internet networks such as satellite internet constellation or collaborating with telecommunication providers for mobile internet deployment.
High cost of current generation of internet devices	**Device subsidy programmes:** Subsidized low-cost devices and network connectivity are supporting low-income and digitally disadvantaged groups. **Low-cost AI optimized devices:** Collaboration with technology providers and non-profit organizations is providing widespread access to devices for impactful AI use cases.

Building sustainable AI infrastructure requires a coordinated action plan involving many stakeholders. A preliminary set of five capabilities frames how this strategic objective can be delivered:

Sustainable and responsible green energy

To minimize the environmental impact of AI, it is crucial that the rapid expansion in data centres is powered by sustainable and responsible energy sources. The substantial financial investment in this infrastructure in some regions will not be affordable for most countries. Therefore, viable alternatives will be necessary, alongside strong collaboration among energy providers, environmental organizations, technology firms and governments.

Illustrating the substantial scale of the commitments that global tech firms have begun to make in the most mature AI markets, Microsoft recently signed a power purchasing agreement in the US to buy carbon-free energy using only nuclear power.[1] This agreement will reopen the Three Mile Island plant, shut down since 2019, solely to supply the Microsoft data centre with green energy.

For the benefit of emerging and developing economies, the World Bank has created a $2 billion, 10-year, multi-phased initiative to add 15 gigawatts (GW) of renewable energy capacity (enough to charge 650 million electric cars every year). The plan aims to eliminate around 240 million tonnes of carbon emissions (equivalent to avoiding the combustion of 100 billion litres of gasoline). The first initiative of the programme involves a $657 million financing facility for Turkey and an enabling framework to attract private capital to scale up renewable energy.[2]

As AI use cases expand, extensive decarbonization opportunities are emerging to support global climate and energy conservation goals. AI is already being embedded into building and network management, predictive maintenance, grid optimization and fleet management. Some use cases demonstrate conservation rates of up to 60%, with potential for further optimization.[3]

Secure networks and resilient AI supply chains

Resilience means that national critical infrastructure and enterprise AI systems are protected against disruption and can withstand cyberattacks and other risks. Mitigating these risks necessitates cooperation among cybersecurity firms, infrastructure providers and governments to develop robust AI infrastructure and associated regulatory guardrails.

Foreign investment plays a significant role here. It can accelerate development and provide essential resources but may also create geopolitical complexities. Without a strategy to ensure the diversity of AI hardware, countries may find themselves grappling with strategic and political considerations, particularly related to national security and economic sovereignty. Governments are thus compelled to assess the implications of being reliant on other countries or tech firms for critical infrastructure.

Governments can guide industry to deploy resilient, scalable and secure foundations for AI by establishing a national AI security framework, facilitating public-public or PPPs, or directly leading AI infrastructure development. These strategies offer various balances between government control, private sector involvement and international cooperation.

The development of new international trade corridors presents another viable route to building resilient AI supply chains, offering flexibility, reduced risk, and improved resilience through diversified sourcing and distribution networks. Trade corridors can alleviate supply chain issues related to AI hardware (such as microchips and critical resources like cobalt used in semiconductors) by improving material access and streamlining transport. The NY SMART I-Corridor illustrates the potential of trade corridors; it aims to establish a world-leading semiconductor cluster by joining more than 100 regional semiconductor suppliers together to provide local industries with expansive growth opportunities.[4]

Access to high-speed connectivity

Access to high-speed networks is crucial for the effective functioning of AI systems and to encourage inclusive digital participation. Expanding this infrastructure, especially in underserved areas, can represent a significant opportunity for telecommunication providers and technology firms. Currently, approximately 2.6 billion people (one-third of the global population) remain offline.[5]

Digital public infrastructure (DPI) is a set of secure and interoperable digital systems built on open standards. They enable a community of competitive market players to provide innovative digital services to deliver public service objectives. DPI is another way to bridge the digital divide and aid inclusion by enabling businesses and citizens to gain access to online resources like digital payments, healthcare services and technology.[6]

AI is being added to DPI to personalize user interactions and translate languages in real time. Additionally, DPI can be used as a catalyst for AI

innovation through the development and sharing of open AI models that can be replicated, modified and shared within the constraints of secure environments. Yet the integration of AI with DPI can also bring new challenges, such as the risk of large-scale data breaches. The United Nations DPI Safeguard Framework outlines an approach for mitigating risks at both individual and societal levels.

