



AI and Climate Change

This editorial is based on [“The Climate Costs of AI”](#) which was published in Indian Express on 03/02/2022. It talks about the interconnection between the development of AI Technology and Climate Change.

For Prelims: Artificial Intelligence (AI), Climate Change, Dartmouth Conference,

For Mains: AI and Climate Change Relationship - Significance of AI in climate change mitigation and Impact of development of AI technology on climate change.

[Artificial Intelligence \(AI\) technologies](#) have been often thought as a gateway to a future written in chrome, operating on a virtual cloud.

Even in the [Budget 2022-23](#), AI was described as a sunrise technology that would “assist sustainable development at scale and modernise the country.”

In terms of climate change, AI can prove to be immensely helpful in **developing environment friendly infrastructure, making climate predictions and decarbonising industries**. However, ironically, the AI with itself brings an environmental cost to the development of the technology.

As we look to the future, there is a need to ensure that the **benefits of using AI to tackle climate change outweigh the drawbacks**.

AI-Climate Nexus

What is AI?

- AI describes the action of machines accomplishing tasks that have historically required human intelligence.
 - In the year 1956, American computer scientist John McCarthy organised the **Dartmouth Conference**, at which the **term ‘Artificial Intelligence’ was first adopted**.
- It **includes technologies like machine learning, pattern recognition, [big data](#)**, neural networks, self algorithms etc.
 - AI is **different from hardware driven robotic automation**. Instead of automating manual tasks, AI performs frequent high volume computerised tasks reliably.
- The governments of **developing countries see AI as a silver bullet for solving complex socio-economic problems**, as a result, a high share of AI in technology-linked emissions would be seen in the coming decades.

What are the Global Trends for the Development of AI Technology?

- The **“race” for dominance in AI is far from fair**: a few developed economies possess certain material advantages right from the start, they also set the rules.
 - They have an advantage in research and development, and possess a skilled workforce as well as wealth to invest in AI.
 - **North America and East Asia** alone account for **three-fourths of global private investment in AI, patents and publications**.
- The current state of inequity in AI in terms of governance raises **concerns about the technological fluency of policymakers** in developing and underdeveloped countries and their **representation and empowerment at the international bodies** that set rules and standards on AI.
 - The developing and underdeveloped countries have not been much benefitted by the technology as **AI’s social and economic benefits are accruing to a few countries only**.

What is the Significance of AI in Tackling Climate Change?

- AI could be most valuable in helping humankind fight its biggest threat - climate change. AI can:
 - **Strengthen climate predictions**
 - Enable **smarter decision-making for decarbonising industries** from building to transport
 - Work out how to **allocate renewable energy**.
- **Greening cities** or using **wind channel architecture** to create ventilation are ways to help cities deal with extreme heat that can be guided by AI.
- AI can also help reduce the effects of the climate crisis, such as by **making smart grid designs** and developing low-emission infrastructure.

What is the Impact of AI Technology on Climate?

- **Carbon Footprint**: The climate impact of AI can be majorly attributed to the **energy use of training and operating large AI models**.
 - In 2020, digital technologies accounted for between **1.8% and 6.3% of global emissions**.
 - At this same time, AI development and adoption across sectors skyrocketed and so did the demand for processing power associated with larger and larger AI models.
 - A main problem to tackle in reducing AI’s climate impact is to quantify its energy consumption and carbon emission, and to make this information transparent.
- **UNESCO’s Efforts**: The idea of sustainability is rapidly entering mainstream debates on [AI ethics](#) and [sustainable development](#). Recently, [UNESCO](#) adopted the **Recommendation on the Ethics of Artificial Intelligence**, calling on actors to “reduce the environmental impact of AI systems, including but not limited to its carbon footprint.”
 - In this context, tech-giants like Amazon, Microsoft, Alphabet and Facebook have **announced their “net zero” policies and initiatives** which is a good sign, but **merely scratches the surface**.
- **Issue of Developing and Underdeveloped Countries**: These countries have been specifically facing challenges as most of the **current efforts and narratives on the relationship between AI and climate** impact are being **driven by the developed West**.

What is the Way Forward?

- **Dedicated Research**: The relationship between climate change and AI is understudied, not least because the largest **companies working in this space are neither transparent nor meaningfully committed** to studying, let alone acting, to substantively limit the climate impact of their operations.
 - Dedicated studies, more investments in R&D and better policy interventions are required in this field.
 - AI needs to be **developed and deployed so it can meet society’s needs and protect the environment** by saving more energy than it expends.
- **Merging Technology with Sustainable Development**: To make sure **AI is used to help, and**

not hinder the society, it's time to merge the two big debates of the present time - **digital technology and sustainable development** (in particular, the environment).

- If we use the former to save the latter, this could be the best possible use made out of the resources available to us.

▪ **Exploring the Opportunities for the Developing World:** Governments of developing countries, including India, should assess their technology-led growth priorities in the context of AI's climate costs.

- The developing nations are **not plagued by legacy infrastructure**, hence, it would be **easier for them to "build up better"**.

- These countries don't have to follow the same AI-led growth paradigm as their Western counterparts.

▪ **Recommendation of WEF:** In 2018, a [World Economic Forum \(WEF\)](#) report showed that while AI can address some of Earth's environmental challenges, it is important to manage it properly.

- To prevent this, the WEF proposed that governments and companies should pursue advancements in "**safe**" AI to **ensure that humanity is not developing AI that is harmful to the environment**.

- The AI developers "must incorporate the health of the natural environment as a fundamental dimension."

Drishti Mains Question

"It's time to start thinking about doing AI in a more environmentally friendly way". Comment.