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REVIEW ARTICLE

PUBLIC INSTITUTIONAL RESPONSE POLICIES IN DISASTER MANAGEMENT: A STUDY OF KERALA (STATE) FLOODS 2018 IN INDIA

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ABSTRACT

The disaster management includes a complex set of activities, which are carried out both in the pre and post disaster stage.The disaster emergency management practitioners and scholars refer to these activities as the four phases of the comprehensive emergency management cycle, which include mitigation, preparedness, response and recovery. Mitigation and preparedness are pre-disaster activities, while response and recovery constitute post-disaster activities.The governmental institutions response role is very important than the private sphere activity for handling the disaster management.The Kerala(state) floods took place in the month of august ,2018. Bothe the Kerala(state)government and the central government of Indiahad played an immense response role by various policies for successfully dealtthis state'sfloods in 2018 in India.

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INTRODUCTION

The human populations in the world are becoming more vulnerable to disasters, especially those of the catastrophic scope for many reasons. In the past centuries, people had believed that the disasters werecaused by forces outside of human control. The floods, volcanoes, and other natural disasters of cyclones etc were labelledas "acts of God" and were interpreted as punishment or disfavour for the human beings. Russell Dynes (2000) had proposed that a naturalistic or "modern" interpretation of disaster events first occurred in 1755, following a major earthquake in Lisbon city of Portugal.This earthquake had killed at least ten thousand people, although some estimates place the toll was as high as seventy thousand (Drabek Thomas E.(2008),p.382). The civil authorities of Lisbon had led efforts to rebuild the city and gradually increased their authority over the church in political matters.This shift had led to alternative thinking about attribution for disasters.Although, not universally accepted even today, naturalistic interpretations reflecting enlightenment philosophy paved the way for new approaches to disaster management. Unfortunately, numerous trends are acting in concert to place more andmore humans at risk despite accelerated efforts at management. Among these are population changes, increased reliance on technology, and climate change(Drabek Thomas E.(2008),p.383). Throughout the human history, lives had been cut short by disasters.This term refers to a broad range of events that vary in speed of onset, duration, magnitude, cause, and other characteristics.But always there was both human suffering and disruption of normal community functioning (Drabek Thomas E.(2008),p.381).Public, private, and Non Profit (NP) sectors, all play a vital role in disaster management. There is a broad spectrum of organizations, each having specific functions, that in times of crisis work closely. In United States of America, institution of public sector is in charge of overall disaster management and is mandated to design and implement plans, programs, and operations. For instance, the public sector's responsibility role is to develop policies and plans to mitigate and prepare for a set of hazards and to respond and recover from disasters (Velotti Lucia and Cavaliere Paolo. (2018), p.1419). The NP sector supports the public sector and operates in different capacities throughout all phases of disaster management in the effected states. In United States of America, the cooperation between the public and the nonprofit sector is outlined in the "Whole Community Approach" policy that aimed to create public private partnership in order to better respond to the disasters. The Non Profit Organizations

(NPOs) have a considerable role in the field of disaster management, since they were at the frontline of the response and already have established strong relationships with local communities. Therefore, NPOs can have an enormous impact on communities,during the pre- and post-disaster phases(Velotti Lucia and Cavaliere Paolo. (2018), p.1419). There are many types of disasters exists and these are commonlydivided into three categories such as (1) natural, (2) technological,and (3) conflict-related(Drabek Thomas E. (2008),p.381). Various nations organize for response in different ways, but all disasters are local. They occur in some town or village or some state or region, and the victims are the people, property, and environment in that area(Edwards Frances L. (2018)). The disaster reliefis the assistance provided to individuals, families, and communities to help them cope with disruptive, disorienting events in the effected states. The disaster events can be caused by natural hazards, like hurricanes, earthquakes, wildfires, or tornadoes, or they can be triggered by humans, such as nuclear accidents, health epidemics, or terrorist attacks. Thus, the scope of the disaster assistance had expanded to encompass a wide variety of emergency situations.For the disaster relief programs, governmental institutions used to play a key role in the development and implementation of disaster relief in contemporary societies(Schneider Saundra k. & Lewis Daniel c. (2011),p.440).

