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A GEOGRAPHICAL PERSPECTIVE OF FLOOD AFFECTED VILLAGES: A CASE STUDY OF HARIPUR (SANGLI DISTRICT) MAHARASHTRA

Sardar Patil & D.G. Gatade

Abstract

Maharashtra in general and the Upper Krishna Basin in particular were affected by the floods in the recent years. The Sangli district, especially Miraj Taluka, is one of the flood prone areas of Maharashtra. The present research paper is an attempt to study 'Haripur' as most severely flood affected village for the year 2005 and 2006.

Introduction

In recent years there have been a number of significant riverine floods all around the world which caused enormous damage both in terms of loss of life and economics. In fact, of all natural risks, flood poses the widely distributed risk to life today (Dinand Alkema, 2004). It is also important to note that floods are also aggravated by human activity and thus flood hazard is both natural as well as man-induced rather than man accentuated phenomenon (Savindra Singh, 2001).

India faces flood problems every year in one or other parts, and about 12.5 per cent of its geographical area comes under flood water (Tiwari, 2005). Like India, Maharashtra in general and the upper Krishna basin in particular are affected by the floods in the recent years. In Sangli district, especially in Miraj tehsil, the low lying villages on the banks of the river Krishna and Warna get inundated at the times of floods. The present research paper is an attempt to study the impacts of flood disaster in 'Haripur' and suggest remedial measures to the problem.

Study Region

Haripur is situated on the meander of river Krishna and on its left bank. It is located on 16° 50' 54" N latitude and 74° 32' 14" E longitude. The altitude of Haripur above MSL is be

tween 531 to 535 metres. It is 3 km. from Sangli. According to 2001 Census the population of Haripur is 7695 persons.

Objectives

The major objectives are:

- 1) To find out the causes of floods that occurred in the year 2005 and 2006.
- 2) To assess the impacts of flood.
- 3) To demarcate the flood affected area in Haripur.
- 4) To suggest the remedial measures to minimize the flood disaster in the study region.

Data Source and Methodology

The present paper is based on the both the primary and secondary data. Primary data regarding the flood occurred during 2005 and 2006 and its consequences in the study region has been collected through interview, the post flood field work and observation. The secondary data and information has been taken from the various known sources. Village as a whole is used as a basic unit of investigation. NASA's satellite image, maps, diagrams and tables are supplemented for strengthening the analysis of the flood as a disaster.

Causes of the Flood

"The causes of floods of the alluvial rivers be

merged in the flood water due to unexpectedly occurrence of flood while in 2006, the come highly complex and their relative importance varies from place to place "(Gatade, 2006, P.3). After 1965, the years 2005 and 2006 are the two most flood disastrous years in the history of the Miraj in general and the Haripur in particular. The major causes of the flood disaster at Haripur are as discussed below.

1. Meandering course of River Krishna

The first and the most important cause of the flood as a disaster during 2005 and 2006, is meandering course of River Krishna. Haripur is situated on the meander of river Krishna. The three sides of Haripur are surrounded by Krishna. The fourth side, which is surrounded by Sangli, is at low-lying area than the residential area of Haripur.

2. Confluence of Krishna and Warna

River Warna merges with River Krishna near Haripur. Thus the water of the river Warna creates an obstruction and back pushes water of River Krishna. Hence, the water of river Krishna flows by the shortest path. Thus, Haripur becomes like an Island

3. Siltation in the river channel

"All the tributaries of River Krishna joining from the Western Ghats bring large quantities of very fine sediments and dumps them in the bed of main river as well as on the banks and flood plains of river (Patil, 2002). Thus the deposition of sand and silt in the river channel near Haripur is with an alarming rate, before the confluence of River Warna. In some places, near Haripur, there is very little difference in the river bed and river bed and bank.

4. High intensity of the rainfall in the upper stream region

In the year 2005 and 2006, in the months of July and August highest rainfall was recorded in the upstream region. It was more than the average annual rainfall of those places. In the year 2005, between 22nd July and 13th August it was recorded more than 70 cm. in the

catchments areas of the dams such as Chandoli, Koyana, Tulsi Dhom, Kanher, Kalamvadi, Radhanagari etc. The catchments areas of the upper Krishna basin have been deforested. This situation with highest rainfall helps in the erosion in the catchment areas of the upper Krishna Basin and its tributaries.

