

Heat Wave Management in Andhra Pradesh and Telangana: Efficacy of Heat Wave Guidelines & Heat Wave Action Plans

(Published Under Section 18 (2) (h) guidelines of Disaster Management Act 2005, for prevention, mitigation, capacity building and preparedness to combat the adverse impact of Heat Waves)

Report Prepared by



Centre for Climate Change and Adaptation
National Institute of Agricultural Extension Management, Hyderabad

Report Submitted by



Centre for Disaster Management
Lal Bahadur Shastri National Academy of Administration, Mussoorie

Report Submitted to



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Abhiram G. Sankar, IAS
Director,
Centre for Disaster Management

PREFACE

Disasters have adversely affected human civilization ever since the dawn of our existence. Natural disasters have increased both in frequency and fury in the twenty-first century. India has suffered enormously in terms of loss of lives and livelihoods and damage to both public and private property due to the recurrence of major natural and human induced disasters. In response, various strategies have been formulated and implemented with regards to mitigation, prevention, response, rehabilitation and reconstruction during pre-disaster periods. All these efforts have the same goal: disaster management and disaster governance.

No administrator can afford the luxury of waiting for a disaster to happen in his/her jurisdiction to learn from it. It is therefore imperative to be able to convey the experiences of practitioners to each other in an effort to educate about the variety and intensity of challenges faced in this dynamic field. The responses might not have been the best in all cases – but they would certainly be elucidating some aspect of disaster resilience to the discerning eye.

By virtue of the DM Act 2005, the District Magistrate/ Divisional Commissioner plays a pivotal role in the District Disaster Management Authority (DDMA) and hence it is essential that he/she should be well-versed in the various aspects of DM.

It is our pleasure to publish the report “Heat Wave Management in Telangana and Andhra Pradesh - Efficacy of Heat Wave Guidelines & Heat Wave Action Plans” based on a comprehensive study on the silent disaster that is more conspicuous in the states of Andhra Pradesh and Telangana State. The report will be useful to administrators at various levels who are handling disaster management in the current turbulent times of climate change. It can also serve as a good reference material for ATIs and CTIs for their in-house courses.


(Abhiram G. Sankar)



Sanjeev Chopra
Director

No. LBSNAA/CDM-2020
14th October, 2020
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Message

Given its unique geographical and geological condition, India is vulnerable to various natural disasters. Incidents of flood, drought and other natural disasters pose a tremendous challenge to the society in general and administration in particular. Each disaster heightens the sense of urgency to equip ourselves better in coping and managing them. In this context, the training of civil servants in Disaster Management assumes critical significance. The Disaster Management Act 2005 has made the role of administrators pivotal in disaster management in India. Hence it is essential that the administrators are well-versed and equipped in the various aspects of disaster preparedness and management.

As the present COVID crisis has shown there is a need to move from the paradigm of responding to disasters to one of building resilience against disasters in all aspects of governance. A key challenge to administrators is to establish standard operating procedures and protocols for immediate and effective response as well as for better preparedness in the future. It gives me immense pleasure to note that Centre for Disaster Management, LBSNAA is bringing out the report on the causes and administrative responses to Heat Waves, this study "Heat Wave Management in Telangana and Andhra Pradesh - Efficacy of Heat Wave Guidelines & Heat Wave Action Plans" is based on an intensive study into the multiple causes and multi-level administrative responses to the silent disaster called heat waves. It provides insights into the challenges and potentials before the administrators in dealing with such disaster in the times of climate change. The study team also proposes mitigation strategy and preparedness measures for the management of heat waves in India in keeping with the Disaster Management Act 2005 and the Sendai Framework for Disaster Risk Reduction 2015-30.

I hope this volume will enhance the knowledge base and contribute to policy-making in disaster management in the country, and will be a valuable resource for both the trainees and the administrators in the field.


(Sanjeev Chopra)

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Date: 27.04.2020

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■ Executive summary

Due to global warming, temperature is increasing steadily and causing catastrophic heat waves across the globe. India too is experiencing increase in temperature continuously with higher intensity and increased number of hot days. Within the country, Andhra Pradesh and Telangana are the most affected states due to heat waves and heat related morbidity. Hence, both the states have prepared heat wave action plans as per the guidelines of the National Disaster Management Authority (NDMA) to address the risks of heat wave by involving different departments. Hence, a study titled “Heat Wave Management in Telangana and Andhra Pradesh - Efficacy of Heat Wave Guidelines & Heat Wave Action Plans” has been assigned by LBSNAA to MANAGE with the objectives of assessing the efficacy of various components of heat wave guidelines, their effectiveness in terms of risk mitigation; reduction of mortality and morbidity; risk mitigation strategy adopted by population and to document the suggestions to improve the implementation of the action plans.

Ex-post facto research design and multi stage sampling was used in this study. The data were collected through a field survey using pre-tested schedule in both rural and urban areas in four districts each in Andhra Pradesh and Telangana. Information was collected from 800 rural and 400 urban respondents in 32 villages (@ 2 villages from 8 mandals of 4 districts from each state) covering various vulnerable groups. In addition to this, information was also collected from 80 Government Nodal officers from different departments, besides, from State level Workshop and eight district level meetings with District Collectors. A few death cases of heat wave was also documented.