Regionally, India has been a pioneer in DPI. The widely successful deployment of the Unified Payments Interface (UPI) for small payments, used for 11.7 billion transactions in 2023, demonstrates how DPI can provide inclusive access to high-speed networks for enabling innovative and impactful solutions at a low cost.[7]

Access to scalable and affordable compute

Scalable and affordable compute capacity is also essential for supporting large-scale AI applications. The global AI infrastructure market was valued at $35.42 billion in 2023 and is projected to grow at a compound annual growth rate (CAGR) of 30.4%, reaching $223.45 billion by 2030.[8] Governments are significant investors. The US Federal Government, for example, spent $3.3 billion on AI in fiscal year 2023, more than double the $1.38 billion spent in 2018.[9] A recent report by the Tony Blair Institute for Global Change notes that care should be taken as broad investment in high technology will not translate to compute capability, meaning a specific AI compute strategy is needed.

Tech companies and private investors (including private equity, asset finance funds and infrastructure funds) can play a significant role in developing large-scale data centres. One alternative to training large language models (LLMs) in large data centres is to use small, domain-specific models that provide narrow-focused expert intelligence for a fraction of the cost of training a large language model. This can be an effective strategy for smaller countries and enterprises.

Country collaborations can also help provide access to compute. In one recent successful example, Rwanda and Qatar signed a memorandum of understanding (MoU) to enhance collaboration in R&D in AI, building digital public infrastructure for innovation and transformation.[10]

The International Computation and AI Network (ICAIN) is a Swiss initiative with a global focus on broadening access to AI resources for sustainable development research. It connects AI capabilities, such as computing power, data and expertise with research projects aligned with the UN Sustainable Development Goals. ICAIN uses two supercomputers and draws on the expertise of experienced policy-makers and AI research experts in Europe and Africa to develop AI models that benefit societal needs.

Access to AI-ready devices

The use of smartphones and computers has increased significantly in the past decade, with low-cost devices (such as the affordable Reliance Jio smartphone) driving adoption within the Global South.

Within the context of an inclusive national AI ecosystem, low-cost devices can be used to run AI-enabled applications that have been optimized to work with limited compute capability, weak internet connectivity and low levels of battery storage.

An alternate way to increase access to AI-ready devices is to subsidize the distribution of devices. Singapore's Digital for Life initiative under the Smart Nation Singapore programme, in partnership with the Edison Alliance, provides subsided devices to low-income families through PPPs with telecom and tech providers.[11] Additionally, there are numerous low-cost devices that can be used to facilitate inclusive AI access, such as the previously mentioned Jio smartphone and Computer Aid. The latter, in partnership with large technology companies, provides access to computers and mobile devices.

2.2 | Curate diverse, high-quality datasets

Data is crucial for developing equitable, accurate and fair AI models. Various data-related challenges exist, including data accessibility, imbalance and ownership. Different methodologies are being implemented globally to address these issues.

TABLE 2 | **Key challenges in curating high-quality and diverse datasets**

Key challenges	Examples of successful initiatives
Access to high-quality data	**Open data platforms:** Government programmes are encouraging the development of open data sharing through the mutual sharing of public and private datasets. **Synthetic data:** Synthetic data is being used when there is a lack of diverse dataset availability, specifically for model training requirements. **Transparent multi-sided data markets:** Developing marketplaces that allow for the structured exchange of data are helping to free data currently locked away within large platforms.
Addressing current data inequity	**Diverse and inclusive regional datasets:** Capturing and curating datasets that represent local communities ensures that regional knowledge and insight are represented within AI model development. **Digital language banks:** Governments, the private sector and non-governmental organizations (NGOs) are collaborating to capture differences in idioms, cultural norms and religious considerations to build diverse language training datasets. **Data equity approach:** The adoption of a data equity approach across industries is helping to ensure that data represents all parts of the population.
Increasing data ownership considerations	**International data sharing agreements:** Cross-border data flows within bilateral or multilateral trade agreements are accelerating the pace of innovation and AI product deployment while protecting national interests. **Data residency requirements:** National security and data protections are being governed through data residency requirements, which are also impacting AI regional infrastructure investment.
Keeping pace with advancements in AI	**Data governance frameworks:** Frameworks and data protection rules are providing robust guidelines to ensure data accuracy, reliability, consistency, licencing and compliance across all stages of the AI development life cycle. **Consensus on data quality:** National and regional collaboration can help build parameters for collecting high-quality data, including the timeliness, accuracy, completeness, representativeness and consistency of metadata.
Lack of trust in AI	**Robust AI disclosure requirements:** These are being developed to ensure that individuals and organizations understand when their outputs are AI-derived, while providing greater transparency on sources. **New guidance for the thresholds of data collection:** Refreshed guidelines on data privacy are being adopted to address risks related to personal data collected by AI. **Opt-in/out approaches:** Organizations are exploring the possibility of providing an opt-in/opt-out approach for individuals to make informed choices on the benefits of AI usage versus their choice not to engage.

