

1. INTRODUCTION

VISION

Making a resilient HYDERABAD where communities respond to disasters with sense of urgency and in a planned way to minimize human, property and environmental loss by developing a holistic, proactive, multi-disaster and technology driven strategy for DM. The entire process will center stage the community and will be provided momentum and sustenance through the collective efforts of all government agencies.

POLICY

Saving human lives with utmost priority and ensuring minimum loss to property and environment. Recognizing the commitment of stakeholders and the need for collaboration across all levels of government, community, industry, commerce, government owned corporations, private and volunteer organizations, and local communities in all aspects of disaster management. Emphasizing, building and maintaining sincere relationships, trust, teamwork, consultative decision-making and shared responsibilities among stakeholders.

OBJECTIVES OF THE PLAN

The aim of the DM plan is to ensure that the following components of DM are addressed to facilitate planning, preparedness, operational, coordination and community participation. The objectives guiding the policy formulation are:

- 1) To assess various hazard, vulnerability, capacity and risk associated with the District.
- 2) To lay down various measures and guidelines for prevention and mitigation.
- Page 2 of 1893) 4) To lay down preparedness measures for all stakeholders.
- To build the capacity of all stakeholders in the state to cope with the disasters
- 5) and promote community based disaster management.
- To mainstream disaster management concerns into the developmental planning process.
- 6) To develop efficient, streamlined and rapid disaster response and relief mechanism in the GHMC.
- 7) To provide clarity on roles and responsibilities for all stakeholders concerned with various phases of disaster management.
- 8) To ensure co-ordination and promote productive partnership with all other agencies related to disaster management.
- 9) To commence recovery programme as an opportunity to build back better in case of a future disaster by incorporating community in the programme.

STRATEGY

Keeping in view the hazard risk profile of the district and its disaster history, HYDERABAD has the following prevention and mitigation strategy:

- 1) Creating Disaster Mitigation Fund.
- 2) Creating awareness for disaster risk reduction at all level.
- 3) 4) 5) Appropriate amendments in the legislative and regulatory instruments along with strengthening of the enforcement mechanisms at different levels.

Ensuring use of disaster resistant construction techniques, codes and guidelines in all sectors of the society by law and through incentives and disincentives.

Incorporating the study of disaster engineering subjects in architecture and

Engineering curriculum.

SCOPE OF THE PLAN

The term "**DISASTER MANAGEMENT**" encompasses the complete realm of disaster-related activities. Traditionally people tend to think of disaster management only in terms of the post-disaster actions taken by relief and reconstruction officials; yet disaster management covers a much broader scope, and many modern disaster managers may find themselves far more involved in pre-disaster activities than in post-disaster response. This is because many persons who work in the development field, or who plan routine economic, urban, regional or agricultural development projects, have disaster management responsibilities. For example, housing specialists planning a low-income housing project in a disaster-prone area have the opportunity (and an obligation) to mitigate the impact of a future disaster if the houses incorporate disaster resistant construction technologies. It is mandate the Mainstreaming of Disaster Risk Reduction / Management into all the development projects, policy decisions and execution.

FINANCIAL RESOURCES FOR IMPLEMENTATION OF GHMC - DMP

GHMC should make financial allocations in preparing and executing the disaster management plan. The HoD, Finance, GHMC should plan for the following:

1) 2) Funds for Prevention and Mitigation Activities

Funds for Preparedness and Training Activities

3) Funds for Response Activities (including pre-authorization to draw money from treasury in the event of an immediate emergency)

4) Funds for Disaster Risk Insurance

For the purpose of expediting services to its customers, GHMC will delegate special financial powers during an emergency to the officers dealing with disaster.

NATIONAL DISASTER MANAGEMENT STRUCTURE

The Disaster Management Act 2005 provides the legal and institutional framework for disaster management in India at the National, State and District level.

