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Socio Economic Assessment and the Impact of Disaster in Cuddalore District

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Abstract

The Cuddalore district being a coastal zone is mostly covered by plain terrain without any high relief zone except some sedimentary high grounds. The Gadilam and Pennaiyar rivers flow in the northern side of the Cuddalore District and Vellar and Kollidam River (Coleroon) flows in south. Cuddalore is high Cyclone prone zone of the Eastcoast and its neighbourhood falls under rainfall surplus category and the temperatures vary between 19.9 C to 26 C in the winter season and 31 C to 42 C in the summer season. The district gets rainfall mostly in the months of October to December from the Northeast monsoon which accounts for 72 percentage of the total amount of rainfall. Researcher is interested to analyse the socio economic assessment of the district after disaster as well as the impact of disaster in Cuddalore district. By conducting a Focused Group Discussion researcher tries to find out the social vulnerabilities.

Key words: disaster, vulnerability, flood, drought

Introduction

Cuddalore have witnessed catastrophic events from 2000 onwards and these were stark reminders of the need of bringing hazards, risks and vulnerabilities at the core of development agenda. Based on the destructions there should be a suitable approach to hazards and risk mitigation essentially requires in- depth understanding of vulnerabilities and social significance attached to human losses and socioeconomic disruption during and after such extreme events. Recently, disaster research is flourished with n multidisciplinary exercise as the physical part of the picture is inevitably reconstructed at community level and expressed through their experiences. Again, from a systemic point of view, it becomes important to understand the various elements and factors which construct the disaster as an event and contribute in characterization of individual incident or situation. Present paper tries to holistically characterize individual events, took place before, during and after disasters in different villages, covered under this research, in their immediate settings, including the hazards, vulnerabilities and nature of their impact on local communities. These were few of the statistics showing the overall impact of the disaster in the state. However, beneath the load of these statistical figures, the fishermen communities of Cuddalore district suffered at various levels. Social, economic, mental and physical sphere of their lives suffered immediate and sustained impacts of these events. This research tries to explore the nature and foot prints of these impacts.
Five Major rivers runs through the plains of the Cuddalore District and drains into the Bay of Bengal. Due to the flooding of rain water from the river mentioned below and their source points which are in the upstream of the Cuddalore district, vulnerable areas in Cuddalore District is classified into 12 flood prone basins. Coleroon originating from Cauvery River is the longest among the 5 rivers flowing through Cuddalore. Vellar is originating from Kalrayan hills of Selam district, Paravanar originating from Neyveli Mines, Gadilam river originating from Sankarapuram Taluk Villupuram district, Penniyar originating from Chennakesava hills of Karnataka. All these rivers are confluence in Bay of Bengal and the flood prone Basins in Cuddalore are Coleroon Delta area, Veeranam Tank Drainages, Chidambaram Town, Vellar river meandering, Paravanar, Perumal Tank, Sengal odai, Jungle streams in Visoor, Meliruppu & Kiliruppu areas, Cuddalore and Nellikuppam Towns, Pennaiyar & Malattar Rivers, Gadilam River.

Statement of the problem

Present study is primarily focused on mapping the extent, scope and intensity of the impacts of unusual physical events triggered by extreme rainfall experienced over a major portion of Cuddalore district, and consequent creation of emergency situations which disrupted social and economic life of the villagers in selected areas in the districts. Multi-disciplinary and collaborative nature of disaster research cannot ignore the physical side of the events; "a more comprehensive perspective are needed that consider both disaster events and broader structural and contextual factors that contribute to disaster victimization and loss." this paper is an effort to briefly characterize the events in their holistic settings to understand their comprehensive nature and forms.

Review of literature

Socio Economic Assessment of Nature and Impact of Disaster of 2013 on Communities in Pithoragarh, Bageshwar and Uttarkashi districts of Uttarakhand: Again, from a systemic point of view, it becomes important to understand the various elements and factors which construct the disaster as an event and contribute in characterization of individual incident or situation. This report tries to holistically characterize individual events, took place before, during and after June 2013, in different villages, covered under this research, in their immediate settings, including the hazards, vulnerabilities and nature of their impact on local communities.Extensive media coverage of human loss and sufferings, pictures of the unprecedented damages to buildings and structures under the torrents of rivers, especially in Mandakini valley, generated an enormous 'information impact' on affected people, concerned agencies and people across country. News of Kedarnath tragedy reached instantly to pilgrims stranded between Bhatwari and Gangotri and generated tremendous fear and mental shock among them.

