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1. An overview of Europe's AI convention

Why in News?

The global governance of Artificial Intelligence (AI) is becoming more complex even as countries try to govern AI within their borders in various ways, ranging from acts of law to executive orders. Many experts have articulated a global treaty to this effect, but the obstacles in its path are daunting.

What is Europe's AI convention?

Although there are many ethical guidelines, 'soft law' tools, and governance principles enshrined in many documents, none of them are binding or are likely to result in a global treaty. There is also no ongoing negotiation for an AI treaty at the global level anywhere. Against this background, the Council of Europe (COE) took a big step by adopting the Framework Convention on Artificial Intelligence and Human Rights, Democracy and the Rule of Law, also known as the 'AI convention', on May 17.

The COE is an intergovernmental organisation formed in 1949, with currently 46 members. The agreement is a comprehensive convention covering AI governance and links to human rights, democracy, and the responsible use of AI. The framework convention will be opened for signature on September 5.

What is a framework convention?

A 'framework convention' is a legally binding treaty that specifies the broader commitments and objectives under the convention, and sets mechanisms to achieve them. The task of setting specific targets is left to subsequent agreements. Those agreements that are negotiated under the framework convention will be called protocols. For example, the Convention on Biological Diversity is a framework convention while the Cartagena Protocol on Biosafety is a protocol under it that deals with living modified organisms.

The framework convention approach is useful because it allows flexibility even as it encodes the core principles and processes by which the objectives are to be realised. Parties to the convention have the discretion to decide the ways in which to achieve the objectives, depending on their capacities and priorities.

What is the scope of the convention?

Article 1 of the convention states: "The provisions of this Convention aim to ensure that activities within the lifecycle of artificial intelligence systems are fully consistent with human rights, democracy and the rule of law".

Article 3 states: "The scope of this Convention covers the activities within the lifecycle of artificial intelligence systems that have the potential to interfere with human rights, democracy, and the rule of law as follows: a. Each Party shall apply this Convention to the activities within the lifecycle of artificial intelligence systems undertaken by public authorities or private actors acting on their behalf. b. Each Party shall address risks and impacts arising from activities within the lifecycle of artificial intelligence systems by private actors... in a manner conforming with the object and purpose of this Convention."

Why do we need the AI convention?
The AI convention doesn't create new and/or substantive human rights specific to AI. Instead, it asserts that existing human and fundamental rights that are protected by international and national laws will need to stay protected during the application of AI systems as well. The obligations are primarily directed towards governments, which are expected to install effective remedies and procedural safeguards. In all, the convention takes a comprehensive approach to mitigating risks from the use of AI systems for human rights and democracy. There are bound to be challenges to implementing it, particularly at a time when AI regulation regimes are yet to be fully established and technology continues to outpace policy.

Relevance: GS Prelims & Mains Paper II; International Organisations
Source: The Hindu

2. Why has NASA launched a tiny satellite to measure heat lost from Earth's poles?

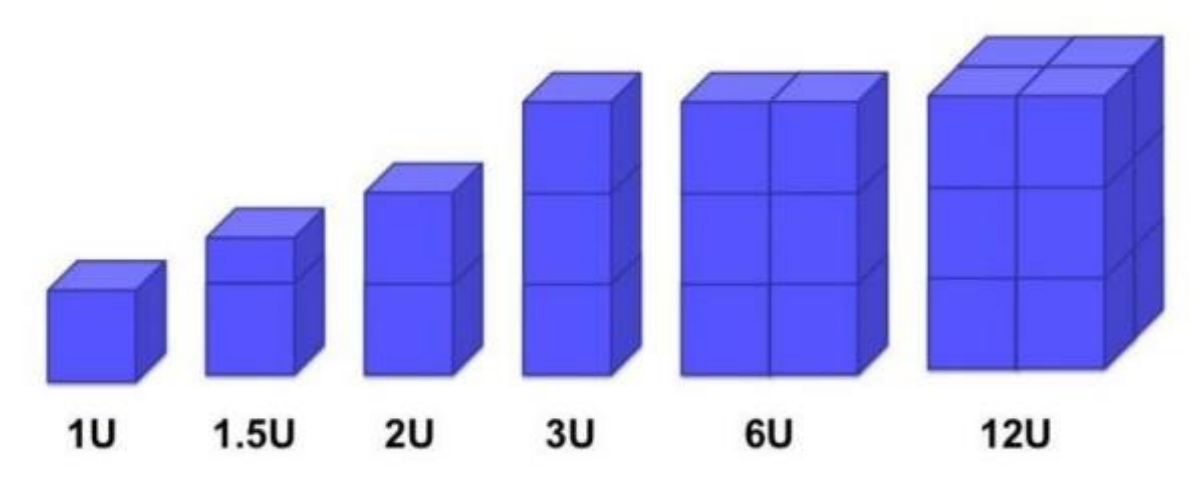
Why in News?
On May 25, the National Aeronautics and Space Administration (NASA) launched one of the two climate satellites, which would study heat emissions at Earth's poles, from Māhia, New Zealand. The second satellite will be launched in the following days.

The two shoebox-sized cube satellites, or CubeSats, will measure how much heat the Arctic and Antarctica — two of the coldest regions on the Earth — radiate into space and how this influences the planet's climate. The mission has been named PREFIRE (Polar Radiant Energy in the Far-InfraRed Experiment) and was jointly developed by NASA and the University of Wisconsin-Madison (US).

But first, what are CubeSats?
CubeSats are essentially miniature satellites whose basic design is a 10 cm x 10 cm x 10 cm (which makes up for "one unit" or "1U") cube — just a little bigger than a Rubik's cube — and weight not more than 1.33 kg.

These satellites were first developed in 1999 by California Polytechnic State University at San Luis Obispo (Cal Poly) and Stanford University as educational tools. However, owing to their low cost and less mass in comparison to traditional satellites, they began to be put in orbit for technology demonstrations, scientific research, and commercial purposes.

Each of the PREFIRE satellites is a 6U CubeSat. They measure around 90 cm in height and nearly 120 cm in width when the solar panels, which will power the satellite, are deployed. The two satellites will be placed in a near-polar orbit (a type of low Earth orbit) at an altitude of about 525 kilometres.



Why do researchers want to measure heat emissions at Earth's poles?
It has to do with the Earth's energy budget, which is the balance between the amount of heat incoming to Earth from the Sun and the amount of heat outgoing from Earth into space. The difference between the two determines the planet's temperature and climate.

A large amount of the heat radiated from the Arctic and Antarctica is emitted as far-infrared radiation — wavelengths of 3 μm to 1,000 μm within the infrared range of electromagnetic radiation. However, there is currently no way to measure this type of energy. As a result, there is a gap in knowledge about the planet's energy budget.

What is the PREFIRE mission?
The PREFIRE mission will change that. Its two CubeSats can study far-infrared radiation from the Earth's pole and the data collected by them would help scientists better understand the energy budget of the planet.

The CubeSats will also measure the amount of far-infrared radiation trapped by atmospheric water vapour and clouds at the poles and how this influences the greenhouse effect in the region.

Relevance: GS Prelims & Mains Paper III; Science & Technology
Source: Indian Express