5. Release of water from upstream dams and backwater of Almatti dam

Because of the prolonged heavy rainfall during 22nd July and 13th August 2005 in the upstream region of River Krishna, Warna, Panchanga and Dudhganga, the water levels at Dhom Chandoli, Koyana, Kanher, Kalamvadi, Tulsi and Radhanagari dams crossed the danger mark in the first week of August 2005. Therefore, the gates of above noted dams were opened to allow the excess of water out. Apart from these, water level in Almatti dam on Krishna was increased to 527 meters above M.S.L., which caused rise in backwater up to the low lying areas of the Krishna basin (Gatade, 2006, P.6). Due to this the water level at Haripur was recorded 532 metres from MSL and 51 feet measured at "Ankali Bridge", as a base level. The same was experienced during 2006 flood. But, the water level was less as compared to 2005 flood, because of the controlled discharge from the upstream dams and Almatti also.

Impacts of the floods in the study region

Floods results when natural drainage channels, or human made facsimiles, cannot convey all the water supplied to them; excess water spills over the banks and inundates the surroundings areas (Kewalramani, 2006). Recurrence of flood hazards cause damage to crops, agricultural productivity, properties and human and animal lives (Basu and Santra, 1988). Impacts of the floods are negative as well as positive. The flood in the year 2005 and 2006 were disastrous only due to their periodicity.

Flood Affected Cropland in the Haripur. (2005 and 2006)

Sr.No.	Crops	2005			2006		
		Flood Affected crops			Flood Affected crops		
		Below 50%	Above 50%	Total	Below 50%	Above 50%	Total
1	Sugarcane	90.67	73.62	164.29	61.58	22.25	83.83
2	Soyabean	1.74	76.54	78.28	3.24	5.25	8.49
3	Groundnut	1.2	15.09	16.29	1.55	0.85	2.4
4	Vegetables	0.1	5.19	5.29	0.8	2.07	2.87
5	Fruits	1.34	13.69	15.03	2.72	5.05	7.77
6	Other crops	0.1	1.38	1.48	4.26	4.08	8.34
7	Fodder Crops	7.15	40.71	47.86	17.58	2.16	19.74
	Total	102.3	226.22	328.52	91.73	41.71	133.44

SOURCE: Talathi office (2005-2006) Final Flood Report, Haripur. (area in hectares)

1. Economic impact of the flood

a) Loss of Crops:

Floods are most disastrous to the agricultural land than any other because most of the agricultural lands are low lying area. The inundation of agricultural land, for more than 12 days during 2005 flood and for 7 days during 2006 flood, was responsible for the loss of crops in the study region. In 2005 flood, 574 farmers reported submergence of 338.52 hectares of cropped area. Out of total damaged cropped area (i.e. 328.52 hectares) 226.22 hectares of cropped area suffered a loss of more than 50% (Table I). Among the damaged crops, sugarcane was largely affected one. Area under sugarcane was the largest i.e. 164.29 hectares) followed by Soyabean (78.28 hect) Groundnut (16.29 hect.), vegetables (5.29 hect) and various fruits (13.69 hect). Maize and Rice were the Minor crops damaged by the flood. 47.86 hectares of fodder crops was also damaged by the 2005 flood.

During 2006 flood, loss of crops was comparatively less than 2005 flood. Totally, 133.44 hectares of cropped area of 304 farmers was damaged. Out of this damaged area, 41.71 hectares of cropped area suffered loss more than 50%. The break up is as follows: Sugarcane (83.83) Soyabean (8.49) groundnut (2.4) fruits (7.77), vegetables (2.87) and fodder (19.74) were the major crops damaged by the flood 2006. Maize, Jowar, Flower, Udid, Moog, were the other minor damaged crops

during the flood 2006

b) Loss of live stock

Loss of Livestock was negligible as compared to the loss of crops. In the year 2005, six cattle lost their lives in floods while there was no loss of cattle in the years 2006. Non availability of fodder after the floods was also critical during the both years.

c) Damage to Settlement

The old settlement area of the Haripur was not affected by the flood, due to high elevation of residential area than the surrounding agricultural area. But the newly formed "Beghar Vasahat" and "Gunthewari Vasahat" were worst affected by the flood due to its location in the low lying area. Though, the water level was more than six feet in the "Gunthewari Vasahat", Whereas, the "Beghar Vasahat" was damaged as an worth of Rs. 1, 45,000/-. The school and a martyr monument were also damaged. No such damage occurred during 2006 flood.

d) Other economic loss

The village Haripur is famous for the "Pevas" ("Peva" is an underground store house/Warehouse/ Godown of the turmeric). Out of 2500 Pevas in the Haripur, 1000 Pevas were damaged during 2005 floods. The storage capacity of each Peva is 20 tonnes of food grains. Out of total damaged Pevas, 200 "Pevas" were filled with turmeric. No damage of the "Pevas"

occurred during 2006 flood due to the awareness of the people.

