

Effect of Natural Disaster on Livestock Farmers: The case of Cyclone 'Phailin' in Odisha

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Abstract—India is one of the most disaster prone areas among the world. Flood and cyclones are the most occurring natural disasters in this country. Disasters affect the animals in the same way as human beings, but the welfare measures in the wake of disasters are mainly concerned for human beings rather than livestock, thus making the condition aggravated causing maximum casualty of animals and huge economic loss to the livestock farmers. Cyclonic storm 'phailin' hit the coastal belt of Orissa in the year 2013 resulting in massive devastation and heavy flood in many districts. It not only caused huge and extensive damage to human life and property but also had high impact on the livestock farmers as well. The farmers faced several problems like sheltering, feeding, treatment of animals as well as marketing of milk and other products, disposal of carcasses, restocking of animals etc. The present study revealed that the preparedness, response and recovery mechanism were not adequate resulting poor recovery of losses to the livestock farmers in the affected area.

1. INTRODUCTION

Natural disasters like earthquakes, landslides, volcanic activity, cyclones, river floods, draught etc. cause major loss of human lives and livelihoods as well as environmental damage. Natural disasters account for nearly 80% of all disasters that occur in the world. Disasters have an enormous impact on human development. In addition to the projected estimation of 100,000 lives lost each year due to natural hazards in the world, the global cost of natural disasters is anticipated to top \$300 billion annually by the year 2050 [1]. While no country in the world is entirely safe, an estimated 97% natural disaster related death each year occur in developing countries [13]. In developing countries, disasters represent a major source of risk for the poor and can potentially destroy development gains and accumulated wealth [10].

India is one of the most disaster prone areas among the world. Nearly 59 per cent of India's land area is prone to earthquakes of moderate to very high intensity, over 40 million hectares (12% of land) is prone to floods, close to 5700kms of its 7516 km coast line (about 8%) is cyclone prone and exposed to tsunamis and storm surges, 2 per cent of land is landslide prone and 68% of India's arable land is affected by droughts.

Cyclone and tornadoes together account for 40% of all disaster related deaths in India. Odisha is a poverty ridden state which is one of the four most cyclone prone state of the country. The coastal districts of Odisha have been hit by 11 severe cyclones and 55 cyclone storms in last 120 years.

Disasters affect the animals in the same way as human beings. Livestock population is the first to be affected in the precarious situation due to natural disaster like flood, drought, cyclone, volcanic eruption, earth quake, tsunami etc. The impact of disaster on animals is also more in developing countries than developed countries [6]. The main concerns for animals in disaster are zoonoses, animal bites, psychological impact on livestock owners and feeling of guilt, bereavement and anger due to loss, injury or death of the same, loss of livestock production, high mortality rates, increased predation, diseases during and after a disaster [12].

In India as high as 70% of livestock is owned by 67% of small, marginal farmers and landless people. These small holders generate milk, meat, wool etc. for the community with virtually no capital resource or training; but they contribute significantly to the GDP of the developing countries. In India these people contribute 62% of the total milk procured. 60% of livestock farming labour is provided by women and more than 90% of work related to care of animals is rendered by womenfolk of the family [11].

22 out of 32 states and Union Territories of India are vulnerable to some disaster or other. The cyclone in the state of Andhra Pradesh, of November 14 to 20, 1977, caused an estimated loss of 2,30,146 cattle and 3,44,056 other livestock, as against 8,515 human deaths. Similarly in Orissa cyclone occurred in India during the 4th of June, 1982 there had been 11,468 cattle loss against 243 human deaths. Earthquake has comparatively less impact on animals; but in Uttarkashi earthquake if India 3100 cattle heads were lost as against 770 human lives. Between 1953-1990 we lost 1,02,905 cattle against 1532 human lives because of earthquakes. According to Govt. of Odisha white paper 97 blocks of 12 districts were affected during supercyclone in 1999. 315,886 heads of cattle and 316,72 small animals died against a loss of 9,885 people.

According to Bhanja et al. 1999 there were 19.04 per cent loss of cows, 2.78 per cent of bullocks, 4.07 per cent of calves, 4.08 per cent of buffaloes, 12.70 per cent of sheep, 8.65 per cent of goats, 6.43 per cent of pigs and 24.31 per cent of poultry.

As per the report of Directorate of Animal Husbandry and Veterinary Services, Odisha 4393 animals died in 13 districts affected by cyclone "phailin" which occurred in October, 2013. It was also reported about death of 166579 poultry birds in 5 districts affected by this cyclone. The most affected districts were Ganjam, Kendrapada, Khordha, Puri, Jajpur, Gajapati, Balasore and Bhadrak. Carcasses of 1169 large animals, 2,728 small animals and 161,949 birds have been disposed of in 10 cyclone affected districts of the state.