AGENCIES ROLES & RESPONSIBILITIES

NATIONAL DISASTER MANAGEMENT AUTHORITY (NDMA)

NDMA, as the apex body, is mandated to lay down the policies, plans and guidelines for Disaster Management to ensure timely and effective response to disasters. Towards this, it has the following responsibilities:-

1) Lay down policies on disaster management;

2) Approve the National Plan;

3) Approve plans prepared by the Ministries or Departments of the Government of India in accordance with the National Plan;

4) Lay down guidelines to be followed by the State Authorities in drawing up the State Plan;

5) Lay down guidelines to be followed by the different Ministries or Departments of the Government of India for the Purpose of integrating the measures for prevention of disaster or the mitigation of its effects in their development plans and projects;

6) Coordinate the enforcement and implementation of the policy and plans for disaster management;

7) Recommend provision of funds for the purpose of mitigation;

8) Provide such support to other countries affected by major disasters as may be

determined by the Central Government;

9) Take such other measures for the prevention of disaster, or the mitigation, or preparedness and capacity building for dealing with threatening disaster situations or disasters as it may consider necessary;

10) Lay down broad policies and guidelines for the functioning of the National Institute of Disaster Management.

NATIONAL INSTITUTE OF DISASTER MANAGEMENT (NIDM)

1) The NIDM, in partnership with other research institutions has capacity development as one of its major responsibilities, along with training, research, documentation and development of a national level information base.

2) It will network with other knowledge-based institutions and function within the broad policies and guidelines laid down by the NDMA.

3) It will organize training of trainers, DM officials and other stakeholders.

4) The NIDM will strive to emerge as a 'Centre of Excellence' in the field of Disaster Management.

NATIONAL DISASTER RESPONSE FORCE (NDRF)

NON-DISASTER PERIOD

1) Acquire and continually upgrade its own training and skills

2) Impart basic and operational level training to State Response Forces (Police, Civil Defense and Home Guards)

3) Assist in Community Training & Preparedness

4) Liaison, Reconnaissance, Rehearsals and Mock Drills.

IMPENDING DISASTER

Page 6 of 1891) Proactive deployment during impending disaster situations.

DURING DISASTER

1) Specialized Response.

STATE DISASTER MANAGEMENT AUTHORITY (SDMA)

According to the Disaster Management Act 2005 Section 14 each State mandates to establish State Disaster Management Authority (SDMA), which functions under the chairmanship of the Chief Minister. The SDMA has a clearly defined line of command and control.

Section 18: Powers and functions of State Authority.

1) Subject to the provisions of this Act, a State Authority shall have the responsibility for laying down policies and plans for disaster management in the State.

2) Without prejudice to the generality of provisions contained in sub-section (1), the State Authority may-

a) Lay down the State disaster management policy.

b) Approve the State Plan in accordance with the guidelines laid down by the National Authority.

3) Approve the disaster management plans prepared by the departments of the Government of the State.

4) Lay down guidelines to be followed by the departments of the Government of the State for the purposes of integration of measures for prevention of disasters and mitigation in their development plans and projects and provide necessary technical assistance therefore.

- 5) Coordinate the implementation of the State Plan.
- 6) Recommend provision of funds for mitigation and preparedness measures.
- 7) Review the development plans of the different departments of the State and ensure that prevention and mitigation measures are integrated therein.
- 8) Review the measures being taken for mitigation, capacity building and preparedness by the departments of the Government of the State and issue such guidelines as may be necessary.
- 9) The Chairperson of the State Authority shall, in the case of emergency, have power to exercise all or any of the powers of the State Authority but the exercise of such powers shall be subject to ex post facto ratification of the State Authority".

STATE INSTITUTE OF DISASTER MANAGEMENT (SIDM)

- 1) The SIDM, in partnership with other research institutions has capacity development as one of its major responsibilities, along with training, research, documentation and development of a state level information base.
- 2) It will network with other knowledge-based institutions and function within the broad policies and guidelines laid down by the SDMA.
- 3) It will organize training of trainers, DM officials and other stakeholders.
- 4) The SIDM will strive to emerge as a 'Centre of Excellence' in the field of Disaster Management.

5. PREVENTION AND MITIGATION MEASURES

MITIGATION:

Disaster Preparedness needs to be followed by disaster mitigation, which is essential for providing long-term succor to the victims of disasters. Mitigation involves all actions to reduce the effects of disaster –causing phenomena. Mitigation involves all actions to reduce the impact of a disaster that can be taken prior to its occurrence, including preparedness and long-term risk reduction measures. It also includes the planning implementation of measures to reduce the risks of human-made hazards, and the process of planning for effective response to disasters. Disaster mitigation includes scientific analysis of risk assessment, social, economic, legal and technical process in the application of these measures.

