



Formulation of  
District Disaster Management Plan

**Module**

**Developed by :**

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# Formulation of District Disaster Management Plan

## Module

### Introduction

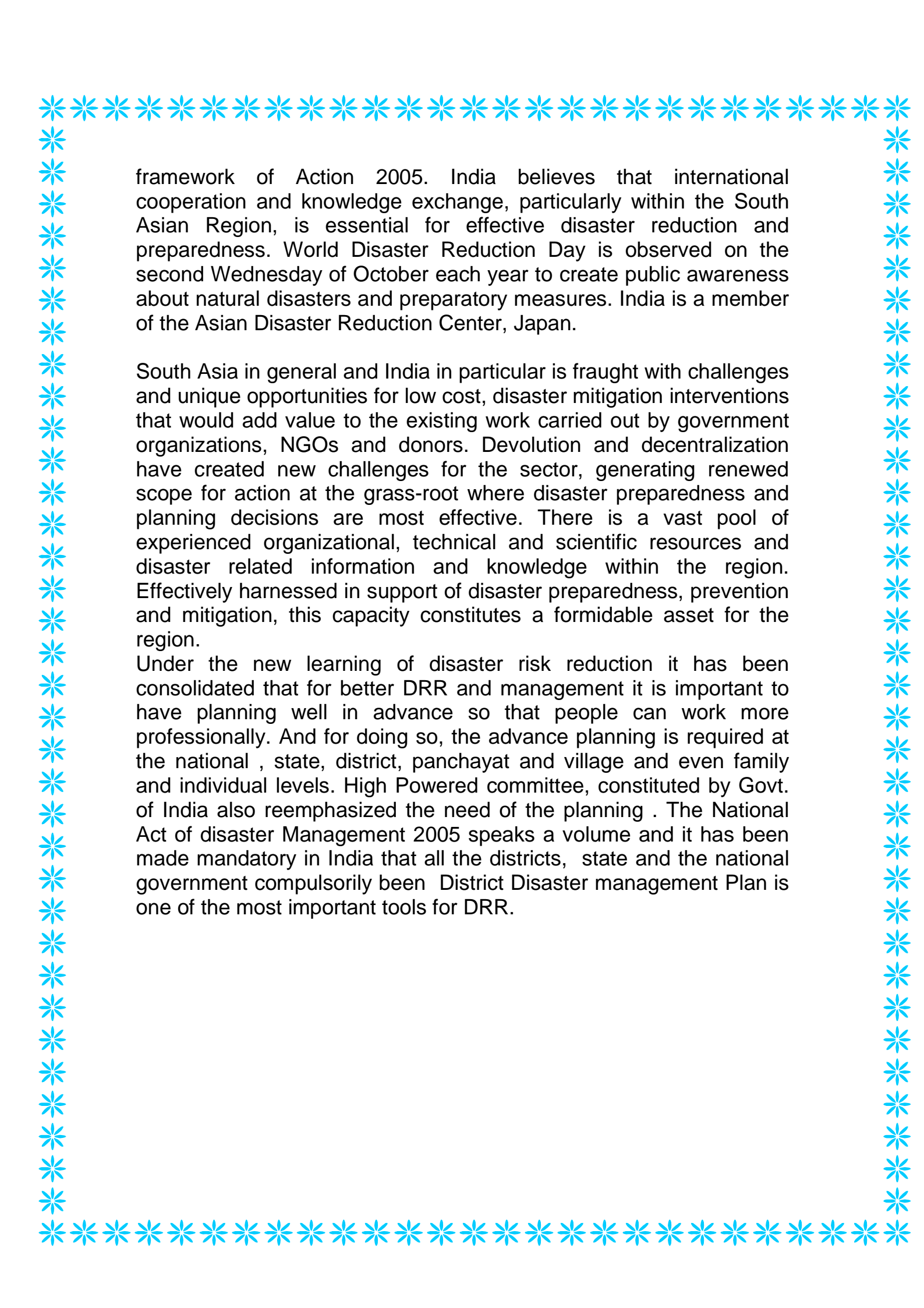
India is one of the most disaster prone countries in the world. Its location and geographical features render it vulnerable to a number of natural hazards including cyclone, drought, floods, earthquake, fire, landslides and avalanches. A disaster is an event that causes the sudden disruption to the normal life of a society and causes damage to property and lives, to such an extent that normal social and economic mechanisms available to the society are inadequate to restore normalcy.

