

(c) The impacts of climate change on various sectors like agriculture water resources, biodiversity, human health, coastal ecosystems and forestry are well documented under the India's first National Communication (NATCOM) to the United Nations Framework Convention on climate Change (UNFCCC). The second NATCOM report is under preparation. These efforts are coordinated by Ministry of Environment and Forests. More than 2 dozen leading research teams are involved with this endeavour.

Climate change

1369. DR. K. MALAISAMY: Will the Minister of EARTH SCIENCES be pleased to state:

(a) while global warming and corresponding climate changes will have complex problems and distinctive dimensions, what are the essential measures and means for mitigation of this major problem;

(b) what can be its impact on agriculture, water resources, sea levels, coastal safety, Bio-diversity, climate and health; and

(c) India's response to climate changes challenges?

THE MINISTER OF STATE OF THE MINISTRY OF EARTH SCIENCES (SHRI PRITHVIRAJ CHAVAN): (a) The global community, world over, has agreed for evolving the essential measures for mitigation of global warming impacts, which include reduction of carbon emissions, greater use of renewable/nuclear energy, preservation of Ozone Layer, preservation of ecological systems, deployment of eco-friendly technologies etc.

(b) Possible impacts on Agriculture: Variable impacts of climate on agriculture have been projected. For instance, increase in CO₂ concentration; increase in temperature and variable distribution of rainfall show a mixed projection of yields of various crops across regions. No definite trends have yet been established.

Possible impact on Water Resources: It is projected that quantity of surface run off due to climate change would vary across the river basins as well as sub basins of major rivers. However, there is a general reduction in the quantity of the available run off.

Possible impact on sea levels and coastal safety: Analysis of past tide gauge records for the Indian coastline regions gives an estimate of sea level rise of 1.30 mm/year. It is projected that Indian coastline may experience higher sea level rise in the later part of 21st century. Such a scenario can possibly increase the vulnerability of the coastal zones.

Possible impact on Bio-diversity; The emerging results of analysis of impacts of climate change on forest biomes in India seem to be highly vulnerable to the projected change in climate. Majority of the vegetation in India is likely to be less optimally adapted to its existing location and consequently vulnerable to the adverse climatic changes. Biodiversity is also likely to be adversely impacted due to this.

Possible impact on Health: Increase in temperature is projected to enhance the occurrence and spread of vector borne diseases such as Malaria. Malaria incidences are directly linked to the generation of vectors which are sensitive to temperature, precipitation and humidity conditions. In the climate change context, more States may offer climate opportunities for malaria vector breeding throughout the year. These opportunities are projected to increase by 3-5 months in northern States and may reduce by 2-3 months in the southern States.

(c) The National Action Plan on Climate Change (NAPCC) was released by the Prime Minister on 30th June, 2008. Under the NAPCC, it is proposed to establish a permanent institutional mechanism that will play a development and coordination role. The NAPCC outlines eight missions in specific areas of Solar Energy, Enhanced Energy Efficiency, Sustainable Habitat, Water, Sustaining the Himalayan Eco-system, Green India, Sustainable Agriculture and Strategic knowledge for Climate Change. Eight National Missions from the core of the National Action Plan, representing multi-pronged, long term and integrated strategies for achieving key goals in the context of climate change.

Cloudbursts

1370. SHRIMATI VIPLOVE THAKUR: Will the Minister of EARTH SCIENCES be pleased to state:

(a) whether Government is aware of the fact that with the monsoon, fear of cloudbursts which causes huge damage of property and loss of lives, starts hovering over the people of Himachal Pradesh, particularly of Kullu valley;

(b) if so, whether Government has installed any systems in the State to forecast the cloudbursts well in time;

(c) if so, the location-wise details thereof; and

(d) the details of the amount allocated to the State during the year 2008-09 alongwith the preparation of Government to cope up with the havoc?

THE MINISTER OF STATE OF THE MINISTRY OF EARTH SCIENCES (SHRI PRITHVIRAJ CHAVAN): (a) Yes, Sir.

(b) Yes, Sir.

(c) A robust satellite telemetry based observational network of 23 Automatic Weather Stations (AWS) is commissioned in various districts of Himachal Pradesh — 1 in Bilaspur; 2 in Chamba; 1 in Hamirpur; 2 in Kangra; 1 in Kunnaur; 3 in Kullu; 2 in Lahaul and Spiti; 1 in Mandi; 6 in Shimla; 1 in Simaur; 2 in Solan and 1 in Una. In addition, India Meteorological Department (IMD) has undertaken the establishment Automatic Rain Gauge (ARG) network of 62-Nos. in various districts of Himachal Pradesh during the current five year plan. With these observational systems over Himachal Pradesh, the real time monitoring and forewarning services of Cloudbursts will improve.