Thegovernmental involvement is very necessary, because many disasters cannot be addressed through private efforts only. As a result, most countries had created a set of policies andprocedures to guide their governmental operations.Thesepolicies identify, when the government will become involved andthe types of assistance it has to be provide. In most nations, governmental disaster relief policies had coveredfour primary areas such as mitigation, preparedness, response, and recovery(Schneider Saundra k. & Lewis Daniel c. (2011),p.440).The response programs are designed in such a way that to address the immediate problems of disaster situations. The objectives of these programs are to save lives, minimize damage, and help facilitatethe recovery efforts that will follow in the effected states or countries. If needed, officials have to be activate warning systems, issue evacuation orders, and set emergency response plans into motion even before a disaster strikes in the states. However, most response activities focus on those operations that take place after an event had occurred. For example, opening relief shelters, providing medical care and essential services, re-establishing power and communication systems, and clearing debris. Once the hazardous conditions have subsided, response activities often evolved into efforts to assess the extent of the damages and to initiate longer term relief. In the majority of nations, disaster relief was implemented in a fairly centralized manner from the top to down. That is, the national or central government is primarily responsible fordeveloping and administering emergency aid. But the bottom up approach is also evident in countries like the United States, Canada, and Australia(Schneider Saundra k. & Lewis Daniel c. (2011),p.440).As far as disaster response management is concerned, there are four phases to emergency disaster management such as mitigation/prevention, preparedness, response, and recovery. Response includes the organization of personnel and resources and the delivery of services to victims and communities with the goal of ending the emergency disaster. Disaster is a type of emergency. So, this can be called as Disaster emergency management (Edwards Frances L.(2018).

Disaster Management in India: As per the Government of India's Disaster Management Act, 2005, the word disaster means a catastrophe, mishap, calamity or grave occurrence in any area, arising from natural or man made causes, or by accident or negligence, which results in substantial loss of life or human suffering or damage to and destruction of property or damage to 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(https://legislative.gov.in /sites/default/files/A2005-53.pdf).

In order to over come these, the 2005 act mentioned about disaster management, which means a continuous and integrated process of planning, organising, coordinating and implementing measures, which are necessary or expedient for (1) prevention of danger or threat of any disaster; (2) mitigation or reduction of risk of any disaster or its severity or consequences; (3) capacity-building; (4) preparedness to deal with any disaster; (5) prompt response to any threatening disaster situation or disaster; (6) assessing the severity or magnitude of effects of any disaster; (7) evacuation, rescue and relief and (8) rehabilitation and reconstruction(https://legislative.gov.in/sites/default/files/A2005-53.pdf).

Moreover, the Disaster Management Act, 2005, says thatthe District Authority means the District Disaster Management Authority constituted under subsection (1) of section 25. The Local authority includes Panchayati raj institutions, Municipalities, a District board, Cantonment board, Town planning authority or Zila Parishad or any other body or authority, by whatever name called, for the time being invested by law for rendering essential services or with the control and management of civic services within a specified local area.The act defined the State Authority,which means the State Disaster Management Authority(SDMA) established under subsection (1) of section 14 and includes the Disaster Management Authority for the Union territory constituted under that section.The Chief Minister of the particular State, who shall be Chairperson and ex officio of the SDMA. The State Government means the Department of Government of the State having administrative control of disaster management and includes Administrator of the Union Territory appointed by the President of India under article 239 of the Constitution of India. The act defined the State Plan as the plan for disaster management for the whole of the State prepared under section 23(https://legislative.gov.in/sites/default/files/A2005-53.pdf).