A number of special programs are in operation for mitigating the impact of natural disasters and local communities have developed their own indigenous coping mechanisms. In the event of an emergency, the mobilization of community action supported by NGOs, add strength to the national disaster management capacity.

Concepts of forging linkages between disaster reduction and development, training and education, participation in integrating social and human science inputs in vulnerability assessment and appropriate resources allocation against competing demands are yet to be fully integrated with practice.

Despite initiating various disaster mitigation measures, there has been little improvement. Accordingly, India has taken initiatives for linking disaster mitigation with development plans, promote the application of effective communication systems and information technology, insurance, extensive public awareness and education campaigns (particularly in rural areas), involve the private sector and strengthen institutional mechanisms and international community cooperation.

India is committed for achieving the goals and objectives of the International Decade for Natural Disaster Reduction and Hygo



framework of Action 2005. India believes that international cooperation and knowledge exchange, particularly within the South Asian Region, is essential for effective disaster reduction and preparedness. World Disaster Reduction Day is observed on the second Wednesday of October each year to create public awareness about natural disasters and preparatory measures. India is a member of the Asian Disaster Reduction Center, Japan.

South Asia in general and India in particular is fraught with challenges and unique opportunities for low cost, disaster mitigation interventions that would add value to the existing work carried out by government organizations, NGOs and donors. Devolution and decentralization have created new challenges for the sector, generating renewed scope for action at the grass-root where disaster preparedness and planning decisions are most effective. There is a vast pool of experienced organizational, technical and scientific resources and disaster related information and knowledge within the region. Effectively harnessed in support of disaster preparedness, prevention and mitigation, this capacity constitutes a formidable asset for the region.

Under the new learning of disaster risk reduction it has been consolidated that for better DRR and management it is important to have planning well in advance so that people can work more professionally. And for doing so, the advance planning is required at the national , state, district, panchayat and village and even family and individual levels. High Powered committee, constituted by Govt. of India also reemphasized the need of the planning . The National Act of disaster Management 2005 speaks a volume and it has been made mandatory in India that all the districts, state and the national government compulsorily been District Disaster management Plan is one of the most important tools for DRR.

# Unit I: Development and Disaster

## Session 1. Impact of disaster on development

**Objectives:** At the end of this session participants would be able to

1. Define development and disaster
2. Explain the differences and relation between disaster and development
3. Identify issues for DRR and development

**Time: 90 mts.**

**Methods : Discussion and presentation  
Individual exercise**

### Process

**In the beginning of the** session facilitators may distribute participants one card to each and ask to define what is development and write four to five indicators. Give them 5 mts to reflect their views on the card and then ask them to focus on the presentation made by the facilitators. ( time 10 mts).

Relate their definition with the actual definition Where they are closer to the appropriate answer encourage them

Until the 26<sup>th</sup> January, 2001 at around 9.p.m, cities were breathing normal, flag of development was high, people were out to attend the republic day parade , governance was ready to put up a development report card before the people and the earth shook . Within couple minutes development challenged by the natural forces and infrastructure created got completely eroded. Thousands of people got killed and million became homeless. The story of such devastation was not a single case. After the year 2001, Floods in Assam, Bihar, Mumbai, drought in Rajasthan, Maharashtra, Gujarat ,karnatka and Andhra, Asian Tsunami and Kashmir earthquakes, Hurricane Katrina and many more are catastrophic incident happened which actually raised finger on the complete development

process. Disasters in the colonial time could have been accepted but such devastation which make development non existent are not tolerable in the in the democratic form governance . India, as per the world Bank study , losses @ 2% of the GDP per annum and 12 % of the total revenue which may be assumed approximately Rs. 40000 crores of rupees on a regular basis.

