CHAPTER I

INTRODUCTION

1. Introduction

Tourism and disasters are interconnected. Tourism is the first industry to hit hard by disasters and last to recover from the potential impacts caused. Disasters can cause infrastructure damages to the destinations; destroy the attractions, impact on local economy and destination image. It also demolishes the visitor experience and causes local residents displacement over a period of time affecting the community livelihood. The challenges behind balancing the impact of disasters and fostering a disaster resilient industry are significant. Kerala, a well known tourism destination have affected by short term setbacks in the recent years. Kerala has faced several disasters and has a history of bouncing back from disasters with the scenic beauty, culture, sustainable tourism and support from the local community for tourism development. The disasters have halted visitors in the destination affecting decline on international and national tourism arrivals in Kerala. Tourism rebuilding efforts assured the destination is safe for travel in post disaster scenario, also to improve the disaster preparedness of community and visitors. Despite the disaster challenges, Kerala remain as a popular destination for tourism and a balanced approach is essential for the tourism disaster management in promoting tourism for a sustainable destination. Community based awareness and activities could contribute to the tourism disaster management.

A disaster prone region like Kerala, for minimizing the impacts of the disasters, community involvement is crucial. Community based disaster management ensures the disaster preparedness in training residents, evacuation procedures, to act effectively. It could build local capacity in disaster risk reduction to make individuals capable to respond for emergencies. Behavioural preparedness of the local community is crucial and a way to prepare for disasters mentally, physically and emotionally. Preparedness in disaster management plays significant role but behavioural preparedness assures the individuals are responding to disasters efficiently. The study is an exploration of the behavioural factors influencing the local residents' preparedness of the disaster affected tourism destinations in Kerala, especially the ecologically sensitive districts: Wayanad and Kozhikode.

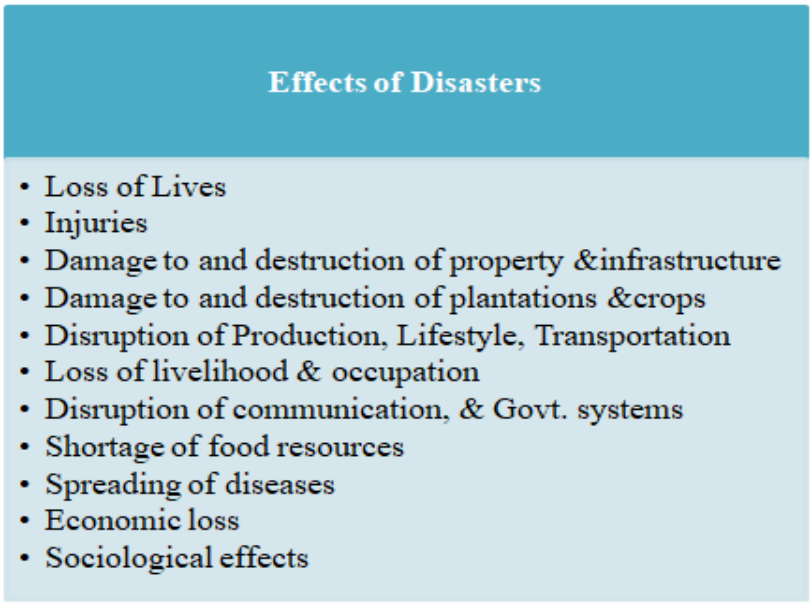
1.1 Disasters

Disaster refers to a state of emergency in an unexpected scenario. Disaster Management Act, (2005) defines disaster as "a catastrophe, mishap, calamity or grave occurrence in any area, arising from natural or manmade causes, or by accident or negligence which results in substantial loss of life or human suffering or damage to, and destruction of, property, or degradation of, environment, and is of such a nature or magnitude as to be beyond the coping capacity of the community of the affected area". "Disaster" is originated from the word "Disastre", in which "Des" (Bad) and "Aster" (Star) and means "Bad or Evil Star". Disasters are "the occurrence of sudden or major misfortune which disrupts the basic fabric and normal functioning of the society or community" (UNDRR, 2015). It is "a serious disruption of the functioning of society, causing widespread human, material or environmental losses which exceed the ability of affected society to cope using only its own resources" (Asian Disaster Reduction Center, 2003). "Disaster is a sudden ecological phenomenon of sufficient magnitude to require external assistance" (WHO, 2022). It is also described as any incident, usually unexpected, that negatively impacts the environment, people, and goes beyond the ability of the impacted community to survive when assistance from others becomes essential (Landsman, 2014).

Disaster is a dangerous phenomenon where loss of lives and properties happens, infrastructures get damaged, and these unforeseen events impact every aspect of life and systems that sustain life. It could result from man-made or natural causes, accidents, or ignorance. Disasters cause heavy losses of human, injuries, disabilities and harm to property and environment. Disaster affects or hits a vulnerable community with limited ability, causing losses, harm, and extensive losses of people, property, and environment that are beyond that the community's capability to handle. A considerable number of people are exposed to extreme events around the world; disasters happen in both urban and rural areas. It also covers a lot of property damage, devastation and environmental degradation. Understanding the different kinds of catastrophes, as well as their causes, traits, and effects, is essential. The mentioned Figure 1.1 shows the main effects of disasters. People, social and economic institutions are primarily responsible for the disaster management. Every

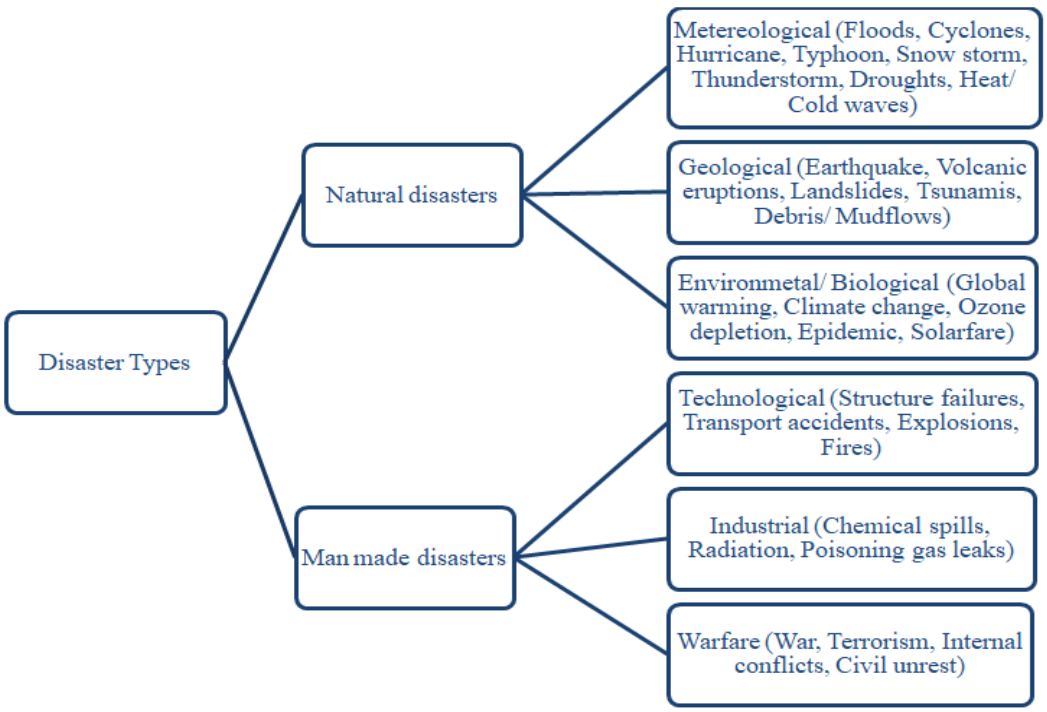
element of nature is susceptible to seasonal, and yearly changes, and the unpredictable character of disasters occurrences of their timing, frequency, and severity.

Figure 1.1: Effects of Disasters



Source: ChildFund Blog (2013)

Figure 1.2: Types of Disaster



Source: NIDM (2014)

1.2 Types of Disasters

Disaster is a severe interruption that impacts society's capacity to manage on its own. Disasters are classified mainly as natural and man-made. Events brought on natural causes are natural disasters and the direct outcome of human activity, such as disasters brought on by industrial accidents, transportation accidents, environmental contamination, and political upheaval are 'human-made' disasters.