The National Disaster Management Authority (NDMA), which is headed by the Prime Minister of India is the apex body for disaster management in India. This was established based on the Disaster Management Act, 2005.The setting up of NDMA and the creation of an enabling environment for institutional mechanisms at the State and District levels is mandated by the Disaster Management Act, 2005. The NDMA is mandated to lay down the policies, plans and guidelines for disaster management for the whole India.It also envisioned the development of an ethos of prevention, mitigation, preparedness and response (https://ndma.gov.in). The Indian government strives to promote a national resolve to mitigate the damages and destructions caused by natural and man-made disasters through sustained and collective efforts of all

Government agencies, Non-Governmental Organizations and People's participation.This is planned to be accomplished by adopting a technology-driven, pro-active, multi-hazard and multi-sectoral strategy for building a safer, Disaster resilient and dynamic India.The NDMA logo reflects the aspirations of this national vision of empowering all stakeholders to improve effectiveness of the disaster management in India. The NDMA has 5 major divisions viz Policy & Plans, Mitigation, Operations & Communications & Information & Technology, Administration& Capacity building and Finance(https://ndma.gov.in). In India, for response to the various disasters, it established institutions of NDRF, SDRF, Emergency Operations Center, Civil Defence, Fire Service and HomeGuards(https://ndma.gov.in).Flood is one of the disaster. India is highly vulnerable to floods. Out of the total geographical area of 329 million hectares (mha), more than 40 mha is flood prone.This can be attributed to many reasons including a steep increase in population, rapid urbanization andgrowing developmental as well as economic activities in flood plains coupled with global warming. An average every year, 75 lakh hectares of land is affected(https://ndma.gov.in). The Kerala(state) floods, which had happened in 2018 are analyzed below.

Kerala(state) Floods in 2018: The Kerala, a south western coastal state of India is flanked by the Arabian sea on the west and the western ghats mountains on the east. The Kerala(state) stretches north-south along a coastline of 580 km with a varying width of 35 to 120 km. The terrain divides the State east through west into three distinct regions- hills and valleys, midland and plains and coastal region. The eastern edge, along the Ghats, comprises steep mountains and valleys, covered with dense forests.There are 44 rivers in the state of Kerala, all of which originate in the western ghats, of which 41 flow towards the west into the Arabian sea and the 3 east flowing rivers form tributaries of the river Cauvery in the neighbouringstates. The backwaters are a peculiar feature of the Kerala. Canals link the lakes and backwaters to facilitate an uninterrupted inland water navigation system from Thiruvananthapuram to Vadakara, distance of 450 km(JRDNA(2018),p.11). Kerala(state) has consists of 14 Districts, 21 Revenue divisions, 75 Taluks, 152 Block panchayats, 941 Gram panchayats, 87 Municipalities, 6 Corporations, and 1664 Villages. Located between 8°18'N and 12°48'N latitude and 74°52'E & 77°22'E longitude, the Kerala encompasses 1.18% of the country, and holds 3.44% of the India's population. With a population of 33,406,061 at 860 persons per km, Kerala is nearly three times densely populated compared to the rest of India. Kerala's Human Development Indices (HDIs) such as primary education, health care and elimination of poverty are among the best in India. Kerala has also made an extensive stride in reducing both rural and urban poverty(JRDNA(2018),p.11). Kerala with a population of over 3.3 crore is globally recognised for its impressive achievements in human development. Kerala is highly vulnerable to natural disasters and the changing climatic dynamics given its location along the sea coast and with a steep gradient along the slopes of the western ghats. Kerala is also one of the most densely populated Indian states (860 persons per square kilometres) making it more vulnerable to damages and losses on an account of disasters (https://sdma.kerala.gov.in/wp-content/uploads/ 2020/08/ Kerala- Post-D isaster-Needs- Assessment.pdf,p.12). The heavy monsoon rain of 2018 year had brought widespread flooding to several districts of Kerala(state), which triggered thousands of small to big landslides. The extreme and prolonged rainfall spell in august month led to the worst flooding in Kerala in nearly a century, which had impacting almost 5.4 million people, one-sixth of the State's population(JRDNA(2018),p.8).Moreover, in august 2018, the state of Kerala had experienced its worst flooding since 1924. The devastating flood and associated landslides were affected 5.4 million people and claimed over 400 lives (Hunt Kieran M. R. and Menon Arathy (2020),p.2433).

