

Global Centre for Environment and Energy





From Left to Right: Suvadip Neogi, Shivika Mittal, Minal Pathak, PR Shukla, Purvi Vyas, Shaurya Patel, Shrutika Parihar, Anurag Gupta

Global Centre for Environment and Energy, Ahmedabad University is a unique centre among Indian universities. The Centre fosters and pursues interdisciplinary research and policy making related to climate change, energy and natural resources. The centre's focus is to discover and address research needs at the interfaces of three vital global challenges - environment, energy and sustainability.

The Global Centre for Environment and Energy along with Centre for Environmental Policy, Imperial College London co-host mitigation group (Working Group III) of the Intergovernmental Panel on Climate Change (IPCC). IPCC is the United Nations body for assessing the science related to climate change. IPCC provides regular assessments of the scientific basis of climate change, its impacts and future risks, and options for adaptation and mitigation.



Research Collaborations



Imperial College London

Intergovernmental Panel on Climate Change, United Nations



Urban Climate Change Research Network, Earth Institute, Columbia University Imperial College London, United Kingdom



Department of Climate Change, Government of Gujarat

Urban Climate Change Research Network

The Urban Climate Change Research Network (UCCRN) is a consortium of over 800 individuals dedicated to the analysis of climate change mitigation and adaptation from an urban perspective. UCCRN members are scholars and experts from universities and research organizations. They span a broad range of expertise including climate scientists; urban heat island and air quality experts; climate change impact scientists; social scientists, including political scientists, planners, and economists; and urban designers and planners.

The Global Centre for Environment and Energy, Ahmedabad University hosts the South Asia Hub of the Urban Climate Change Research Network (UCCRN) in collaboration with Earth Institute, Columbia University to enhance global city focused climate change knowledge assessment & solutions program.

UCCRN Regional Hubs



Research Highlights

The centre engages on high level research and publications.



Special Report on Climate Change and Land 2019

Special Report on Climate Change and Land of the Intergovernmental Panel on Climate Change I(PCC) addresses greenhouse gas (GHG) fluxes in land-based ecosystems, land use and sustainable land management in relation to climate change adaptation and mitigation, desertification, land degradation and food security. The report shows that better land management can contribute to tackling climate change, but is not the only solution. Reducing greenhouse gas emissions from all sectors is essential if global warming is to be kept to well below 2°C, if not 1.5°C.



Special Report on Global Warming of 1.5°C 2018

Special Report on Global Warming of 1.5°C also known as SR1.5 of the Intergovernmental Panel on Climate Change (IPCC) looks at the impacts of global warming of 1.5 °C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty. The report finds that limiting global warming to 1.5°C would require "rapid and far-reaching" transitions in land, energy, industry, buildings, transport, and cities.



Emissions Gap Report 2019

This is the tenth edition of the United Nations Environment Programme (UNEP) Emissions Gap Report. It provides the latest assessment of scientific studies on current and estimated future greenhouse gas (GHG) emissions and compares these with the emission levels permissible for the world to progress on a least-cost pathway to achieve the goals of the Paris Agreement. This difference between "where we are likely to be and where we need to be" has become known as the 'emissions gap'.



Global Research and Action Agenda on Cities and Climate Change Science 2018

The Global Research and Action Agenda on Cities and Climate Change Science looks at crosscutting issues and knowledge gaps; establishes topical research areas; and approaches to implement the Research and Action Agenda. The Research and Action Agenda is meant to be representative of conference discussions relating to progress which can be made to develop further knowledge on cities and climate change with the science, policy and practice communities.



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A pathway design framework for national low greenhouse gas emission development strategies

Henri Wassenson, P., Chris Bataller, P., Handel Wassen, P., Frank Alexan, P., Paspatensk Stadikt, Markard Calmainer, Sonard Band, Parkol Chapel, Marcher Erlmeiner, M. (2006). Kannan A., Hannesson, K. (2007). A strange of the strange of the strange of the strange of the National Science of the strange of the strange of the strange of the strange of the National Science of the strange of the strange of the strange of the strange of the National Science of the strange of the strange of the strange of the strange of the National Science of the strange of the strange of the strange of the strange of the Science of the strange of the Science of Science of The strange of the s

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Climate Change and Cities: Second Assessment Report 2018

The Urban Climate Change Research Network's Second Assessment Report on Climate Change in Cities (ARC3.2) is the second in a series of global, science–based reports to examine climate risk, adaptation, and mitigation efforts in cities. The report explicitly seeks to explore the implications of changing climatic conditions on critical urban physical and social infrastructure sectors and intersectoral concerns. The primary purpose of ARC3.2 is to inform the development and implementation of effective urban climate change policies, leveraging ongoing and planned investments for populations in cities of developing, emerging, and developed countries.

