



## Concept of Social Vulnerability to Climatic Events in the Context Of West Bengal Sundarban

**Dr. Khade Sominath Sarangdhar**

Dept of Geography

Rastramata Indira Gandhi Arts, Science & Commerce

College, Jalna (MS)

sominath.khade@gmail.com

### Abstract:

The concept of Social Vulnerability is very complex. It can be perceived from different perspectives as it has been emerged through different overlapping dimensions like, physical, ecological, social, demographic, economic, emotional etc. It covers a broad spectrum rather than just concentrating on social issues like gender, age, education and income etc. It must include the factors that create weakness in responding to and recovering from the effects of extreme climatic events. The frequent attack of multiple hazard arising out of extreme climatic events and associated phenomena generates risk as well as vulnerability worldwide. In case of Sundarban of West Bengal, climatic events like cyclone, storm, flood, associated with tidal surge, periodic waterlogging, severe bank erosion, embankment failure, soil salinity pose serious threat to livelihood dimensions of the people living there. Thus, the concept of Social Vulnerability becomes very relevant in a fragile area like West Bengal Sundarban. Holistic approach should be adopted to develop Social Vulnerability Assessment not only to reduce risk but to increase adaptive capacity as well as resilience. Part of three blocks (Namkhana, Sagar, Pathar Pratima) of West Bengal Sundarban have been taken as the study area to identify the development of social vulnerabilities at household level.

**Keywords:** *Social Vulnerability, Climatic Events, Livelihood.*

### Introduction:

The concept of Social Vulnerability is very complex. It can be viewed from different perspectives as it has been emerged through different overlapping dimensions like, physical, ecological, social, demographic, economic, emotional etc. Consensus on this aspect is not being achieved and research is still going on. But the accepted fact is that it is a multi-dimensional issue. It covers a broad spectrum rather than just concentrating on social issues like gender, age, education and income etc. It must include the factors that create weakness in responding to and recovering from the effects of extreme climatic events. Therefore, it can encompass various aspects and attributes, which are linked to socially created vulnerabilities. The interplay of social, economic, demographic and other attributes determines the vulnerability as well as the resilience of individuals and communities to climatic accidents. In case of Sundarban of West Bengal, climatic events like cyclone, storm, flood, associated with tidal surge, periodic waterlogging, severe bank erosion, embankment failure, soil salinity pose serious threat to livelihood dimensions of



the people living there. Thus, the concept of Social Vulnerability becomes very relevant in a fragile area like West Bengal Sundarban.

**Study Area:**

Part of three blocks (Namkhana, Sagar, Pathar Pratima) of West Bengal Sundarban have been taken as the study area, like Mousuni village of Namkhana Block; Ghoramara Village of Sagar Block; Gobardhanpur village of Patharpratima Block.

**Objective:**

1. To identify the development of social vulnerabilities at household level through different dimensions of resilience like human, financial, social, physical, natural, etc.
2. To suggest some coping strategy.

**Data Base & Methodology:**

Household survey, field observation and interviewing of people are key sources of information for this study to understand the ground level reality. The primary data has been collected from intensive field study of 210 sample households across three villages on the basis of purposive sampling. The secondary data has been collected from different articles, hand books and reports. After analyzing the collected data and information inferences have been drawn.

**Result and Discussion:**

Climate change has already been diagnosed as a threat multiplier by its direct or indirect role in affecting the living condition of people through recurring occurrence of different extreme climatic events. This area is situated in a high- risk region towards climatic accidents and experiences the fury of these events repeatedly which causes disruption in the livelihood of the local people Through crisis of safe drinking water, loss of farmland, dwelling etc.. Some parts of this study area are extremely vulnerable as parts of Ghoramara Island have already been vanished resulting into a large number of environmental refugees. People have to migrate to high building, schools or in any relief camp. Cultivation become almost impossible though the saline water was removed but the top soil becomes very much saline which compels the inhabitants to search an alternative pattern of livelihood. The ultimate impact is insecurity, vulnerability and marginalization. Thus, the concept of Social Vulnerability can be expressed through human, financial, physical, social, natural capital.

**A. Human Capital:** After analyzing the collected data, it has been found that females are found to be more vulnerable due to their physical condition, social customs, mental set-up and tradition. Dependent population falling within the age group below 15 years and above 60 years are vulnerable specially who are completely unable to move one place to another and arrange food for themselves. In case of education it has been found that with the increase in educational level the percentage of population is decreasing. Families with low level of education, illiterate people, first learners, are found to be vulnerable due to the unawareness, biasness and low level of knowledge.

