governments have issued guidelines and instructions as a follow up. At the international level, it was observed during the study, the level of awareness and preparedness is extremely high. The US government has been regularly conducting studies in this regard and many hospitals have issued guidelines like HOPE (Hospital Preparedness and Emergency Response).

Every situation is different and what may succeed in one may not in another. The level of resistance of human beings and the society also differs from one place to another. However, best practices may be copied and even improved upon. Any Disaster preparedness plan should clearly identify the agencies and their roles. These should be unambiguously communicated to the respective agencies, which need to check and rehearse them in minute details.

Apart from the visit to the hospitals, police stations, NDMA, National Disaster Response Force (NDRF) headquarters, National Institute of Disaster management (NIDM), data and views were also gathered from many journals and articles published in journals, books and newspapers. Media reports were also checked, internet was surfed and many videos exhibiting the process of adulteration of food were analysed during the process.

CHAPTER-2

DISASTER MANAGEMENT IN INDIA- AN OVERVIEW

2.1 Historical perspective in India

During the British administration, relief departments were set up for emergencies during disasters. Such an activity-based setup with a reactive approach was functional only in the post disaster scenarios. The policy was relief-oriented and activities included designing the relief codes and initialising food for work

programmes. The Great Famine of 1876-1878 lead to constitution of the Famine Commission of 1880 and eventual adoption of **Famine Relief Code in** India, which is probably, the world's oldest disaster relief code (started in1880). This Code provides details of the relief to be given by the government to the affected people.

Post-Independence, the task for managing disasters continued to rest with the Relief Commissioners in each state, who functioned under the Central Relief Commissioner, with their role limited to delegation and distribution of relief material and money in the affected areas. Every five-year plan addressed flood disasters under "Irrigation, Command Area Development and Flood Control". Until this stage, the disaster management structure was activity-based, functioning under the Relief departments of the various state governments. The recurrent occurrences of different types of disasters compelled the Government of India to establish many different committees and commissions to suggest measures to deal with the problem.

A permanent and institutionalised setup began in the decade of 1990s with set up of a disaster management cell under the Ministry of Agriculture, following the declaration of the decade of 1990's as the 'International Decade for Natural Disaster Reduction' (IDNDR) by the UN General Assembly. Following a series of disasters such as Latur Earthquake (1993), Malpa Landslide (1994), Orissa Super Cyclone (1999) and Bhuj Earthquake (2001) a **High Power Committee on Disaster Management (HPC)** was established in 1999 for making recommendations on the preparation of Disaster Management plans and suggestions for effective mitigation mechanisms. The HPC gave its recommendations in October 2001 including a draft of the Disaster Management Act, a National Response Plan, move from disaster response to disaster preparedness, and establishment of National Disaster Management Authority. Following one of the HPC recommendations, the Disaster Management (DM) function was transferred from Ministry of Agriculture, Department of Agriculture and Cooperation, in the Government of India, which had historically been the nodal ministry for disaster relief in the country, to the Ministry of Home Affairs. Consequently, the DM division was shifted under the Ministry of Home Affairs in 2002 vide Cabinet Secretariat's Notification No. DOC.CD-108/2002 dated 27/02/2002 and a hierarchical structure for disaster management

evolved in India.[14] The Ministry of Agriculture in March 1995 had previously also set up a National Centre for Disaster Management (NCDM), which was located at Indian Institute of Public Administration, New Delhi.

Thus, there was a shift in policy from an approach of relief through financial aid to a holistic one for addressing disaster management. Over the last few years Government of India has made a paradigm shift in the approach to disaster management. The Tenth Five-Year Plan 2002-2007 for the first time had a detailed chapter entitled *"Disaster Management: The Development Perspective"*. The plan emphasized the fact that development cannot be sustainable without mitigation being built into the development process. Disaster mitigation and prevention were adopted as essential components of the development strategy.