PRINCIPALS OF DISASTER MITIGATION:

- 1) 2) 3) 4) 5) 6) 7) 8) Creating awareness of risk at community level
- Promoting local actions through community participation to reduce such risks
- Assisting decision makers to understand the nature and extent of various risks faced by communities

Pre-disaster mitigation helps ensure fast recovery of a community from the economic and other impacts of a disaster.

Hazard reduction measures should take into account the various hazards faced by the community, including technological hazards.

Mitigation measures should protect natural and cultural resources of the community.

Mitigation is the effort to reduce loss of life and property by lessening the impact of disasters.

The magnitude of damage wreaked by natural disasters can be reduced

considerably by adopting the twin strategies of “culture of prevention” and “Spirit of Cooperation” through awareness, knowledge, training and proper use of new technologies.

Greater Hyderabad municipal corporation has adopted both mitigation and prevention components for disaster management.

5.1 DISASTER MITIGATION MEASURES

5.1.1 EARTHQUAKE

A comprehensive programme has been taken up for earthquake mitigation. The Bureau of Indian Standards (BIS) has laid down the standards for construction in the seismic zones; these are not being adhered to. The building construction in urban and suburban areas is regulated by the Town and Country Planning Acts and building regulations. In many cases, the building regulations do not incorporate the BIS codes. Even where they do, the lack of knowledge regarding seismically safe construction among the architects and engineers as well as awareness regarding their vulnerability among the population has resulted in most of the construction in the urban / suburban areas being done without reference to BIS standards. The increasing population has led to Settlements in vulnerable areas close to the riverbed areas, which are prone to liquefaction. Earthquake mitigation requires engineered structures to withstand seismic forces, compliance to building codes, regulations, appropriate location planning, land-use regulations. In case of earthquakes, it is not yet possible to make forecasts about the impending event. Therefore, there can be no warning. Thus to ensure the earthquake risk mitigation, it is necessary to prepare the community for:

- 1) Hazard resistant construction or retrofitting of building / houses to reduce the vulnerability of the structures
- 2) 3) Proper land use planning to avoid potentially high hazard zone; and Community preparedness through awareness generation, mutual assistance, and adherence to a set of Do's and Don'ts.

It is poorly built structures, not earthquakes that kill people. It is a well-known fact that most earthquake related deaths and financial losses are due to the structural collapse of houses and other buildings and structures. The impact of an earthquake on a structure is greatly influenced By the building material used, design of the building and techniques employed for construction.

5.1.2 URBAN FLOODS:

Floods are extreme events, usually triggered by extreme precipitation (river/inland floods)and/or storms (coastal floods). If these rainfalls exceed the retention capacity of the basins, drainage speed and volume, it causes floods.

DIFFERENT TYPES OF FLOODING ARE EVIDENT IN HYDERABAD:

- 1) 2) 3) 4) localized flooding due to inadequate drainage; flooding due to overflows from musli River, where settlements have taken place in the flood plains.

Localized flooding occurs mainly due to informal settlements in the drain path, improper drainage network, reduction in drain capacity due to siltation.

Land use practices, solid waste management practices and drainage maintenance in the city have influenced and exacerbated the flood hazard.

Various approaches are available to deal with floods and to mitigate their adverse impact. As each situation is different, different approaches or their combination is adopted. Basically, these approaches fall under the following three categories:

Modification of floods would involve measures such as weather modification (if possible), catchment and land use modification, physical control works such as reservoirs and embankments. Modification of the susceptibility of the people would involve flood forecasting, warning, flood proofing and flood plain management. Modifying the loss burden is possible through evacuation, pumping out water, avoidance of epidemics, flood insurance and compensation.

Modification of the hazard is possible through structural and non-structural measures.

epidemic is the rapid spread of infectious disease to a large number of people in a given population within a short period of time, usually two weeks or less.

Greater Hyderabad municipal corporation is the Lead Agency for monitoring and control of epidemics in post monsoon times.

MITIGATION EFFORTS FOR CONTROL OF EPIDEMICS WOULD INCLUDE

- 1) Surveillance and warning
- 1) Surveillance and warning
- 2) Preventive and promotive measures
- 3) Strengthening institutional infrastructure.

The following measures for preventing the health risk arising out of a disaster:

Research and epidemiological studies

Immunization and vaccination

Proper food and nutrition

Maintenance of hygiene and sanitation

Adequate system of garbage disposal

Vector Control

Well laid down system of education, training and simulation exercises

Mitigation Plans

Media Campaigns

Sustainable development

People's involvement

Mitigation plans should integrate the following points:

Creating awareness of health risk at community level

Promote local actions through community participation to reduce such risk

Assist decision makers (Politicians and administrators) to understand the nature and extent of various risks faced by the communities in their area of responsibility, and to assess the economic conditions through proper decision making and planning.

