

## Natural Hazardous, Epidemic Disease and Governance Role in Assam

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### Abstract:

Assam is a multihazard State prone to floods, earthquake, storms and landslide besides man-made disasters. Also, the State faces acute flood & erosion problem. Assam has a history of disasters ranging from large earthquakes to severe floods. During the past two decades, natural disasters have killed millions of people, adversely affecting at least one billion more, especially in Assam. After potentially increase the transmission of the following communicable diseases: such as typhoid fever, cholera, leptospirosis and hepatitis A and E. Vector-borne diseases, such as malaria, dengue and dengue haemorrhagic fever, and West Nile Fever, this paper focus on Facilitate land use planning measures to reduce the future growth of flood risk and flood damages. This paper summarised the how far governance role both (Central and state) to prevent the floods, and to assist communities reducing risk and human suffering and financial assistance under the Natural Disaster Relief and Recovery Arrangements, How far government take the long and short term to prevent natural hazardous and unconditional epidemic disease.

**Keyword:** Natural Hazardous, Epidemic disease, Governance etc.

### Introduction

A hazard is an agent which has the potential to cause harm to a vulnerable target. Hazards can be both natural or human induced. Sometimes natural hazards such as floods and drought can be caused by human activity. Floods can be caused by bad drainage facilities and droughts can be caused by over-irrigation or groundwater pollution. The terms "hazard" and "risk" are often used interchangeably however, in terms of risk assessment, they are two very distinct terms. A hazard is any agent that can cause harm or damage to humans, property, or the environment. Risk is defined as the probability that exposure to a hazard will lead to a negative consequence, or more simply, a hazard poses no risk if there is no exposure to that hazard. In India Natural disaster many of them related to the climate of India, cause massive losses of life and property. Droughts, flash floods, cyclones, avalanches, landslides brought by torrential rains, and snowstorms pose the greatest threats. A natural disaster might be caused by earthquakes, flooding, volcanic eruption, landslides, hurricanes etc. In order to be classified as a disaster it will have profound environmental effect and/or human loss and frequently incurs financial loss. Other dangers include frequent summer dust storms, which usually track from north to south; they cause extensive property damage in North India and deposit large amounts of dust from arid regions. Hail is also common in parts of India, causing severe damage to standing crops such as rice and wheat and many more crops.

70% flood effected people of Assam are suffering from water borne diseases ,More than cases of skin allergies, diarrhea, gastrointestinal, fever and blood pressure problems were diagnosed by the doctors. The cause of these ailments was reportedly due to stagnant water and consumption and use of untreated water. Floods are often related to larger risks of epidemics during the time of displacement or when water sources are compromised. There is a high probability for a sudden increase in the number of water-borne diseases. In most of the areas there was no outlet for the flood water to drain, leaving people with no medical camp was conducted many years ago. Through the current medical camps conducted by Caritas India his wife, father and nephew who were suffering from stomach ailments were also treated. Efforts on the ground are organized using a systematic method for beneficiary selection, families belonging to socially and economically excluded communities were prioritized for relief and special focus has been given to women (especially women-headed households, pregnant and lactating mothers), children, adolescent girls, persons with disability and the elderly. its relief interventions to include Food, Water, Sanitation &

Hygiene (WaSH) in Assam to the most marginalized families. 2000 households will be supported with food items including Rice, Dal, Salt, Mustard Oil, Soya beans and Glucose biscuits. Under WaSH, 6100 families will receive Buckets, Mug, Liquid Antiseptic, Bathing & Washing Soaps, Chlorine Tablets, Colored Cloth, Toothpaste, Toothbrushes and Markin cloth.

### **The objective of the Study:**

- 1) To know the condition of people in Assam during the natural hazardous.
- 2) To know the governance role to tackle natural hazardous in Assam.
- 3) To analyse the condition of people after natural hazardous.
- 4) To know the governance policy to prevent the epidemic diseases after natural hazardous .

### **Discussion:**

#### **1) Natural Hazardous In Assam**

##### **Assam flood in 2012:**

Brahmaputra floods were an unprecedented flood event along the [brahmaputra River units tributaries due to significant monsoon rains in Assam, In Assam 124 people were killed by the flooding and landslides, and about six million people were displaced. The worst hit area was the state of Assam in India. Flooding significantly affected Kaziranga National Park, where 540 animals died including 16 rhinos. In September 2011, the Brahmaputra River flowed through braided channels, but a year later, the channels could not be detected in the swollen river. During the monsoon season (June–October), floods are a common occurrence in India. Occasionally, massive flooding causes huge losses to crops, life and property. Deforestation in the Brahmaputra watershed has resulted in increased siltation levels, flash floods, and soil erosion in critical downstream habitat, such as the Kaziranga National Park in middle Assam.]Helicopters were deployed to drop food supplies to nearly 10,000 people in six villages where highway access was cut off by the flooding, about 550 km west of Gauhati, the capital of Assam.

