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<th>Media in MEERP and disaster management.</th>
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Regional Conference on Disaster Broadcasting, Oct 13-15, 1999, Bangkok

Media in MEERP and Disaster Management

1.0 Introduction

A massive earthquake struck Maharashtra on September 30, 1993 measuring 6.4 on Richter scale with epicentre at Killari in Latur district. Extensive damage was caused to life and property in the districts of Latur and Osmanabad with 7,928 people killed, 16,000 injured and 15,847 livestock killed. In Latur and Osmanabad, 52 villages were razed to ground wherein 27,000 houses, amenities and related infrastructure facilities were totally damaged. Nearly 2,20,000 houses in the adjoining villages of Latur and Osmanabad and 11 other districts of Solapur, Satara, Sangli, Beed, Parbhani, Ahmednagar, Nanded, Kolhapur, Aurangabad, Pune and Nashik suffered varying degrees of damage.

1.2 Rescue and Relief

Comprehensive rescue and relief operations were launched with no loss of time with active participation of the Army, Governmental agencies, Donor agencies, NGOs and other Voluntary organisations. Rescue and relief operations involved the clearing of debris and removal of the injured and the dead, immediate medical attention, provision of food and clothing, erection of temporary shelters for the homeless, prophylactic measures and Ex-gratia payment to the next of kin of the deceased and the disabled.

1.3 Rehabilitation

Even while the rescue and relief operations were on, Government of Maharashtra (GOM) formulated the largest ever rehabilitation programme for the disaster affected - The Maharashtra Emergency Earthquake Rehabilitation Programme (MEERP). The programme aimed at the total rehabilitation of the 52 affected villages and restoration of damaged housing stock and infrastructural facilities in the other 13 affected districts. The rehabilitation policy formulated by the GOM involved funding by agencies like the World Bank (WB), Asian Development Bank (ADB), Department for International Development (DFID), United Nations Development Programme (UNDP), GOI, GOM and Donors.

1.4 Objectives of MEERP

Considering the nature and magnitude of the programme, the GOM formulated a Rehabilitation Policy addressing the various issues of the rehabilitation programme to ensure quick and efficient completion, in a manner that is fair, equitable and transparent. The various objectives set by the GOM are outlined below:

* The Primary Objective of the GOM was the comprehensive and satisfactory
resettlement and rehabilitation of affected people and villages.

* The Resettlement Objective was to ensure socially, culturally and economically self-sustaining communities in an environment that includes appropriate housing and civic amenities and addressed issues in relation to social infrastructure.

* The Rehabilitation Objective was to ensure that the rehabilitation placed an emphasis on the restoration of the productive system and reserve base through socially equitable means. It focused on issues relating to economic and social rehabilitation, provision of training to ensure economic self-reliance and that policy implementation protected the rights of women and children.

* Ensure full participation of the community in the resettlement and rehabilitation program right through the implementation.

* Mitigating the effects of disasters

* Ensuring preparedness for any future disaster and improving seismic monitoring capability.

1.5 Salient Features of MEERP

The underpinnings of this programme were based on a philosophy of collaborative effort between the affected people, Government and the Non-Government sector. Rehabilitation was not viewed as a technical or administrative or political problem. Rather, the programme placed the needs and aspirations of the people in the affected villages at the core, and built a comprehensive benefit delivery mechanism enveloping it. The Government and the Non-Government sectors were mere channels to achieve the ultimate goal of fulfilling the needs of the people. The affected people were themselves the main drivers of this programme.

