

# Impact of Climate Changes in the Life of *People with Disabilities* - A Study Based in Kerala

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**Abstract:** *Climate Change is the defining issue of our time that threaten all the areas of life and it paved path to rise sea levels that increase the risk of catastrophic flooding and other natural disasters. Kerala, a Southern state of India which had undergone terribly flooding in previous years is an example for this drastic climate change. The latest scientific report by the IPCC in 2022 finds earth's climate and climate system is changing in all region and many changes are unprecedented in thousands, if not hundreds of thousands of years. The report clearly states that the role of human influence on the climate system is undisputed. The purpose of this study is to look at climate changes and its harmful effects faced by all people with special reference to disabled people. The study systematically oversees this climate change and its impact on disabled people with a focus on Kerala's climate disasters in recent years. This paper primarily presented with a well - ordered literature review and also the researcher had made an attempt to collect certain qualitative data with Focussed Group discussion and interview among people with disability. So, this study had used a mixed methodology and with a descriptive research design. This paper enlightens to think for the people who are already vulnerable due to their disability and more vulnerable due to climate change. The major findings of this study are: the whole universe is under climate change and human action is a major reason for this shift of climate. Climate change affects and altered globally, nationally and individually. The impact of climate change is heterogeneous and people with disability suffer a lot because of climate change than people without disability. The researcher proposes some intervention models to deal with climate change and disability.*

**Keywords:** Climate change, people with disability, adaptation, preparedness

## 1. Introduction

The climate system changes are being observed since 1950 unprecedentedly and warming of the climate system is unequivocal over decades to millennia. The effects of these changes are seen like atmosphere and ocean warmed, the amounts of snow and ice diminished, sea level risen, and the concentrations of greenhouse gases increased. Human influence on the climate system is clear and it is evident from the increasing greenhouse gas concentrations in the atmosphere, positive radiative forcing, observed warming, warming of the atmosphere and the ocean, in changes in the global water cycle, in reductions in snow and ice, in global mean sea level rise, and in changes in some climate extremes (IPCC, 2013). People with disabilities may be more vulnerable to climate change with their limitations and they are disrupted in many ways during climate change disasters. Kerala, a famed state for its moderate tropical climate is now facing threats from extreme climate events. Its intensity was realized by the common folks only when it knocked on their doorsteps in the form of disasters. This disaster events due to increase of climate change created a panic situation(Mathrubhumi Fact Check Desk, Nov.3, 2021). There is no doubt that all the people regardless age, gender and economic status are suffering due to climate changes but the suffering is very much higher when we compared it with most vulnerable people who are disabled. The situation becomes more worse than normal living and their demands are high for the survival. Their resilience needs more care, concern and support. The following section will discuss these issues in detail.

### 1.1. What does it mean by climate change?

United Nation defines "Climate change as a long - term shift in temperatures and weather patterns. These shifts may be natural, such as through variations in the solar cycle. But since the 1800s, human activities have been the main driver of climate change, primarily due to burning fossil fuels like coal, oil, and gas. Contemporary climate change includes global warming and its impacts on Earth's weather patterns" (UN). The latest scientific report by the IPCC in 2022 finds earth's climate and climate system is changing in all region and many changes are unprecedented in thousands, if not hundreds of thousands of years. Some, such as continued sea - level rise, are irreversible over hundreds to thousands of years. The report clearly states that the role of human influence on the climate system is undisputed(IPCC, 2022). Global warming which is a product of climate change affect people with heat - sensitive medical conditions and they increasingly struggle to cope with soaring summer temperatures due to, such as those experienced in the Pacific Northwest this past June (Alexiou, 2021).

### 1.2. Climate change and people with disability

UN Human Rights (2020) report that climate change is one of the main threats facing humanity, yet people with disabilities have been practically absent from these discussions and there is little literature on the impacts of climate change on their rights. UN Human Rights (2020) discussed that climate change is not the main cause of our hardships, but it is rather the social exclusion that we experience regularly in our daily life, the denial of our rights and the lack of legal protection. A survey published by the

United Nations Office for Disaster Risk Reduction found that 85.7% of disabled people in 137 countries reported that they had not been consulted in their community disaster management processes (UN Human Rights, 2020).