However, Kerala is the well-developed state of India in terms of its Physical Quality of Life Index(PQLI),governance, social equity and religious harmony. It had experienced a disaster of gigantic proportions with the flood inaugust 2018. The weathermen have said it is the biggest to have hit the state in close to a century. The disaster that struck the state in the middle of August changed the ecosystem, both on land and water, which adversely affected the bio resources (biodiversity), livelihood and capital wealth etc. While at least 483 human lives and thousands of livestock were lost, the disaster incurred immense losses to the state's infrastructure, as many roads and bridges, thousands of houses were damaged or washed away. Large quantities of agricultural produce were lost putting the livelihood of farmers at risk(RGIDS (2018), p.5).In an august month of 2018, the state of Kerala experienced its worst flooding since 1924. The devastating flood and associated landslides were affected 5.4 million people and claimed over 400 lives. The natural disaster had dented tourism industry of the state. It drew the attention of world organisations including the United Nations (UN), Asian Development Bank (ADB) and the World Bank. The total loss is estimated around rs.40,000 Crore. The flood and associated events made lakhs of Keralites suffer for the next five to 10 years. However, this calamity needs to be accepted as a challenge and yet an opportunity to rebuild the state and to provide better standard of living to all sections of its society(RGIDS(2018),p.5).The state had faced the wrath of nature in the form of flood and landslides during the monsoon rain of 2018. The calamity left in its wake a trail of destruction all throughout the state with several areas submerged under water, landslides in the hills and flood in the valleys and plains. The continuous rainfall from 8th to 18th of august,2018 was excessive and unprecedented, especially in the hilly districts of Idukki and Wayanad, which was around 290 mm, instead these areas received around 700 mm of rainfall that acted as the trigger for the floods(RGIDS(2018),p.7).

However, between June and August 2018, the Indian state of Kerala was affected by a natural disaster caused by a once-in-the-century rainfall event. The flooding and landslides, which caused from the rainfall resulted in approximately 500 casualties, 19,000 homes destroyed, temporary displacement of 1.1 million persons, and 5.5 million people affected. The World Bank estimated a total economic loss of 3.4 billion USD and the UN system estimated 3.7 billion USD in recovery costs (https://www.gfdrr.org/ en/events/ WRC4/session4b). Between June 1stand August 19th, 2018, Kerala had received abnormally high rainfall about 42% above normal, which had resulting in the worst ever floods since 1924, impacting almost 5.4 million people, one-sixth of the State's population. Kerala had received 2346.6 mm of rainfall from 1st June 2018 to 19th August 2018 in contrast to an expected 1649.5 mm of rainfall (IMD data). This rainfall was about 42% above the normal. Further, the rainfall over Kerala during June, July and 1st to the 19th of August,2018 was 15%,

18% and 164% respectively, above normal. The heavy monsoon had brought widespread flooding to several districts of Kerala(state) and this triggered thousands of small to big landslides. Around 1,259 out of 1,664 villages spread across its 14 districts were affected. Seven districts were worst hit, where all the districts were notified as flood affected. These districts were such as Alappuzha, Ernakulam, Idukki, Kottayam, Pathanamthitha, Thrissur and Wayanad. Water levels in several reservoirs were almost near their capacity due to continuous rainfall. Due to heavy rainfall, the first onset of flooding had occurred towards the end of July. Thirty-five dams across the State were opened to release flood runoff. All five overflow gates of the Idukki dam were also opened for the first time in 26 years. Heavy rains in Wayanad and Idukki caused severe landslides (https://sdma.kerala.gov.in/wp-content/uploads/2020/08/RKDP-Plan-report.pdf, p.22).

