

The Role of Local Institutions in Reducing Vulnerability to Natural Disasters in Coastal Areas of West Bengal

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Abstract—Disasters are not random and do not occur by accident. They are the convergence of hazards and vulnerable conditions. Disasters not only reveal underlying social, economic, political and environmental problems, but unfortunately contribute to worsening them. The effects of a disaster are immediate and long-lasting. When disaster strikes, communities are left without, basic necessities such as food water and shelter. The basic responsibility for undertaking rescue, relief and rehabilitation measures in the event of a disaster rests with the concerned State Government. A study was undertaken with 150 affected people from 30 Gram Panchayats for altering their perception to role of local institutions in disaster management. It has been observed that the people of the area should not inform the details of information sufficiently ahead of the flood and cyclone. People must be made conscious about preserving safe drinking water, usable assets, materials for temporary shed and essential medicines. The government functionaries have to strengthen in selecting safety place for rehabilitation, stocking essential medicines and adequate arrangements for rescue and shifting of affected people immediately. Immediate action need to be taken for restoration of transport and communication system with all sanitation measures. People must be trained to develop their capability towards preparedness and mitigation measures.

Keywords: Local institution, vulnerability, disaster management, rehabilitation.

1. INTRODUCTION

India occupied the fourth position in ranking of regular occurrence of natural disasters. Floods, droughts, cyclones, earthquakes and landslides have been recurrent phenomena. About 60% of the landmass is prone to earthquakes of various intensities; over 40 million hectares is prone to floods; about 8% of the total area is prone to cyclones and 68% of the area is susceptible to drought. Local self-government played an important role in the Independence Movement. After Independence, the Constitution of India was framed on federal principles. Indian Constitution makers divided the government

functions in three lists: Federal, State and Concurrent. Local government bodies are covered in the State List and are governed by the State Statutes or in the case of Union Territories by the Union Parliament (Golandaz, H. M. and B. Mohanty, 1993). Government post-disaster relief compensation programmes and international assistance may also act as a “two-edged sword” by providing ‘incentives’ for poor people to locate to disaster-prone areas. Legal and regulatory environments differ enormously from country to country, as does the degree to which the necessary norms that would allow to reduce disaster vulnerability are actually applied and enforced (Messer, 2011).

2. MATERIALS AND METHODS

The districts North and South 24 Parganas of West Bengal were selected purposively for the study because these two districts were the most severely affected by disaster. Seven blocks namely Basanti, Gosaba, Namkhana, Kakdwip, Sandeshkhali I, Sandeshkhali-II and Parthar pratima and were selected purposively. From the selected blocks, 60 gram panchayat members and 150 villagers were selected randomly as respondents.

3. RESULTS AND DISCUSSION

The G.P played an important role in disaster management in three phases. These were before disaster, during disaster and after disaster. The village people are the most vulnerable for disasters and therefore the gram panchayats have to play a major role in association with the higher level bodies of Panchayati Raj Institutions (PRIs) as well as with the government agencies and others. The major functions of G.P during the post-disaster were identification of victims for compensation, relief and rehabilitation work, monitoring and supervision of relief works as well as damage assessment.

Table 1: Preparedness and early warning system taken by the G.P

| Sl. no | Block | G.P | Impact/ effectiveness of preparedness measure | | | Impact/ effectiveness of early warning system | | |
|--------|-----------------|----------------------|---|----------|----------|---|----------|----------|
| | | | Good (3) | Avg. (2) | Poor (1) | Good (3) | Avg. (2) | Poor (1) |
| 1. | Basanti | Basanti | | 2 | | | 2 | |
| | | Bharatgarh | | 2 | | | 2 | |
| | | Jharkhali | | | 1 | | 2 | |
| | | Ramchandra khali | | 2 | | | 2 | |
| | | Nafarganj | | | 1 | | | 1 |
| 2. | Gosaba | Chotomollakhali | | | 1 | | | 1 |
| | | Satzelia | | 2 | | | 2 | |
| | | Lahiripur | | 2 | | | 2 | |
| | | Kumirmari | | | 1 | | | 1 |
| | | Rangabelia | | 2 | | | 2 | |
| 3. | Kakdwip | Surjanagar | | 2 | | | 2 | |
| | | Rishi Bankim Chandra | | 2 | | | | 1 |
| 4. | Namkhana | Mousuni | | | 1 | | | 1 |
| | | Sibarampur | | 2 | | | 2 | |
| | | Namkhana | | 2 | | | 2 | |
| | | Budhakhali | | 2 | | | 2 | |
| 5. | Pathar Pratima | Haripur | | | 1 | | | 1 |
| | | Dakshinroy pur | | | 1 | | | 1 |
| | | G-Plot | | | 1 | | | 1 |
| | | Patharpratima | | | 1 | | | 1 |
| | | Digambarpur | | 2 | | | 2 | |
| | | Ramganega | | 2 | | | 2 | |
| 6. | Sandeshkhali -I | Durbachati | | 2 | | | 2 | |
| | | Kalinagar | | | 1 | | | 1 |
| | | Hatgachi | | | 1 | | | 1 |
| | | Bayermari - I | | | 1 | | | 1 |