Introduce effective measures to implement disaster mitigation plans at different levels of public administration based on risk assessment and vulnerability analysis.

With such a mitigation strategy, it becomes possible to reduce the adverse health consequences. The local community, the governmental bodies, and other agencies working in the area of disaster management can assess the causes, severity and elements of risks

pertaining in their areas. This will enable them to take appropriate health preparedness measures. NGOs and disaster management agencies should conduct training programmes of the public health workers and volunteers in the community. As far as possible, population should be trained for multi-purpose activities. Formal training can be given through modular courses by NGOs or other agencies.

URBAN FLOOD MANAGEMENT

INTRODUCTION

Flooding is a natural event; the water cycle is a balanced system. Water flowing into one part of the cycle (like streams) is balanced by water flowing back to the sea. Sometimes, however the amount flowing into one area is greater than the capacity of the system to holdPage 45 of 189it within natural confines. The result is a flood, which occurs when the amount of water

arriving on land (from rainfall, snow melt, surface flow, flow in watercourses or inundation by the sea) exceeds the capacity of the land or drainage-system to discharge that water. It can occur on any location but mainly occurs on land adjacent to watercourses (fluvial flood plains) or low laying areas.

Increasing trend of urban flooding is a universal phenomenon and poses a great challenge to urban planners the world over. Urban floods will happen in a relatively short period of time and can inundate an area with several feet of water. Although volume of water to be handled is not as severe as a flash flood of a river system the property damages and indirect financial losses are significant as surface water runoff is controlled and managed by humans in a concrete world as this flooding occurs in highly populated areas. As the Environment Agency sustainable development Unit said in June 2001: "Major floods that have only happened before say, every 100 years on average, may now start to happen every 10 or 20 years. The flood season may become longer and there will be flooding in places where there has never been any before". Urban flooding is significantly different from rural flooding as urbanisation leads to developed catchments which increases the flood peaks from 1.8 to 8 times and flood volumes by up to 6 times. Consequently, flooding occurs very quickly due to faster flow times, sometimes in a matter of minutes. Urban areas are centres of economic activities with vital infrastructure which needs to be protected 24x7. In urban areas, water must follow the prescribed pathways set forth by large water systems that direct water where to flow. According to FEMA, the basic philosophy of urban drainage systems, or "storm water management", for redirecting water flow has been to seek maximum convenience at an individual site by the most rapid possible elimination of excess surface water after a rainfall and the containment and disposal of that water as quickly as possible through a closed/ Open conveyance system. In other words, "get that water out of here NOW" has been the overlying philosophy of creating drainage systems in urban areas.

Types of Flooding

Flooding can be divided into different categories according to their duration:

1. Slow-Onset Floods

Slow-Onset Floods usually last for a relatively longer period, it may last for one or more weeks, or even months. As this kind of flood last for a long period, it can lead to lose of stock, damage to agricultural products, roads and rail links.

2. Rapid-Onset Floods

Rapid-Onset Floods last for a relatively shorter period, they usually last for one or two days only. Although this kind of flood lasts for a shorter period, it can cause more damages and pose a greater risk to life and property as people usually have less time to take preventative action during rapid-onset floods.

3. Flash Floods

Flash Floods may occur within minutes or a few hours after heavy rainfall, tropical storm, failure of dams or levees or releases of ice jams. And it causes the greatest damages to society.

Flooding can also be divided into different categories according to their location:

1. Coastal Floods

Coastal Floods usually occur along coastal areas. When there are hurricanes and tropical storms which will produce heavy rains, or giant tidal waves created by volcanoes or earthquakes, ocean water may be driven onto the coastal areas and cause coastal floods.

2. Arroyos Floods

An arroyo is a river which is normally dry. When there are storms approaching these areas, a fast-moving river will normally form along the gully and cause damages.

3. River Floods

This is the most common type of flooding. When the actual amount of river flow is larger than the amount that the channel can hold, the river will overflow its banks and flood the areas alongside the river. And this may be caused by reasons like snow melt or heavy spring rain.

