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AI for Sustainable Development: A Study of India's AI Initiatives

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Abstract

The purpose of this abstract is to provide an analysis of the potential for transformation and the significant obstacles that may be encountered when utilizing artificial intelligence (AI) to promote sustainable development in India, with a primary emphasis on efforts that have been implemented by the government. The research concludes that artificial intelligence is a potent instrument that may be used to accelerate progress in a variety of Sustainable Development Goals (SDGs). These include areas such as healthcare, agriculture, energy, and urban planning, among others. Although there is a great deal of ambiguity around the future of Artificial Intelligence (AI), the field is already having a significant impact on our world. Artificial intelligence is reshaping businesses, spurring innovation, and reshaping the way in which we tackle complicated issues. Although there are still obstacles to overcome in the areas of ethics, equality, and best practices, The area is growing at a quick pace, and it is becoming increasingly clear that artificial intelligence (AI) has the ability to enhance human rights, labor conditions, and environmental protection, as well as to avoid corruption. However, in order to fully realize these advantages, it is necessary to have a deliberate design, responsible governance, and broad involvement. Improved urban planning, agriculture, healthcare, and climate action are some of the ways artificial intelligence is helping India move toward sustainable development. Optimisation of renewable energy networks, improved waste and water management, precision agricultural assistance for farmers, and expanded access to healthcare via telemedicine are all examples of how artificial intelligence is changing the world. The "AI for Sustainable Development" programs in India aim to use AI to combat climate change, urbanization, and resource loss.

1. Introduction

The "#AIforAll" strategy that has been adopted by India in order to promote sustainable development via the use of artificial intelligence (AI) is based on the idea of using technology to achieve inclusive growth and benefit society in key areas such as agriculture, healthcare, and smart cities. Among the most important measures are the comprehensive IndiaAI Mission and the construction of a variety of Centres of Excellence, which are intended to encourage innovation that is home-grown and to narrow the digital gap. Positioning India as a global leader in ethical and development-oriented AI is the goal of the government's strategy, which is guided by the vision of "Making AI in India and Making AI Work for India." The strategy is mainly articulated by NITI Aayog and is being implemented by the Ministry of Electronics and Information Technology (MeitY). This strategy stands out because it targets the specific problems faced by India and aims to fulfill the SDGs set forth by the UN through the use of artificial intelligence.

Under the guidance of Prime Minister Modi's forward-thinking leadership, India is seeing an extraordinary metamorphosis in the field of artificial intelligence. The Indian government is taking active steps to develop an artificial intelligence ecosystem in which powerful computing capabilities, GPUs, and research possibilities can be obtained at reasonable prices. This is the first time in the country's history that such a development has occurred.

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In contrast to the past, artificial intelligence (AI) in India is no longer restricted to a select few or under the control of the world's largest technology companies. By implementing forward-thinking policies, the Modi administration is equipping students, startups, and innovators with state-of-the-art artificial intelligence infrastructure, therefore establishing a genuinely egalitarian environment. The construction of Centers of Excellence for artificial intelligence (AI) and initiatives such as the IndiaAI Mission are helping to bolster the nation's artificial intelligence ecosystem, which is paving the way for self-sufficiency and innovation in this vital industry. These endeavors are in line with the goals of Viksit Bharat by the year 2047, which includes the aspiration for India to become a worldwide artificial intelligence (AI) powerhouse, using state-of-the-art technology to advance its economy, government, and societal advancement.

India is swiftly developing a robust AI computing and semiconductor infrastructure to bolster its expanding digital economy. Following the endorsement of the IndiaAI Mission in 2024, the government earmarked ₹10,300 crore over a five-year period to enhance AI capabilities. This project prioritizes the establishment of a sophisticated shared computing facility including 18,693 Graphics Processing Units (GPUs), rendering it one of the largest AI computing infrastructures worldwide. This capability is approximately ninefold that of the open-source AI model DeepSeek and around two-thirds of the operational capacity of ChatGPT.

2. Key Points

- Potential for Progress: Applications that use AI, like prediction analytics in agriculture (which predicts the best way to water crops and how much they will produce), smart grids for managing energy, and better medical diagnoses, make things more efficient, make better use of resources, and have less of an effect on the environment. India's AI Mission and programs like BHASHINI (for international access) and Digital Shram Setu want to make sure that technology helps people from all walks of life.

- Policy Framework: With NITI Aayog acting as the main organization for tracking SDG achievement and encouraging AI integration in national planning, the report examines India's policy environment. AI-supported government initiatives like the Pradhan Mantri Awas Yojana and Ayushman Bharat-PMJAY show how to effectively reduce poverty and improve access to healthcare.

- Challenges and Limitations: The study emphasizes considerable challenges, such as ethical concerns, data privacy issues, algorithmic bias, a persistent talent gap, and infrastructure deficits, despite the significant opportunities. The high energy consumption of AI technologies also poses a potential counter-effect to climate action.

3. India's AI Initiatives

Projects like BharatGen multimodal LLM are part of India's larger AI effort, which aims to establish a strong AI ecosystem by enhancing computing power, data infrastructure, and innovation. Vital projects also include "AI for India 2.0," which aims to improve people's skills, and the IndiaAI Application Development Initiative, which focuses on developing AI for specific sectors like healthcare and agriculture. To meet the unique demands of their respective regions, state governments are also enacting AI policies of their own.

4. National Initiatives

- **IndiaAI Mission:** A comprehensive strategy with a budget of about 10,300 crore rupees, the goal of which is to make India a global leader in the field of artificial intelligence. It is founded on seven pillars, three of which are the expansion of computational capacity, the creation of artificial intelligence models that are specific to India, and the promotion of innovation by providing assistance to startups. A project that falls within the umbrella of the mission to promote and implement India's development.