Risks from nature are the main cause of natural disasters. Natural hazards are caused by biological, topographical, weather-related, and internal occurrences. "Act of God" is a common expression used to describe natural disasters. Natural disasters can be major and minor categories based on their capacity to harm property and human, including: meteorology, hydrology climatology. Natural catastrophes include events like volcanic eruptions, earthquakes, droughts, cyclones, floods, hailstorms, avalanches, landslides, and fire mishaps. The geophysical disasters originates from earth such as Earthquake, Volcano, Tsunami, Landslides; Meteorological disasters are small to meso scale such as cyclones, storm; Hydrolgical disasters occur due to deviations or overflow of water bodies such as Floods; Climatological disasters are the long or meso to macro scale as extreme temperature, wildfire, droughts, and Biological disasters occurs from living things being exposed to harmful substances and microorganisms, like epidemic, stampede, insect infestation.

The natural disasters are explained as: *Earthquakes* occurs when the earth's upper layers rupture, or shattering the surface and causing the ground to shake with such intensity the buildings collapse, property and human life are destroyed (Centre for Research on the Epidemiology of Disasters, 2003). *Tsunamis* are seismic waves generated by earthquakes that originate underneath the ocean. A mountain opens downhill to a deposit of molten rock beneath the earth's surface is known as a *Volcanic Eruption*. Volcanoes are formed by the accumulation of eruptive products, such as ash flows, lava, and dust, compared to other mountains (Federal Emergency Management Agency, 2003). *Floods* occur when a substantial increase happens in the water level in reservoir, or coastal area (Centre for Research on the Epidemiology of Disasters, 2003). The wind system that revolves around the centre of low air pressure at a speed more than 100 kmph is referred to as a *Cyclone*.

Landslides are the down-slope movement of soil and rock caused from natural phenomena or man-made activities. It can be slides, falls, lateral spread, topples, and flow movements (World Health Organization, 2003). When debris of masses moves down, landslides occur (Federal Emergency Management Agency, 2003). *Bushfire / Wildfire* or forest fires is a threat that tends to be seasonal conditions when high temperatures and wind, happen. Fire fragments are supposed to be carry forwarded by wind to new fires further in forest areas. *Droughts* are due to the failure of monsoons. It is to an extended period occurring because of deficient rainfall. Droughts also lead to famine, malnutrition, epidemics and migration (International Federation of Red Cross and Red Crescent Societies, 2003). *Avalanches* are sliding or flowage of snow/ice. *Tornado* is windstorm funnel-shaped cloud as a result of high wind debris. *Heat wave*s occur when temperatures above ten degrees or more last for longer time, accompanied by high humidity and extreme heat (Federal Emergency Management Agency, 2003). *Biological events* is kind of increase in cases of infectious disease that exists in a region.

Man-made disasters are based on human decisions that are sudden or long-term; they are also known as socio-technical disasters and caused by human activities. Man-made disasters are technological (eg: systems failure, structural collapse); industrial (eg: industrial companies accident, chemical & nuclear explosion); warfare (eg: sociopolitical conflicts, war,) and socio-natural disaster (mix of human and natural forces) (Cvetković et al., 2024). *Technological disasters* is "an occurrence such as a major emission, fire or explosion resulting from uncontrolled developments in the course of an industrial activity, leading to a serious danger to man, immediate or delayed, inside or outside the establishment, and to the environment, and involving one or more dangerous substances" (International Labor Organization, 1988). Examples are (Shaluf, 2007) are Seveso chemical factory explosion (1978); Bhopal Chemical Leak (1984); Flixborough Chemical Plant Explosion (1974); Chernobyl nuclear accident (1986); and Piper Alpha Gas Leakage & Explosion (1988).*Transportation disasters* are any kind of accident that causes injuries which need emergency medical resources due to the transportation. Rail/highway/airway accidents cause larger casualties and disruption of transportation. *Warfare or Internal conflicts* are due to the incapacity to offer security for citizens, by governance and political process. Conventional conflicts are foreign invasion border disputes, and other attacks. Non-

conventional wars are biological, chemical, and nuclear. *Epidemic, Accidents and Civil Unrests* are the spread of contagious diseases due to man-made reasons arising from food, water, inadequate health facilities, and malnutrition.

1.3 Tourism Disaster Management

Disaster Management Act (2005) defines Disaster Management as an "integrated process of planning, organizing, coordinating and implementing measures which are necessary for prevention of threat of any disaster, reduction of risk of any disaster or its consequences, readiness to deal with any disaster, promptness in dealing with a disaster, assessing the severity of the effects of any disaster, rescue and relief, rehabilitation and reconstruction" (NDMP, 2016). Tourism is undoubtedly a vital component of the worldwide economy. However, it is also highly fragile and susceptible to crises and calamities. Specifically, in the 21st century, the worldwide tourist sector has been impacted by acts of terrorism, unstable politics, financial crises, ecological threats to security, and catastrophic natural disasters. Natural disasters have the potential to devastate the natural environment and disturb the conditions needed for the rise of tourism. They can also damage the infrastructure and disrupt the activities of the tourism industry, affecting the sector. The community's ability to support itself becomes unsustainable, resulting in substantial damage to the tourism sector. Disasters significantly impede the sustainable growth of tourism globally. Tourism industry has to make response to manage crisis in tourist destinations which is difficult task. Unexpected events are having effects on individuals and society, and affect tourism flows. Disasters constitute abrupt changes in tourism is embedded (Miller, 2008). It impacts on individuals, communities, organizations and tourism destinations (OECD, 2014). The disasters affect tourism directly and indirectly at a destination for travel to and from the affected region (Jin, et al., 2019; Ruan et al., 2017). Responding to disaster risks is an integral factor of sustainable tourism (Shakeela & Becken, 2015).

Disasters devastate tourism destinations, crippling their ability to host visitors immediately after the event. From damaging hotels to disrupting transportation networks, the aftermath leaves destinations facing significant challenges in recovery. Immediate action is essential to restore infrastructure and ensure safety, vital for regaining competitiveness in

the global tourism market (Huang & Min, 2002). Disasters reshape transit routes influencing that destinations are perceived in terms of safety. The events disrupt transportation networks, impeding tourists' access to affected areas and causing a decline in visitor numbers. Consequently, destinations must prioritize rebuilding trust and implementing robust safety measures to mitigate negative perceptions and attract tourists back to their destinations (Scott et al., 2008). The low community response to disasters in tourism destinations is a concern to be studied (November & Leanza, 2015). Disaster causes impact on image of a destination. If preparedness for disasters are not managed in a destination, the image will be affected badly, impacts the economy and visitors will less consider the destination for tourism. A destination image is dependent on the safety or economic stability (Walters et. al., 2015). Disasters affect tourism development; destroys the environment, resources, and service facilities for tourism. The community livelihood becomes unsustainable, and so disasters severely restrict the sustainable development of tourism. Disasters in tourism also impact in direct and indirect effects such as job losses, economic downturns, damaged facilities, closed attractions, decreased tourist arrivals and other indirect effects cause to local community and stakeholders. It is important to create and implement effective disaster risk reduction strategies. Tourist destinations also need to have the resources to restore a safe environment for tourism. Disasters caused huge losses to tourist destinations, by reducing the number of visitors, damaging attractions and facilities, and making community livelihood complex to sustain (Guo et al., 2018; Jin et al., 2019).

