WORLD BANK GROUP

Devising a Strategic Approach to Artificial Intelligence

A Handbook for Policy Makers

The World Bank Group
1818 H Street NW Washington DC 20433
Telephone: 202-473-1000
Internet: www.worldbank.org

DISCLAIMER

RIGHTS AND PERMISSIONS

Acknowledgement

This handbook is a product of the Digital Vice Presidency at The World Bank Group (WBG).

It was prepared by Johan Bjurman Bergman (Digital Specialist, Artificial Intelligence (AI) Business Line (Lead Author)) and Sharmista Appaya (Lead, AI Business Line & Task Team Leader) with substantial inputs from Yolanda Lannquist (Consultant), Jane Munga (Consultant), and Aishwarya Viswanathan (Consultant). Christine Zhenwei Qiang (Director, Digital Core) provided valuable strategic guidance. The team would like to thank the peer reviewers Gian Boeddu (Senior Financial Sector Specialist), Meritxell Martinez (Senior Operations Officer, IFC), Tim Kelly (Lead Digital Specialist), Tiago Peixoto (Senior Digital Specialist), and Sharada Srinivasan (Economist) for their contributions. The team thanks Aldo Morri for editorial support, and Big Blue Communications for design and layout assistance.

This handbook is part of The World Bank's Artificial Intelligence Playbook currently being developed. It will continue to evolve to capture emerging technological advancements and to support the needs of policymakers.

The team is grateful to the Digital Development Partnership for co-financing the development of the handbook.

Abbreviations

3MTT	3 Million Technical Talent program (Nigeria)
AI	Artificial Intelligence
AI-CIU	AI Coordination & Implementation Unit (Malaysia)
APEC	Asia-Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
ASP	Adaptive Social Protection
AU	African Union
COE	Technology Centers of Excellence
EA-LION	Southeast Asian Languages in One Network
EC	European Commission
FMCIDE	Federal Ministry Communications, Innovation & Digital Economy (Nigeria)
GCG	Global Center on AI Governance
GIS	Geographic Information System
HICS	High-Income Countries
ICT	Information and Communications Technology
IFC	International Finance Corporation
ITU	International Telecommunications Union
LICs	Low-Income Countries
LLM	Large Language Model
LMICs	Low- and Middle-Income Countries
M&E	Monitoring and Evaluation
METI	Ministry of Economy, Trade, and Industry (Japan)
MINEDUC	Ministry of Education (Rwanda)
MINICT	Ministry of Information, Communication Technology and Innovation (Rwanda)
MISED	Ministry of Innovation, Science, and Economic Development (Canada)
ML	Machine Learning
NAIO	National AI Office
NCAI	National Council for Artificial Intelligence (Egypt)
NCAIR	National Center for Artificial Intelligence and Robotics (Nigeria)
NGO	Non-governmental Organization
NHS	National Health Service (UK)
PPP	Public-Private Partnership
PSF	The Private Sector Federation (Rwanda)
R&D	Research and Development
RAG	Retrieval Augmented Generation
RAIO	Responsible AI Office (Rwanda)
RDB	Rwanda Development Board (Rwanda)
SADA	Smart Africa Digital Academy
SBI	State Bank of India
SMART	Specific, Measurable, Achievable, Relevant, Timebound
STEM	Science, Technology, Engineering, and Mathematics
SWOT	Strengths, Weaknesses, Opportunities, and Threats
TB	Tuberculosis
ToR	Terms of Reference
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
WBG	World Bank Group
WiMLDS	Women in Machine Learning and Data Science

Contents

List of Figures

List of Boxes

List of Tables

How to Use this Handbook

Purpose

This handbook aims to assist policy makers in developing strategic national-level approaches to artificial intelligence (AI), supporting the responsible development and deployment of AI for public good. It offers a hands-on, structured, yet adaptable framework that can help policy makers tailor strategic AI approaches adapted to their unique contexts. Without being normative or prescriptive, the framework and tools outlined in the handbook offer guidance and provide a collection of emerging good practices to help each country find the most suitable approach.

The handbook does not presume that every country needs a national AI strategy but invites policy makers to evaluate and determine what type of strategic approach to AI suits their context best. The iterative and modular approach adopted in this handbook will help policy makers shape a vision, objectives, and policies that leverage their countries' unique strengths, while aligning with global frameworks and principles.

The iterative approach is realized through:

1. **An analytical structure for a strategic approach to AI,** outlining the building blocks required for adopting and scaling AI that will help policy makers articulate their approach and identify priority areas for AI deployment.
2. **A modular framework** consisting of seven modules, each with two to four actionable points, providing policy makers with practical guidance, structure, and policy options. For countries seeking guidance on specific areas, the modules can also be leveraged on a stand-alone basis.
3. **Practical tools including diagnostic questions, templates, processes, and tips** to facilitate the development of a strategic approach to AI.
4. **Key insights and lessons drawn from the analysis of 30+ national AI strategies** from various countries.

The handbook is structured into four sections:

- **Section 1** provides a short background and overview of the AI landscape, highlighting the urgency for countries of developing strategic approaches to AI development and adoption. It also presents some approaches to AI strategy development that policy makers can draw from, based on World Bank analysis of existing AI strategies.
- **Section 2** outlines global AI principles and frameworks and discusses how policy makers can engage with the global AI community to support regulatory harmonization and keep up to speed with the latest technology developments.
- **Section 3** presents common building blocks and outlines a schematic structure of a strategic approach to AI. It also provides diagnostic questions for assessing a country's current level of AI readiness and informing the baseline for strategic planning.
- **Section 4** outlines the framework for developing a strategic approach to AI consisting of seven modules and their respective activities. Each module includes diagnostic questions, processes, templates, and tips to help policy makers navigate the challenging process of formulating a strategic approach to AI.

The most important takeaways throughout the handbook are highlighted in tip boxes (Box 0.1) and stakeholder engagement boxes (Box 0.2).

Box 0.1: Tip Box

Key Tip Boxes

This handbook contains eight key tip boxes. They highlight particularly important or useful things for policy makers to remember as they move through the development process.

Box 0.2: Stakeholder Engagement Box

Key Stakeholder Engagement Boxes

This handbooks contains five key stakeholder engagement points for policy makers to consider. These are hands-on tips and guidance for engaging stakeholders at key points during the development process. A Stakeholder Engagement Guide provides detailed instructions for interviews and workshops to support productive and informative discussions.

1 Introduction and Background

1.1 Artificial Intelligence Strategies and Development

Artificial Intelligence (AI) has significant potential to help drive economic development and poverty reduction in low- and middle-income countries (LMICs). AI—including traditional and generative AI (GenAI)—is a tool that can help foster resilient, sustainable, and inclusive economic growth (Stanford Institute for Human-Centered Artificial Intelligence, 2024). AI tools can help improve the quality and efficiency of public sector service delivery by facilitating timely access to information and improving government operations and data-driven policy making. AI solutions can also support the development of human capital by increasing reach, personalization, quality, and targeting of healthcare, education, and social protection services (Molina et al., 2024). For a more in-depth discussion of different subfields of AI, see the World Bank Group publication Global Trends in AI Governance: Evolving Country Approaches.

While GenAI tools have quickly reached hundreds of millions of users globally, low-income countries (LICs) are lagging, even as "small AI" solutions gain ground. Global GenAI uptake has grown at an unprecedented pace, with middle-income countries (MICs) and high-income countries (HICs) accounting for similar shares of use traffic of popular AI tools (Liu and Wang, 2024). At the same time, LICs account for just 1 percent of GenAI traffic, GenAI tools remaining out of reach for over a third of the world population who don't access internet daily. While the use of "small AI" solutions—that leverage computing on devices and specialized data sets to drive impact in sectors including agriculture and healthcare—is expanding in LMICs, there is a risk that the emerging AI divide will become more pronounced. As the capabilities of GenAI tools improve, the AI divide may exacerbate inequality in access to information, jobs, and services.

To mitigate the AI divide, policy makers need to prioritize the development of a strategic approach to AI and support AI ecosystems development. Some studies suggest that AI may over time shrink the space for countries to generate well-paid jobs in high-skill services (Liu, 2024) and that countries that fail to develop a comparative advantage in high-skill services and delay AI adoption may face mounting difficulties creating jobs. The lack of well-paid jobs is likely to exacerbate youth underemployment and diminish social mobility, leading to stagnating or even declining living standards. This risk is particularly pronounced for developing economies already lagging in AI readiness and lacking the prerequisites for harnessing AI.

Specific prerequisites for harnessing AI depend on a country's vision and approach. Nevertheless, countries making rapid AI progress tend to share the four C's:

- *Connectivity (Broadband and Energy):* Access to reliable and sustainable energy, high-speed broadband connectivity, and AI-compatible devices for both data collection and running AI models are essential for AI functioning and adoption at scale. Increasing equitable access to these resources is central to preventing a widening digital divide both within and between countries.
- *Computing:* Availability of and access to high-performance computing (HPC) for processing large datasets and transferring data at scale is foundational for developing new, and fine-tuning existing, AI systems and increasingly for inference tasks—the "thinking" that AI models do to provide answers. In addition, data centers are required for data storage, processing, and exchange, as well as for hosting the HPC for AI.
- *Context (Data):* Availability and access to digitized, well governed, curated, high-quality multimodal data that reflects local contexts is indispensable for developing new, and fine-tuning existing, AI systems that would serve specific needs, reflect different values, and understand local languages.
- *Competencies (Skills):* Building AI literacy—the ability to safely and productively use AI systems—across society is key to driving AI use at scale. Developing skills, including specialized software development, to integrate AI in existing services and products is equally important. Advanced AI development often requires a foundation of STEM capabilities complemented by specialized skills including machine learning and algorithmic design to develop AI models and applications that respond to local needs (Cazzaniga et al., 2024).

In addition to the four C's, countries also need to invest in the following assets to gain the capacity to develop, deploy and use AI at scale:

- *Innovation Ecosystem:* A thriving AI innovation ecosystem is essential for translating AI advancement into practical applications. Innovation is supported by venture financing and a thriving community of AI researchers, practitioners, and investors that can exchange ideas and collaborate on projects. Investment in AI research and development (R&D) is also critical for building capacity and cutting-edge skills to support AI-based innovation.
- *Governance & Policy:* To enable responsible AI adoption and balance risks and benefits, policy makers must be agile and flexible as they develop risk-based approaches to regulation, fit-for-purpose governance frameworks, and appropriate safeguards. The World Bank publication Global Trends in AI Governance: Evolving Country Approaches provides more detail on this topic.
- *AI Use Cases:* To unlock AI benefits for economic growth, job creation, and services improvement, both private and public organizations must proactively adopt AI solutions and invest in AI adoption and integration of AI use cases. To enable AI adoption, organizations must be digitalized and have structured, high-quality data available for fine-tuning AI systems and building specialized applications, while ensuring the right safeguards are in place.

AI holds transformative potential for developing countries, but also comes with risks. Risks such as data privacy vulnerabilities, algorithmic bias, and workforce displacement can undermine social trust and inclusive growth. Adopting effective risk assessment frameworks, inclusive governance, and robust regulatory measures is essential for responding to these challenges. Decision makers can minimize unintended consequences and maintain public trust by integrating risk mitigation throughout AI initiatives. Addressing both sector-specific implications and broader societal risks will help ensure that AI benefits are realized responsibly and equitably. The World Bank paper Global Trends in AI Governance: Evolving Country Approaches discusses risks and governance approaches countries have taken in greater depth.

1.2 Developing a Strategic Approach to AI at the National Level

Having a strategic approach to AI would benefit most countries, but it does not have to be in the form of a national AI strategy. A national AI strategy[1] will benefit countries investing, or planning to invest, heavily in AI development and adoption. National level strategies are most effective in countries where some centralized leadership and consensus across national and sub-national bodies exists. However, some countries take different approaches, combining agency- and sector-specific requirements, non-binding guidance and codes of conduct, executive orders, and adherence to international frameworks such as the United Nations Educational, Scientific and Cultural Organization (UNESCO) Recommendation on the Ethics of AI and the Organisation for Economic Co-operation and Development (OECD) AI principles. The World Bank publication Global Trends in AI Governance: Evolving Country Approaches details these approaches, along with key considerations for adopting each approach. Sometimes, AI can be embedded within a broader digital transformation strategy, coordinating AI development with national infrastructure, connectivity, and digital governance priorities. Policy makers should assess what approach best aligns with their context, capacity, and priorities, while ensuring that AI-related investments do not create unintended risks.

Governments are increasingly developing strategic approaches to AI to chart the course for responsible AI development and deployment. Whether in the form of a national AI strategy or a collection of other tools, a strategic approach provides a vision and roadmap for AI development and deployment outlining how, when, and in what priority sectors a country will adopt AI solutions, while accounting for ethical considerations, regulatory oversight, infrastructure needs, and workforce preparedness. An AI strategy helps create shared understanding and outlines ways to address key barriers, policy gaps, and risks that prevent responsible AI adoption. As of 2025, over 75 national AI strategies have been published worldwide (Stanford Institute for Human-Centered Artificial Intelligence, 2024). While adoption is rising in the Global South, gaps still exist, particularly in Africa.

As AI capabilities evolve and adoption grows, the need for broader strategic guidance increase. Therefore, the questions whether, when, and how to implement a dedicated AI strategy have to be periodically reevaluated. Any national AI strategy must be backed by sufficient financial, human, and technological resources to support and guide stakeholders through development and implementation.

Most national AI strategies converge around a few key themes (*Figure 1.1*). Most countries define objectives in terms of unlocking the economic impact of AI and ensuring that benefits are shared across regions, sectors, and socio-economic groups. Encouragingly, ethical and responsible AI adoption is also a recurring theme. Several strategies set out specific objectives related to global AI value chain positioning: for example, as AI solution providers for the global market, global leaders in AI research, or as a "global test bed" for AI. Other strategies aim more broadly for enhancing competitiveness using AI or competing in the AI value chain. Some strategies define objectives in relation to international peers, such as OECD countries, in terms of AI readiness, or regional leadership. Several strategies also define objectives in terms of improving AI foundation and enablers by, for example, developing an open and secure data ecosystem, improving AI skills and literacy, and investing in AI R&D. A sub-set of strategies explicitly aim to leverage AI to transform the public sector by leveraging AI to turn ideas of policy makers and civil servants into practical solutions.

1 The terms governance, strategy, and policy are often used interchangeably but refer to distinct aspects of AI oversight and implementation. Governance refers to the frameworks and mechanisms that ensure AI is developed and used responsibly. Strategy defines a high-level vision and priorities, while policy translates strategy into specific rules and initiatives.

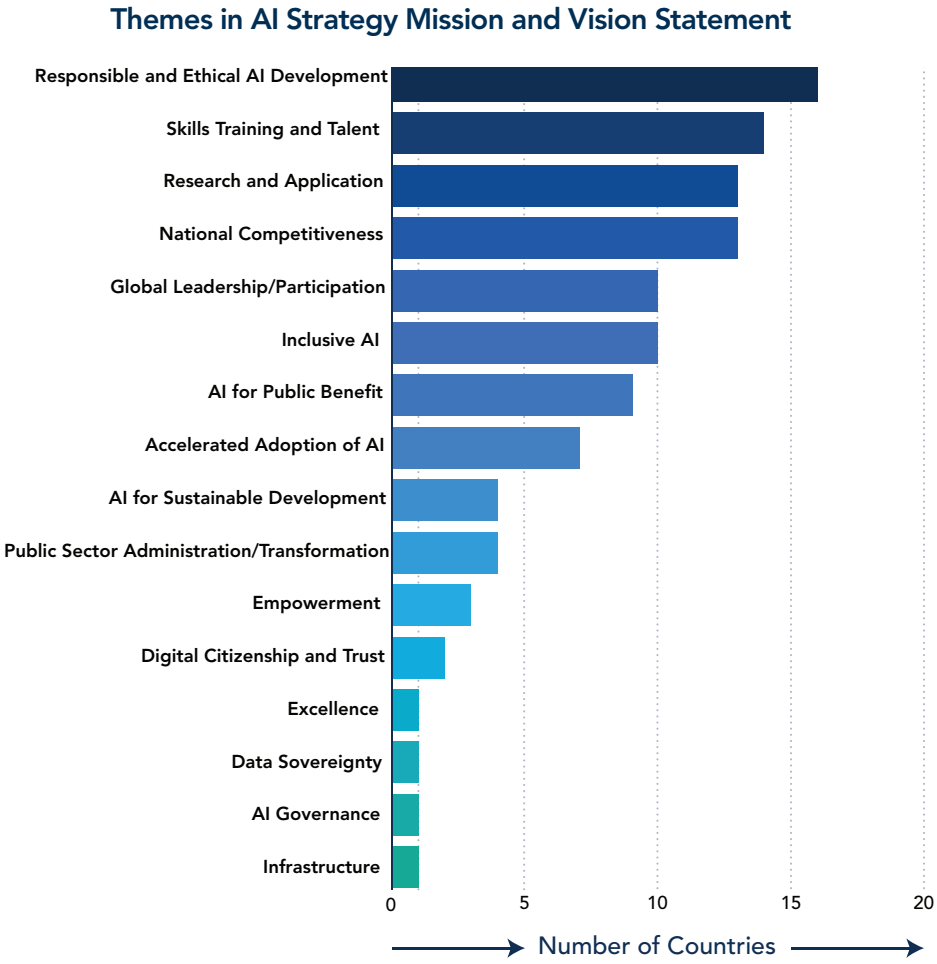


Figure 1.1: Number of Countries Featuring a Specific Theme in the Mission and Vision Statement of Their National AI Strategy. *Source: World Bank staff analysis, based on a sample of 30 national AI strategies*

Any strategic approach to AI must be coordinated with broader digital transformation, ICT, data, and cybersecurity strategies and roadmaps. For example, any strategic approach to AI will inevitably interact with data governance, privacy protection, and cybersecurity frameworks—often addressed in ICT and cybersecurity strategies. And investments in digital infrastructure, digital skills, and foundational ICT systems, which are already being undertaken by most LMIC and MIC governments, also enable AI development and adoption. Identifying and exploiting synergies between such "no-regrets" digital investments and AI can help enable faster and more cost-effective AI deployment while mitigating risks. Moreover, a cohesive approach to data, including governance and sharing will also help unlock greater value from AI applications. Similarly, cybersecurity efforts build public trust in digital and AI solutions, laying the foundation for rapid adoption. Coordination with existing strategies improves policy coherence and enhances long-term sustainability across the board.

Given the short implementation timelines of most AI strategies so far, incorporating lessons from prior digital strategies can help avoid pitfalls in strategy design. Lessons from the implementation of broadband, e-government services, and digital identification suggest that the implementation of AI frameworks may be challenged by the fragmentation of initiatives, limited stakeholder buy-in, the need for advance planning, and complex regulatory and ethical issues, including data privacy and security. While these broad areas can be helpful, countries should extract specific lessons from prior strategies as an important input for AI strategy development in their specific context.

1.3 Approaches to National Strategies on AI

Most national strategic approaches to AI rely on four factors, which countries combine in various proportions:

1. **Stakeholder engagement** to foster buy-in and ensure the strategic approach caters to private sector, academia, and civil society needs;
2. **Expert input** to ensure the strategic approach is technically sound and leverages the country's strengths for positioning in the global AI value chain;
3. **Stocktaking of AI use cases and applications** to understand how AI is being implemented and what use cases the strategic approach could support for the public good; and
4. **4. Identification of relevant international principles and frameworks** to align with global regulatory and risk mitigation efforts.

Box 1.1: Countries Emphasize Different Factors in the Design of their Strategic Approach to AI

Countries take varied approaches to developing their national AI strategies, emphasizing different factors based on their development priorities, institutional strengths, and societal needs. Some focus on broad-based stakeholder engagement, while others prioritize expert input, sectoral use cases, or alignment with global regulatory norms. These differences reflect the flexibility required for crafting effective, context-sensitive strategies for AI adoption and governance.

Emphasis on Stakeholder Engagement

Nigeria took a uniquely inclusive approach to developing its national AI strategy, emphasizing local stakeholder input and co-creation, and leveraging "human-centered" design. This methodology aligns with the country's National Development Plan 2021-2025, which prioritizes inclusive stakeholder contributions (Federal Government of Nigeria, 2021). A four-day National Artificial Intelligence Strategy (NAIS) Workshop brought together over 120 participants, including AI researchers, practitioners, technology companies, civil society representatives, and other key actors. The workshop, organized by the Federal Ministry for Communications, Innovation & Digital Economy (FMCIDE), along with local and international organizations, resulted in a draft national AI strategy outlining the vision, strategic objectives, pillars with target outcomes, and risk mitigation strategies. The strategy was published in August 2024 (National Center for Artificial Intelligence and Robotics, 2024). The Nigeria AI Collective operating within the National Center for Artificial Intelligence and Robotics (NCAIR) provides a platform for knowledge sharing, capacity building, innovation and research, policy advocacy, and international AI collaboration, cementing Nigeria's bottom-up approach to AI development (Luminate, 2024).

Emphasis on Expert Input

The Egyptian Cabinet initiated the AI strategy process by forming the National Council for Artificial Intelligence (NCAI), which includes representatives from across the government and independent AI experts. The Council, particularly its Technical Committee, was tasked with developing and overseeing the implementation of Egypt's National AI Strategy. The strat-

(Continued)

(Box 1.1: Countries Emphasize Different Factors in the Design of their Strategic Approach to AI, continued)

egy built on the work carried out in 2019 by the Ministry of Communications and Information Technology and the Ministry of Higher Education and Scientific Research, along with the input from independent experts and private sector companies (Ministry of Communications and Information Technology, 2021).

Emphasis on AI Use Cases

India's AI policy approach centers on AI use cases to benefit society in an inclusive manner. The initiative aims to discover and demonstrate use cases that matter most in the Indian context and work towards addressing gaps in infrastructure, talent, and the ecosystem to unlock the potential of AI (Abdhut India, n.d.). NITI Aayog, the national think-tank, identified priority AI applications in key sectors such as education, healthcare, agriculture, in addition to language translation. This approach is dubbed "AI for All," as it seeks to democratize AI applications for inclusive development (OECD.AI, n.d.). Similarly, the "Abdhut India" ("Amazing India") movement aims to coordinate diverse stakeholders from companies, government, academia, and citizens to harness the power of AI to improve the lives of all Indians.

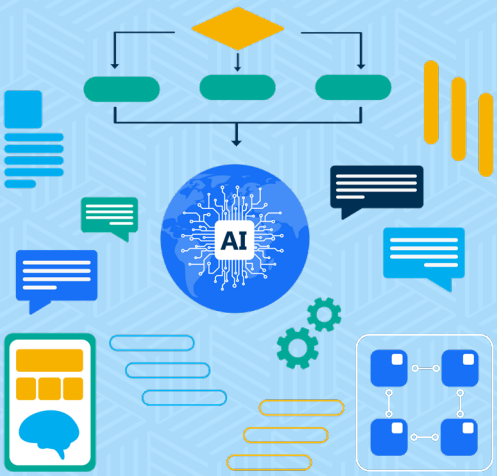
Emphasis on Alignment with Global Regulatory Efforts

The Republic of Korea developed its national AI strategy under the leadership of the Ministry of Science and ICT to coordinate efforts among government agencies. The collaborative approach included key government bodies, industry leaders, academic institutions, and research organizations. The process involved forming expert committees, conducting public consultations, and integrating input from industry and academia to align the strategy with national priorities and global developments, including the establishment of AI Ethical Standards consistent with global norms and trends. The approach aimed to foster innovation, address societal challenges, and position South Korea as a leader in the global AI landscape.

Countries place varying degrees of emphasis on these mechanisms, depending on their unique priorities and context—there is no "one-size-fits-all" model. Policy makers can consider examples of national AI strategies that leverage different mechanisms (Box 1.1), while aligning their AI strategy with their country's economic and social development priorities, existing governance and policy processes, and cultural and social values, including language.

As the AI policy field is new and resource-intensive, many governments supplement their expertise with external technical assistance. A number of organizations provide technical and financial support to help governments across LIMICs and MICs to develop strategic AI approaches. These include development agencies and international organizations such as UNESCO and the United Nations Development Programme (UNDP), the World Bank Group (WBG), as well as specialized non-governmental organizations (NGOs) and bilateral development agencies.

2 Engaging and Aligning with Global AI Communities and Frameworks



International AI principles and frameworks can support responsible AI adoption in LMICs, helping address risks such as bias, privacy concerns, and unequal access. Examples include the G7 Hiroshima Principles (*Box 2.1*), the G20/OECD AI Principles, and UNESCO's Recommendation on the Ethics of AI. By founding their national approach on these guidelines, policy makers can help harmonize the international AI governance ecosystem, while strengthening trust, reducing risks, and improving transparency and accountability. However, it is important to adapt these global frameworks to the specific country contexts, including through stakeholder consultations. The World Bank publication Global Trends in AI Governance: Evolving Country Approaches lays out additional principles.

Box 2.1: G7 Hiroshima Process, International Guiding Principles for Organizations Developing Advanced AI systems

The International Guiding Principles for Organizations Developing Advanced AI Systems aim to promote safe, secure, and trustworthy AI worldwide (G7, 2023). They are meant to guide organizations that develop and use cutting-edge foundation models and generative AI. As non-exhaustive, they build on OECD AI Principles to facilitate rapid AI advances, helping stakeholders design, develop, and deploy AI while mitigating risks.

In brief, the nine principles emphasize:

- **Risk Management & Safety:** Identify, assess, and mitigate AI-related risks to protect users and society.
- **Accountability:** Clearly assign responsibility for AI outcomes and maintain oversight throughout the AI lifecycle.
- **Transparency & Explainability:** Communicate how AI systems function, their limitations, and potential impacts.
- **Fairness & Inclusion:** Prevent bias, ensure equitable treatment, and consider diverse user needs.
- **Data Protection & Privacy:** Safeguard personal information and uphold confidentiality.