Both states have prepared the list of vulnerable Districts and Mandals to heat wave in advance and mitigation measures were also taken up accordingly. The revenue department coordinated with other line departments and made arrangements for dissemination of information such as weather data, mitigation measures, training of the stakeholders, preparing education and information materials etc.

In both rural and urban areas, the respondents felt that heat wave occurrence is increasing and becoming more severe year after year with a duration of about 15 days and temperature was around 41-45°C 2019. The awareness on government’s heat wave action plan implementation was more in the urban (89%) areas compared to the rural (57%) areas. The major source of information on heat wave is newspapers and electronic media. However, information on heat wave mitigation measures is not reaching to the majority of the people in rural areas. Relief from “Apathbandhu” scheme was not reaching majority of heat wave affected people.

The heat wave effect was felt by nearly 80-90% of the respondents. Human mortality and health issues were felt by around 85% of urban respondents compared to 69% in rural areas. The rural respondents felt that the economic and asset loss was 10-30% and the urban respondents felt it was around 10%. The loss of working days was around 20 days due to heat wave. Farmers observed crop damage due to heat wave in crops like rice, maize, oil seeds, pulses, sugarcane and millets. They also noticed occurrence of diseases and product quality damage ultimately led to low price to the produce. Only a less than 30% of the recommended mitigation measures were adopted by farmers. The yield loss reduction due to adoption of the recommended measures was in the range of 15-40%. The impact of heat wave on horticulture crops like mango, guava etc., is more compared to agriculture crops. Horticulture activity is more in Telangana district compared to the Andhra Pradesh. In Telangana, yield loss of fruit crop was around 20% and in vegetables it was 20-30%. The department is providing heat resistant vegetable

varieties, drip and sprinkler irrigation systems for saving horticulture crops to a limited extent. The opinions of Andhra Pradesh horticulture farmers is more or less similar to that of Telangana farmers. The risk mitigation measures taken up by the Agriculture & Horticulture departments like advance warning in the study area and Do's and Don'ts etc., have not reached to the majority of the farmers. Respondents informed that they have not received any assistance for protecting crop harvested during the heat wave. They also felt that there are no infrastructure facilities to protect the crop in the study area. Nearly 70-80% of the farmers felt the need for further assistance after heat wave to save the produce.

Livestock and poultry farms are severely affected due to heat wave both in Andhra Pradesh and in Telangana in terms of reduction in yield loss, occurrence of diseases and mortality in spite of adopting heat wave mitigation measures like feeding during cool hours, keeping the animals under the shed etc., The losses in poultry due to heat wave are in terms of lower egg production (15-20%), less growth of birds and high mortality. Majority of the farmers are not satisfied with the mitigation measures taken by the Animal husbandry department.

Results on the awareness of the respondents on risk mitigation strategy of heat wave varies greatly. Awareness on activities of 108/104; awareness through electronic and print media; arrangement of drinking water, butter milk, cooling centers at public places etc., is more. However, publicity through posters, pamphlets, flexies, LED display boards etc., is very low in both the states.

During the heat wave period respondents in both rural and urban areas are adopting various traditional risk mitigation measures to overcome the adverse effects. The general measures practiced by them are drinking more water during hot hours, drinking lime juice, taking ragi and jowar gruel, butter milk as a part of diet; carrying water bottles while going out; wearing cotton cloths, wearing caps, tying towels to the head, carrying umbrella etc. Agriculture and horticulture farmers were also taking up their own mitigation methods like irrigating the crops, mulching around the trees, providing shade to the newly planted saplings/vegetables etc., Livestock and poultry farmers were protecting their livestock by providing shade, splashing cold water during hot hours, feeding balanced diet etc.,

The analysis of data on implementation of the various components of the heat wave action plan in the study area revealed that the efficacy of implementation of the action plan in the reduction of loss/damage was to an extent of 25-50% in different areas. Considerable efforts were made in providing the facilities like cooling centers, shelters, first aid kits at working places, made available ORS packets in public places etc. Information on heat wave and mitigation measures were disseminated by all the departments to the extent possible through print and electronic media. Almost all the departments have given emphasis on changing the work timings during the heat wave period particularly by Education and Labour departments. Whereas, the regulation of work hours in the unorganized sector is challenging and it required to be given special focus.

Suggestions received from the respondents for effective implementation of the heat wave action plan are, arranging more number of chalivendrams, ORS, lemon water, butter milk at convenient places, shift in working times especially for unorganized sectors, provision of shelters and first aid kits in work place, more involvement of ASHA workers and Gram Panchayats for creating awareness, expansion of plantation and enhancement of green cover in rural and urban areas, effective use of social and print media and designing specific programmes for the vulnerable especially elderly, infants, children, and pregnant women during the heat wave period.