| | | | | | | | | |
|----|------------------|--------------|--|--|---|--|--|---|
| 7. | Sandeshkhali -II | Bermajur-II | | | 1 | | | 1 |
| | | Bermajur-I | | | 1 | | | 1 |
| | | Sandeshkhali | | | 1 | | | 1 |
| | | Jeliahkhali | | | 1 | | | 1 |

The preparedness measures undertaken by the gram panchayats were categorized as good, average and poor on the basis of forecasting and preparation of villagers to face the disaster. If the villagers were informed 2 days in advance, prepare them for relief and rehabilitates by moving them to safer places and stock relief materials, measure is categorized as 'good'. In case the villagers are informed in advance but did not prepare them to face the disaster, then it is categorized as 'average'. If there is no forewarning and no prepared measures taken then it is categorized as 'poor'. Good, average and poor is ranked 3, 2, and 1 respectively.

Table 2: Listing of preparedness measures taken by the G.P

| Sl. no | Block | Name of the G.P | Effectiveness of preparedness measure (As perceived by the affected people) | | | Measures taken by the G.P as per disaster preparedness measures |
|--------|---------|------------------|---|------------|---------|---|
| | | | Good(3) | Average(2) | Poor(1) | |
| 1. | Basanti | Basanti | | 2 | | Organizing awareness camp |
| | | Bharatgarh | | 2 | | Informed the villagers |
| | | Jharkhali | | | 1 | No measures were taken |
| | | Ramchandra khali | | 2 | | Stocked relief material |

| | | | | | |
|----|---------|----------------------|---|---|--|
| | | Nafar ganj | | 1 | No measures were taken |
| 2. | Gosaba | Choto molla khali | | 1 | No measures were taken |
| | | Satzelia | 2 | | Providing hazard information |
| | | Lahiripur | 2 | | Informed the villagers by miking |
| | | Kumir mari | | 1 | No measures were taken |
| | | Rangabelia | 2 | | Shifting important documents to safer places |
| 3. | Kakdwip | Surjanagar | 2 | | Arranged drinking water, medicines |
| | | Rishi Bankim Chandra | 2 | | Encouraging people to insure assets and |

| | | | | | |
|----|----------------|-----------------|---|---|--|
| | | | | | livestock |
| 4. | Namkhana | Mousuni | | 1 | No measures were taken |
| | | Sibarampur | 2 | | Provided booth level warning information |
| | | Namkhana | 2 | | Stored relief |
| | | Budha | 2 | | Informat |
| | | Haripur | | 1 | No measures were taken |
| | | Dakshin roy pur | | 1 | Formulated plans |
| 5. | Pathar Pratima | G-Plot | | 1 | No measures were taken |
| | | Pathar pratima | | 1 | Provide training |
| | | Digambarpur | 2 | | Informed the villagers |
| | | Ramganga | 2 | | Informed the |
| | | Durbachati | 2 | | Shifted importa |
| 6. | Sandeshkhali-I | Kalinagar | | 1 | No measure |
| | | Hatgachi | | 1 | Stocking |
| | | Bayermari - I | | 1 | No measures were taken |

| | | | | | | |
|----|-----------------|--------------|--|--|---|------------------------|
| 7. | Sandeshkhali-II | Bermajur-II | | | 1 | No measures were taken |
| | | Bermajur-I | | | 1 | No measures were taken |
| | | Sandeshkhali | | | 1 | Informed the villagers |
| | | Jelia khali | | | 1 | No measure |

Preparedness measures taken by the selected gram panchayats in the study areas were awareness generations, identification of vulnerable groups, warning mechanisms, storing food grains, arranging shelters, identification of resources and assets, household preparation, capacity building and developing a disaster management plan etc. This needs a sustained effort on the part of the community. The table also depicted that the preparedness measures taken by the selected G.P were arranging shelters, proving disaster information, storing relief materials and shifting important document to safer places. After getting the warning information from the block or district or from anywhere the G.P members disseminated the information to the villagers. The members expressed their views that after getting the warning they arrange disaster shelters and stores food grains. But some G.P did not take any measures because they have not received any warning information.