There are different factors that lead disabled people more vulnerable to the ravages of climate change that include ill - health and reduced physical capacity, being overlooked by policymakers and an increased likelihood of forming part of a low socio - economic stratum (Alexiou, 2021). A climate - driven hazard may present a double - burden for people with disabilities as they experience the same challenging event as everyone else, as well as the additional challenge of operating in a disrupted and resource - limited context with a disability. People with disabilities will have an especially difficult time managing mass displacement and migration. Among other things, they may lack access to reliable, accessible transportation, have difficulty finding accessible and appropriate housing, become disconnected from personal or social support networks, experience difficulty enrolling in social services, protection or maintaining healthcare, and/or be unable or not allowed to cross borders because of their disability (Gutnik & Roth, 2018).

### 1.3. Climate change in Kerala - a general view

Kerala is a land in one side western ghat and Arabian Sea and in other side with a unique climate condition from the rest of the country and it covers mountains and valleys, evergreen thick forests, cascading waterfalls, number of rivers etc. The periodical reversal and control of weather in this state is subjected to the wind system in the adjoining Indian Ocean and Arabian Sea. It is also much influenced by western ghats (Climate Change in Kerala- Kerala State Climate Change Knowledge Portal, 2022). Monsoon with heavy rainfall was starting from the first week of June was very regular in Kerala for many years. The state was undergoing summer from March to May. The maximum temperature during this season was 33 to 35 and the minimum temperature was remaining within 20 degrees centigrade at sea level. The winter season starts from November and ends in January was truly a pleasant time. There was a heavy rainfall accompanied by thunder, lightning and strong wind in the month of October. All this cyclical climate experience is not seen in Kerala for the past decades. People could predict and expect the monsoon, winter and summer till a decade back. The drastic changes we experience today is the creation of this past decade.

Kerala experienced decline in annual and monsoon rainfall which was very regular in decades back. Temperature had increased in during these past decades. The mean annual maximum temperature over Kerala has risen by 0.8 degree centigrade, the minimum temperature by 0.2 degree Celsius and the average by 0.5 degree centigrade between 1961 and 2003 as per the study taken up by the India Meteorological Department (Kerala State Climate Change Knowledge Portal, 2022). The state had undergone temperature rise, irregular monsoon and water scarcity for the past few years and also life - threatening in the form of extreme unforeseen disasters (Mathrubhumi Fact Check Desk, Nov.3, 2021). Ockhi in 2017 was an unforeseen disaster which struck Kerala after the Tsunami and catastrophic floods of 2018

and the subsequent floods and landslides from 2018 to 2021 gave Kerala unexpected misfortunes. Each of these disasters due to climate change affects different regions each time. The disasters of 2019 did not occur where the landslides and floods of 2018 were terribly affected. There were landslides in Kerala in 2020 and 2021. They were also in different areas from previous years. There are probable chances that the next incident would happen somewhere else. Climate change is not something that can be prevented. The state must prepare itself to become more climate resilient. However, the only way to survive such climate events is to minimise the impact of this phenomenon (Mathrubhumi Fact Check Desk, Nov.3, 2021).

## 2. Review of Literature

This research paper concentrates on climate change and disability. Universal documents, government documents, scholarly articles, reports from different sets of platform and news are reviewed here in connection with climate change and disability.

### 2.1 Climate change and disability: a global scenario

Gianna Cacciatore had published a talk with Liebman, a veteran educator who has worked in independent schools for almost 30 years and made researches on the intersection of climate change and disability. He explained by quoting WHO report that climate change threatens all of us. But for those people living with a disability — an estimated 15% of the global population — the threat, compounded by discrimination, marginalization, and other pre - existing inequalities, is even greater (WHO, 2011). He hinted in his talk that climate change will be the central political and moral issue of the 21st century. It will affect everyone, but not equally. For example, one oft - cited estimate suggests 200 million people will be climate refugees by 2050. According to the World Health Organization 15% of the global population has an intellectual or physical disability, so 30 million of those climate refugees will require different kinds of support (WHO, 2011).

The findings of Gaskin et al suggest that in many instances people with disability may not have been able to enjoy this right. They found in their study that systems designed to assist people in times of emergency, in particular, are often inaccessible to people with disability (Gaskin, et al., 2017). Effective climate action requires reducing the energy inequalities between the Global North and the Global South. Energy use in wealthy countries far exceeds what is required to meet human needs at a decent standard of living and more than 3 billion people in low - income countries do not have enough energy to achieve decent living standards. (Hickel & Slameršak, 2022).

