Impact of 2018 Kerala Floods on Kuzhur Grama Panchayat of Chalakudy River Basin: An analysis of factors that aggravated the Impact of flood

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ABSTRACT

The Kerala Flood 2018 has affected various river basins on a large scale and Chalakudy River basin (CRB) was no alien to it. Amongst the several panchayats in the CRB, this article looks upon the factors which aggravated the impact of flood on Kuzhur Grama Panchayat of Mala Block. Further through the method of surveying and interview process the articles find out that the factors which spiked the destruction was the mass destruction of houses, home appliances and crop loss. It was also found out that the factors which moderated the overall flood impact was very low to nil impact on life-loss, cattle loss, miscellaneous losses etc. The article also dwells into the reasons behind the highest SDRF (State disaster response fund) allocation amongst all the panchayats of the Mala block. It was concluded that the SDRF allocation was to mitigate the immediate losses concurred due to loss of houses, appliances, crop losses despite having a low to moderate impact on total damage caused due to flood.

Key words: Chalakudy River Basin, factors of flood impact, SDRF.

INTRODUCTION

The Kerala flood, occurred between June and August 2018, was triggered by a combination of factors, including unusually heavy rainfall, inadequate water management, and environmental degradation. The south-western monsoon, which usually brings abundant rainfall to the region, intensified to unprecedented levels, resulting in incessant downpours and widespread flooding across the state. The hilly terrains of the Western Ghats, along with the densely populated coastal areas, bore the brunt of this deluge.

During the devastating Kerala flood of 2018, several river basins in the state were severely affected. The floodwaters inundated numerous rivers, causing widespread damage and destruction. Out of the affected river basins like Periyar River Basin, Pamba River Basin, Bharathapuzha River Basin, Chaliyar River Basin, Chalakudy River Basin was one of the most affected river basins during the Kerala flood, witnessing substantial flooding and causing significant damage to surrounding areas.

The Kerala flood of 2018 caused immense loss of life, displacement of communities, and extensive damage to infrastructure. As part of the recovery process, the government disbursed SDRF funds to aid in the mitigation efforts across various affected regions. Notably, Kuzhoor Grama Panchayat of Mala Block out of the other 4 block panchayats of Chalakudy river basin received the highest SDRF fund allocation. This article tries to explore the factors which aggravated the impact of flood on Kuzhur Grama Panchayat and to identify the reasons behind the high allocation of SDRF fund to the panchayat.

OBJECTIVE OF THE STUDY

To analyse the reasons behind the impact of flood on Kuzhur Grama Panchayat and the factors this aggravated the disaster in the panchayat.

REVIEW OF LITERATURE

Kundzewicz, Z. Wet al (2019) says that the complexity of flood risk is driven by numerous factors, contributing to significant uncertainty in assessments and future predictions. Moreover, the paper delves into diverse strategies for mitigating flood risk, spanning from a global framework down to regional and local dimensions. An essential aspect emphasized is the ongoing need to monitor updated flood-related indices, seeking patterns of change that impact flood hazard and risk within river basins.

Hallie Eakin et al (2006) says that the discourse surrounding climate change management places significant emphasis on nation-state leadership to drive adaptation efforts. However, the era of globalization has ushered in a fresh set of challenges for states, extending beyond the management of swift economic and cultural integration. These challenges encompass intricate governance and decision-making processes, the incorporation of scientific insights and information into policies, and a shift in issues that governments are tasked with resolving. Through tangible instances of policy formulation within Latin American nations, we underscore not only the enduring significance of the state in this context but also illuminate the intricate and multifaceted obstacles that globalization presents to state-driven adaptation endeavours.

Doocy S et al (2013) says that floods, as the most prevalent natural disasters globally, impose a substantial toll on human populations through fatalities, injuries, and displacement. The escalating risk of catastrophic consequences arises from deforestation, rising human settlements in flood-prone areas, and the encroachment on coastal zones, river basins, and lakeshores. This review focuses on flood impacts from 1980 to 2009, revealing 539,811 recorded deaths, 361,974 injuries, and over 2.8 billion people affected. Although these figures likely under represent the true scope due to inconsistent reporting, the primary cause of flood-

related deaths is drowning, with distinctive risk factors such as gender and socioeconomic status influencing mortality rates. To mitigate these impacts, enhanced flood monitoring, robust mitigation strategies, and efficient communication with authorities and vulnerable communities emerge as vital pathways for reducing future flood-induced losses.