Table 3: Opinion of the respondents about preparedness measures taken by the G.Ps (n=150)

| Sl. No | Preparedness measures | Extent of taking measures | | | | | |
|--------|---|---------------------------|-------|-----------|-------|-------|-------|
| | | Always | | Sometimes | | Never | |
| | | No | % | No | % | No | % |
| 1 | Warning systems forecast | 06 | 4.00 | 03 | 2.00 | 141 | 94.00 |
| 2 | Arrange Proper selection of safety place for rehabilitation | 30 | 20.00 | 33 | 22.00 | 87 | 58.00 |
| 3 | Stocking of food materials for villagers and domestic animals | 27 | 18.00 | 30 | 20.00 | 93 | 62.00 |
| 4 | Stocking of essentials medicines for human and animals | 33 | 22.00 | 48 | 32.00 | 69 | 46.00 |
| 5 | Arranging drinking water facilities | 81 | 54.00 | 45 | 30.00 | 24 | 16.00 |

| | | | | | | | |
|----|---|----|-------|----|-------|-----|-------|
| 6 | Arrangement of physician for human and animal health care | 20 | 13.33 | 35 | 23.33 | 95 | 63.34 |
| 7 | Maximum attention to children, disabled, age old people and women | 21 | 14.00 | 57 | 38.00 | 72 | 48.00 |
| 8 | Convey meeting to make people conscious | 60 | 40.00 | 48 | 32.00 | 42 | 28.00 |
| 9 | Helping weaker section of the communities | 45 | 30.00 | 51 | 34.00 | 54 | 36.00 |
| 10 | Shifting important materials of the communities to safer places | 21 | 14.00 | 12 | 8.00 | 117 | 78.00 |
| 11 | Make contact with the govt. officials | 63 | 42.00 | 77 | 51.33 | 10 | 6.67 |
| 12 | Making communication facilities and arranging training | 42 | 28.00 | 39 | 26.00 | 69 | 46.00 |

Since people have no competency in managing the disaster at the individual level, the G.P functionaries have to extend all support to the people and community as a whole. Preparedness measures taken by the G.Ps have also been collected from the respondents and analyzed. Majority (94 %) of the respondents opined that disaster forecasting system of the G.P was not up to the mark. While the G.P has taken adequate steps to drinking water facilities for the villagers but in case of other aspects like arrangement of essential medicines, physicians and temporary shifting of people, the steps taken by the G.P was not satisfactory as expressed by the respondents. It is observed from the table that majority (62 %) of the respondents had arranged for their basic foods for themselves and domestic animals also. It is also essential to alert physicians for health care and skilled personnel for rescue operation as expressed by the respondents.

Table 4: Comparative analysis of the extent of support provided by panchayat officials

| Sl. No | Measures | ρ (rho) value |
|--------|---|---------------|
| 1. | Relief activities | 0.9642** |
| 2. | Rehabilitation support | 0.8458** |
| 3. | Restoration/ repair of damaged houses | 0.8857** |
| 4. | Management of disaster affected households | 0.1000 |
| 5. | Health and sanitation measures | 0.5476 |
| 6. | Management of crops | 0.8303** |
| 7. | Management of domestic animals | 0.9761** |
| 8. | Repair/ maintenance of infrastructure, transport and communication facilities | 0.8333** |

** indicates significant at 1% level

It is observed from the table that both people and official respondents were of similar opinion towards support on repair/maintenance of infrastructure, transport and communication facilities as well as management of disaster affected households and management of domestic animals. Significant differential opinions were observed on the relief activities, rehabilitation measures, management of crops and health and sanitation measures. Rho value showed that rank coefficient of the opinion of the both types of respondents. Management of domestic animal had positively and strongly related and significant at 1% level. The opinion regarding relief activities taken by the G.P between affected people and panchayat officials was highly correlated at 1 % level. The other opinion on restoration/ repair of damaged houses, rehabilitation support, repair/ maintenance of infrastructure, transport and communication facilities and management of crops were highly correlated at ($p < 0.001$).

4. CONCLUSION

A study was undertaken on role of local institution in disaster management in West Bengal. The findings of the study conclude that, the people of the disaster affected area should inform the details of the disaster well in advance. The people must be made conscious towards preserving safe drinking water, usable assets, materials for temporary shed and common medicines in addition to other safety measures usually done by them. The local institutions have to strengthen the precautionary measures stocking essential medicines and arrangements for health care to both people and domestic animals, stocking materials for temporary shed and adequate arrangements for rescue and shifting affected people immediately towards selecting safety place for rehabilitation. Most of the respondents reported that the local institution members' did not take preparedness measures well in advance. This constitutes all the more reason to inform local population groups about the risks they are taking, involving them as responsible actors in disaster prevention activities; a lot depends on people's perceptions and interpretations of hazard risk, which should be explored. Natural disasters rarely hit whole countries - hazard risks normally vary even from one micro-region to another, and it is therefore essential to use local knowledge for effective prevention measures and to adapt these to local hazards and vulnerabilities.

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