

Al and Climate Change

This editorial is based on <u>"The Climate Costs of Al"</u> which was published in Indian Express on 03/02/2022. It talks about the interconnection between the development of Al Technology and Climate Change.

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

For Mains: Al and Climate Change Relationship - Significance of Al in climate change mitigation and Impact of development of Al 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 <u>Budget 2022-23</u>, Al was described as a sunrise technology that would "assist sustainable development at scale and modernise the country."

In terms of climate change, Al can prove to be immensely helpful in **developing environment friendly infrastructure, making climate predictions and decarbonising industries.** However, ironically, the Al 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?

- Al 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.
 - Al is different from hardware driven robotic automation. Instead of automating manual tasks, Al 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 Al.
 - 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 Al.
 - The developing and underdeveloped countries have not been much benefitted by the technology as Al's social and economic benefits are accruing to a few countries only.

What is the Significance of AI in Tackling Climate Change?

- Al could be most valuable in helping humankind fight its biggest threat climate change. Al 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 Al.
- Al can also help reduce the effects of the climate crisis, such as by making smart grid designs and developing low-emission infrastructure. Jision

What is the Impact of AI Technology on Climate?

- Carbon Footprint: The climate impact of Al 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, Al 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 Al'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 Al 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 Al 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.
 - All 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 Al'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 Al-led growth paradigm as their Western counterparts.
- **Recommendation of WEF:** In 2018, a <u>World Economic Forum (WEF)</u> report showed that while Al 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.

PDF Reference URL: https://www.drishtiias.com/current-affairs-news-analysis-editorials/news-editorials/2022-02-03/print