4. Urban Floods

In most of the urban area, roads are usually paved. With heavy rain, the large amount of rain water cannot be absorbed into the ground and leads to urban floods.

Among various kinds of disasters, flooding is unique in the sense that it has a very high degree of predictability, both in the short term, as well as long term. In most situations, flood-prone areas are quite known – in the sense that they have a history of flooding. Only in very rare situations, a place might be flooded – without having any past history of flooding. Even in such cases, a careful study of the area could give an indication of possible flooding.

Flood Prone Areas

The areas, which are prone to flood-risks, are:
places, which have a history of flooding

Low-lying areas

Areas receiving heavy rainfall, with not much naturally sloping landscape

areas at the lower levels of naturally sloping landscape – where, the higher areas are receiving heavy rainfall

areas within the FTL limits of tanks/ponds/lakes.

areas downstream of Tanks. As water level upstream of Tanks/lakes/ponds might rise, the authorities might be forced to release water (to safeguard the Tanks/lakes/ponds) – which might cause flooding of downstream areas

Loss due to Flooding

The most common kinds of loss that are caused during flooding include:

Lack of water: It is an irony, that a disaster which means water everywhere, results in lack of water to drink and sanitation. Lack of proper drinking water and sanitation causes

widespread outbreak of diseases.

Lack of food: Most of the food items get damaged, causing a severe shortage of food. This shortage could be for the food to be consumed in the near future, or, even standing crops could be damaged causing long-term food shortage.

Lack of utilities: Utility services might have to be turned off, for the fear of electrocution, as, there is water everywhere.

Widespread damage to structure

Drowning: People, livestock, goods etc. might get drowned.

Snakes and other creatures: Some of the dangerous creatures which usually stay underground would be forced to come up, as their natural habitat becomes unlivable. These could prove dangerous to human beings and cattle.

Submerging of vehicles and other equipment's: Vehicles and other equipment's might get permanently damaged – as they remain submerged under water – for prolonged duration. Because of wide-spread impact of such floods, the suffering could be long-drawn, besides the immediate impact – as mentioned above.

Major Causes of Urban Floods

Urban floods are caused by natural events and anthropogenic activities. In Indian cities flooding is becoming frequent due to both human factors and meteorological/hydrological factors, with the former factor being more predominant. Some of the issues contributing to urban floods are listed below:

Page 49 of 1891) **Planning issues:** Increasing population, habitations coming up in low-lying areas, encroachment on drainage channels and immediate upper catchment of hilly urban areas.

2) **Technical issues:** Increased imperviousness leading to increased runoff as compared to drainage capacity, improper waste disposal resulting in clogged drains, high intensity – high load of runoff.

3) **Meteorological issues:** Exacerbated by changing climate, resulting in extreme events, NASA studies indicate that the urban heat island effect also results in High intensity rainfall over urban areas.

4) **Policy issues:** Lack of integrated flood control implementing agency

The following could be additional contributing factors to flooding impacts,

a. Building developments in floodplains, where they are vulnerable to flood hazards;

Built development in catchments and other changes in land use, that increase the rate and volume of runoff in a catchment;

Sediment movement changing river cross-sections and affecting flood levels

Lack of maintenance of flood defence systems, watercourses, culverts (including flood storage areas around them) and road gullies, particularly where this leads to channel blockage.

Canalization, modification and diversion of rivers and watercourses, which increase the rate of flow and decrease the time taken for water to travel within a catchment

b. c. d. e. Page 50 of 189 f. g. The building of structures e.g. (embankments), which restrict flows over historical flood plains and thereby create additional flood risks both upstream and downstream.

Land management practices that increase blockages of hydraulic structures.

Impacts - flooding in urban areas affects more than one sector

- 1) Traffic jams
- 2) Damage to public and private property
- 3) Mixing of solid waste in flood waters causing further choking of drains
- 4) Vector and water borne diseases
- 5) Incessant rains causing Nala overflow/breaching of tanks which causes inundation of low lying areas.
- 6) Disruption of power supply and telecommunication.
- 7) Mixing of faecal matter in the flood water due to open defecation.

Measures to Mitigate/Eliminate Urban Flooding

An integrated approach combining watershed and land use management with development planning, engineering measures, flood preparedness, and emergency management should be adopted for controlling urban floods. Three aspects viz. flood avoidance, flood tolerance and flood resilience should be addressed in an integrated way for flood management in cities.

