

## **EDITORIAL: THE HINDU**

# **GENERAL STUDIES 3:** ECONOMY/S&T/ENVIRONMENT**DATE:** 28.04.2025**TOPIC:** AI ON ECONMY & SUSTAINABLE DEVELOPMENT

Clean AI: On AI data centres and energy demand

### 1. Context and Background

- The **International Monetary Fund (IMF)** has released a report titled "*Power Hungry: How AI Will Drive Energy Demand*", exploring the intersection of artificial intelligence (AI), energy consumption, economic growth, and environmental consequences.
- The report presents a dual-edged outlook:
  - **Positive:** AI will significantly enhance productivity and economic output.
  - **Negative:** This productivity surge will come at the cost of increased electricity usage and associated greenhouse gas emissions.

#### 2. Economic Impact of AI: Key Findings

- Global GDP Growth Boost
  - AI technologies are expected to increase global GDP by 0.5% annually between 2025 and 2030.
  - The cumulative economic uplift from AI over this period is substantial, amounting to trillions of dollars in additional global output.
- Unequal Gains Across Regions and Sectors
  - Advanced economies and AI-intensive sectors like finance, technology, and telecommunications are expected to gain the most.
  - **Developing countries**, labor-intensive industries, and digitally underdeveloped regions may lag behind, worsening global inequality.
  - Without redistribution mechanisms, this imbalance could intensify *economic disparity* and *social tensions*.

#### 3. Environmental and Energy Concerns

- Sharp Rise in Electricity Demand
  - AI-related activities including **data centers**, algorithm training, and real-time analytics are energy-intensive.



- Global electricity consumption by AI could **triple by 2030**, reaching **1,500 TWh** roughly equal to the entire **electricity consumption of India** in 2023.
- Increase in Greenhouse Gas (GHG) Emissions
  - Under current energy and climate policies, AI is projected to cause a **1.2% rise in global GHG emissions** from 2025 to 2030.
  - While the number may appear small, it adds significant stress to global efforts to meet **net-zero emissions goals**.
- Social Cost of Emissions
  - The estimated monetary value of the additional emissions caused by AI ranges from \$50.7 billion to \$66.3 billion.
  - Though minor compared to the broader economic benefits of AI, these costs reflect real damages including health impacts, climate disruptions, and ecosystem degradation.

#### 4. AI's Potential to Support Sustainability

- AI for Energy Efficiency
  - If guided correctly, AI can help *reduce overall emissions* by optimizing energy usage in:
    - Power grids (smart grids)
    - Transportation systems (AI-driven traffic and logistics)
    - Manufacturing processes (automated and precision-controlled operations)
    - Agriculture (climate-sensitive irrigation and crop management)
- Climate and Environmental Monitoring
  - AI can improve **predictive modeling** for extreme weather, emissions tracking, and resource allocation during disasters.
- Circular Economy and Waste Reduction
  - AI can assist in waste classification, recycling logistics, and product lifecycle analysis to **minimize environmental impact**.

#### 5. Policy Recommendations and Role of Governments

• Need for Policy Intervention



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- Market forces alone will not ensure sustainable AI deployment, warns the Grantham Research Institute.
- Governments must design regulations and incentives that align AI development with climate and equity goals.
- Investment in Green Infrastructure
  - Public and private investments should focus on:
    - **Renewable energy sources** to power data centers
    - Low-energy hardware designs for AI computing
    - **Carbon pricing or taxation policies** to account for social costs of emissions
- Equitable AI Access and Capacity Building
  - Ensure **developing nations** are not left behind in AI adoption.
  - Promote **tech transfer**, digital literacy, and infrastructure development in low-income regions.
- Establish AI Governance Frameworks
  - Ethical and sustainable AI development needs strong governance, including:
    - Transparency in AI usage
    - Environmental impact assessments for large-scale AI deployment
    - Cross-border collaborations on carbon accounting
- 6. Conclusion: Balancing Innovation with Responsibility
  - AI offers transformational economic opportunities but carries environmental costs that cannot be ignored.
  - **Proactive, climate-conscious policies** are crucial to ensure AI contributes positively to the **global green transition**.
  - The challenge ahead lies in **decoupling AI-driven economic growth from rising emissions**, ensuring that the future of AI is both **smart and sustainable**.

Source: <u>https://www.thehindu.com/opinion/editorial/clean-ai-on-ai-data-centres-and-energy-demand/article69497410.ece</u>



