

2001 and 2010-2011. The study-revealed that 1752 glaciers showed no change, 248 glaciers were retreating and 18 glaciers were advancing.

Under the Himalayan Glaciological Programme sponsored by the Department of Science and Technology, Government of India, studies related to mass balance, hydro-meteorology, glacier dynamics, glacier length/area changes and climate studies of the Himalayan glaciers are being carried out. A Centre for Glaciology has been set up at Wadia Institute of Himalayan Geology, Dehradun.

(c) National Mission for Sustaining the Himalayan Ecosystem (NMSHE) under National Action Plan on Climate Change (NAPCC) encompasses conservation measures for sustaining and safeguarding the Himalayan glaciers and mountain ecosystems through establishment of monitoring network, promotion of community based management, human resource development, and strengthening regional cooperation. Major initiatives taken under NMSHE include creation of four Thematic Task Forces on Himalayan Agriculture, Traditional Knowledge systems, Forest Resources and Plant Diversity, and Fauna and Wildlife Habitats. It also includes networking of related institutions for focused research in different themes of Himalayan ecosystem. Programmes have been initiated for training in the field of glaciology, awareness programmes for community based organizations and officials related to the Indian Himalayan Region. Also, State Climate Change Centres have been set up in the seven Himalayan states, namely, Jammu and Kashmir, Himachal Pradesh, Manipur, Mizoram, Tripura, Sikkim and Meghalaya.

Study on impact of climate change

1637. SHRIMATI NAZNIN FARUQUE: Will the Minister of ENVIRONMENT, FOREST AND CLIMATE CHANGE be pleased to state:

(a) whether Government has made any study on the impact of climate change including changing monsoon pattern and the manner in which the country's agriculture sector is affected;

(b) if so, the details thereof and if not, the reasons therefor; and

(c) whether Government is formulating an action plan to deal with the problem of climate change including changing monsoon pattern?

THE MINISTER OF STATE OF THE MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE (SHRI PRAKASH JAVADEKAR): (a) and (b) India's Second National Communication (SNC), submitted to the United Nations Framework Convention

on Climate Change (UNFCCC) in 2012, has provided observed impacts, projections of future climate scenarios and likely adverse impacts of climate change on water resources, agriculture, forests, natural ecosystems, coastal zones, health, energy and infrastructure. As per this report, there may not be significant decrease in the monsoon rainfall in future except in some parts of the southern peninsula. Simulations indicate increase in the rainfall intensity in the 21st century over most of the regions and marginal decrease in the intensity for the east peninsular region.

Further, as per the assessment carried out by Indian Council of Agricultural Research (ICAR), crop yields may reduce for irrigated maize, wheat, irrigated and rainfed rice upto 18%, 6%, 4% and 6% respectively by 2020. Under the National Innovations in Climate Resilient Agriculture (NICRA) Program, a study on vulnerability assessment of major crops in different production zones to climate variability was undertaken which revealed that around 81.3% million hectare area in arid, semi arid and dry sub humid regions may suffer from extreme weather events.

(c) The Government has formulated the National Action Plan on Climate Change (NAPCC) in June 2008 to deal with the climate change related issues. NAPCC comprises eight Missions in specific areas of solar energy, enhanced energy efficiency, sustainable habitat, water, sustaining Himalayan Ecosystems, Green India, sustainable agriculture, and strategic knowledge for climate change. Thirty two States/Union Territories have prepared State Action Plans on Climate Change consistent with the objectives of NAPCC.

A National Adaptation Fund on Climate Change has been established with the objective of addressing the existing funding gap for undertaking adaptation activities at State level. A sum of ₹ 350 crore has been allocated for remaining two years of 12 Five Year Plan for adaptation projects related to agriculture, water, forestry, coast, disaster, health, tourism, marine system and capacity building.

Ministry of Agriculture has taken a major initiative by launching NIGRA in 2011 to adapt and mitigate the impact of climate change on Indian agriculture. Major interventions implemented include efficient management of natural resources, adoption of resilient agronomic practices, adoption of stress tolerant varieties, efficient management of livestock, poultry and fisheries and strengthening local institutions.

The Integrated Agro-meteorological Advisory Service (IAAS) of the Earth System Science Organization (ESSO) - India Meteorological Department (IMD) provides crop specific advisories to the farmers at the district level twice weekly through print, visual, radio and short message service (sms) to make farmers aware of the changes in the environment and in the long run cope up with the ill-effects of the climate change.