Several districts of Kerala were inundated for more than two weeks due to heavy rains induced floods. The limited capacity of Vembanad lake and Thottappally spillway worsened the flooding in the Kuttanad region and the backwaters. The worst affected districts were Wayanad (Kabini sub-basin), Idukki (Periyar sub-basin), Ernakulam&Thrissur (Periyar and Chalakudi sub-basins), Alappuzha and Pathanamthitta (Pamba subbasin). According to the flood-affected area maps provided by the National Remote Sensing Centre (NRSC), between 16th July to 28thAugust, 65,188 hectares of the land area was inundated. Many areas were under water for more than two weeks. Nearly 341 landslides were reported from 10 districts. Idukki district was ravaged by 143 landslides. The devastating incident was resulted in a total of 498 casualties, with over 5.4 million people affected with loss of assets and property and 1.4 million people displaced, forcing them to temporarily move to relief camps during the peak of the disaster. Many of the displaced were women and children (https://sdma.kerala.gov.in/wp-content/uploads/2020/0 8/ RKDP- Plan-report.pdf, p.22). However, the main causative factors of Kerala flood 2018 were high rain fall, almost all the dams in Kerala were almost full by the end of July-2018, overflow of rivers and blockage of water bodies, poor resource management, lack of awareness, poor discharge capacities of water bodies and unplanned urbanization(NIDM (2020),p.40).

Institutional ResponsePolicies to Kerala(state) Flood in 2018: Response includes actions aimed at limiting injuries, loss of life, and damage to property and environment that get impacted during the disaster. It was the most visible function during disasters and hence it has to be carried out effectively as it is always under scrutiny. Although response functions include saving lives and giving assistance in the early phase of a post disaster scenario, these have to be done keeping in view of the geographic location of the disaster. Response consists of evacuation of humans, livestock and other animals. Immediately after the floods, the basic amenities of providing food,clothing, shelter and medicines to disaster survivors is of utmost importance. If these needs are fulfilled timely and immediately, the disastrous effects of the disaster to living beings can be reduced. In the wake of Kerala floods, various stakeholders like institutions of NDRF, Indian Army, State-led and other community volunteers, fishermen, women volunteers, Non-state actors as well as technological(Social media, Web-based application, and Crowd sourcing) interventions responded to the massive deluge in a very effectively manner(NIDM(2020),p.45).The national public institutions response through public policies to Kerala(state) flood of 2018 handling are analysed below.

National Disaster Response Force (NDRF): *The Kerala (state) experienced heavy rain fall from the middle of monsoon season in India. Incessant heavy rainfall began on the intervening night of August 8-9,2018 with landslides as water released due to opening of shutters and gates of several dams in the state. The devastating floods had swept all the things in the districts which were worst affected. The roads were submerged, no communication system was functional. At that time NDRF team called for rescue (*https://ndrf.gov.in/ operations/kerala-floods-2018). *The NDRF is a central government national institution in India.*

*The NDRF had made its highest ever deployment in a single state, and deputed 58 teams for fighting flood fury in the worst affected areas in the Kerala. Maximum teams were deployed in worst affected districts such as Pathanamthitta, Idduki, Alappuzha, Wayanad, Kotayam, Ernakulam, Thrissur, Kozhikode, Trivendrum and Mallapuram.Despite all odds, the brave-hearts of NDRF work throughout day & night with full zeal and commitment to reach to the every people in the flood ravaged state. The NDRF had successfully rescued 535 persons, evacuated 24690 persons as well as 119 live-stocks and further they shifted them to safer places. Teams were also retrieved 10 dead bodies. In addition, teams were also provided medical assistance to flood affected victims and assisted the state authorities in distribution of relief materials(*https://ndrf.gov.in/operations/kerala-floods-2018).
As part of proactive measures, the NDRF had pre-positioned its 3 teams in Kerala for the emergency response since 29th July, 2018 in Ernakulam, Thrissur and Idukki. On requisition of State Emergency Operation Centre (SEOC) of Kerala, 3 additional teams were sent by road from NDRF base Arakkonam and 4 teams were airlifted from Indian Navy Ship INS Rajalion on 09th August, 2018. To supplement the efforts of State Government, four more teams were airlifted from NDRF base Arakkonam on 10th August, 2018 making 14 teams functional on the ground. The Chief Minister of KeralaPinarayi Vijayan , on further assessment, decided to approach the Centre for assistance in the form of additional NDRF Teams(NIDM(2020),p.45).

