

AI & SUSTAINABILITY

Through an India Lens

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2.Executive Summary

For decades, Artificial intelligence (AI) has served as a tool to assist human activity, but its potential as a transformative force in increasingly shaping economic systems, governance frameworks, and societal structures has now captured global attention. The rapid pace of adoption and expansion of AI undeniably presents significant opportunities to enhance productivity, foster innovation, promote inclusive growth, and support sustainable development, while generating positive environmental, economic, and social outcomes. But it also highlights complex challenges related to governance and regulation, risk mitigation, energy and environmental issues, labour markets, culture and equity - particularly in ensuring that its benefits are distributed fairly and its environmental and social risks are effectively mitigated, managed.

India's interest in artificial intelligence and efforts to prepare for its adoption at scale have been underway for an extended period. The AI Impact Summit 2026 served as an occasion to demonstrate this preparedness at the international level and express India's intent in playing a leading role in the design, development, and deployment of AI. The Summit also helped consolidate India's position within the global AI landscape, supported by a growing innovation ecosystem, a home-grown talent pool, and expanding digital and communication infrastructure.

The realization of AI's full potential however, will not merely depend on the scale of its adoption, but also on the social, economic and environmental value it creates and delivers at scale. In light of this understanding, this paper underlines that the intersection of AI and sustainability could be considered from two complementary dimensions of (i) AI for Sustainability and (ii) Sustainability of AI, operating within the three fundamental pillars of (i) Design, (ii) Development, and (iii) Deployment of AI - spanning across five interrelated layers of (i) Energy Systems, (ii) Infrastructure, (iii) Chip Manufacturing, (iv) Code/Algorithms, and (v) Applications.

AI systems are primarily designed to optimize costs and resource use at speed and scale, and are neither inherently sustainable nor unsustainable, but reflect the values, incentives, and structural biases of the systems within which they are designed and deployed. To ensure AI is ethical, inclusive, and sustainable in the long term, sustainability has to be incorporated within the design of both the broader AI ecosystem and individual AI systems. This will depend on the alignment of technological development with broader societal goals, institutional frameworks, and governance mechanisms, with a focus on strengthening regulatory frameworks, enabling broader access to AI, investing in foundational infrastructure, and embedding principles of transparency, inclusion, and long-term sustainability into AI systems.

AI is serving as an instrument to modify and restructure multiple domains, like industry, public services, labour markets, social and cultural structures and governance systems. Its growing integration into economic and social systems, along with the increasing convergence between digital transformation and (social - economic - environmental) sustainability, emphasizes the need to view AI not merely as a technological advancement but as a systems force with wide-ranging implications. The success of AI can not be determined by technological sophistication alone, but needs to be defined in terms of scale and depth of its real-world impacts.

From a societal perspective, long-term value lies in AI's ability to enhance productivity, improve public service delivery, expand opportunities, and address complex societal challenges, particularly for the underserved and vulnerable communities. However, realising these benefits depends on equitable access to AI capabilities, infrastructure, and resources. While AI presents significant opportunities for stakeholders, their ability to capitalize on these opportunities often remains constrained by limited access to technology, data, skills, knowledge and finance. By moving beyond one-size-fits-all models towards more precise and context-sensitive approaches, AI has the potential to provide solutions tailored to specific needs, at the ground level.

Academic research has widened its scope from understanding AI to exploring how AI can be used to advance sustainability objectives while mitigating adverse impacts, with a sharp focus on sustainability-oriented AI frameworks, responsible AI practices, interdisciplinary applications, assessments of socio-economic and environmental trade-offs, and governance approaches that balance innovation, ethics, and environmental stewardship.

In light of evolving views on the role of AI and in recognition that sustainability is a complex, multidimensional challenge requiring the alignment of diverse stakeholder interests, the Centre for Responsible Business (CRB) convened an expert roundtable at its Annual Sustainability Summit (India & Sustainability Standards, in New Delhi, in November 2025)¹. Bringing together thinkers and practitioners from the fields of both AI and sustainability, the roundtable explored why and how sustainability principles can be embedded in the design, development, and deployment of AI systems, and the potential of AI to advance sustainability outcomes beyond the scope of conventional approaches. Furthermore, CRB also participated in the AI Impact Summit in January 2026 to gain further perspectives on this interface.

This briefing paper is based on CRB's analyses of this evolving discourse on the intersection of artificial intelligence (AI) and sustainability, and outlines a simple conceptual framework to understand the interface from an Indian lens. Expert inputs and perspectives have helped refine and strengthen this framework, and CRB will continue to enrich this discourse going forward.



¹<https://sustainabilitystandards.in/>

3. AI & Sustainability: The Evolving Operational Framework

The intersection of AI and sustainability can be understood through two complementary dimensions of:

- (i) **AI for Sustainability**, and the
- (ii) **Sustainability of AI**,

Operating within the three Pillars of:

- (i) **Design**,
- (ii) **Development**, and
- (iii) **Deployment**

Spanning across the five interrelated Layers of the AI ecosystem:

- (i) **Energy Systems**,
- (ii) **Infrastructure**,
- (iii) **Chip Manufacturing**,
- (iv) **Codes/Algorithms**, and
- (v) **Applications**

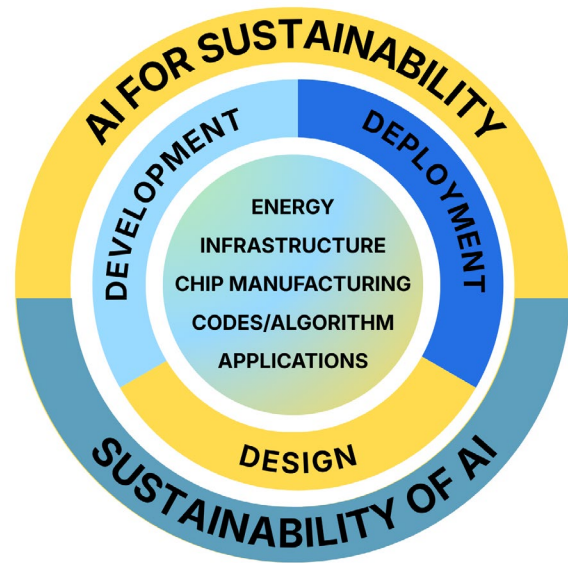


Figure 1: The Evolving Operational Framework (CRB, 2026)