(Continued)

(Box 2.1, continued)

- **Robustness & Reliability:** Design AI to be technically dependable and resistant to manipulation or failure.
- **Human-Centered Values:** Respect human rights, dignity, and well-being as core ethical foundations.
- **Collaboration & Knowledge Sharing:** Work with stakeholders and share best practices for responsible AI development.
- **Social & Economic Impact:** Evaluate AI's broader effects on labor, the environment, and society to ensure sustainable benefits.

Source: G7 Hiroshima Principles

In addition to principles and frameworks, governments can engage through multiple AI governance platforms. The WBG, the United Nations, International Telecommunications Union (ITU), UNESCO, and the OECD/Global Partnership on AI strategic alliance, among others, are major international platforms for AI governance, alongside a growing number of international convenings and conferences. The G20 and G7 are increasingly active platforms for AI governance, the UN Global Digital Compact is currently one of the most inclusive platforms for diverse countries to align on a common, inclusive digital development agenda. Beginning in November 2023 with the UK "AI Safety Summit", countries are hosting a series of AI Summits to discuss AI governance and actions.

Countries should identify AI governance forums in which to engage to keep up to date about international frameworks and best practices, and to help shape the future of AI. These platforms provide opportunities to engage with other nations, share experiences, and contribute to global standards and guidelines. International forums can also offer insights into AI technology trends and their societal impacts, helping governments better understand potential benefits, risks, and challenges as they emerge. Participation can help governments align AI approaches with international norms and principles, while also advocating for their own interests and values. Governments can also help establish an international regulatory framework to foster innovation and reduce complexities, while providing input in new agreements to better mitigate risks and promote innovation, such as the Convention on AI and Human Rights outlined in ***Box 2.2***. Moreover, participation in global forums can promote partnerships and collaborations between local businesses and larger international companies, universities, and other key actors.

Box 2.2: The First Legally Binding Treaty to Ensure AI Upholds People's Rights

In May 2024, The Council of Europe adopted the first international treaty aimed at ensuring the respect of human rights, democracy, and the rule of law in the use of AI systems.

The Framework Convention on Artificial Intelligence and Human Rights, Democracy and the Rule of Law, which is also open to non-European countries, sets out a legal framework covering the lifecycle of AI systems and addresses risks they may pose, while promoting responsible innovation.

In line with the EU AI Act, the convention adopts a risk-based approach for design, development, use, and decommissioning of AI systems, considering all potential negative consequences of using AI systems. The treaty covers AI in the public sector—including companies acting on its behalf—and in the private sector (Council of Europe, 2024).

Participation in regional coordination bodies can help strengthen a country's AI maturity and governance. Regional coordination can enhance resource efficiency by leveraging investments in digital infrastructure, computing resources, and academic exchanges. Regional bodies can help shape and share best practices and convene countries to discuss and align common positions—such as the Cartagena AI Declaration (***Box 2.3***)—and to prepare for global summits. Examples of regional platforms include the Asia-Pacific Economic Cooperation (APEC), Association of Southeast Asian Nations (ASEAN), Smart Africa, the African Union (AU), and EA-LION (Southeast Asian Languages in One Network).

Box 2.3: The Cartagena Declaration on AI Governance, Ecosystem Building and Education

Signed by representatives of 17 Latin American countries in August 2024, the Cartagena Declaration on AI Governance, Ecosystem Building and Education is and example of a regional regulatory harmonization initiative that promotes ethical and responsible development of AI. The countries pledged to:

- Cooperate on developing and using AI in ethical, safe, inclusive, efficient and dynamic ways, and to harness its potential to spur economic growth;
- Exchange know-how, data and good practices, as well as experiences of AI use in the public sector; and
- Use AI-based solutions to achieve the UN's sustainable development goals.

As relates to AI governance, regional countries committed to developing a joint ethical framework, strengthening the voice of the region and increasing its influence in global AI governance (Ministerio de Ciencia, Tecnología, Conocimiento e Innovación, 2024).

Governments can leverage the strong international interest in AI to identify partners and prepare for the AI age. LMIC governments have a unique opportunity to tap into knowledge, expertise, and resources from countries, organizations, and companies leading AI innovation. By forming strategic partnerships, governments can accelerate AI capabilities development, access cutting-edge technologies, adopt global best practices, and generally keep up with AI developments. Collaborations can also lead to financial, technical, and capacity support.

3 Key Building Blocks of a National Strategic Approach to AI

This overview of key building blocks is a good starting point for national strategic AI planning. Derived from the analysis of over 30 national AI strategies developed in Global South and Global North, the building blocks represent the most common areas of focus across national AI strategies, which should be adapted to the country context, including the approach taken to AI and the governance and jurisdictional constraints.

3.1 Key Building Blocks of a National AI Strategy

Successful AI development and deployment depends on the existence of a set of prerequisites. Ecosystem foundations and enablers facilitate and drive AI development, adoption, and innovation at scale. To foster sustainable, inclusive economic growth, nations need to assess the current status of AI foundations, enablers, and services and address gaps in a manner that benefits individuals and the broader private and public sectors (see ***Figure 3.1***). A forthcoming World Bank publication provides a more detailed discussion of AI prerequisites.

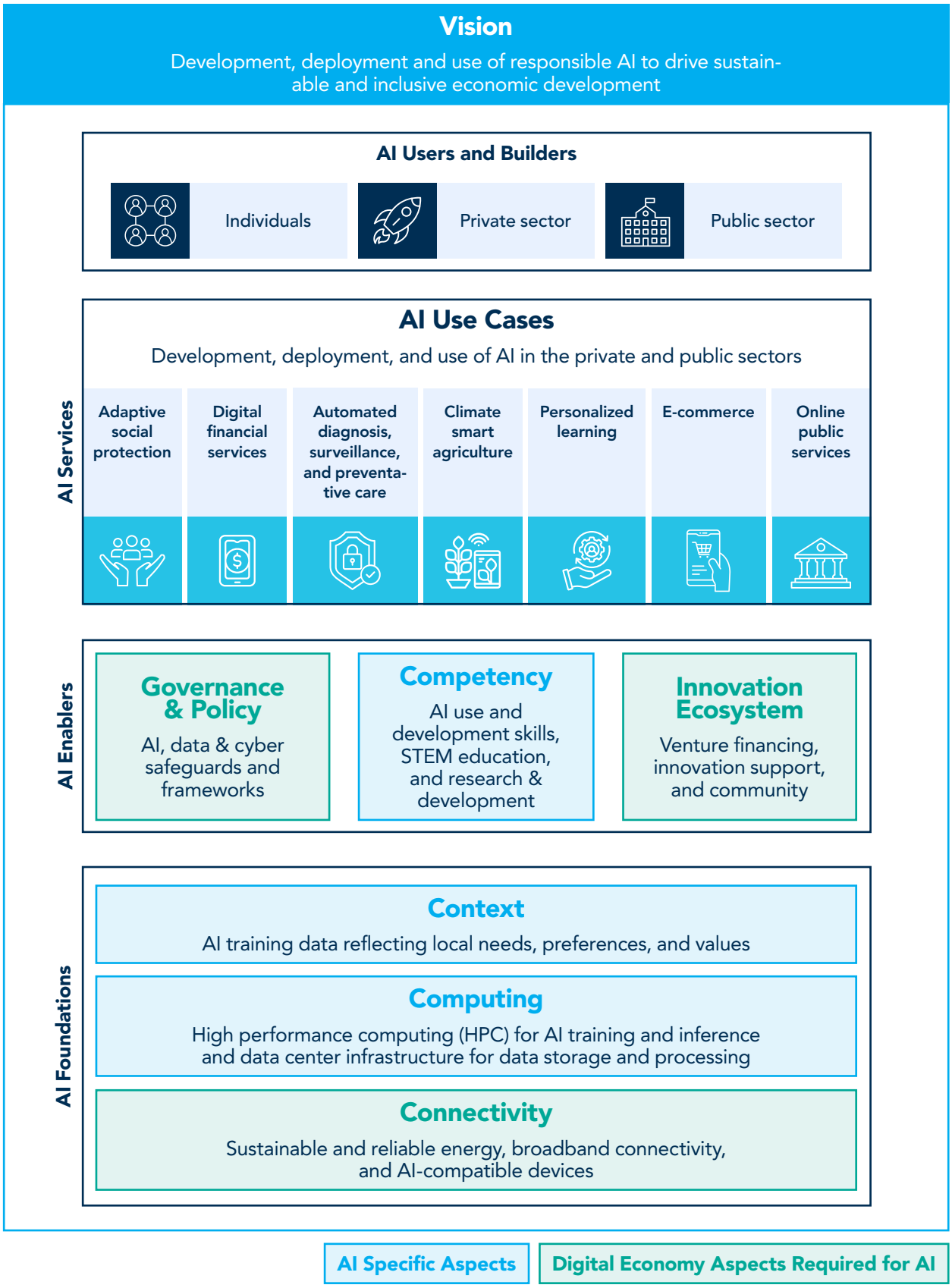


Figure 3.1: Key Building Blocks of a National Strategic Approach to AI
Source: World Bank staff

(i) AI Foundations

AI foundations are the basic building blocks without which AI cannot be developed or deployed. AI foundations are infrastructure prerequisites for AI development, deployment, and use at scale, including sustainable power, broadband connectivity, devices, and data centers. Policy makers should consider including initiatives addressing the following AI foundations in their national AI strategy.

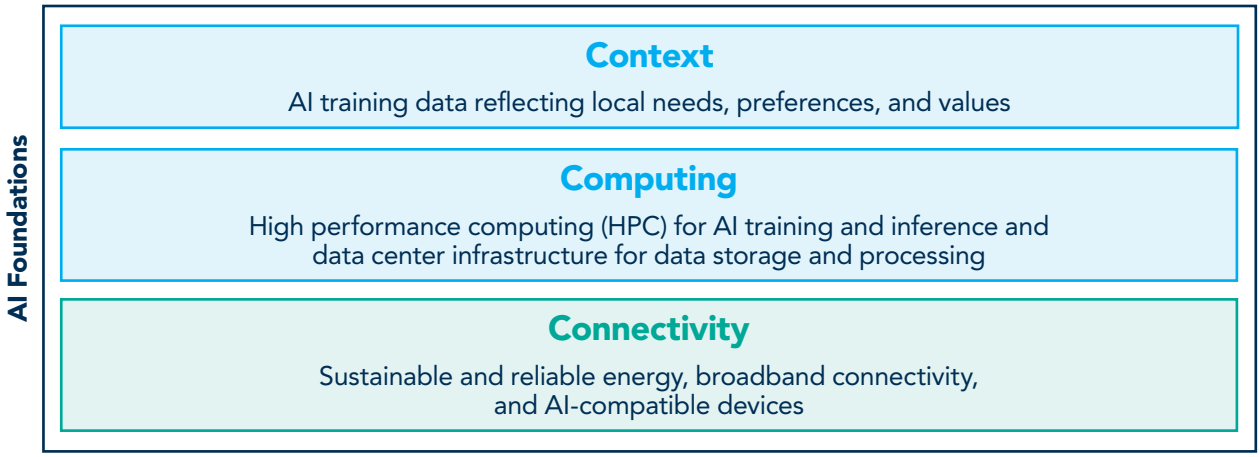


Figure 3.2: AI Foundations

- **Ensure access to sustainable and reliable power.** The chips and data centers used for AI training and inference consumes significant amounts of energy. Many countries struggle to provide reliable power from renewable sources or in sufficient quantities at affordable prices, making power a first hurdle to AI development and deployment in many LMICs.
- **Improve digital infrastructure and device access to enable AI system development, deployment, and scaling.** To train and deploy AI models in various sectors, policy makers should seek to provide affordable access to high-speed broadband internet to enable efficient data transfer between devices, data centers, and cloud services. To scale AI solutions, the public also needs sufficiently capable devices to run AI applications. Additionally, data centers and other infrastructure require reliable power, preferably provided through sustainable resources.
- **Strengthen data infrastructure to enable data collection, storage, management, processing, and distribution for AI systems and services.** Investments in data centers and related infrastructure are needed to support the entire AI data lifecycle —from data ingestion and cleansing, through storage in databases or "data lakes," to making the data accessible for training, validating, and deploying AI models. Key infrastructure elements are: hardware, such as servers and storage systems; software, such as data management platforms, processing frameworks, and data exchange systems; and organizational practices, including data governance policies and security protocols.
- **Enable access to affordable compute power for AI training and inference.** Policy makers must also prioritize access to computational power ("compute"), which can be organized on the premises of data centers, in the cloud, or on devices (Tony Blair Institute for Global Change, 2024). Compute is key for enabling domestic firms to train and fine-tune AI models for local needs and values, as well as to enable AI to make predictions and calculations ("inference") in real time.
- **Context (Data): Policy makers should prioritize improving access to high-quality, diverse, representative data.** Such data enables effective training of AI models, helping ensure accuracy, fairness, and robustness. Governments can enhance public sector data readiness by stand-

ardizing data collection, improving interoperability, and ensuring compliance with privacy and ethical standards. To encourage private sector data sharing, policy makers can offer incentives and provide secure data-sharing frameworks that protect proprietary interests and sensitive data while fostering innovation. High-quality data is crucial for AI's effectiveness in decision-making, automation, and public service improvements, making strategic data governance a key enabler of AI-driven economic and societal benefits. See ***Box 3.2*** for additional information how to LMICs can create value from data for AI.

Given rapid technological advancement, countries should prioritize investment in AI foundations regardless of their AI readiness. In addition to supporting AI development and deployment, improvements in these areas will also facilitate economy-wide digital transformation. ***Box 3.1*** provides an example of how Nigeria has strengthened its AI foundations in its national AI strategy.

Box 3.1: Nigeria's Approach to Investing in AI Foundations

In connection with its National AI Strategy Workshop, the Government of Nigeria outlined a number of strategic projects to accelerate the country's AI journey. Notably, two of these efforts aim at strengthening AI foundations and enablers. If implemented, they will be key to enabling a wider range of uses of AI in Nigeria.

Nigeria's Computing Infrastructure Pilot: To accelerate development of AI projects of national interest, a public-private partnership (PPP) will be created to develop Nigeria's national compute project. The compute will be available to local researchers, startups, and government entities working on critical AI projects, and be accessible through the National Centre for AI and Robotics (NCAIR).

Nigerian Multilingual Large Language Model (LLM): This initiative aims to develop a robust Nigerian LLM to enable AI integration into public and private services in local languages. The project will leverage support of the 3 Million Technical Talent (3MTT) program, which builds Nigerian technical talent to power its digital economy—to collate high quality Nigerian language data for LLM input (Federal Ministry of Communications, Innovation & Digital Economy, 2024).

(ii) AI Enablers

The second building block comprises AI enablers, such as governance, competencies, innovation ecosystems, and local context in the form of well governed data. This "soft" infrastructure underpins responsible and ethical AI development and use, helping ensure benefits are widely shared.

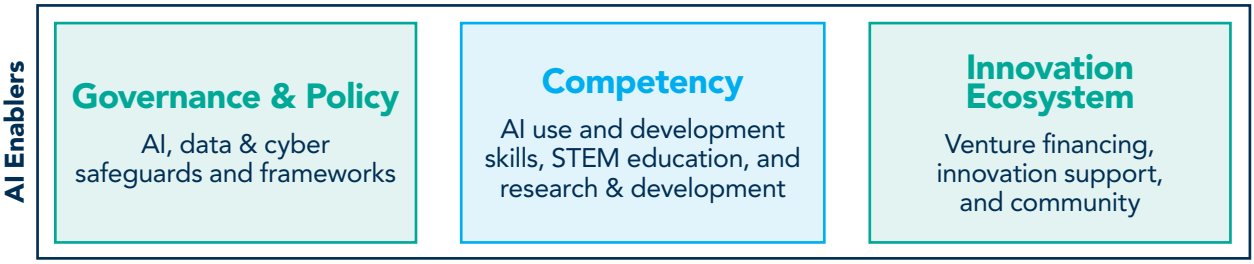


Figure 3.3: AI Enablers

- **Governance & Policy: Develop and implement AI governance frameworks and related regulation to promote AI innovation while balancing emerging risks.** Policy makers must ensure a policy and regulatory framework that is fit for mitigating AI deployment and use risks. While

specific policies and regulations will need to be tailored to the national context, they should always balance potential risks with the need for AI innovation, including by ensuring fairness, transparency, privacy, and accountability. AI use in sensitive areas such as healthcare, finance, and criminal justice require special attention to protect individuals' rights. Policy makers must also ensure sufficient AI governance capacity to oversee and enforce these frameworks. The World Bank publication Global Trends in AI Governance: Evolving Country Approaches presents more details on AI governance approaches.

- **Competency: Invest in a wide range AI skills, prioritizing basic AI literacy to enable scaling of AI solutions for public benefit.** Policy makers must prioritize AI literacy in basic AI concepts and for critically evaluation of AI outputs, along with awareness of AI's ethical and societal implications. Empowering individuals and organizations with these skills enables them to adopt and implement AI solutions effectively, responsibly, and with greater confidence. Countries also need to invest in cultivating strong technical skills, including programming languages like Python or Java, proficiency with machine learning frameworks such as TensorFlow or PyTorch, deep understanding of algorithms and data structures, along with developing experience in data preprocessing, model training and evaluation, and deploying models on cloud platforms or edge devices. Finally, governments should promote integration of these competencies into Science, Technology, Engineering, and Mathematics (STEM) curriculums early in the education system.
- **Innovation Ecosystem: Foster a vibrant AI ecosystem to promote AI technology innovation and advancement aligned with public interest and needs.** Governments must collaborate with large companies, startups, research institutions, universities, investors, civil society organizations, and AI talent. Governments should be active facilitators, taking on roles that the private sector does not have capacity or incentives to take on. For example, increasing research financing, promoting foreign direct investment, and de-risking and incentivizing private investment in AI. Governments should seek to make it easy to launch AI startups, operate, take risk and share knowledge within the AI ecosystem to promote scaling of AI solutions.

Box 3.2: Unlocking the Strategic Value of Data in AI's Next Frontier

As conventional training datasets—particularly those from Western digitized sources—approach saturation, LMICs, with vast reserves of underutilized and undigitized data, are emerging as critical players in the future of AI (Jones, 2024). The next phase of AI development will require not just more data, but greater diversity, contextual specificity, and real-world grounding of data. Developing economies are not merely data providers; they hold strategic value across three critical dimensions that can shape AI's evolution:

1. Epistemic and Linguistic Diversity

LMICs are home to rich and diverse knowledge (epistemic) systems that remain largely underrepresented in contemporary AI models. These include indigenous knowledge, oral traditions, and linguistic structures that differ fundamentally from those embedded in Western-centric datasets. Incorporating these diverse perspectives into AI training data could lead to more robust, contextually aware, and globally inclusive models. Moreover, AI systems trained on a broader range of reasoning patterns could become not only more representative but also more adaptable in solving complex real-world problems. Advances in natural language processing (NLP), for example, depend on a wider linguistic base that includes low-resource languages, which many developing nations could help supply.

(Continued)

(Box 3.2: Unlocking the Strategic Value of Data in AI's Next Frontier, continued)

2. Natural Assets and Biodiversity

LMICs encompass the world's most biologically diverse regions, from the Amazon rainforest to the Congo Basin and the Coral Triangle. These ecosystems hold vast scientific potential for fields such as biotechnology, pharmaceuticals, and environmental sustainability. AI, when applied to biodiversity data, can accelerate breakthroughs in drug discovery, climate resilience, and sustainable resource management. However, the benefits of AI-driven bioeconomies will depend on governance frameworks that ensure equitable value distribution. Without such frameworks, these countries risk becoming mere data suppliers in a global value chain rather than active participants capturing downstream benefits.

3. World Model Development

As AI systems evolve from predictive models trained on static datasets to dynamic world models capable of reasoning about real-world phenomena, diverse environmental and socio-economic conditions become critical training grounds. Many developing nations offer unparalleled variation in geography, climate, and human environments, providing AI with rich datasets on causal relationships, adaptive behaviors, and physical dynamics. These datasets are particularly relevant to advancing AI in fields such as climate modeling, disaster response, and infrastructure resilience—areas where accurate real-world simulation is crucial. Developing nations, therefore, can contribute not just data but also contextual expertise in refining AI's capacity to navigate complex real-world interactions.

(iii) AI Services

AI Services are AI applications and use cases that are built on top of AI models, enabling effective adoption and integration of AI into daily life. They demonstrate AI's versatility, underlining that AI is not a distinct sector of the economy but a tool to enhance existing services and products and overcome barriers. ***Figure 3.4*** lists AI services most commonly featured and implemented in national LMIC AI strategies.

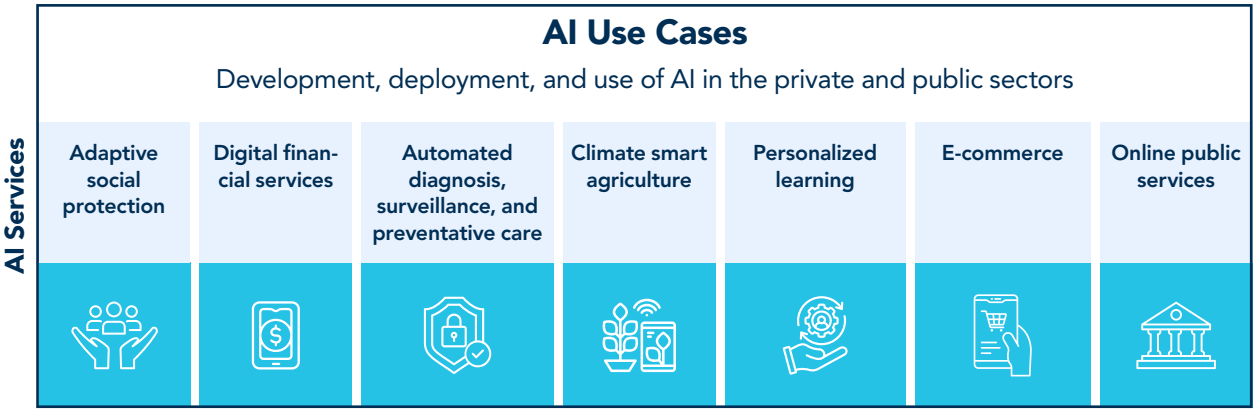


Figure 3.4: AI Services

AI services help ensure the channeling of AI benefits towards the public good. For example, in social protection, AI can improve beneficiary identification and targeting. Digital financial services leverage AI for fraud detection and personalized financial advice. In health, AI can improve diagnostics and patient care. Climate-smart agriculture uses AI for precision farming and resource management. Personalized learning platforms can use AI to adapt to individual student needs, enhancing

education outcomes. AI can benefit e-commerce by improving inventory management and customer service. Online public services can utilize AI to streamline administrative tasks and improve citizen engagement. ***Box 3.3*** provides examples of AI services being implemented in various countries.

The integration of AI into public services and key economic sectors can improve service delivery, drive innovation and productivity, and facilitate large-scale AI deployment and use. Governments should prioritize AI adoption to enhance public service accessibility, efficiency, transparency, and responsiveness. AI can improve data management and decision making, helping to reduce errors and human workloads, and enabling faster, more accurate response in, for example, public health, traffic management, and administrative tasks. Using AI for public services can foster innovation and trust, setting the stage for widespread AI adoption. Policy makers—in collaboration with entrepreneurs, industry leaders, and other key stakeholders—should identify key use cases and priority sectors to unlock AI's potential. AI integration in economic sectors will be vital for addressing development challenges, as well as for enabling key economic sectors to develop or maintain global competitiveness.

Before investing time in designing and testing AI use cases, governments should ensure that the foundational conditions for implementation are in place. These are strong leadership commitment, technology readiness, and funding for implementation. Without these elements, ideation risks becoming a wasted effort with no path to execution. Early structured engagement with stakeholders is also essential for aligning expectations, identifying practical constraints, and ensuring that proposed use cases can realistically be delivered and sustained.

Box 3.3: Examples of AI Use Cases

Togo's use of AI in adaptive social protection (ASP) systems: During the COVID-19 pandemic, Togo implemented an innovative adaptive social protection program, leveraging AI to provide rapid financial assistance to its most vulnerable citizens. The program, known as "Novissi" (meaning "solidarity" in the Ewe language), utilized AI and mobile technology to overcome challenges associated with identifying and reaching those in need, especially in a country with limited formal identification systems and banking infrastructure (World Bank, 2022).

India's use of AI to improve operations and fraud detection in financial services: As India's financial sector undergoes rapid digital transformation, fraud risk has escalated due to increasing online transaction volume. Financial institutions are turning to AI to enhance fraud detection capabilities. One prominent example is State Bank of India (SBI), the country's largest public bank, which has implemented AI-driven systems to combat fraudulent activities (Indian Startup News, 2024).

Nigeria's use of AI for rapid tuberculosis (TB) diagnosis and treatment: Every year, TB infects roughly 450,000 Nigerians, claiming about 125,000 lives. The Nawgu community in Anambra State has been particularly hit by this devastating disease. Authorities have started implementing AI solutions, including from Qure.ai, to improve the accuracy and speed of TB diagnosis. By analyzing chest X-rays and other medical data, AI algorithms can quickly identify potential TB cases, allowing healthcare workers to intervene early and provide timely treatment (Qure.ai, 2024).