MATERIALS AND METHODS

The materials used for this article is primary data and secondary data related with the impact of Kerala flood 2018 on Kuzhur Grama Panchayat of Mala Block. The methodologies used are Surveying, interview, discussion, collection of secondary data from Asst Directorate of Agriculture (ADA) office etc. In surveying a detailed questionnaire was prepared and all relevant details of the impacted inhabitants of Kuzhur Grama Panchayat of Mala Block was collected and studied. The literature articles were taken by referring to various internet resources like Google Scholar, library facilities, journals etc.

RESULT AND DISCUSSION ANALYSIS

Personal profile:

The personal profile of the respondents are given below in which gender, age group, education and occupation of the respondents were analysed.

Table 1

Personal profile of the respondents

Characteristics	Category	Frequency	Percentage
Gender	Male	39	44.3
	Female	49	55.7
Age group	≤ 40	6	6.8
	41-50	19	21.6
	51-60	22	25.0
	61-70	28	31.8
	Above 70	13	14.8
Education	Illiterate	12	13.6
	≤ SSLC	59	67.0
	Plus two	6	6.8
	Degree and Above	6	6.8
	Diploma	5	5.7

Occupation	Retired	2	2.3
	Private	3	3.4
	Self employed	29	33.0
	Unemployed	54	61.4

Source: Primary data

The socio-economic profile of Kuzhur Grama Panchayat is given in the table above shows that the majority of the respondents fall into the age group of 50+ having education less than intermediate level ie10th class (67.0%). An important insight from the respondents is that a majority of the respondents (61.4%) are unemployed and only 33.0% of them are self-employed. A large section of the respondents (62.5%) falls into the category of APL (above poverty level).

Family profile :

The family profile of the respondents on the basis of their type of family, income group and family size is given below.

Table 2

Family profile of the respondents

Characteristics	Category	Frequency	Percentage
Category	APL	55	62.5
	BPL	33	37.5
Income group	≤10000	8	9.1
	10001 – 25000	7	8.0
	25001-50000	26	29.5
	50001-100000	23	26.1
	100001-200000	17	19.3
	Above 2 lakhs	7	8.0
Family size	1-2	25	28.4
	3-4	38	43.2
	Above 4	25	28.4

Source: Primary data

An important insight to the family profile of the respondents shows that , majority of them fall into APL category with income falling between 25000 – 50000 rupees and having a family size between 3-4.

Housing status:

The housing status of the respondents on the basis of ownership of house, type of house, nature of the house, size of the house, distance from the river basin and period of stay is given in the table 3.

Table 3
Housing status of the respondents

Characteristics	Category	Frequency	Percentage
Ownership of house	Own	83	94.3
	Rented	5	5.7
Type of house	Old	68	77.3
	New	20	22.7
Ownership of house	Own	83	94.3
	Rented	5	5.7
Type of house	Old	68	77.3
	New	20	22.7
Nature of the house	Pacca	18	20.5
	Semi pacca	69	78.4
	Kacha	1	1.1
Size of the house	Single	80	90.9
	Double	8	9.1
Distance from the river basin	≤ 100 m	10	11.3
	101-500 m	13	14.8
	501m -1km	7	8.0
	Above 1 km	58	65.9
Period of stay	1-2	2	2.3
	3-5	2	2.3
	6-10	2	2.3

	11-15	7	8.0
	Above 15	75	10.2

Source: Primary data

An important insight from the table of housing status is , majority of them (94.3%) owns a house and 34.1% of the respondents reside very near (less than 1km) from river side.

Impact of flood

The impact of flood in different area is given in the table 4 below.

Table 4

Opinion regarding Impact of flood in different area

Area	Category	Frequency	Percentage	Mean score
Life	Nil	82	93.2	**0.07**
	Damage	6	6.8	
	Loss	0	0	
House	Nil	16	18.2	**0.99**
	Damage	57	**64.8**	
	Loss	15	**17.0**	
Home Appliances	Nil	18	20.5	**1.15**
	Damage	39	**44.3**	
	Loss	31	**35.2**	
Vehicle	Nil	51	58.0	**1.15**
	Damage	29	33.0	
	Loss	8	9.1	
Crops	Nil	44	50.0	**0.67**
	Damage	29	**33.0**	
	Loss	15	**17.0**	
Cattle	Nil	71	80.7	**0.31**
	Damage	7	8.0	

	Loss	10	11.4	
Others	Nil	80	90.9	**0.15**
	Damage	3	3.4	
	Loss	5	5.7	

Source: Primary data

Level of severity was assessed by giving a score of 0, 1, 2 for the responses no damage, damage and loss respectively to each area and then adding the scores of all area to get a total score for intensity of impact. As there are 7 areas, the total score may range in between 0 to 14. The entire range of total score is divided into three categories namely 0 to 4 as low severity, 5 to 9 as moderate level of severity and 9 to 14 as high level of severity. Respondents were classified according to this and given in Table 5.