3.1 TWO DIMENSIONS OF ARTIFICIAL INTELLIGENCE

3.1.1 AI for Sustainability

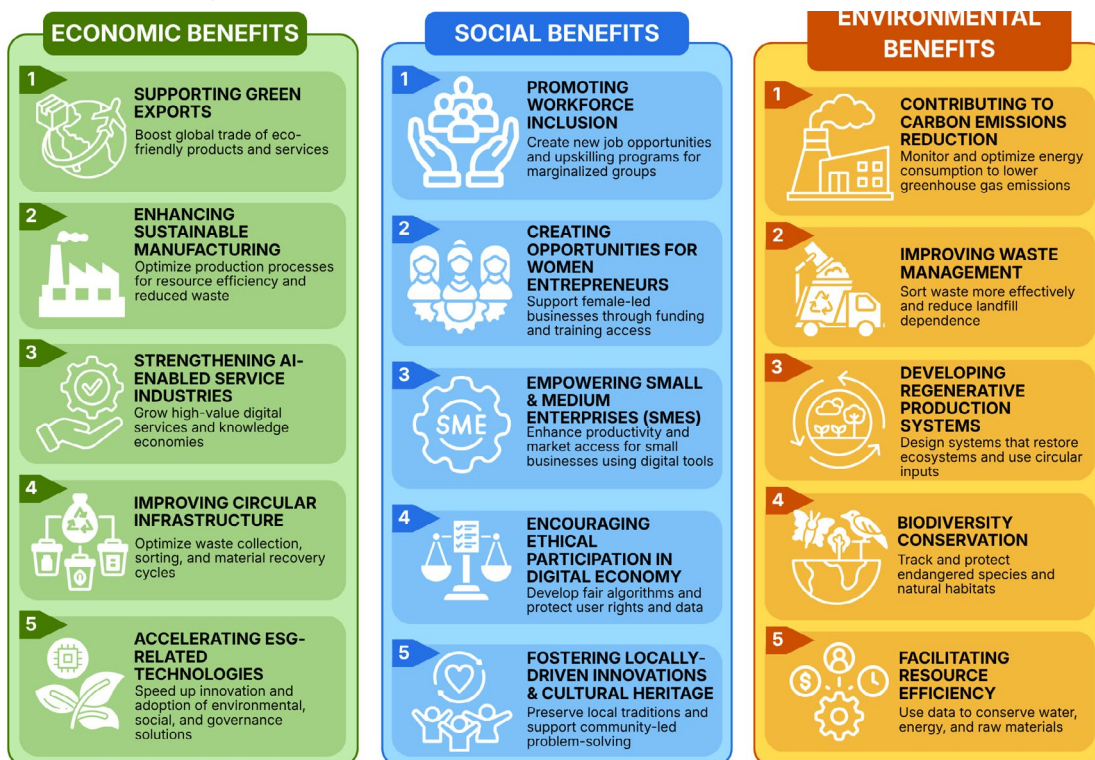


Figure 2: AI for Sustainability across economic, social & environmental benefits

(Note: The above-mentioned list of benefits is not exhaustive)

AI for Sustainability can be interpreted as leveraging AI to enable economically viable, environmentally sound, and socially acceptable actions across sectors such as climate, agriculture, water, energy, biodiversity, skilling, education, service delivery etc. This dimension highlights the areas that could particularly benefit from AI applications, through better data monitoring and analysis, improved predictions and advanced warning systems, and the development and modelling of alternative materials and systems across industries

that are more environmentally friendly.

AI has the potential to contribute to sustainability by generating economic, social, and environmental value across sectors. Together, these opportunities position AI as a potential enabler of sustainable development, provided that its deployment is guided by appropriate governance frameworks and aligned with local cultures, norms and realities.

To realise these benefits, organizations need to move beyond small pilots and focus on creating value at scale. This starts with choosing AI use cases that clearly link to important ESG issues, assigning clear ownership and looking at long-term returns beyond mere cost savings. Value should also be measured in terms of risk reduction, regulatory readiness, and long-term resilience across all the four capitals: natural, human, social and produced. At scale, organizations must also tackle common challenges such as poor data quality, systems that require tight integration, change management, workforce readiness, ongoing monitoring, vendor lock-in, regulatory audits, and building trust with communities.

Another aspect is the transformative potential of AI for hyper-local decision-making. The ability to process very large volumes of data at high speed can help generate granular, high-resolution insights for climate risks, resource use, supply chains, agriculture, urban systems, and SME ecosystems in ways that were previously difficult, slow, or prohibitively expensive. As AI systems become faster and more context-aware, sectors such as disaster resilience, energy management, water stress monitoring, worker safety, and green value chains could benefit enormously from rapid feedback loops and adaptive responses rather than static planning frameworks. This could enable more targeted interventions, improve resource allocation, and strengthen the effectiveness of sustainability strategies at the local level.

3.1.2 Sustainability of AI

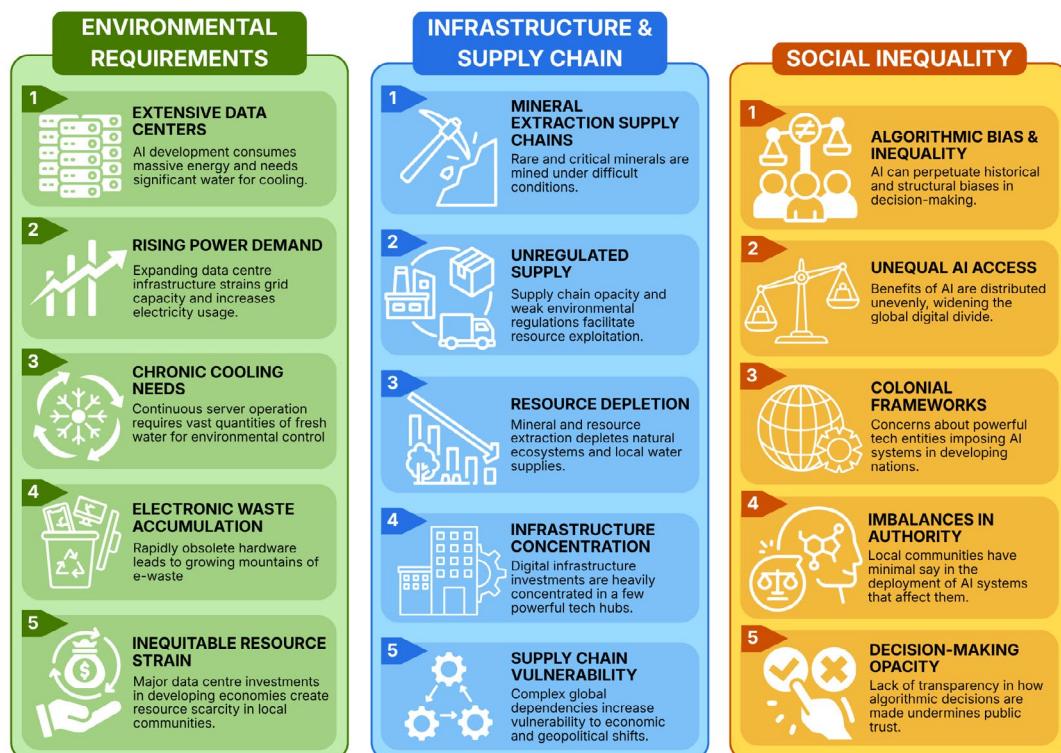


Figure 3: Sustainability of AI

(Note: The above-mentioned list of benefits is not exhaustive)

Sustainability of AI can be interpreted as ensuring the AI systems are designed, developed, and deployed in ways that are environmentally efficient, socio-culturally inclusive, and guided by strong and ethical governance systems.