The coastal districts of Odisha have been hit by 11 severe cyclones and 55 cyclone storms in last 120 years. Every time these natural disasters cause huge loss of human as well as animal life resulting in poor economy of the state especially the livestock farmers who solely depend on animals for their livelihood. It is apparent that even though animals are the main source of livelihood to the poorest of the poor and to the landless, concrete steps towards disaster management of livestock and other animals are yet to be taken. Govt. and other voluntary organizations remain busy for the welfare of the human beings. Thus leaving the situation aggravated for the livestock as a result there is an outbreak of epidemics particularly during the post-disaster period, causing a large number of casualties and huge economic loss to the farmers [9].

Considering the importance of livestock in our national economy and the dependence of poor livestock farmers on animals for their livelihood, immediate response should be given in respect of pre-disaster management of livestock as well as post-disaster rehabilitation programmes. It is important for all animals but is particularly important for livestock because of their size and requirements needed to transport/shelter those [7].

Government of India also gave special impetus on this issue on and from the 10th plan onwards. Recently in 2013 to highlight the importance and relevance of 'Animal Disaster Management', FICCI in association with National Disaster Management Authority (NDMA) and World Society for the Protection of Animals (WSPA) organized a two-day national conference in Delhi. The conference suggested establishing a "veterinary emergency response unit" all over the country to minimize the loss of livestock as well as reducing economic impact on the livestock farmers. There is also a need for creation of institutional memory that survives over generations and provides valuable information on past disasters and their management.

Thus, considering the importance of livestock to the local economy and livelihood of the rural poor in the cyclone affected areas of Orissa state, we conducted an ex post facto study taking the "Phailin" as a case to understand the preparedness, response and rehabilitation activities undertaken

with respect to livestock management in the cyclone affected areas.

2. MATERIALS AND METHODS

Considering the nature of the problem, an ex post facto research design was used in the present study. The study was conducted in Ganjam (between 19.4 to 20.17 degree North Latitude and 84.7 to 85.12 degree East Longitude) district of Odisha, because it was the most affected district regarding livestock casualties in cyclone "phailin" of October, 2013. Ganjam district was comprised of 22 blocks. Considering the severity of livestock casualty, Khalikote block (19.62°N 85.08°E) was selected for the study. 5 villages namely Bharasa, Tulasipur, Gola-mathura, Haridamal and Fasula were selected randomly from this block. 20 respondents (who were having livestock at the time of Phailin) were selected randomly from each of the 5 villages by using lottery method so as to make a sample size of 100. The report of ARD department was considered to identify the farmers who were keeping livestock at the time of Phailin. Data were collected from the selected respondents through personal interview with the help of semi-structured interview schedule developed for the study. Besides primary data, some relevant secondary data were also collected from secondary sources.

3. RESULTS AND DISCUSSION

3.1. Evacuation

Farmers in the study area received the warning message from different sources 24 hours before the onset of phailin. Majority of them informed that they were advised to move to nearby safe shelters and to untether their animals. The livestock farmers of the study area considered the warning message as highly valuable and authentic. Therefore, majority of the farmers (83%) moved to nearby safe shelters viz. School, neighbour's house, 'Rajiv Gandhi Bharat Nirman Seva Kendra' etc. This is in contrary to the findings of a previous study stating that the majority of the livestock farmers did not consider the warning of 1999 super cyclone as highly valuable [4] and as such the number of human deaths as well as livestock casualties were much more in Odisha supercyclone 1999 than phailin, 2013.

Majority of the respondents (48.00 per cent) reported that they could only untether their animals, followed by shifted their animals along with them (30.00 per cent) and left their animals (22.00 per cent). Regarding problems of shifting animals, majority of the respondents (71.00 per cent) perceived that non-availability of proper arrangement to shift the animal was the major problem followed by no safe place to move (29.00 per cent). Non-availability of sufficient safe shelters, delay in decision making, ambiguity of warning message were among the major problems regarding evacuation of animals during supercyclone of 1999 [4,2]. Helpless livestock owners

were only able to free their livestock before they themselves left the house to reach a safe shelter nearby [8].

3.2. Disposal of animal carcasses

Proper disposal of animal carcasses is necessary to stop the outbreak of disease surrounding the affected area. But it was observed that no such effort was taken by the Govt. or any NGO in the study area. Majority of farmers (59.00 per cent) reported that they themselves had to carry the carcass over the ground away from their home. All of them reported that none of the carcasses were either buried under or burnt down but those were left open. During supercyclone of 1999 though the carcasses were displaced primarily by the livestock farmers to a distant place, after 10-15 days those carcasses were disposed off either by burning or buried under ground by NGO persons and army personnel [4].

3.3. Sufferings of the survived livestock

Majority of the respondents (45.00 per cent) said that they kept their animals in government schools, while 40.00 per cent of them left their animals in the field, 8.00 per cent of the respondents kept their animals at home itself and rest 7.00 per cent housed their animals in Rajiv Gandhi Bharat Nirman Seva Kendra. Most of the livestock owners (90.00 per cent) informed that their animal houses were collapsed. It was observed that most of the animal houses of the livestock farmers were of kutch type, made of mud and having thatched roof. This might be one reason due to which majority of the animal houses was completely collapsed due to phailin accompanied with heavy rainfall.