Mauritius's AI integration in climate-smart agriculture: Demonstrating how AI can modernize farming while building climate resilience and food security, Mauritius has pioneered an

(Continued)

(Box 3.3: Examples of AI services Use Cases, continued)

innovative agricultural transformation approach using AI. Working alongside UN partners, the Mauritius Cane Industry Authority deploys drones to obtain high-resolution imagery and sensor data for early plant stress detection. The approach also uses mobile solutions like the Mokaro app to provide AI-processed insights to farmers. The AI technologies help farmers make data-driven decisions about planting, irrigation, and field management, while receiving real-time weather updates and agricultural alerts (Infocomm Media Development Authority, 2024).

Nigeria's AI tutor pilot: A pilot program in Nigeria demonstrated that using generative AI as a virtual tutor can significantly boost learning outcomes. Over a six-week after-school intervention, students who interacted with AI not only improved their English and digital skills but also achieved nearly two years' worth of learning gains. The AI tools provided personalized support that deepened student engagement, helped bridge gender gaps, and improved performance in broader academic areas, underscoring the transformative potential of AI in education (World Bank, 2024).

Indonesia's AI adoption in e-commerce: Tokopedia—Indonesia's leading e-commerce plat- form—has integrated AI technology to: (i) personalize user experiences through smart product recommendations based on individual preferences and shopping patterns, (ii) deploy AI-powered chatbots to provide 24/7 customer support for purchase assistance and queries, and (iii) implement sophisticated machine learning systems for fraud detection and transaction security. This multi-layered AI technology deployment has improved Tokopedia's operational efficiency and enhanced customer experiences while helping to position Indonesia as a leader in digital commerce (Setyadi et al., 2024).

UK's AI integration in public service transformation: Showcasing how emerging technologies can enhance public sector efficiency and service delivery, the UK is implementing innovative AI applications across government services, including: (i) deploying Retrieval Augmented Generation (RAG) systems to enable public servants to query vast databases through conversational interfaces, (ii) transforming Skills for Care's data processing from a month-long manual effort to a 20-minute automated pipeline that provides crucial adult care workforce statistics to government ministers, and (iii) enhancing the Met Office's service delivery through AI-powered sentiment analysis of user feedback from millions of daily website and mobile app users. This deployment of AI technology has revolutionized public service delivery by reducing processing times, freeing human resources for more complex tasks, and enabling data-driven decision making (Think Digital Partners, 2024).

Several organizations are compiling AI use cases across sectors to provide a starting point for country-level research. For example, Smart Africa's Blueprint: Artificial Intelligence for Africa report presents various AI applications from education, agriculture, education, health, financial services, energy, transportation, and climate change. The Latin American Artificial Intelligence Index (ILIA) *(Indice Latinoamericano de Inteligencia Artificial)* monitors AI policy and adoption efforts across 12 countries. The Global Partnership on AI (GPAI) has identified numerous climate and environment AI applications. Climate Change AI is also dedicated to promoting environmental machine learning applications. The annual AI for Good Global Summit, co-hosted by United Nations (UN) institutions in Geneva, showcases numerous AI applications to promote the 17 UN Sustainable Development Goals (SDGs). In 2024, McKinsey & Company released a report mapping use cases for AI across each of the SDGs.

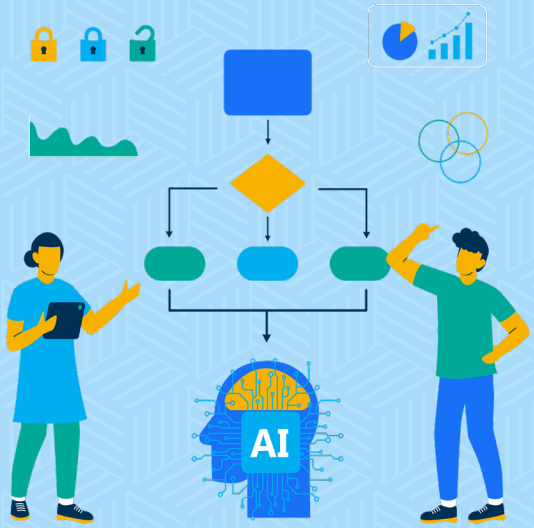
(iv) AI Users and Builders

Individuals, private sector firms, and public sector entities, who build and use AI, must be at the core of any strategic approach to AI. They are the creators and users of AI technologies, as well as the beneficiaries of AI and those who may suffer potential drawbacks of the technology. When developing an AI strategy, policy makers need to ensure that the full range of actors are engaged and consulted.

Figure 3.5: AI Users and Builders

4

A Framework Process for Developing a Strategic Approach to AI



This section presents a framework to guide policy makers in the development of a strategic national approach to AI. It aims to help policy makers shape a shared vision around AI, identify key strengths and gaps, define tangible objectives and initiatives, generate implementation buy-in, and implement a performance tracking system. The framework can be tailored to fit specific country contexts, considering various factors, including strategic objectives and scope, the entity charged with strategy development, level of political buy-in, country AI readiness, and stakeholder knowledge and interest in AI.

Structure and clarity are critical for a well-rounded, strategic approach to AI. The framework *(Figure 4.1)* outlines three phases to structure an approach to AI, consisting of seven modules, each featuring two to four key activities. As part of an AI strategy process, the phases are best pursued sequentially, while the modules within each phase can be undertaken concurrently or shifted as needed. Some modules, such as Module 3 "Set the Direction" and Module 4 "Define the Focus", may also be pursued iteratively using outcomes of subsequent activities to refine previous ones. Guiding questions under each module help focus policy makers' and the AI strategy "task force's" attention. The modules can also be useful on a stand-alone basis for countries seeking guidance only on specific AI strategy aspects.

Governments usually take about 8 to 10 months to develop a national AI strategy, but the timing depends on a range of factors: the current state of AI foundations and enablers, the depth of research and stakeholder engagement, and the political and governance processes involved. Timelines may be shorter for countries leveraging only certain modules to support an alternative strategic approach. Strong stakeholder engagement helps ensure that all voices are adequately represented, while full engagement by the responsible government entity, supported by political commitment from the top, is key to facilitate the work. The modules in section 4 will elaborate on these aspects.

Prepare

Approx. 2 months

Module 1: Get Set Up

- Define a Responsible Government Entity
- Appoint a Collaborative and Well-rounded Team

Module 2: Map the Landscape

- Survey Key Policies & Strategies
- Map Stakeholders
- Review the State of AI Foundations
- Review the State of AI Enablers

Where are we now?

Design

Approx. 4-5 months

Module 3: Set the Direction

- Define Strategy Objectives
- Define Mission and Vision

Where are we going?

Module 4: Define the Focus

- Identify Priority Sectors for AI Integration
- Map Use Cases in Priority Sectors
- Define Pillars

What do we need to do?

Module 5: Shape Actions

- Conduct a Policy Gap Analysis
- Define SMART Actions and Initiatives

How should we do it?

Launch

Approx. 2-3 months

Module 6: Prepare for Implementation

- Institutionalize the Implementation of the National AI Strategy
- Develop a Results Framework
- Assign Responsibility for Actions and Initiatives
- Develop a Communication Plan

Who will do what by when?

Module 7: Adopt, Launch, and Adjust

- Maintain Continuous Engagement
- Monitor Progress
- Adjust as Needed

Figure 4.1: Development Framework for a National Strategic Approach to AI—Modules, Actions, and Timeline
Source: World Bank staff

4.1 Module 1: Get Set Up

Overview

Developing a national strategic approach to AI requires an effective team situated at the right place within the government structure. To that end, this module:

i. Supports policy makers and government leaders to define leadership for the national AI strategy process, outlining a set of factors to consider, and providing country examples.

ii. Facilitates creation of a national AI development task force by providing a list of key skills and expertise, and four different models for the national AI task force, as well as a list of factors for the task force to consider.

Activities

a. Define a Responsible Government Entity

The development process is often housed in a government entity that has done previous AI work, or the entity responsible for technology and digital development. Countries have used various approaches to identify a responsible entity, sometimes even creating a new entity. For example, in Canada, the Ministry of Innovation, Science, and Economic Development (ISED) lead AI strategy development (Innovation, Science and Economic Development Canada, n.d.), whereas in Japan the Ministry of Economy, Trade, and Industry (METI) leads (Ministry of Economy, Trade, and Industry, 2022). In Tunisia, the Ministry of Industry, Mines and Energy led initial work on AI, before launching a National AI Strategy with the Ministry of Communication Technologies, Ministry of Higher Education and Scientific Research, and Ministry of Economy and Planning, bringing diverse perspectives and sectors to bear (Tunisia's Ministry of Industry, Mines and Energy, 2024). Countries that have created a centralized AI office include Singapore's National AI Office (NAIO), Egypt's National AI Council, and the UK's Office for AI. On a regional level, the European AI Office, within the European Commission (EC), collaborates with Member States and experts to implement the AI Act (European Commission, n.d.). While a centralized body can coordinate cross-sectoral efforts, it may require extra time to establish, and may introduce administrative burden and costs. It may also take some time to build relationships across government and industry sectors. ***Box 4.1*** provides the details on how Rwanda has approached this topic. The specific political, economic, and technological context, as well as the capacity to drive digital policies, often determines the choice of the entity.

Box 4.1: Rwanda's Approach to Assigning Responsibility for National AI Strategy Development and Implementation

The national AI strategy development effort in Rwanda was led by its Ministry of ICT and Innovation (MINICT), with support from partners. However, implementation of the strategy was then assigned to various government bodies, based on their sectoral specialization, as well as a new Responsible AI Office (RAIO).

The RAIO is tasked with monitoring and evaluating policy implementation. It is also charged with ensuring integration of the implementation plan with regional policies and actors, leading communications around the National AI Policy, and participating in international AI governance platforms such as the conferences and communities provided by the OECD (AI Policy Observatory), ITU, and UNESCO.

AI task force provides a clear focus for strategy development and facilitates stakeholder coordination. Task force leadership is often drawn from the ministry or agency leading the technology agenda, but incorporates officials across ministries, and often also private stakeholders.

Task force setup has three key benefits:

i. It promotes ownership.

ii. It helps streamline decision-making and promotes stakeholder coordination, reducing the risk of fragmentation or conflicting agendas.

iii. It fosters consistency of strategic vision and goals, ensuring that the strategy remains focused and aligned with national objectives. This is particularly important in a field like AI, with rapid technological advancements and diverse applications.

Key Tip 1: Considerations for a Task Force Leading the National AI Strategy Process.

The task force charged with developing the national AI strategy—supported by the government agency within which it sits—needs to have the capacity and authority to:

- Identify and coordinate with key stakeholders;
- Secure necessary human and financial resources for strategy development;
- Navigate digital policies and regulations in the local and regional ecosystem.

An explicit high-level mandate from head of state or government for the agency and task force to lead the AI strategy development process is helpful to ensure alignment across government entities and facilitate the process.

Regardless of its form, the team leading AI strategy development should be flexible and agile, ensuring all stakeholder voices are represented. It is essential to manage and balance the interests of all stakeholders during strategy development. To achieve this, the task force should be assigned clear mandates and set up transparent processes, and periodic reviews, while maintain updating mechanisms and accountability frameworks that prioritize public interest over private gain (Moës, Lannquist, Iliadis, & Miailhe, 2024).

b. Appoint a Collaborative and Well-Rounded Team

Task force leadership should have prior experience in policy and digital development, complemented by participants with sectoral expertise. Clear terms of reference (ToR) (see Annex A for sample ToR), should give the task force authority to coordinate the entire AI strategy process. The following list provides a non-exhaustive overview of key skills useful for national AI strategy development, but policy makers should assess which best suit their country needs:

- **AI and data science experts** provide in-depth technical insights into AI methodologies, data management, and the practical capabilities and limitations of AI technologies. They ensure that the strategy leverages the most relevant and effective AI tools and approaches.
- **Digital policy analysts and strategists** specialize in the country's digital landscape, crafting strategies that align with existing digital policies and infrastructure. They focus on integrating AI into the broader national digital development goals.

- **Legal and ethical advisors** focus on the legal, ethical, and regulatory aspects of AI implementation. They help navigate complex issues such as data privacy, intellectual property, AI ethics, and compliance with both national and international regulations.
- **Economic analysts** evaluate the economic implications of AI adoption, including cost-benefit analysis, employment and productivity repercussions, and sector-specific economic modeling. They provide insights into how AI can drive economic growth and mitigate risks.
- **Education and workforce development specialists** design strategies for workforce "upskilling", developing educational programs, and facilitating the country has the talent pipeline to support AI initiatives. They focus on creating sustainable, long-term capacity within the local labor market.
- **Industry and innovation experts** bridge the gap between government strategy and industry needs, ensuring that AI initiatives are practical, commercially viable, and align with industry innovation goals. They facilitate partnerships with startups and established companies.
- **Communications and stakeholder engagement specialists** manage the communication strategy promote all stakeholders', including public, understanding of AI goals and benefits. They also foster collaboration between government entities, the private sector, and international partners.
- **Project management and implementation leads** oversee day-to-day AI strategy execution, ensuring that projects stay on track, remain within budget, and align with overall strategic goals. They coordinate between different teams and manage resources effectively.

The task force may also consult with international AI experts in technology, industry applications, and global trends, or any other relevant expert based on country context and needs. This team composition helps provide a balanced approach combining deep local insights with international best practices, while helping build capacity for effective implementation.

The task force can be organized in different ways, depending on government needs and resources. "Internal Teams", "Hub-and-Spoke Model", and "Partnership" are three archetypes countries have used to date. These are merely illustrative, serving as inspiration for policy makers to design a structure optimized for their local context. The archetypes are:

- **Internal Teams:** A fully dedicated team focusing full-time on the strategy process, drawn from internal and external sources, within the government entity tasked with developing the strategic AI approach. This helps ensure expertise and time to focus on the AI strategy development and implementation. This model concentrates the effort within a responsible government entity with a holistic view of the AI strategy Modules.

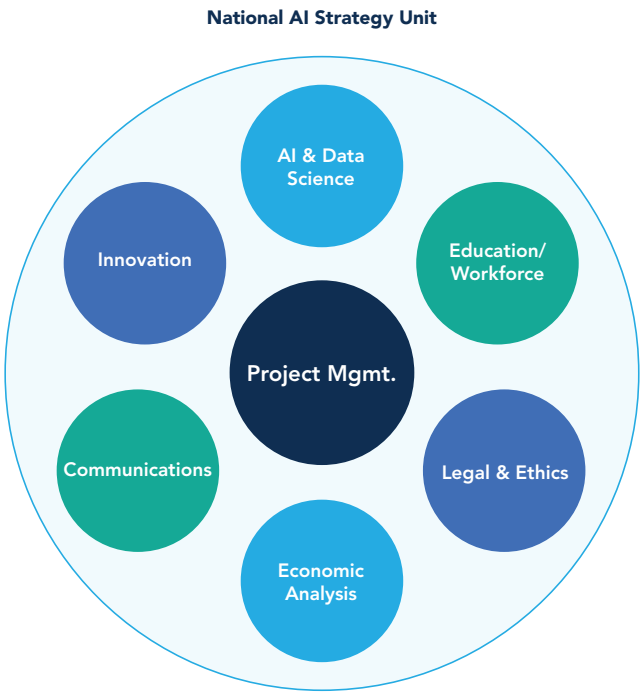


Figure 4.2: AI Task Force Internal Teams Model

- **Hub-and-Spoke Model:** A central hub consisting of a small team within the entity in charge of the strategic approach coordinating efforts, while specialized teams or experts from different government entities, departments, or sectors work part-time on sections of the strategy while continuing their regular jobs. This model allows for broader participation across government, can provide more agile access to specialized domain expertise for AI integration into various sectors, and can limit resource intensity of the effort.

Figure 4.3: AI Task Force Hub-and-Spoke Model

- **Partnership Model:** In some cases, the strategy team may include external experts or organization to bring specialized knowledge and resources for AI policy. Depending on the extent of work external partners perform, this setup can limit domestic capacity development. Furthermore, external experts may lack the access, knowledge, and authority to engage effectively across stakeholders, design tailored policy recommendations and assign responsibilities to government entities. To mitigate these issues, the country government should maintain leadership of the process through a dedicated team or hub-and-spoke model. Leaders can then add external experts to work closely with government partners and local experts to transfer knowledge to local counterparts. The agency overseeing AI strategy development should also be the secretariat and custodian of documents and related knowledge throughout the process to ensure it is locally-owned.

Key Tip 2: Priorities for the First Meeting of the AI Strategy Development Task Force

Once the team is announced, the AI taskforce will need to have an inaugural meeting to launch the process. At this meeting team members will:

- Review their terms of reference;
- Agree on a timeline for the strategy development;
- Agree on outputs to be delivered;
- Establish an AI strategy development secretariat, responsible for coordinating the process.

This meeting can also be used to set up sub/expert teams to focus on key strategy pillars. However, if the initial process does not map out the pillars, sub-teams can be determined later.

Module 1 Output:

- **Appointment of a responsible government entity** empowered to lead the national AI strategy effort and coordinate across government institutions and other stakeholders.
- **Establishment of a multi-stakeholder task force for development of a strategic approach to AI** within the responsible government entity, a team with local digital and international AI policy expertise with commitment from all project partners to develop the National AI Strategy, featuring a clear mandate outlined in clear terms of reference.

4.2 Module 2: Map the Landscape

Overview

A comprehensive view of the current AI and digital landscape is key to charting a path forward. To that end, this module:

i. Outlines the rationale for the kinds of strategies and policies that may influence or relate to the AI strategy, proposing a list of sectors and areas for review.

ii. Presents a structure to help policy makers diagnose strengths and gaps in AI readiness and create a baseline from which to design strategic objectives. The World Bank's forthcoming AI Country Diagnostic provides a tool for governments to carry out this exercise.

iii. Presents comprehensive, detailed questionnaires to help policy makers assess the state of AI foundations and enablers to diagnose strengths and gaps in AI readiness and create a baseline from which to design strategic objectives.

AI indexes (see *Box 4.2*) provide a high-level snapshot of a country's AI landscape to use as a starting point for discussions. Indexes can only provide a high-level snapshot of the AI landscape, however. To shape a coherent strategic approach to address country-specific key barriers to AI development and adoption, policy makers should conduct a diagnostic review of the domestic AI landscape. The activities in Modules 2a, b, c, and d are helpful to create a diagnostic summarizing the country's orientation and starting position related to key AI foundations (such as digital infrastructure, power, data and compute), and AI enablers (such as skills, innovation ecosystem, and governance).

Box 4.2: AI Indexes Provide a High-level Overview of the AI Landscape.

Most AI indexes generally rely on a set of proxy indicators to assess AI readiness. Since LMICs often lack public data relating to AI-relevant metrics, indexes rely primarily on secondary sources and can be less accurate than for HICs. Hence, it is important to review and understand the methodology used to produce index categories and scores to ensure appropriate information interpretation.

Selected Indexes

- International Monetary Fund's *AI Preparedness Index* assesses the level of AI preparedness in 174 countries, based on a set of macro-structural indicators covering countries' digital infrastructure, human capital and labor market policies, innovation and economic integration, and regulation and ethics.
- Oxford Insights' 2023 *Government AI Readiness Index* considers the extent that governments and public sector entities are prepared to implement AI for public services expansion. It ranks 193 countries on 39 indicators across 10 dimensions, which make up three pillars: Government, Technology Sector, and Data & Infrastructure (Oxford Insights, 2023).
- Stanford University's *AI Index Report*, led by an independent and interdisciplinary group of AI thought leaders from industry and academia, is one of the most comprehensive annual reports on AI progress. It tracks trends in research and development, technical

(Continued)

(Box 4.2: AI Indexes Provide a High-level Overview of the AI Landscape, continued)

performance, responsible AI, economics, policy, public opinion, and more. The report is grounded in quantitative data and designed to put key decision makers, like policy leaders and business executives, in position to understand global AI developments.

- Tortoise Media's *Global AI Index* benchmarks nations on levels investment, innovation, and implementation in AI and corresponding sub-pillars. It provides rankings in each category and an overall score (Tortoise Media, n.d.).
- *The Global Index on Responsible AI*, produced by the Global Center on AI Governance (GCG) is a multidimensional tool measuring progress towards responsible AI in 138 countries along three pillars—Government Framework, Government Action, Nonstate Actors—and three thematic areas—Responsible AI Capacities, Human Rights, and Responsible AI Governance. The index aims to address the scarcity of globally representative data on steps countries are taking to prepare for AI challenges and possibilities, particularly regarding human rights (Global Center on AI Governance, n.d.).

These indexes are all prepared by third-party organizations on a rolling basis primarily to provide high-level country-to-country AI readiness comparisons. However, countries can undertake their own readiness assessments. One methodology is provided by UNESCO:

- The UNESCO Readiness Assessment Methodology (RAM), deployed in about 50 countries to date, helps countries understand how prepared they are to apply AI ethically and responsibly, focusing on social and scientific domains. It contains a range of questions to gather information about a country's AI ecosystem, including legal, regulatory, social, cultural, economic, scientific, educational, technological, and infrastructural dimensions.

Activities

a. Survey Key Policies and Strategies

Use primary and secondary research to identify existing digital policies and stakeholders for the AI ecosystem. The policy map should identify existing policies or strategies that may need adjustment to align with, and support, the AI strategy. ***Figure 4.7*** provides an overview of priority sectors featured in national AI strategies to help inform the policy and strategy survey. ***Box 4.3*** provides an example of how Sri Lanka's AI strategy makes its intention to support and accelerate the national digital transformation strategy explicit, building on a mapping of key policies.

Examples of policies and strategies to include in the survey:

- **Digital or ICT strategy** outlines a country's comprehensive approach to harnessing digital technologies for economic growth, innovation, and improved public services, while addressing challenges like cybersecurity, digital inclusion, and regulatory compliance.
- **Education policy** as it relates to incorporating digital literacy, technology-enabled learning, and digital educational infrastructure into the educational system to equip students with essential AI skills.
- **National innovation policies** promoting development, adoption, and commercialization of technological advancements to drive economic growth, competitiveness, and societal progress.

- **Strategies and policies for various economic sectors that could benefit from AI** including healthcare, agriculture, manufacturing, finance, transport, energy, retail, tourism, and public administration.
- **Data protection and privacy laws** governing the collection, storage, and use of personal data, promoting privacy and security in AI applications (for example, the EU's General Data Protection Regulation).
- **Cybersecurity laws** establishing legal frameworks for protecting information systems and data from unauthorized access and attacks. This is crucial for safeguarding AI systems from cyber threats and ensuring the integrity and security of AI-driven processes.
- **Data sharing and accessibility policies** facilitating exchange and availability of data across organizations and sectors. This is essential for training robust AI models, enhancing innovation, and ensuring equitable access to AI-driven insights.
- **Regional continental frameworks** from various multilateral and regional bodies to promote harmonization of AI policy across borders and facilitate innovation, trade, and regulation.

Box 4.3: Sri Lanka's AI Strategy, Accelerating its Digital Transformation Strategy

Sri Lanka's national strategy is built on five interconnected and mutually reinforcing key enablers: data, skills development, infrastructure, research and development, and public awareness. Investing in these areas will not only strengthen Sri Lanka's AI capabilities but also accelerate its broader digital transformation agenda, as outlined in its Digital Strategy 2030. This provides an example of how a strategic approach to AI needs to align with and support acceleration of existing digital transformation policies and initiatives.

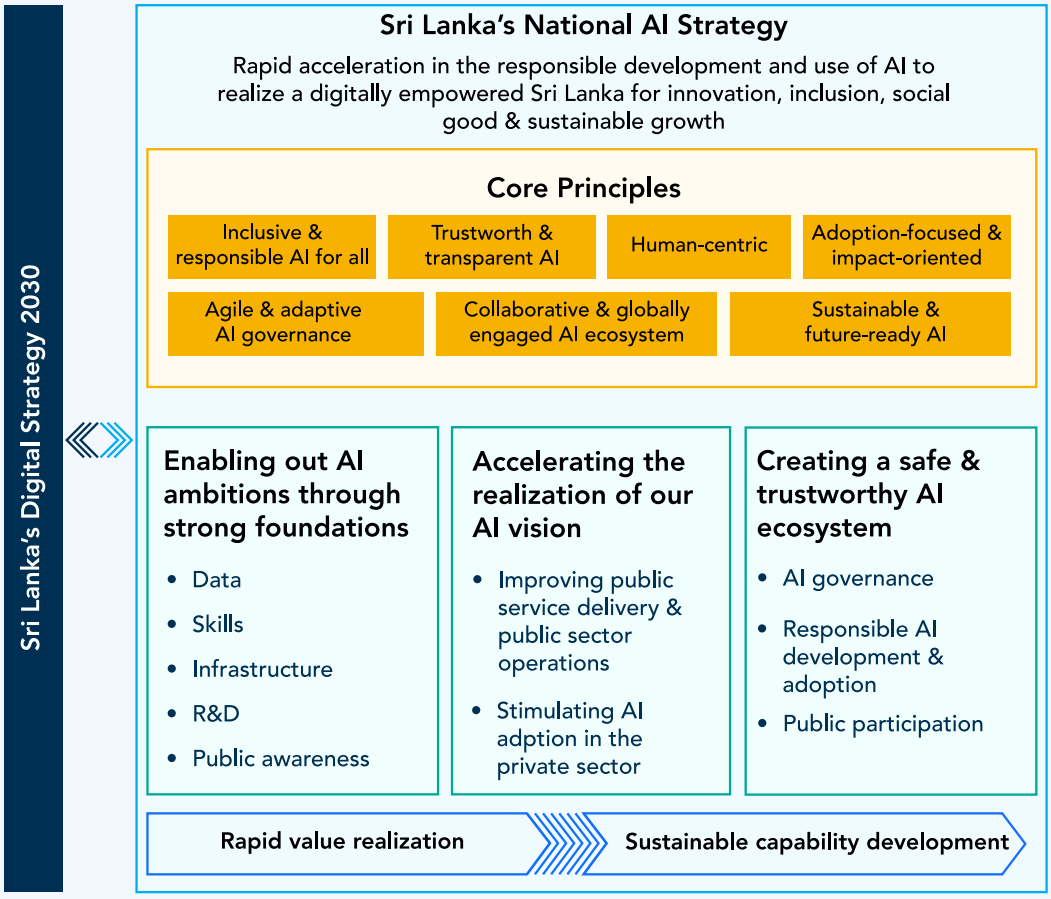


Figure 4.4: Sri Lanka's National AI Strategy. *Source: Ministry of Digital Economy of Sri Lanka*

b. Map Stakeholders

A detailed stakeholder map will help engage diverse stakeholders to foster trust, transparency, and buy-in, and promote an inclusive strategy. This will ultimately support implementation and compliance by ensuring representation from across groups. A stakeholder engagement plan, including a systematic approach to tracking invitations, attendance, and participation for interviews and workshops can help ensure that no important stakeholders are left out. Many stakeholders will be engaged more than once during the strategy process; for example, first being interviewed to provide insights about the ecosystem and then being invited to a validation workshop for the strategy pillars (described in Module 4). Ongoing stakeholder engagement also helps "onboard" stakeholders to the AI Strategy.