Women: Their Needs and Adaptation Strategies after Disaster: Generally, women are responsible for household tasks such as food collection, water collection for the household as well as many care-giving tasks, such as caring for the children, sick, elderly, home and assets. Waterborne diseases, snake bites, drowning and collapse of physical structure are the causes of deaths, disease and injuries for women. Besides, lack of medical facilities, malnutrition, disrupted supply of pure drinking water and lack of proper sanitation facilities make women's life increasingly vulnerable. During cyclones and floods, women and adolescent girls suffer as sanitation systems are destroyed. Pregnant women, lactating mothers and differently-abled (disabled) women suffer the most -- as they find it difficult to quickly move to safer place before and after any natural calamity. Whoever and whenever any accident occur women are particularly susceptible. Therefore adaptation strategies of women are different. There adaptation strategies vary because of geographical location, economic status and social status. Sometimes good relation with dominating people forces them to adapt differently. Moreover, an increase in the number of female-headed households (because of male migration to cities or overseas destinations) also amplifies women's responsibilities and vulnerabilities during natural disasters.

Objectives of the Study

* Understanding the nature and forms of disastrous events took place in Cuddalore
* Exploring long term impacts disasters events on community

Method of Data collection

Focus Group Discussion has been selected for the method of data collection

Result and Discussion

Causes for Flooding in Cuddalore district: The Cuddalore district is categorically classified as Disaster Prone Area because of its geological position and Low Lying Areas. The Cuddalore district is frequently subjected to natural disasters such as Flood, Tsunami, Drought, Cyclone (ex: Thane, Nisha) etc., and the major reasons for flooding in Cuddalore district are prescribed as below: As the terrain is flat and just 1.50m above M.S.L, all the flood water got accumulated in this area could not be easily drained in to the Sea. The bed levels of rivers are also lower than the sea and due to this, the back water in the rivers cause all the flood damages.

Vulnerabilities and Disasters in Cuddalore district

Tsunami - 2004 The Tsunami that smashed into the coasts of Tamil Nadu on the 26th of December 2004 and left behind an unprecedented trail of devastation & despair. 31 fishing hamlets in Coastal areas of Cuddalore District were affected badly due to this Disaster. 31 coastal villages have been affected directly. 610 people were died and 38 people are missing. 262 cattle death was reported during the incident. Major part of the vulnerability is associated with economic loss. Damage of Mechanized boats (350), FRP boats (503) and Catamarans (4253)

Human side of the vulnerability is equally important to understand the holistic nature and dynamics of disasters. Impact of modernity and effort to extend the development models of coastal area Houses, public buildings and roads were along the sea coast and rescue of people and immediate rehabilitation measures were taken by the authorities were to bring the normalcy of life and afforded required amenities to the people to subdue the effects of havoc wrecked by natural disaster Tsunami.

Restoration of Electricity & Communications, Public Health Care and Sanitation, Water Supply, Relief Disbursal, Taking care of Animals, Community Kitchens, Temporary Accommodation, Crops Damage Assessment, Counseling Helping the Destitute, Caring for the Orphans / Students, Repair of Boats, Relief to the Non Fishermen, Temporary

Huts Construction, IT- Enabled Management, Psychosocial Support, Arresting Sea Erosion, Assisting Women, Inventory Management were the Rehabilitation and resettlement Measures have taken by the district authorities.

Cyclone NISHA - On November 24, 2008, a low pressure formed near Srilanka and started moving into the Bay of Bengal within the next 24 hours and made landfall in Cuddalore district on the same day. The cyclonic storm named "NISHA" claimed the lives of 29 people and 222 cattle died because of heavy rain and flooding. 42615 hoses were fully damaged while 27090 were partially affected. It is estimated that, loss of crops was 4234 lakhs.

THANE Cyclone - Cyclone Thane hit the Cuddalore district on 29th and 30th December 2011 which destroyed houses, boats, standing crops, Livestock's and livelihoods. As per the Government data the cyclone claimed the lives of 40 people and 271 cattles. The storm brought wind speed of up to 135 kmph and tidal surges reaching 1.5 m which forced coastal fishing and farming communities left their houses and moved towards the cyclone shelters.

Nirvar Cyclone 2020: even as the assessment of damage caused by the recent incessant rain due to Cyclone Nirvar in Cuddalore district is under way, preliminary estimates indicate that standing crops in over 2,900 acres have been destroyed. Paddy and groundnut cultivated in about 2,525 acres and horticulture crops in about 185 hectares were destroyed. As many as 95 thatched huts were completely destroyed while 642 huts were partially damaged. In addition, as many as 174 concrete houses were fully damaged.