On 15th August, 2018, the meeting of the National Crisis Management Committee (NCMC), which is the country's apex body for handling emergency situation was held in New Delhi to ensure continued support and scaled up the assistance to the Kerala in view of the prevailing flood situation. As per direction of Government of India, 44 additional NDRF fresh teams were airlifted on 16th& 17th August, 2018 to Kerala from the NDRF base Pune, Ghaziabad, Kolkata, Odisha, Gujarat, Mundali, Bhatinda, Arakkonam and Patna places in order to scale up the operations(NIDM(2020),p.46). Lack of access to the affected areas due to road blocks along with landslides and flooding hampered the rescue operations. The devastating floods had swept all fourteen districts of the state, stuck thousands of people in various regions due to damaged roads and landslides.The districts of Pathanamthitta, Idukki, Alappuzha, Wayanad, Kotayam, Ernakulum, Thrissur, Kozhikode, Trivandrum and Mallapuram were the worst affected. The bridges and roads were completely destroyed and no communication system was functional. This was the situation when NDRF was called for rescue. The NDRF responders performed war front like services in the hamlets of

rain hit Kerala(NIDM(2020),p.46). Continuous heavy rainfall, endangering weather conditions and terrain rose the fear of another landslide every minute and made the rescue operation very difficult. The flood situation deteriorated with each passing day, as people were separated and needed essential commodities. In the several places that were inaccessible through boats, the NDRF teams persons used rope rescue techniques to made access to the stranded people and provide essential commodities. Maximum numbers of boats were employed to evacuate people with specific areas being allocated to each team/ unit for rescue and evacuation operations. For swift response, the rescue and relief operations were commenced throughout day and night on rotation basis. As mentioned earlier, the NDRF made its highest ever deployment in a single state and deputed 58 teams for fighting flood fury in the worst affected areas(NIDM(2020),p.46).

The maximum teams of NDRF were deployed in worst affected districts such as Pathanamthitta, Idukki, Alappuzha, Wayanad, Kotayam, Ernakulum, Thrissur, Kozhikode, Trivandrum and Malapuram. Besides, NDRF was also assisted the state administration in several other situations like landslides, house collapses and restoring communication facilities, essential services and civil supplies. In total, National Disaster Response Force (NDRF) sent 57 teams along with 435 boats for search and rescue in addition to five companies of paramilitary forces, armed forces and coast guards with 40 helicopters, 20 aircraft, 2 ships, 10 columns and 10 teams of Engineering Task Force. In Kerala, the younger population is generally employed outside the state or the country. It is the elderly population who stays at home with their family members. During the rescue and evacuation operations, elderly and females were reluctant to leave their homes. The NDRF teams assisted such elderly people by providing food and medical assistance as well as psychological support by visiting them at least once in a day(NIDM(2020),p.47).

Indian Army: The Indian army is also a central government institution in India. This was also deeply involved in the rescue and relief operations in Kerala due to flood of 2018. Request for provision of Army assistance was received on 09th August, 2018. Accordingly, Indian Army carried out execution of Disaster Relief tasks on a war footing which has been greatly appreciated by civilian populace and the Kerala(State) administration. The Army rescued over 23,000 people as part of its 'Operation Madad'. As part of the operation, the Army provided medical aid to over 2,000 people. It also restored the connectivity at 42 locations, cleared 22 landslides and constructed 15 temporary bridges. It also pressed into service two Advanced Light Helicopters and two Cheetah Helicopters to rescue marooned people and provide essential supplies to various parts of thestate (NIDM (2020),p.47). Choppers played a crucial role in evacuating people stuck on the rooftops of their flooded homes. Hundreds of people were ensured safety. In total 5 medical teams and 10 groups or columns of soldiers each consisting of 50-60 personnel were sent for performing relief activities in Kerala. Engineering Task forces are time-bound and outcome-focused groups that were convened to support Kerala(state) relief and rescue mission. So, in addition to the 10 flood relief columns, 10 Engineer Task Forces (ETF) each having an approximate strength of 40 personnel from Jodhpur, Bhopal, Pune, Bangalore and Secunderabad were pressed into action. Army also utilized 53 military boats to evacuate civilians from flood affected areas(NIDM(2020),p.49). In spite of continuous and heavy rains, Indian Army columns worked round the clock to restore connectivity to remote villages by constructing temporary foot bridges, bunds and preparing alternate routes. 13 temporary bridges were constructed to reconnect 38 remote areas and total of 3627 personnel were rescued, which included 22 foreign nationals. Relief materials were sent to 19 villages with medical aid. In addition 3000 pre cooked meals and 300 life jackets were handed over to civil administration on 17th August 2018 by the Indian Army(NIDM(2020),p.50).The military helicopters are being used to fly in supplies and personnel to areas where people are trapped officials said(https://www.bbc.com/news/world-asia-india-58940880).