Natural disasters are unpredictable, which makes preparation challenging. Tourism industry is vulnerable because it depends significantly on transportation and infrastructure, both of which might sustain significant damage in the event of a disaster. Co-ordination among stakeholders such as local governments, travel agencies, emergency services, and relief organizations is essential to manage disasters effectively. Disasters can cause tourism destinations to suffer long-term financial losses, which can have an impact on jobs and the standard of living for many people who depend on the sector. The behaviour of tourists in the times of crisis, tourists may exhibit unpredictable reactions, making it challenging to control their movement and safety. To overcome all the challenges of disasters in tourism

sector, tourism disaster management should be effective. Tourism Disaster Management (TDM) refers to the methods and measures used to lessen the effects of disasters on the travel and tourism sector and all of its stakeholders, including travelers, businesses, local communities, and the environment. Tourism industry can swiftly recover from a disaster and carry on operating while maintaining sustainability and safety; it entails preparedness, reaction, recovery, and mitigation activities. Tourism disaster management has the phases such as preparedness, response, recovery, mitigation and post disaster stages. Preparedness is the stage of risk assessment, to determine the possible threats to the tourism industry; creating emergency plans and procedures for the preparation or evacuating visitors, offering medical support and communication for an emergency. Education and training for the individuals to provide and empower community, local government and tourism stakeholders in preparing to disasters, and also ensure redundancy in communication, transportation networks and fortify infrastructure. The response phase of TDM involves in providing accurate crisis communication about the risks and evacuation procedures to inform tourists and local community of the destination through social media and other reliable platforms, and evacuate tourists from affected areas and assure their safety by providing emergency shelters and transportation. Co-ordination work with local authorities, government agencies, and organizations could provide immediate relief and effectively manage the situation. Recovery stage is the psychological support i.e., counseling and psychological services to visitors and residents impacted by the disaster could facilitate recovery hold up; moreover, support to affected businesses provide financial aid and resources to assist tourism businesses in rebuilding and restoration of services to restore basic services like electricity, water, and medical facilities to tourist areas. Mitigation in TDM facilitate in promoting the eco friendly building materials, disaster resistant and sustainable construction under responsible tourism practices could lower the disaster risks. Community involvement helps in engaging community in preparedness and disaster risk reduction to increase resilience.

TDM means the protection of lives and property during times of disasters in the tourism destinations. It brings in proper management during emergency situations and ensures to lessen the losses in tourism. The objectives of tourism disaster management are to protect the community; harmonize regulations; planned and organized disaster

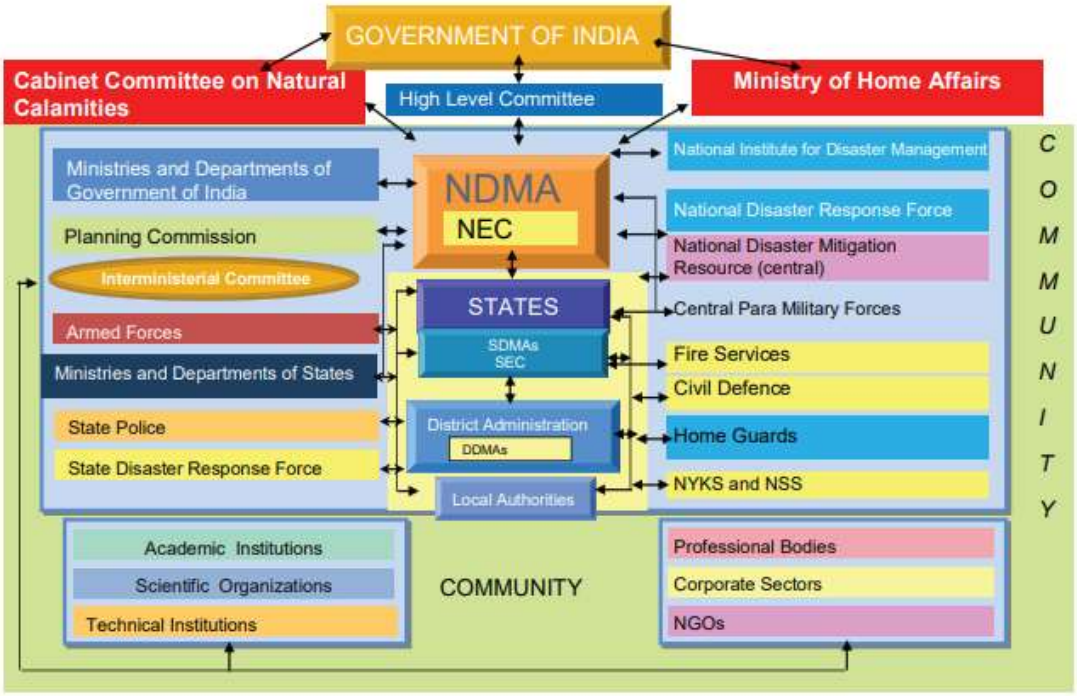
management; build public-private participation and partnership; respect local culture; encourage working and collaborating; and establishing peace in society. Disaster management in tourism is a hard-hitting mission of preparation, prevention, response and recovery phases for a tourism destination. It involves steps and guidelines for local community and tourists for managing disasters in a tourist destination. For the disaster management, the major agencies involved in India are:

National Disaster Management Authority (NDMA): an apex body headed by Prime Minister of India and responsible for the supervision of National Disaster Response Force (NDRF). *National Executive Committee (NEC):* committee of ministerial members including Union Home Secretary and Secretaries from Agriculture, Atomic Energy, Defense, Environment and Forests. NEC formulates national plan. *State Disaster Management Authority (SDMA)* is headed by the Chief Minister of the respective state. State Executive Committee (SEC) assists SDMA on Disaster Management. *District Disaster Management Authority (DDMA)* - DDMA is headed by District Collector, Deputy Commissioner or District Magistrate and elected representatives as Co-Chairperson. DDMA ensures that the guidelines framed by NDMA and SDMA are followed by District level and the local authorities. *Local Authorities* include Municipalities, Panchayati Raj Institutions (PRI), District, Legal Arrangements Boards, Cantonment 11 Institutional and Town Planning Authorities to manage services. The above are the governmental bodies and local authorities involved in the disaster management process. The local community and tourists also have also the responsibilities in tourism disaster management to engage and encourage the individuals in tourism disaster management (TDM).

1.3.1 Disaster Management Act (2005)

The Disaster Management Act provides institutional mechanisms in monitoring the plans implemented. It provides in setting up of NDMA and provides constitution of Executive Committee at various levels. National Institute of Disaster Management (NIDM) and National Disaster Response Force (NDRF) for capacity building and response has been set up under the act. It also contains the provisions for funding for disaster management.

Figure 1.3: National Disaster Management Structure



Source: NIDM (2014)

1.3.2 National Policy on Disaster Management (NPDM)

NPDM, approved on October 22, 2009, aims to create a safer disaster resilient India to develop a holistic, strategy for prevention, and response. It covers institutional and legal arrangements, funds, prevention, preparedness, techno-legal aspects, response, rehabilitation, recovery, knowledge management, capacity building, and development. NPDM focuses on the sections for differently abled persons, women, and children for relief and rehabilitation. It aims for transparency and accountability through the involvement of community, organizations, Panchayats, and local bodies.

1.4 Tourism Disaster Management Cycle

Disaster Management implies "systematic process of using administrative decisions, organization, operational skills, and capacities to implement policies, strategies and coping capacities of the society and communities to lessen the impact of natural hazards and related environmental and technological disasters. These comprise all forms of activities including structural and non-structural measures to avoid (prevention) or to limit (mitigation and

preparedness) adverse effects to hazards" (UNISDR, 2004). The stages in disaster management are: Pre-disaster stage reduces the potential losses caused; During disaster ensures that the needs are met in minimising suffering; and Post-disaster stage aims to achieve recovery from the vulnerable conditions.

The Disaster Management Cycle is the activities for mitigating the impact of disasters and dealing with threats of disasters. Disaster management cycle integrates the attempts from government and non-government, for vulnerability reduction. 'Prevention, mitigation and preparedness are pre-disaster' activities; whereas response, relief, recovery and rehabilitation are post-disaster activities in the cycle. Successful disaster management encompasses all the activities of before, during and after disasters. The major issue in the cycle of disaster management is allocating the resources for all stages for the effectiveness of risk reduction. Disaster management cycle is a framework that helps communities to prepare for disasters and consists of four steps:

1.4.1 Prevention (mitigation) phase involves the steps to reduce the risks by fortifying buildings, strengthening of infrastructure, land use management, and efforts make community resilient to disasters in tourism destinations. The stage identifies the potential disasters impact and solutions to minimize the effect, i.e., preparation before the crisis and taking measures that can help in tourism disaster management. It involves an evacuation plan, long-term plans for the process. Preparedness and mitigation are the activities for lessening the impact in community likelihood. Structural and non-structural measures are involved in the prevention methods by analyzing environment, assessing vulnerabilities, and developing measures to mitigate the hazards risks of the destination. If prevention and mitigation are efficient to implement it could benefit in all disaster management stages.

