

# EVALUATION OF FLOODS AND COASTAL HAZARDS IN KOLLAM DISTRICT DURING 2000– 2015

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**Abstract:** Kollam is a coastal town situated on southern part of Kerala. Kollam is prone to different type of coastal hazards and the district is considered as a multihazard prone area in the state. Its impact can be felt by more than three – fourth of the population that is settled along the coast. With the rapid increase of infrastructural development along the coast, the impact of coastal hazards is set to rise and the risks associated with it are often unpredictable. Floods and coastal hazards are the two most reoccurring and devastating natural disasters in the Kollam District. The present study is for evaluating the spatio-temporal variations of floods and coastal hazards during 2000 – 2015.

**Keywords:** Hazard, disaster management, floods, coastal hazards, erosion.

## INTRODUCTION

Kerala a narrow strip of land in the s-w margin of Indian Peninsula is a place of high incidence of coastal hazards compared to most of the other parts in India. The 570km coast of Kerala is one of the most densely populated land areas in the country exposed to different types of coastal hazards. The high steep monsoonal waves cause severe seasonal erosion all along the coast (Korean et.al @2009). More than 300km seashore is erosion prone. Extensive sea wall construction along with gabion – box and groins has failed to arrest the erosion in many cases. The tsunami of 2004 which was experienced along most of the coastal regions of the state has added a new dimension to the disaster scenario of the state.

Although the Kerala state does not experience floods as severe as in the northern plains, incidence of floods in the state is becoming more frequent and severe. 14.8% of the total area in the state is prone to flood. High intensity of rainfall during the monsoon causes severe floods. Increasing flood plain along with reclamation of waterbodies and wetlands results in increasing flood damages.

Kollam district is not an exception. Coastal hazards such as coastal erosion, coastal flooding, cyclone, landward intrusion of saline ground water are common in the district now a day. The people living along the coastline of Kollam are scared of the monsoon due to threat of sea erosion. Studies reveal that the coastal areas stretching over 37km from Paravoor to Azheekkal is more vulnerable to erosion. Preliminary investigation along the Kollam District shown that the coastal ecosystems such as beaches, sanddunes, estuaries, mangroves and reefs have been threatened by various coastal hazards. Human activities such as construction of harbors, jetties, river training work, mining, dredging are also lead to erosion in certain regions. The districts also experience frequent floods due to monsoon rains coupled with inadequate drainage systems.

## DATA COLLECTION

The data for this study collected from secondary sources. It includes newspapers such as Malayala Manorama and Mathrubhumi, artices and District disaster management plan Kollam. It covers data from the year 2000 to 2015. Data mainly covers location information, period of occurrence and type of hazard with its consequences.

## METHODOLOGY

Collected data were classified into major natural hazards such as floods and coastal hazards. This was arranged in spread sheet and detailed information was compiled for each hazards. For each hazards year wise occurrence, death and casualty were given in detail. Separate tables were prepared for each hazard.