Key Tip 3: Principles for Productive Stakeholder Engagements

Three key principles can help foster representative and productive stakeholder engagement during national AI strategy development:

- **Inclusivity and diversity:** Ensure that each engagement features a wide range of stakeholders and considers multiple perspectives to promote an equitable AI strategy.
- **Transparency and openness:** Keep stakeholders updated and provide them with clear, accessible information about the strategy's goals, processes, and decisions to help build trust and promote collaboration.
- **Continuous engagement and feedback:** Maintain an ongoing dialogue with stakeholders, including outside of formal consultations, and ensure they have a focal point on the strategy team to whom they can turn for input and questions.

The **Stakeholder Engagement Guide**, and the notes in the "Stakeholder Engagement Boxes" in this report provide hands-on guidance for policy makers on best practices for workshops and other engagement formats.

Key Tip 4: Kickoff for the AI Strategy Development Process

With stakeholders mapped out, a kickoff meeting should be held to align all partners and launch the initiative effectively.

The meeting should aim to:

- Gather all stakeholders identified in the Stakeholder Mapping and inform them about the national AI strategy effort, including who is on the core team, as well as the strategy's purpose and timeline to generate buy-in and support.
- Set expectations for their engagement by describing the various stakeholder engagements planned throughout the process.
- Outline clear ways to communicate with stakeholders to ensure consideration of their feedback.

Table 4.1: Stakeholders to consider for Stakeholder Mapping

Stakeholder Type	Examples & Notes
Public Sector	• Primary: Ministries, agencies, or institutions responsible for Information and Communications Technology (ICT), innovation, digital transformation, and data privacy • Secondary: Ministries, agencies or institutions for education, economy, line ministries (for example, agriculture, finance, transportation, energy, environment), gender, science & technology, space, domestic or regional development, central bank, national statistics office, and central tax authority
Private Sector	• Primary: AI and digital startups and large domestic technology/digital economy companies or that house AI pilots or projects. Can also include ICT companies, sectoral and domain specific startups or corporates, multinational companies operating in the country, and private telecom companies and other players engaged in digital and data infrastructure development • Include, if possible, 10 or more local AI practitioners as their insights from leveraging AI within the prevailing context are essential to identify practical obstacles and challenges to enabling AI growth and innovation in the country
Academia	• Universities and research institutions, in particular ones with academic programs in AI and computer science, and that host professors, students, or researchers developing AI projects • Technology centers of excellence (CoE) which may host AI projects or even have ongoing work on advanced data science
Civil Society and Non-Profit Organizations	• Organizations or associations focused on digital skills training, human rights, equity, and technology; for example, groups upskilling youth or marginalized communities such as Women in ML and Data Science (WiMLDS) (more detail provided on the next page)
International Community	• Relevant regional or international development partners or institutions • Bilateral donor agencies with active programs supporting governments and countries to advance technology and AI sectors
General Public	• People living in the country will be the ultimate users and beneficiaries of AI solutions and should be consulted on relevant aspects.

Box 4.4: Beyond the Usual Stakeholders: Citizens' Input for Strategic Alignment

AI strategies and their direct societal impact—such as algorithmic decision-making, data protection, and digital platform governance—should not remain confined to traditional stakeholders. Instead, innovative participatory approaches can harness the lived experiences of everyday citizens, ensuring AI strategies are ethically grounded and aligned with public values, needs, and preferences. The complexity of AI should not be a pretext for excluding the public: AI strategies are bound to shape fundamental aspects of daily life, from employment and education to access to essential services. Given these far-reaching effects, citizens are not only stakeholders but also critical knowledge contributors.

To build trust and legitimacy, processes such as citizens' assemblies provide an effective participation mechanism. These assemblies consist of randomly selected individuals reflecting the broader population. Through structured meetings, participants receive expert briefings, engage in discussions, and evaluate multiple perspectives before making recommendations. This process help ensure AI strategies are responsive to societal concerns and expectations. One example is Belgium's Citizens' Assembly on AI, convened during its Presidency of the European Council in 2024. The initiative gathered 60 randomly selected citizens to deliberate on AI's societal impact, ensuring public input in shaping Europe's AI agenda.

With nearly half the world (49%) concerned about AI's impact on jobs and potential misuse, global public opinion reinforces the need for participatory mechanisms in risk prioritization and strategy development (Stanford Institute for Human-Centered Artificial Intelligence, 2024)**.** One such approach is the Collective Intelligence Project, which used All Our Ideas, a wiki-survey platform, to enable 1,000 demographically representative citizens to rank and contribute statements about AI safety priorities. The process revealed strong public demands for regulated development, prevention of overreliance on poorly understood systems, and transparent frameworks for monitoring AI's societal impacts.

Public participation is critical not only for shaping AI strategies but also for ensuring their implementation. Many strategies fail due to a lack of societal legitimacy and support. Inclusive processes mitigate this risk by turning passive stakeholders into active participants, making policies more durable and enforceable. A key example is Brazil's Internet Bill of Rights (Marco Civil da Internet), a legal framework on net neutrality, data protection, and digital rights. Its development was preceded by an extensive participatory process, including crowdsourcing, public consultations, and multi-stakeholder engagement, strengthening both adoption and enforcement (Peixoto, Canuto, & Jordan, 2024).

c. Review the State of AI Foundations

Quantitative and qualitative evidence to gather information needed to review the country's current AI foundations. As discussed in section 3.1, AI foundations are the "hard" infrastructure necessary for developing, deploying and scaling AI including green energy, broadband connectivity, devices, and data enters. The task force may solicit this information from relevant government entities, such as national bureau of statistics, and conduct desk research or consultations where necessary. Where possible, specify data by demographic groups such as gender or rural versus urban.

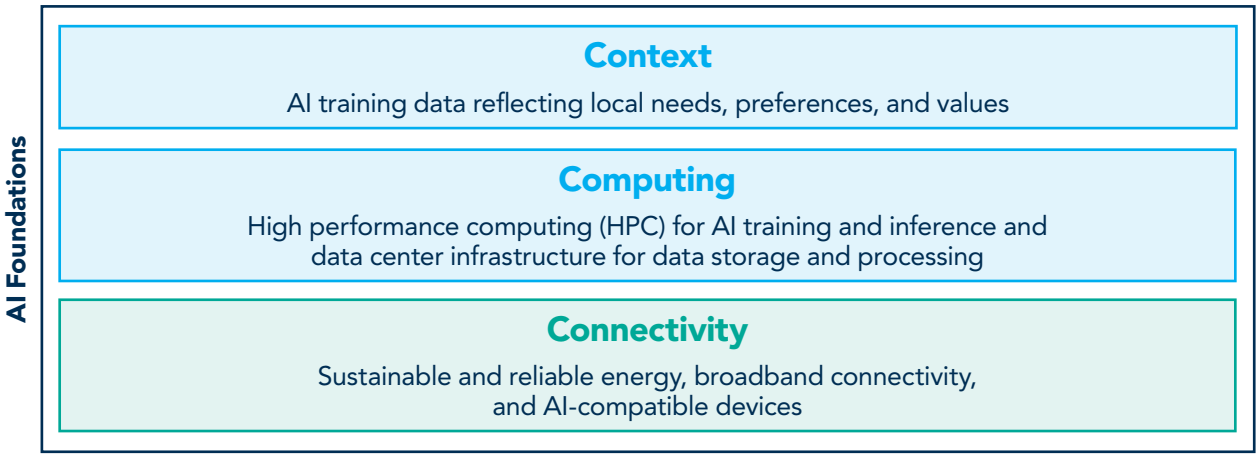


Figure 4.5: AI Foundations for Review

d. Review the State of AI Enablers.

ngage stakeholders to review the country's current AI enablers. As discussed in section 3.1, AI enablers are the local data, AI governance and ethics framework and other enabling policies, capacity, and innovation ecosystem—the "soft" infrastructure—necessary to foster responsible development, deployment, governance, and ethical use of AI technologies. The methodology employed here should mirror the one from Module 2C, and it would be easier if the information gathering is conducted as one exercise.

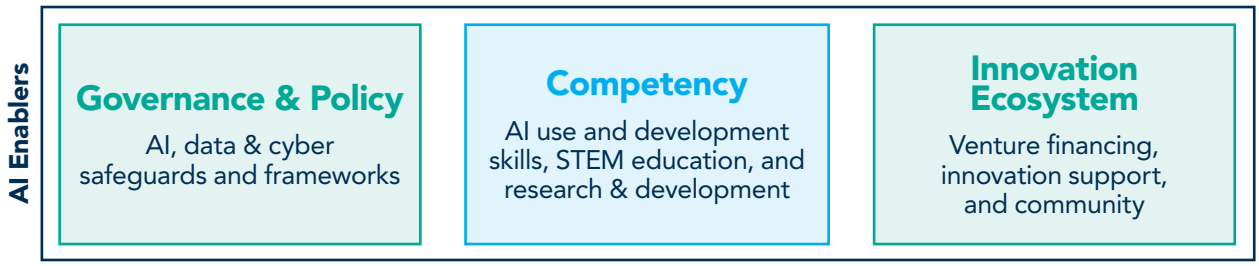


Figure 4.6: AI Enablers for Review

Note: Adoption and target sectors are explored further in Module 4. The questions here are intended to help provide a foundation for that further inquiry.

Box 4.5: Reviewing the Government's Internal Readiness and Capacity for AI Adoption

The government will play a central role in the development and implementation of any national approach to AI, both overseeing progress and integrating AI into public services and administration.

Therefore it is crucial to understand the level of AI readiness among government agencies and civil servants and identify key gaps to address under the strategy. The following questions will help establish a baseline understanding.

Government AI Foundations

- Share of civil servants with reliable access to high-speed broadband internet at the workplace
- Share of civil servants with access to devices capable of running AI applications
- Share of civil servants that have access to AI-enabled software and data analytics tools

(Continued)

(Box 4.5: Reviewing the Government's Internal Readiness and Capacity for AI Adoption, continued)

- Share of civil servants that can access and utilize centralized data repositories or platforms
- Share of civil servants that work within departments equipped with secure and scalable digital infrastructure supporting AI services

Government AI Enablers

- Existence of internal policies, guidelines, and compliance mechanisms governing AI use
- Share of civil servants with basic AI literacy (understanding of AI concepts, technologies, and applications for the public sector)
- Existence of AI skills development programs for civil servants (for development and use, as appropriate)
- Share of civil servants that have received training on the ethical considerations, legal frameworks, and regulatory policies governing AI
- Existence of government supported research center of excellence in a field related to AI
- Existence of high-quality, well-governed, accessible local data relevant for training AI models for government use cases in key sectors
- Organizational cultural openness to embracing technological change and existence of processes to manage such change
- Share of government departments actively supporting AI initiatives through policies, resources, or leadership endorsement

Module 2 Output:

- **Policy Overview:** The policy survey should result in an overview of existing policies and strategies (both national and regional) that relate to A,I and which may need adjustment to align with the AI strategy.
- **Stakeholder Map:** The stakeholder mapping exercises should result in a comprehensive, prioritized list of stakeholders to engage during project consultations.
- **AI Foundation and Enabler Assessment:** This exercise will provide a detailed picture of the "AI maturity" of the country to help define pillars and initiatives later in the strategy process. In terms of "hard" infrastructure, this assessment can also be helpful in determining investment needed to increase the country's AI readiness.

4.3 Module 3: Set the Direction

Overview

A strategic approach to AI should articulate the rationale and objective for AI in the country. This module:

i. Supports policy makers to define relevant and specific strategic objectives by providing a set of factors to account for as they consider country goals for using AI. This is complemented by an analysis of themes existing national AI strategies have prioritized.

ii. Shares key considerations for developing Mission and Vision statements, provides examples of Mission and Vision statements from existing national AI strategies, and links to a stakeholder engagement guide outlining how to run a workshop to collaboratively create a national AI strategy mission and vision.

Define the focus of the strategic approach to AI as a function of both domestic and international priorities and trends. This will help ensure that objectives and activities address local needs while keeping pace with global advancements. Aligning with domestic goals ensures AI supports national objectives such as economic growth and societal well-being; while integrating international trends paves the way for adoption of emerging good practices, adherence to global standards, and participation in global collaborations. This balanced approach can also help position the nation strategically within the global AI value chain.

Countries should identify their differentiated role in the global AI value chain by understanding and investing in AI-related strengths and assets. For example, LMICs can:

- **Leverage access to abundant clean energy** to enable power sharing and position as attractive hubs for AI development, particularly as compute demands grow. Nations like Kenya and Morocco, with abundant renewable energy supply, are well-placed to attract significant AI investments.
- **Leverage untapped AI data training resources (as noted in *Box 3.2)*** LMICs host diverse epistemic systems and unique linguistic traditions that are underrepresented in current AI models, and incorporating these perspectives could yield more robust, contextually aware, and globally inclusive systems. These regions also contain some of the world's most biodiverse ecosystems, offering vast scientific potential for breakthroughs in biotechnology, climate resilience, and sustainable resource management, provided that equitable governance frameworks are in place. Additionally, the varied environmental and socio-economic conditions in developing nations supply critical data and contextual expertise for evolving AI from static models to dynamic world models capable of simulating complex real-world interactions.

Box 4.6: Harnessing the Data Opportunity: Policy and Governance Considerations

Realizing the full potential of developing nations in AI's next phase requires intentional policy frameworks that move beyond extractive data-sharing models toward equitable collaboration. Governments and international institutions must establish governance mechanisms that:

Ensure Value Capture: Developing countries must take proactive steps to integrate their data resources into the AI value chain, ensuring they capture economic and technological benefits rather than remaining passive suppliers.

Promote Ethical and Secure Data Use: Policies should safeguard against the unregulated extraction of local datasets while encouraging responsible data-sharing agreements that align with national development priorities.

Invest in Local AI Ecosystems: Strengthening domestic AI research capacity, digital infrastructure, and human capital (e.g., data scientists, bioinformaticians, AI engineers) will enable countries to develop AI applications tailored to local challenges, from healthcare diagnostics to climate adaptation.

Foster Global Collaboration: International cooperation can help establish common standards for AI data governance, ensuring that developing nations not only contribute to but also benefit from cross-border AI innovation.

Developing a robust AI strategy requires a clear understanding of where strategic opportunities lie and how national comparative advantages can be leveraged within the evolving global AI value chain. Below are seven critical questions to guide policy makers in assessing their nation's data potential to inform their AI strategies:

1. How is the global AI value chain shifting, and which data niches offer the country the greatest strategic advantage?
2. What unique data resources (e.g., linguistic, cultural, biodiversity, or domain-specific) does the country possess, and how can these assets be quantified, managed, and governed effectively?
3. How can the country ensure robust data governance that respects privacy, prevents bias, and offers fair benefit-sharing, particularly when it comes to sensitive or community-owned data?
4. Does the country have the necessary data infrastructure and human capital (e.g., data scientists, bioinformaticians) to fully leverage its data assets for AI innovation?
5. How can the country harness its biodiversity (and related traditional knowledge) for AI applications—such as drug discovery or conservation—while ensuring fair benefit-sharing and adherence to global standards?
6. How can the country structure partnerships—both domestic and international—to ensure local communities benefit equitably from AI-driven data use?
7. Does the AI strategy present clear goals and monitoring frameworks that align with the country's comparative advantages, encourage collaboration, and advance inclusive growth?

- **Leverage their size** and extensive, diverse populations to serve as dynamic test beds for AI innovations, enabling real-world experimentation in areas such as healthcare, agriculture, and public services. By harnessing the unique challenges and opportunities inherent in these large markets, these nations can rapidly iterate and refine AI solutions, generating scalable insights that benefit both their own development and other emerging economies.
- **Leverage their geostrategic positioning** by establishing themselves as critical hubs for AI research and development, connecting global supply chains and digital talent. By capitalizing on location-specific advantages—such as cost-effective labor, proximity to emerging markets, and diverse cultural insights—they can drive regional innovation and attract strategic international partnerships. ***Box 4.7*** provides an overview of various roles a country can take in the global AI value chain.

Box 4.7: Considering Potential Roles in the Global AI Value Chain

The global AI value chain is made up of a series of interconnected steps, from data gathering and preprocessing to algorithm development, model training, and deployment of AI systems across industries worldwide. This chain involves collaboration among data providers, tech companies, researchers, and end-users to create and implement AI solutions that drive innovation and economic value on a global scale.

As with most manufacturing process, the global AI value chain steps are distributed across the globe. Many MICs and territories—including India, Malaysia, Brazil (semiconductor fabrication and assembly), Viet-Nam (packaging and testing of semiconductors), and West Bank and Gaza (semiconductor chip design); and some LICs, including Uganda (data annotation and labeling), and many more—are creating jobs by leveraging their comparative advantages to participate in a specific area of the global AI value chain.

Many countries—including Rwanda, Madagascar, Malawi, and Nepal—are growing an ecosystem of AI startups that are developing AI services and solutions for domestic and regional markets. Sectoral applications include:

- Financial sector, such as AI for credit scoring to improve financial inclusion;
- Healthcare, such as AI for diagnosis and telemedicine to increase access to care;
- Agriculture, such as providing farmers with real-time data on soil quality and weather to optimize crop yields.

In addition to "hard" and "soft" digital infrastructure, to assess how the country might position in the global AI value chain, policy makers must consider factors such as geographic position, access to cheap and "green" power sources, membership in free trade areas, presence of multi-national technology firms, as well as emerging AI activity in the country.

(Continued)

(Box 4.7: Considering Potential Roles in the Global AI Value Chain, continued)

AI Services

AI consulting: Support large organization to adopt AI technologies effectively, including integration of AI in systems and processes and in specific sectoral use-cases

AI-enhanced BPO services: Expanding traditional BPO offerings to include AI services like chatbot management or data analysis

Cloud services provision: Develop and offer localized cloud as service to small businesses

Education and training: Establishing programs to build AI expertise within the country

AI Applications

Developing localized AI solutions: Creating applications that address specific local challenges

Localization and adaptation: Adapting existing AI applications to local languages and cultural contexts

Software development: Building AI-powered mobile and web applications for both local and global markets

Implementation services: Assisting businesses in integrating AI solutions into their operations

AI Models

Data collection: Gathering unique datasets, especially in underrepresented languages or local contexts

Data labeling and annotation services: Offering cost effective services for annotating data required for training AI models

Model training and customization: Utilizing local talent to train and fine-tune AI models for specific applications

Research and development: Participating in AI research, possibly through partnerships with global institutions

AI Hardware

Manufacturing and assembly: Leverage lower production costs to attract investments in manufacturing, assembly, and packaging of AI hardware components like sensors, processors, and semiconductors

Hardware maintenance and support services: Providing regional maintenance, repair, and technical support for AI hardware

Recycling and refurbishing: Engaging in environmentally friendly recycling or refurbishing of outdated AI hardware

Figure 4.7: Simplified AI value chain and potential ways for LMIC firms to engage in related activities

Activities

a. Define Strategy Objectives

Strategic objectives define the specific goals the country aims to achieve through AI development and integration. They provide clear direction for policy makers, the private sector, academia, and other stakeholders to align efforts and allocate resources appropriately to promote strategy implementation. Objectives should be grounded in the country's starting position and align and complement existing strategies and vision. When defining objectives, policy makers should ensure they:

- are specific enough to easily understood and assess, and broad enough for the benefits are shared across society;

- build on the insights gained from module 2 of this toolkit, including the policy and strategy survey, AI foundations and enablers assessment, and the state of AI adoption;
- aim to tap into the opportunities for AI implementation domestically and for positioning in the global AI value chain;
- incorporate AI risk considerations—such as increased inequality, widening digital divide, impact on youth unemployment, or environmental degradation—and how to mitigate these risks.

Expert and stakeholder interviews can be key tools for defining objectives. Some governments choose to consult a select group of AI experts and rely on in-house knowledge and analysis of needs and constraints to define their objectives. However, engaging a broader cross-section of stakeholders during development of strategic objectives, mission, and vision can help create a shared purpose and "ownership" to facilitate AI implementation and investments.

b. Define the Mission and Vision

Mission and Vision statements should serve as the strategy's guiding "north star", in alignment with strategic objectives. It is important for the mission to articulate the country's commitment to AI and its purpose, while the vision outlines long-term aspirations and transformative potential of AI. Strategic objectives support achievement of the mission by articulating goals in various areas. ***Box 4.8*** provides examples of how Mission and Vision statements can be aligned with strategic objectives.

Stakeholder Engagement Box 1

Mission and Vision statements for a national strategic approach to AI are best developed through a consultative workshop with a range of stakeholders drawn from the Stakeholder Map (Module 2B).

A Stakeholder Engagement Guide—providing insights on suggested setup, participants, and agenda for a workshop.

Box 4.8: Examples of Vision, Mission, and Objectives Statements in Rwanda and Ireland's AI Strategies

Policy makers should seek to balance bold visions but grounded in steps achievable in their country context that will serve the needs of people. Rwanda's and Ireland's approaches to defining their vision, mission, and objectives share common factors, including desire for leadership on the AI agenda, using AI as a tool for improving the lives of their peoples, and driving AI adoption in the private and public sectors. While Rwanda sets out the bold vision to become a global center for AI research and innovation, Ireland sets a more people-centric tone, approaching AI leadership to improve lives.

The National AI Policy, Republic of Rwanda (Ministry of ICT and Innovation, 2024)
Vision: To become a global center for AI research and innovation
Mission: To leverage AI to power economic growth, improve quality of life, and position

(Continued)

(Box 4.8: Examples of Vision, Mission, and Objectives Statements in Rwanda and Ireland's AI Strategies, continued)

Rwanda as a global innovator for responsible and inclusive AI

Objectives:

- Positioning Rwanda as Africa's AI lab and responsible AI champion
- Building 21st century skills and AI literacy
- Creating an open, secure, trusted data ecosystem as an enabler of the AI revolution
- Driving public sector transformation to fuel AI adoption
- Accelerating responsible AI adoption in the private sector

AI—Here for Good: A National Artificial Intelligence Strategy for Ireland (Department of Enterprise, Trade and Employment, n.d.)

Vision: Ireland will be an international leader in using AI to the benefit of our population, through a people-centered, ethical approach to AI development, adoption, and use.

Objectives:

- Strong public trust in AI as a force for societal good in Ireland
- An agile and appropriate governance and regulatory environment for AI
- Increased productivity through a step change in AI adoption by Irish enterprises
- Better public service outcomes through a step change in AI adoption by the Irish public sector
- A strong Irish ecosystem for high-quality and responsible AI research and innovation
- A workforce prepared for and adopting AI
- A data, digital, and connectivity infrastructure providing a secure foundation for AI development and use in Ireland

Key Tip 5: Flexible and Agile Objectives, Mission, and Vision

The vision, mission, and objectives can also be defined after deciding on, or in parallel with, work to determine key use cases and strategy pillars, as the two processes are inter-linked and inform each other. The process can be iterative, where, for example, objectives build on strategy pillars and key use cases.

Changes regarding key outcomes sought from the strategy over time might result in the need to update the vision statement or objectives. In this case, it is important to re-establish stakeholder agreement for priority areas.

Module 3: Outputs

- **A set of strategy objectives** clarifying the direction of the strategy and key outcomes
- **Mission and Vision statements** that articulate the end goal of the strategy and establish alignment across stakeholders

4.4 Module 4: Define the Focus

Overview

Focus on a limited number of strategic sectors and pillars to address the most critical needs and opportunities. To support this goal, this module:

i. Outlines a transparent, clear, and systematic approach to identify priority sectors for AI integration to maximize benefits, and defines three approaches for sectoral AI integration.

ii. Presents a step-by-step guide to identifying and evaluating existing and potential new local AI use cases and provides links to AI case libraries.

iii. Describes an approach to identify strategic pillars, provides an analytical tool to gather information required, and showcases selected national AI strategy pillars.

Activities

a. Identify Priority Sectors for AI Integration

Select AI priority sectors to foster social and economic development and the public good, such as healthcare, education, and agriculture. Policy makers consider a range of factors when determining what sectors to integrate for maximize public good. These include assessing societal needs and challenges and analyzing how AI integration into sectors such as healthcare, education, public safety, and the environment could help meet needs and address challenges. In some countries, organizations in these sectors may already be undertaking AI pilots for policy makers to gain insights about AI effectiveness and benefits. International collaboration and sharing of best practices and results from AI integration in other countries can also provide insights to help prioritize sectors.