1.4.2 Preparedness: Preparedness before an event indicates that individuals and community of a tourism destination need to plan and train themselves to confront the disasters. Making arrangements and plans, training activities, education, and information sharing facilitate in preparing communities in tourism disaster management. Preparation involves ongoing training, teaching new concepts and actions with the support of experts. It helps in to take actions to evacuate, demonstrate measures and methods such as drills, evacuation procedures for ensuring the readiness of residents. Preparedness focuses on

planning, preparing, educating and engaging the community to build capacity, guide information, people, equipments and systems on readiness activities in tourism disaster management.

1.4.3 Response: This phase is an immediate reaction of individual when disaster occurs. It could be long and short-term kind of responses to a disaster. Response stage coordinates the resource for the operation in ensuring the safety in a tourism destination. It could be medical, safety, equipment and supplies also help in mitigate damages from theft or other crimes. Response stage is a crucial phase of disaster management cycle, for reducing the consequences kind of physical or social. In this stage challenges such as loss of lives and properties, communication, infrastructure, physical and other facilities, rehabilitation, resources, economic losses, employment losses restoration and reconstruction need to be managed. Vulnerability, health and hygiene arrangements, administration, policy making implementation, poverty, logistical arrangements are the areas to strengthen in response stage. If any of the factors fail to meet the efforts disaster response would be challenging. An immediate response in tourism disaster management is the important step to be taken such as rescue operations, emergency assistance of medicine and shelters, damage assessment, and resource distribution.

Figure 1.4: Disaster Management Cycle

Source: Cozannet et al. (2020)

1.4.4 Recovery: Recovery stage involves after the disasters, mainly the recuperation of the people and property. Recovery can be physical and psychological. The short-term recovery lasts from six months to one year by providing immediate services to implement actions to promote redevelopment for disaster affected tourism destinations. The long-term recovery is a process of rebuilding of buildings, infrastructure, and restoring to pre-disaster stage. It makes up infrastructure and systems to minimum level of standards and to return life to normal as an overlapping phase of relief, rehabilitation and reconstruction. The long-term phase needs strategic planning and action to offer temporary employment, economic development, capacity building, partnerships and restoration of lost livelihoods. Mitigation can be incorporated into reconstruction and improve safety in post-tourism disaster management. Communities need to access and deploy resources to facilitate economic recovery for effective disaster management in tourism.

1.5 Advanced Technologies used for Disaster Management

Technology in disaster management facilitate in predicting disasters to minimize the hazard vulnerability. It could not only protect life but provide essential information which can be useful in future, and also cannot replace the resources people need at that time but still facilitate in disaster preparedness and management. Technology has made significant changes in disaster management approaches. Some of the important technologies used in disaster management are: Geographical Information System, Satellite communication, Television, Global Positioning System, Satellite Navigation System, Radio Broadcasting, and Community Radio, Networking Technologies, Internet, disaster information systems, robotics, management Databases, and Networks. Early warning system, database construction; analysis of disaster system, mapping, information integration, monitoring; decision support, disaster forecasting, hazard assessment, emergency response, disaster relief are kind of the major technological involvement in disaster management process. Advanced technologies in disaster management facilitate in gathering data for vulnerable and disaster-prone areas. It helps in decision-making capacity to increase rescue operations; also minimise misleading information to be transparent between government and community. It can also aid in efficient allocation of the resources. They help in identifying the gaps and make recommendations to allocate resources for risk reduction. Technologies in disaster management work on a structured approach to reach

maximum people with geo-location and beneficial for government to predict the prone areas. Social media facilitate in spreading information and track the required facilities for survivors. Aerial robotics can also assess damage, increases awareness, provide high-resolution mapping and delivers in fast, cheap and more efficiently. Sensors play a very important role in monitoring important parameters before, during and after the occurrence of a disaster. There are a wide variety of sensors like Environmental Sensors (for parameters- temperature, humidity, air quality, radiation levels), Seismic Sensors, Water level/Flood Sensors, Fire Sensors, Structural Health Sensors (to monitor structural health of buildings/infrastructure), Biometric Sensors, Satellite/Drone based Remote Sensors (aerial imagery and damage assessment). Wearable IoT enabled sensors provide freedom of deployment while sensors based on Nanotechnology and graphene based sensors provide ultra-precise measurements over a wide spectrum of molecules and substances. IoT's ability to connect devices, gather data, and enable real-time communication enhances disaster preparedness, response, and recovery efforts. Ultra-fast data transfer speeds of 5G Networks enable quick sharing of large datasets such as high-resolution images, videos, and real-time sensor data, which is crucial for informed decision-making for every stage of Disaster Management. Satellite-based internet provides a lifeline during disasters, ensuring connectivity, information exchange, and efficient response co-ordination, ultimately contributing to more effective disaster management and recovery.

Technological tools in machine learning, big data analytics, and artificial intelligence are driving decision support systems to empower disaster managers during disaster management cycle. Data analytics of very large volumes of diverse data using AI algorithms and ML models have led to a better analysis and predictions for faster resource allocation and response. Historical data, response and the post hazard damage assessment can be analyzed by AI algorithms more accurately. AI algorithms can consider factors like road closures, traffic patterns, and available emergency services to optimize resources and determine the quickest and most effective response routes. Social media platforms provide excellent real time crowd sourced inputs of any developing situation pertaining to disasters. The data includes photos, videos, and eyewitness accounts from affected individuals. Analysis of the vast amount of data using Big data Analytics opens new avenues of helpful information for disaster management in terms of early signs of disasters and emerging

incidents. The following are some of the technological tools used for disaster management: Drones (Can be used to survey damage, locate survivors, and create 3D maps. Drones can be more efficient than satellite pictures and GPS surveys, and can take better photos in less time) Early warning systems; Artificial intelligence (AI); Remote sensing: Can be used to track changes in earth's surface, atmosphere, and seas; Cloud storage and crowd sourcing: Can help humanitarian responders receive information faster; Radars; Satellite imaging; Internet of Things (IoT); Smart phones; Social media; Decision support systems (DSS) are other technical aids to support disaster management process.

1.6 Vulnerability Profile of India

India is the most vulnerable countries of the world. The country is sensitive to natural and human induced disasters due to geographical features, climatic conditions, topography, industrialization, environmental degradation, urbanization and population. India is vulnerable to 30 types of disasters (NDMA, 2016) due to the unique geo-climatic features. The nation is a prone area to cyclones, droughts, floods, landslides, earthquakes, avalanches, and forest fires. 58.6% of the land is sensitive and prone to moderate to very high intensity earthquakes; 12% of land is flood prone areas; 5,700 km coastline is prone to tsunamis and cyclones; 68% of the agricultural land is prone area to drought and also hilly regions of the country are having landslides and avalanches risks (NDMA, 2022)

The five regions of the country that are highly vulnerable are Himalayan region, Hilly parts of peninsula (including Western Ghats, Eastern Ghats, Aravalli Range and Hill ranges of Deccan Plateau), Alluvial plains, and Coastal areas. Himalayan is prone to landslides and earthquakes; plains by floods and the deserts by droughts and the coastal area to cyclones and storms. The geological factors are the primary reason for the high vulnerable profile. The geo-tectonic features of Himalayan areas and alluvial plains make the destination a disaster prone area. Peninsular region is most stable, but earthquakes are affecting the region. The tectonic features of the Himalaya, alluvial plains of Indus, Ganges and Brahmaputra are also prone to seismic activities. River systems flowing from Himalaya is suffering from channel siltation, results in frequent floods (Uttar Pradesh and Bihar). The western parts (Gujarat, Rajasthan and Maharashtra) are very frequently prone to droughts and depend on the monsoon season. The pressure over oceans results in cyclones and

tsunamis in coastal areas. Human-induced activities such as deforestation, environmental conditions, agricultural practices, unscientific construction, unplanned urbanization, are also impacting and increasing in frequency of disasters (CEEW, 2021).