### 2.2 Different approaches to climate change and disability

A disability rights approach has the potential to generate climate solutions that resonate with a greater share of the population by empowering disabled persons and meaningfully including their rights, ideas and perspectives. The report also found that poverty, stigma and discrimination were the three key components which expose

persons with disabilities to the impacts of climate change (UN Human Rights, 2020). A person's environment has a huge impact on the experience and extent of disability. Environmental factors include a wider set of issues than simply physical and information access. The environment may be changed to improve health conditions, prevent impairments, and improve outcomes for persons with disabilities. Inaccessible environments create disability by creating barriers to participation and inclusion. (World Health Organization, 2011).

Brooks and Adger (2005) emphasize in their studies that the risk of climate change which ultimately leads to disasters that impacts all. The 'impact all' factor could also be the problem to adaptive capacity, as individual protections and prioritization leans more towards the decision-makers who socially construct the ideas, procedures, and policies (Brooks & Adger, 2005). The age-old disability rights mantra "Nothing About us, Without Us" is apt in the case of people with disabilities joining with the global effort to fight against climate crisis. The needs of disabled people should ensure by governments around the world in terms of promoting sustainable practices and in evacuation and disaster (Alexiou, 2021).

Leong in her study pointed out that participatory aspects is required throughout planning stages for climate change resilience plans and policies. For the success of frameworks, it must be adopted, representative of all members of society, and include. A scholarly approach is prerequisite to create a more collaborative, inclusive - resilient community and interdisciplinary or multidisciplinary approach to climate change studies and disability studies is required through a scholarly - lens. Furthermore, a multidisciplinary approach would also be beneficial to the field of academia and research as there is a lack of empirical research on disability & climate change from a disability - perspective approach, as well as, beneficial to policy and decision-makers as there is a lack of policies in disability - inclusive solutions (Leong, 2020).

### 2.3 Vulnerability, Adaptation and preparedness to climate change disasters

Several studies pointed out a theme that preparedness of people with disability for weather-related emergencies were limited and it was coded as a factor increasing vulnerability to the types of events associated with climate change. These studies showed that people with disability were less prepared (Gaskin, et al., 2017). People with poor health, disabilities, and chronic diseases are at an increased risk of adverse health outcomes resulting from natural disasters. These vulnerable populations were generally less likely to have household preparedness items but more likely to have medication supplies than their counterparts. There levels of disaster preparedness should be targeted by public health officials (Bethel, Foreman, & Burke, 2011).

Gaskin et al observed in their study that people without disability who were underprepared may be more able to assemble required items and do other preparedness tasks at short notice than those with disability in an emergency situation. The focus on the vulnerability of disabled people

adopted a deficit-based model of disability which ignored the strengths of people with disability (Gaskin, et al., 2017). According to the Intergovernmental Panel on Climate Change (IPCC), adaptation is the "Adjustment in natural or *human systems* in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities" (IPCC, 2007). Adaptation can encompass national or regional strategies as well as practical steps taken at the community level or by individuals (Wolbring, 2009).

Tomio et. al examined disaster preparedness status among chronically ill patients with various health and functional conditions, focusing on patients with Rheumatoid Arthritis (RA). The percentages of these patients who adopted medical and general preparedness measures were generally similar to or lower than those reported in previous studies. They found in their study that disaster preparedness was insufficient, and their preparedness status varied with health, functional, and disability conditions. They suggested that, therefore, policy-makers, public health providers, patients, and their caregivers should seriously consider these results in future planning for disaster preparedness (Tomio, Sato, & Mizumura, 2012).

### 2.4 Climate change and different forms of disabilities

People with cerebral palsy (CP) experience greater thermal strain in hot conditions than those without impairments. The population of those with CP for whom this could be an issue would be those with mild CP because they are capable of working at higher intensities as they are not as limited by their motor deficit(s) (Maltais, Wilk, & Unnithan, 2004). The study by Lazrus et. al found that hearing-impaired participants face communicative barriers in receiving and interpreting information. They mentioned in their study that with respect to cognitive impairments people with intellectual disability, minimal information was found relative to their vulnerability and adaptive capacity. (Lazrus, Morrow, Morss, & Lazo, 2012).