**B. Financial Capital:** Household living below poverty line and with seasonal occupation, families with no surplus production, families without cash crop farming, and any kind of savings or insurance have been found as vulnerable. Mono crop farming, lack



of irrigation facility throughout the year, saline soil, absence of know how regarding dry farming, lack of alternative livelihood, lack of capital are the reasons behind their weakness in financial capital. Leaving ancestral home and belongings along with all assetlike agricultural land, pond, betel garden etc. in search of an alternative living is not at alleasy for the poor. After a hazard the people who losses all assets suffer the most.

**C. Physical Capital:** Living condition along with infrastructural condition determines social vulnerability. Housing profile of this area depicts that there are still houses that can be categorized as kuccha and semi pucca. Some of these houses have kuccha floor, mud wall, bamboo wall. The roofs are made up of either straw, tile, or tin. These houses are vulnerable as they are easily damaged and washed away by strong wind as well as water. In case of drinking water facility, the area needs much attention. Tap water is not available all over the study area and thus the residents are forced to depend on deep tube well. But during the cyclone the a few meters rise in sea level water causes salt water invasion and water logging and they suffer from lack of safe drinking water as the sources of drinking water supply become submerged under the water. The infrastructural condition of the toilets is not satisfactory. Every household do not have proper outlet of toilet. Some semi-permanent structure like hole, pit, ring pit have been found. there are houses with semi pucca structure of toilets and some people Still prefer open defecation. All these further pollute water during calamity and bring in health hazard. Health and transport condition of the study area is not up to the mark. The studied villages are located in isolated islands and to avail the hospital one has to depend on the ferry services which takes three or four hours. Otherwise they have to rely the local practitioners. During storm ferry services stop and health services during emergency becomes completely unavailable.

**D. Natural capital:** Dependency on natural resources makes the people more vulnerable. During natural calamity they cannot go to the forest for collecting honey, wax, wood, fuelwood etc. and to the sea for fishing. Even after cyclone due to salt water invasion soil becomes saline and cultivation becomes impossible for long period. These people who have no other alternatives for income generation have been identified as vulnerable. Studied villages face acute problem of bank erosion throughout the year and creates tension, fear and insecurity of the residents of becoming homeless and environmental refugee as part of the villages have been swallowed by the rivers. Dwindling of mangrove vegetation along embankment due to rampant cutting of Mangroves widens the scope of bank erosion and openness of embankment to waves. Thus, embankment becomes more exposed to erosion and earthen embankment easily being collapsed.

#### **Social Capital:**

Warning system is totally dependent on the social networking condition. In the study area it has been seen that most of the families have mobile phone but they do not get the warning at proper time and get less time to protect their home, cattle, crops and reach to the shelter with their belongings. Most of the people of the study area do not have so much savings in bank or any kind of insurance which can work as buffer elements during need.



They only have land to cultivate, food stock, house, cattle and shifting to the rescue center with these assets seems to be impossible. These absence of buffering elements expose them to be most vulnerable.

### **Conclusions:**

Whenever to suggest anything for Sundarban area we should always prioritize the conservation of this fragile ecosystem firstly and then plan for the rest. Mitigation must include area specific Disaster Management Plan and planning for proper infrastructural development should be adopted to deal with the situation. Alternative income generating activities should come up to reduce the risk as well as the dependency on natural resources like ecotourism, construction work, handicraft item making etc., Unsustainable anthropogenic activities should be prohibited to protect the nature and prevent physical vulnerability which will in turn reduce social vulnerability. Top most priority should be given to raising the level of consciousness of people through provision of effective information and ideas about extreme climatic events, consequences, risks, coping strategies etc. Preparedness must include Construction of houses away from embankment, raising the height of basement of houses, latrines, tube wells, schools or any building along with provision of early warning system. Response phase should incorporate quick evacuation, rescue operation, adequate supply of all relief materials, proper training for adaptive mechanism. Last but not the least is the Recovery in which restoration, replacement, repairing and maintenance should be done to provide basic services and restoring the previous livelihood pattern through the best possible way.

### **References:**

1. Adger, W. N. and Kelly, P. M. (1999), Social vulnerability and the architecture of entitlements. *Mitigation and Adaptation Strategies for Global Change*, 4, pp.253- 266.
2. Cutter, S. L., B. J. Boruff and W. L. Shirley (2003). "Social vulnerability to environmental hazards." *Social Science Quarterly* 84(1): 242-261.
3. Cutter et al (2009), *Social Vulnerability to Climate Variability Hazards: A Review of the Literature*, Final Report to Oxfam America Hazards and Vulnerability Research Institute, Department of Geography, University of South Carolina Columbia, pp.1-44.
4. Dwyer A. et al (2004), *Quantifying Social Vulnerability: A Methodology for Identifying Those at Risk to Natural Hazards*, Geoscience Australia, pp. 8-31.
5. Mukherjee, K. N. (1976), *Harmonious Solution of the Basic problem of Sundarban Reclamation*, *Geographical Review of India*, Geographical Society of India, Vol.38, No.3, pp. 311