



# **Regional Action Plan on Climate Change and Impacts of Peri-Urban on Urban Climate Resilience**

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# Vulnerability to Climate Change

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- UP is 5<sup>th</sup> Largest State in India, 200 million Population.
- 2/3 of Economy based on Agriculture.
- 70 % population still live in Rural /Peri-Urban
- Agriculture depends largely on monsoon rainfall (around 60 per cent of the net cultivated area is rainfed).
- Most farmers are poor, small with marginal income and have low adaptive capacity.



# Vulnerability to Climate Change

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- Lack of knowledge and awareness and poor rural infrastructure facilities.
- Vulnerability to climate change and variability is linked with social and economic development.
- Livestock, forestry, consumption of fertiliser, per capita income, and infant mortality rate are observed to be important correlates of farmers' vulnerability to climate change.



## Objective of the State Climate Change Action plan

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Align state priorities along the national action plan on climate change as well as to identify state specific vulnerability and key priorities related to adaptation and mitigation.



## Climate Change Institutional Structure in UP

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- Climate Change Authority shall oversee the implementation of SAPCC
- Headed by the Chief Minister of the State



# Working Groups for SAPCC

Forestry and  
Biodiversity

Water  
Resources

Sustainable  
Agriculture

Energy  
efficiency

Sustainable  
Habitat/ Urban

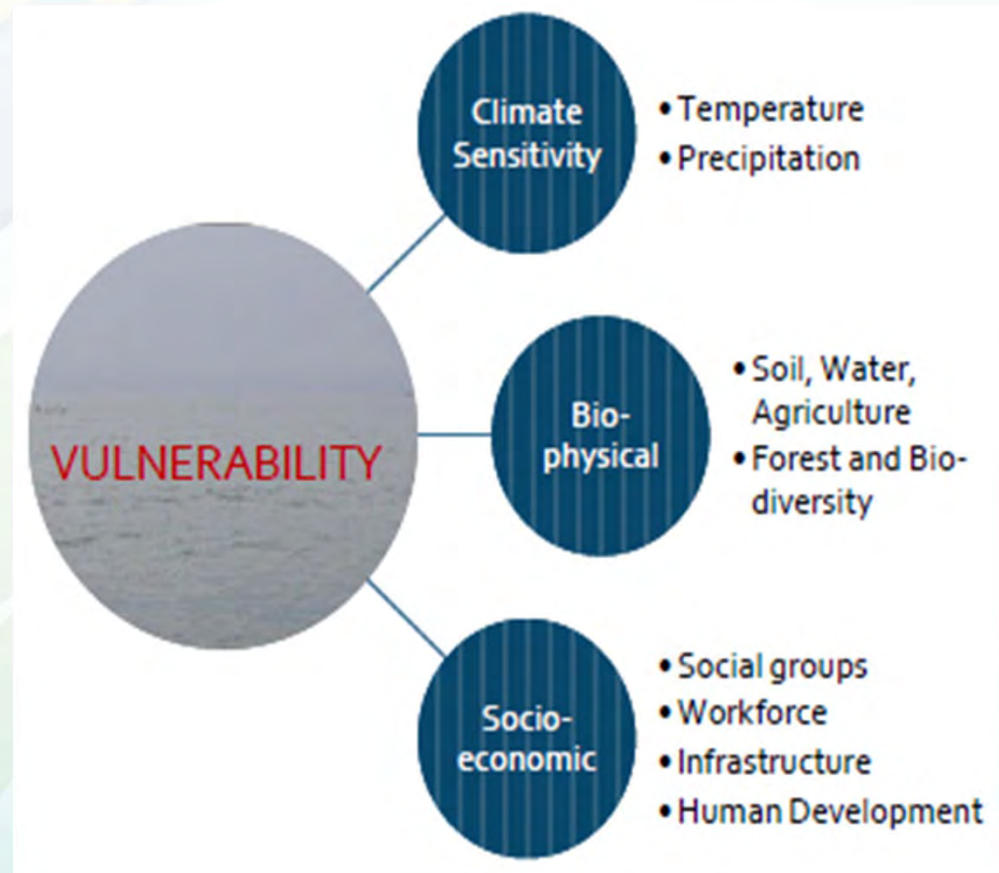
Solar Energy

Knowledge  
Management  
and Capacity  
Building



## Projected Effect of Climate Change In UP Region and Vulnerability

- Annual rainfall predicted to increase by 15% to 20% in the 2050's as compared to the baseline and the increase is higher towards 2080's (25% to 35%)
- Annual increase in temperature is estimated to be 2 degree towards 2050 and 4.5 deg. Celsius towards 2080.