The new approach proceeds from the conviction that development and disaster mitigation have to go hand in hand. Another corner stone of the approach is that mitigation has to be multi-disciplinary spanning across all sectors of development. On 23 December 2005, the Government of India (GOI) took a defining step by enacting the Disaster Management Act, 2005 (D.M. Act 2005), which envisaged the creation of the National Disaster Management Authority (NDMA) headed by the Prime Minister; State Disaster Management Authorities (SDMAs) headed by the Chief Ministers, and District Disaster management Authorities (DDMAs) headed by the District Collector/ District Magistrate/ District Commissioner. The Act lays down institutional and coordination mechanism for effective Disaster Management (DM) at the national, state, district and local levels. The National Disaster Management Plan (NDMP) provides a framework and direction to the government agencies for all phases of disaster management cycle.

The broad features of the drafted National Policy on Disaster Management are enunciated below:-

i) Adoption of a holistic and pro active approach towards prevention, mitigation and preparedness.

ii) Incorporation of mitigation measures in the ongoing schemes/programmes.

iii) Each Ministry/Department of the Central/State Government will set apart an appropriate quantum of funds under the Plan for specific schemes/projects addressing vulnerability reduction and preparedness.

iv)Where ever there are a number of projects, those projects addressing mitigation will be given priority.

v) Each project in a hazard prone area has to have mitigation as an essential term of reference and include a statement indicating as to how the project addresses vulnerability reduction.

vi) Community involvement and awareness generation, particularly the of the vulnerable segments of population and women has been emphasized as necessary for sustainable disaster risk reduction. This is a critical component of the policy since communities are the first responders to disasters and, therefore, unless they are empowered and made capable of managing disasters, any amount of external support cannot lead to optimal results.

vii) Interaction with the corporate sector, the non–governmental organization and the media in the national efforts for disaster prevention/vulnerability reduction is essential.

viii) Building up institutional structures/appropriate chain of command and imparting training to disaster managers at various levels to ensure coordinated and quick response and development of inter–state arrangements for sharing of resources during emergencies.

ix) Inculcating a culture of planning and preparedness at all levels for capacity building measures.

x) Formulation of Standard Operating Procedures (SOPs) and disaster management plans at state and district levels as well as by relevant central government departments.

xi) Compliance with construction designs laid down in relevant India Standards. Evaluation and, where necessary, retrofitting of lifeline buildings in various seismic zones.

xiii) Conversion of relief codes into disaster management codes for institutionalizing the planning process.

xiv) Promotion of internal cooperation in the area of disaster response preparedness and mitigation in tune with national strategic goals objectives.

The vision of the National Disaster Management Plan is to make India disaster resilient, achieve substantial disaster risk reduction, and significantly decrease the losses of life, livelihoods, and assets – economic, physical, social, cultural, and environmental – by maximizing the ability to cope with disasters at all levels of administration as well as among communities.[15]

2.2 Types of disasters- natural and human induced[16]
2.21 Natural disasters

The widely accepted classification system used by the Disaster Information Management System of DesInventar[17] classifies disasters arising from natural hazards into five major categories (DesInventar2016):

1) *Geophysical*: Geological process or phenomenon that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage. Hydro-meteorological factors are important contributors to some of these processes. Tsunamis are difficult to categorize; although they are triggered by undersea earthquakes, and other geological events, they are essentially an oceanic process that is manifested as a coastal water-related hazard.

2) *Hydrological*: Events caused by deviations in the normal water cycle and/or overflow of bodies of water caused by wind set-up.

3) *Meteorological*: Events caused by short-lived/small to meso-scale atmospheric processes (in the spectrum from minutes to days)

4) *Climatological*: Events caused by long-lived meso- to macro-scale processes (in the spectrum from intra-seasonal to multi-decadal climate variability)

5) *Biological*: Process or phenomenon of organic origin or conveyed by biological vectors, including exposure to pathogenic micro-organisms, toxins and bioactive substances that may cause loss of life, injury, illness or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.