Curating diverse and high-quality datasets requires a coordinated action plan involving many stakeholders. A preliminary set of five capabilities frames how this strategic objective can be delivered:

Available and accessible data

To realize the transformative nature of AI, data must be available and accessible for AI model development so that AI can truthfully and accurately represent the spectrum of communities it aims to empower. In the context of inclusive AI, it is important to consider the sensitivity, relationship, originality and value of data for model development. Globally, governments have committed to the United Nations Global Digital Compact, which emphasizes the need for multistakeholder cooperation for the development and deployment of open data, software and AI models.

Fugaku LLM, for example, is a Japanese-based open-source LLM developed by a public-private and academic partnership.[12] Trained on over 380 billion tokens of data, significant effort was made to ensure that at least 60% of the training data originated in Japan for a Japanese audience.

When data is not available, artificially generated data (known as "synthetic data") can bridge the gap.[13] However, while synthetic data can be helpful, training a model purely on synthetic data can result in narrow model outputs, leading to the erosion of the diversity that the synthetic data is aiming to address.[14]

Diverse and inclusive data

Equitable data is not a luxury; diverse and inclusive datasets are essential for creating AI that reflects and serves all of humanity. The World Economic Forum's Global Future Council on Data Equity defines data equity as the shared responsibility for fair data practices that respect and promote human rights, opportunity and dignity. Data equity is a fundamental responsibility that requires strategic, participative, inclusive, proactive and coordinated action. It aims to create a world where data-based systems promote fair, just and beneficial outcomes for all individuals, groups and communities.[15]

National language models are an important new way to support data equity. A PPP between the United Arab Emirates government and G42 has developed one of the world's first LLMs based specifically on modern standard Arabic (understood across the Middle East) and regional diverse spoken dialects.[16] Known as "Jais", the LLM draws on local media reports and social media posts to ensure that locally spoken languages are included within the LLM development while also considering cultural norms. Taking inspiration from Google Research's language inclusion work and the concept of digital language banks, Jais should act as a catalyst to enabling region-specific model requirements.

Additionally, Cohere has developed Aya, a dataset (more specifically, a digital language bank) that represents one of the largest collections of multilingual models covering 114 languages, including rare and local dialects.[17] The Aya models and datasets have been released publicly with the intention of safely advancing the R&D of multilingual capabilities.

Data ownership and sharing

The controlled ownership of data enables governments to regulate how data is shared internationally, thereby reducing misuse and promoting trust in AI applications. This complexity of data ownership is now increasing with the emergence of the agent economy and multi-agent interactions, where data is modified many times during use.

The past few years have seen a shift to data residency restrictions, often justified as essential to national security. These restrictions are now shaping data centre investment as tech companies look to comply with data residency requirements, operational compliance and, in some cases, the need for individual consent. Microsoft's recent announcement of significant investment into cloud services in Saudi Arabia,[18] for example, is partly driven by market demand and partly by evolving regional data residency requirements.