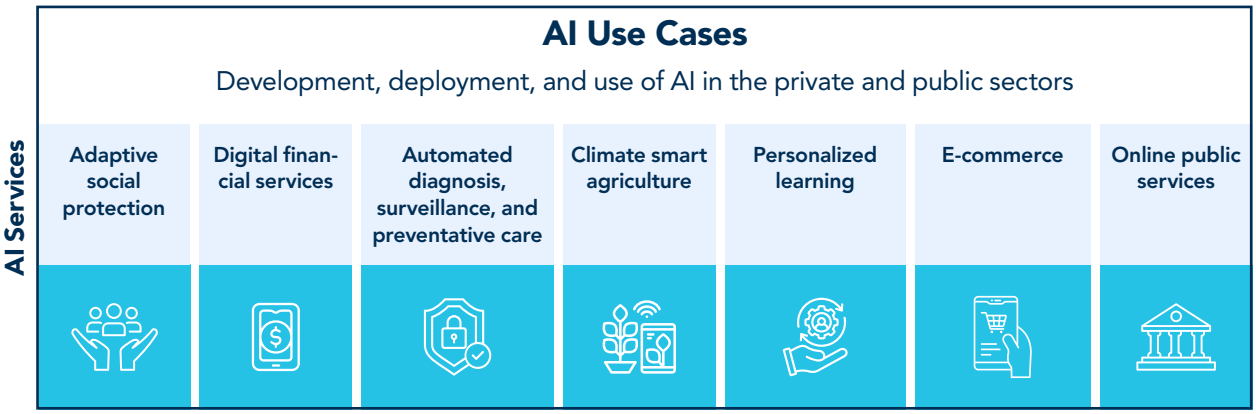


Figure 4.8: AI Services Outlined in the AI Strategy Framework Represent Common Priority Sectors for AI Integration

AI priority sectors for economic development should align with the country's comparative advantage and export strengths. Policy makers can leverage analyses of country current comparative advantage, export strengths, and government priority sectors. Analysis should include discussions with industry experts, academic institutions, and international organizations. In-depth research in key areas and reviewing relevant AI pilot projects can point to where AI can strengthen existing comparative advantages and support economic diversification and growth. *Box 4.9* outlines a systematic approach for identifying priority sectors and provides an example from Malaysia, while *Figure 4.10* presents the most common sectors existing AI strategies prioritize.

Box 4.9: A Systematic Approach for Identifying Priority Sectors for AI Integration

Employing a clear, transparent, and structured process to identify priority sectors for AI integration can help build trust among key stakeholders and ensure that sectoral efforts are strategic, maximize benefits, and align with overall national AI strategy objectives.

i. **Establish clear objectives of AI integration:** These should align with overall strategy objectives (Module 3A), and can include topics such as economic growth, improved public services, strengthened competitive advantages, or addressing specific societal challenges.

ii. **List and assess the potential of all relevant sectors:** The list will likely include sectors mentioned in Figure 4.8 but should be adapted to the local context. Potential development impact should be evaluated based on the objectives outlined in the previous point, such as potential contribution to economic growth and potential for social benefits.

iii. **Assess the readiness of any sectors evaluated for AI integration:** Leverage assessment of AI foundations and enablers from Module 1, and explore the digital and data infrastructure, skills, and legal and ethical considerations for these sectors. The case mapping (Module 4B) can help inform this step.

iv. **Prioritize sectors based on clear criteria:** Outline specific criteria for prioritization, aligned with objectives outlined in step 1, such as potential financial return, potential for scalability, time to achieve results, and ethical considerations. Rank sectors based on their scoring against the criteria. The highest ranked sectors will be those that offer the most significant benefit and align with the strategy's overarching objectives.

Example: Malaysia's priority sectors and related use cases

Malaysia's AI policy targets high-priority sectors, including agriculture, healthcare, education, and transportation, building on the country's comparative advantage in palm oil manufacturing and considering key societal building blocks. For each sector, the policy outlines use cases where AI integration can bring significant benefits, such as AI-driven supply chain management in agriculture, personalized learning systems in education, and smart traffic management in transportation.

(Continued)

(Box 4.9: A Systematic Approach for Identifying Priority Sectors for AI Integration, continued)

National priority area	National AI use cases	Technology drivers
Agriculture & forestry	• AI-driven supply chain management system for palm oil • Autonomous robotics oil palm harvesting system	Sensor technology
Medical & healthcare	• Autonomous vaccine distribution & management system • Personalized proactive healthcare • Autonomous A-eye system • AI-nasoalveolar (AI-na) system	Advanced intelligent systems
Smart cities & transportation	• AI-driven mass public transport	Aug. analytics & data disc
Education	• Quality and inclusive data systems for students profitting • Personalized learning system • Intelligent automated marking system	
Public services	• Intelligent automation in public services	

Figure 4.9: Malaysia's Priority Sectors and Related Use Cases. *Source: Malaysia Artificial Intelligence Roadmap 2021-2025*

Identify how to integrate AI technologies into various sectors to ensure deployment feasibility, considering specific sectoral needs, policies, and regulations. For AI to enhance services without compromising safeguards, policy makers should collaborate with AI and sectoral experts to evaluate integration approaches and identify practical ways to implement AI in compliance with data privacy and other laws and regulations. ***Box 4.8*** outlines three archetypal approaches for policy maker to consider.

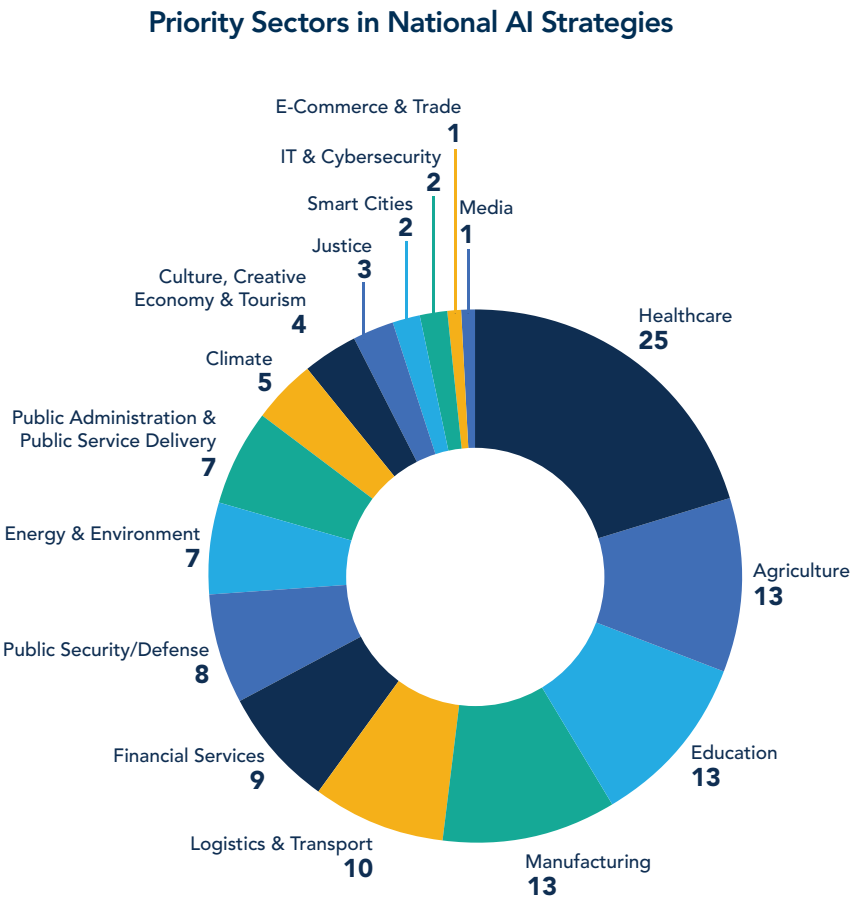


Figure 4.10: National AI strategies converge on a few sectors which are important for both social and economic development (number of analyzed National AI strategies that feature a specific priority sector).
Source: World Bank staff analysis, based on a sample of 30 national AI strategies

Box 4.10: Different Approaches to Integrate AI in Economic Sectors

When considering *how* to integrate AI in various economic sectors, it can be helpful to consider three ways in which this might happen:

i. **AI Adoption:** Relates to initial AI implementation and the process by which organizations or individuals begin to use and implement AI technologies for operations, products, or services. *Example:* Farmers begin using AI-driven tools, such as drones and sensors, to monitor soil health, crop growth, and weather patterns. Adoption enhances yield predictions and resource management, making farming more efficient and sustainable.

ii. **AI Infusion:** Relates to enhancement of existing systems, processes, or products through AI integration to enhance functionality and performance. *Example:* Hospitals integrate AI into existing diagnostic equipment, such as MRI and CT scanners. The AI analyzes imaging data to detect anomalies the human eye might miss, improving diagnostic accuracy and patient outcomes.

iii. **AI Innovation:** Relates to creation of new AI-enabled sectoral technologies, methods, approaches, and solutions. *Example:* Climate and conservation researchers develop new AI technologies to process much greater amounts of satellite imagery more exactly to monitor deforestation and wildlife populations. This innovation unlocks new, preventative approaches to environmental protection.

Key Tip 6: Data Considerations for Selecting Key Sectors

Sectors such as agriculture or environment should be evaluated for AI integration for potential societal benefits, but they also tend to have fewer regulatory requirements or processing of personally identifiable information. The judiciary can also be a good pilot, as court cases generally are public information which can be used to train AI models to power chatbots.

Sectors with large, digitized data assets, such as financial services or e-commerce, can also be good areas to explore for AI pilots. Similarly, institutions that have both data assets and expertise in data analytics, such as central banks or statistics offices, can also be strong partners for initial pilot projects.

b. Map Use Cases in Priority Sectors

AI use cases help focus a strategic AI approach by illustrating specific barriers and benefits of AI adoption. This can help policy makers design pillars and actions to address key obstacles. The list of AI use cases should include ones already being implemented, as well as new use cases with high potential to benefit the country. AI use cases can also help explain benefits of AI integration to the public. *Box 4.11* outlines a systematic approach to mapping and evaluating key use cases.

Box 4.11: Local AI Use Case Mapping; a Step-by-step Approach

This process proposes a systematic approach to identifying, analyzing, and documenting AI use cases in priority sectors to address country-specific challenges and opportunities:

Step 1. Define objective, scope, and criteria: For large countries, setting a geographic and sectoral scope can support the mapping exercise. A set of selection criteria, such as relevance (does it address a critical and specific problem within the sector?); potential for benefits; technological feasibility (given the local context); and scalability can sharpen focus and help identify relevant, implementable use cases.

Step 2. Review existing use cases: Start mapping existing AI use case in the country, then identify potential additional areas for AI deployment. Depending on the scope, the review could involve desk research, interviews with AI practitioners, and study of development agencies' and technology companies' use case libraries. The mapping should also leverage key economic sectors and areas of societal importance identified in Module 3.

Step 3. Categorize use cases: Categorize AI use cases by sector (for example, healthcare, agriculture, education). Within each sector, further categorize by application type (for example, diagnostics, supply chain optimization, personalized learning). Identify whether each use case is at the concept, pilot, or fully implemented stage, and the scale of the pilot to understand the effort needed to realize the case at scale.

Step 4. Assess impact and feasibility: Use the analysis AI foundations and enablers (Module 2) to identify specific barriers for use cases and assess the feasibility of scaling and replicating the use case. Also assess potential economic, social, and environmental benefits and risks of the use case on the population, especially on vulnerable groups.

(Continued)

(Box 4.11: Local AI use case mapping; a step-by-step approach, continued)

Step 5. Provide documentation: Compile use cases into an user friendly and accessible format. Use digital visualization tools adapted to the local context, including simple tools such as excel sheets listing information about the cases to advanced Geographic Information System (GIS) platforms that map use cases across the country.

Step 6. Disseminate and collaborate: Share results with stakeholders—including government bodies, NGOs, companies/startups, and the public—to inspire action and encourage experimentation. Identify key partners and structures, such as national statistics offices or financial sector players with experience in data analytics, that could enable pilot projects. Identifying potential collaborations between ministries and large agricultural or healthcare companies, as well as AI technology startups, can help initiate and scale pilots. Consider engaging with international forums and platforms for stakeholders to share AI projects, challenges, and lessons learned. Examples include the AI for Good Global Summit and AI for Good Community, the Artificial Intelligence for Development (AI4D) Africa, and the Global Partnership on Artificial Intelligence (GPAI).

Stakeholder Engagement Box 2

AI Use Case Mapping might involve 10-30 interviews to comprehensively review and describe the AI landscape. Interviewees should be drawn from the Stakeholder Map created in Module 2B, focusing on actors with practical AI experience, such as students and university professors conducting AI projects, public sector entities and companies with AI and data science projects, and AI startups.

Stakeholder interviews for AI Use Case Mapping can be combined with those for the Strengths, Weaknesses, and Opportunities (SWOT) analysis (proposed in Module 4C) to increase efficiency.

For guidance on how to design and conduct stakeholder interviews, please see the **Stakeholder Engagement Guide**.

c. Create a Set of Strategic Pillars and Define their Objectives.

Create a limited number of strategic pillars to focus efforts and drive substantial gains in key areas. Policy makers can leverage the strategy framework (section 2.1) to identify strategy pillars. The framework emphasizes the importance of improving AI foundations and strengthening AI enablers, such as addressing limited digital and data infrastructure and low AI skills availability and increasing financing for innovation. To drive AI use, it is important to define pillars that support AI integration into both the private and public sectors—building on priority sectors and use cases identified—while mitigating AI risks. It is also important, however, to encourage innovation, focusing on governance that guides innovation toward the public good. The strategy becomes more comprehensible and progress easier to measure and evaluate when limiting strategy pillars to between five and eight. ***Box 4.12*** provides examples of how countries have approached identification of strategic pillars.

Box 4.12: Example of Pillars in Selected National AI Strategies

While not all strategies explicitly feature "pillars", they all group activities and actions around a limited number of key areas to drive progress toward strategic objectives. Policy makers should determine how best, in their context, to group and name their "pillars". The activities proposed here can help develop these pillars, but policy makers should keep three factors in mind:

i. **Consistency:** Ensure that pillars align with national plans for economic growth, digitalization, and poverty reduction. For example, does a potential pillar focused on AI talent development in infrastructure address regional or demographic disparities?

ii. **Clarity:** Ensure that each pillar is clearly defined and mapped against at least one strategy objectives. Moreover, to facilitate downstream program development and implementation, be clear about how each pillar maps to a specific government agency, department, or non-governmental actor to mitigate later confusion and friction.

iii. **Complementarity:** Ensure that pillars are mutually reinforcing without overlapping. For example, make sure that pillars focusing on AI skills and R&D complement each other by verifying that training priorities align with country AI research priorities; or ensure that ethical and governance considerations align with infrastructure investments by, for instance, ensuring that data-sharing frameworks and computing resources safeguard privacy, safety, and trust.

We present four country examples here to illustrate different approaches to defining and grouping strategy pillars. They all feature pillars focused on improving the four Cs including Connectivity (energy and broadband connectivity), Computing, Context (data) and Capabilities (skills) as well as AI use cases and promote adoption of AI in private sector enterprises and public sector operations and services, including in target sectors. All examples seek to integrate AI in peoples' everyday lives and ensure that the benefits of AI adoption reach all of society, while mitigating risks.

Brazilian Artificial Intelligence Plan (PBIA) 2024-2028

Brazil's AI strategy is built on five key pillars:

- **Infrastructure and Development** aims to establish supercomputers, data centers, and software essential for advancing AI research.
- **Dissemination, Training, and Capacity Building** focuses on educating the population from basic digital literacy to advanced AI research to build a skilled workforce.
- **AI for Improving Public Services** seeks to enhance efficiency in sectors such as healthcare, education, and administration.
- **AI for Business Innovation** supports businesses, particularly small and medium enterprises (SMEs), to use AI to drive productivity and competitiveness.
- **Support for Regulatory Process and Governance** aims to create a regulatory framework that fosters innovation while protecting human rights and promoting responsible AI use.

(Continued)

(Box 4.12: Example of pillars in national AI strategies, continued)

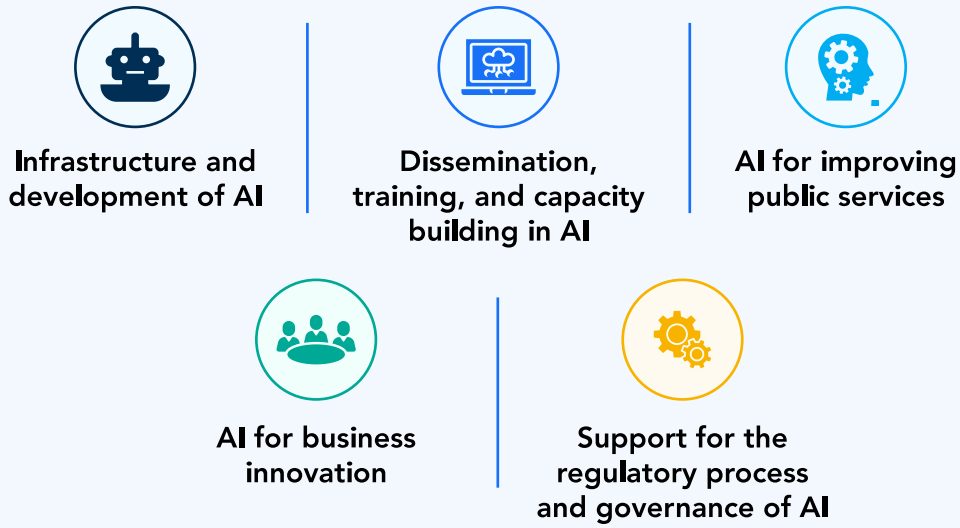


Figure 4.11: Brazil's AI Plan Pillars

Ireland's National Artificial Intelligence Strategy

The Irish strategy features three key pillars: developing foundations, shaping governance, and applying AI for economic and social impact. In turn, these consist of eight sub-pillars (strands) providing more detail on the specific government priorities for under each of the pillars.

In recognition of the wide-ranging effect AI will have on our lives, this Strategy considers AI from a number of perspectives. These are:

Building public trust in AI
Strand 1: AI and society
Strand 2: A governance ecosystem that promotes trustworthy AI

Leveraging AI for economic and societal benefit
Strand 3: Driving adoption of AI in Irish enterprise
Strand 4: AI serving the public

Enablers for AI
Strand 5: A strong AI innovation ecosystem
Strand 6: AI education, skills and talent
Strand 7: A supportive and secure infrastructure for AI
Strand 8: Implementing the Strategy

A theme that runs through the entire Strategy is Government's commitment to an ethical approach to AI and to the secure use of AI and other digital technologies.

Ultimately the ambition of this Strategy is to make sure that AI is here for good.

Figure 4.12: Ireland's National Artificial Intelligence Strategy

(Continued)

(Box 4.12: Example of pillars in national AI strategies, continued)

China's New Generation Artificial Intelligence Development Plan 2017

The strategy highlights that AI advancement is a multifaceted undertaking connected to a broader context, requiring alignment with the strategy to "build one system, grasp the two attributes, adhere to the trinity, and strengthen the four supports" to establish a path for AI's healthy, sustainable growth. Specific components are:

i. construct an open and cooperative AI technology innovation system;

ii. grasp AI's characteristic high degree of integration of technological and social attributes;

iii. adhere to promotion of the trinity of breakthroughs in AI research and development, product applications, and fostering industry development;

iv. fully support science and technology, the economy, social development, and national security.

Figure 4.13: 国务院关于印发新一代人工智能发展规划的通知_科技_中国政府网 and peer reviewed translation of the same found through China's 'New Generation Artificial Intelligence Development Plan' (2017)

By strategically focusing on the interconnected pillars (Figure 4.13), China's 2017 AI strategy aimed to establish a solid foundation for achieving its ambitious goals, and ultimately transforming the nation into a global AI leader.

(Continued)

(Box 4.12: Example of pillars in national AI strategies, continued)

Thailand's National AI Strategy and Action Plan (2022-2027)

Thailand's strategy features five key pillars (called "strategies"). These align with key common LMIC development areas as they work to increase AI preparedness and support three overarching strategy objectives. Sectoral AI integration is featured separately, focusing on use cases and applications.

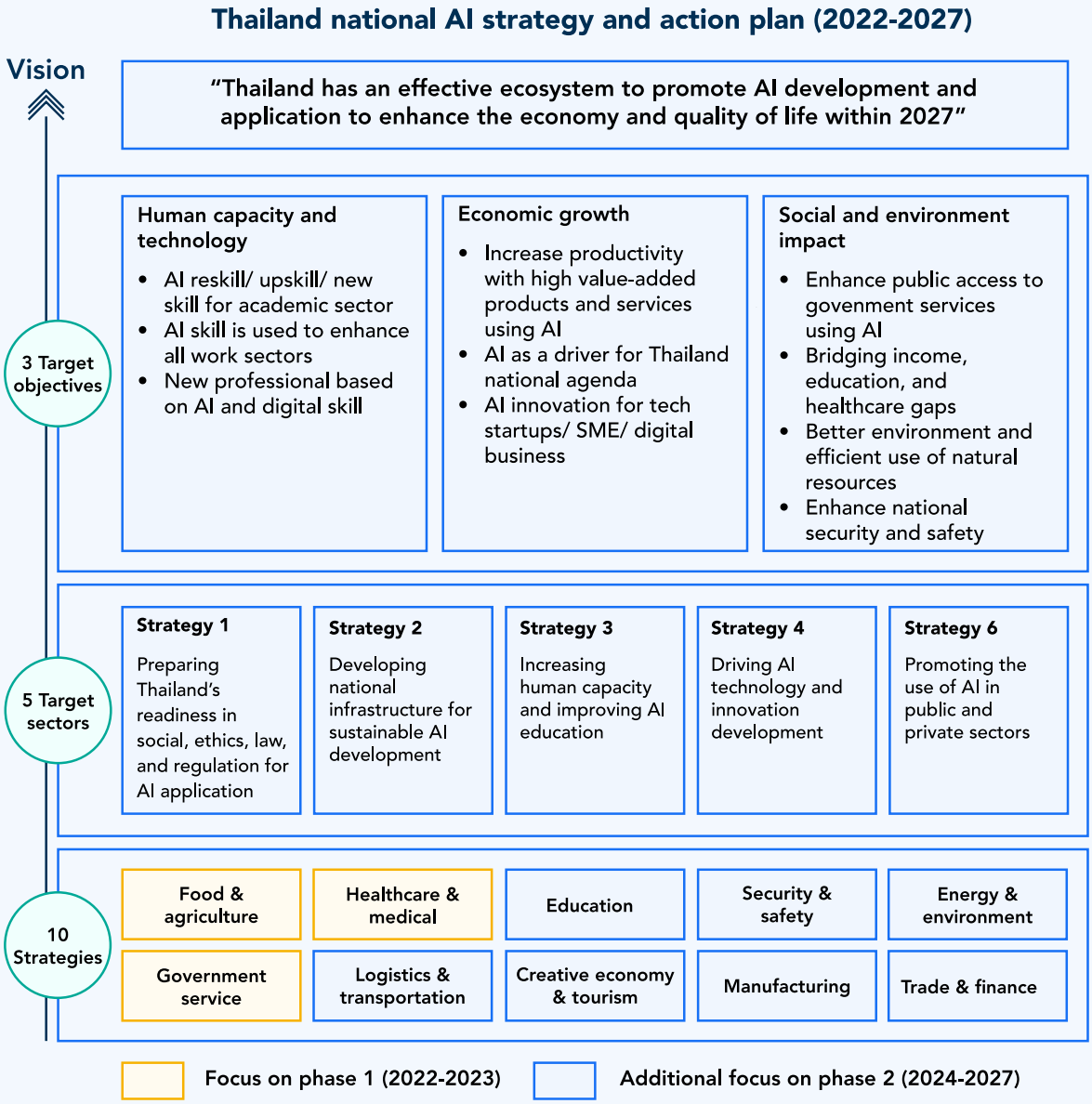


Figure 4.14: Thailand's National Artificial Intelligence Strategy (National Electronics and Computer Technology Center (NECTEC), 2024)

Identify specific objectives for each pillar and potential linkages with other pillars, and engage sub-committees with specific expertise to shape them. Pillar objectives should be derived from the strategy's overall objectives and outline how the pillar contributes. Examples in Box 4.10 illustrate how to formulate pillar objectives. It is also important to identify interdependencies between pillars and specify the sequencing of activities for each pillar (Module 5). For example, a pillar related to AI enablers, such as skills development, provides the foundation for pillars to support sectoral adoption and use. Similarly, pillars relating to AI foundations, such as digital connectivity, support AI integration across the economy. As noted in Module 1, specific teams or subcommittees with expertise in the pillar areas can draft the text for specific pillars. For example, a subcommittee on digital infrastructure should include experts on compute, connectivity, devices, and energy to determine objectives and recommendations for this pillar.

Identify key opportunities and challenges for each pillar to address, as well as assumptions that underpin them. To ensure pillars address the right aspects, policy makers should complement the landscape assessment (Module 2) with assessment of the country's AI-related strengths, weaknesses, opportunities, and threats (SWOT). It is also important to ensure that the strategic approach is grounded in realistic assessment of internal capabilities and external factors, including examining assumptions underlying the pillars. ***Box 4.13*** presents a SWOT analysis framework and how Sri Lanka used it for its AI strategy.

Box 4.13: Strengths, Weaknesses, Opportunities, and Threats (SWOT) Analysis Framework with Illustrative Questions and Topics

SWOT analysis can inform the design of strategy pillars and potential actions that maximize and leverage strengths, mitigate weaknesses and threats, and seize opportunities within the AI landscape. Inputs for the SWOT analysis include stakeholder interviews (see Stakeholder Engagement Point), information gathered from the Survey of Key Policies and Strategies (Module 2A), and the Reviews of AI Foundations (Module 2C) and AI Enablers (Module 2D).