A pathway design framework for national low greenhouse gas emission development strategies 2019

The Paris Agreement introduces long-term strategies as an instrument to inform progressively more ambitious emission reduction objectives, while holding development goals paramount in the context of national circumstances. We assessed India in context of innovative pathway design framework In this Perspective, we describe this framework and show how it can support the development of sectorally and technologically detailed, policy-relevant and country-driven strategies consistent with the Paris Agreement climate goal. We also discuss how this framework can be used to engage stakeholder input and buy-in; design implementation policy packages; reveal necessary technological, financial and institutional enabling conditions; and support global stocktaking and increasing of ambition.



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Abstract

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Transformation of India's steel and cement industry in a sustainable 1.5 °C world 2019

India's steel and cement industry will require a more transformative shift, both on the demand and supply side to reduce carbon emissions. In this paper strategies from both supply and demand-side are analysed for steel and cement sector to understand consequences for energy and emissions using two modelling approaches i) energy system and ii) material flow models. A portfolio of technically feasible options to reduce the material, energy and CO₂ intensity is explored under four alternate scenarios spanning till 2050 differentiated by their mitigation ambition and development paradigm The study concludes that a stringent carbon policy in combination with strong sustainability principles can reduce CO₂ emissions by 68% in the steel and cement sector in 1.5°C Scenario compared to NDC Scenario.

Altitude Profiles of Cloud Condensation Nuclei Characteristics across the Indo-Gangetic Plain prior to the onset of the Indian Summer Monsoon 2020

Concurrent measurements of the altitude profiles of the concentration of cloud condensation nuclei (CCN), as a function of supersaturation (ranging from 0.2% to 1.0%), and aerosol optical properties (scattering and absorption coefficients) were carried out aboard an instrumented aircraft across the Indo-Gangetic Plain (IGP) just prior to the onset of the Indian summer monsoon (ISM) of 2016. In general, the CCN concentration was highest in the central IGP, decreasing spatially from east to west above the planetary boundary layer (PBL), which is 1:5 km for the IGP during pre-monsoon period. An empirical relation has emerged between the CCN concentration and the scattering aerosol index (AI), which would facilitate the prediction of CCN from aerosol optical properties.

Spatial and Altitudinal Contrast in Aerosol Radiative Properties across the Indo-Gangetic Plain 2019

With a view to understanding the vertical distribution of aerosols and estimating the radiative impacts of elevated aerosols in the lower free troposphere, extensive profiling of the vertical variation of the optical properties, namely the extinction/ scattering and absorption coefficients have been carried out from three base stations in the Indo-Gangetic Plain (IGP) using an instrumented aircraft, prior to onset of the Indian Summer Monsoon.The vertical profiles of the optical properties differed significantly across these locations and this resulted in a regionally significant heating rate gradient. While the integrated (ground to 3 km altitude) scat remained quite comparable across the IGP, the highest abs and hence the lowest single scattering albedo (SSA) occurred in the central IGP (Varanasi)

Outreach & Stakeholder Engagement

Road to the IPCC Sixth Assessment Report Fostering deeper engagement with industry, finance and civil society stakeholders 15th January 2019 | New Delhi

Conference: Road to the IPCC Sixth Assessment Report





PhD Candidates in conversation with Dr. N.H. Ravidranath from IISC





Minal Pathak at Symposium on Climate Change and the Global Environment, Kolkata



Professor Chandra addressing participants at Climate Change and Industry Workshop



Professor Pathak and Diemen at local school discussing climate change and 1.5°C report



Mukesh Shah from Government of Gujarat supporting centre's activities



Conference: Mitigation landscape in a Carbon Constrained World - Q&A Session

PhD in Management in Climate Change / Energy / Environment

Global Centre for Environment and Energy and Amrut Mody School of Management, Ahmedabad University provides a platform for talented and motivated candidates to undertake a **PhD in Management in Climate Change / Energy / Environment.**

In line with Ahmedabad University's objective of promoting high quality research, the PhD in programme gives passionate researchers an opportunity to explore cutting-edge research in emerging and interdisciplinary areas including, but not limited to energy policy, mitigation of greenhouse gas emissions, energy and emissions modelling, urban sustainability, alternative energy, global climate policy, climate change adaptation and air pollution.