To realise the true potential of AI for Sustainability a shift from generic models to context-sensitive solutions that improve public services and inclusion at scale, is essential. At the same time, ensuring the sustainability of AI necessitates greater attention to carbon- and water-aware computing, transparent and fair models, responsible data practices, and equitable access to infrastructure, skills, and digital resources.

In addition to its widely recognised potential to enhance productivity, innovation, and economic growth, sustainability implications of AI design, development, and deployment are also attracting significant attention.

The concentration of data centre investments in developing economies, including India, has prompted questions about the distribution of the environmental costs of the digital economy. In India, the adoption of responsible and sustainable AI is shaped not only by technological capabilities but also by the institutional and ecosystem conditions that support its diffusion. Intermediary organisations, sectoral platforms, and digital public infrastructure influence the accessibility of AI across actors and sectors. For smaller enterprises, adoption is often constrained by affordability, trust, language barriers, and limited technical expertise, highlighting the uneven conditions under which AI-enabled transformation occurs. An additional dimension is the relationship between AI and citizen participation. AI can not only optimize systems from the top down but also strengthen bottom-up intelligence by incorporating local knowledge, community observations, and lived realities into sustainability planning. In countries such as India, this could become an important differentiator in fostering more inclusive and resilient development pathways.

Current discussions often focus on the environmental impact of AI in isolation. However, AI is likely to automate and transform both existing and future processes, resulting in significant reallocations of resources, labour, skills, and institutional capacities. While AI-powered systems may increase energy consumption directly, they may simultaneously reduce resource use in the systems they replace. These transformations also have broader social and cultural implications, including changes to employment, livelihoods, access to opportunities, cultural practices, and societal values, highlighting that the sustainability implications of AI extend far beyond environmental impacts and require a holistic, multidimensional understanding of sustainability. Assessing the net sustainability impact of AI will therefore require a broader system-wide perspective and stakeholder engagement rather than a narrow focus on the footprint of AI technologies alone.

3.2 THREE PILLARS OF ARTIFICIAL INTELLIGENCE

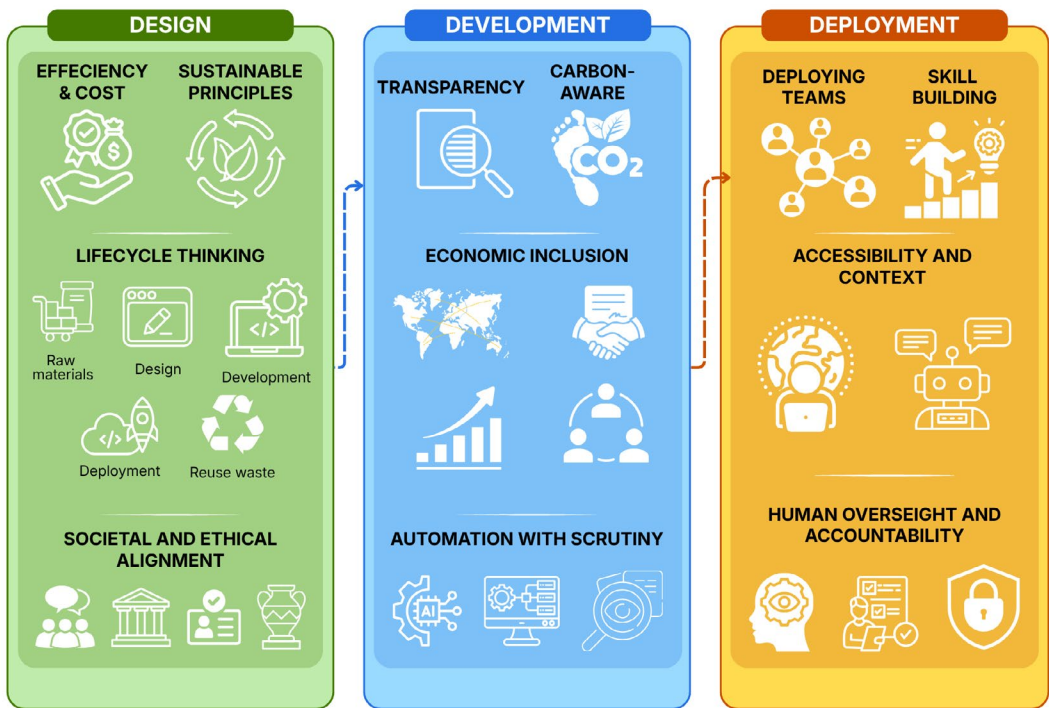


Figure 4: Three Pillars of AI

3.2.1 Design

AI systems are designed for efficiency, cost-effectiveness, and delivering outcomes at speed and scale. Making them truly sustainable requires a broader design lens that prioritizes resource efficiency, circular-design principles, equity and fairness. This implies incorporating lifecycle thinking to minimize resource use, enable reuse and regeneration, and reduce waste, while ensuring fairness in how benefits and risks are distributed so as not to reinforce existing inequalities.

It further necessitates incorporation of broader societal objectives, cultural nuances, stakeholder perspectives, institutional arrangements, and governance frameworks that align with the intended purpose and long-term outcomes of AI tools.

Data verification, along with addressing racial and gender bias in algorithms and ensuring culture and faith-neutral content, are critical considerations in responsible AI system design.

3.2.2 Development

In the development phase, it is important to prioritize interpretable and transparent models, carbon-aware training practices, and the integration of sustainability metrics into evaluation frameworks to ensure alignment between technical design and intended long-term sustainability outcomes such as Decarbonization, Nature-positive impacts, inclusive economic growth, etc.

AI systems should be leveraged to broaden economic access, build capabilities, and support job creation, particularly for women and youth, while addressing, rather than reinforcing, existing inequities. Given their strong dependence on data, the performance and fairness of AI systems remain contingent on the quality, representativeness, and inclusivity of the datasets on which they are trained.

