

Dept of Climate Change, provides a much-needed platform to explore Climate Change and Sustainability in an all-encompassing way.

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As one of the biggest long-term and pressing societal challenges facing human beings in the twenty-first century, climate change has exerted a negative effect globally, and climate is still changing. The term "climate change" is defined by NASA's glossary as well as by the United Nations as "long-term shifts in temperatures and weather patterns." No matter how the phrase is defined, there is widespread agreement within the scientific community that human activities are, in fact, impacting the climate system.

Climate change can affect our health, ability to grow food, housing, safety, and work. Some of us are already more vulnerable to climate impacts, such as people living in small island nations and other developing countries. Conditions like sea-level rise and saltwater intrusion have advanced to the point where whole communities have had to relocate, and protracted droughts are putting people at risk of famine. It's now been almost a year; we left COP26 with "1.5" on life support. Since then, its pulse has weakened further. Greenhouse gas concentrations, sea level rise, and ocean heat have broken new records. The world is in the danger zone from floods, droughts, extreme storms, and wildfires. No nation is immune. Yet we continue to feed our fossil fuel addiction.

We now have global frameworks and agreements to guide progress, such as the Sustainable Development Goals, the UN Framework Convention on Climate Change, and the Paris Agreement. Three broad categories of action are: cutting emissions, adapting to climate impacts, and financing required adjustments. Secretary General of the UN, in his last speech, mentioned the importance of Mitigation, Adaptation, Finance, and Loss & Damage. He also mentioned that the coming decade is the decade of Climate Action. Switching energy systems from fossil fuels to renewables like solar or wind will reduce the emissions driving climate change. But we must start right now. While a growing coalition of countries is committing to net zero emissions by

2050, about half of emissions cuts must be in place by 2030 to keep warming below 1.5 °C. Fossil fuel production must decline by roughly 6 per cent per year between 2020 and 2030. The increasing scale of human activity on the planet has led to the emergence of sustainability as a central aim for society. Today, sustainability is an issue of concern.

Primarily because of the mounting evidence that suggests that increasing scale of human activity on our planet Earth is following an overwhelming trajectory. Highlighting the magnitude of this problem, researchers have suggested that supporting today's population, consuming resources at the same rate as we are now, "would take four to five more Earths." The rising significance of sustainability research is reflected in the expanding size of the literature that document it. A query of "sustainability" in a recognized scholarly database, Scopus, turns up more than 20000 review papers itself. Within this literature, one may identify a plethora of goals, indicators, and targets that are intended to facilitate a shift toward sustainability. At its heart are the 17 Sustainable Development Goals (SDGs), which are an urgent call for action by all countries - developed and developing - in a global partnership. They recognize that ending poverty and other deprivations must go together with strategies that improve health and education, reduce inequality, and spur economic growth - all while tackling climate change and working to preserve our natural resources.

With less than a decade left to realize the SDGs, India has set 17 targets, including climate efficient and sustainable infrastructure, sustainable environment, renewable energy, safe sanitation, and drinking water, among others; that have a deadline this year when we celebrate our 75th Independence Day.

On indices like GHG emissions, energy use, and climate policies India has ranked high in a report on Climate Change. However, even well

performing states in India have a high score on Climate Vulnerability Index. For example, the Cyclone Amphan is a lesson on the compounding effects that extreme weather events can have when they co-occur with any other disaster. It was estimated to have a 13 billion dollar cost of damages; 4.9 million people were displaced with 100 + deaths.

It is an ambitious but necessary task to comprehensively address these growing concerns, and the Department of Climate Change, along with the GreenKo School of Sustainability at IIT Hyderabad, provides a much-needed platform to explore Climate Change and Sustainability in an all-encompassing way. The department and the school aid to integrating academic knowledge with practical knowledge while bringing together scientists, engineers, practitioners, policymakers, and students, who shall help to reshape our future. The key will be to foster an interdisciplinary space of inquiry that incorporates sustainability into climate. Sciences, technology, and engineering-based design approaches, as well as social and policy research. This merges perfectly with our plan at IITH, to become a leading institute in bringing a synergy among these key areas.

Research from the department has been focused on Climate Modeling, Climate Mitigation, Climate Policies, and Governance, and Sustainable Development. At this moment, we have several research projects, notably on renewable energy, sustainable infrastructure, and smart cities, and have been actively publishing in internationally reputed Journals. We thrive to continue the trend and achieve even more through practical and state-of-the-art research and technological contributions. Let us all work together to achieve a cleaner, greener, and a sustainable India for our future generations

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