Data protection and privacy

Emerging privacy challenges such as deepfakes, AI-generated misinformation and high-profile data breaches are increasing mistrust in AI. Tools such as the World Economic Forum's Digital Trust Framework can support regulators and industry leaders in considering shared goals and values in the development, use and application of AI.[19]

Disclosure requirements mandate organizations to share information about their data practices, including how data is collected, used and protected. Broadening these requirements to include AI-derived data enhances data protection. It requires companies to clarify how they use AI to process and generate insights from personal information.[20]

Expanding these requirements in this way may mean that companies need to offer their users an opt-in/out option to consent to expanding the purpose for which their data is used.

Data life cycle management

Regulatory tools remain key to safeguarding the privacy and security of data. Existing national data governance frameworks can be adapted and employed to ensure data is managed responsibly in the context of AI development, deployment and use.

International agreements on cross-border data flows are becoming increasingly vital tools to minimizing regulatory obstacles, enhancing collaborative research and knowledge sharing related to AI, and building trust in data sharing.

Collaboration with stakeholders at regional and global levels can lead to the development of shared terminology of concepts relating to privacy and data protection, thereby promoting clarity and effective communication between all stakeholders. Data intermediaries and stewards, along with leadership from chief data officers, have an important role to play in guiding the data strategy for collecting, sharing and using data.

Data free flow with trust (DFFT) policies enforce the need to govern the flow of data, both within the data type and how it is used,[21] however more comprehensive data governance is required to ensure that AI is developed responsibly and ethically. This does not happen organically, and, given the recent advancement of AI, governments must address their wider data governance approach to ensure that data is managed responsibly, with safeguards to protect privacy, security and ownership.

2.3 | Establish guardrails for ethics, safety and security

Robust ethical and regulatory frameworks for AI are essential to ensuring that technology benefits society while reducing risks. Establishing standards prevents misuse, bias and ethical breaches, strengthening trust in AI and promoting responsible development and use.

TABLE 3 | Key challenges in establishing guardrails for responsible AI

Key challenges	Examples of successful initiatives
Mitigating bias, ensuring equity and inclusion	**Consensus on ethical AI:** Consensus can be reached through collaborations between international and regional bodies, along with industry and civil society engagement. **Awareness campaigns:** Initiatives that solicit cultural and regional feedback to inform policy development are being prioritized within historically underrepresented groups and communities that do not fully trust AI.
Navigating evolving regulatory landscapes	**Enhanced data and technology regulations:** These are helping organizations to consider the changing landscape within the context of AI while assigning responsibilities and ownership of AI's regulatory challenges. **Risk-based regulatory approaches:** These are being used to ensure regulation remains in line with the fast-paced advancement of AI, addressing the balance between supporting innovation within defined AI safety and security considerations.
Securing AI against emerging risks	**AI safety bodies:** These bodies are contributing to the development of global and regional AI safety standards. **Agreement to "red lines":** Defining the highest-risk use cases through the continuous dialogue between all stakeholders in the AI value chain
Implementing accountable AI practices	**Adaptation of existing AI regulatory frameworks:** Governments and industry are using regulation and self-regulation to encourage operationalization of self-governance.
AI intellectual property (IP) rights and legal uncertainty	**Alignment on global IP standards:** Collaboration between international IP boards and industry groups is ensuring that emerging AI technology definitions are common within rights and legal frameworks. **International AI IP sharing platforms:** These are being developed to enable cross-boundary commercial partnerships and alignment around R&D outcomes.

Establishing guardrails for ethics, safety and security requires a coordinated action plan involving many stakeholders. A preliminary set of five capabilities frames how this strategic objective can be delivered:

Ethical guardrails

Ethical guardrails are essential for building societal trust and ensuring AI systems align with both global and local values. AI systems predominantly trained on Western-centric data risk perpetuating cultural biases when deployed globally, thereby creating ethical dilemmas in culturally diverse settings.

Efforts like the Organisation for Economic Co-operation and Development's (OECD) International Standards and regional initiatives such as the African Union's Continental AI Strategy play crucial roles in reflecting diverse values. However, the lack of universally accepted ethical standards significantly complicates the implementation of ethical principles in AI systems.

As AI ethics governance evolves, there is a growing recognition of the need for culturally sensitive approaches. In 2024, eight global tech companies announced their intention to align with the United Nations Educational, Scientific and Cultural Organization's (UNESCO) Recommendation on the Ethics of AI,[22] which emphasizes cultural sensitivity in AI development and deployment.[23] Initiatives in Australia, Canada and New Zealand focus on integrating indigenous knowledge and perspectives, such as those of the Māori, into AI systems.[24] Similarly, frameworks developed by the Council of Europe[25] and Singapore reflect their unique societal values and risk tolerances.