Strengths

- What existing digital infrastructure (for example, broadband or data centers) supports AI development in the country?
- What government policies or initiatives are already in place to promote AI?
- What educational institutions or research centers lead in AI research and development?
- What is the level of AI expertise and talent available in the country?

(Continued)

(Box 4.13: SWOT analysis framework with illustrative questions and topics, continued)

- Which industry sectors already use automation, especially key sectors such as healthcare, agriculture, and finance? Which are conducive to AI adoption?
- What partnerships (public-private or international) are in place to support AI development?
- What natural or industrial resources could be leveraged to advance AI technologies?

Weaknesses

- What gaps in digital infrastructure hinder AI adoption?
- How significant is the digital divide in terms of access to technology and skills?
- What is the level of AI literacy among government officials and policymakers?
- What regulatory or legal challenges could slow AI adoption?
- What ethical concerns or public perceptions exist regarding AI?
- Is investment in AI research and development lacking?
- Is data available and of what quality, and what challenges exist regarding data privacy and security?
- Does the country have the talent and skills needed for AI development? What are the gaps, and how can they be addressed?
- What obstacles exist in the startup and finance ecosystem for AI innovation and entrepreneurship?
- How inclusive and accessible are AI technologies and benefits to different segments of society?
- Does the government have the capacity to effectively support and regulate AI development? Do problems exist related to regulatory clarity, awareness, or administrative red tape? Do different ministries coordinate with each other?

Opportunities

- What global AI trends could be leveraged to accelerate AI adoption?
- How can AI be used to solve specific local challenges, such as in agriculture, healthcare, or education?
- What opportunities exist for international collaboration or funding for AI initiatives?
- How can AI contribute to economic growth, job creation, and new business models?
- What emerging technologies (for example, 5G or IoT) could support AI development | in the country?
- How can the country position itself as a leader in AI within its region or globally?
- What opportunities exist to position the country as a regional AI hub, niche specialist, or leader in responsible AI practices?
- What opportunities exist to develop AI ethics frameworks to influence global standards?
- What opportunities exist to boost AI employment or establish partnerships?

Threats

- What external factors (for example, global competition or trade restrictions) could affect AI development in the country?
- How might AI exacerbate existing inequalities or lead to job displacement?
- What risks are associated with cybersecurity in the context of increased AI adoption?

(Continued)

(Box 4.13: SWOT analysis framework with illustrative questions and topics, continued)

- Are there concerns about data sovereignty or reliance on foreign technology providers?
- What potential regulatory changes at the global level could pose challenges for AI strategy implementation?
- How could societal resistance or skepticism about AI technologies affect adoption?
- What potential environmental threats do AI-related activities impose (for example, increased energy consumption)?
- What are the top ethical challenges and risks of AI applications related to fairness, safety, security, bias, transparency, and inclusion?

Example: Sri Lanka's AI strategy SWOT analysis

Sri Lanka's SWOT analysis provides clarity on opportunities and challenges, helping policy makers devise interventions that address binding constraints. The analysis shows that despite a skilled tech workforce and strong data protection laws, the country faces challenges in building a robust AI presence, including insufficient digital infrastructure for advanced applications, low overall digital literacy, and limited data availability, accessibility, and quality. However, the National AI Strategy, aligned with Digital Strategy 2030, presents an opportunity to enhance collaboration, promote responsible data use, and drive international partnerships to foster AI growth and investment.

Strengths

- Technically competent workforce
- Globally competitive technology companies
- Multilingual capabilities with strong English fluency
- Comprehensive data protection legislation
- Strong enterprises

Weaknesses

- Lack of AI-focused companies and no significant impact on global AI landscape
- Scarcity of advanced AI engineering skills and strategies expertise in developing strong AI business cases
- Insufficient digital infrastructure for advanced AI applications
- Lack of robust data strategy and governance framework that can hinder AI development and deployment
- Low levels of basic computer, digital, and data literacy among the population
- Inadequate local collaborations among academia, research institutes, government, civil society, private sector, legal professionals, and the tech community

Opportunities

- Position Sri Lanka as a destination for high quality AI and data talent and development capacity
- Leverage on the on-going digital strategy 2030 to bring the benefits of AI to the general population
- Improve efficiency and lower costs of state machinery at a time when this is a national priority

Threats

- Brain drain exacerbating the scarcity of AI talent
- Scepticism and resistance to the adoption of AI-driven solutions due to lack of understanding of AI's potential benefits and risks
- Lack of buy-in from state institutions

Stakeholder Engagement Box 3

SWOT Analysis Stakeholder Interviews

To ensure comprehensive understanding of the landscape, the SWOT analysis should leverage consultations with stakeholders to fill information gaps, particularly relating to ongoing initiatives, on-the-ground obstacles, and AI perceptions from professionals in the ecosystem. The interviews aim to identify trends and recurring obstacles, challenges, and opportunities for AI to validate desk research findings. If multiple respondents allude to similar constraints, these should be added to the SWOT Analysis. If an insight is mentioned less often but seems material, it should be validated in other interviews or through desk research.

About 10-20 interviews often provide a good view of on-the-ground realities, interviewee selection is representative and includes AI practitioners and potential AI users. Interviews can range from people working in digital or AI startups, university students or graduates, and corporate and public sector actors developing or considering AI projects. Where the AI startup scene is nascent, interviews may include people working in data science startups.

Interview subjects should be selected from the **Stakeholder Map** (Module 2B), and any new ones that emerge should be added to the Map for follow up.

Stakeholder engagements for the SWOT analysis can be *combined with those for the AI Use Case Mapping (Module 4B)* to increase efficiency.

Stakeholder Workshop to Validate Pillars and SWOT

Inviting key stakeholders (using the Stakeholder Map) to a workshop to validate the proposed Pillars and SWOT results can help: (i) ensure alignment on the broad strategy, (ii) gather early input for designing key actions and initiatives (Module 5), and (iii) strengthen buy-in and ownership of the strategy among key stakeholders who will be engaged in its implementation.

For guidance on how to design and run the interviews and stakeholder workshop, see the **Stakeholder Engagement Guide**.

Key Tip 7: Ensure Concrete and Precise Interview Responses

In all engagements with stakeholders, whether interviews or workshops, it is important to seek concrete and specific responses. This will help ensure that pillars, activities, and initiatives addressing key challenges are specific and effective. If replies do not include precise information, or are otherwise not clear, ask follow-up questions to seek precise data, responsible parties, timings, locations, and reasoning behind answers. Doing this can be as simple as asking Who, What, Where, When, Why and How.

Module 4: Output

- **Priority sectors for AI integration** relating to both social and economic development, aligned with the country's strategic direction, and building on its comparative advantages.
- **A list of AI use cases** vetted and assessed for feasibility and potential to benefit, provided as a public good to inform both public and private sector projects.
- **A SWOT Analysis** that complements of AI Foundations and Enablers assessment to serve as a diagnostic of the country's AI ecosystem, informing the strategic direction.
- **A validated set of strategy pillars** for the AI strategy designed to address key barriers to AI development and deployment, and tapping into well-defined opportunities for AI to drive social and economic development.

4.5 Module 5: Shape Actions

Overview

Strategic actions operationalize the AI strategy and drive progress toward its objectives, mission, and vision. To that end, this module:

i. Presents a step-by-step guide to analyzing policies related to AI, identify gaps for the national AI strategy's objectives, and devise additions or modifications to close those gaps.

ii. Provides guidance on how to develop actions and initiatives for the AI strategy that are specific, measurable, achievable, relevant, timebound (SMART).

iii. Provides examples of policy areas and specific policies that may need updating in response to AI, and how this may be done.

iv. The module also provides some guidance on how policy makers may leverage other national AI strategies as inspiration when developing their own.

When shaping actions, consider current policy and regulatory frameworks, and assess how new policies should correspond with, or differ from, existing laws. This requires thorough analysis of the current legal framework and identification of deficiencies that need policy attention. It is crucial to evaluate both broad policy frameworks and specific sector policies, given that AI systems function across various sectors, such as agriculture, finance, health, manufacturing, transport, environment, citizen services, and government, among others. Existing policy frameworks in these sectors often require updates or extensions to accommodate AI systems.

Activities

a. Conduct an AI Policy Gap Analysis

The policy gap analysis defines changes needed to current policies to achieve national AI objectives. This analysis, covering all foundations and pillars of the strategic approach, informs development of new actions or policies, and modifications to existing ones, needed to support AI. The gap analysis is based on the Survey of Policies and Strategies (Module 2A), the review of AI foundations (Module 2B) and enablers (Module 2A), as well as SWOT results and the pillar objectives (Module 4C). Additional research and interviews should complement the analysis. Gap analysis can also help

highlight and remind stakeholders about the need to advance on existing digital development plans and related reforms, such as data privacy laws. The sub-committee of the task force can undertake a regulatory review or policy gap analysis (***Box 4.14***), ideally with representatives from each concerned unit of government as members. For example, a member from the Ministry of Education can serve as the resource or liaison with the ministry undertaking the policy gap analysis.

Box 4.14: Policy Gap Analysis Step-by-Step Guide

The following process provides a step-by-step guide to conducting a policy gap analysis for AI. It helps policymakers identify missing or misaligned policies needed to enable responsible AI development and use.

i. Consider a pillar within the AI strategy and its objectives.
ii. Refer to the policy mapping or conduct additional desk research or consultations to identify existing policies or programs aiming to address these objectives.
iii. What are its intended outcomes, activities, and timeline?
iv. What are the current levels of achievement in the country?
v. What new additions or modifications are required to meet the AI strategy's objectives?

Table 4.2 below provides an example of policy mapping for pillars related to AI Education & Skills Development, Digital Infrastructure, and AI Innovation Ecosystem.

Table 4.2: Example of a Simplified Country-level Policy Gap Analysis

Objective in the AI Strategy	Pillar in the AI Strategy	Existing related policy	Current level of results/outcomes	Key action in the AI Strategy
Build an AI-ready workforce	Capacity: AI education & skills development	National ICT in Education Policy (2020), National Digital Economy Policy	Country is ranked 75th on AI higher education; few graduates have requisite skills in data science and software engineering	Public-private funded program for AI university courses and research fellowships, free online upskilling courses
Increase access to affordable, reliable, and secure scalable storage and high-performance compute infrastructure	Digital Infrastructure: Broadband connectivity, compute, and devices	National ICT Development Agenda (2018), Digital Development Agenda (2020-2025)	Low affordability of international cloud offerings for AI start-ups and students; digital infrastructure ranked 104th in international index	Initiate partnerships with world-class cloud computing providers, with support of development institutions, for affordable access for AI startups
Accelerate responsible AI innovation and adoption in the private sector	Ecosystem: Fostering research, innovation, and community	National Digital Economy Policy, Digital Finance Strategy	Ranked at 91 in World Bank B-READY Index, lack of access to credit, very limited VC funding for digital startups	Establish AI innovation hubs, fund sector-specific adoption incentives, foster cross-border academia-industry partnerships

b. Design SMART Actions and Initiatives

Design concrete and measurable key actions within each pillar to drive accountability and implementation. Policy and projects should be framed in a concrete, clear, and actionable way. They should be designed to be measured, monitored, incentivized, and enforced. When crafting key actions, use the SMART criteria (***Box 4.15***) to create well-defined actions that are easier to implement, track, and evaluate, ultimately increasing the likelihood of achieving strategic objectives.

Box 4.15: Designing SMART Goals and Actions to Track Progress and Assign Accountability

Designing SMART actions and related indicators is crucial for tracking progress, ensuring accountability, and incentivizing implementation. The actions break strategy objectives into specific goals. Each action should be connected to a clear and tangible outcome and be explicit about what defines success. Ensure that goals are realistic given the country's resources, capabilities, and current AI development and use. Set clear baselines and divide larger goals into smaller, manageable milestones to help maintain momentum and provide opportunities for adjustment.

These examples of SMART actions and goals that provide answers to the key questions "what", "who", "how much", and "by when":

- Increase **AI literacy** among **high school students** by **50 percent** within **five years**.
- Deploy **AI systems** in **10 government agencies** by **2027**.
- Make **10 high quality, accessible data sets in local language** available **for large language model (LLM) training** within **two years**.
- Incentivize **30 percent of large companies** to **adopt AI ethical guidelines** within **three years**.
- Increase **annual public-private investments in AI R&D projects** by **10 percent** within **two years**.

SMART goals should be accompanied by indicators to track their progress as part of the implementation plan, as suggested in the approach in Module 6.

Identify key linkages between actors, policies, and strategies. Leveraging the Survey of Policies and Strategies from Module 2, analyze how policies and strategies interconnect by examining their mutual effects, shared objectives, potential conflicts or synergies, and how one policy might influence the implementation or outcomes of others. For example, a program to digitize public data should be coordinated with efforts to improve data privacy, security, and representation. Similarly, a strategy to grow the local AI community through meetups can be coordinated with AI training, education, and job placement programs. ***Box 4.16*** provides examples of potential updates of sectoral policies in response to the AI strategy. However, these will be specific to each country and context.

Box 4.16: Examples of Policy Updates to Support a National AI Strategy

Policy area: Education and Workforce Development (AI Enablers)

Rationale for updates:

- *Develop a skilled workforce:* Updating education policies ensures a steady pipeline of talent to meet the demands of an AI-driven economy.
- *Enhance employment opportunities:* Proactively equipping citizens with AI skills can improve their competitiveness in the job market and help mitigate potential labor market impacts of technological shifts.
- *Foster innovation and entrepreneurship:* Educated individuals are more likely to engage in innovative activities and start new businesses in the AI sector.

Potential updates: Education strategies may need to be revised to incorporate AI literacy and skills at all education levels:

- *Primary and secondary education:* Introduce basic AI concepts and computational thinking to prepare students from an early age.
- *Higher education and vocational training:* Expand programs in data science, machine learning (ML), and related fields to produce qualified AI professionals.
- *Continuous learning and upskilling programs:* Provide opportunities for the current workforce to gain AI-related skills through certifications and professional development courses.

Policy area: Data Protection and Privacy (AI Enablers)

Rationale for updates:

- *Support AI research and innovation:* By updating data laws, the government enables researchers and companies to access the large datasets necessary for training AI algorithms.
- *Build public trust:* Strengthening privacy protections while allowing for data utilization helps build public trust in AI technologies.
- *Strengthen international competitiveness:* Aligning data policies with global standards can make the country more attractive for international AI collaborations and investments.

Potential updates: Laws may need revision to balance individual privacy protection with the need for data accessibility for AI development. This could involve using:

- *Anonymization standards:* Establishing clear guidelines for anonymizing personal data to make it usable for AI without compromising privacy.
- *Data portability and sharing frameworks:* Creating legal frameworks that facilitate secure data sharing between organizations, researchers, and government entities.
- *Consent mechanisms:* Updating consent requirements to cover AI-specific data uses, ensuring individuals are informed about how AI systems may process their data.

Policy area: Healthcare (AI Services)

Rationale

- *Enhance healthcare delivery:* Updating healthcare policies can enable AI technology adoption to improve diagnostic accuracy, personalize treatments, and increase healthcare services efficiency.

(Continued)

(Box 4.16: Examples of policy updates to support a national AI strategy, continued)

- ***Improve patient outcomes:*** By integrating AI into healthcare, the sector can achieve better patient outcomes through early disease detection, predictive analytics, and more effective treatment plans.
- ***Foster innovation in medical technology:*** Clear, supportive regulations encourage investment and innovation in AI-driven medical technologies, contributing to economic growth and positioning the country as a leader in healthcare innovation.

Potential updates:

- ***Approval processes for AI medical devices:*** Current regulations may not adequately address AI-powered medical devices and software. Update policies to include clear guidelines for evaluation, approval, and monitoring AI diagnostic tools, treatment planning systems, and patient monitoring applications.
- ***Telemedicine and remote care regulations:*** Revise policies to accommodate AI-driven telemedicine services, ensuring they comply with patient confidentiality, data security, and quality of care standards.
- ***Patient data management and sharing:*** Update regulations to facilitate secure and ethical patient data sharing for AI applications, including provisions for data anonymization, patient consent, and cross-institutional data collaboration.

Prioritize the inclusion of capacity building initiatives in the actions, where necessary, to pre-empt implementation obstacles. For civil servants, such programs should, at a minimum, expose them to AI tools and help them become familiar with AI fundamentals, key use cases for their role and technical specialty, and ethical considerations. However, depending on the audience, capacity building programs can also cover topics such as AI governance and regulation, AI infrastructure needs, and AI-related data management practices. Training technical staff within government agencies on how to integrate AI into services and platforms is also critical to implementing the targets set under the strategy. By increasing knowledge and comfort with AI, capacity building programs can also promote intra-governmental coordination and innovation. Examples of available resource include GIZ's *Handbook for Implementing a Capacity Building Programme for Policy Makers on AI* and Smart Africa Digital Academy's (SADA) course on "AI for policymakers" and training on green and inclusive digital transformation. A change management plan can help facilitate transitions needed to carry out assigned responsibilities. Public sector entities can also consider recruiting technical experts, or launching small AI pilot projects, to foster internal learning. More broadly, society-wide AI skills are critical to enable successful implementation of the strategy, as ***Box 4.17*** outlines.

Box 4.17: Developing AI Skills to Enable Safe Adoption at Scale

The unprecedented opportunities for innovation and socio-economic development AI presents can only be fully realized if there is a concerted effort to equip citizens with relevant skills.

A strategic AI approach should therefore outline a comprehensive approach to AI education and capacity building, including:

- building a supply of AI talent needed for researching and developing AI;
- developing technical skills for integrating AI into public and private sector services and products;

(Continued)

(Box 4.17: Developing AI skills to enable safe adoption at scale, continued)

- upskilling software developers to build applications on top of AI models;
- developing general AI literacy required for using AI;
- reskilling or upskilling the labor force to be able to use AI in the workplace or transition to working on tasks with higher AI complementarity;
- building public sector capacity to foster AI skills, development, and governance.

AI Skills and capacity building requires identifying specific deliverables and recommendations, in collaboration with the Ministry of Education. Policies on AI skills development could be standalone documents or streamlined into other or existing policies. For example, AI education can be introduced at the primary level and progressively enhanced throughout secondary and high school education. For public servants, AI training programs can be incorporated into continuous education programs.

Stakeholder Engagement Box 4

Actions and initiatives are often developed through a consultative process, led by the task force and including entities that will oversee their implementation, such as ICT or telecommunications agencies, the agency overseeing data privacy, the ministries of education and economy, and other relevant sectoral ministries.

The process can leverage about 10 interviews or focus groups focused on sensitizing stakeholders to emerging ideas for initiatives and gathering feedback and additional insights to inform the design of actions and initiatives, will help ensure that policies and initiatives are feasible, sustainable, and address the specific needs and concerns of different sectors. In addition, governments may wish to publish key initiatives online to gather public feedback before finalizing the design.

For guidance on how to design and conduct stakeholder interviews, please see the **Stakeholder Engagement Guide**.

Refer to international AI policy examples to gather innovative ideas to adapt to the local context. It may be useful to refer to other countries' AI policies and governance approaches to help prioritize or refining policy recommendations, or to validate and strengthen credibility with internal stakeholders. Helpful references include countries leading in AI technological and policy development—such as the UK, Singapore, Canada, the US, or China—but also those with similar digital maturity, market size, income level, and/or geographic region. In addition to here, the OECD provides a library of national AI policies and strategies. However, it is important not to rely too heavily on international examples, since the AI policy field is nascent, and evidence-based best practices are lacking. Nonetheless, Annex B provides a template format illustrating the type of content relevant for reviewing international AI policies.

Module 5: Outputs

- **An analysis to identify gaps** between the strategy's objectives, mission, and vision and existing policies and current results
- **A set of SMART key actions, policies, and programs** within each pillar that turn the strategy into an implementable plan

4.6 Module 6: Prepare for Implementation

Overview

A strategic approach to AI must be supported by a strong implementation plan. To that end, this module:

i. Outlines factors to consider when institutionalizing implementation of the national AI strategy.

ii. Provides a simple framework for assigning responsibility and accountability for strategic initiatives and actions.

iii. Provides a tangible guide to developing a results framework for national strategic AI, enabling timely tracking of results and accountability, and allow for adjustments as needed.

iv. Provides key aspects to consider for public engagement and education about AI, outlines a list of common AI misconceptions and "myths", and a links to communications plan template that policy makers can use as they develop their own public relations efforts.

Activities

a. Institutionalize Implementation of the National Strategic Approach to AI

The ministry overseeing development of the national strategic approach to AI is often also responsibility for overseeing its implementation. The task force overseeing AI strategy development should also be responsible for defining the institutional structure, including institutional and governance framework, for implementation. While the task force is disbanded upon completion of its mandate, AI strategy implementation often remains with the Ministry of ICT or Digital or a specialized AI office. During implementation, the entity should have authority to monitor implementation across various government entities assigned responsibilities. Moreover, assigning a responsible coordinating entity enables consistent oversight and policy enforcement, enhancing accountability and ensuring compliance with regulatory frameworks. Enlisting the same focal points across various ministries as during strategy development can help leverage institutional knowledge and existing relationships.

Box 4.18: Examples of Policy Updates to Support a National AI Strategy

In its AI Roadmap 2021-2025, Malaysia introduced the **AI Coordination & Implementation Unit (AI-CIU)**, under Malaysia's Prime Minister's Office. The plan aims to create a sustainable innovation ecosystem through strategic investments, supportive interventions, and strong governance. The CIU oversees policy, legal and regulatory affairs, ethics, talent development, and research and innovation committees to ensure effective governance and implementation.

(Continued)

(Box 4.18: Examples of policy updates to support a national AI strategy, continued)

Building on the experience with the AI-CIU, Malaysia launched the **National AI Office (NAIO)** in December 2024 with the goal of "accelerating AI adoption, foster innovation, and ensure ethical development of artificial intelligence." The NAIO has seven primary deliverables, including development of a successor to the current AI roadmap (AI Technology Plan 2026-2030), an AI Regulatory Framework to promote ethical and sustainable AI adoption, an AI Impact Study to assess how AI affects the government, and a National AI Trend report to assess sectoral maturity to adopt AI innovations.

AI coordination and implementation unit (AI-CIU) governance structure

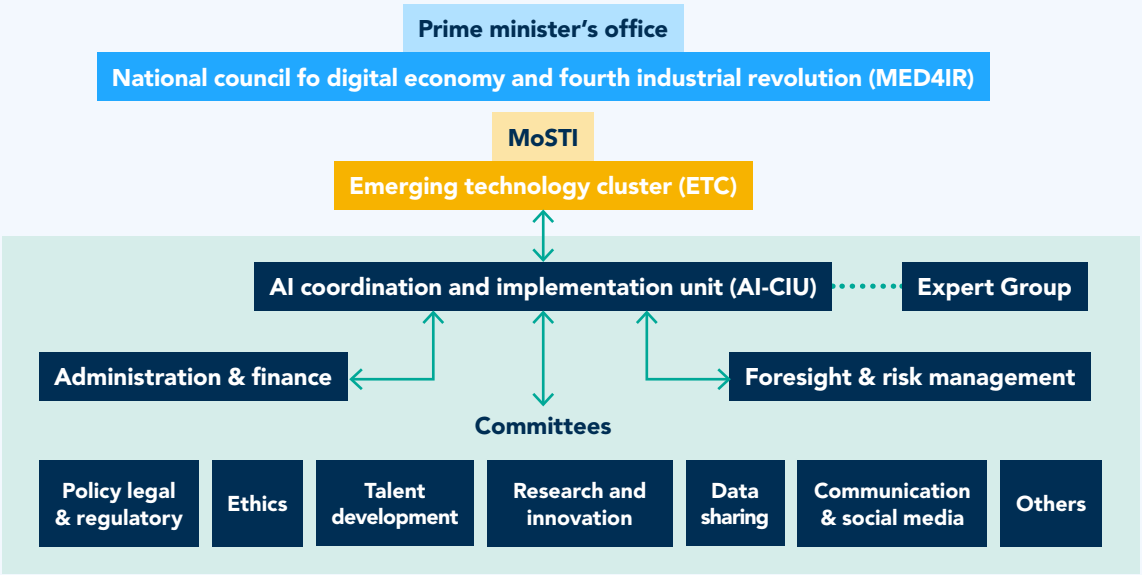


Figure 4.15: Malaysia's AI Coordination and Implementation Structure.
Source: Malaysia AI Roadmap 2021-2025

b. Assign Responsibility for Actions and Initiatives

When assigning ownership to actors, consider their capacity, resources, and authority to implement. To ensure implementation, initiatives and actions should foresee ways to mitigate any limitations in these areas. The AI Strategy team can draft the plan and refine in the final stakeholder workshop (see stakeholder engagement box, Module 6C), which should include the responsible actors. For each strategic action developed in Module 5B, the implementation plan should contain:

- **Responsible actor(s):** The organization or institution responsible for driving key actions (government ministries or agencies, private sector, civil society, development partners) and which will be held accountable for its results.
- **Output(s):** Tangible results expected from the action (for example, development and launch of a national AI skills program, launch of a public sector AI pilot project, attraction of a new Venture Capital firm to the country to invest in AI startups).
- **Indicator(s):** Measurable baseline and target metric to assess progress (for example, number of graduates, number of people served by AI-enabled public services and their level of satisfaction, volume and value of investment, number of new AI startups launched).
- **Timeline:** Specific dates or periods for completing each action and achieving outputs.

