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Contributions made by the State of Himachal Pradesh so far on Climate Change Issues

A few initiatives and actions on Climate Change Issues of State of Himachal Pradesh are summarized as below:

A. Milestones Achieved

- 1. A very comprehensive State Strategy & Action Plan on Climate Change (SAPCC)** has been prepared and the same has been approved by Ministry of Environment Forests & Climate Change, Government of India. This Action Plan has come up with very important recommendations and proposed actions for various sectors viz. Agriculture, Water Source, Forests, Biodiversity, Health, Tourism, Housing and Urban Infrastructure among others.
- 2.** As part of its Action Plan on Climate Change, Himachal Pradesh is among the first states in India to have conducted an **inventory of GHG emissions**, and publicly disclosed its findings. Two Reports - for 2008-2009 and 2012-2013 – analyze the volume of GHGs emitted by a wide range of sectors and sub-sectors, as well as the carbon sequestered by HP's forests and grasslands. The study uses the guidelines laid down by the Intergovernmental Panel on Climate Change to capture emissions for a variety of sectors - power generation, transportation, buildings, industries, agriculture, as well as for solid and liquid waste
- 3.** Recently **HP State Knowledge Cell on Climate Change (HPKCCC) under National Mission for Sustaining the Himalayan Ecosystem (NMSHE)** has been setup after the approval of The Ministry of Science & Technology, Govt. of India. Through this cell the GoHP intends to place a sound coordination mechanism for ensuring cooperative and cohesive actions on climate change under active coordination with Department of Science Technology (DST), Government of India. The setting up of a knowledge cell shall build a vibrant and dynamic knowledge system in line with the objectives of National Missions with primary focus to collection, collation and dissemination of climate change knowledge in the State.
- 4.** Having emerged as the frontrunner among the Himalayan states in adopting a green road to development, HP is now providing a platform for all such states to come together to discuss ways to protect their fragile ecosystems. In 2009, the state held a conclave of Himalayan Chief Ministers where a joint program called the '**Shimla Declaration on Climate Change and Himalayan Development**' was adopted.

5. Government of HP's Inclusive Green Growth And Sustainable Development Program Successfully Completed

B. Specific Activities Completed:

- Seasonal snow cover Mapping for 2012-13 for 5 Daily and 10 Daily products using AWIFS satellite data products.
- Monitoring of glacial lakes in Satluj River basin for 2013 and compilation of a technical document based on the analysis carried out.
- Monitoring of Nardu glacier snout using LISS IV satellite data.
- Expedition to Nardu Glacier for ground verification.
- Creation of interactive Geoportal of Himachal Pradesh w.r.t. Lithology, drainage, geomorphology, water shed etc.
- Data analysis of different fruits for the year 2001-2012 for different districts in Himachal Pradesh.
- Preparation of a document on the water sources of Himachal Pradesh.
- Regular monitoring of water samples collected from nearby sources for Radon estimation as earthquake precursor.
- Carbon stock estimation for Himachal Pradesh for 03 crown density classes and 08 forest type groups based on secondary data.
- Climate change impact on wetlands of Himachal Pradesh.
- Status paper/Report on Pong wetland.
- Status paper on animal diseases influenced by climate variation in Himachal Pradesh.
- Preparation of status paper on snow and glaciers is under progress.

C. Ongoing Activities:

- Hazards and risks assessment study of Kullu District.
- Land use/Land cover mapping with special reference to Horticulture in Narkanda block of district Shimla, H.P.
- Collection of data on horticulture crops from different sources and further analysis for its documentation is under process.
- Compilation of data collected from horticulture department regarding area and production of different fruits in twelve district of Himachal Pradesh for the year 2001-12 and correlation of this data with monthly rainfall data.

- To study the trends of monsoon in Himachal Pradesh from the year 1901-2013.
- Estimation of radon in context to earthquake precursor in Shimla.
- Monitoring of glacial lakes in Chenab, Beas, Ravi & Satluj basins in H.P.
- Monitoring of glaciers of Spiti basin.
- Monitoring of Nardu Glacier in Baspa Basin, District Kinnaur.
- Govt. of Himachal Pradesh is also participating as a collaborating partner through Govt. of India with Switzerland Govt. under the program named as “Indian Himalayas Climate Adaptation Program (IHCAP)”