Indian Air force (IAF): The Indian Air force (IAF) is also a central government public institution in India**.** Due to heavy rainfall and resultant extreme floods and landslides, many parts of northern Kerala was left completely isolated in 2018. For this, the Government of Kerala had called IAF for the help, and they had provided immediate assistance by carrying out 'Operation Karuna' and through Humanitarian Assistance Disaster Relief (HADR) mission.The IAF had delivered aid by deploying transport aircraft's on 9thAugust, 2018. With the help of IAF's aircrafts, tonnes of supplies including food, clothing and water etc were provided everyday to the affected population including medicinal help with doctors on board. On 9th of August,2018 alone, 300 KGs of relief material was dropped followed by 900 kg on 16th August(NIDM(2020),p.50).These were thecentral government of India'snational public institutions responses through public policies implemented in order to deal Kerala(state) flood of 2018 .

Kerala (State) governmentLed ResponseGovernance Policies to its Floodin 2018: For immediate response and relief operations due to the flood of 2018,the Kerala(state) government had responded swiftly with rescue and relief operations and saved many lives by rapidly mobilising the following national public institutional forces such as1)Kerala Fire and Rescue Services(4,100 individuals and the entire rescue equipment deployed), 2) National Disaster Response Force (NDRF)(58 teams, 207 boats),3 Army(23 columns, 104 boats),4) Navy(94 rescue teams, one medical team, nine helicopters, two fixed wing aircrafts and 94 boats),5) Coast Guard(36 teams, 49 boats, two helicopters, two fixed wing and 27 hired boats),6) Air Force(22 helicopters from Air Force and 23 fixed wing aircrafts),7) Central Reserve Police Force(10 teams),8) Border Security Force(Two companies and one water vehicle team)(https://sdma.kerala.gov.in/wp-content/uploads/2020/08/Kerala-Post-Disaster-Needs-Assessment.pdf, p.13). The fishing community of the Kerala(state) had rendered phenomenal voluntary assistance towards search and rescue in the flood affected areas. Nearly 669 boats that went out with 4,537 fishermen are estimated to have saved at least 65,000 lives. The Government of India announced an additional assistance of INR 600 crore (USD 85 million) which included ex gratia payment of INR 2 lakh (USD 2,800) per person to the next kin of the deceased and INR 50,000 (USD 700) per head to those seriously injured. The Ministry of Rural Development had sanctioned an additional INR 1,800 crore (approximately USD 260 million) under the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS). Relief assistance was provided to people in camps including immediate food

supplies (rice, wheat, and pulses), drinking water, kerosene and other life-saving items. Food packets and assistance of INR 10,000 per family to clean inundated houses were also disbursed (https://sdma.kerala.gov.in/wp-content/uploads/ 2020/08/ Kerala-Post-Disaster-Needs-Assessment.pdf, p.14).

The fatigue and resource constraints hampered the ability of affected communities to respond to the disaster in the initial days of incessant rains and flooding.The primary role of rescue and relief was conducted by state and non-state service providers. Among these, the government disaster management teams, state government machineries and the local governments played an important role. The formal response received key information from the local administration and the State Disaster Management teams. However, realizing that the formal emergency services would not be adequate to provide such large-scale support, the state government had asked openly to the citizens for participation(NIDM(2020),p.51).

