Center of excellence in climate change is established under Prime Minister's National Action Plan on Climate Change and as an inter-disciplinary, long-term research and capacity-building initiative.
**Objectives**

I. To understand model performance with respect to parameterization and validation of various climate models and constraining uncertainty
II. To standardize the sector specific impact assessment models for agricultural crops, water and health.
III. To quantify the impacts and vulnerability in water, agriculture and health due to climate variability and change.
IV. To identify the associated socio-economic implications.
V. To develop infrastructure facilities for climate research and a coherent multi-disciplinary problem-driven research group, manpower by strengthening teaching and training to build long-term scientific capacity and serve R&D needs.

**Major thematic areas**

- **Climate simulation modeling**
- **Climatic impacts and vulnerability assessment**
- **Socio-economic issues**

**Focus areas**

**Theme-1: Climate simulation modeling**
- Role of aerosols on climate change: Recognizing the uncertainty for improved climate modeling
- Evaluation of Climate Models: Understanding model performance and constraining uncertainty in climate models

**Theme-2: Climatic impacts and vulnerability assessment**
- Climatic impacts and vulnerability assessment in water sector
- Climatic impacts and vulnerability assessment in agriculture sector
- Soil ecology and plant-microbe interactions under climate change
- Developing durable technology for sustaining adverse impact of climatic change on the important crops and food security
- Climatic impacts and vulnerability assessment in health sector

**Theme-3: Socio-economic issues**
- Community based management
- Economics of Climate Change
- Climate Change and Human Security: Resilience and Response
- Water security, Food Security, Energy Security, Health security leading to national security

**Recent achievements**

First Brainstorming session - February, 2017

WMO workshop on Piloting Climate Outlook Forums - May, 2017

**Partner Institutes**

- Institute of Medical Science
- Institute of Agricultural Science
- Institute of Science
- IIT - BHU
- Faculty of Social Science
- Faculty of Arts

**Global Partners**

- IITs - Kanpur, Kharagpur, Delhi
- IITs - Bhuvaneshwar, Roorkee
- IARI - New Delhi
- IITM - Pune
- NIDM New Delhi
- IMD, NCMRWF
- JNU, India
- ICTP, Italy
- ANU, Australia
- Univ. of Florida, USA
- Purdue University
- NASA-IPL, AMES
- Technion IIT, Israel

**Approach and Methodologies**

- Studying the role of aerosols on climate change.
- Understanding model performance with respect to parameterization and validation of various climate models and constraining uncertainty.
- Modeling future climate under different developmental scenarios.
- Evaluating agroecology and plant-microbe interactions under changing climate.
- Standardization of sector specific impact assessment models for agricultural crops, water, health etc.
- Assessing climatic impacts and vulnerability in water, agriculture and health sectors.
- Identifying associated socio-economic implications (e.g. water and food security etc.).
- Recommending climate resilient pathways for sustainable development.

**About MCECCR**

The DST MCECCR was initiated at Banaras Hindu University, Varanasi in 2017 with the help of over 20 faculty participants drawn from different Institutes of BHU such as Institute of Science, Institute of Medical Sciences, Institute of Agricultural Sciences, Indian Institute of Technology (BHU) and Institute of Environment and Sustainable Development.

The main goal of this initiative is to develop a holistic approach for solving climate change related problems and impact assessment.

**MCECCR mission**

The main mission of the center is to develop fundamental understanding of the climate change and deducing its impact on the water, health and agricultural sectors from local to global scales.

**Mission statement**

**Education:** To develop an interdisciplinary curriculum, special courses for undergraduate, postgraduate doctoral students and to serve continuing education needs of professionals.

**Research:** To undertake high-impact, multi-disciplinary problem driven research for end-to-end solutions to climate change. To build long term scientific capacity and systems for study of regional climate change and climate futures.

**Human Resource Development:** To enable the creation of a pool of multi-disciplinary researchers to serve the growing need for climate change professionals.

**Government and Industry Interaction:** To provide critical assessments to support policy and Governmental decision making. To serve public and private sector entities catering to clean energy and climate advisories and ser-