2.22 Human induced disasters

The National Policy on Disaster Management (NPDM) notes that rise in population, rapid urbanization and industrialization, development within high-risk zones, environmental degradation, and climate change aggravates the vulnerabilities to various kinds of disasters. Due to inadequate disaster preparedness, communities and animals are at increased risk from many kinds of human-induced hazards arising from accidents (industrial, road, air, rail, on river or sea, building collapse, fires, mine flooding, oil spills, etc.). Chemical, Biological, Radiological, and Nuclear (CBRN) hazards rank very high among the human-induced risks. Terrorist activities and secondary incidents add to these risks and call for adequate preparedness and planning.

As the thesis is about the food bio terrorism, I will be discussing only about the human induced biological disasters. Biological disasters are causative of process or phenomenon of organic origin or conveyed by biological vectors, including exposure to pathogenic micro-organisms, toxins and bioactive substances that may cause loss of life, injury, illness or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage. Examples of biological disasters include outbreaks of epidemic diseases, plant or animal contagion, insect or other animal plagues and infestation. Biological disasters may be in the form of:-

Epidemic affecting a disproportionately large number of individuals within a population, community, or region at the same time, e.g. Cholera, Plague, Japanese Encephalitis (JE)/Acute Encephalitis Syndrome (AES); or

Pandemic, which is an epidemic that spreads across a large region, whole country, across continents, or even worldwide of existing, emerging or re-emerging

diseases and pestilences, e.g. Influenza H1N1 (Swine Flu), Foot and Mouth Disease, etc.[18]

2.3 Organisational Setup[19]

2.31   National Level

The overall coordination of disaster management vests with the Ministry of Home Affairs (MHA). The Cabinet Committee on Security (CCS) and the National Crisis Management Committee (NCMC) are the key committees involved in the top-level decision-making with regard to disaster management.

The NDMA is the lead agency responsible for the preparation DM plans and the execution of DM functions at the national level. The assistance of NIDM and NDRF is taken in preparedness, control, mitigation, prevention and after disaster actions.

2.32   State level

As per the DM Act, 2005 each state in India shall have its own institutional framework for disaster management. Among other things, the Act mandates that each State Government shall take necessary steps for the preparation of state DM plans, integration of measures for prevention of disasters or mitigation into state development plans, allocation of funds, and establish Early Warning Systems (EWS).

Depending on specific situations and needs, the State Government shall also assist the Central Government and central agencies in various aspects of DM. Each state shall prepare its own State Disaster Management Plan. The DM Act mandates the setting of a State Disaster Management Authority (SDMA) with the Chief Minister as the *ex officio* Chairperson. Similar system will function in each Union Territory with Lieutenant Governor as the Chairperson.

2.33 District level

At the district level, District Disaster Management Authority (DDMA), the District Collector/ District Magistrate/ Deputy Commissioner, as applicable, will be responsible for overall coordination of the disaster management efforts and planning.

Detailed DMP will be developed and subjected to periodic review and revision, at the levels of state, district, towns and blocks (taluka).

2.4 National Disaster Management Authority (NDMA)

NDMA, as the apex body for disaster management, is responsible for laying down the policies, plans, and guidelines for disaster management for ensuring timely and effective response to disaster. These guidelines assist the Central Ministries, Departments, and States to formulate their respective DM plans. It approves the National Disaster Management Plans and DM plans of the Central Ministries / Departments. It also takes steps for prevention, mitigation, preparedness of disasters and capacity building for dealing with a threatening disaster situations or disasters.

NDMA authorises emergency procurement of provisions or materials for rescue and relief in a threatening disaster situations. The general superintendence, direction, and control of the National Disaster Response Force (NDRF) is vested in NDMA. The National Institute of Disaster Management (NIDM) works within the framework of broad policies and guidelines laid down by the NDMA. The NDMA has the mandate to deal with all types of disasters – natural or human-induced.