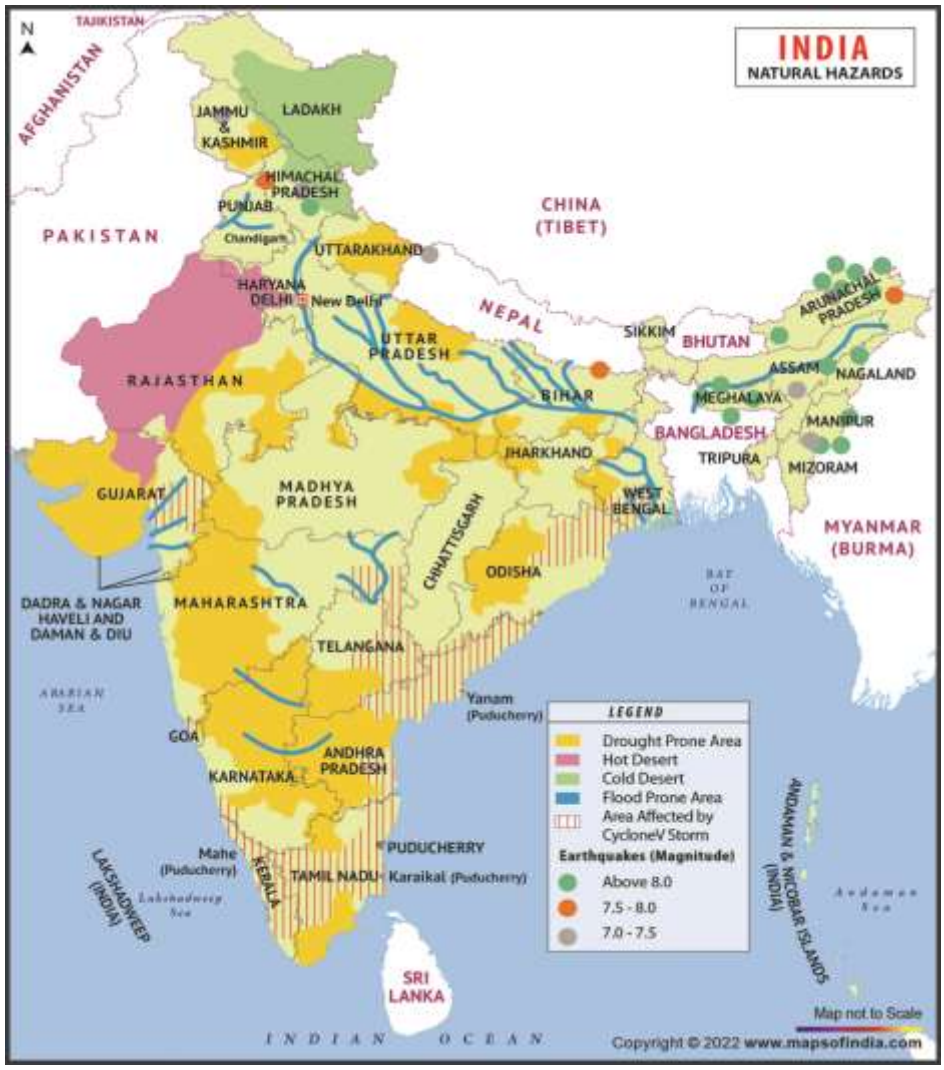
India is having a variety of climatic conditions, tropical in south, temperate and alpine in Himalayan north. The climate is influenced by Himalayas and Thar deserts. The Central Water Commission (CWC), criteria to recognize the drought prone areas, has mentioned "drought is a situation occurring in an area when the annual rainfall is less than 75 percent of normal in 20 percent of the years examined. Any block or equivalent unit where 30 percent or more of the cultivated area is irrigated is considered to have reached a stage, which enables it to sustain a reasonable protection against drought". In 124 years, the probability of drought occurrence is high in Rajasthan (25%), Jammu & Kashmir (21%), Saurastra & Kutch (23%), and Gujarat (21%). The 1987 drought in various parts of the country is of "unprecedented intensity" resulting crop damages and scarcity of drinking water (ASDMA, 2011). Rainfall in India, for mainly two seasons is an important factor influencing Indian climate. 75% of the rainfall receives from June to September. Variations are there in the amount of rainfall received at various locations. El Nino-Southern Oscillation (ENSO) patterns have significant influence in the previous droughts happened in India. The south-west monsoon rainfall contributes 74.2% of the annual rainfall. Monsoon depressions and cyclones of low pressure are formed in Bay of Bengal. The season is replaced by airflow called North-East Monsoon (October, November and December). Andhra Pradesh, Kerala Tamil Nadu, and South Karnataka receive rainfall of 35% of annual total rainfall. The average rainfall in India annually is 1150 mm with variation across the regions (ASDMA, 2011).

1.7 Common Type of Disasters in India

India is a highly disaster prone destination in the world. The natural ecological systems, monsoon, highly silted river systems and steep mountains, makes the country vulnerable. This section discusses the most common type of disasters happening in India. Floods are one of the frequently occurring disasters in all rivers basins. Heavy rainfall, high rate of water flow, inadequate capacity of water resources, poor permeability of the soil, inappropriate drainage systems, typhoons and cyclones are the main reasons for the floods.

7516km of India's coastline is vulnerable to 10% of world's cyclones. 71% is in Gujarat, Goa, Karnataka, Maharashtra, Kerala, Puducherry, Tamil Nadu, Orissa, West Bengal, Andaman Nicobar, Andhra Pradesh, and Lakshadweep which are prone to cyclones. Five or six tropical cyclones form in Arabian Sea and Bay of Bengal affects the coastal area (NDMA, 2021). A prolonged period of dry weather or droughts; 68% of the land is prone to droughts in India. 35% area receives between 750 mm and 1125 mm rainfall which is drought prone and 33%, receives between less than 750 mm rainfall which chronically drought prone. The major reason of drought is rainfall deficiency (distribution, timing, and intensity).

Figure 1.5: Natural Hazard Map of India



Source: Maps of India (2022)

Disaster Management in India has witnessed a significant transformation in the past years, by evolving a centric approach to the preparation, mitigation nd managagement. The country has adopted a disaster resilient India focusing on zero casuality approach to better prepare for future events. Important policy decisions have been implemented in 'Early warning and preparednesss based system', Distribution of relief funds', 'Community based disaster management', 'Deployment of response force', and 'Disaster risk reduction'. For a range of disasters happening in India, disaster management success is enhancing through technology intervention. The Common Alerting Protocol (CAP) boosted the capacity to disseminate warnings to share real time information. Further, local capacity building pragrammes are introduced to ensure the effectiveness of local administration and citizens. Fnancial allocation, role of women in risk reducation, awareness raising, modernization of services are the main implications focusing on disaster preparedness and management in India. Prime Ministers' agenda on disaster risk reduction in India reflects into main areas such as: All sectors must apply disaster risk management principles; Risk coverage includes poor, Small and Medium Enterprises, Multi-National Corporations; Technological advancement; Network of volunteers to work for related issues; Local capacity building programmes and initiatives; Learn from each disaster experience; Greater cohesion to international response ; Womens leadership and involvement; Investment in risk mapping globally. To improve the disaster preparedness and management, Union Government of India has developed apps enhancing effectivenesss and coordination to provide public real time information and support. Some of the apps are:

- NDMA App:
  - Quick information and emergency assistance
  - Prepation tips before disasters
  - Helpline numbers
  - Safety measeures based on disaster type
- SACHET App:
  - Provide aletrs and predictions
  - Real time weather information and warnings I regional languages
- Bhookamp Ap:
  - Alerts and data related to earthquakes
  - Information on safety measures and affected areas
- Damini App:
  - Alert warning and precautions for lightening

- Agri-DPM App:
  - Information for farmers relating to crop losses, insurance, emergency assistance for agriculture
- CWC- Flood App:
  - Information and forecasts of floods
  - Risk area maps and evacuation plans
- 112 India App:
  - Connects to ambulance, police, and relief services
  - Quick response and location tracking

National Disaster Management Authority (NDMA) in India is responsible for rescue, relief and rehabilitation measures in disaster management process. NDMA has significant role in providing early warning systems, training and exercises, coordination and collaboration, policy interventions, funding and hazard mapping. The policies on disaster management and guidelines are issued by NDMA to follow by different Ministries and Departments of the country. As of 2024, the country has faced 47 natural disasters claiming 1789 lives economic losses. 10.63 crores of people were directly affected by the calamities as estimated by NDMA. 26% of death rates were because of heatwaves, 14% because of dloods and cyclones, and landlsides and other disasters caused he rest. Even economoically lost 2% of Global Domestic Product due to the disasters. 159 earthquakes recorded in India in the period of 2024 to 2025. The community, Ministry, non governmental organizations, media and international organizations are few of the key stakeholders involved in disaster management. The role of institutional framework and government provides legal support to the disaster management practices. Non governmental organizations such as Indian Red Cross Society, SEEDS India, Reliance Foundation, Humane Society, Mukti, and Resilient Foundation are main agencies involved for rehabilation and long term resilience. They provide awareness and education, capacity building, engagement, in all phases of managing disasters. Despite, the system of disaster management in India is strong with legal framework, still the country faces challenge on laxity in preparedness measures. The main key areas of challenges are public awareness and participation, lack of enforcement and skills in preparedness phase. Preparedness plans and risk assessment for disaster prone areas need to be more effective in order to achieve disaster preparedness. Inadequate funding and accountability, infrastructure, vulnerable areas and communities, skill shortages also results laxity in the disaster preparedness measures of India.