Facilitators while debriefing may highlight the following example or any other example which he/she think is an appropriate

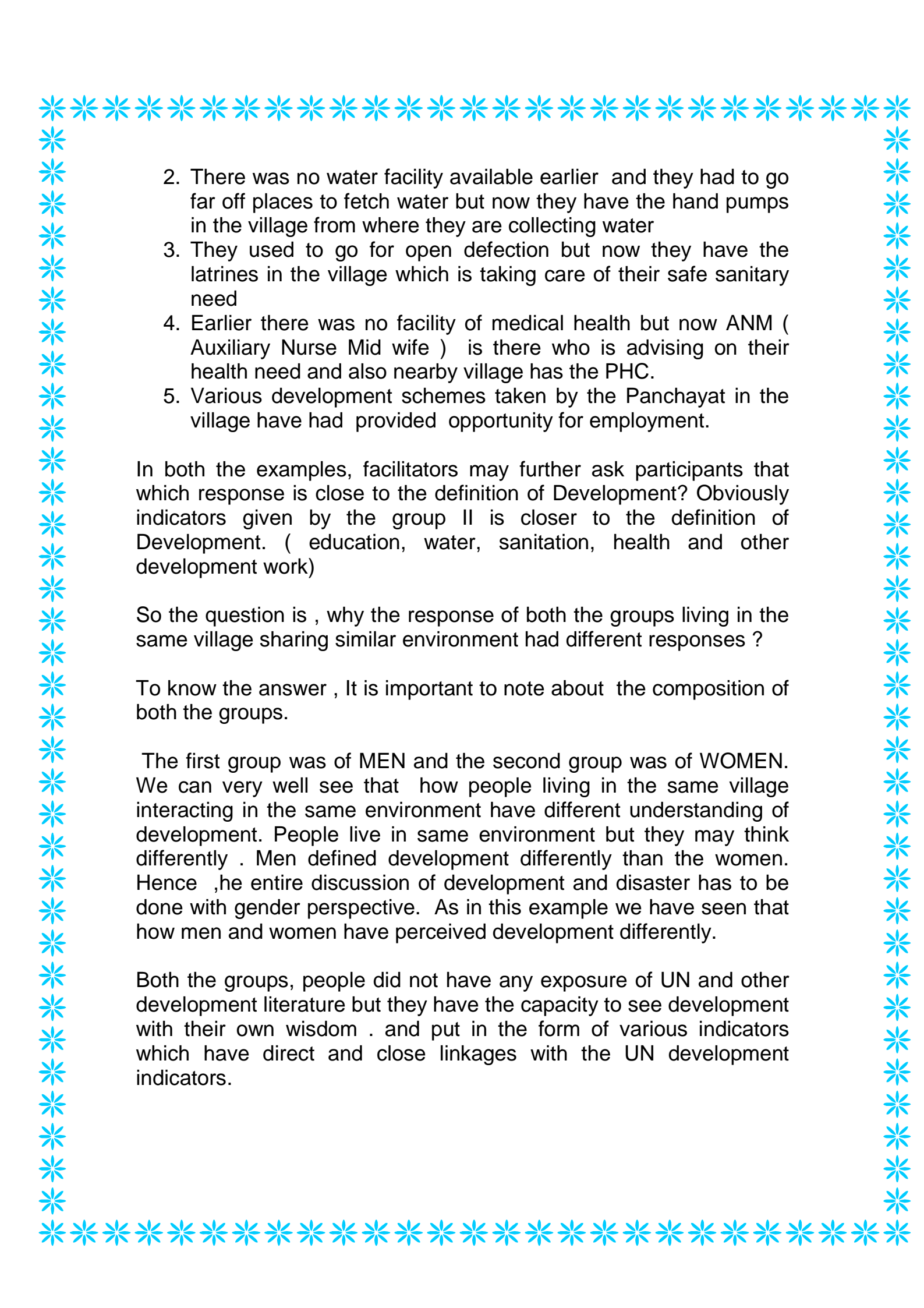
The definition of development I can quote from my field visit conducted in four different states in the country . During the field visit we divided villagers, with whom we were interacting, in two different groups and asked both the groups a very simple question to answer in their respective groups. The question was whether development has taken place in the village or not ? if yes or No what are the indicators to say so ?