However, other emergencies such as terrorism (counter-insurgency), law and order situations, hijacking, air accidents, Chemical Biological Radiological and Nuclear (CBRN) weapon systems, which require close involvement of the security forces and/or intelligence agencies, and other incidents such as mine disasters, port and harbour emergencies, forest fires, oilfield fires and oil spills will be handled by the National Crisis Management Committee (NCMC). Nevertheless, NDMA may formulate guidelines and facilitate training and preparedness activities in respect of CBRN emergencies.

2.5 National Disaster Response Force (NDRF)

NDRF has been raised by taking battalions from the Central Armed Police Forces (CAPF) and located at various parts of the country. It is force that can be deployed in a threatening disaster situation or disaster. It has been specially trained

and equipped for disaster situations. It is headed by a Director General appointed by the Government of India. NDRF units will maintain close liaison with the designated State Governments and will be available to them in the event of any serious threatening disaster situation. The NDRF units will also impart basic training to all the stakeholders identified by the State Governments in their respective locations and it has also setup a National Academy to provide training for trainers in disaster management and to meet related National and International commitments.

NDRF has also participated successfully in post disaster situations in Japan and Nepal recently.

2.6 National Institute of Disaster management (NIDM)

National Institute of Disaster Management (NIDM) is the premier institute for capacity development for disaster management in India and the region. The vision of NIDM is to create a Disaster Resilient India. It has been assigned responsibilities for human resource development, capacity building, training, research, documentation, and policy advocacy in the field of disaster management. The NIDM has built strategic partnerships with various ministries and departments of the central, state, and local governments, academic, research and technical organizations in India and abroad and other bi-lateral and multi-lateral international agencies. It also provides technical support to the state governments through the Disaster Management Centres (DMCs) in the Administrative Training Institutes (ATIs) of the States and Union Territories.

2.7 Structure, Training, Education and Capacity Development

The Disaster management Structure in India is listed below-

Table-1

*Source:https://socialissuesindia.files.wordpress.com/2013/10/disastermanagemen
t--in-india.pdf*
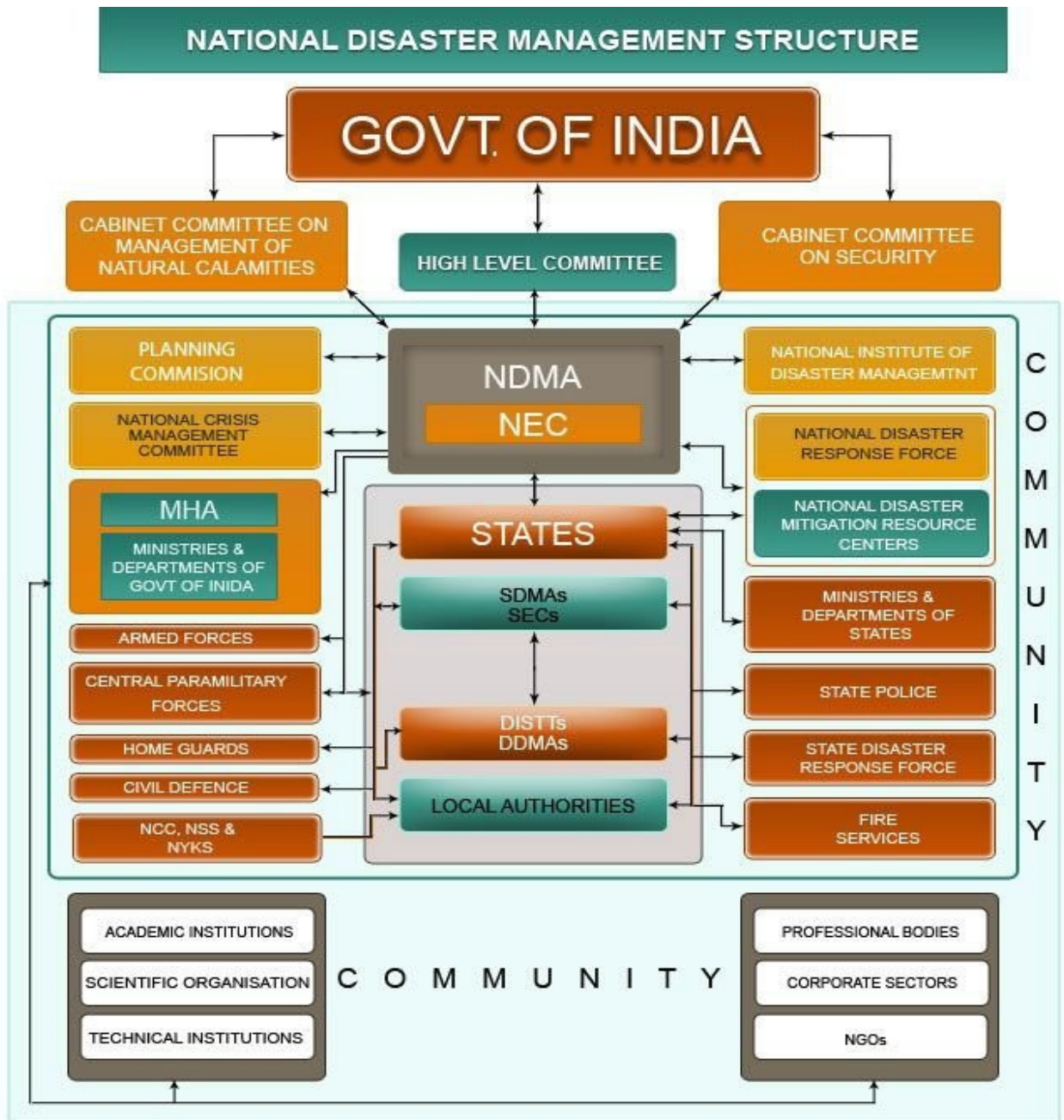
Capacity development covers strengthening of institutions, mechanisms, and capacities at all levels of all stakeholders. The United Nations International Strategy