During 2005 flood, five agricultural tools and eighty one electric water pumps were submerged while next year it was one agricultural tool and ten electric water pumps.

During 2005 and 2006 floods, the village became like an Island. The transportation and communication system was stopped for more than 10 days in the year 2005 and six to seven days in the year 2006. It affected on the income of people from milk production. 1500 liters of milk production per day in the study region were severely affected by the floods of 2005 and 2006.

2. Social Impacts

Flood is a social disaster which affects the poor than rich (Thakur, 2003, P.2). During the flood for 2005 and 2006 more than 70% and 40 % population of the study region was affected by the floods directly or indirectly respectively. There was loss of one human life due to the flood.

Various diseases occurred as a result of floods in both the years (Table II). Various cases were reported of fever, Diarrhea and other diseases in 2006. Not a single patient of dysentery was observed and it was because of that more attention was given on the preventive measures. Another social consequence was that the agricultural workers faced acute problem of employment after receding the floods for a month.

3 Flood Related Erosion

Geographic consequences of the flood are also more acute. Flood is occurred due to the fluvial processes of the river Krishna. Nearly 2.5 hectares of land was eroded on the left bank of meander of river Krishna. At few places upper layer of the land is eroded by the flood. The survey numbers 13, 15, 16, 17, 18 and 19 were worst affected in both the years. While the survey numbers 134, 5, 6 and 10 were slightly affected. Along with the survey numbers 15, 16, 17 and 18 near about 15 feet of land was eroded in the river channel in the year 2005 and 2006.

Delimitation of Flood Affected Area

Floods are the natural phenomenon. We can not control the floods completely, but minimize the disastrous effects of the flood by proper strategic planning.

For such purpose delimitation of the floods affected area is most useful. The delimitation of the flood affected area of the Haripur is as shown in the figure 3. Water level is noticed between 2 feet and 16 feet in the study region.

Relief and Rescue Works

The flood victims were provided relief and rescue on war footing. The fund of Rs. 4, 37, 574 to 765 families and Rs. 1, 91, 779 to 391 families were granted in the year 2005 and 2006 respectively. NGOs like "Sangli; Mishan Society and 'Phadke Classes" with the International Organizations i.e. C.R.S. and CARITAS distributed the utensils, cloths, notebooks, soap and other essentials. "Shri. Sangli Jain Shwetamber Murtipujak Samaj" provided fodder for cattle. As many as 133 sacks in the year 2005 were distributed.

The team of medical officers was provided by the government to reduce the impact of flood on the health. More stress was given on the preventive measures to check the spread of diseases. After the receding of flood, Melithan powder was sprayed in the drainage. Kingflock liquid mixed with Diesel and Abate was also spread specially in the accumulated puddle. The Ortho Tolodine Tests of water were taken regularly and emphasis was given on health education.

Rehabitation measures

During the flood, about 50% population was rehabilitated in the year 2005. While in the next flood year, 30% of the population was rehabilitated. Boats were used for rescue operation as many of the areas were flooded.

Conclusion and Remedial Measures

After 1965, the floods that occurred in 2005 and 2006 were disastrous in terms of crop destruction, loss of life stock and normal

lifestyles. This was due to copious rainfall, meandering course of the river Krishna near Haripur, siltation in the river channel and release of water from upstream dams and back water of the Almati dam.

By knowing all the disastrous effects of the floods in the study region and causes of the sever floods of the year 2005 and 2006, the following remedial measures have been suggested.

1. There is need for proper planning of discharge from the upstream dams and from the Almati dam also. The irrigation department should obtain rainfall data from meteorological department and then release the water from upstream accordingly.
2. Afforestation should be undertaken in the catchment area of Krishna and its tributaries to increase percolation and reduce the surface flow and erosion also.
3. To construct the protective railing along the survey numbers 5, 6, 1, 10, 13, 15, 16, 17, 18, and 19, which will protect the slumping of river banks due to attack of water.
4. To avoid the construction of houses in the low lying area i.e. in the "Gunthewari Vasahat."
5. To select the proper crops according to the elevation of the field.
6. To create flood literacy among the people living along the bank of river on top priority.
7. To construct new and safety routes to Miraj via Sangli radio centre, thereby transportation can be continued during flood period also.

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Address of the authors

Mr. Sardar Patil

Lecturer
Mahavir Mahavidyalaya, Kolhapur.
e-mail: sa19091@yahoo.co.in
sardarpatilmmk@yahoo.co.in

Dr. D.G. Gatade

Reader and Head
A.S.C. College, Ramanandnagar (Burlli)
Tal- Palus, Dist- Sangli.
e-Mail: dggatade@gmail.com
dggatade@sancharnet.in