Drought affects water supplies, crops, animals, malnutrition and health; soil stalinization, groundwater decline, and so on. India is also vulnerable to heat wave or extreme temperature mainly during summer over north western parts of India. Cold wave or extreme low temperature is also occurring in India mainly northern parts of India. Earthquakes are also frequently occurring disaster and the region is divided into seismic zones based on the earthquakes intensity. Zone V is most active including Uttarakhand, North-east, Gujarat, Bihar, Jammu, Himachal Pradesh, and Andaman & Nicobar Islands. Six earthquakes have affected mainly India over last 15 years. Landslides are major hazard in India, causing loss of life, human settlements, and ecosystems. Landslides affect Himalayan region and Western ghats. Unprecedented rains triggered landslides causing severe damage in India. Industrial disasters due to mechanical, chemical, civil, electrical, or failures have caused life, property and environment. Road accidents, railway disaster, air accidents also affect Indian community. Epidemics Infectious diseases caused by unhygienic food, not clean and hygienic water, lack of awareness on sanitation, and biological conditions are also considered as the health problem in India. COVID 19 pandemic, Nipah virus outbreak are examples for biological disasters (Agrifare, 2020).

1.8 Hazard and Vulnerability Profile of Kerala

Kerala is a multi-hazard prone area, located along with the sea coast and Western Ghats that makes the state vulnerable to disasters. KSDMP (2016) has mentioned that Kerala is susceptible to 39 hazards of natural and man-made. Kerala's density, i.e., 860 persons in square kms makes susceptible to losses and damages. Floods and landslides mainly occur along the Western Ghats. Landslides happen mostly in Kozhikode, Wayanad, Idukki, and Kottayam. Drought is also common in the state due to dry rivers and low water sources. Soil piping and coastal erosion make more vulnerable to disasters.

Kerala has a humid and tropical climate and is in seismic Zone- III indicating earthquake vulnerability. South-West monsoons and North-East monsoons produce 80% of total annual rainfall and average annual precipitation is 3000 mm. 14.8% area is prone to flooding in Kerala. 50% of the land is moderate to severe drought prone area. It is expected the climate change increases extreme rainfall which leads to flooding or shortage of water, increase in temperature, and so on (NIDM, 2018). Also increases the frequency and

intensity of droughts, floods, mudflows, sea level rise and soil erosion which affects 63% coastline. 65 landslides have happened between 1961 and 2009 caused 257 deaths (Kuriakose, 2019). From 1871 to 2000, Kerala has experienced 12 moderate droughts. Increase in surface temperature from 0.5 to 4.5C increases the probability of epidemics. Sea-level rise increases the intensity of coastal erosion.

KSDMA has structural and non-structural measures for reducing disaster risks. The structural includes capital investment, construction and other resistant, protective methods and non-structural measures such as policies, training, awareness education, practices, techno-legal systems, and capacity development are facilitated by KSDMA.

Plans and Guidelines supporting disaster management in Kerala

1. National Disaster Management Plan, 2016 (NDMP, 2016)
2. 12th Five Year Plan - Disaster Management (2012-17)
3. Kerala State Action Plan on Climate Change, 2014
4. Norms for relief assistance under National/State Disaster Response Fund
5. Handbook on Disaster Management – Volume 1 – Hazard Susceptible Areas of Kerala, 2014 (HSAK, 2014)
6. Handbook on Disaster Management – Volume 2 – Emergency Operations Centres & Emergency Support Functions Plan, Kerala, 2015 (ESFP, 2015)
7. Standard Operating Procedure for Festival Disasters – Safety in Religious Mass Gatherings, 2015 (FSOP, 2015)
8. Chemical Disaster Risk Reduction Guidelines, 2012 (CDRRG, 2012)
9. Railway Disaster Management Plan, 2016 (RDMP, 2016)
10. Standard Operating Procedure for the deployment of National Disaster Response Force (NDRFSOP, 2015)
11. Crisis Management Plan 2016 (Part 1), Ministry of Home Affairs (MHACMP, 2016)
12. Manual for Drought Management, 2009, Ministry of Agriculture (MDM, 2009)

Kerala has a history of various kinds of disasters impacting massive misery to the affected community. Heavy rainfall, floods, landslides, coastal erosion, biological disasters, epidemics, road and rail accidents, cyclones, tsunamis, lightning are high which caused the loss of lives, properties and environment.

Table 1.1: Vulnerability Profile of Kerala

Hazard	Description of hazards
Extreme Rainfall Precipitation and Floods	Rainfall trends happening in Kerala over the last years leads to increasing of extreme rainfalls and floods.
Droughts	Seasonal drought experienced every year causes decreasing trend of rainfall in Kerala. 50% of the region is vulnerable to 'moderately to severely drought'.
Sea Level Rise	Global warming results sea level rise that is vulnerable to the coastal communities.
Strong Winds	The state is prone to strong winds specific disaster calamity. The maximum speed from tropical cyclones is predictable to increase.
Tsunami	590 km coastline of the state is densely populated and is exposed to high waves, storms, and tsunami.
Landslide	Mountain regions experience several landslides during monsoon. Small and big landslides, landslips impact the communities.

Source: NIDM (2021)

Kerala is Zone III earthquake zone makes vulnerable of magnitude of 6.5 or above. The global warming and climatic variations, environmental issues, unplanned construction and sea level rise increase the susceptibility. Government of Kerala realizes the requirement of having a proactive approach in reducing the detrimental causes of crises on Kerala (KSDMA, 2010).

1.9 Historical Events of Disasters Happened in the Study Area

1.9.1 Floods 2018 and 2019

14.5% of the Kerala's land is vulnerable to floods. In 2018, Kerala has witnessed worst floods, 483 lives are lost, and 1260 villages are affected badly in the history of Kerala since 1924. The heavy monsoon has resulted in flooding to Kerala and triggered landslides. Water reservoirs exceeded their capacity and the rainfall, and the excess water from 37 dams have released, resulted in flooding of 13 districts of the state. Kerala has received abnormally high rainfall of 2346.6 mm during the period, i.e., 42% above the normal. 398 mm, 305 mm, 255 mm, are received at Malappuram, Wayanad and Idukki respectively on August 9th, 2018. This has led to floods at Mananthavady and Vythiri in Wayanad. It has left the hilly areas isolated. The KSDMA has placed red alert because of the flooding. Relief camps have been opened and monitored by the State, Central Governments, and Crisis Management Committee for rescue operations. The affected areas are Wayanad (Kabini sub-basin), Ernakulam (Periyar and Chalakudi) sub-basins, Idukki (Periyar sub-basin), Alleppey and Pathanamthitta (Pamba sub-basin).