Flood (2015) - Unlike regular monsoon, the rainfall during NEM - 2015, is sporadic because of the El-Nino year. A low pressure area consolidated into a depression and slowly intensified into a deep depression before crossing coast of Tamilnadu. In 2015 it was record rainfall against the normal average rainfall. The 3 phases of heavy rainfall totally affected normal life of people and caused heavy damages to the people, Cattles and property and the impact of the flood brought many people lost their lives, many people became homeless and heavy damages in huts and pucca houses and their livelihood was totally affected.

The Effects of Flood in Cuddalore

Usually the villages and taluks on the breaches of Sengal Odai and Paravanar River will be affected first. Flood and over flow from Middle Paravanar surplus course led the villages to become marooned and the people moved to temporary shelters. During North East Monsoon 2015 period, Veeranam tank foreshore was inundated and aycut area of 720 acres of agricultural land had been affected. The Periyakattupalayam village, Panruti Taluk, had experienced never seen flood on 9th November 2015. The odai which carried huge quantity of flood water washed away the huts which were on the path and caused the loss of lives of 8 members from a same family as well as it relocated many pucca houses and caused sand cast over 5 feet on patta lands and agricultural lands. The causeway at Pasimuthan odai in Chidambaram taluk was washed away by the flood and the habitation was cut off from road connectivity in 2015 and the foot bridge across Velliangal Odai at Kumaratchi block also washed away. In Cuddalore taluk, the low lying areas were inundated because of Gadilam River and PennaiyarRriver, which carried the flood water and drained in to the Bay of Bengal at Devanampattinam (Silver Beach) and Tazhanguda.

DROUGHT (2013) - Crop loss occurred consequent to the drought situation due to non release of water from Cauvery in the Delta Region of Cuddalore District. In this year droughts affected area was 11885.00 acres and 8565 farmers in total.

DROUGHT (2016) - Cuddalore district had received less rainfall and faced severe drought due to failure of the North-East Monsoon Paddy, Black-gram, Maize, Cotton and Varagu raised in the rain fed areas dried, the economic condition of the farmers became worst. 76634 farmers and 54818.604 ha area were affected with the drought. More than the crop failure and bankrupt every drought will be directly affecting the supply of fodder and indirectly the cattle life.

Damage and losses due to Disasters

Table No.01 - Direct and indirect damage and losses due to disasters

	Direct Losses	Indirect Loss	Human and other loss
Primarily	Buildings and houses Contents of buildings Infrastructure facilities - road, bridges Crops and animals	Agricultural production Industrial production Disruption in communication Health care and education services Utility supplies	Loss of life Physical injury Loss of heritage or archeological site

Secondary	Flood causes fire damage Salt Contamination of land Damage to susceptible machines and computers	Lost value added in industry Increased traffic congestion and costs Disruption of flow of employees to work causing knock-on effects Contamination of water supplies Food and other shortages Increased cost of energy services Loss of income	Increased stress Physical and psychological trauma Increase in flood related suicides Increase in water born diseases Increase in morbidity rate Increase in post - flood visits to doctors Increase in mortality rate
Tertiary	Enhanced rate of property deterioration and decay Long term rot and dump Structures and weakened making them More damage-prone in subsequent flood	Some business are bankrupt Loss of exports Reduced national Gross Domestic Product	Homelessness Loss of livelihoods Total loss of possessions Blighted families Blighted communities

As per the responses gathered from the focused group discussion, to know the disaster experience of the villages in the Cuddalore district it is shown like that, with regard to the experiencing the disaster it was by the cyclone they had worst experience, as it wiped away the lives and assets irrecoverably. The compensatory measures provided by the government were not adequate; in fact, most of the families didn't received any rehabilitation and reconstruction funds. While talking to the representative of villages; the researcher found that community plays a fabulous role during and post- disaster period. According to one person, they did voluntary contributions. One of them told that "it took many hours even in some cases days for government officials to reach the affected areas; as roads were totally blocked because of landslides du 00 heavy rainfall. Hence it is the community and surrounding villages which play an important role for rescue and relief, even in the formation of artificial bridges and electricity restoration". So 80% of the respondents told that the help from the government and other sources was inadequate. and almost nothing, 20% respondents said that government and multi- stakeholders like NGO'S) Armed forces, BRO, Home Guards ete played an significant role in the distribution of medical and other reliefs, rehabilitation and construction.