# Agriculture Mission Action Plan

- Establishment of climate change and agriculture cell
- Establishment of Climate Field Schools (CFS).
- Promotion of Carbon Sequestration Agricultural Practices.
- Use of organic manures.
- Soil Management Practices to remove carbon dioxide from atmosphere by minimum tillage or zero-tillage practice, which should increase soil organic carbon (SOC)
- Farming system approach for diversifying incomes and livelihoods. Livestock as an integrated component have the potential to mitigate some of the adverse effects of climate change
- Diversification of cropping systems and promotion of stress tolerant crop varieties
- Popularization of aerobic rice cultivation methods
- Popularization of Agro-forestry.





# Solar Energy Mission

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- Megawatt-scale solar plant.
- Deployment of solar pumps in agriculture and heating systems in residential and commercial areas
- Rooftop and stand-alone solar power generation in cities



# ENERGY EFFICIENCY MISSION

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- Energy Audits of Government Buildings may be done in phased manner.
- Reduction of Transmission & Distribution Losses in Power Sector
- Government incentives on star rated energy devices
- Green Buildings
- Promotion of LED, etc.



# GREEN U.P MISSION

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- Reforestation in degraded forests
- Catchment area – decentralised based forest management
- Creation of extra buffer zones by creating city forests in city adjoining areas
- Conservation of biodiversity
- Agro-forestry
- Eco-tourism
- Wildlife protection
- Livelihood generation
- Strengthening of Joint Forest Management



# WATER MISSION

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- Compulsory rain water harvesting in all residential projects
- Rejuvenation of all water bodies / wetlands
- Lining of canals and de-siltation
- Zero discharge from industries
- Water conservation at city level



# SUSTAINABLE URBAN HABITAT MISSION

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- Sustainable transport management
- Water – Energy conservation in all buildings as per Govt bye-laws in master planning
- 100% sewerage management
- Water metering and reduction of losses
- Integrated solid waste management
- Air and water pollution prevention and management
- Creation of green belts in and around the city



# STRATEGIC KNOWLEDGE MISSION

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- Climate data collection, management and knowledge dissemination
- Compilation of best practices on climate change and dissemination
- International networking on climate knowledge
- Capacity building of stakeholders in climate change adaptation and mitigation



## Relevance of Peri-urban

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- Peri Urban provide space for water harvesting, agriculture production, livelihood, goods and services
- Peri-Urban Ecosystem for Livelihood of local poor and Resilience capacity to city
- Urban-Peri Urban- Rural: Continuum
- Master Plans play an important role



# The Peri-urban Space

## Observed Changes

- Decreased green cover or 'breathing' spaces
- Expanding urban area affected vital peri-urban agricultural ecosystems
- Interruption of supply chains of vital food (food grains, vegetables, dairy products etc.) items to cities
- Disruption of livelihood patterns of those living in these areas
- Increased heat island effects
- Lack of natural drainage/storage of excess storm water and illegal construction on flood plains





## Ecosystem for Resilience

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**Ecosystems** provides food security, disaster risk management, nutrient recycling, dispersal, soil conservation, livelihoods, forest management, agriculture, aesthetic opportunities, cultural values, air and water purification and climate resilience for urban



# Way Forward-

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- Significant role of 'Peri-Urban Ecosystem Services' for enhancing Urban Resilience and its inclusion as an integral part of development planning process is required through case specific tailoring of methods
- Enlarged role for various stakeholders, professionals and urban managers'going beyond only assessing the challenges/stresses but also to find the solutions and monitor the implementation of interventions for maintaining the ecosystem services
- Robust Institutional framework such as regulatory body, implementing agencies having Governance; Conservation; and Monitoring mechanism not only for the water bodies but also for its catchment area.



# Way Forward-----

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- Farmers' awareness and adaptive capacity to climate change needs to be strengthened, for which policy options such as crop insurance and early warning systems would help.
- Place based land use planning with provisions for optimal infrastructural development
- Sustainable intensification of existing ecosystem services
- Capacity building and technology cooperation for preparedness



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**Thank You**