##### **Assam flood in 2013:**

2013 Assam floods were floods in the Indian state of Assam which were triggered by heavy rainfall at the end of June in neighbouring Arunachal Pradesh state through Brahmaputra river and its tributaries. These flood submerged 12 districts out of 27 in the state where more than 1,00,000 people affected. The flood also affected Kaziranga National Park and Pobitora Wildlife Sanctuar where many animals have moved on to higher ground to save themselves from the flood. According to Assam State Disaster Management Authority's flood report as of 13 July 2013 totally 12 districts out of the 27 districts in the state were affected, the districts are Bongaigaon, Chirang, Dhemaji, Golaghat, Jorhat, Kamrup, Karimganj, Lakhimpur, Morigaon, Nagaon, Sivasagar and Tinsukia. In which 396 villages affected and around 7000 hectares of agricultural land were destroyed. Many roads and bridges were washed away cutting all road links to rest of the state. Eight relief camps have been set up in Dhemaji and Chirang districts where about 3,000 people have been given shelter. The flood victims claimed there were no river embankments at various places or those breached by earlier floods were not repaired.

##### **Assam flood in 2015**

the Indian state of Assam which were triggered by heavy rainfall at the end of August in neighbouring Arunachal Pradesh state through Brahmaputra river and its tributaries. The floods are reported to have caused the deaths of 42 people and numerous landslides, road blockages and affected 16.5 lakh people in 21 districts. Flooding affected 2,100 villages and destroyed standing

crops across an area of 4,40,000 acres. In the Dhubri district alone, more than 400 villages are now almost impossible to reach making it difficult to send aid to the suffering civilians. However, this is not the first time the Assam state has experienced destructive flooding; the region is possibly India's most flood-prone state and has experienced at least 12 major floods since 1950. Although always prone to floods, the frequency of disastrous floods was increased in the area after the 1950 Assam-Tibet earthquake, also referred to as the "1950 Great Earthquake".

### **Assam flood in 2016:**

In 2016 Assam floods were caused by large rains over the Indian state of Assam in July 2016. The flooding had affected 18 lakh people, and flooded the Kaziranga National Park. As of 1 August 2016, 28 people had been killed as a result of the flooding starting 17 July, according to a report by the State Disaster Management Authority.[18] The north-eastern states of India saw heavy rainfalls in July 2016. The state of Assam faced around 60% more rains than it received in July 2015.[19] The rainfall resulted in flooding of various rivers and on 5 July the Brahmaputra River had crossed its danger mark level in the seven districts of Lakhimpur, Dhemaji, Nagaon, Jorhat, Golaghat, Morigaon and Biswanath. The floods have affected more than 16 lakh human lives, and people choose to abandon their households and livestock, and escape with help of homemade rafts. Mobile phone networks, along with power transmission, have been hampered in many regions of the state. Around 4,90,000 acres of farming land was affected by the floods. The Assam Branch Indian Tea Association (ABITA) has estimated a 21-30% crop loss of Assam tea. The state of Assam had produced 63.1 crore kg of tea in a year. The Kaziranga National Park in proximity with the Brahmaputra River.

The floods have affected the Pobitora Wildlife Sanctuary[20] and the Kaziranga National Park, a World Heritage Site. As of 2 August 2016, around 300 wild animals have been reported to have drowned, while around 81 percent of the Kaziranga National Park was under water. This includes 21 great one-horned rhinoceroses (*Rhinoceros unicorn's*) and about 219 Indian hog deer (*Hyelaphus porcinus*). The park officially reported deaths of "11 wild boar, nine swamp deer, six sambar, three buffalo, two hog badger, one porcupine and one python" in the time span of 25 July to 31 July.] Officers and local people rescued 100 wild animals, including 9 rhinoceroses. These were taken for treatment at the Centre for Wildlife Rehabilitation and Conservation (CWRC) located within Kaziranga

### **Assam flood in 2017:**

In 2017 Northeast India floods were caused by overflowing of Brahmaputra river in the state of Assam in July 2017 affecting four Indian states: Assam, Arunachal Pradesh, Nagaland and Manipur. AS of 14 July 2017, at least 85 people were dead[28] as a result of the flooding and 4 lakh people have been affected and 5,00,000 have been homeless.[29] Nearly 60 animals, mostly deer and wild boars, perished in the floods.[30] The flood-affected 15 districts of Assam state that includes Lakhimpur, Jorhat, Golaghat, Sivasagar, Cachar, Dhemaji, Karimganj, Sonitpur, Hojai, Biswanath, Majuli, BARPETA, Chirang, Nagaon and Nalbari.] It has also inundated large tracts of Kaziranga National Park, Pobitora Wildlife Sanctuary and Nameri National Park.