Both the groups worked on it and shared their view points with us. The one group responded and said, that NO development has taken place at all and to say so, they gave us the following indicators:

1. Villagers are still unemployed and they do not have enough opportunities to work
2. Village is yet not connected with the Pucca Road ( mortar road)
3. There is very remote connectivity to the near by service centers/ town/city
4. There is no organised market facility where they can go and sell there products at better price.
5. There is no entertainment place inside and nearby the village where they can go and relax

The other group of the same village responded differently and they said YES , the development has taken place in the village and to say so they had given the following indicators :

1. Earlier in the village there was no school , but now they have school and they are sending their children to the school.

- 
2. There was no water facility available earlier and they had to go far off places to fetch water but now they have the hand pumps in the village from where they are collecting water
  3. They used to go for open defecation but now they have the latrines in the village which is taking care of their safe sanitary need
  4. Earlier there was no facility of medical health but now ANM ( Auxiliary Nurse Mid wife ) is there who is advising on their health need and also nearby village has the PHC.
  5. Various development schemes taken by the Panchayat in the village have had provided opportunity for employment.

In both the examples, facilitators may further ask participants that which response is close to the definition of Development? Obviously indicators given by the group II is closer to the definition of Development. ( education, water, sanitation, health and other development work)

So the question is , why the response of both the groups living in the same village sharing similar environment had different responses ?

To know the answer , It is important to note about the composition of both the groups.

The first group was of MEN and the second group was of WOMEN. We can very well see that how people living in the same village interacting in the same environment have different understanding of development. People live in same environment but they may think differently . Men defined development differently than the women. Hence ,he entire discussion of development and disaster has to be done with gender perspective. As in this example we have seen that how men and women have perceived development differently.

Both the groups, people did not have any exposure of UN and other development literature but they have the capacity to see development with their own wisdom . and put in the form of various indicators which have direct and close linkages with the UN development indicators.



The UN definition of Development:

The basic purpose of development is to enlarge people's choices. In principle, these choices can be infinite and can change over time. People often value achievements that do not show up at all, or not immediately, in income or growth figures: greater access to knowledge, better nutrition and health services, more secure livelihoods, security against crime and physical violence, satisfying leisure hours, political and cultural freedoms and sense of participation in community activities. The objective of development is to create an enabling environment for people to enjoy long, healthy and creative lives."

**Mahbub ul Haq**  
Founder of the Human  
Development Report

HD Indicators are largely health ( life expectancy ) , education ( literacy and enrolment rate) , Income ( GDP of the country) which have direct relation with the indicators given by the group II . The point we need to emphasise is that the perception of development is different amongst the men and women ,even if they are living in the same society and this has strong linkages in the development analysis.

### **How development is linked with the Disaster?**

**TASK** : Ask question to the participants as what happens when disaster strikes? Get participants responses write on the board then collate and analyse with them.

Largely ,the impact of disaster would be discussed in the in the form of that it kills people, lead to injury, destruction of property, displacement, loss to flora and fauna etc. To emphasis point facilitator may use Gujarat example as given below in fig 1 and fig 2

For example see what happened in Gujarat :