The State Government invited organisations from the Non-Government and Government sectors to actively participate in the relief and rehabilitation exercise. There was an instantaneous overwhelming response from various organisations, Donor agencies and Non Governmental Organisations (NGOs) from all over the country to participate in the programme formulated by the GOM. A total of 53 Donor agencies and NGOs came forward to assist the GOM in the reconstruction programme. The work undertaken by these donor agencies was implemented as an integral element of the overall programme albeit with different players. This close relation between the work carried out by the different participants was cemented by several collaborative initiatives. The government undertook several steps to facilitate their progress. The Government extended several benefits like providing land, water and exemption from levies and taxes. Financial assistance was also given wherever donor agencies faced shortage of funds. A broad framework to govern implementation was laid down to facilitate the work and ensure quality.
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Regional Conference on Disaster Broadcasting, Oct 13-15, 1999, Bangkok

The programme comprised the following components:

i. Housing

This component involved the reconstruction and rehabilitation of 52 new, serviced, relocation villages that were totally destroyed - over 27,000 houses, associated infrastructure and civic amenities, reconstruction on existing sites of about 10,000 houses that were destroyed or substantially damaged and the repair and strengthening of over 1,80,000 partially damaged houses. In order to propagate the use of seismic resistant technology in the area, the construction of model houses in four districts and pilot strengthening of houses in 13 districts was also taken up.

ii. Infrastructure

Reconstruction, repair and strengthening of public buildings and infrastructure (including schools, health centres, social service facilities, water supply system, roads, bridges, irrigation facilities, public buildings, and historical monuments), and the improvement of transit shelters was covered in this component.

iii. Social Rehabilitation

Provision for special facilities and activities to address the needs of women and children affected by the earthquake, and improvement / restoration of social facilities such as old aged homes, district trauma centers, homes for handicapped, community centers for women etc. were covered in this component.

iv. Economic Rehabilitation

This included provision for replacement and reconstruction, on a grant basis, of losses of Agriculturists, Artisans and small industry and business. The assistance provided under this component also included replacement of, minor equipment, bullocks, milch cattle, sheep and goats, and the repair and reconstruction of dug wells.

v. Community Rehabilitation

The cost of works and materials to re-establish essential services such essential medical services, construction and provision of services for temporary transit shelters etc. were included in this component.

vi. Technical Assistance, Training and Equipment

Design, supervision and monitoring of project components, other Consultancy services and equipment, including the development of a disaster management programme for the state of Maharashtra and a seismic monitoring and research programme for the GOI were covered in this component.

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2.0 Role of the Media in MEERP

The media, both print and electronic played a key role immediately after the disaster and also during the reconstruction and rehabilitation programme undertaken by the government. The various initiatives taken up by the media were:

- Eliciting National/ International Response to the Disaster

Immediately after the disaster, the media through various mediums informed the national and international community about the devastating earthquake and the appalling situation in the affected areas. The government immediately took the initiative to provide immediate rescue and relief measures and through the media made an appeal to various institutions, donor organisations, NGOs, Voluntary agencies and the general public to come forward to help the affected community. This appeal through the media provided the much needed reaction from various sources. There was an overwhelming response from various donor and voluntary organisations to take part in this humanitarian task. Initially various organisations helped the government in the rescue and relief operations and later in the rehabilitation programme, by adopting various relocated villages for construction of houses, related amenities and civic infrastructure.

The international community also came forward with the required help. The World Bank immediately sent a team to assess the situation and within a week confirmed in principal to provide an emergency loan for the rehabilitation programme. The other multi-lateral agencies like the Asian Development Bank, Department for International Development and United Nations Development Programme also pitched in their support for the programme through generous grants. Apart from these agencies, the international community also generously donated for the rescue, relief and rehabilitation efforts of the government.

- Providing True Status of the Disaster

The media’s role in the MEERP was appreciated as it provided the government a platform for communicating with the national and international community. The media understanding its pivotal role brought out various news items and true stories of the disaster, which cajoled the community to respond to the humanitarian effort immediately.

- Providing a Link between the Common Man and Government

The trauma and tragedy caused by the earthquake shook the moral of the community. The government accorded highest priority to the task of rehabilitation and resettlement of the earthquake affected districts and to restore
confidence in the communities in order that they may put the tragedy behind them and look to the future with hope and confidence. Here again the media acted as a link between the affected population and the government. It informed the public about the initiatives being taken by the government to rehabilitate them and generated a sense of confidence that the government and the nation was behind them.

