

## **OBJECTIVES & ACTIVITIES OF KSNDMC**

Disaster Management heavily depends on inputs from Science and Technology. KSNDMC has been serving as a common platform to the various response players in the field of Natural Disaster Management by providing timely proactive Science and Technology inputs.

Karnataka State has the distinction of being first in the country to establish a Drought Monitoring Cell (DMC) in 1988 as an institutional mechanism affiliated to Department of Science and Technology, Govt. of Karnataka and subsequently in 2007, the DMC was renamed as Karnataka State Natural Disaster Monitoring Centre (KSNDMC) and the activities were broadened.

The Disaster Management Act 2005, Government of India reiterates paradigm shift in Disaster Management from rescue, relief centric approach to Preparedness, Early Warning approach. Thus, with the following Objectives & Activities KSNDMC is providing a formal common platform to achieve synergy in the field of disaster management in Karnataka.

The main Objectives of KSNDMC may be classified as below:

- Hazard mapping and vulnerability studies.
- Strengthening of Information Technology for Natural Disasters Management.
- Monitoring and impact assessment of Natural Hazards.
- Human Resource Development mainly by imparting training.
- Natural Disaster Early Warning System.

KSNDMC has Core activities which include maintaining & updating data base on drought and flood parameters, preparation and issuance of periodical reports on drought indicators and conducting integrated studies on Drought Management in the Drought prone districts of Karnataka. Along with the Core activities, the Peripheral activities of the centre are as below:

- Satellite based drought monitoring as a collaborative study with National Remote Sensing Agency (NRSA), GoI, Hyderabad.
- Agro-meteorological crop yield modeling.
- Water Balance Studies.
- Crop Water Budgeting Studies – both crop wise and taluk wise.
- Impact Assessment of Watershed Development programmes.

- Flood Related Studies.
  - Conducting trainings/workshops in the field of Natural Hazards.
  - Monitoring of Seismic Activity in Karnataka and adjoining States.
  - Establishment of Telemetric Raingauges/Weather Stations in all Gramapanchayaths of the State and strengthening the Drought Monitoring System.
  - Providing scientific inputs to GoK in Cauvery and Krishna Water Dispute.
  - Interacting with line departments of GOK on day to day basis and providing scientific information related to Natural Disasters.
  - Networking with other organizations at State/Central/Global levels.
  - Rendering technical assistance to Watershed Development Programmes.
  - Developing “Drought Management Information System”.
  - Study of the Impact of drought 2001-03 in Rural Karnataka and Evaluation of the Response System.
  - KSNDMC has been identified as a nodal agency by State level coordinating committee for crop insurance to provide weather data to the weather based crop insurance program in the State. The weather based crop insurance program prefers collection of rainfall data through telemetric rain gauges and telemetric weather stations and also to make the data available on web site in near real time.
  - 24x7 Help Desk of Master Control Facility (MCF): KSNDMC has been operating 24x7 Help Desk “Varuna Mitra” to farmers and is providing weather related information by detailing on forecast up to 2 days, rainfall pattern, distribution of Temperature, Relative Humidity, Wind Speed & Wind Direction in the State at Hobli/Gramapanchayath level.
  - The Master Control Facility (MCF) of KSNDMC is capable of receiving and analyzing data on near real time from the following:
    - GPRS Enabled Telemetric Rain Gauges (TRG)
    - Satellite and GPRS linked Weather Stations
    - VSAT Enabled Earthquake Monitoring Stations Network
    - Early Warning Dissemination System for the above
- ❖ KSNDMC has established a strong Real-time Weather Monitoring System by installing automated, Solar powered, GPRS enabled 5,978 Telemetric Rain

gauges at Grampanchayath level & BBMP area along with 747 Telemetric Weather Stations at Hobli level in Karnataka.

- ❖ The near real time rainfall and weather data received at central server located at KSNDMC through network of stations is been analysed and Scientific Reports are prepared at auto mode by using web enabled application and information/reports are being disseminated to the users through SMS, email, helpdesk and through Electronic and Print Media.
- ❖ KSNDMC being the Nodal Agency to provide weather related database to Agriculture Insurance Companies also evaluates the Weather Based Crop Insurance Scheme.
- ❖ Developing Hydrological Model and Flood Early Warning System for Bruhat Bengaluru Mahanagara Palike (BBMP) under Urban Flood Management Project.
- ❖ Rainfall and Weather forecast for periods of 24, 48 & 72 hrs time format up to a smaller administrative unit (GP level) is being issued through SMS, email, web portal and 24x7 help desk “Varuna Mitra” directly to the Farming community, related sectors and General Public. “Varuna Mitra” – Rainfall Forecast Helpdesk Phone Nos.: 9243345433; 080-2274 5232; 080-2274 5234.
- ❖ Disseminating Early Warnings/Advisories to the Farming Community & General public in the events of Natural Disasters in the State to the Last Mile for taking up necessary mitigation measures.
- ❖ World Bank assisted NCRMP programme is being implemented in three coastal districts of Karnataka namely Uttara Kannada, Udupi and Dakshina Kannada covering a coastal length of 320KM under NCRMP phase – II. As KSNDMC has already established a robust mechanism for disseminating Natural Disasters related information, Early warning and Advisories to all the stakeholders, the NCRMP project of Karnataka has been assigned to KSNDMC for implementing component ‘A’ of NCRM which is “Early Warning Dissemination System (EWDS)-last mile connectivity” for the vulnerable areas in the State.
- ❖ The weather system which is the most significant component in Drought or Flood Management has been assigned to KSNDMC as the centre is Nodal Agency