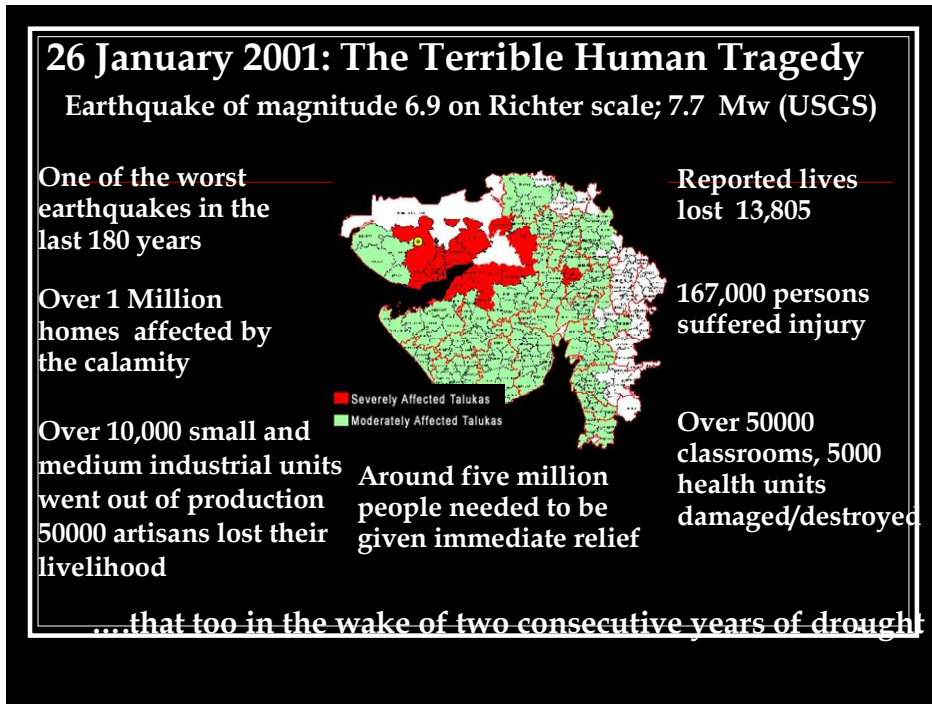


Fig 1

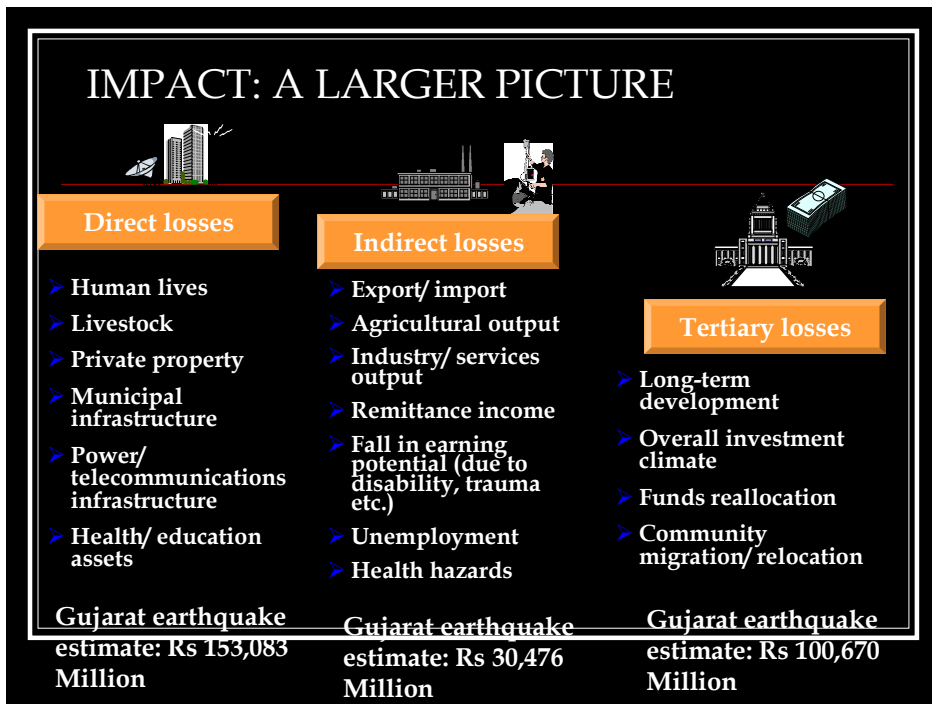


Fig 2.

Both the above figures are self explanatory and it talks about the degree of losses other than the people killed if we go by the above



data Govt. of Gujarat had the Total loss of ( Primary + secondary+ Tertiary losses ) Rs.284,229 millions. People who lost there lives are 13805 and got severly injured 167,000. The total lives lost and the loss to the infrastructure is clear cut scar on the development process. This raises two questions

- I) Are we ignorant about the severity and about the future risks and engaged in the mindless development? Or we are aware and not able to do anything. Either development is affecting disasters or disasters are affecting development or it is both?
- II) Yes, Disaster and development cannot be seen in isolation of each other. It is important that we look holistically and get ourselves prepared.

**Task :** Ask question taking the reference of the examples ( slides) shown earlier that suppose it happens to your district / block/village what you will do ? How you would be responding ? are you or your department and your district is prepared for such eventualities.