Prompt , efficient rescue and relief operations were conducted by the Government of Kerala with the help of local communities who mobilized around the cause at ground level as well on virtual mode vis-a-vis social media. The role of local volunteers and voluntary groups were immense which were majorly consisted of Keralite youth. The process of rehabilitation in this flood was also marked with inspiring acts of the people of Kerala who, by the sheer force of resilience or desperation for some stability or may be the combination of both, in a week returned to their homes to rebuilding them from the scratch. The administrative machinery of the Kerala government was working in full during the relief operations even though their loved ones or relatives were struggling with the impacts of the flood(NIDM(2020),p.51).

The Kerala State Disaster Management Authority (KSDMA) is a state level public institution in Kerala. The KSDMA as per its responsibility coordinated emergency responses, rescue and relief operations when the flood was ravaging and after the flood. Relief assistance in the form of providing cereals and pulse, drinking water, kerosene and other essential items was given in the relief camps. Food packets and monetary assistance of rs.10,000 per family (for rebuilding inundated houses) were also disbursed. The Kerala state's renowned Poverty Eradication and Women's Empowerment Programme of 'Kudumbashree' was highly effective in these efforts. Kudumbashree members were cleaned the houses and public offices, provided counselling to families, managed community kitchens in affected areas, collected relief material and distributed it in camps, provided assistance for packing of take-home kits, supplied volunteers for various activities, rehabilitated flood victims in their homes, and conducted mass cleaning activities in some districts. They also raised funds and contributed nearly rs.11.2 crores to the Chief Minister's Disaster Relief Fund (NIDM. (2020),p.51), which is a state level public institution in Kerala.

Thousands of families in panchayats like Edathiruthy, Kaipamangalam, Perinjanam and Mathilakam on the banks of Canolly canal took shelter in relief camps. In many places relief and rescue operations were organized which clearly shows the effectiveness of local level planning and leadership. It is reported that local people had sponsored one year rent for all those who have lost their houses completely in Puthupadygrama panchayat. The state administration asked self-governing village panchayats and gram sabhas to contribute in relief panchayat operations and distributing food and drinking water in flood affected areas. The Panchayat staffs were deployed for disaster management operations. The panchayat director issued a directive to all the secretaries to issue a circular entrusting panchayat staff with disaster management activities. Only the essential staff stayed back for office duties.The government had earlier given sanction to local bodies to spend amount for disaster relief from own funds as per requirement. Moreover, staff of panchayats including engineering wing were deployed for disaster management as directed by state disaster management authority(NIDM(2020),p.52). The Central Government along with many other states in India had provided support to the Kerala (state) government's response and relief efforts. The Prime Minister of India, under the Pradhan Mantri AwasYojana (PMAY), had declared financial assistance package of rs.600 crore for providing houses in villages which lost many houses to flood. Clear directions were issued for insurance companies for the timely release of compensation to the affected families and beneficiaries under social security schemes. In addition to contributions in kind such as medical and relief supplies, the Chief Minister's Disaster Relief Fund (CMDRF) had credited approximately rs.1,400 crores from millions of individuals and organizations across India and overseas(NIDM(2020),p.52). This was in order to assist to recover from the flood damage .

The Government of Kerala had conducted timely and efficient rescue and relief operations with heavy support of communities mobilizing on their own, and effective application of information technology and social media by voluntary youth groups. The people of Kerala also had showed remarkable resilience in the face of adversity to the extent that within one week of flood waters receding, most people returned to their homes to rebuild their lives.The administrative machinery of the Kerala government was in full force during relief operations despite many of their own families and property being adversely impacted in floods.The KSDMA had played a critical role in coordinating emergency response, rescue and relief operations during and after the floods. The relief assistance was provided to people in camps including immediate food supplies such as rice, wheat , pulses, drinking water. Moreover, it also supplied kerosene and other life-saving items (https://sdma.kerala.gov.in/wp-content/ uploads/2 020/08/RKDP-Plan-report.pdf,p.22).

CONCLUSION

The disasters are use to take place mainly due tonatural calamities.The Kerala (state) flood of 2018 was also happened due to the natural calamity of heavy excessive rain fall.The government of Kerala,had responded in order to manage this disasterthrough its various state publicpolicies, governance initiatives and also took assistance from the central government of India'spublic institutions through systematically to help the affected people and developed the affected areas as well.

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