However, the UN's 2024 report, *Governing AI for Humanity*, highlights a critical current gap: "whole parts of the world have been left out of international AI governance conversations … primarily in the Global South".[26] This homogenization of AI ethics, dominated by perspectives from the Global North, risks excluding diverse cultural philosophies and interests worldwide. Addressing this issue requires stakeholders to commit to comprehensive approaches to ethical AI development and deployment.

Multiple international AI governance initiatives are being put in place, including UNESCO's Global AI Ethics and Governance Observatory,[27] the Readiness Assessment Methodology (RAM) tool,[28] the Hiroshima Principles[29] and the OECD's ethical AI governance framework.[30] While these efforts lay a strong foundation, there remains a critical need for further action and broader agreement on global ethics frameworks for AI.

Responsible use guardrails

Responsible use guardrails promote the ethical and responsible management and use of AI across various sectors, helping to prevent harmful applications while maintaining public trust and accountability. The recently published USAID AI Action Plan report notes the need for significant stakeholder engagement, with governments providing strategic vision, and academia addressing complex challenges with civil society.

Establishing responsible AI practices requires a thoughtful approach to ethical standards, comprehensive transparency initiatives and a continuous dedication to societal improvement in various technological domains. The challenge encompasses not only the creation of these standards but also the cultivation of public trust and the maintenance of accountability amid the swift progression of AI technologies.

Self-governance tools have been widely adopted by the largest developers of AI models, such as Microsoft's Responsible AI Principles,[31] Google's AI Principles[32] and Salesforce's Office of Ethical and Humane Use.[33] The promotion of self-governance processes should be encouraged within the small and medium-sized technology business community.

However, self-regulation presents a host of challenges such as limited oversight and accountability. Self-regulation alone can sometimes be insufficient and necessitates a degree of governmental intervention to ensure consistency in the implementation of responsible and ethical AI principles.

Safety and security standards

AI poses risks that are both known and still emerging, particularly as researchers progress towards advanced AI development, such as artificial general intelligence (AGI). To mitigate these AI safety and security risks, it is crucial to first establish clear policy "red lines" and safety guardrails.

The EU Artificial Intelligence Act[34] categorizes AI applications into risk levels, setting requirements for high-risk areas like critical infrastructure while promoting innovation in low-risk sectors. This approach defines "red line" areas where AI poses unacceptable risks. In another example, the collaboration between the US and UK, through their AI Safety Institutes,[35] focuses on developing shared frameworks for testing advanced AI models, emphasizing international collaboration. The NIST AI risk framework[36] is an example of a voluntary structure for managing AI risks, emphasizing trustworthiness and alignment with international standards but still lacking in enforceability and global consensus.

A global framework and international body for AI could set boundaries on high-risk technologies, such as autonomous weapons and mass surveillance systems. The recent collaboration between the UK, US and Canada on AI in the nuclear sector[37] highlights the importance of international cooperation, emphasizing risk management and balancing human oversight with AI autonomy.

AI regulations

The rapidly changing regulatory landscape for AI presents significant challenges for industries delivering technological advancements at regional or global scale. Companies must adapt to complex and evolving AI-specific regulations across various jurisdictions while ensuring compliance with data protection laws and industry standards. Regulatory approaches vary widely, from hands-off to hands-on, and can differ even within regions.

A hands-off approach to regulation minimizes government intervention, allowing for rapid innovation and market-driven growth by reducing barriers to entry. While this creates an environment conducive to experimentation, it has led to public concerns over privacy violations and the misuse of technologies like facial recognition. The alternative is a hands-on approach that promotes government intervention with clear guidelines and accountability mechanisms. The EU Artificial Intelligence Act is one example, setting regulated requirements for high-risk AI applications, aiming to protect public interests while encouraging innovation through structured oversight. Narrowly targeted regulation by governments can also be a valuable policy lever and can proactively prevent emerging AI risks while supporting innovation.