Recommendations emerged from the study

- All the disaster management including heat waves involves technology and scientific management. Hence, Disaster Management Department may create a permanent system at district level with the designated technical experts to act automatically in coordination with all the technical departments, without waiting for the government orders on weather disaster like heat wave for timely action.
- District administration may prepare a comprehensive district level heat wave action plan in line with state heat wave action plan by involving TSDPS/APSDPS, IMD, line departments, Krishi Vigyan Kendra, NGOs, Civil Society Organizations including panchayat representatives. This plan should be supported with adequate budget allocation including mobilization of Corporate Social Responsibility (CSR) funds to meet the adaptation and rehabilitation measures. The plan should have an institutional mechanism to ensure convergence and minimize the duplication of efforts.
- Similar to district level plan, block level and village level action plans may be developed in vulnerable areas. The learning experiences in high temperatures zone/vulnerable heat zones across the states and country may be documented, the experiences may be incorporated in the district and village level plans for further upscaling.
- Both states (Andhra Pradesh and Telangana) have identified vulnerable districts and mandal of heat waves with past temperature data of IMD. Within the mandal/block, there is a need for the identification of heat island/hot spot to ensure further micro zonation of the more vulnerable areas.
- GIS mapping of the worst affected villages needs to be done and it should be tagged with the dedicated Village Heat Action Plan/ Village Disaster Management Plan.
- Once the tagging has been done specialized monitoring of the Public Distribution System, Water Supply and livelihood support programme should be ensured.
- Create awareness to the public and disseminate advance warning and mitigation measures by using effective means such as organizing village/block level meetings by designated nodal officers, by use of social and print media, small video clippings, farmers association, farmer friend, farmers interest groups, farmers producers companies, milk cooperatives societies, etc., before commencement of the heat wave period in vulnerable locations to reach out to the unreached.
- Permanent records are not available at present on heat wave action plan with departments like IMD, which is maintaining regular data on cyclones and other extreme events. Hence, permanent records on heat wave management should be maintained and documented, which may be shared to other departments for future use. Hence, maintenance of permanent records may be initiated henceforth.
- Government of India may take initiation that the heat wave action committee should include personnel/officials from the respective universities of Agriculture, Horticulture and Veterinary as these universities possess Krishi Vignans Kendras (KVKs) which are dealing with farmers at grass root level.
- Refresher / Re- Orientation training is essential to all the health care and other professionals involved in heat wave management.
- The Incremental Learning Approach (ILA) is being implemented under POSHAN Abhiyaan as capacity building programmes for Anganwadi and other frontline workers with 21 modules. One module on heat wave aspects may be covered so as to sensitize the health workers. Similarly, teachers may also be sensitized about the heat waves through existing schemes like NISHTHA. Likewise, the existing schemes of the government from various departments may be identified and officials involved in heat wave management may be sensitized.
- Workshops at different level, (village, block and mandal level) should be conducted every year by using technical expertise and infrastructure available at SAUS, SAMETIs, KVKs, etc.,

- Andhra Pradesh has introduced an innovative system of Village Secretariat and Village Volunteers. Such type of interventions/innovative platforms may be identified and trained on Do's and Don'ts of heat wave and their services may be utilized for sensitising the public.
- Existing system of disaster management concentrating more on direct effects like human being ill health, morbidity and mortality, but indirect effect is severe on agriculture, horticulture and livestock sectors by means of crop damage or loss due to heat wave. Thus, there is a need to focus on these neglected and important sectors as these sectors directly associated with livelihood activities of the majority of the population in rural areas and help in poverty alleviation. Therefore, agriculture, horticulture, and animal husbandry departments may also develop a heat wave action plan and it should be part of district heat wave action plan.
- The innovative e-agricultural platform like e-crop booking may be strengthened to cover all major crops and extended these facilities to cattle, small ruminants, poultry and fisheries and the risks of heat wave may be minimized by covering under insurance scheme like The Pradhan Mantri Fasal Bima Yojana (PMFBY) to provide compensation to the affected farmers.
- Crop Insurance with Index Based Drought/Crop Insurance Plan, based on real time GIS pictures of agricultural land areas needs to be promoted. Although, the Pradhan Mantri Fasal Bima Yojana (PMFBY) is being implemented in the study areas, wherein, farmers can register in e-crop booking and get their crop insured but a more holistic and accountable approach would be, the Index Based Drought/ Crop Insurance Plan, wherein the real beneficiaries can be identified and compensated. This will also help to contain the heat wave impact on agriculture crops
- Under Mini Gokulam scheme, the cattle sheds are constructed to safeguard the health of the animals, such facilities may be extended to other livestock. Similar such schemes may be evolved to protect agricultural assets from the heat waves.
- Irrigation and electricity consumption rates increase considerably during the heat wave period, so proper planning is to be done before the pre heat wave period.
- Institutional Strengthening of the training institutes on Heat Wave Action Plan of line departments and Administrative Training Institutes needs to be undertaken.
- Sector specific training manuals/resource manuals may be developed by the national level institute like MANAGE, NAARM, NIRD & PR, etc., on heat wave approaches and methods and adaptive measures for risk mitigation.
- Revision of the existing action plan based on learning experiences and feedback received from the field level learning is needed.



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