GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
LOK SABHA
UNSTARRED QUESTION NO. 3959
TO BE ANSWERED ON WEDNESDAY, 22ND DECEMBER, 2021

CHANGE IN WEATHER

3959. SHRI NALIN KUMAR KATEEL:
SHRIMATI SUMALATHA AMBAREESH:

Will the Minister of EARTH SCIENCES be pleased to state:

(a) whether the Government has taken note of the rapidly changing weather and occurrence of natural calamities during the previous years;
(b) if so, the details thereof;
(c) whether the Government proposes to adopt new technologies to ensure accuracy in weather forecasting; and
(d) if so, the details thereof?

ANSWER
THE MINISTER OF STATE (INDEPENDENT CHARGE) FOR MINISTRY OF SCIENCE AND TECHNOLOGY AND EARTH SCIENCES
(DR. JITENDRA SINGH)

(a)-(b) Yes Sir. The Ministry of Earth Sciences (MoES), has recently published a Climate Change report entitled "Assessment of Climate Change over the Indian Region" (http://cccr.tropmet.res.in/home/docs/cccr/2020_Book_AssessmentOfClimateChangeOverT.pdf). The report highlights the effects of human-induced climate change. The summer monsoon precipitation (June to September) over India has declined by around 6% from 1951 to 2015, with notable decrease over the Indo-Gangetic Plains and the Western Ghats. There is an emerging consensus, based on multiple datasets and climate model simulations, that the radiative effects of anthropogenic aerosol forcing over the Northern Hemisphere have considerably offset the expected precipitation increase from Green House Gas (GHG) warming and contributed to the observed decline in summer monsoon precipitation. The Hindu Kush Himalayas (HKH) experienced a temperature rise of about 1.3°C during 1951–2014. Several areas of HKH have experienced a declining trend in snowfall and also retreat of glaciers in recent decades. In contrast, the high-elevation Karakoram Himalayas have experienced higher winter snowfall that has shielded the region from glacier shrinkage.

(c)-(d) To minimize the adverse effect of the extreme weather events like rainfall leading to floods/flash-floods/landslides, heat/cold waves, lightning associated with thunderstorms, cyclones etc., IMD is effectively functioning in the country maintaining accurate weather monitoring and forecasting of these natural disasters. During the past few years, IMD has been continuously improving weather prediction services in terms of accuracy, lead time and associated impact. The accuracy of the weather forecast is more than 80% qualitatively and 65-70% quantitatively for various regions in the country. The forecasts and warnings are issued by IMD at the national, State and district levels. It has a network of State Meteorological Centres for better coordination with State and district level agencies. With the upgradation of observations and prediction system noticeable improvements have been made in the recent past in the skill of prediction, especially with respect to heavy-rainfall, heat-wave, thunderstorm and cyclones.

IMD started issuing Impact Based Forecast (IBF) in the recent past. Impact Based Warning contains guidelines to the general public while getting exposed to the severe weather. These guidelines are finalized by NDMA (National Disaster Management Authority) in coordination with IMD.

While issuing the warning suitable colour code is used to bring out the impact of the severe weather expected and to signal the Disaster Management about the course of action to be taken with respect to impending disaster weather event. Green color corresponds to no warning hence no action is needed, yellow color corresponds to be watchful and get updated information, orange color to be alert and be prepared to take action whereas red color signals to take action.

Regarding dissemination of weather forecasts and warnings, IMD is always in a continuous process of improvement. At present the forecasts and warnings are broadcasted or disseminated to users including disaster managers by e-mail on regular basis. In addition to this, WhatsApp groups are created including disaster managers and IMD officials through which these forecasts & warnings are disseminated. The forecasts & warnings are uploaded in social media & website for reference by all concerned. The nowcasts related to Severe Weathers are also disseminated through SMS to the registered users.

In addition to this, as and when the situation arises, Press Releases are issued by IMD and the same is also disseminated by all the platforms mentioned above.

India Meteorological Department (IMD) has taken various initiatives in recent years for improvement in dissemination of weather forecast and warning services based on latest tools and technologies. In 2020, IMD has launched seven of its services (Current Weather, Nowcast, City Forecast, Rainfall Information, Tourism Forecast, Warnings and Cyclone) with '**UMANG**' mobile App for use by public.

Moreover, in 2020, India Meteorological Department had developed mobile App '**MAUSAM**' for weather forecasting, '**Meghdoot**' for Agromet advisory dissemination and '**Damini**' for lightning alert.

To further upgrade the forecasting capabilities throughout the country, various programs are being implemented in IMD under the umbrella scheme "Atmosphere & Climate Research-Modelling Observing Systems & Services (ACROSS)" of the MoES. The projects under ACROSS encompasses various activities in an integrated manner to ensure the sustenance & augmentation of observations &enhancement of facilities required for the weather forecasting services.

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