- Creating General Awareness about Earthquakes

The media through various sources took up the task of informing the masses about the earthquakes, its causes and the areas prone to such disasters. It was an effort to inform the public, so that they are aware of the disastrous effects of an earthquake and could react positively in case of any future disaster of similar nature.

- Information Dissemination about Pre and Post Earthquake Activities and Rehabilitation Measures

Information dissemination about the disaster management plan being prepared by the government, the mitigation and response strategy in case of any disaster have also been taken up by the media. Further it is planned to use the media to inform the people about the early warning activities, evacuation procedures, community and family preparedness procedures and mitigation measures.
3.0 Disaster Management Information System for Information Dissemination, Planning and Management

Maharashtra, the 3rd largest state in India in terms of geographical area and population, is prone to various disasters such as drought, floods, cyclones, earthquake and accidents. Industrial belt of Pune, Mumbai and Nashik are prone to the risk of accident and industrial hazards, Koyna reservoir and surroundings fall under the risk of earthquake hazard. Low rainfall area of the state is under the constant risk of drought, while, high rainfall zones of eastern and western Maharashtra are prone to landslides and flash floods.

The direct or indirect economic losses caused by disasters are beyond imagination since they affect infrastructure, natural resources, human resource etc. Take for example, the Latur earthquake, where entire infrastructure such as houses, buildings, roads, railways, pipelines, electricity network was heavily damaged, including the loss of human lives and cattle resources. In order to avoid such huge losses due to disasters, it becomes essential for the GOM to establish a mechanism for disaster preparedness and mitigation. In this context science and technology integrated together with the communication network facilitates disaster preparedness and mitigation activities.

3.1 Science and Technology for Disaster Management

Natural hazards can not be prevented but can be managed to reduce its impact on the society. The recent focus of the government to manage disasters in a holistic manner with the support of a comprehensive database and effective communication systems is a welcome move. Traditionally, the Government had been managing disasters by focusing on post-disaster activities such as rescue and relief operations. With the proven applications of information technology in recent decade, approaches have been changed and focus is given to pre-disaster activities such as early warning, preparedness and prevention. Thus, the challenge before the modern planners is to operate with a new paradigm having a greater focus on long term strategies for disaster mitigation. This paradigm requires the definition of system and means for their management, which will detect, assess, respond and communicate to the risk.

3.2 DMIS for Maharashtra

The Government of Maharashtra has established Disaster Management Information System (DMIS) for multipurpose applications such as identification of hazard zones, hazard assessment, vulnerability and risk assessment, monitoring, prediction and warning, to plan long-term prevention measures and early intervention measures. DMIS is a GIS based system, that allows disaster managers to compile, analyse, query and view disaster related information in the form of maps. The network of DMIS is spread all over the State covering 6 Divisions and 31 Districts and Ministry.
The DMIS has been prepared by the Maharashtra Remote Sensing Applications Centre, which is engaged in satisfying the remote sensing and GIS needs of the State. DMIS contains information on disaster prone areas, amenities, infrastructure facilities, natural resources (land and water), socioeconomic data obtained from various sources including remote sensing (Fig. 2). With the strong database, DMIS offers potential to disseminate most of the information related to the disaster management, especially in the area of disaster preparedness.

DMIS aims to achieve following objectives:

- To create digital database comprising of both spatial and non-spatial data on 1:250,000 and 1:50,000 scale for identifying disaster prone areas
- To assess disaster situation through integrated analysis
- To organize response emergency operation through better information flow
- To utilize the GIS database for designing and implementing the mitigation and preparedness measures
- To derive additional benefits of utilizing the resources database for developmental planning at the district/region and state level

Information (maps) generated using Satellite Remote Sensing have been incorporated in DMIS and these maps have relevance to natural disaster. These maps provide scientific base to disaster management. The thematic mapping obtained from satellite remote sensing and their relevance to natural disasters is given in Table 1.