Level of severity due to flood

The level of severity due to flood is given in the table below.

Table 5

Level of severity due to flood

Level	Frequency	Percentage
Low	55	62.5
Moderate	33	37.5
High	0	0
Total	88	100

Source: Primary data

Table 5 shows the level of severity due to flood was low for 62.5 % and moderate for 37.5 % of the respondents. None was observed in the high level.

Table 6

Association of Level of severity due to flood with type of family

Level	APL		BPL	
	Frequency	Percentage	Frequency	Percentage
Low	33	60.0	22	66.7
Moderate	22	40.0	11	33.3
Total	55	100	33	100

Chi-square = 0.391[ns]; P-value = 0.532

ns non-significant

Association of level of severity due to flood on type family was tested by using chi square test and the results was given in Table 6. Chi square value (0.391) was found to be non-significant as the p-value was found to be greater than 0.05. Hence, it can be concluded that the level of severity is almost same both in BPL and APL families.

Table 7
Association of Level of severity due to flood with type of house

Level	OLD		New	
	Frequency	Percentage	Frequency	Percentage
Low	44	64.7%	11	55.0%
Moderate	24	35.3%	9	45.0%
Total	68	100	20	100
Chi-square = 0.621[ns]; P-value = 0.431				

ns non-significant

From the above table it is clear that, the severity of the flood was recorded as low to moderate.

Table 8
Association of Level of severity due to flood with distance from river basin

Level	≤ 1 km		Above 1 km	
	Frequency	Percentage	Frequency	Percentage
Low	13	61.9	36	62.1
Moderate	8	28.1	22	37.9
Total	21	100	58	100
Chi-square = 0.000[ns]; P-value = 1.00				

ns non-significant

From the above table it is clear that most of the respondents reside in an area which is more than 1km from the river.

Table 9
Association of Level of severity due to flood with period of stay

Level	≤ 1 km		Above 1 km	
	Frequency	Percentage	Frequency	Percentage

Low	6	46.2	40	60.6
Moderate	7	53.8	26	39.4
Total	13	100	66	100
Chi-square = 0.933^{ns}; P-value = 0.334				

ns non-significant

There was a low to moderate level of impact with respect to period of stay.

Table 10
Correlation of Level of severity due to flood with Income, distance from the river basin and period of stay

Variable	Spearman's Rank Correlation	P-value
Income	0.015^{ns}	0.893
Distance from river basin	0.019^{ns}	0.866
Period of stay	-0.163^{ns}	0.151

ns non-significant

No significant correlation of severity of flood was noted with income, distance from river basin and period of stay. These results indicate that intensity of impact flood is not depending on their income, distance from river basin and period of stay.

Allocation of state disaster response fund

Table 11 shows the SDRF fund allocation to the various panchayats through the ADA Office,(The Asst: Director of Agriculture)

Table 11
Allocation of SDRF fund to the panchayats of Mala Block.

Panchayat	Amount to SDRF	Number of people	Sample size
Meloor	14242996	773	77
Pariyaram	10090185	652	65
Kuzhur	**14596084**	**885**	**88**
Annamanada	4649773	831	83
Padiyoor	1915505.9	438	44
Puthenchira	1833854	648	65

Total population – 4227, Selected Sample- 422, Sample Size - 10%

Interestingly enough Kuzhur grama panchayat has got the highest SDRF allocation for the flood mitigation (Rs.14596084). For a panchayat which has recorded low (60.6) to moderate (39.4) impact of flood, this is a very high allocation of fund for the mitigation efforts. Further introspection into the list of actual losses that happened in the panchayat (table 4) we can find that the allocation of fund was to mitigate the losses which happened because of the

losses happened due to destruction of houses, housing appliances and crop loss. This spike of destruction was moderated by other indicators like loss of life, cattle loss, miscellaneous losses etc where 50-90% of respondents showed very low impact which made the result as 'low to moderate impact of flood'.

CONCLUSION

The Kerala Flood 2018 had a profound impact on the entirety of the state and specifically on Chalakudy River Basin (CRB) as well. Amongst the several panchayat's in CRB, Kuzhur Panchayat witnessed a huge loss of Housing, vehicles and crop loss. The other key indicators of flood impact like cattle loss, miscellaneous loss, loss of life etc has been low. Further it was found that socio economic indicators like income, education etc has near to no relevance on the impact of flood. The SDRF allocation was found to be the highest to the Kuzhur Grama Panchayat and this was based on the fact that the region witnessed a significant habitat loss.

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