- 1) Planned and proper construction of drainage network separately for storm water and sewer.
- 2) Regular maintenance of storm water drains.
- 3) Use of porous construction material for pavements.
- Page 51 of 189 4) Putting in place water sensitive infrastructure.
- 5) Taking drainage basin as the base for city master plans.
- 6) Protecting lakes/water bodies from encroachments and clearing existing encroachments by the departments/agencies concerned.
- 7) Rejuvenating water bodies back to their original state.
- 8) Training programs should be organised for staff involved in operation and administration to enable them to take action as per the operating procedures.
- 9) Sensitization programs should be organised for public on flood related aspects.
- 10) Damage assessment should be done in vulnerable areas and sufficient funds should be allocated for flood prevention related works . This will help in reducing the recurring expenditure for the same damages every year.
- 11) General clean-up of streets is also important. As rain-water falls down the street, it rushes into the storm drains. if the streets are not clean, the rain water trying to go into the drain – carries solid wastes into the drain with itself, which then obstructs the flow of water by the drainage system.
- 12) Rain water harvesting system: As more rain-water tries to flow down the drains, it puts that much more stress on the drainage system. Instead, if there are several rain-water harvesting systems, the rainfall falling in that much area would try to go to the sub-soil of the region locally, rather than straining the drainage system. Lower is the amount of water trying to go through the drainage system, the easier it is for

the drainage system to drain off the water.

13) Desilting: The drains should be desilted before the onset of the rainy season. This prevents the drains from getting choked. And, it also increases the holding capacity of the drain, as, accumulated silt prevents that much more water from being accumulated in the drains.

Page 52 of 18914) Afforestation: Forestation helps in binding the loose soil. The most major impact of

this is, as flood-water races through, it might take loose soil with it. This loose soil will now choke the drains, as well as water-harvesting systems, thus, rendering both of these as ineffective. On the other hand, trees will prevent soil to flow with the water, as, the roots of the trees will act as binding force. Another major impact that afforestation provides is by reducing the impact of flowing water. This has impact on large-scale flooding, such as overflowing river. As water charges forward, its speed is reduced to some extent due to resistance offered by trees. This can reduce the force of the charging water – thereby, reducing structural damage – due to weakening in the force with which water hits various structures.

15) Local lowlands should have storm drains, so that water does not get accumulated there. These drains should have some kind of mesh covering, so that only water can flow in. Leaves and other solid debris should not go in these drains.

16) Local embankments around low-lying houses etc: Lets say, for some reason, your house is at a level lower than its vicinity (e.g. road-level). This can happen, because, say: you have constructed a basement – which is obviously lower than the road-level, or, over a period of years, the road-level has risen due to repeated tarring etc. In such cases, you should create a “local” embankment between the street/road and your property, so that water can not flow “down” from the street/road inside your house. These embankment might be permanent – in the form of concrete structure.

17) Conversion of flood-prone areas into wetlands, where, urbanization is not allowed, i.e. one cannot construct residential houses, or, any other permanent structures etc.

18) Documentation - Activities undertaken by government agencies for controlling and managing floods should be documented and publicized in all forms of media.

19) Stopping illegal construction: Public should be educated on the risks involved in illegal constructions on or along drains and water bodies. Vulnerable areas should be cleared of habitations. Government should consider relocation of the poor to other areas.

20) Institutional arrangements - A unified flood control implementing agency needs to be in place.

Being Prepared – Community Preparedness

People who stay in flood-prone areas should construct their houses using material which does not get damaged severely due to flood-water. Also, since, there is a strong risk of structural damage (for large-scale flooding), the material used to construct the house should be such that it can withstand high impact – due to the charge of flowing water. One should prefer areas, which are slightly elevated. These could be local elevations, i.e. higher parts of the city etc. There should be strong embankments along all entrances of the houses – so that flood water does not enter the house easily.

Cement bags, covered with plastic sheets might be used to keep the flood water from

entering the houses.

Besides, long boots should always be kept, so that one does not run the risk of being bitten by snakes and/or other insects that might also be trying to save themselves from the twirling flood-waters.

One should keep arrangements for raising the height of items, which might get damaged in water, e.g. put a few pieces of bricks below the legs of the furniture, such as bed etc. to raise its height. Important document should always be kept on higher shelves.

As water, food and utilities would not be available – and that too – for possibly several days, one should also take measures towards General Preparedness.