While automation is often pursued for its benefits of reducing costs, saving time, minimizing human error, and enabling scale, its application in sustainability contexts requires careful scrutiny. Unlike deterministic automation systems, AI-based systems are probabilistic, making their outcomes inherently context-dependent. Consequently, decisions regarding automation must be guided by the characteristics of the task, particularly in cases involving normative judgements, irreversible or high-impact outcomes and to curb use of weak, incomplete, or biased data sets, especially in informal economies or contexts where local and indigenous knowledge is underrepresented.

3.2.3 Deployment

At the deployment stage of AI tools/models/systems, not enough attention is given to the selection and capacity of deploying actors. For effective implementation and favourable outcomes, these actors must be aligned with the intended objectives of the system, which underscores the importance and need for targeted capacity building and skill development grounded in principles of ethics and good governance.

Deployment must also prioritise accessibility, context specificity and local capacities for ensuring that systems are responsive to local realities and informed by diverse stakeholder inputs.

Working with AI requires a distinct skill set, as these systems are probabilistic in nature and necessitate continuous human oversight to validate outputs. Unlike deterministic automation, AI systems run on data and may generate biased or inaccurate results if data is not continuously monitored, thus making human involvement critical for result validation, ground-truth verification, detecting bias, and creating accountability in the decision-making processes.

It is important that deployment strategies are aligned with low-carbon objectives, in light of the resource-intensive nature of AI systems.

Finally, deployment should critically consider democratization of access. If AI infrastructure remains concentrated among a limited set of actors, existing inequalities may deepen further, making it imperative to expand equitable access to cloud infrastructure, open datasets, and multilingual models.

3.3 THE OPERATIONAL FRAMEWORK

Fig 5 attempts to encapsulate the two dimensions of AI for Sustainability and Sustainability of AI, across the three core pillars of Design, Development and Deployment within the five inter-related layers of an AI ecosystem thereby advancing an operational framework to help understand issues at the interface between AI and Sustainability.

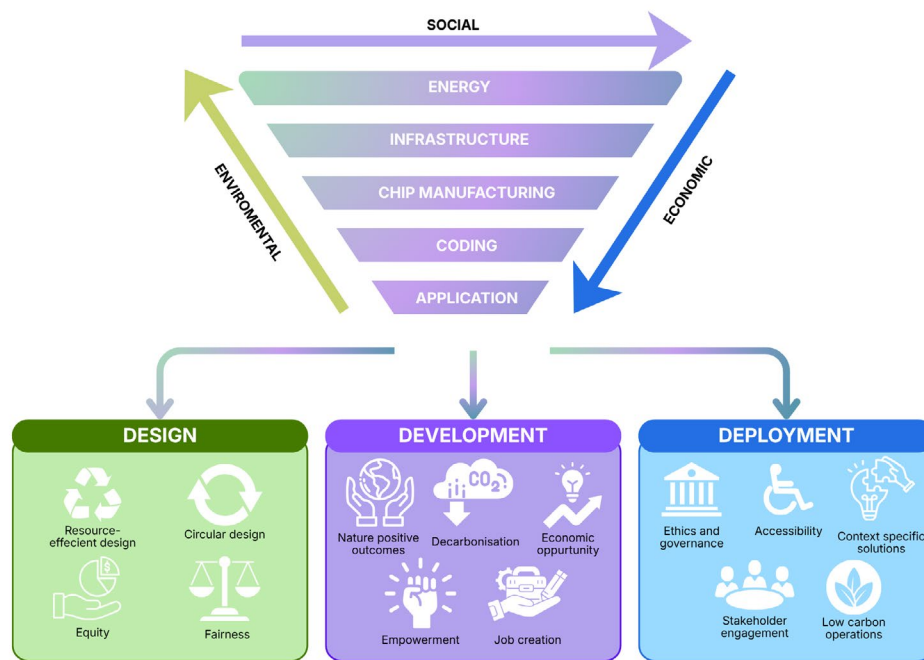


Figure 5: AI and Sustainability: Conceptual Framework (CRB, 2026)

The visual representation is intended to provide a simplified overview of the framework; however, the framework itself comprises a complex and interconnected set of layers, pathways, and pillars, as illustrated in the earlier figure (Fig 1-4).

The framework highlights the importance of embedding social, economic and environmental considerations, across the five layers of the AI ecosystem - Energy, Infrastructure, Chip Manufacturing, Coding and Applications. Pursuing sustainability outcomes across each of these layers especially in terms of implications for nature/climate, people, and local economy/economic actors should be embedded in the evolving governance structure and regulatory framework of the AI ecosystem. Keeping this fundamental integration in account, the framework lists (illustratively), certain key parameters under the three pillars of design, development and deployment, across the two dimensions that define the AI and Sustainability interface.

Interventions vary across these layers depending on the position, role of stakeholders, local context within the ecosystem, implying that each tier requires distinct governance approaches and regulatory frameworks. A one-size-fits-all approach is therefore inadequate for addressing such a complex and layered structure. Instead, the core pillars of design, development, and deployment must be aligned with the two interrelated dimensions of AI for sustainability and the sustainability of AI at each layer/tier of the AI Ecosystem. This multi-layered complexity underscores the need for clearly defined and adaptive regulatory frameworks capable of managing systemic interdependencies while ensuring sustainability, inclusion, and ethical and cultural alignment, particularly in contexts such as India.

4. Emerging Perspectives on the AI & Sustainability Interface

While significant efforts are in place to prepare for the AI transition, these developments are accompanied by a range of challenges and trade-offs. Given the scale and complexity of artificial intelligence, its adoption must remain context-specific and problem-driven, aligned with the development priorities of developing economies rather than being shaped primarily by investment imperatives or global competitive pressures. India possesses considerable potential to emerge as a global leader in AI development and deployment. However, realizing this potential will require deliberate efforts to ensure that AI pathways are not only economically viable, but also equitable, inclusive, and resource-efficient.

This section outlines a non-exhaustive set of key issues and perspectives that emerged from CRB's consultations and interactions with domain experts. These perspectives highlight critical considerations for advancing AI adoption in India, in a manner that is consistent with long-term sustainability objectives and development priorities and require further discussions.

» ***Governance, Accountability and Responsible AI***

In the absence of a single, comprehensive law, the governance of AI remains fragmented. It is governed through a combination of provisions of the existing laws and normative frameworks. Artificial intelligence represents a technological shift that not only expands what organisations can do, but also raises important questions about what they should do responsibly, emphasizing the need for appropriate governance frameworks. Problem-specific AI models can be particularly effective in generating accurate and actionable outcomes. However, ensuring that AI systems remain affordable, resilient, and responsibly governed will be critical for scaling adoption across sectors and regions. As AI-driven productivity gains are likely to materialise over time, their distribution will depend significantly on policy choices.