1,259 villages from total of 1,664 villages are affected. The flood affected 5.4 million, displacing 1.4 million, and 483 lost their lives. The rainwater has loosened soils from hill slopes. From 10 districts 341 landslides are reported. Idukki is ravaged by 143 landslides. 687 km square of the state is flooded. Large numbers of houses are damaged completely or severely. The floods also have damaged the agriculture production. 14 lakh people are shifted to relief camps (SDMA, 2019). The disasters have affected three-fourths of villages and temporarily displaced 1.5 million people. Kerala has been hit by major floods in 2019; South-West monsoon, 2019 has caused 1038 villages of 13 districts and 125 lives are lost. Kerala has received 32% rainfall deficiency and Wayanad received 55% deficiency in rainfall from normal. The low pressure over Bay of Bengal has strengthened Monsoon winds. Kerala has received 123% excess rainfall than average rainfall. In August 2018, 96% excess rainfall has been received. The most affected northern districts are Wayanad (110%), Kozhikode (176%), Palakkad (217%), Malappuram (176%), Ernakulam (140%) and Thrissur (127%). 125 lives have been lost and 42 persons are injured due to landslides and floods. For Wayanad and Kozhikode the fatalities is reported as 17 and 14 respectively. The unprecedented heavy rains have caused damage to both Wayanad and

Kozhikode districts. 1967 houses (fully damaged) and 19,297 houses (severely damaged), in which 472 and 89 houses are fully damaged in Wayanad and Kozhikode districts respectively. And 1079 and 7230 houses are severely damaged in Wayanad and Kozhikode districts respectively. State Disaster Response Fund has provided relief to the community. In Kozhikode 321 camps have been opened with 94031 inmates and in Wayanad 214 camps are opened with 60416 inmates (SDMA, 2019). In both years, flood and accompanied landslides have been disastrous causing loss of lives, property and infrastructure.

1.9.2 COVID 19 Pandemic

First COVID-19 case in India has been reported on 30 January 2020, in Thrissur, Kerala. Kerala has highest cases in the nation in March 2020. Indian government imposed complete lockdown from 24th March 2020. From July 2020, patients with influenza, and acute respiratory illness are tested. The tracing and isolation of contact with infected, prevented the virus within the state. Contact tracing, review meetings, commitment, co-ordination, and awareness campaigns and psychological support are the activities for disaster risk reduction.

Health strategy, 'Break the Chain' campaign has made efforts for hygiene, self-protection, and social distancing. The positivity rate obtained by dividing confirmed cases is a powerful indicator of assessing the current level of Coronavirus transmission in the community and for assessing whether enough testing has been done for the number of people who are getting infected. After the COVID-19 cases confirmed, on February 2020, the state has declared the situation as a 'Health Emergency'. Government of Kerala, after considering the report of the Health Department and Economic slowdown, has declared COVID-19 as State Specific Disaster (Government of Kerala, 2020). After perceiving the probability of the strong COVID-19 outbreak, the Kerala Government has exercised powers under Epidemics Diseases Act (1897) along with the Disaster Management Act (2005) and hence notified lockdown in the state. This is followed by issuing guidelines for strict compliance by all departments, offices, law and order forces. Local Self Government and many in the state under the power has vested on Section 24 of Disaster Management Act, 2005. KSDMA has used Geographic Information System (GIS) in the initial phases to track the most optimised route for the COVID-19 affected patients to reach with minimum

exposure and in the shortest time. Predictive analysis using mathematical models are conducted to assess the number of beds required, the runout capacity after considering the current scenario. The government of Kerala set up round the Clock War Room to monitor and supervise the COVID-19 situation in the state. Different departments like Transport, Health, Revenue, Police, Local Self Government, and Food and Civil Supplies Department have been nominated as top-level management to facilitate management. Keeping into mind the twin burden of responding to floods and COVID-19, KSDMA quickly teamed up with the health experts to devise a detailed plan to effectively respond to the two disasters.

Funds of Rs. 50 lakh have been allocated to every district of Kerala to the respective District Collectors from the state response und. KSDMA has made it compulsory for all the DDMAs to compile a daily report of actions and also ensured minimal staff at Local Self Government Offices for COVID-19 operations (Government of Kerala, 2020). To ensure district-level preparedness, Kerala's ArogyaSetu Portal has become an effective tool of risk communication. State Police Media centre and Kerala Police Social Media Cell have been functioning relentlessly to make attentiveness on COVID-19 through social media. 'Break the Chain' initiative has spread awareness among the communities regarding to wash hands using soap or sanitizers, wearing masks and maintaining social distancing. Besides this, the Kerala police have played a great role in tracking the 'Fake News'. To stop the rumours and busted myths regarding COVID-19, a 'Corona Media Cell' has been set up to monitor the threat of fake news. Empowered women self-help groups like Kudumbashree have been working extensively during this period.

1.9.3 Landslides

SDMA, Kerala has confirmed Wayanad landslide as the largest landslide in India's history. Wayanad in Kerala has witnessed worst landslide on July 30, 2024, devastating the villages of Chooralmala, Punchirimattam, and Mundakkai. The destruction of the landslide is unimaginable, over 231 people confirmed dead, and 218 body parts have been recovered. After the massive landslide, debris still scattered across the landscape. The Wayanad landslide is five times bigger than Malpa landslide in Uttarakhand (1998), which has been recorded as the biggest debris flow in India and three hundred times bigger than 2020 landslide happended in Pettimudi, Munnar. All relief camps in Wayanad have been

dispersed on 24th August 2024. 702 families residing have relocated to other shelters. The Indian Army established command-and-control center in Kozhikode for humanitarian assistance and relief operations. 4,000 have been rescued and more than 10,000 are relocated to 93 relief camps. Machines are deployed for search and rescue operations.

Puthumala in Wayanad district located 1230m above sea level is affected by landslide on 8th August 2019, due to heavy rainfall of around 500 mm. The epicentre is 290m high brought down 20 hectares of land pushing to 2 kms. The lower parts soil structure is fragile, soaked and rocks crushed, turned to a massive landslide. Tea plantation of 100 acres has been washed away. Land slide, land slip and silt deposit affected 40 ha of land. The landslide happened is in the part of ecologically sensitive Western Ghats. Vilangad-Malayangad landslide in Kozhikode has resulted bridge collapse, leaving 12 families isolated. The disaster caused damage to the houses located on the riverbank and roads washed away in the high ranges. The landslide is a kind of similar to Wayanad landslide.

Disaster preparedness is essential because of the characteristics of the disasters which happen unexpectedly, and post disaster phase is often apprehensive. The community must able to behave to disaster risk conditions (Wang & Ritchie, 2012). The safety perceptions are the important factor in destination image (Sharifpour et al., 2014; Trumbo et al., 2016; Williams & Baláž, 2015). The perceptions of safety after disasters are crucial to attract visitors to the destination (WTTC, 2018). Tourism is susceptible to various disasters (Becken & Hughey, 2013), and disasters will deter visitors to travel to affected areas (Bhati et al., 2016). Precautionary measures have to be taken to create awareness and preparedness for community in disaster scenario.

1.9.4 Nipah Virus Outbreak

The Nipah virus outbreak has been first confirmed in Kozhikode on 19th May 2018. There have been 17 deaths and 18 confirmed cases on 1st June 2018. Kozhikode and Malappuram are the affected districts. A team of Indian Government's National Centre for Disease Control has provided facilitation in response. Technical support to nation is provided by WHO. Nipah outbreak reported in Kerala is the third outbreaks after West Bengal (2001, 2007). The state and central governments have managed the outbreak.

outbreak.Kerala's first Nipah outbreak killed 17; fatality rate of 94.4% (KSDMA, 2018; WHO, 2018).

1.10 Tourism Disaster Management

Tourism disaster management includes the strategic plans and measures to reduce the risks related to disasters. It is significant in tourism for the sustainable future, protection of communities, to provide safety for the visitors and destinations. TDMholds an important attention in research. Theoretical and empirical researches havebeen done invarious aspects of disasters management.Existing tourism researches on disasters have used case study approaches and focused mainly on the disastersimpact on tourists' intention, the crisis management in achieving resilience intourism destinations, and disaster management methods to support tourism development (Huan et al., 2004; Kozak et al., 2007; Chiou et al., 2013; Becken et al., 2014; Miller et al., 2017; and Jin, 2019). The disaster preparedness in tourism is less explored area of research in tourism and mainly the behavioural aspects of the local community. The research discusses the behavioural patterns of the local residents in disaster preparedness for the selected tourism destinations.

1.11 Research Questions Developed

Disaster preparedness is a protective behaviourof individuals to take measures to prepare for future disasters and mitigate their impacts on vulnerable communities. Human behaviour in disaster management is important to minimize the trauma and to return them to normal. Understanding individualbehaviour in disastersis complex. This is where the behaviour and psychology provide insights for the emergency preparedness. Understanding behaviouris an essence of creating plans to facilitate humans to response, guide and govern. It also includes how people make decisions, act, and change behavior in a sudden situation. The study is an elucidation of identifying the behavioural factors of an individual in DPB in the face of crisis.