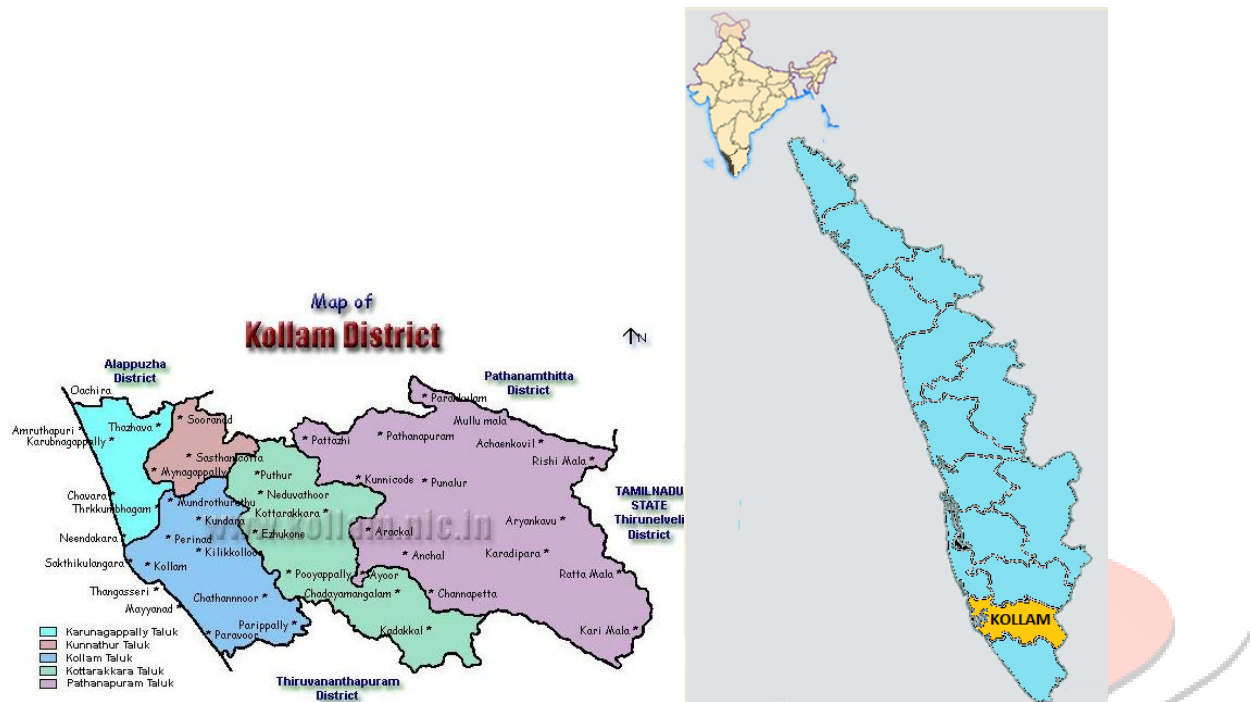
## Study Area

Study area belongs to Kollam district. Kollam is located on the south west part of Kerala and extends from Lakshadweep Sea to Western Ghats and is bordered by Trivandrum district on the south and Alleppey and Pathanamthitta districts in the north and Tirunelveli district of Tamil Nadu in East and Lakshadweep Sea in the west. It lies between north latitude 8<sup>o</sup>45' N and 9<sup>o</sup>07'N

and east longitudes 76°29' and 77°17'. It has a geographical area 2491 sq.km which is about 6.481 of the total geographical area of the state. It falls in parts of survey of India Toposheet 58 C, D, G, and H.

Physiographically Kollam District comprises of three natural divisions, the low land bordering the seacoast, midland consisting the undulating low hills and valleys and the highland covering mainly forests. The elevation gradually increases towards the highlands. The average height of western ghats in Kollam is 618m (Highest Point).

Kollam's temperature is almost steady throughout the year. The average temperature ranges from 25 to 32 degree Celsius. Summer usually runs from March to May. The monsoon begins by June and ends by September. Kollam receives an annual rainfall around 2700mm. Temperature is moderately cool in winter and it is from November to February.



**Result and Discussion**

It has been identified that coastal hazards and flooding are the two major hazards prominent in Kollam districts. Spatio – temporal analysis of these hazards are given below.

**Coastal Hazards**

Coastal Hazards are physical phenomena that expose a coastal area to risk property damages, loss of life and environmental degradation; These are caused by dynamic processes such as waves, tides and currents, coastal erosion sea attack and tsunami.

**Table – 1: Coastal Hazard Occurrence in Kollam during 2000 – 2015**

Year	No.of Occurrence	Casualty	
		Death	Injured
2000	3	-	-
2001	5	1	-
2002	1	-	-
2003	2	-	-
2004	6	100	5000
2005	1	-	-
2006	1	-	-
2007	6	-	-
2008	2	-	-
2009	6	-	-
2010	3	-	20
2011	1	-	-
2012	2	-	-
2013	6	-	-

2014	2	-	-
2015	4	-	-
Total	51	101	5020

Table 1 depicts the coastal hazard occurrence in Kollam during 2000 – 2015. It is found that Kollam district has wide occurrence of coastal Hazards during this period. The affected area includes Karunagappally, Azheekkal, Sasthamcotta, East Kallada, Chavara, Kundara, Neendakara, Thirumullavaram, Thankassery, Eravipuram, Mayyanadu and paravur. There is an occurrence of 51 coastal hazards during 2000 – 2015. Maximum number of coastal hazards has occurred in the year 2004, 2009 and 2013. It has killed 101 people and 5020 injured. Among all the coastal hazards, 2004 tsunami alone caused maximum life and material loss in the district.

## Flood

Flooding may result from coastal storm, dam break or a heavy rainfall within the watershed. These are sudden and temporary inundation of a large area as in overflowing of rivers or reservoirs. Flood is common natural disasters that can affect life and properties. Thus destroy houses and buildings and can carry soil away from farming land. Flood can also contaminate drinking water and lead diseases. They are often caused by rivers, but overflowing lakes and seas can also cause flood.

**Table – 2: Flood Occurrence in Kollam during 2000 – 2015**

Year	No.of Occurrence	Casualty	
		Death	Injured
2000	3	-	-
2001	8	-	3
2002	8	-	-
2003	3	-	1
2004	5	2	-
2005	12	-	-
2006	16	3	1
2007	6	-	-
2008	8	1	3
2009	21	-	5
2010	14	1	5
2011	5	-	-
2012	6	1	-
2013	12	-	-
2014	5	-	-
2015	5	-	-
Total	137	8	18

Table II shows flood occurrence Kollam during the years 2000 – 2015. It is observed that the Kollam district has large occurrence of flood during this period. It is reported from the areas of Ochira, Sasthamcotta, Chathannoor, East Kallada, Manthrothuruthu, Ashtamudi, Neendakara, Ramankulangara, Thirumullavaram, Kottiyam, Pooyappally, Veliyam, Paravoor, Pathanapuram, Achancovil, Punalur, Puthur, Kottarakkara, Oyur and Karavaloor. The study reveals that Kollam experienced an occurrence of 137 floods during the year 2000 – 2015. Maximum number of flood is observed in the year 2009. As a result of the flood eight deaths and eighteen injured were reported.

## CONCLUSION

From this study it is observed that floods and coastal hazards are the two most reoccurring natural disaster in the district. Geographically coastal areas of the district are most hazard prone areas in the district as this region has high urbanization and population density. This makes high level of exposure to various natural disasters. In this regard, special disaster risks reduction strategies must be developed to mitigate the effects of these two hazards.

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