» ***AI Adoption Gaps in Sustainability Ecosystems***

At a systemic level, the integration of AI into sustainability ecosystems remains fragmented, with limited dialogue around governance, transparency, and environmental implications. This is further compounded by a lack of access and clarity in the selection and application of AI tools, particularly among SMEs, resulting in adoption patterns that are often misaligned with sector-specific requirements and sustainability objectives. Expanding access to digital technologies and capabilities, particularly for small and medium enterprises, is significantly important, given their pivotal role in employment generation across developing economies.

» ***Environmental Footprint and Resource Demands***

The environmental footprint of AI is and will continue to increase significantly. The energy demands of computing systems, along with the use of critical raw materials, infrastructure expansion, and water consumption associated with data centres, raise important concerns about the long-term sustainability of AI-driven systems. The rapid expansion of AI is placing increasing pressure on global energy systems, as computational demands continue to grow.

» ***Balancing Resource Intensity with Sustainability Gains***

AI presents a dual dynamic; it is, without a doubt, resource-intensive, but it is also a powerful enabler for resource optimisation, emissions reduction, and efficiency gains. AI offers opportunities to make energy systems more adaptive and efficient by integrating digital intelligence with physical infrastructure. This makes the selection of context-appropriate tools significantly critical to ensuring cost-efficiency and sustainability, while also highlighting the need to address existing knowledge gaps that may constrain effective adoption.

» ***Socio-economic Inclusion and Equitable Access***

Beyond environmental considerations, the socio-economic implications of AI adoption are equally critical, especially in an emerging economies context as is the case in India. These include risks of job displacement, unequal access to AI technologies, and the potential widening of digital divides, particularly across regions and demographic groups. Enabling wider access to AI technologies, alongside fostering collaboration across countries and institutions, will be essential to ensuring that the gains from AI extend beyond a narrow set of actors.

» ***Workforce Transformation and Skills Development***

AI is set to reshape workforce skill requirements, including at the entry level, which concurrently places a responsibility on firms to actively support workforce transitions through structured reskilling initiatives, the creation of new employment pathways, and responsible deployment practices. Current skill development efforts by both public and private actors indicate progress, yet important gaps remain. In particular, the conversion of digital skills into stable and meaningful employment continues to be a challenge, especially for women and underserved groups, suggesting deeper structural constraints within labour markets.

» ***Data Gaps, Representation and Contextual Relevance***

Data and contextual gaps further complicate this landscape. The absence of data from vulnerable sectors/regions, coupled with their limited representation in global AI training datasets, often leads to outputs that are culturally misaligned or contextually inaccurate, thereby reducing the effectiveness and inclusivity of AI systems.

» ***Infrastructure, Capacity and the Global AI Divide***

AI must be situated within the broader technological divide between the Global North and the Global South. In the evolving AI landscape, infrastructure development is pivotal to bridging this gap, but the creation of large-scale computing capacity demands substantial energy resources, sustained investment, and coordinated collaboration between governments and the private sector. Infrastructure extends beyond physical systems to include skills development and institutional capacity, both of which are essential for the effective adoption and use of AI across societies, thereby emphasizing investments in education and workforce development.

» ***AI, Traceability and Sustainable Value Chains***

At the level of Global Value Chains (GVCs), AI is playing a critical role in strengthening traceability, improving compliance, and supporting lifecycle thinking and management. Yet, translating these capabilities into meaningful circular-economy outcomes requires a more targeted capacity-building effort and sustained, coordinated engagement between public and private stakeholders.

» ***Competitiveness, Innovation and Development Priorities***

From a competitiveness and development perspective, as India continues to emerge as a significant AI hub attracting global corporate investment, there is a clear need to ensure that adoption remains problem-driven, cost-sensitive, and oriented towards real-world impact, rather than being shaped primarily by technological competition.

» ***International Cooperation, Digital Sovereignty and AI Governance***

The transnational nature of AI necessitates international collaboration in areas of development of standards, research, and governance. However, countries also have to balance this openness with considerations of digital sovereignty and strategic autonomy, especially in the Global South.