- **India AI Innovation Centre (IAIC):** An endeavor with the goal of creating and implementing native AI models; in early 2025, researchers and entrepreneurs will be able to submit their proposals for the project.

- **Bharat Gen:** The world's first multimodal large language model (LLM) effort that is supported by the government and that is designed to improve public services by utilizing fundamental models in the areas of language, voice, and computer vision.
- **India AI Datasets Platform:** A project aimed at improving the availability of high-quality, non-personal data in order to stimulate advancements in artificial intelligence.
- **India AI Future Skills:** A program to promote AI education and skill development for the workforce.
- **Digital India Bhashini:** An initiative to improve access to government services through AI-powered vernacular language technologies.

5. Sector-Specific and Other Initiatives

- **AI for social good:** Focuses on developing AI solutions for societal challenges.
- **Sector-specific AI:** The IndiaAI Application Development Initiative supports AI applications in healthcare, agriculture, and other fields.
- **State-level AI policies:** Many Indian states are developing their own AI policies and projects to drive regional growth.
- **Research and development:** Academic institutions like the IITs are actively engaged in AI research and collaborations, such as with Samsung for AI research and the National Health Authority for AI in healthcare

6. The Seven Pillars of The India AI Mission

- **India AI Compute Pillar:** The high-end GPUs provided by this pillar are available at reasonable prices. More than 38,000 graphics processing units have been brought on board, as has been said previously. These graphics processing units (GPUs) may be purchased at a discounted price of only 65 rupees per hour.
- **India AI Application Development Initiative**: This section focuses on creating AI apps to solve problems that are unique to India. Assistive learning technology, healthcare, agriculture, climate change, and governance are all part of this sector. In July of 2025, thirty applications were approved. Ministries and institutes work together to host hackathons that focus on certain sectors. One such event that uses AI to improve cyber security is the Cyber Guard AI Hackathon.
- **AIKosh (Dataset Platform)**: Artificial Intelligence Kosh is in the business of creating enormous datasets for the purpose of training artificial intelligence models. It combines information that was obtained from both official and non-government sources. The platform offers a total of more than 3,000 datasets and 243 artificial intelligence models that are available in 20 different areas. Developers can devote more attention to artificial intelligence solutions rather than constructing fundamental modules by utilizing these resources. By the month of July in the year 2025, the platform will have accumulated a total of 265,000 visitors, 13,000 downloads, and 6,000 registered users.
- **IndiaAI Foundation Models:** This initiative cultivates India's proprietary Large Multimodal Models utilizing Indian data and languages. It guarantees national competency and international competitiveness in generative AI. IndiaAI got more than 500 bids. Initially, four startups were chosen: Sarvam AI, Soket AI, Gnani AI, and Gan AI.
- **India AI Future Skills**: This pillar builds AI-skilled professionals. Support is provided to 500 PhD fellows, 5,000 postgraduates, and 8,000 undergraduates. Over 200 students received fellowships by July 2025. Twenty-six institutes onboarded PhD students. Data and AI Labs are being set up in Tier 2 and Tier 3 cities. Twenty-seven labs have been identified with NIELIT. States and UTs nominated 174 ITIs and polytechnics for labs.

- **India AI Start up Financing:** Funding for artificial intelligence startups is provided under this pillar. March 2025 saw the commencement of the India AI Startups Global initiative. Through a partnership with Station F and HEC Paris, it assists ten Indian businesses in breaking into the European market.

- **Safe and Trusted AI :** This pillar guarantees the appropriate implementation of AI through robust governance. Eight ideas were chosen in the initial round. They concentrate on machine unlearning, bias reduction, privacy-preserving machine learning, explainability, auditing, and governance testing. More than 400 applications were submitted in the second round. An expression of interest was issued on 9 May 2025 seeking partner institutions to collaborate with the India AI Safety Institute.

7. Conclusion

The findings of the research indicate that artificial intelligence has the potential to act as a catalyst for the growth of India, which is both inclusive and sustainable (Viksit Bharat 2047). However, in order to achieve this, solid governance frameworks, substantial investments in research and skill development, and collaborative methods among policymakers, business, and academics are required. A human-centric strategy that stresses inclusion and mitigates possible disadvantages is required in order to successfully and equitably deploy artificial intelligence. The country has established itself as a dominant force in the field of artificial intelligence on the world stage, thanks to the quick pace at which it has been developing AI, which is supported by strategic government initiatives. India is establishing an inclusive and innovation-driven ecosystem through the expansion of AI compute infrastructure, the promotion of indigenous AI models, the improvement of digital public infrastructure, and investments in the development of talent. The advantages of artificial intelligence (AI) will be made available to businesses, academics, and citizens through the focus that is placed on open data, inexpensive access to high-performance computers, and AI-driven solutions that are tailored to meet local needs. India's proactive approach to the deployment of artificial intelligence is not only bolstering its digital economy but also setting the road for self-reliance in crucial technologies as AI adoption expands across industries. India is poised to become a leader in artificial intelligence innovation, and it will influence the global AI landscape in the years to come, thanks to its clear vision for the future. India’s progress in AI is a result of deliberate planning and swift execution. The nation is building a strong artificial intelligence ecosystem that helps its population and encourages innovation by increasing its computer capacity, encouraging the development of domestic models, and providing support to companies. Examples of initiatives with tangible, impactful applications may be seen in the fields of agriculture, healthcare, education, and government. Innovation touches every citizen through strategic programs including the IndiaAI Mission, Digital Shram Setu, and fundamental model development. These efforts also stimulate research, skills, and entrepreneurship. These endeavors further the goal of Viksit Bharat 2047 and set the stage for India to become a world leader in artificial intelligence.

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