Comparing between the compensatory measures and the direct indirect damage and loss of lives it is found inadequate. The funds and alternatives will be provided mainly to the direct loss not to the indirect loss or other intangible issues. Sometimes disasters will evacuate the people from their homeland and will lead to other socio-economic and psychological issues.Because of the direct disruptions Agricultural production, Industrial production, Communication facilities, Health care and education services, Utility supplies will also be interrupted. As the water logged or damaged agricultural land become barren and the farmers, agricultural labourers will lose their leman of livelihood. Small, medium, marginal and heavy industries will also be affected with disasters. Lost value added in industry, Increased traffic congestion and costs, Disruption of flow of employees to work causing knock-on effects, Contamination of water supplies, Food and other shortages, Increased cost of energy services, Loss of income. FGD reported that, some business is bankrupt, Loss of exports, and simultaneously it will result in reduced national Gross Domestic Product.

Other social vulnerabilities during disaster

Table No.02 Social vulnerabilities during disaster

Social vulnerabilities	Before Disaster	After Disaster
Negligence towards breaches of rivers	12%	23%
Non sustainable technology and architecture	11%	9%
Poverty and unemployment	41%	89%
Change in Demographic nature	9%	32%
High work load and pressure on women	87%	98%
Health needs of pregnant women	79%	93%
Children and old age	67%	89%

Human death in flood occurring mainly because of electrocution, falling of trees and collapse of houses or walls and death of animals may be due to over flow of rivers. The families who lived in thatched houses were affected severely and they became homeless and were staying in temporary shelter homes arranged in schools or government buildings. There was no electricity and people faced severe drinking water crisis. AS the roads were blocked, supply of rice, milk, grocery items and vegetables also affected. Due to non-availability of petrol/diesel transportation, the normal life of the

people was thrown out of gear.

From the focus group discussion it is found that, negligence towards breaches of rivers have resulted in over flow of water and flood in nearby areas. Suffering of local communities during calamities can be better understood in the context of decreasing traditional knowledge regarding local geography, sustainable practices and tendency to avoid disaster. Only 12% of respondents have positive opinion with regard to the negligence towards breaches of rivers before disaster and 23% respondents have positive response towards this. 11% of people are of the opinion that the non sustainable technology and architecture has been used before the disaster to prevent flood as well as only 9% of respondents supporting this statement post disaster time. It can be assumed that, people local people are not satisfied with the technology and architecture used in high rain fed or coastal areas and in breaches of rivers. Adoption of non sustainable technology will definitely enhance the vulnerabilities.

Poverty and unemployment are the center of plight of coastal areas. It reduces the socio economic resilience of communities against disaster and emergency situations. Economic development of Cuddalore is based on fishing and allied industries. All the jobs related to fishing and allied are seasonal in nature and in off season they will not have job and income. Some of them said, there is nothing in our village after the flood, as the traditional fishing equipments have lost, their means of live also collapsed.

Some others said, Goddess of sea have saved our lives, we would indulged ourselves into fighting for food each other. Where before disaster percentage of unemployed was 41 and it turned into 89% after the disaster.

Only 9% of respondents are of the opinion that, there was shift in the demographic nature of people, youngsters have to respond immediately before, during and after migration. 32% of respondents said, there will be out migration. During disaster it is not possible to stay in home and they will be shifted to temporary shelter homes and will be disconnected from main land. Extensive change in demography will definitely affect the local economy also. During extreme situation only men are required to respond to physical impact of disaster. Usually women are taking care of more than 90% of household activities. After disaster their work load will be increasing after disaster. Besides normative gender roles and house hold responsibilities, during disaster their trauma will be increasing due to extreme conditions and enhanced pressure carried by vulnerability. They have to take care of elders, children, sick and pregnant women in family in temporary shelter home also. They will not get enough time to take care of their food and health. So like war, disaster ruins the life of women everywhere.

Only 79% was agreeing with the provision of care to pregnant women before disaster. During disaster everybody will be getting equal preference and after disaster the condition seems the same. Shift in residence, destruction of homes, death of family member, poor health condition and absence of hospitals, such emergency situation will enhance the vulnerability of pregnant women. In temporary shelter home they will not be getting adequate food, medicine or emergency medical service on time.

Children and old age are vulnerable against extreme events as they have to pass through dangerous conditions. Lose of home, parents will affect directly and indirectly the life of children. Economic loss due to destruction of fishing equipments will lead to poverty and unemployment in family and it will indirectly affect the living status of children, most of the time their schooling also. Child missing cases also reported during flood all over the state.

Conclusion

Characterization of extreme events and emergency situation which is created afterwards would provide key insights regarding the nature and their impact on communities. Disasters are non-routine events all over the nation or their larger subsystem eg. state/ districts that include conjunction of physical conditions with social definitions of loss of human and social destruction. Here the findings of the FGD are that, disaster enhance the social vulnerabilities and it seriously affect the life of marginalized groups.

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