A descriptive study conducted in USA by Hogaboom et. al., to analyse and evaluate the efficacy of evacuation plans described by individuals with spinal cord injury from a convenience sample came up with the result that individuals with spinal cord injury who believe that they have plans are not adequately prepared for an emergency evacuation. Interventions are needed to improve evacuation readiness and lack of preparedness in a catastrophe should be considered by emergency personnel when responding (Hogaboom, Oyster, Riggins, & Boninger, 2013). Some impairments can be invisible – and the adjustments that are needed more subtle. Some people have multiple impairments; some people's impairments are more severe than others. And it's not just that 'disability' covers a range of impairments; disabled people also have a diverse range of opinions and identities. Some disabled people identify themselves as disabled, some don't, some do some of the time (Miller, Parker, & Gillinson, 2004).



## 2.5 Climate change and its impact in Kerala

The experts said that Kerala is no longer the safe haven as it was because of years of rampant mining, lack of scientific land - use policy, and a railway project in the offing. The alarm bells on climate emergency are ringed in near past years (Varma, Nov.3, 2022). Sudha Nambudiri stated in her report that a one - degree rise in temperature could trigger an increase in average rainfall events by 7%. Since Kerala is more urbanized than many cities in the country, development should now be keeping in mind that climate change has already set in. She also intimated that land use changes in Western Ghats are causing landslides during heavy rains the with reference to IPCC report 2021. We are not quantifying it even though it repeats (Nambudiri, 2021). Jeemon Jacob reported in *India Tody Magazine Insight* that: *Kerala had never bothered about global warming induced climatic changes, but the consecutive floods in August 2018 and 2019 have prompted a rethink. The 2018 August floods, the worst in about a century, destroyed Rs 31, 000 crore worth of infrastructure and livelihoods and killed 453 persons*(Jacob, 2019).

## 3. Methodology

This research paper is fundamentally based on a thorough literature review and the researcher had also made an attempt to collect some data through focused group discussion and personal interview with people who are physically and visually impaired. So, a mixed methodology adopted in this study and presented as more descriptive study. Researcher had gone through many reports presented by national and international organizations, government reports, scholarly articles, newspapers etc. in literature review. The Focused Group Discussion (FGD) conducted in an NGO on 28<sup>th</sup> November 2022 with the persons who were physically handicapped by birth. There were six participants in the discussion and they were women from the age group between 45 to 65. The NGO is doing the service more than 25 years and three of the participants were the inmates from the commencement of NGO. One participant arrived there one year back and other two were in different range of years. A visually impaired man also interviewed over the phone and he explained to the questions which researcher prepared for FGD: What are the major climate changes you observe these years in Kerala? What are the reasons for the same according to your opinion? How does this climate change affect your life by looking at life safety, health issues, financial issues, transportation/mobility, prior information etc. ?What are the challenges you face in your life due to climate changes? What are the suggestions you carry forward to overcome these challenges due to climate changes? Their response was not much satisfactory but it sheds light to certain areas which discuss in the following section.

## 4. Discussion

WHO 2011 clearly mentions that people with disability experience multidimensional inequalities particularly vulnerable to climate. IPCC's (2014) reinforces this finding that people who experience marginalization in society are likely to be highly vulnerable to climate change. People with

disability may be particularly vulnerable because disability is more prevalent in vulnerable populations, such as those on low incomes and ethnic minorities (WHO 2011). The coming part will discuss on qualitative data which researcher collected and segmentally explain in detail with theoretical and other related studies.

### 4.1 Focussed Group Discussion (FGD) and Interview report

The participants in FGD were depending on the wheel chair for the movement and they could manage it by themselves. All of them shared that they are safe and secure in NGO set up. A participant who reached in the NGO one year back shared a lot because she had undergone through the catastrophic floods happened in 2018 and 2019 in Kerala. She narrated that *I have seen and experienced the back - breaking situation where I have perplexed with my disability to retrieve from the flood situation. The major anxiety of her parent's was about her. They were in a mystified situation to take care of me because the house where they lived filled with water and they shifted to a community hall and it also flooded with water. They suffered a lot in taking care of her life in dangerous situations with high risks. No one can underestimate the risk that they took in their life during the disaster. I experienced first time in life like this flood situation.* The researcher asked to her: How do you react if the same situation comes again? *Now I got confidence and I can manage the situation with the previous experience,* she replied.