in the State to take up Weather related issues. The project beneficiaries will be Farming Community and general public in the State for duration of 5 years. In this regard a project proposal / concept note under National Adaptation Fund for Climate Change (NAFCC) was submitted to Environmental Management and Policy research institute (EMPRI) for taking up and implementing the required components of the project.

- ❖ A Proposal submitted by KSNDMC to Dept. of Revenue towards establishment of Permanent Seismic Monitoring Station at Udupi and is already sanctioned and is under progress.
- ❖ As per the Dam Safety Act, 2010 and proceedings of the 25th State Level Dam Safety Committee (SLDSC) in Karnataka, a proposal for establishment of Permanent Seismic monitoring Stations at 16 Large dams in Karnataka with 06 dams under Phase I has been proposed and submitted to Dept. of Water Resources, GoK. Accordingly, a letter was received from the office of Executive Engineer, Bhadra Dam towards submission of proposal for release of funds towards establishment of Permanent Seismic monitoring station at Bhadra Dam premises. A Financial Proposal in this regard has already been submitted to the concerned Bhadra Dam Authorities for release of Funds.
- ❖ Early Warning & Preparedness measures in managing Urban Floods in Bengaluru BBMP area as a part of urban flood Pilot studies has been taken up, wherein Rainfall pattern studies for Bengaluru BBMP area is studied with Estimation of expected flows during different rainfall events at the vulnerable areas, Estimating micro - watershed wise Rainfall-Runoff relationship, Providing Dynamic Flood Forecast along with probable Flood inundation area maps, Installation of flow measuring devices in major storm water drains in collaboration with ITRA and IISc at Gottigere Hulimavu lake series sub watershed.
- ❖ A Composite Index of Drought Vulnerability map for Karnataka is attempted at Taluk level using data from KSNDMC Weather Network, related data from Soil, Crop cover and Livelihood through which a composite Index of Drought

vulnerability can be identified more precisely which will further be helpful in identifying vulnerable pockets at Taluk level.

- ❖ Agro-meteorological crop yield forecasting is being taken up using DSSAT Version 4.6 which is used as a research tool to access yield using weather, soil, and crop management data. During 2015 in Kharif season yield forecasting work is taken up for BELLARY, CHITRADURGA, BIDAR, UTTARKANNADA, VIJAYAPURA, KODUGU, CHAMARAJNAGAR, MANDYA, KOPPAL, SHIMOGA, CHIKBALLAPUR, HAVERI DISTRICTS. The simulated output results were compared with the observed results of Directorate of Economics and Statistics, and the obtained results were found to be very much nearer to the previous year's results with Root Mean Square Error (RMSE) less than 10.
- ❖ As a part of Capacity building activities, KSNDMC Scientific Personnel have been resource persons for several training programmes on “Disaster Monitoring and Management” organized for State Government officers by ATI, Mysuru.
- ❖ The Students from several Schools, Universities and other Educational Institutions, Research Organisations have visited KSNDMC for gaining first hand information on Natural Disasters and its monitoring and accordingly, KSNDMC Scientific Personnel have trained them in respective fields.
- ❖ To provide information, on various aspects of weather related Natural Hazards and educate them to mitigate the affect of these Hazard, to the general public, especially the Farmers, the KSNDMC has been actively taking part in Krishi Melas organized at District & State level by Agricultural Universities and Department of Agriculture, GoK.
- ❖ KSNDMC has been providing high resolution data at free of cost to various Government Departments, Research Institutes at State and National level.
- ❖ KSNDMC is providing technical support to several Departments of Agriculture, Horticulture, Revenue (DM), Irrigation which is helping them in taking timely decisions.

- ❖ The Technical information & support has been provided to Cabinet Sub-Committees on Inter State Water Dispute, Inter Ministerial Central Team for assessing Drought/Flood/Hailstorm in the State.
- ❖ KSNDMC has participated in several meetings on various aspects of Natural Disasters organized by National Disaster Management Authority (NDMA). The inputs given by the KSNDMC in these meetings have been appreciated and incorporated in the manuals/guidelines on Natural Disasters Management prepared by NDMA.