

The issue of using emerging technology for detecting natural disasters

What is the EnviroSci Committee?

The Environmental Science Committee is a body of the United Nations which tackles pressing environmental and climate based challenges through the lens of sustainability, scientific research, and international cooperation between member states. EnviroSci's work as a collaborative committee is essential in developing key strategies that integrate scientific research with policymaking and technological innovation.

EnviroSci works closely with the United Nations Environment Programme, the World Meteorological Organisation and the UN Office for Disaster Risk Reduction, allowing for discussion and agreements between member states, NGOs, and scientists to come up with valid solutions that are both environmentally sustainable and technologically feasible.

This year, the EnviroSci committee will be focusing on a key challenge in the modern day climate crisis, which is: how emerging technologies can be used to detect, predict, and respond to natural disasters, with an emphasis on communication and sustainability.

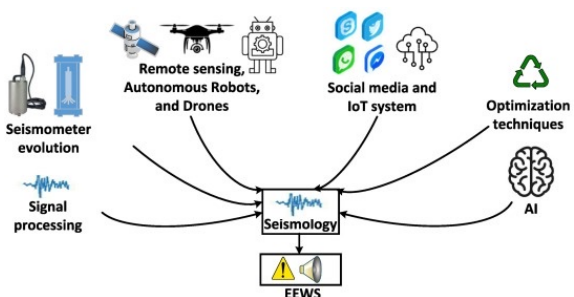


What are Emerging Technologies for Natural Disaster Detection?

Emerging technologies are new and fast evolving innovations that can improve the speed, accuracy, and coordination of natural disaster detection and response.

These technologies include:

- Artificial Intelligence (AI) and Machine Learning; they are used to analyse satellite data, predict the impacts of disasters, and issue early warnings for more efficient action.
- Remote Sensing and Use of Satellite; this offers immediate monitoring of weather patterns and land movements such as earthquakes, landslides, oceanic plate activity.
- Drones and Unmanned Aerial Vehicles; they provide high resolution images and fast situational awareness in disaster struck zones.
- Internet of Things (IoT) Sensors; they are used primarily in highly vulnerable areas to monitor the temperature, moisture levels and seismic activity of earthquakes, etc., sending alerts before a disaster strikes.
- Blockchain Technology; this can help when tracking aid distribution and secure data in disaster zones.
- Big Data Analytics: Combines multiple sources of to improve disaster modelling and optimise evacuation plans.



These innovations aim to make disaster response faster, cheaper, and more effective, especially in areas prone to floods, hurricanes, tsunamis, wildfires, and earthquakes.

What are Some Real World Examples of These Technologies in Use?

- India's Cyclone Detection Network – A Doppler radar was invested in by India to help utilise early warning system tech, and public education campaigns to reduce cyclone-related fatalities.
- Google's Flood Forecasting in Bangladesh and India – Google uses AI and hydrological data to predict and send alerts about flooding, reaching millions of people in flood-prone areas.
- Japan's Earthquake Early Warning System – Japan uses an integrated system of seismic sensors for earthquakes, AI, and mobile alerts to citizens that gives residents seconds to minutes of warning before an earthquake hits.
- NASA's Disasters Program – this uses satellite imagery and AI to track wildfires, hurricanes, and floods, helping first responders and governments make informed decisions.

Significant Issues Presented to the EnviroSci Committee Regarding the Issue of Using Emergency Technology for Detecting Natural Disasters?

Technological Inequality:

- Many LICs do not have any access to emerging technologies due to them being very costly, having poor infrastructure, or lacking technical expertise. This creates a separation between countries that can predict and prepare for disasters and those that cannot which is unfair on those less fortunate nations.

Data Security:

- The use of AI and 'big' data raises concerns about who controls disaster data instances. It begs the question as to whether it should belong to national governments, private companies, or the global community. Improper use or privatisation of critical disaster information could disadvantage vulnerable communities, again making it very unfair.

Over Reliance on Technology:

- Technology cannot eliminate natural disasters, but only help to manage them. Over / heavy reliance on tech may divert funds from vital community-based disaster preparedness, particularly in rural areas.

Ethical Concerns in AI Prediction Models:

- AI systems can reflect biases based on mistaken data or underrepresented populations, leading to unequal warnings and aid allocation. This then begs the question as to who is held accountable if an algorithm fails to predict correctly?

Sustainability and Environmental Impact:

- Some technologies, for example satellites and drones, require rare earth metals, which have

environmental costs.

Points and Questions to Consider in Debate:

- Should the UN reduce emerging technology access for LICs?
- How can global cooperation be improved in sharing real time disaster data?
- Should private technology companies be under regulations when providing services for public emergencies?
- How can we ensure AI models are transparent, unbiased, and ethically accountable?
- What frameworks can be proposed for fair and impartial disaster technology deployment?



Useful Links for Research:

- UNDRR — <https://www.undrr.org>
- WMO — <https://wmo.int>
- NASA Disasters Program — <https://appliedsciences.nasa.gov/what-we-do/disasters>
- World Bank — <https://www.worldbank.org/en/topic/disasterriskmanagement>