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<tr>
<th>THEMATIC DATA</th>
<th>RELEVANCE TO</th>
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<tr>
<td>Soils</td>
<td>Landslides, mass washing, floods, earthquake, drought, soil borne diseases, green-house effects</td>
</tr>
<tr>
<td>Geology</td>
<td>Earthquakes, floods, droughts, fire</td>
</tr>
<tr>
<td>Landuse/landcover</td>
<td>Floods, cyclones, droughts, damage assessments, green-house effect</td>
</tr>
<tr>
<td>Surface reservoirs</td>
<td>Floods, earthquakes, industrial hazards, fires</td>
</tr>
<tr>
<td>Hydrogeomorphology</td>
<td>Industrial hazards, earthquakes, drought, hazard preparedness and monitoring</td>
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Fig. 1. Network of Disaster Management Information System

Earthquake Rehabilitation Cell, Government of Maharashtra
Fig. 2. Elements of DMIS and their Utility
3.3 Features of DMIS

DMIS is a computerised database for planning and management of natural and manmade disasters. Features of DMIS are mentioned below:

- Integrated database supporting maps, tables and attributes on natural resources, infrastructure and socioeconomic features
- Easy to operate and use for query and decision support
- Networking and linkage within district, state and tahsil

3.4 Database Contents of DMIS

The database content of DMIS is grouped into following categories relevant to Disaster Management.

3.4.1 Disaster prone areas

Locations of disaster prone villages and towns are basic input for preparedness planning, facilitating visualization of villages prone to hazards. The cause and interdependency analysis using other spatial and non-spatial information can be taken up for vulnerable area and risk zone identification.

Information on the villages/towns prone to particular disasters has been gathered from district authorities and stored as attributes to the locations of villages/towns. The disasters covered are earthquake, flood, epidemics, accidents, fires, cyclones etc.

3.4.2 Infrastructure facilities

Inventory of infrastructure facilities is useful during relief operations. The DMIS provides information on the various infrastructure facilities available in villages/towns, shortest routes to reach these places, closest facilities from a given location etc. The following data is stored in DMIS on infrastructure facilities:

- Maps showing transport network, locations of towns/villages.
- Amenities such as hospitals, PHCs, ST Depot, Schools, Fire fighters, Police Stations, Petrol pumps etc.

3.4.3 Administrative set-up

The information on any of the aspect related to disasters needs to be visualized village-wise, tahsil-wise or district-wise. Therefore, village, tahsil, district and regional boundaries of entire states have been stored in the DMIS. Tahsil and Village maps have been linked with the attribute data on socio-economic aspects.
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3.4.4 Natural resources

The inventory of natural resources is mandatory for planning mitigation measures during relief operations. Information on natural resources would be useful in

- Identification of the process responsible for the hazards and the natural resources and socio-economic parameters associated with the process
- Planning appropriate preventive measures/preparedness, and
- Assessing damage caused by hazards

The maps depicting natural resources have been prepared using satellite remote sensing data and SOI toposheets. Following natural resources maps are available in DMIS for all the districts.

- Landuse/landcover showing land under agriculture, forest, wasteland, water bodies etc.
- Terrain features such as hydro-geomorphology, contours, slope, aspect, drainage
- Soil map depicting soil morphology and physico-chemical characteristics
- Surface Waterbodies and Watersheds (Micro Watershed - 500 – 1000 Ha.)

3.4.5 Socio-economic data

Details on demography and occupation of all the villages/towns are requirement for effective pre-disaster planning. Therefore, attempt has been made to collect data on population structure, occupation, amenities, development aspects etc. This non-spatial data is linked to the map showing village/town locations.