They had an opinion that they could experience unexpected forms of climate disasters in Kerala for the past few years It was an event to think about unexpected situation. They observed so many health issues in the form of fever, cold, headache, tiredness and fatigue etc. as an impact of climate change. One participant conveyed that if she was at home, how could the family manage her because sudden movement was a hurdle for her when it required. *They might feel uneasiness with my presence.* They shared that their physical deformities are a major problem in a rescue moment when quick action is required.

Another one recalled an event which she had seen during flood relief works. She said that *a man whose one leg was amputated took more than two and half ours to enter in a rescue boat. All shops were closed and in the surface of water many roofs of the houses were seen. There were laxity of food, cloth and other necessary things.* They shared natural calamities became regular during these years in Kerala and the place where NGO is situated is free from such natural calamities like flood situation and landslides etc.

The person who interviewed was a highly educated person, national and international personality with his eminent contributions in empowering people with visual impairments. He started the discussion by stating that *all the problems that affect due to climate changes will affect us also. If we look it in details with specific focus, we can find certain problems. We, who are having direct experience on disability are not involved in policy making for the disabled people instead they collect some data from academicians*

and bureaucrats. We constantly demand for the same before the government. In his point of view, *climate change is going to be affected disabled people when a natural calamity or disaster occurs and no one had much thought of it even common men*. He explained that a visually impaired or disabled person suffer a lot or take challenges when a flood happens or situation requires sudden movement due to natural calamities or disaster than a person without disability. He continued that difficulty in food production and unexpected rainfall are common challenges due to climate change and it severely trouble farmers and not only farmers and also all the population. He concluded his sharing by stating that *a person with disability suffers ten – fold comparing with person without disability in front of natural calamities. There is no doubt in it and it is 100% sure*.

## 4.2 Theoretical frameworks

People with disabilities are often referred as a vulnerable group or with emphasis on their health disparities among climate change scholars, and within the IPCC community and it represents a more *medical model of disability* approach. UN - HRC general assembly in 2019 is looking at disability with a *right perspective* and recognizes stakeholders as persons with disabilities, states, and duty bearers, and businesses. More importantly, the UN - HRC urges states to strengthen already existing policies and if none, implement policies aimed at increasing the participation of persons with disabilities in climate change solutions through ‘meaningful’ participation and hold’s leadership decision - making roles, locally, nationally, and internationally. *Social model of disability* perceive disability as a culture that is often disproportionately affected by the lack of policy efforts protecting the impacts of climate change on persons with disabilities (Leong, 2020).

## 4.3 In depth Discussion on climate change and disability

It is unequivocal that human influence has warmed the atmosphere, ocean and land. Widespread and rapid changes in the atmosphere, ocean, cryosphere and biosphere have occurred. Each of the last four decades has been successively warmer than any decade that preceded it since 1850 (IPCC, 2021). The evidence pointing directly to climate change and its consequences for persons with disabilities demonstrates impacts that are more severe than those for the general population, while their resilience capacity is lower (Smith, Simard, Wigg, Kett, & Cole, 2017).

The pre - monsoon season of mainly April - May and the post - monsoon season of September - December witnesses two to three tropical cyclones over the Arabian Sea every calendar year, an average of one storm in the pre - monsoon period, and one or two storms in the post - monsoon period due to the warm surface temperature in the Arabian Sea. The IMD stats also show nine cyclones and depressions had formed in 2020, of which four were over the Arabian Sea. The number was seven in 2019. The climate change over the Arabian Sea is having a direct bearing on the rain pattern in Kerala which is evident from the rainfall that the state has received in the last four years. Though July and June are the

months that brought copious rain to Kerala in the past, spells of very heavy rain in a short span of time have been seen in August and September in the last four years. (Kallungal, Nov.3,2022). All the literature underlines the facts that climate change is drastically affected in Kerala and its impact is visible through unpredictable rainfall and landslides.