5. India's Strategic Preparedness for AI Transition

5.1 PHASES OF INDIA'S AI JOURNEY

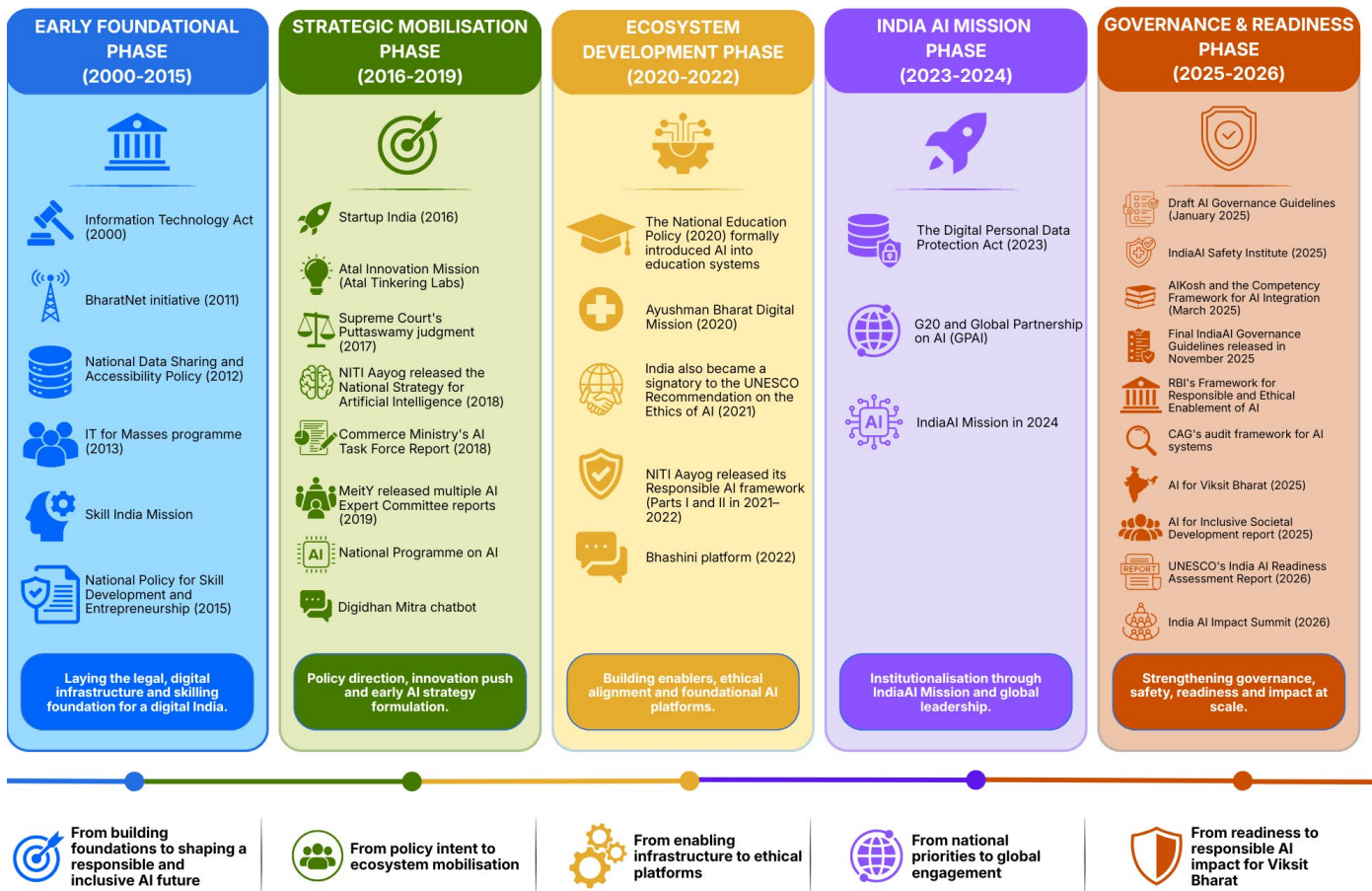


Figure 6: India's AI Journey (Phases)

India's engagement with artificial intelligence is not a recent development. Instead, it has been a gradual evolution from foundational digital policy frameworks to a comprehensive, multi-pillar national strategy anchored in the vision of "AI for All." This trajectory can be broadly understood across the following phases.

The Early Foundational Phase (2000–2015): established the legal and institutional groundwork for India's digital ecosystem. The Information Technology Act (2000)² provided the primary legal framework for digital technologies and cybersecurity, forming the basis for subsequent AI governance. This period also saw investments in digital infrastructure and capability building, including the BharatNet initiative (2011)³ to expand rural broadband connectivity, the National Data Sharing and Accessibility Policy (2012)⁴ to enable public access to government data, and the IT for Masses programme (2013)⁵ aimed at digital inclusion for marginalised groups. Complementary efforts such as the Skill India Mission and the National Policy for Skill Development and Entrepreneurship (2015)⁶ further focused on building a future-ready workforce.

The Strategic Mobilisation Phase (2016–2019): marked a shift toward innovation-led policy frameworks and institutional experimentation. Key initiatives included Startup India (2016)⁷ and the Atal Innovation Mission⁸, which established over 9,000 Atal Tinkering Labs to foster innovation at the school level. The recognition of privacy as a fundamental right in the Supreme Court's Puttaswamy judgment (2017)⁹ had a significant influence on the future data protection landscape. During this period, NITI Aayog released

²it_act_2000_updated.pdf

³usof.gov.in/en/bharatnet-project

⁴National Data Sharing and Accessibility Policy | Department Of Science & Technology

⁵<https://www.nielit.gov.in/haridwar/content/itformasses>

⁶Press Release Page | Press Information Bureau

⁷Startup India Programme; About Startup India Initiative

⁸Press Release: Press Information Bureau; Atal Innovation Mission (AIM) | Government of India's flagship initiative

⁹Justice K.S.Puttaswamy(Retd) And Anr. vs Union Of India And Ors. on 24 August, 2017

the National Strategy for Artificial Intelligence (2018)¹⁰, articulating the “AI for All” vision and identifying priority sectors for AI deployment. This was complemented by the Commerce Ministry’s AI Task Force Report (2018)¹¹, which recommended a central AI agency and ethical governance structures. In 2019, MeitY released multiple AI Expert Committee reports¹² focusing on data, platforms, and ethics, alongside the launch of the National Programme on AI¹³ and the Digidhan Mitra chatbot¹⁴.

The Ecosystem Development Phase (2020–2022): deepened sectoral integration and ethical framing of AI. The National Education Policy (2020)¹⁵ formally introduced AI into education systems, while the Ayushman Bharat Digital Mission (2020)¹⁶ established the foundations of a national digital health ecosystem. India also became a signatory to the UNESCO Recommendation on the Ethics of AI (2021)¹⁷, reinforcing its commitment to ethical AI governance. During this phase, NITI Aayog released its Responsible AI framework (Parts I and II in 2021–2022)¹⁸, outlining principles of safety, transparency, accountability, and operational risk management. Parallel initiatives such as the Bhashini platform (2022)¹⁹ advanced linguistic inclusion by enabling AI-driven services in multiple Indian languages.

The India AI Mission Phase (2023–2024): represents the consolidation of the national AI strategy into a structured, mission-driven framework. The Digital Personal Data Protection Act (2023)²⁰ established a comprehensive data governance regime, while India’s leadership roles in the G20 and Global Partnership on AI (GPAI) reinforced its global positioning. In 2024, the Government formally launched the IndiaAI Mission²¹, with a five-year budget of INR 10,300 crore (apprx. \$1.1 Billion USD), aiming to democratise compute access, strengthen indigenous AI capabilities, and support startups and innovation ecosystems. The mission is structured around seven pillars, including compute infrastructure, datasets, foundation models, skilling, startup financing, applications, and safe and trusted AI.

The Governance & Readiness Phase (2025–2026): reflects a shift toward governance refinement, institutional strengthening, and readiness assessment. Key developments include the draft AI Governance Guidelines (January 2025), the establishment of the IndiaAI Safety Institute (2025)²², and the launch of AIKosh and the Competency Framework for AI integration (March 2025)²³. The final IndiaAI Governance Guidelines released in November 2025²⁴ introduced seven foundational principles for safe and trusted AI. This period also includes sector-specific and cross-cutting interventions such as RBI’s Framework for Responsible and Ethical Enablement of AI, for the Indian financial sector²⁵, CAG’s audit framework for AI systems²⁶, and policy work on generative AI and copyright. In addition, strategic foresight documents such as AI for Viksit Bharat (2025)²⁷ and the AI for Inclusive Societal Development report (2025)²⁸ highlight AI’s role in economic transformation and social inclusion. The trajectory is further consolidated in the UNESCO’s India AI Readiness Assessment Report (2026)²⁹, which evaluates India’s preparedness across legal, social, economic, technical, and infrastructural dimensions. The report highlights India’s AI strategy, which follows a “whole-of-government” approach aimed at positioning the country as a global leader under the vision “Solve for India, Solve for 40% of the World.”

Thus, engagement with artificial intelligence and preparedness for its adoption have been underway for a considerable period of time in India. These policy, regulatory, and institutional developments illustrate a progressively structured and layered approach to AI governance in India. The India AI Impact Summit (2026)³⁰ provided a platform to signal this readiness and to articulate India’s ambition to play a leading role in the global design, development, and deployment of AI.