3.5 Queries handled by DMIS

Considering the practical needs of the disaster managers, the data content can be viewed, analysed, or maps/reports can be prepared to handle following queries:

- Vulnerable areas and types of disasters
- Socio-economic scenario around the disaster prone area
- Infrastructure facilities/amenities for emergency operations
- Accessibility to hazard affected areas
- Loss estimation of natural resources in disaster affected area
- Preliminary assessment of possible impact on social and economic sector

Such queries are considered of utmost importance during various stages of disaster management such as pre-disaster planning (preparedness and prevention) and post disaster activities (relief operations).

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3.6 Multiple applications of DMIS

The computerised database in DMIS can be potentially utilized as per the needs to create information systems such as Land Information System, Water Resources Information System, Forest Information System, Agricultural Information System etc. (Fig.3). Such information systems should be useful in providing scientific inputs in various developmental fields such as wasteland development, watershed prioritization, forest management, ground water targeting, soil and water conservation etc. It can provide policy level inputs in the government aided programmes such as Hilly Area Development Programme, District Rural Developmental Agency, Drought Prone Area Programme etc. Networking utility such as finding optimal path are useful for planning distribution of ballot boxes during elections, medical aids during epidemics etc.

3.7 DMIS for Dissemination of Information

The information dissemination plays major role during various stages of disaster management such as pre-disaster, relief operations and mitigation phases. The information should flow among various key players of disaster management and creating awareness of disaster to common man is absolutely essential. Authorities such as district control authorities, police stations, military services, and volunteers such as NGOs and community groups need to be provided with the updated information about various aspects of disasters. GIS based DMIS can certainly play role in information broadcasting provided it is integrated with disaster management plans and communication network already available with disaster managers in each districts of Maharashtra.

DMIS for Maharashtra state, installed at district control rooms, divisional control rooms, Ministries and Scientific Institutions, is useful in deriving relevant information that can be disseminated to the authorities and volunteers responsible for disaster management. The major contribution of DMIS may be attributed in preparedness planning, focussing the generation of maps and other information that can be disseminated for following purposes:

- Awareness about potential hazards
- Precautionary measures
- Line of actions to be followed in case of disasters
- Post disaster operations such as preliminary assessment of the impact on agriculture and other natural resources

Awareness about potential hazards, with its precise locations obtained from DMIS, may be generated by disseminating information through mass media such as news papers and periodicals. In case of emergency, information may be broadcasted through radio and televisions, giving details about the places at risk. During relief operations, DMIS can be used to determine access routes for the affected area, population at risk,
identifying nearest rescue facilities and other amenities etc. Such information can be immediately conveyed through VSAT and VHF network functioning in the State.
Fig. 3. Multiple applications of DMIS
Presently DMIS covers the database on disaster prone places, socio-economic scenario, amenities, natural resources, infrastructure such as road/ rail network etc. There is enormous scope to incorporate additional information to make it more suitable for information dissemination. Integration of district level disaster management plans and DMIS would promise successful utilization of DMIS to mitigate the effects of disasters.
4.0 Disaster Management Plan for Maharashtra and Media’s Involvement

Reducing the losses in life and property caused by disasters is a compelling objective now receiving worldwide attention. Scientists and engineers now believe that, the knowledge and technology base potentially applicable to the mitigation of the hazards, has grown so dramatically in the recent years, that it would be possible, through concerted cooperative international effort, to save the lives and reduce human suffering, dislocation and economic losses. Communication is central to this effort for public education, early warning, evacuation and post disaster relief.

The media acts as the link between the common man and the technical information about the risk and the hazards. It absorbs and transforms the technical information provided by either experts or mediators and relays the information to the public in a simple manner.

The strengths of the mass media lie partly in their independence from the governments or other agencies, and partly in their ability to attract large audiences who regard them as reasonably credible information sources.

The capabilities of communications, data gathering and data management technology have leaped forward with increasing knowledge about the origins and behaviour of disasters, and the mitigation of its effects. Indeed, the advances in the telecommunications and computer sciences are among the major contributors to the recognition that technology can do much to blunt the effects of hazards.