People with disabilities experience poverty at more than twice the rate of people without disabilities. This puts people with disabilities at heightened risk, as the world’s poorest people continue to experience the most severe impacts of climate change through lost income, displacement, hunger, and adverse impacts on health (Schulte, 2020). Climate change and disasters spot light for specific concern for people with disability because the existing disabilities mediate whether and how people are physically, mentally, socially, or spatially susceptible to climate harm. It can also affect whether and how people can access information and resources that would enable them to prepare for, manage, and adapt to disaster and climate health risks in a timely way. In other words an anticipatory alarm will help them to manage the situation (Engelman, 2022). The above narrated FGD and interview also stress the same point.

We cannot ‘generalize the need’ of disabled people in a climate change disaster situation. It differs enormously in their disabilities, identities, and cultures. People with sensory, intellectual, mental health and psychiatric, neurodiversity, physical and mobility, and learning disabilities can experience climate change and disasters differently. Their voice should heterogeneously. In recent years, many countries have endorsed national and international policies that support the inclusion of people with disabilities in climate change emergencies and humanitarian settings. Similarly, many government agencies and aid organizations have produced disability - specific reports to help prepare for disasters. However, these efforts often amount to accessibility in name only and do not necessarily translate to accessible and equitable practices on the ground (Engelman, 2022).

Even though many research has shown that people with disability are particularly at risk from the impacts of extreme weather government had “systematically ignored” them. They were the most vulnerable to climate impacts, partly because of the nature of their disabilities and also because of the social disadvantage that often accompanies this. People who use wheelchairs are among those most vulnerable to the climate crisis. There are so many less obvious risk factors in connection with climate change and people with disabilities (Harvey, 2022). The interview that researcher did with person with visual impairment had clearly given the same picture that policy makers and government systematically ignore their problems and viewpoints in policy making procedure.

## 5. Suggestions and recommendations with intervention models

The researcher proposes a five - fold intervention models which will help to identify climate changes, risk factors, climate change disasters and its consequences and how to

respond to these situations. An in depth literature review and interview and other discussions paved the path to this intervention models. Government and NGOs should intervene jointly for the implementation of green social work related to climate change and environmental issues. The five - fold intervention models are as follows:

- 1) Identify climate change factors - Shortlist the reasons behind this change with evidential factors - Implement policies to minimise the consequences (ISI)
- 2) Identify climate changes - Compare its growth rate in recent years by looking at its consequences - Find out its reasons and solutions (ICF)
- 3) Identify risk factors - Compare it with people with and without disability - Develop policies preferential to people with disability (ICD)
- 4) Identify risk factors - Prepare people with Awareness - Implement policies with a participatory approach (IPI)
- 5) Identify climate related disasters - Create awareness and prepare people to - Implement policies with a participatory approach (ICI)

The study by Fox et. al. suggested that that improved training, awareness, and surveillance are needed for better respond to the needs of persons with disabilities before, during, and after local disasters. It includes developing improved technology assistance, providing environmental modifications to improve access for persons with disabilities during disasters, and ensuring far greater participation of persons with disabilities in all phases of the disaster planning and response process (Fox, White, Rooney, & Rowland, 2007). People with disability needs more training in disaster management and it is clear from this study. All the people should know how to respond to a natural calamity or disaster situation. The government and NGOs should intervene with training programmes. This training program should concentrate on awareness creation of disaster management and preparedness for a disaster and how to minimise or mitigate climate related disasters. The current study also affirms this fact that awareness and preparation will give confidence to deal with climate related disasters.

Digital technology supports decarbonisation only if appropriately governed (IPCC, 2022). Digital technology can contribute in awareness creation and preparation for disaster management and identifying climate changes, and its risks and factors that lead to climate changes. Adaptation plays a key role in reducing exposure and vulnerability to climate change. Climate change including increases in frequency and intensity of extremes have reduced food and water security, hindering efforts to meet Sustainable Development Goals (IPCC, 2022).

## 6. Conclusions

Climate change has adversely affected physical and mental health of people globally. Climate change impacts on health are mediated through natural and human systems, including economic and social conditions and disruptions. In all regions extreme heat events have resulted in human mortality and morbidity. The study clearly pictures that climate change is a universal problem and its impact on peoples day to day life is very clear with reference to health, social, economic and psychological factors. We need

awareness and we should take pledge to keep our environment healthy. We also need policies and humanitarian settings to deal with challenges of climate changes and its consequences and disasters. It should be inclusive in nature which support people with disability who are more vulnerable to a disaster situation.

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