Ideally, the implementing agency responsible should separate the strategic action into specific tasks (for example, preparing communications materials to roll-out an AI education campaign). ***Box 4.19*** provides examples of implementation plans with priority areas separated into specific tasks.

Box 4.19: Example AI Strategy Implementation Plans

The National AI Policy, Republic of Rwanda (2023)

Rwanda's National AI Policy summarizes an implementation plan for a policy area concerning human capital (Ministry of ICT and Innovation, 2024). The summary is simple and clear, identifying responsible entities, timelines, and an overarching indicator to measure success. The plan is easy to understand for all stakeholders and helps create a shared view of implementation steps.

Implementation Plan Summary

The following implementation plan is a summary of the detailed implementation plan in the National Artificial Intelligence Policy for the Republic of Rwanda. It only contains summarized activity descriptions, primary indicators and responsible lead institutions. Please read the policy document for full information on activities, indicators and stakeholders.

Priority Area 1: **21st Century Skills & High AI Literacy**

Output: A highly skilled workforce with 21st Century Skills and AI literacy
Indicator: Number of professionals trained in data and AI-related skills

N°	Activity	FY 23/24	FY 24/25	FY 25/26	FY 26/27	FY 27/28	Responsible (Lead Institution)
1	Conduct a skills gap assessment	●					MINEDUC
2	Establish a Professional Training Program		●				MINICT/ RDB Skills Office
3	Conduct analysis of existing tax and non tax incentives for upskilling/reskilling employees & benchmark tax relief and grant programs		●				RAIO
4	Implement a Tax Relief and Grants program for employers to upskill and reskill their employees			●			RAIO
5	Roll out an annual centralized agenda of AI-related meet-ups	●	●	●	●	●	RAIO
6	Establish and develop a framework for an industry-led Apprenticeship program			●	●	●	PSF

Figure 4.16: Rwanda's National AI Policy's Implementation Plan Summary.
(Illustration is an excerpt from page 7)

Acronyms: MINEDUC (Ministry of Education), MINICT (Ministry of Information, Communication Technology and Innovation), RDB (Rwanda Development Board), RAIO (Responsible AI Office), PSF (The Private Sector Federation).

Source: Ministry of ICT and Innovation, Republic of Rwanda, 2024

Singapore National AI Strategy (2019)

Singapore's implementation strategy (from its 2019 AI strategy) focused on five key national challenges (see ***Figure 4.19***), each with specific objectives and initial deployment steps. The projects targeted logistics optimization through intelligent freight planning, enhanced municipal services, AI-powered reporting systems, improved healthcare through chronic

(Continued)

(Box 4.19: Example AI Strategy Implementation Plans, continued)

disease prediction, personalized education through adaptive learning platforms, and streamlined border security using automated clearance systems. Each initiative began with a focused pilot program, designed to establish foundational capabilities before scaling to full implementation, demonstrating Singapore's pragmatic approach to AI deployment in critical national sectors.

Timeline & milestones for national AI projects	2022	2025	2030
1. Intelligent freight planning	Develop a common and trusted data platform for the logistics ecosystem	Deploy AI applications that facilitate freight planning and optimisation at the sea gateway	Scale deployment of intelligent freight planning to air and land gateways
2. Seamless and efficient municial services	Launch of chatbots for reporting of municipal issues	Sensors and AI are deployed for predictive maintenance of public housing estates	Use of AI to improve planning of our living environment
3. Chronic disease prediction and management	Deploy SELENA+* for diabetes retinopathy screenig accrossthe nation	Development of retina-based risk score for 3H* related cardiovascular diseases	Collaborative with industry to co-develop novel AI models for 3H patients
4. Personalised education through adaptive learning and assessment	Launch automated marking systems for primary/ secondary english language	Launch adaptive learning systems for primary/ lower secondary maths and learning companion	Expand adaptive learning systems and automated marking systems to more subjects
5. Border clearance operations	AI-supported forward risk-assessment capability ready for operational deployment	Transformed border clearance concept for all travellers to enjoy self-clear immigration	

Figure 4.17: Key National Challenges with Specific Objectives and Initial Deployment Steps from Singapore National AI Strategy (2019). *Source: Singapore National AI Strategy 2019*

c. Develop a Results Framework

The results framework links different levels of the AI strategy to results, enabling progress tracking. The results framework should reflect both longer-term results—aligned with outcomes or objectives—as well as intermediate results. Outcomes and impacts (not outputs)[2] represent the ultimate goals of a national AI strategy, thus represent the focus of the results framework. Strategic actions—developed according to the SMART approach—and objectives form the foundation for the results framework. The process of designing a results framework and its logical chain helps ensure that strategic actions are designed to underpin objectives and have clear cause-effect linkages.

2 Outputs refer to the tangible products or services delivered by a project, outcomes are the immediate effects or changes resulting from these outputs, and impacts are the long-term, broader transformations these changes bring about.

Box 4.20: Developing a Results Framework to Track AI Strategy Progress

Key considerations when developing a results framework (Roberts et al., 2012):

- **Clarity of Objectives:** Use the clearly defined objectives of the strategic approach to guide results framework design.
- **Logical Framework:** Use a logical framework to link activities to outputs, outcomes, and impacts.
- **Measurable Indicators:** Develop specific, measurable indicators for each level of results.
- **Data Collection:** Establish robust data collection and reporting mechanisms.
- **Flexibility:** Maintain flexibility to adapt the framework based on monitoring feedback.
- **Stakeholder Engagement:** Involve stakeholders in development and implementation of the results framework.

Table 4.3 provides an sample simplified results framework for one objective of a national AI strategy. A final results framework includes all objectives and all corresponding strategic actions.

Table 4.3: Example of a Simplified Results Framework for one Objective of a National AI Strategy

Pillar	Outcome Indicator	Data Source	Use of Data
Accelerate responsible AI innovation and adoption in the private sector. (Pillar 3)	Share of private sector firms offering AI-based services to customers (% of all firms in company registry) (Pillar 3)	AI strategy coordination body, annual survey to stakeholders	The objective indicator shows the efficiency and effectiveness of the actions associated with the objective in increasing innovation and use of AI solutions in the private sector.
Action	Intermediate Results Indicator		
Action **Establish programs supporting SMEs seeking to adopt AI technologies including tax incentives, grants, and low-interest loans** *(Action 3.1)*	1. Number of SMEs Implementing AI solution pilots. Baseline: xxx (2024) Target 2025: xxx Target 2026: xxx Target 2027: xxx End Target: yyy (2028)		This indicator shows the initial effectiveness of the action on AI adoption
	2. Number beneficiaries of AI pilot projects undertaken by private firms. Targets (as per above)		This indicator shows the number of people using AI solutions supported by the activity.
	3. Increase in AI-related Investments by SMEs. Targets (as per above)		These indicators reflect the broader financial commitment of SMEs to adopting AI, beyond simply receiving support.
	4. Increase in number of employees in firms implementing AI solutions. Targets (as per above)		This indicator shows how AI might be impacting the job growth of firms.

Figure 4.20 provides a simplified illustration of the logical flow within a results framework.

(Continued)

(Box 4.20: Developing a results framework to track AI Strategy progress, continued)

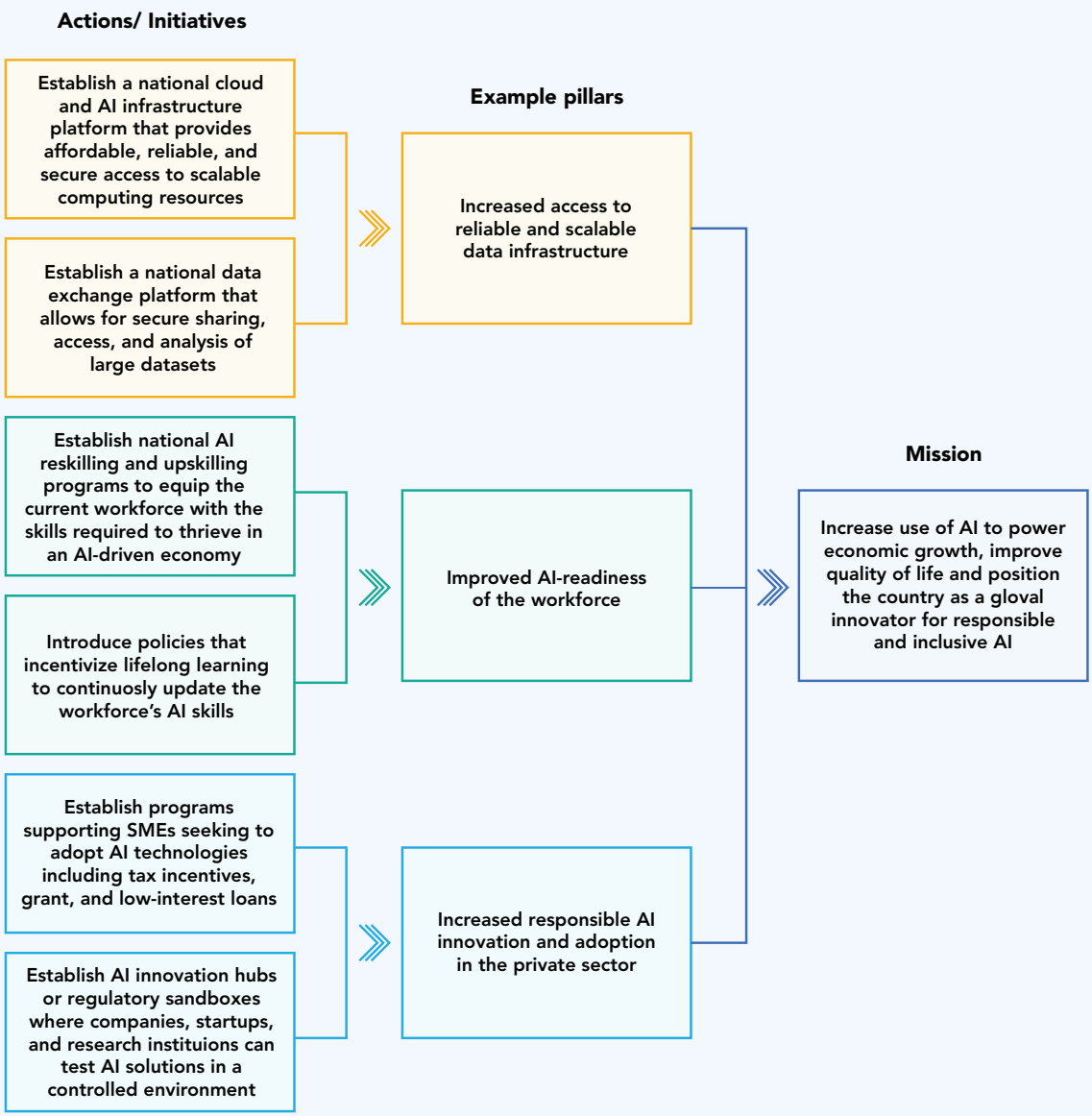


Figure 4.18: Illustrative AI Strategy Results Chain

The results framework forms the basis for tracking results and evaluating the AI strategy. Results framework indicators provide a foundation for systematic monitoring and evaluation to track progress, assess effectiveness, and inform adjustments to achieve desired AI benefits.

Box 4.21: Good Practices for Tracking the Results of the National Strategic Approach to AI

Monitoring refers to the continuous process of systematic collection or collation of data on specified indicators or other types of information. It provides the entity in charge of the AI strategy and other stakeholders with data to indicate the extent of implementation progress, achievement of intended results, potential unintended results, use of allocated funds, and other important intervention and context-related information. Monitoring informs ongoing management of the initiatives under the strategy and helping to identify potential problems.

Evaluation refers to systematic, objective assessment of the AI strategy, including its design, implementation, and results. The aim is to determine the strategy's relevance, coherence, effectiveness, efficiency, impact, and sustainability through examination of progress and performance against the results framework; assessment of actual versus expected results; and identification of lessons and recommendations for adjustment. The evaluation should produce insights and lessons to incorporate into AI strategy decision-making processes, as well as other related government plans and strategies. The evaluation should cast a wider net than ongoing monitoring to include perspectives from stakeholders either engaged in implementation or benefitting from it. Full evaluation may take place after half of the AI strategy's implementation time has elapsed.

Key recommendations to consider when designing a framework for tracking progress include:

- **Clearly define the institutional setup and division of labor around monitoring and evaluation (M&E) activities.** The entity overseeing the AI strategy implementation should be in charge of M&E efforts, in coordination with potential centralized M&E units within the government. All stakeholders involved in strategy implementation—including academia, private sector actors, government ministries, and agencies—should have clearly defined reporting requirements, including what data to report at what intervals and how to report it.
- **Design a simple M&E framework well aligned with existing M&E systems.** Design the AI strategy M&E framework with existing capacity and systems in mind, ensuring that the M&E framework aligns with the country's overall national M&E system in terms of complexity, reporting standards and indicators, to integrate data collection and ensure sufficient capacity. An AI M&E framework much more complex than the national M&E system—one with too many indicators, specifies difficult-to-obtain data, or requires complex reporting, for instance—may undermine the usefulness of the AI M&E system to yield data and drive decision making.
- **Integrate strategic actions and operational tasks with related projects.** Using the M&E framework to measure AI strategy progress and impact should take place from the very beginning of the strategy process. Integrating M&E into the process of defining objectives and actions of the strategy, rather than added ad-hoc at the end, helps ensure objectives and actions link closely with indicators and that monitoring accurately reflects activity progress.

(Continued)

(Box 4.21: Good Practices for Tracking the Results of the National Strategic Approach to AI, continued)

- **Conduct regular and timely reporting and use M&E insights for ongoing decision making.** A system able to supply and analyze M&E information should support the M&E framework; that is, it must have both the technical capacity to measure and analyze performance and provide credible, timely information, as well as enable someone to demand and use the M&E information. Key users of the collected and analyzed data include government institutions, ministries, citizens, media, and other stakeholders who support strategy implementation.

Sources: Adapted from Organization for Economic Cooperation and Development (OECD), n.d.; Raimondo, E., 2016; and Lahey, R., 2015.

d. Develop a Communications Plan to Engage and Educate the Public

Developing a communications plan can help generate excitement, promote public AI awareness, and highlight the AI Strategies plans. Through demonstrations, information sessions, and interactive engagements, stakeholders can experience AI firsthand. Public awareness campaigns, AI literacy courses, and evidence-based media content from trusted experts can enhance enthusiasm and dispel myths, while demonstrating AI's capabilities and limitations while short videos or interactive games can help the public grasp basic AI concepts and distinguish fact from fiction.

Key Tip 8: Communications Plan Templates

This **Communications Plan Template** represents a starting point for development of a comprehensive and detailed communication plan.

Table 4.4: Common AI Misconceptions and Corresponding Realities
Source: World Bank staff

Category	Misconception	Reality
Jobs	AI will lead to massive unemployment by replacing most human jobs.	AI's impacts on employment are uncertain. While GenAI will automate certain tasks, it may also create new jobs. Many roles will evolve to work alongside GenAI, rather than disappear.
Superintelligence	AI will quickly surpass human intelligence and become impossible to control.	While superintelligent AI is a theoretical concern, researchers note that current AI technologies are still far from reaching that level. There are significant efforts to ensuring AI safety and alignment.

Category	Misconception	Reality
Bias	AI systems are inherently biased and discriminatory.	AI can perpetuate biases present in training data while algorithms may seek to harmonize patterns. Understanding of these patterns, appropriate oversight, and use of diverse datasets can mitigate these biases.
Only for Big Companies and Technologically Advanced Nations	Only large tech companies and advanced economies can develop and benefit from AI.	While AI tools (including GenAI) and technologies are becoming more accessible, allowing small businesses, startups, and individuals to leverage AI for various applications, there are risks of increased inequalities. It is important for policymakers to understand and mitigate these proactively.
Problem Solving	AI will be able to solve most challenges we face in society, from poverty to climate change.	AI is a powerful tool but not a panacea. It has human-level capabilities in specific conditions but still struggles to carry out many tasks in the real world.
Accuracy and Reliability	AI systems are infallible and always make the right decisions.	AI systems can make mistakes and "hallucinate", requiring constant monitoring, updates and human output review to maintain accuracy.
Cost	Developing and maintaining AI systems is straightforward and inexpensive.	AI development and maintenance can require significant resources, including data, compute, power, and expertise.
Economic Growth	The benefits of AI will lead to widespread adoption of AI solutions, ushering in a new era of massive economic growth and prosperity.	AI has the potential to drive economic growth. However, widespread adoption that can unleash this growth will require significant upgrades of AI foundations, skills, and governance, as well as organizational and social change. Moreover, policy needs to ensure that benefits are distributed equitably, and address challenges such as job displacement, inequality, and sustainability.

Identify AI "champions" to promote responsible AI technology integration in key sectors. Engaging active practitioners across sectors as local leaders can facilitate "last-mile" AI strategy implementation. AI "champions" can be appointed by the taskforce to play leadership roles to introduce responsible AI technologies in their specific field. Ideally, champions have both personal interest and experience with AI solutions and are drawn from across sectors and organizations to ensure broad coverage. AI champions often meet on a regular basis to share experiences and insights, and develop their skills and knowledge on the AI aspects relevant to them in the health, manufacturing, education, agriculture, or business realms, for instance.

Box 4.22: AI Champions for Health & Social Sectors in the UK

In the UK, *the Responsible AI UK (Rai UK)* effort has appointed doctors and medical experts working in the National Health Service (NHS) and beyond as AI champions to lead responsible AI introductions into the healthcare sector.

The network of AI champions will drive deployment of effective, relevant AI technologies that address real-world healthcare needs, while ensuring these technologies are used responsibly to enhance patient outcomes and streamline healthcare processes.

The initiative brings together a multidisciplinary team including clinicians, doctors, AI experts, social scientists, academia, and ethicists. This diverse team is crucial for developing responsible AI protocols and ensuring ethical standards in AI deployment.

Responsible AI UK is funded through the UK Research and Innovation's Technology Missions Fund, a GBP 250 million initiative to secure the UK's world-leading position in AI and other emerging technologies, highlighting the centrality of responsible and ethical AI research and innovation to global leadership in the technology.

Stakeholder Engagement Box 5

Before launching the national AI strategy, it can be valuable to hold a final stakeholder workshop to validate the implementation plan and ensure buy-in and preparedness of all stakeholders engaged in the implementation phase.

This workshop can also provide an opportunity to recognize the effort of stakeholders engaged throughout the strategy development process, and thank them for their contributions.

For guidance on how to design and conduct stakeholder workshops, please see the **Stakeholder Engagement Guide**.

Module 6 Output:

- An implementation plan identifying committed, responsible actors, and key actions, outputs, indicators, timeline, and resources
- Frameworks and plans for results tracking, evaluation, and capacity-building
- Communications and dissemination plan
- Identification of an entity assigned to lead and coordinate implementation of the AI Strategy

4.7 Module 7: Adopt, Launch, and Adjust

Overview

A national AI strategy is only as effective as its implementation. To that end, this module:

i. Recommends that the agency overseeing national AI strategy implementation continues to engage stakeholders and proactively addresses emerging issues.

ii. Emphasizes that continuous and diligent implementation of the M&E approach developed in Module 6 is crucial to drive progress, ensure accountability, and gather insights from implementation to enable ongoing adjustments.

iii. Proposes that the government commits upfront to regular strategy updates, based on implementation insights, and that if implementation slows significantly, recommits to the strategy and take active steps to re-energize efforts.

Completing the AI strategy approach should culminate in a launch event and official adoption of relevant draft documents as law. The process of formally adopting the strategic approach will differ, depending on if the country has opted for a full strategy or for a set of sectoral policies and guidelines. Some countries require legislative procedures to adopt a strategy, while a ministerial declaration could suffice in others. Whatever the processes, it is important that they adopt relevant policy documents and that the institutional framework, as defined by the task force, is set up to oversee all implementation aspects. Establishing the institutional framework will also require enabling budgets and resources for AI roll-out.

The institutional structure set up to oversee AI strategy implementation is the body that will be undertaking the activities in this module.

Activities

a. Maintain Continuous Stakeholder Engagement

To proactively address Issues and obstacles to AI strategy implementation, the entity overseeing implementation should continually interact with all stakeholders. Consistently engage stakeholders and keep them informed about progress by organizing regular meetings, establishing open communication channels, and creating collaborative forums for feedback and discussion. Involving them in decision-making processes and acknowledging their contributions will help maintain engagement and commitment.

To keep the public engaged and foster trust, leverage the communications plan (Module 6) to educate citizens about AI benefits and government measures to address risks. Campaigns can also highlight local success stories and demonstrate AI benefits to society to promote curiosity and increase adoption. It is critical to dialogue with stakeholders subject to key risks. For example, related to job displacement, discussions with industry leaders, workers' unions, academic experts, and civil society can help identify and collaboratively address emerging concerns early.

b. Ensure ongoing progress monitoring and periodic effectiveness evaluation

Use the results framework and tracking structure. The entity tasked with overseeing AI strategy implementation should conduct an annual or mid-term strategy evaluation along with the entity in charge of M&E. Insights gained from ongoing results tracking and periodic evaluation should be compiled into a list of lessons learned during strategy implementation—both AI and sector-specific—to inform updates to the current and future AI strategy and digital transformation strategies.

c. Commit to updating or the strategic approach as needed

Be prepared to update the strategy periodically to adapt to new AI developments, including seizing new opportunities and addressing emerging obstacles. New opportunities and obstacles may appear as the global AI landscape shifts. As part of evaluation, governments should assess if assumptions underlying the strategy (Module 4) are still valid and if objectives are still achievable, making adjustments as needed. Countries may sometimes need to update the strategy with additional chapters or annexes. For example, national AI strategies created prior to generative AI breakthroughs in the fall of 2022 may now require reevaluation. Policy makers should consider adding a statement in the strategy document mandating that it be reviewed annually or biannually and revised every three to five years.

Be prepared to recommit to the strategy if implementation lags. Competing priorities—including related to near-term social, political, and economic issues—may make it difficult to keep the AI strategy at high priority, which can lead to delays. When the monitoring framework indicates slow implementation, it is important that AI strategy leadership has the authority and resources to initiate recommitment to the strategy, including adjusting the implementation plan.

Box 4.23: Canada's Iterative Approach to Supporting AI

Since announcing the world's first national AI strategy in 2017, the Canadian federal government has taken a proactive role in defining policies for supporting its AI ecosystem. In Spring 2024, Canada announced another package of investments to support local computing and technological infrastructure, AI startups in critical sectors, and a program to assist SMEs to deploy new AI solutions.

Government measures include supporting worker training programs in potentially disrupted sectors and communities, creating a new Canadian AI Safety Institute leveraging local experts, and consulting with AI stakeholders to inform launch of a new AI Compute Access Fund for local researchers and industry (Prime Minister of Canada, 2024).

Module 7 Output:

Periodic progress reports, including lessons learned from strategy implementation, to be made available to key stakeholders and the public, as appropriate, to ensure accountability

References

Abdhut India. (n.d.). Abdhut India: Amazing India initiative. https://docs.adbhut.ai/

Biden, J. R. (2023). Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence (Executive Order No. 14110). The White House. https://www.whitehouse.gov/briefing-room/presidential-actions/2023/10/30/executive-order-on-the-safe-secure-and-trustworthy-development-and-use-of-artificial-intelligence/

Cazzaniga, F., et al. (2024). Gen-AI: Artificial intelligence and the future of work (Staff Discussion Note No. 2024/001). International Monetary Fund. https://www.imf.org/en/Publications/Staff-Discussion-Notes/Issues/2024/01/14/Gen-AI-Artificial-Intelligence-and-the-Future-of-Work-542379

CHIPS and Science Act of 2022, Pub. L. No. 117-167, 136 Stat. 1366. (2022). https://www.congress.gov/bill/117th-congress/house-bill/4346

Council of Europe. (2024). Council of Europe adopts first international treaty on artificial intelligence. https://www.coe.int/en/web/portal/-/council-of-europe-adopts-first-international-treaty-on-artificial-intelligence

Department of Enterprise, Trade and Employment. (n.d.). National AI strategy. Government of Ireland. https://enterprise.gov.ie/en/publications/publication-files/national-ai-strategy.pdf

European Commission. (n.d.). AI Office. https://digital-strategy.ec.europa.eu/en/policies/ai-office

Federal Government of Nigeria. (2021). National Development Plan 2021–2025. https://nationalplanning.gov.ng/wp-content/uploads/2021/12/NDP-2021-2025_AA_FINAL_PRINTING.pdf

Federal Ministry of Communications, Innovation & Digital Economy. (2024). Hon. Minister Dr. Bosun Tijani wraps up Artificial Intelligence Strategy Workshop; announces groundbreaking partnerships with Cisco, 21st Century Technologies & others. https://fmcide.gov.ng/hon-minister-dr-bosun-tijani-wraps-up-artificial-intelligence-strategy-workshop-announces-groundbreaking-partnerships-with-cisco-21st-century-technologies-others/

G7. (2023). Hiroshima process: International guiding principles for organizations developing advanced AI systems. https://g7g20-documents.org/database/document/2023-g7-japan-leaders-leaders-annex-hiroshima-process-international-guiding-principles-for-organizations-developing-advanced-ai-system

Global Center on AI Governance. (n.d.). Global index on responsible AI. https://global-index.ai/Countries

Indian Startup News. (2024). SBI embraces AI and ML technologies to transform banking operations. https://indianstartupnews.com/news/sbi-embraces-ai-and-ml-technologies-to-transform-banking-operations

Infocomm Media Development Authority. (2024). AI playbook for small states. https://www.imda.gov.sg/-/media/imda/files/news-and-events/media-room/media-releases/2024/09/ai-playbook-for-small-states/imda-ai-playbook-for-small-states.pdf

Innovation, Science and Economic Development Canada (ISED). (n.d.). Canada's AI strategy. https://ised-isde.canada.ca/site/ai-strategy/en

Jones, N. (2024). The AI revolution is running out of data: What can researchers do? Nature, 636(8042), 290–292.