### **Assam flood in 2018:**

In 2018 Floods in the Tributaries of the Brahmaputra affected 4.5 lakh people across the districts of Dhemaji, BARPETA, Lakhimpur, Biswanath, Majuli and Dibrugarh in the state of Assam. According to the Assam State Disaster Management Authority (ASDMA), total 12 persons lost their lives in the first wave of flood in the year. The floods inundated 11,243 hectares of agricultural lands with standing crops in four districts.

## Assam flood in 2019:

In 2019 Brahmaputra Floods, till July 16, affected a total of 52,59,142 people, 1,63,962.02 hectares of crop area, in 30 districts in the state of Assam.[35] In the State, death toll rose to 59 on 20 July. At least 3,024 villages in the affected districts continued to be underwater and 44,08,142 people are hit in Dhemaji, Lakhimpur, Biswanath, Sonitpur district, Darrang, Barpeta, Nalbari, Chirang, Bongaigaon, Kokrajhar, Dhubri, South Salmara, Goalpara, Kamrup, Kamrup Metro, Morigaon, Nagaon, Karbi Anglong, Golaghat, Jorhat, Dibrugarh, Tinsukia, Cachar and Karimganj districts.[36] Notably, in this wave of floods, 2400 an endangered species of Indian rhinoceros in Kaziranga National Park were badly affected by the Flood.

## 2) Epidemic Disease after natural Hazardous (Specially flood) In Assam

In Assam Floods can potentially increase the transmission of the following communicable diseases: Water-borne diseases, such as typhoid fever, cholera, leptospirosis and hepatitis A Vector-borne diseases, such as malaria, dengue and dengue haemorrhagic fever, yellow fever, and West Nile Fever Water-borne diseases Water-borne diseases Flooding is associated with an increased risk of infection, however this risk is low unless there is significant population displacement and/or water sources are compromised. Of the 14 major floods which occurred in Assam between 1970 and 2019, only one led to a major diarrhoeal disease outbreak - in Assam, 1980. This was probably because the flood was complicated by population displacement. Floods in Assam in January-March 2000 led to an increase in the incidence of diarrhoea and in 1998, floods in Assam led to a large cholera epidemic, Floods may indirectly lead to an increase in vector-borne diseases through the expansion in the number and range of vector habitats. Standing water caused by heavy rainfall or overflow of rivers can act as breeding sites for mosquitoes, and therefore enhance the potential for exposure of the disaster-affected population and emergency workers to infections such as dengue, malaria and West Nile fever. Flooding may initially flush out mosquito breeding, but it comes back when the waters recede. The lag time is usually around 6-8 weeks before the onset of a malaria epidemic. In Assam Contrary to common belief, there is no evidence that corpses pose a risk of disease "epidemics" after natural disasters. Most agents do not survive long in the human body after death (with the exception of HIV -which can be up to 6 days) and the source of acute infections is more likely to be the survivors.

## 3) Governance role in Assam to tackle natural disaster and prevent epidemic disease .

The state government of Assam set up 128 relief camps under the surveillance of Assam Chief Minister Sarbananda Sonowal for people displaced, and has made arrangements for drinking water, food and medical teams and rescue goods. 154 people died due to drowning, electrocution and diseases caused due to water contamination.

Government has provided health and medical facilities in the state. About 300 makeshift camps were erected to rehabilitate people displaced by the flooding. Various schools were used as relief camps. National Disaster Response Force took up the relief works. An NGO named "Save the Children" worked for the rehabilitation of children and their families in the three districts of Dhemaji, Lakhimpur and Majuli. Seven public-sector oil companies Oil and Natural Gas Corporation, Indian Oil Corporation, Oil India Limited, Bharat Petroleum Corporation Limited, Hindustan Petroleum Corporation Limited, Gas Authority of India Limited, and Numaligarh Refinery Limited donated a total of ₹15 crore towards Chief Minister's Relief Fund.

## Suggestions and conclusion:

In Assam mostly flood effected area where every year 80% people under the flood. Flood potentially increases chances of outbreak of infectious diseases. The alternating wet and dry phases increase the hazard to public health. Affected areas become more prone to disease outbreak especially after the flood water dries up. Surge in diseases happens as flood water gets mixed up with sewage water and several other contaminants. Some of the common diseases that occur in Assam during and post flood are typhoid, cholera, hepatitis A, conjunctivitis, leptospirosis, dengue jaundice, etc. Without proper preventive measures and precautions, these diseases may prove fatal. Generally, flood water increases the risk and transmission of two types of diseases - vector-borne diseases and water-borne diseases. Vector-borne diseases are those that are transmitted through several parasites and pathogens such as mosquitoes. Some examples are dengue, malaria, chikungunya, etc. On the other hand, diseases such as cholera, typhoid, jaundice, leptospirosis, etc., that are caused by contaminated water are categorized as water-borne diseases. With the surge in diseases during and after flood, the need for awareness about preventive measures and precautionary steps are of utmost importance. Proper management can help keep diseases and infections at bay.

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