Based on the reviews following are the research questions to be answered:

1. What are the factors influencing disaster behavioural preparedness of the local residents?
2. Does the behavioural factors of the local residents have influence on disaster preparedness in tourism?

3. Does self-efficacy have a mediating role between place attachment and disaster preparedness?

4. Does community participation attitude and community participation intention have a mediating role among risk perception, place attachment and disaster preparedness behaviour?

1.12 Statement of the Problem

Wayanad and Kozhikode districts of Kerala are highly vulnerable to the natural and manmade disasters. The behavioural factors must be identified to make local community more confident to react and respond to the disasters in facilitating local community to engage in preparing for disasters and training to respond in the terms of individual behaviour. The local community is unaware about the relevance of preparedness in disaster management, for minimizing the impact of disasters in tourism, the influencing behavioural factors of the local community need to be explored.

1.13 Objectives of the Study

The major objective is to examine the factors influencing tourism disaster behavioural preparedness through local community participation of Wayanad and Kozhikode districts, and to achieve the major objective, the following subsidiary objectives are developed:

1. To identify the factors influencing disaster preparedness behaviour of local community

2. To identify the relation of behavioural factors (RP, PA, CPA, CPI and SE) on disaster preparedness behaviour.

3. To investigate the mediating role of self-efficacy between place attachment and disaster preparedness behaviour.

4. To investigate the mediating roles of community participation attitude and community participation intention among risk perception, place attachment and disaster preparedness behaviour.

1.14 Need of the Study

Disaster preparedness behaviour is crucial in tourism disaster management in which the individuals would involve in mitigating efforts to lessen disasters impact in the destination. DPB provides to foster awareness, training and behavioural change of local residents in participating disaster preparedness. DPB of local residents in tourism destinations strengthens the risk management measures, understand evacuation measures, safeguard infrastructure, and minimises the potential losses. Preparedness behaviour of the local residents could co-ordinate activities of government authorities, emergency and tourism stakeholders to work for disaster management framework.

The study titled, 'Exploring the Factors Influencing Disaster Preparedness Behaviour of Local Residents in Disaster Affected Tourism Destinations in Kerala' addresses the gap between disaster management and tourism. Kerala is prone to disasters, and as a popular tourism destination, the tourism industry of the state is also facing the challenges by disasters. Identifying the factors influencing disaster preparedness behaviour to enhance residents' preparedness measures are essential. By exploring the DPB factors, the research could provide valuable insights to the tourism stakeholders and policy makers in developing context-specific strategies. Disasters not only affect the local residents but also impact on Kerala's tourism industry directly. Local residents in disaster management is significant however overlooked but not given much attention in TDM. Also, understanding the factors influencing residents' behaviour is important because it directly affects the emergency response for recovering from disasters. Wayanad and Kozhikode districts of Kerala are highly vulnerable and environmentally sensitive destination to disasters. Both districts are tourism destinations attracting visitors all around the year because of the climate and geographical attractions. Recent years have witnessed disasters and devastating damages to the both districts with floods, landslides, COVID 19 pandemic, Nipah virus outbreak affecting the afore-mentioned destinations, local community and tourism development. The behavioural aspects of the local residents need to be studied in order to prepare themselves for future disasters. Community behaviour leads to human actions that are important in tourism disaster management to improve risk communication to adapt behaviours in pre, during and post tourism disaster management. Behaviour could motivate and ensure individual to act and prepare for disasters. Therefore, factors influencing the

individuals' disaster preparedness of Wayanad and Kozhikode need to be assessed. Study findings could provide insights to the stakeholders in addressing the need of decision-making in tourism disaster preparedness with the support of the empirical research to understand the DPB of residents of Wayanad and Kozhikode. And the research contributes to the literature of tourism and disaster management in understanding the factors influencing DPB of local residents.

1.15 Scope of the Study

Disaster preparedness is improving the capacities of an individual before a disaster happens which will reduce impacts. Kinds of disaster preparedness in physical measures include availability of food and fund, health facility, warning systems, infrastructure, relief systems, and shelves. Local residents of disaster affected tourism destinations and vulnerable area have the significant role in preparing for the upcoming disasters. The research focuses on Wayanad and Kozhikode districts, prone and sensitive areas to disasters in context of TDM. The responses of local residents in disaster affected tourism destinations are analyzed to identify the behavioural factors of disaster preparedness. It discusses how the behavioural factors have significant relation with the DPB. The study understands the significance of local community in disaster preparedness and facilitates them to engage in destination management in disaster scenario. Also it could be a recommendation to stakeholders for tourism disaster management in preparing local community in the perspective of behavioural patterns. The study is a suggestion to build a supporting framework to tourism disaster preparedness practices to the host community of Kerala tourism to cope with future disasters. And finally it adds to the existing literature of behavioural theory of disaster preparedness. The study is significant in tourism disaster management by targeting the local residents of tourism destinations, who are directly affected by the disasters to respond first to the disasters. Also the key factors of disaster preparedness behaviour of the residents have been identified to assess the preparedness in providing insights to improve the behavioural factors incorporating preparedness with tourism disaster management strategies. It could raise awareness among the residents and local authorities in enhancing and developing preparedness efforts for leading more proactive DPB of residents in tourism destinations. The scope of the research includes the significant and insignificant relationship found between the DPB and the behavioural

factors in the theoretical background could reflect in the practical way of disaster preparedness in tourism. Since the studies are limited in TDM, the study findings and suggestions offer tourism stakeholders to take part in the TDM process by identifying the significant insights to explore the context of tourism disaster management. It reduces the impacts of the disasters with proper planning involving the local community participation.

1.16 Limitations

The following are the limitations of the research:

- Generalizability: Due to the community characteristics, regional variations and type of disasters happening, the study might not be applicable to every geographical regions.
- The study has not specifically studied the behaviour preparedness of Most Vulnerable Groups (MVGs) such as elderly citizens, pregnant women, children, and differently-abled, because the preparedness behaviour of MVG may differ from one other.
- Disasters are volatile in nature leading to perception bias; the characteristics of disasters, (uncertainty and unpredictability) could change the perception of local community in terms of disasters happening and individual characteristics. Long gap of disasters happening in the regions also could change the mentality of the people which results difference in the DPB.
- Qualitative approach is not addressed; the study is purely on quantitative measures. The emotional, behaviour and sentimental view of respondents are not considered in the present study.

1.17 Structure of the Thesis

The research study is structured as below:

Chapter 1: The *Introduction* chapter discusses the concepts of disaster management in tourism, disaster management cycle, recent disasters happened in Wayanad and Kozhikode districts of Kerala, research questions, statement of the problem, objectives, formulated hypotheses, need, scope and limitations.

Chapter 2: The *Review of Literature* chapter provides the literatures explored in the concepts of DPB, RP, PA, SE, CPA and CPI. The adapted models and the research gap identified have also incorporated in the chapter.

Chapter 3: The *Research Methodology* chapter discusses the overall research design. The data collection methods, conceptual model proposed, questionnaire construction, sampling design, data analysis tools used, hypotheses developed and profile of the study areas, Wayanad and Kozhikode districts of Kerala are discussed in depth in the chapter.

Chapter4: The *Data analysis and Results* chapter is the data analysis, results and the interpretation of the data. The results and interpretation of the analysis such as Frequencies, Descriptive statistics, One way ANOVA, Confirmatory Factor Analysis, Structural Equation Modeling and Mediation analysis are provided in the chapter.

Chapter 5: The *Findings, Suggestions & Conclusion* chapter provides the summary of the findings of the analysis results, the suggestions developed to advance the tourism disaster management and conclusion.

1.18 Chapter Summary

The Introduction chapter of the study, 'Exploring the Factors Influencing Disaster Preparedness Behaviour of Local Residents in Disaster Affected Tourism Destinations in Kerala' provides an overview of the study. It is dealing with the concept of disasters, types, tourism disaster management and its phases, and institutional support in India. The vulnerability profile India and Kerala are also discussed to get an outline of the disaster risks of the regions. The summary of common disasters happening in the study areas and disasters experienced by the community are discussed. A brief of technological advancement in disaster management are incorporated. After discussing the disaster management concepts, the research questions, problem statement, objectives, scope and limitations are discussed.