¹⁰Press Information Bureau; National Strategy for Artificial Intelligence

¹¹Press Information Bureau; Report of Task Force on Artificial Intelligence 20 March 2018 2.pdf

¹²Report Of Committee | Ministry of Electronics and Information Technology

¹³National Program on Artificial Intelligence - Digital India | Leading the transformation in India for ease of living and digital economy | MeitY, Government of India

¹⁴95455251_12_13_egps_digidhan_compressed.pdf

¹⁵National Education Policy (2020) (23. Technology Use and Integration); NEP_Final_English_0.pdf

¹⁶Factsheet Details: Factsheet Details | PIB; Ayushman Bharat Digital Mission - Digital India | Leading the transformation in India for ease of living and digital economy | MeitY, Government of India

¹⁷Recommendation on the Ethics of Artificial Intelligence | UNESCO

¹⁸Responsible-AI-22022021.pdf; Part2-Responsible-AI-12082021.pdf

¹⁹Bhashini; doc202282696201.pdf

²⁰THE DIGITAL PERSONAL DATA PROTECTION ACT, 2023; 2bf1f0e9f04e6fb4f8fef35e82c42aa5.pdf

²¹Press Release Page | Press Information Bureau; Press Release Page | Press Information Bureau; INDIAai | Pillars

²²India Takes the Lead Establishing the IndiaAI Safety Institute for Responsible AI Innovation.pdf

²³Press Information Bureau Empowering Public Sector Leadership: A Competency Framework for AI Integration in India

²⁴Final_Version_01; doc2026215790801.pdf

²⁵Reports- Reserve Bank of India

²⁶Inside Pages.cdr

²⁷AI-for-Viksit-Bharat-the-opportunity-for-accelerated-economic-growth.pdf

²⁸Roadmap_On_AI_for_Inclusive_Societal_Development.pdf

²⁹Artificial intelligence readiness assessment report: India - UNESCO Digital Library

³⁰India AI Impact Summit 2026

5.2 INDIA AND THE WORLD

For many countries in the Global South, the risk–reward calculus of AI adoption differs from that in advanced economies. There is a noticeable transition in the global AI discourse, from competition over who develops the most advanced models to a focus on who can deploy AI effectively at scale, placing users at the centre of implementation strategies, with an emphasis on tangible outcomes, inclusion, and real-world utility.

As AI adoption accelerates globally, international organizations and governments have developed governance frameworks to guide its responsible development and use. Some of the most referred are the OECD AI Principles³¹ and UNESCO's Recommendation on the Ethics of Artificial Intelligence³², both of which seek to ensure that AI advances in a manner consistent with human rights, societal well-being, and sustainable development.

The OECD AI Principles, adopted in 2019 and updated in 2024, are widely regarded as the first intergovernmental standard for AI governance. The framework promotes AI that is innovative, trustworthy, and respectful of human rights and democratic values through five core principles: Inclusive Growth, Sustainable Development and Well-being; Human Rights, Democratic Values, Fairness and Privacy; Transparency and Explainability; Robustness, Security and Safety; and Accountability. The OECD framework emphasizes human-centred AI development, fairness and non-discrimination, transparency regarding AI capabilities and limitations, risk management throughout the AI lifecycle, accountability and traceability, and the safety and resilience of AI systems. Importantly, it explicitly links AI governance to inclusive growth, environmental sustainability, and the reduction of social and economic inequalities.

Complementing this approach, UNESCO's Recommendation on the Ethics of Artificial Intelligence, adopted in 2021 by all 194 UNESCO Member States, represents the first global normative framework dedicated specifically to AI ethics. The Recommendation is grounded in four core values: human rights and human dignity; living in peaceful, just, and interconnected societies; diversity and inclusiveness; and environment and ecosystem flourishing. These values are operationalized through ten ethical principles, including proportionality and do no harm, safety and security, privacy and data protection, responsibility and accountability, transparency and explainability, human oversight, sustainability, awareness and literacy, and fairness and non-discrimination. UNESCO is particularly significant in the AI and sustainability discourse because it treats sustainability as a foundational principle and explicitly calls for evaluating AI systems based on their environmental, social, and economic impacts, as well as their contribution to the Sustainable Development Goals (SDGs).

Business-led sustainability organisations have also played an important role in shaping the global sustainable AI ecosystem. A notable example is Forética, Spain's leading business network on sustainability and corporate social responsibility, which distinguishes itself by explicitly integrating environmental sustainability into AI governance alongside more established concerns such as ethics, fairness, privacy, and accountability. Through its 2024 Manifesto for Responsible and Sustainable Artificial Intelligence,³³ Forética advances principles related to climate action, responsible resource use, human rights, inclusion, and governance. These principles are supported through a multi-stakeholder Responsible AI Initiative³⁴, the AI on ESG³⁵ platform that convenes businesses, policymakers, academia, and civil society, and a range of knowledge-generation and capacity-building activities focused on AI governance, regulation, and ESG integration. In collaboration with public institutions, Forética also contributes to the development of sustainable AI practices and the alignment of business action with emerging policy and governance frameworks. A number of leading universities across the world are also investing in developing Centres and Faculty dedicated to Ethical/Responsible AI.

³¹AI principles | OECD

³²Ethics of Artificial Intelligence - AI | UNESCO

³³Manifesto for a Responsible and Sustainable Artificial Intelligence - Forética

³⁴Inteligencia Artificial responsable, clave para acelerar la sostenibilidad en las empresas - Forética

³⁵AI on ESG: Artificial Intelligence and Sustainability - Forética

Alongside normative frameworks, international standards and regulations also emerged to operationalize AI governance. ISO/IEC 42001³⁶, jointly developed by the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC) and published in 2023, is the first global standard specifically focused on AI governance and management systems. It provides organizations developing or deploying AI with a structured framework for managing AI-related risks, accountability, and governance processes. While voluntary in nature, the standard is increasingly being viewed as a benchmark for responsible AI management.

In contrast, the European Union's AI Act³⁷, adopted in 2024, represents a legally binding regulatory framework. Unlike ISO/IEC 42001, compliance with the EU AI Act is mandatory for organizations operating within the European Union or providing AI systems to the EU market, regardless of where they are based. The Act introduces a risk-based regulatory approach and is expected to influence AI governance practices globally, much as the General Data Protection Regulation (GDPR) shaped global approaches to data protection.