Mass communication is inextricably entwined with disasters and hazard mitigation. The electronic and print media, reflecting great public interest and concern and provide extensive coverage to disasters, particularly those with strong visual impact. As forecasters have increasingly gained the ability to predict, the media has covered the near-term prediction and relief planning phases of the event. The media has significantly improved the level and sophistication of their pre and post-disaster coverage in recent years by using new technology and consulting technical experts, who are better able to describe the causes and mitigation measures for disaster.

The print media, too, has benefited from advanced technology. Facsimile transmission and closer linkages between reporters and specialists in government and academia have deepened the understanding of causes and impacts of these disastrous events, and no doubt, have had some effect in reducing long-term exposure and risk.

Clearly mass communications technology already has had a significant impact on how the public learns of and perceives the impact of disasters. As the cost reduce further and the capabilities of these technologies improve the level and sophistication of information presented to the public will also be enhanced.

Earthquake Rehabilitation Cell, Government of Maharashtra
Regional Conference on Disaster Broadcasting, Oct 13-15, 1999, Bangkok

In addition to the vastly improved opportunities that the telecommunications technologies have provided, to report on prospective, ongoing and recent disasters and relief efforts, their capabilities have slowly shifted the focus from post disaster relief to mere effective means of coping with sudden disasters.

Better linkages between the public media and the community of disaster mitigation researchers and practitioners, whether scientific, technological or service oriented can make disaster management efforts more effective and more important, can accelerate the shift in both the public and the administration’s thought towards effective pre-disaster initiatives.

To this end, the electronic and print media would be involved in a two-step process to enhance the quality of its hazard related service as envisaged under the Disaster Management Plan.

4.1 Sharing Media Facilities

The first step is to foster closer linkages with the research community and share their vast information gathering and transmission resources, when appropriate and available, with disaster mitigation organisations.

In the post-disaster phase for example, the facilities established by the media to report on an event are often far more robust and more promptly operational than those of relief organisations, whether government or voluntary. These channels should be available as means for better assessing the nature and extent of damage, local relief requirements, the need for specialised recovery equipment, and unique problems or opportunities.

4.2 Integration of the Media into Disaster Mitigation Activities and during Disasters

The second step in building links with the new organisations is to more effectively link the media into an intensified effort in disaster mitigation, including activities such as

- Risk assessment
- Mitigation Measures
- Early Warning and evacuation
- Public awareness and education
- Advocacy for self-help
- Effective response to risk

The media is seen as relaters of official information and measures which the citizens are expected to undertake immediately and at the same time are conduits for relaying information through inter-governmental structures and channels to bring the...
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core of citizens to the official attention.

In the event of disaster, media has a responsibility of reporting the same on a day-to-day basis. Such reporting can contribute to

- Information dissemination about disaster
- Stimulating public response and assistance
- Enhancing transparency of post disaster rehabilitation efforts
- Auditing the role of agencies and increasing their accountability
- Documentation of learning experiences

However, care should be taken to safeguard the authenticity of the information and the credibility of the media. This can be done by

- Avoiding reinforcing stereotypes that the people carry about disaster victims
- Promoting sensitivity as against sensationalism
- Highlighting both the positive and negative aspects of disaster management
- Cross-checking information from the disaster site as well as the official sources

During disasters, it is important to organise regular press meetings and issue press releases. The importance of the efforts of various non-governmental agencies engaged in relief operations and their specific problems should be highlighted through such briefings. This will ensure highlighted transparency in all operations, concern, and commitments to those affected.

A rational approach to media involvement in disaster management would depend on how much the media is familiar with the preparedness measures, the disaster management action plans, roles and responsibilities and strengths and limitations with respect to administrative capabilities. This will prepare ground for utilising the technological and human resources available with the mass media. Tapping the media’s capabilities can and will improve the preparedness and response to disasters. Conversely, the study and application of disaster mitigation techniques can enhance the quality of and interest in the services the media can provide. The media has the definitive opportunity to play a leadership role in the transition of thinking and action from post-disaster relief to preparedness and disaster mitigation.