D. Linkages with National Action Plan on CC and State Achievements

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| <p>National Mission for Sustaining the Himalayan Ecosystem.</p> | <p>Studies pertaining to the Himalayan snow and glacier reserve & Ecosystem. Recently HP State Knowledge Cell on Climate Change (HPKCCC) has been setup</p> <p>Activities Completed:</p> <ul style="list-style-type: none"> ➤ Seasonal snow cover Mapping for 2012-13 for 5 Daily and 10 Daily products using AWIFS satellite data products. ➤ Monitoring of glacial lakes in Satluj River basin for 2013 and compilation of a technical document based on the analysis carried out. ➤ Monitoring of Nardu glacier snout using LISS IV satellite data. ➤ Expedition to Nardu Glacier for ground verification. ➤ Creation of interactive Geoportal of Himachal Pradesh w.r.t. Lithology, drainage, geomorphology, water shed etc. |
| <p>National Mission for Sustainable Agriculture</p> | <p>Mitigation and adaptation strategies for sustainable and resilient to climate change practices in agriculture and horticulture sector . The GOHP’s Cabinet has approved and issued the State Organic Farming Policy.</p> |
| <p>National Water Mission</p> | <p>Studies pertaining to the impact of climate change on water resources . GoHP has amended the HP Water Policy-2005 through the notification of the new HP Water Policy-2013 for the sustainable management of HP water resources.</p> |
| <p>National Mission on Strategic Knowledge for Climate Change.</p> | <p>Reliable and authentic data base pertaining to the Himalayan region GoHP has established Aryabhata Geo-Informatics and Space Application Centre (AGiSAC) to promote integrated GIS mapping and decision making.</p> <p>GoHP has issued an Order operationalizing AGiSAC’s protocols for monitoring and evaluation of activities in the infrastructure and natural resources management sectors, including the integration of geo-informatics technology.</p> |

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| National Solar Mission | Measure to adopt and practice alternate source of energy in the state |
| National Mission on Sustainable Habitat | Promoting energy efficiency as an integral part of urban planning, solid waste management practices in the state |
| National Green Mission | Afforestation measures for enhancing and maintaining carbon sinks and other measures such as CAMPA etc |
| National Mission for Enhanced Energy Efficiency. | Implementation of energy efficiency measures in domestic and commercial sector |

E. Successful Implementation of CDM A/R Project and thereby Earning tCERs: First in India

The Clean Development Mechanism (CDM) A/R Project, “*India: Himachal Pradesh Reforestation Project – Improving Livelihoods and Watersheds*”, is a pioneer effort - first in India and most probably in Asia- being implemented mostly on public degraded lands by a government Agency viz. State Forest Department. Further, under umbrella of the larger on going IBRD funded Mid-Himalayan Watershed Development Project (MHWDP), it has shown the way how Watershed Development with emphasis on enhancing livelihood of the local communities could successfully and efficiently be linked to CDM plantations and how fifty thousand poor people living in the 602 scattered villages around degraded lands spread in the mid and high hills (600 to 1800 meters above the mean sea level) falling in 10 districts of Indian Province Himachal Pradesh could receive multiple benefits from improved natural resource management practices.

The CDM Project involves local communities, particularly small and marginal farmers in plantation activities on degraded common lands, degraded forestlands and private degraded lands through planting of multi-purpose species and implementing sustainable forest management practices. While The MHMHWDP aims to protect watersheds improvement and livelihood enhancement, the A&R project is to sequester Green House Gases (GHG) through reforestation on and generate carbon revenue for the local communities. This combination has been able to provide multiple benefits to the poor farmers through meeting their needs of small timber, firewood, minor forest produce along with carbon credits (as cash incentive), besides providing employment opportunities.

The Project in implementation since July 2006 has brought in several development perspectives (with relevant implementation tools). These include: development of local level institutional mechanisms for the sale of Certified Emission

Reductions (CERs), testing of carbon purchase transactions and accumulation of experience in practical and technical measures for CDM project activities, development and testing of local financial arrangements for restoration of degraded lands; and identification of resource-poor farmers as the beneficiaries of the project. Being the first of its kind, the project is also expected to have significant demonstration effect in the country .It has effectively brought new awareness to local people about importance of trees The project is instrumental in mobilizing farmers, who were earlier reluctant to take part in Forest Department driven afforestation work due to lack of incentives.

It is estimated that the A/R Project will sequester a total of 8,28,016 tCO₂-e of tCERs in the project area of 4003 ha.(421 parcels) over the first crediting period of 20-years at the rate of 10.34 tCO₂^{-e}/ha/year. The Project will make the villagers strategic seller of carbon credits, in response to global demand for Certified Emission Reduction. 343 person days/ha of employment and an additional income of INR 3000 per ha per year will be generated from during the project period. Final approval of 62100 tCERs obtained and issued and a financial incentive of INR 1.93 received. It is the first such issuance for a government initiative done on degraded forest land.