Against this evolving international landscape, India is emerging as an increasingly important actor in the global AI ecosystem. The country's large and diverse population, extensive digital public infrastructure, rapidly expanding technology ecosystem, and strong base of digital users and entrepreneurs create favourable conditions for the development, testing, and deployment of AI solutions at scale. The successful implementation of AI in such a complex and heterogeneous environment enhances the potential for Indian-developed solutions to be adapted and replicated across other geographies, particularly in the Global South

India's approach to AI governance differs from jurisdictions that have adopted comprehensive AI legislation. Rather than relying on a single AI law, India currently governs AI through a combination of techno-legal frameworks that draw upon existing legislation, emerging regulations, and policy guidelines. These include the Information Technology Act, 2000³⁸, the Digital Personal Data Protection Act, 2023³⁹, the Copyright Act, 1957⁴⁰, and evolving approaches to the regulation of AI-generated content.

At the AI India Summit 2026,⁴¹ the Prime Minister articulated the MANAV Mission⁴², a normative framework that reflects India's evolving vision for ethical, inclusive, and development-oriented AI governance. Rather than constituting a formal administrative mission, MANAV represents a strategic framework for guiding policy, regulation, and India's international positioning on AI. The framework is built around five pillars: Moral and Ethical Systems, emphasizing the need for ethical foundations for AI; Accountable Governance, promoting transparent rules and robust oversight; National Sovereignty, affirming that data belongs to its rightful owner; Accessible and Inclusive AI, ensuring that AI serves as a multiplier rather than a monopoly; and Valid and Legitimate AI, requiring AI systems to be lawful and verifiable.

³⁶ISO/IEC 42001:2023 - AI management systems

³⁷EU AI Act: first regulation on artificial intelligence | Topics | European Parliament

³⁸The Information Technology Act 2000 (India)

³⁹2bf1f0e9f04e6fb4f8fe35e82c42aa5.pdf

⁴⁰Copyrightrules1957.pdf

⁴¹India AI Impact Summit 2026

⁴²doc2026219796801.pdf

5.3 REGIONAL COLLABORATIONS

India has increasingly engaged in international and regional collaborations that connect artificial intelligence (AI) with broader sustainable development objectives, although it has not yet entered into a dedicated regional agreement focused specifically on AI and sustainability. Instead, its engagement has largely taken place through global, plurilateral, and regional digital cooperation frameworks that address issues such as inclusive development, digital transformation, climate resilience, innovation, and responsible AI governance.

One of India's most significant engagements in this area is through the Global Partnership on Artificial Intelligence (GPAI)⁴³, of which it is a founding member. GPAI promotes the development and deployment of responsible, human-centric AI and encourages international cooperation on AI governance. India has played an active leadership role within the initiative, including hosting the GPAI Summit in New Delhi. Through GPAI, India has supported discussions on the application of AI to address societal and developmental challenges, including those linked to the Sustainable Development Goals (SDGs), digital inclusion, public service delivery, and sustainable economic development.

India has also advanced AI-related sustainability objectives through its participation in the Group of Twenty (G20)⁴⁴. During its G20 Presidency, India emphasised the role of digital public infrastructure and AI in promoting inclusive growth, improving public service delivery, and supporting sustainable development. Discussions within the G20 highlighted the potential of AI applications in sectors such as healthcare, agriculture, education, and climate resilience, while also underscoring the need for responsible governance frameworks to manage associated risks.

At the regional level, India has incorporated AI into its broader engagement with Southeast Asia through India-ASEAN digital cooperation initiatives. While no formal India-ASEAN AI agreement currently exists, emerging technologies have become an increasingly important component of cooperation in areas such as digital transformation, smart cities, innovation ecosystems, capacity building, and the development of inclusive digital economies. AI-related discussions have also featured within broader Indo-Pacific dialogues that seek to strengthen regional cooperation on technology governance and sustainable development.

Beyond multilateral and regional initiatives, India has pursued several bilateral partnerships that integrate AI with sustainability-related priorities. These collaborations include research and innovation partnerships focused on areas such as climate change, food security, water management, clean energy, and responsible technology governance.⁴⁵ Such partnerships demonstrate India's growing interest in leveraging AI not only as a driver of economic growth and technological competitiveness but also as a tool for addressing broader developmental and sustainability challenges.

Overall, India's engagement at the intersection of AI and sustainability has been characterised by participation in global governance initiatives and broader digital cooperation frameworks rather than through a dedicated AI regulatory architecture. The cooperation on AI remains fragmented and is often embedded within wider discussions on digital economy development, innovation, and sustainable growth rather than being addressed through specialised regional institutions or agreements.

⁴³India joins Global Partnership on Artificial Intelligence - IndBiz | Economic Diplomacy Division | IndBiz | Economic Diplomacy Division; PM inaugurates annual Global Partnership on Artificial Intelligence (GPAI) Summit | Prime Minister of India

⁴⁴G20_Brief_upto_MAR_25.pdf

⁴⁵Imperial College London sets up New Science Hub in Bengaluru to Bolster India-UK Research Ties - The Economic Times

6. Conclusion

AI has considerable potential to address complex sustainability challenges, provided its development is grounded in sustainability principles and supported by coherent international policy frameworks. India is well positioned to shape this emerging agenda. The combination of scale and heterogeneity enables India to develop, test, and deploy AI solutions in complex real-world conditions, enhancing their relevance and potential replicability across other global contexts. While this underlines our ability as a partner to attract the attention of global AI solution providers, we must invest in strengthening our governance and regulatory systems to derive full benefits of such potential collaboration projects, and mitigate potential risks and vulnerabilities.

India is well placed to play an important role globally in advancing the discourse on the AI - sustainability interface, particularly in bridging the perceived dichotomy between a tech-driven growth model and persistent regional sustainability challenges. This positions India not only as a major adopter of AI technologies but also as a potential agenda-setter in international forums, where it can contribute to shaping norms and standards that embed environmental and social considerations into AI governance frameworks.

From a domestic policy perspective, the AI sector also presents an opportunity to attract foreign direct investment and strengthen R&D and scientific research capacity. However, such investment strategies must be aligned with clear expectations around resilience, future-readiness, cultural norms and sustainability outcomes. This requires a governance and regulatory framework that places nature, climate, people, and local economic actors at the centre of AI development, ensuring that innovation is not pursued in isolation from the broader societal, cultural and environmental priorities.

At the same time, regulatory approaches must be designed in a way that anticipate rather than react to technological change, as relying on a “regulation after innovation” approach risks missing critical opportunities to shape the trajectory of AI development. A futuristic and sustainability-aligned policy framework can therefore position India not only as a key global AI hub, but also as a leader in defining how AI can be deployed responsibly to support inclusive and sustainable development.

AI is not a panacea for all sustainable development challenges, but it can serve as a catalyst for accelerating progress towards the Global Goals, provided it is supported by a balanced and well-calibrated governance and policy framework. Policymakers and business leaders should therefore take into consideration the overall value creation potential from the pursuit of the AI sector expansion, across all the four capitals: natural, social, human and produced.

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