Liu, Y. (2024). Generative AI: Catalyst for growth or harbinger of premature de-professionalization? (Policy Research Working Paper; DIGITAL). World Bank Group.

Liu, Y., & Wang, H. (2024). Who on Earth Is Using Generative AI? (Policy Research Working Paper; 10870). World Bank Group. https://hdl.handle.net/10986/42071

Luminate. (2024). Partnerships in Nigeria's AI strategy. https://www.luminategroup.com/posts/news/partnerships-nigeria-ai-strategy

Ministerio de Ciencia, Tecnología, Conocimiento e Innovación. (2024). Subsecretaria Gañza en Cumbre de IA en Colombia: La gobernanza no es solo regulación y marcos legales.... https://www.minciencia.gob.cl/noticias/subsecretaria-gainza-en-cumbre-de-ia-en-colombia-la-gobernanza-no-es-solo-regulacion-y-marcos-legales-sino-que-principalmente-tiene-que-ver-con-perspectivas-y-principios/

Ministry of Communications and Information Technology (MCIT), Egypt. (2021). Egypt National AI Strategy. https://mcit.gov.eg/Upcont/Documents/swf/Egypt-National-AI-Strategy-English/index.html

Ministry of Economy, Trade, and Industry (METI), Japan. (2022). Press release on AI strategy. https://www.meti.go.jp/english/press/2022/0128_003.html

Ministry of ICT and Innovation, Republic of Rwanda. (2024). The national AI policy. https://www.minict.gov.rw/index.php?eID=dumpFile&t=f&f=67550&token=6195a53203e197efa47592f40ff4aaf24579640e

Moës, N., Lannquist, Y., Iliadis, N., & Miailhe, N. (2024). Institutional design principles for global AI governance in the age of foundation models and generative AI. In Safety and Global Governance of Generative AI Report (WFEO-CEIT, Shenzhen Association for Science and Technology). https://www.wfeo.org/wp-content/uploads/2024/CEIT_Safety-and-Global-Governance-of-Generative-AI.pdf

Molina, G., et al. (2024). AI revolution in education: What you need to know. Digital Innovations in Education. World Bank Group. http://documents.worldbank.org/curated/en/099734306182493324

National Center for Artificial Intelligence and Robotics (NCAIR). (2024). Nigeria National AI Strategy. https://ncair.nitda.gov.ng/wp-content/uploads/2024/08/National-AI-Strategy_01082024-copy.pdf

National Electronics and Computer Technology Center (NECTEC). (2024). Thailand's National Artificial Intelligence Strategy. *https://ai.in.th/en/about-ai-thailand/*

National Science Foundation. (n.d.). AI research overview. https://www.nsf.gov/cise/ai.jsp

Organization for Economic Cooperation and Development (OECD). (n.d.) Glossary of Key Terms in Evaluation and Results-Based Management, 2nd Edition—Prepublication version

Raimondo, E. (2016). What Difference Does Good Monitoring and Evaluation Make to World Bank Project Performance? Policy Research Working Paper; No. 7726. http://hdl.handle.net/10986/24644

Lahey, R. (2015). Devising an Appropriate Strategy for Capacity Building of a National Monitoring and Evaluation System: Lessons from Selected African Countries. http://hdl.handle.net/10986/22079

OECD.AI. (n.d.). India: OECD.AI Country Dashboard. https://oecd.ai/en/wonk/india

Oxford Insights. (2023). Government AI readiness index 2023. https://oxfordinsights.com/ai-readiness/ai-readiness-index/

Peixoto, T. C., Canuto, O., & Jordan, L. (2024). AI and the future of government: Unexpected effects and critical challenges. Policy Center for the New South.

Prime Minister of Canada. (2024). Securing Canada's AI. https://www.pm.gc.ca/en/news/news-releases/2024/04/07/securing-canadas-ai

Qure.ai. (2024). AI's impact on tuberculosis treatment and management in Anambra State, Nigeria. https://www.qure.ai/insights/ai-impact-on-tuberculosis-treatment-and-management-in-anambra-state-nigeria

Roberts, D., et al. (2012). Designing a results framework for achieving results: A how-to guide. World Bank. https://documents1.worldbank.org/curated/en/331541563854787772/pdf/Designing-a-Results-Framework-for-Achieving-Results-A-How-to-Guide.pdf

Setyadi, Y., et al. (2024). The role of technology in building competitive advantage in the digital age in Indonesia. Budapest International Research and Critics Institute (BIRCI) Journal, 7(3). https://doi.org/10.33258/birci.v7i3.7933

Stanford Institute for Human-Centered Artificial Intelligence (HAI). (2024). Artificial Intelligence Index Report 2024. Stanford University. https://aiindex.stanford.edu/wp-content/uploads/2024/05/HAI_AI-Index-Report-2024.pdf

Think Digital Partners. (2024). Is AI the answer to your public sector needs? http://www.thinkdigitalpartners.com/news/2024/09/10/is-ai-the-answer-to-your-public-sector-needs/

Tony Blair Institute for Global Change. (2024). State of compute access: How to bridge the new digital divide. https://www.institute.global/insights/tech-and-digitalisation/state-of-compute-access-how-to-bridge-the-new-digital-divide

Tortoise Media. (n.d.). Global AI Index. https://www.tortoisemedia.com/intelligence/global-ai/

Tunisia's Ministry of Industry, Mines and Energy. (2024). Tunisia's AI Strategy. https://www.webmanagercenter.com/2024/03/15/521285/la-strategie-nationale-de-lia-en-tunisie-tout-ca-pour-ca and https://managers.tn/2022/02/21/la-tunisie-prepare-sa-strategie-nationale-dintelligence-artificielle/

World Bank. (2024). From chalkboards to chatbots: Transforming learning in Nigeria. https://blogs.worldbank.org/en/education/From-chalkboards-to-chatbots-Transforming-learning-in-Nigeria

World Bank. (2022). Leveraging digital technologies for social protection: Novissi in Togo. https://documents1.worldbank.org/curated/en/099751009222330502/pdf/IDU0e83f857301ff1047bf082710a8d21ddf42c3.pdf

ANNEX A:
(Sample) Artificial Intelligence Taskforce, Terms of Reference

Purpose:

To develop a [No of Years] year Artificial Intelligence Strategy for Country X

Objectives:

1. Create a comprehensive Artificial Intelligence strategy
2. Develop a strategy that aligns with and complements existing strategies and plans
3. Develop buy-in and agreement from across relevant public sector entities
4. Develop buy-in and support from the wider industry and ecosystem

Terms of Reference for the Taskforce (TOR's) for the Artificial Intelligence Strategy Taskforce

1. Outline a X year Artificial Intelligence Strategy for the country, including X-year goals.
2. Identify key pillars for the Artificial Intelligence Strategy and cross-cutting themes.
3. Articulate a way forward to achieve the vision of the Strategy, including priority issues to be addressed in each of the X pillars and cross-cutting themes.
4. Propose ways to build stakeholder engagement and commitment in delivering long-term Artificial Intelligence Strategy needs for the country.
5. Identify drivers for and barriers to Artificial Intelligence growth and innovation in the industry.
6. Identify and validate the key domestic, regional and global trends, opportunities and challenges for the Artificial Intelligence development and deployment.
7. Develop detailed recommendations and rationale of the strategies and actions proposed to be undertaken by Government, Private Sector, industry associations, educational and research institutions, and Innovation Hubs to encourage the growth of the Artificial Intelligence in each of the xxx pillars.
8. Identify key performance indicators, progress and outcome metrics, clear benchmarks and timeframes for major initiatives.
9. Clearly identify roles and responsibilities for the delivery of the Artificial Intelligence Strategy recommendations, and outline mechanisms to oversee and report on the progress of its implementation.
10. Come up with programs from which specific Projects can be drawn and implemented to accelerate Artificial Intelligence.

Process:

1. Create steering committee for Artificial Intelligence (by Month **).
2. Create working groups for each pillar of the AI Strategy (by Month **).
3. Literature Review of other relevant regional, national and local government existing strategies and mapping targets, budgets and responsibilities (by Month **).
4. First draft of AI Strategy with relevant public and private sector in line with existing planned goals and budgets (by Month**).
5. Stakeholder engagement of AI strategy (by Month**).
6. Second draft of AI strategy for approval by Cabinet (by Month**).
7. Final version of AI strategy (by Month**).

Working Groups TOR:

A. Steering Committee (Name of responsible unit in Government.)

1. To review progress towards the strategy on monthly basis.
2. To appoint the members for the working groups.
3. To recommend relevant documents for inclusion in the literature review.
4. To review the strategy drafts and submit the AI strategy to (appointing authority) for approval.

The Steering Committee will have a half-day kick-off meeting to approve the plan, followed by monthly 2-hour meetings to review progress, and a final half-day sign-off meeting.

B. Pillar-specific Working Groups

1. To incorporate other relevant government plans into the pillar contents.
2. To further develop the pillar contents with clear goals and annual targets.

The pillar Working Groups will have a half-day kick-off meeting to approve their workplan and timetable followed by an initial off-site meeting to develop the first draft of the strategy. Following feedback from stakeholders, a second meeting will take place to update the strategy and develop the second draft for submission to the Steering Committee.

C. Communications Working Group

1. To engage stakeholders through relevant consultations into the DE strategy.
2. To provide updates to members of the relevant Steering Committee and Working Groups on progress.
3. To prepare a communications plan.
4. To implement the communications plan.

The Communications Working Group will have a half-day kick-off meeting to approve their workplan and timetable followed by regular meetings as necessary. The Communications working group will also organize the stakeholder consultation around the strategy, incorporating both online and offline opportunities for input from various industry and government stakeholders across the country.

Working Groups Responsibilities:

1. Members will elect a chair of the working group.
2. Each working group will have a secretariat support staff to provide coordination and meeting note taking.
3. Members will be expected to participate in meetings and respond to communications promptly.
4. Members will be expected to contribute to drafting relevant documents as necessary.

Working Groups Terms and Conditions:

1. Indicate if members will receive any honorarium or payment.

ANNEX B:
Reference Examples of International AI Policies and Strategies

Pillar: AI Education & Skills Development
Objective: Building an AI-ready workforce

Country	Objective	Key Actions
Singapore	**AI Talent and Education: Address the short-fall in the quantity and quality of talent across the entire range of AI-related job roles**	• Singapore's AI Apprenticeship Program (AIAP) full-time 9-month fellowship for practical AI technical skills to train 500 Singaporeans over 5 years. • Post-graduate scholarships funded by the Singapore Government to provide graduates with training at companies such as Alibaba and Nvidia, and partnerships to train AI PhDs with industry experience. • TechSkills Accelerator (TeSA) offers skills training including bootcamps, mentorship and coaching, funds for professional development courses, a reference guide of in-demand job roles and their required skills, and structured learning courses for in collaboration with companies. • SkillsFuture Singapore partners with major technology partners to include AI related content in digital training programming.
Egypt	**Human capacity building in formal education and professional training**	• Introduction of two third- and fourth-year consecutive university courses: Introduction to Computing (prerequisite) and 'Specialized AI', which is tailored to the students' background to focus on AI in law, literature, history, etc. • Summer holiday bootcamps, AI hackathons, and internships for small pilot projects in AI in public and private sector • Government-provided funding for students working on AI projects solving societal challenges. • Teacher training and funds allocation for hardware and software resources used in Technical and vocation training (TVET) programs.

Country	Objective	Key Actions
Mauritius	**Train and attract a supply of skilled AI talent**	• Attract international AI experts while training local computer scientists and mathematicians. Target Africa as a potential market for AI solutions. • Establish an AI campus for 100 students with a 6-month tailored program, developed in collaboration with local universities and international experts. • Promote science, technology, and mathematical literacy from primary school level. Increase digital science and AI training from high school to university. Invest in national retraining programs and lifelong learning to prepare workers for the digital economy.
Brazil	**Enable and educate professionals for the AI ecosystem**	• AI is a priority area within existing federal fellowship and service programs, including high school to graduate fellowships, alternative education, and scholarship for service programs. • Programs to recognize and fund early-career university faculty who conduct AI R&D, including Presidential awards and recognitions. • Development of curricula integrating AI technologies into courses, aiming to facilitate personalized and adaptive learning in formal and informal education and training settings. • Agencies shall annually communicate plans for achieving the prioritization of AI in their educational and training programs.
United States	**Train an AI-Ready Workforce**	• The National Science Foundation (NSF) to establish four new National AI Research Institutes and implement the Computer Science for All (CSforAll) programs in preK-12 AI education • According to a 2023 Presidential Executive Order, federal agencies are instructed to implement or expand AI training programs for employees at all levels; Department of Energy directed to train 500 new AI researchers by 2025. • The Chips and Science Act of 2022 authorizes the NSF to establish a federal AI and cyber scholarship-for-service program.

Sources:

Brazilian National Artificial Intelligence Strategy (Estratégia Brasileira de Inteligência Artificial), Ministry of Science, Technology, Innovations and Communications (Ministério da Ciência, Tecnologia, Inovações e Comunicações), 2021 . Retrieved from: https://oecd.ai/en/dashboards/countries/Brazil. Translated using the Claude Sonnet 3.5 large language model.

Mauritius Artificial Intelligence Strategy (2018), https://ncb.govmu.org/ncb/strategicplans/MauritiusAIStrategy2018.pdf

Smart Nation Singapore, National Artificial Intelligence Strategy: Advancing our Smart Nation Journey, https://www.smartnation.gov.sg/files/publications/national-ai-strategy.pdf

The National Council for Artificial Intelligence, Egypt National Artificial Intelligence Strategy (2021), https://mcit.gov.eg/Upcont/Documents/Publications_672021000_Egypt-National-AI-Strategy-English.pdf

The United States National Science Foundation (https://www.nsf.gov/cise/ai.jsp); United States Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence (2023), https://www.whitehouse.gov/briefing-room/presidential-actions/2023/10/30/executive-order-on-the-safe-secure-and-trustworthy-development-and-use-of-artificial-intelligence/; The Chips and Science Act of 2022 (https://www.congress.gov/bill/117th-congress/house-bill/4346).

ANNEX C:
Stakeholder Engagement Guide

This guide provides practical information for conducting stakeholder consultations, including both interviews and workshops, for a national AI strategy. The stakeholder engagements during the strategy process are critical to the development of an effective strategy and have three main purposes:

i. Gather concrete and specific insights about the real-world obstacles to responsible AI adoption and deployment in the country

ii. Gain detailed feedback on the various aspects of the strategy during the development process, including mission, vision, objectives, and initiatives

iii. Generate buy-in for the strategy and its initiatives among key stakeholders to maximize the chances of successful implementation

The team overseeing the stakeholder engagements should ensure that each engagement is adapted to the participants prior AI knowledge and strikes a positive and constructive tone. To that end, it may be useful to assess the level of AI knowledge by opening with broad, general questions and providing information where necessary, such as about opportunities or potential applications of AI for the country. Communication should be positive and encouraging, and appropriate for the participants' level of understanding to ensure they remain engaged in the AI Strategy process. At the end of the engagement, establish a point of contact for further feedback and provide information about the project's next steps.

I. Guide for conducting stakeholder interviews

If interviews are conducted online, consider requesting permission to record them for future reference by the project team. Inform the respondent that recordings will not be shared with external parties.

- Open the interview by providing a brief overview of the project and its timeline, and the objectives of the interview. For example, explain that the interview is part of the project led by the responsible government entity to develop a National AI Strategy over the next 6 months, and this interview is to gather insights about the opportunities and challenges in the country's AI ecosystem or to gather feedback for specific policies.
- To ensure common understanding, begin the interview with 1-2 broad, open-ended questions to assess their level of understanding or context for artificial intelligence, such as "Is our country ready for AI?", "What does AI mean to you?", or "What applications of AI in our country do you know about, if any?"
- If the respondent has a limited understanding of AI, you may wish to adjust the questions during the interview to their level of understanding and areas of expertise, by for example focusing more on sectoral challenges related to AI, which they may be familiar with.
- Ask open-ended questions to avoid bias and encourage creative and diverse perspectives.
- Information gathered during interviews should be as concrete and specific as possible. Ask follow-up questions as necessary to learn specific information and examples, such as by asking about 'Who?,' 'What?', 'Where?', 'When?,' 'Why?' and 'How?'

- Employ active listening and paraphrasing (i.e. restate the information provided by the interviewee) to ensure understanding.
- Conclude by summarizing next steps including upcoming workshops or consultations and thanking the participant for their time.
- Finally, ask if the respondent is available for follow-up questions and provide them with a point of contact for any additional comments they may have after the interview. If needed and appropriate, ask for suggestions for other potential stakeholders to interview.

Checklist for a successful interview:

- ☐ Responses are concrete and specific (ask follow-up questions as needed).
- ☐ Responses are recorded and saved clearly and intelligibly.
- ☐ Respondent is aware of the effort to develop an AI Strategy, timeline, next steps, and point of contact for additional comments.

II. Guide for conducting consultation workshops

Who: Diverse multi-stakeholder participants

A stakeholder consultation workshop should feature representation from diverse stakeholders, as identified in the stakeholder mapping (Module 2B), including from across public sector, private sector (startups, companies), academia, and civil society. Engaging an experienced third-party facilitator, for example from a trusted civil society organization, to moderate and lead the workshop can help ensure an open and constructive dialogue among participants. If needed, this person can be supported by an expert(s) with technical knowledge of AI applications in the economy to ensure the discussions are supported by real world-insights of AI related opportunities and obstacles. It is important to plan the workshop, including finding a convenient location and distributing invitations, in time to ensure participation by key stakeholders.

How: Structured Workshop

Room Setup:

- U-shaped or circular seating arrangement to encourage interaction.
- Whiteboard or flipchart for capturing ideas.
- Projector for presentations.
- Breakout areas for small group discussions.
- As needed, refreshments set up on a separate table at the side of the room.

Materials: Sticky/post-it notes (multiple colors), sharpie pens, extra paper, regular pens, whiteboards or large sheets of paper for group work

Workshop Introduction:

- The responsible government entity should welcome participants to the workshop, announce the project intention and introduce the national AI Strategy team.
- The national AI Strategy team outlines the national AI Strategy project timeline, and the workshop's objectives.
- The national AI Strategy team presents the project timeline and gives a brief overview of 'What is AI?', AI applications locally and internationally (See Module 4B of the handbook), and AI opportunities and risks (refer to AI governance Paper).

Workshop Facilitation Guidelines:

- Start with an open-ended brainstorm around broad, general questions (proposed list in the agenda below) to foster trust, encourage the exchange of ideas, and promote collective problem-solving.
- Allow participants to write responses to the questions posed on sticky notes or note cards. Post on a wall or a table.
- Based on the outcomes of the brainstorm and the questions on the sticky notes, the facilitator moderates a group discussion to prioritize findings and build consensus around key areas.
- It is important that the facilitator is allowed to manage dominant voices and encourage quieter participants to contribute to get a broader perspective on issues.
- It can be good to maintain a side board to gather off-topic but important issues that come up during the conversation.

Follow-up:

- Summarize key findings and distribute to participants within a week to show that their inputs are being taken onboard and create trust and ownership.
- In the follow-up email, clearly communicate next steps, how participants' input will be used, and share the project timeline.
- Provide a mechanism (e.g. point of contact with email address) for participants to share additional comments, as they come up.
- Consider follow-up interviews or focus groups for deeper exploration of key themes, as needed.

This guide is intended to provide a framework to help policy makers design and run effective national AI strategy workshops and interviews. However, the interviews and workshops should be adapted based on local language and context, cultural norms, and specific workshop objectives, as needed.

Tentative Agenda for Initial Workshop—Mission & Vision Workshop

Welcome and Opening Remarks (30 minutes)

- Introduction of the workshop's objectives (e.g. broad stakeholder input for mission and vision statements and key objectives for AI in the country).
- Introduction of the national AI Strategy team.

Overview of AI and its Implications (30 minutes)

- Timeline for the AI Strategy project.
- "What is AI?"—Understanding the fundamentals.
- Examples of AI applications both locally and internationally.
- Overview of opportunities and risks.

> For definitions and explanations of AI adapted to policy makers, please refer to The World Bank paper "AI Governance: A Regulatory Toolbox for Safe and Trusted AI" for definitions and explanations of AI technology and to the National AI strategy handbook, Module 1 and 2, for information about the fundamentals required for responsible AI adoption.

Coffee Break (15 minutes)

Brainstorming Session on AI Opportunities & Challenges (1 hour)

- Open-ended brainstorming on key questions outlined below (participants post responses in sticky notes on the wall or write on a white-board).

AI Opportunities & Challenges

- What do you think are our country's key economic and development goals?
- What do you think are the most important sectors of our economy?
- According to you, what are key priorities for social and economic development in the country?
- What sustainable development goals (SDGs) are we prioritizing? (this may be omitted for audiences who are not familiar with the SDGs)
- What are some of the challenges for everyday life and work that you see in our country?
- What are obstacles for businesses, the economy, or society that you think AI might help solve?
- In your view, what might be some unique advantages for our country or region for AI adoption?

Group Discussion (1 hour 15 minutes)

- Facilitated discussion to prioritize findings and move towards consensus on mission, vision, and key objectives.

Key Points to Guide the Facilitated Discussion

Establish Clear Criteria for Prioritization: Define and agree upon specific criteria or metrics (e.g., impact, feasibility, urgency) that will guide the prioritization process. This ensures all participants evaluate findings based on the same standards, reducing ambiguity and personal bias.

Encourage Inclusive Participation and Active Listening: Foster an environment where every participant feels comfortable sharing their perspectives. Encourage active listening and ensure that quieter voices are heard. Inclusive participation leads to more comprehensive discussions and helps in building a consensus that reflects the group's collective insights.

Facilitate Open and Constructive Dialogue: Promote open communication while guiding the discussion to remain focused on objectives. Be prepared to address disagreements by finding common ground and steering conversations towards collaborative solutions.

Lunch Break (1 hour)

Detailed Discussion on Key Objectives for the national AI Strategy (1 hour)

- Deep dive into selected priority areas.
- Discussion on specific goals and outcomes.

AI Application & Impact

- What are some potential applications for AI, across our key sectors or societal challenges?
- What is the value that AI can bring to the key economic sectors in our country?
- What specific, measurable goals should we aim to achieve through AI adoption?
- In your view, what societal risks or concerns from AI are most important for our context?
- What considerations are important for inclusion, sustainability or other objectives?
- In your view, what societal groups (youth, elderly, vulnerable, women) should be the prioritized in the strategy and how?
- In your view, are there any cities or regions that should be specifically targeted in the national AI strategy?

Closing Remarks (30 minutes)

- Summary of the discussions and next steps.
- Identification of a point of contact to receive additional comments.
- Assignment of responsibilities and timeline for follow-up actions.

ANNEX D:
National Artificial Intelligence Strategy Handbook:Communications Plan Toolkit

Purpose

Develop a communications plan to support the AI Strategy's implementation.

Instructions

- Fill in Table 1 with the goals for a communications plan that raises awareness about the AI Strategy and helps achieve its mission, vision and the national objectives. Refer to page 3 for examples of objectives and metrics.

- Fill in Table 2 with the audiences, messages, channels and plan for various communications engagements that help to achieve the objectives in Table 1. Refer to page 3 for example content and additional categories to consider as relevant.

- Consult with the actors involved in rollout of the communications plan to ensure feasibility, and align with any existing digital policy communication plans.

- Periodically assess the metrics, and update and adjust the table.

Table 1: Communications Strategy

Target Objective(s)	Outcome Metrics

Table 1: Examples of objectives and metrics

Target Objective(s):

- Raise awareness about the AI Strategy.
- Increase buy-in and support implementation of the AI Strategy.
- Raise awareness about AI opportunities and applications.
- Spark demand for AI applications, training and investment.
- Expand AI and digital literacy and skills.

Outcome Metrics:

- # of new AI and digital startup applications.
- # of job postings requiring data science, AI/ML skills.
- # and % increase of businesses, government entities and organizations implementing AI solutions.
- # of AI products and solutions across target sectors.
- # and % increase of enrolled students in courses and training seminars by gender and geography.
- # of AI related events, hackathons, conferences, and participation by gender and geography.
- # of innovation hubs, incubators, or accelerator programs.
- Investment (local currency) in startups using AI/ML.
- Investment (local currency) in AI projects by established companies.

Table 2: Communications Plan

Phase	Target Audience(s)	Key message(s)	Channel(s)	Frequency	Period(s)	Owner(s) & Collaborators	Performance Metrics

Table 2: Example content by category

- **Phase:** 1 , 2, 3
- **Target Audience(s):** Entrepreneurs and SMEs, the public, government officials, students, investors, international audiences.
- **Key message(s):** Dispel misconceptions, AI & cyber literacy, opportunities & risks of AI, AI use cases, ethics & security guidelines.
- **Channel(s):** Website, events, hackathons, Q&A sessions, radio, social media, television, town halls, billboards, memos, workshops, intranet portals, tutorials.
- **Frequency:** Weekly, monthly, quarterly.
- **Period(s):** Month/Day to Month/Day.
- **Owner(s) & collaborators:** Individual or Entity.
- **Performance Metrics:** # of viewers, % increase in social media engagement, number of participants or attendance, number of comments, scores in surveys or sentiment analysis.

Additional categories

- **Budget:** amount in local currency.
- **Approvals required:** individual or entity.
- **Feedback mechanism:** online surveys, comments, questionnaires.
- **Risk management:** radio or SMS for inclusion, misinformation about AI.