The World Economic Forum's *Governance in the Age of Generative AI* report[38] suggests that governments should enhance existing regulations, clarify authorities and assign responsibilities to adapt to AI's regulatory challenges. This includes addressing privacy, consumer protection, product liability and competition issues.

Legal frameworks

The advancement of AI has introduced new challenges related to IP, primarily owing to legal uncertainties surrounding AI-generated works and the unauthorized use of copyrighted materials for training AI models. Traditional copyright laws require meaningful human contribution, which generative AI frequently lacks, thereby complicating matters of authorship and ownership. Although this thinking is evolving within legal jurisprudence, ambiguities persist.

Existing laws addressing these challenges are intricate and continue to evolve, consisting of a patchwork of national regulations and ongoing legal debates. Prominent lawsuits underscore disagreements regarding whether AI-generated outputs that closely mimic copyrighted works constitute infringement or fair use. Interpretations differ significantly across jurisdictions. For instance, the EU's copyright directive includes exceptions for text and data mining,[39] while Japan has expanded fair use to cover certain AI training activities.[40]

To address these challenges, regional legal frameworks are necessary to manage the borderless nature of AI technologies effectively. Developing global IP standards, led by organizations like the World Intellectual Property Organization (WIPO),[41] will help ensure that AI intellectual property is safeguarded internationally.

Conclusion

Designing national and regional AI strategies

National or regional AI strategies can be effective tools for designing and implementing AI initiatives. They should also be endorsed at the highest level to demonstrate a commitment to long-term success. Achieving equitable access to AI necessitates a hybrid approach, combining a top-down approach to developing national and regional strategies with bottom-up initiatives that actively involve end users, individuals, communities, entrepreneurs, businesses and government administrations to uncover their needs.

Strategies must tackle the most pressing local challenges. Their long-term impact must be considered from the outset. For example, while responsible AI and data governance frameworks are essential, their development must consider the potential local impact these may have on innovation and investment decisions.

Adapting innovative solutions to the market

While there is no one-size-fits-all approach to tackling these challenges, it can be effective to replicate existing successful solutions developed elsewhere. For example, regional frameworks for sharing AI infrastructure and energy can overcome national resource limitations, while DPI can improve the reach of a country's digital and AI ecosystem for payments or for publishing open AI models. Centralized databanks offer an innovative way to create multilingual and inclusive local datasets to feed AI applications tailored to users' needs. Public-private subsidies can widen access to low-cost AI-ready devices and encourage small businesses to implement AI-powered applications.

Multistakeholder action at the global and national level

Technological advancements are projected to remain driven by the private sector. As such, it will become increasingly important for innovative AI solutions to be more inclusive of their expanding global user base.

The adoption of AI remains a significant challenge in many regions globally, especially within the small business sector. Collaboration between the private and public sectors can encourage entrepreneurs and small businesses to implement AI-powered applications through specific incentives and educational programs.

Governments can prioritize strategic sectors such as health, education, finance, agriculture and energy by implementing supportive policies aimed at advancing AI innovation and enabling these sectors to act as engines of growth. Additionally, governments, educational institutions and industries can collaborate to offer skills training, workforce development, and continuous learning opportunities. This will ensure that individuals are equipped to adapt to the evolving impact of AI on the workplace.

Academia and the education sectors are critical in cultivating the talent pool required to sustain the pace of innovation. Collaborations between the AI industry and various industrial sectors have the potential to uncover solutions to global challenges.

Towards a regional dialogue

The subsequent phase of this work will focus on implementing these recommended actions with active participation from regional stakeholders. Collective efforts will focus on assessing common challenges and proposing solutions aimed at developing or enhancing AI ecosystems.

Contributors

This paper is a combined effort based on numerous interviews, discussions, workshops and research. The opinions expressed herein do not necessarily reflect the views of the individuals or organizations involved in the project or listed below. Sincere thanks are extended to those who contributed to the drafting or review of the report, as well as those not captured below.

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Acknowledgements

Sincere appreciation is extended to the following working group members, who took part in dedicated interviews or provided critical input and feedback on the draft. Their diverse insights were fundamental to the success of this work.

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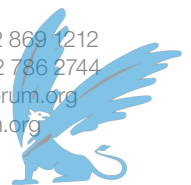
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