for Disaster Reduction (UNISDR) defines 'Capacity Development' for Disaster Risk Reduction (DRR) as follows:

"The process by which people, organisations and society systematically stimulate and develop their capability over time to achieve social and economic goals, including through improvement of knowledge, skills, systems, and institutions – within a wider social and cultural enabling environment."

It is an important component of investing in disaster risk reduction. The Sendai Framework emphasizes the need for enhancing the technical, financial, and administrative capabilities of institutions, governments, and communities to deal with the identified risks at different levels. The framework underlines the need for capacity development of women in disaster management and building up their ability to participate effectively in managing disaster risk. Investing in capacity development for DRR will be a continuing process to enhance the capability of individuals, agencies, and communities to improve the performance of their DM functions. The process of capacity building will include elements of human resource development, i.e., individual training, organizational development such as improving the functioning of groups, strengthening of organizations, regulations, and institutions. Involving stakeholders through participatory approaches is essential to establish ownership and commitment.

As capacity development entails activities on various levels, i.e. legal and institutional frameworks, systems, organisation and human and material resources, it is necessary to address challenges on all of them by implementing a mix of activities, on short and long term perspectives. The focus of many capacity development efforts for DRR must also pay attention to organisational and institutional issues. Public and private investment in disaster risk prevention and reduction through structural and non-structural measures are essential to enhance the resilience to disasters.

Investing in capacity development is a very cost-effective way to save lives, prevent or reduce losses and ensure effective recovery and rehabilitation. Without adequate capacity development, the local bodies and even the local communities cannot contribute effectively to disaster management mitigation as they are

invariably the first responders in all emergencies. Capacity building has to include awareness, training, sensitisation, orientation, education right from the school levels, developing skills of communities and the community leaders. Therefore, it is of utmost importance that the capacities at the grassroots level are enhanced and strengthened.

CHAPTER 3
FOOD BIO-TERRORISM
CHARACTERISTICS, CONSEQUENCES AND LEGAL ISSUES

3.1 Characteristics of food bioterrorism

Food terrorism has been defined by the World Health Organisation (WHO) as an act or threat of deliberate contamination of food for human consumption with chemical, biological and radio-nuclear agents for the purpose of causing deaths to