For more information on eligibility and how to apply scan the QR code or visit: https://ahduni.edu.in/amsom/admissions

For any clarifications, please email: amsomphd@ahduni.edu.in or Call us on 079- 61911319



Current Doctoral Candidates



Shrutika Parihar

Area of Research: Landuse Inventories, Cities and Sciences and GIS for Monitoring Ecosystems and Green GDP Growth



Chaitali Trivedi

Area of Research: Building Energy Use, Alternative Building Material and Circular Economy



Purvi Jadav

Area of Research: Urban Solutions for Climate Change Mitigation

Kopal Agrawal

Area of Research: Consumer Behaviour and Sustainable Energy Consumption

People



Priyadarshi Shukla

Co-Chair, Working Group III, Intergovernmental Panel on Climate Change, United Nations (UN); Distinguished Professor, Amrut Mody School of Management and Chair, Global Centre for Environment and Energy

Area of Research: Energy Efficiency, Energy-Environment Modelling, Renewable Technologies, Decentralized Planning, Integrated Assessment Modelling and Climate Change Policy Analysis



Minal Pathak

Senior Scientist, Technical Support Unit of Working Group III, Intergovernmental Panel on Climate Change, UN and Global Centre for Environment and Energy

Expertise: Urban Climate Change Mitigation Actions & Co-benfits, Deep Decarbonisation Scenarios for India, Demand Side Solutions for Climate Change Mitigation and Sustainable Development



Aditya Vaishya

Assistant Professor, Mathematical and Physical Sciences, School of Arts and Sciences, Ahmedabad University and Affiliate Faculty, Global Centre for Environment and Energy

Expertise: Meterology, Climatology, Experimental Physics, Aerosol-Cloud-Radiation Interaction, Development of Light-Weight Sensors for Atmospheric Studies, Atmospheric Sciences, Aerosol Science, Radiative Forcing, and Air Pollution Studies



Subhash Rajpurohit

Assistant Professor and Ramanujan Fellow, Biological & Life Sciences, School of Arts and Sciences, Ahmedabad University and Affiliate Faculty, Global Centre for Environment and Energy

Expertise: Ecological and Evolutionary-Physiology, Genetic Basis of Climate Adaptation, Metabolic Ecology, and Rapid Evolution



Deepak Varma

Assistant Professor, School of Engineering and Applied Science, Ahmedabad University and Affiliate Faculty, Global Centre for Environment and Energy

Expertise: Thin Film Solar Cells and Photovoltaic Systems

People



Purvi Vyas

Science Officer, Technical Support Unit of Working Group III, Intergovernmental Panel on Climate Change, UN and Global Centre for Environment and Energy

Area of Research: Climate Change Mitigation, Sustainable Lifestyle, Low-Carbon Transport, Shared Economy, and Sustainable Development



Shaurya Patel

Research Associate, Global Centre for Environment and Energy

Area of Research: Urban (City) Studies, Climate Change Mitigation, Data Science, Analytics and GIS, Policy Research, and Climate Change Communication



Chandrima Mukhopadhyay

Post Doctoral Research Associate, Opportunities for Climate Mitigation and Sustainable Development (OPTIMISM) Project, Ahmedabad University

Area of Research: Urban Governance, PPP, Mega-Regions, Decarbonisation in transport and Planning Theory



Bandish Patel

Research Associate, OPTIMISM Project, Ahmedabad University

Area of Research: Climate Policy, Climate Financing and Sustainable Urban Development



Saumya Lathia Research Associate, OPTIMISM Project, Ahmedabad University

Area of Research: Urban and Regional Equity, Sustainability, Resilience and Informal Urban Sector.

Visiting Researchers



Subash Dhar

June, 2018 | Senior Research Fellow, Global Centre for Environment and Energy and Senior Economist at Denmark Technical University, UNEP DTU Partnership



Shivika Mittal

Oct, 2019 to Feb, 2020 | Senior Research Fellow, Global Centre for Environment and Energy and Post-doctoral research from the National Institute of Environmental Studies, Japan, the Chalmers University of Technology, Sweden and University College Cork, Ireland



Anjali Ramakrishnan

April, 2019 to Aug, 2019 | Research Fellow, Global Centre for Environment and Energy and PhD candidate since October 2017 at Mercator Research Institute on Global Commons and Climate Change



Nandini Das

June, 2019 to Dec, 2019 | Research Fellow, Global Centre for Environment and Energy and Project Personnel-Global Change Programme-Jadavpur University & Chapter Scientist-WG III, IPCC

Engage with the Centre





Get in touch!

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