Regarding feeding to their livestock during phailin, majority of the livestock owners (85.00 per cent) reported that they could provide feed to their livestock during the first 24 hrs of the cyclone, whereas 15.00 per cent of the respondents asserted that they could not provide feed to their livestock due to non availability of feed at home and difficulty to arrange feed in heavy rain accompanied by winds. The farmers provided tree leaves, decomposed straw, rice gruel and some amount of concentrates which was supplied by the Govt. It was also seen that all the livestock owners could not provide sufficient straw and cattle feed mixture to their animals. Farmers expressed that the distribution of cattle feeds was not even as it was distributed only once during the phailin at rate of 3 kg per respondent which was not sufficient as per their requirements. After the super cyclone of 1999 the survived livestock had to depend only on decomposed paddy straw and tree leaves for about a period of 15 days [5]. Salination of crops submerged grazing land and continual rain forced the animals to starve after the super cyclone [2].

Diarrhea, coughing and poor feed intake were observed as the main health problems during phailin in the study area. Regarding health problems after phailin majority of the respondent (55.00 per cent) reported that their survived livestock suffered from fever. 40.00 per cent respondents

reported that their animals suffered from FMD while 35.00 per cent informed that their animals suffered from poor feed intake. Majority of the respondents (53.00 per cent) reported that they could arrange treatment to the diseased animal during phailin and 47.00 per cent respondents reported that they could not provide treatment to the affected animals due to unavailability of medicines from the Govt. It was also reported by the respondents that Govt. Veterinary doctor had visited for treating their animals during phailin. During supercyclone 1999, 76.00 per cent of the respondents could not provide treatment to the diseased livestock for 15 days following cyclone and only 24.00 per cent respondents could provide treatment after cyclone [4]. Majority of the respondents (73.00 per cent) reported that there were no sufficient medicines in the veterinary dispensaries to treat the affected animals during phailin. Many of them had to purchase medicines from outside. This indicates that Govt. did not supply sufficient medicines and other required materials needed for an immediate action in such situations. As a result poor livestock farmers had to suffer and remain incapable to treat their affected animals resulting mortality and production loss. Mass vaccination is a must after such disaster to check spreading of infectious diseases. Majority of the respondents (81.00 per cent) reported that their animals were vaccinated. Species wise vaccination schedule indicates that major vaccination was done in goat against FMD, followed by against B.Q in cattle. It was also reported that most of the animals were vaccinated by the Govt. at free of cost. However, 6 percent respondents informed that they had to purchase the vaccines from market.

The production of cow milk reduced drastically after phailin. Majority of the farmers could produce less than 1kg cow milk per day from their animals. Almost same thing happened in case of goat milk production. Farmers could get maximum up to 1.5 kg milk from their herd. Production of milk decreased by 50 per cent or more after the super cyclone of 1999 [4]. Serious crisis in supply of milk and milk products in coastal districts of odisha was observed after the super cyclone [3].

It was observed that the survived livestock had to face problems of low quality feed, scarcity of feed, lack of proper treatment, lack of proper housing and treatment due to which the production level might have been reduced.

3.4. Rehabilitation

Restocking is considered as a proven method after disaster situation. The word restocking can be defined as an approach which aims at helping individual households or communities to build up or make up lost herds and flocks in a sustainable manner. It was found that only 4.00 per cent of respondents restocked by purchasing animals. 40.00 per cent of the respondents restocked after the super cyclone of 1999 and a significant percentage (20.00 per cent) did not restock any form of livestock after cyclone period. Poor economic condition, non-availability of financial assistance and lack of safety measures for animals from disaster were found to be the main reasons of not restocking [5].

Most of the livestock owners (52.00 per cent) have rebuilt their animal houses only after one month. 13.00 per cent of them reconstructed within one month and 35.00 per cent livestock owners could not make their animal houses till the time of data collection. It was found that Odisha Govt. provided financial assistance ranging from Rs/- 1900 to Rs/- 4,000 as compensation for each fully damaged and partially damaged human dwelling, respectively. No such assistance was rendered for damaged animal houses by the Govt. or any other organization. It was observed that some farmers had to take loan from the private company (pedita loan) by paying interest of Rs. 2/- per day for rebuilding the animal house. It was found that majority of the livestock owners had to maintain their livestock without an animal house for about one month or more. Most of the houses which were collapsed in super cyclone 1999 were rebuilt after more than one year [4].

The result of the study revealed that the preparedness, response and recovery mechanism were not adequate resulting poor recovery of losses to the livestock farmers in the study area. It was again observed that the animal health care measures provided by the Department of ARD, Govt. of Odisha was perceived by the respondents as inadequate. No other organizations came forward in management of livestock before, during and after the phailin. It is concluded based on the findings of the study that considering the contribution of livestock to local and national economy and the dependence of poor farmers on livestock for their livelihood the preparedness, response and recovery mechanism should be given better attention both by the Government as well as NGOs to minimize the economic, social and psychological loss to the livestock farmers due to natural disasters.

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