Figure iii, iv, and v given below are highlighting that low income/ developing countries will have higher risk of disasters than the high income countries even if the later countries are more exposed to risk. Higher exposure to risk not necessarily always mean to high disasters. Even low exposures can lead to higher degree of risks. The similar analogy would work at the district and block levels.. Ask participants to see the district profile and understand their district better

- Disaster risk is lower in high development countries than in low development countries.
- Development processes intervene in the translation of physical exposure to hazards into disaster risk

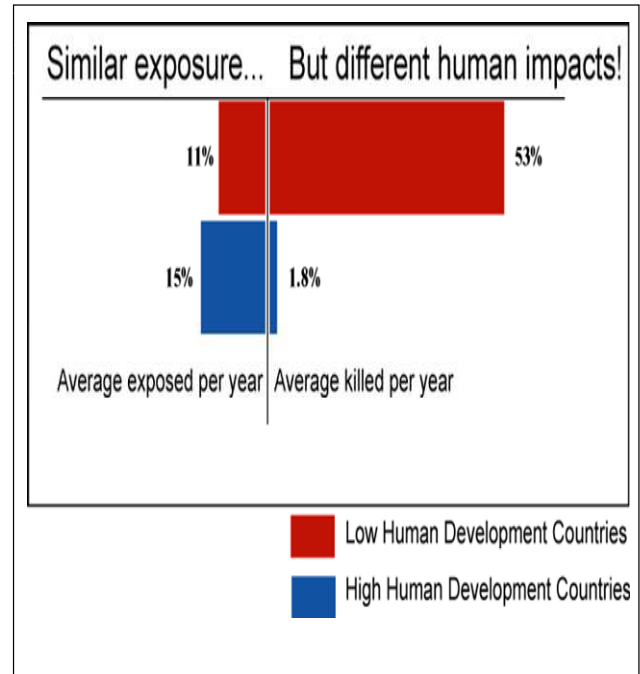
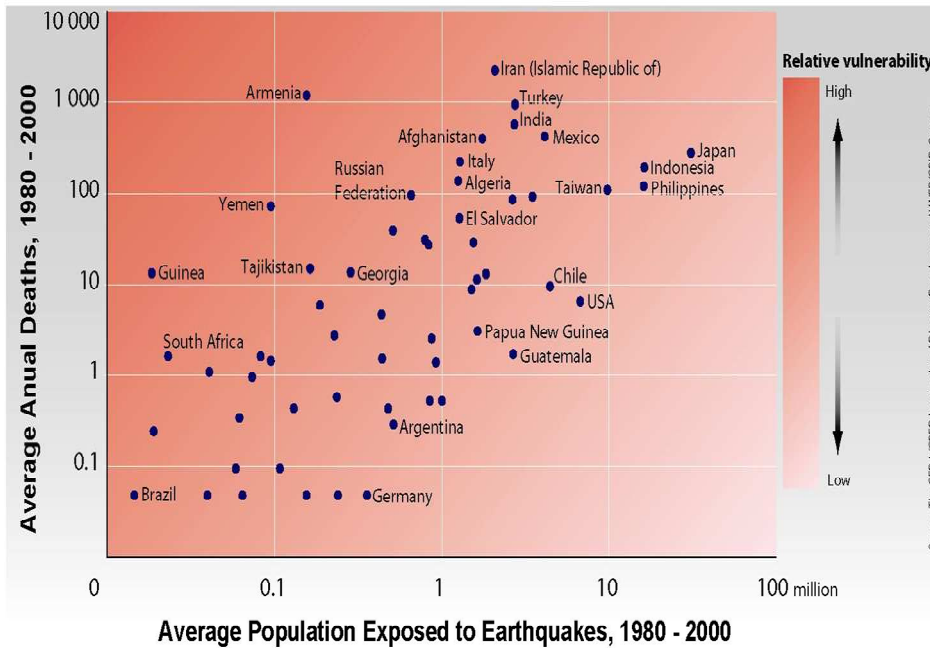


Fig. 3

### Relative Vulnerability for earthquakes



Source: The CFDA/CFED International Disaster Database and UNEP/GRID-Geneva

Fig 4. countries exposure and their relative vulnerability to earthquake

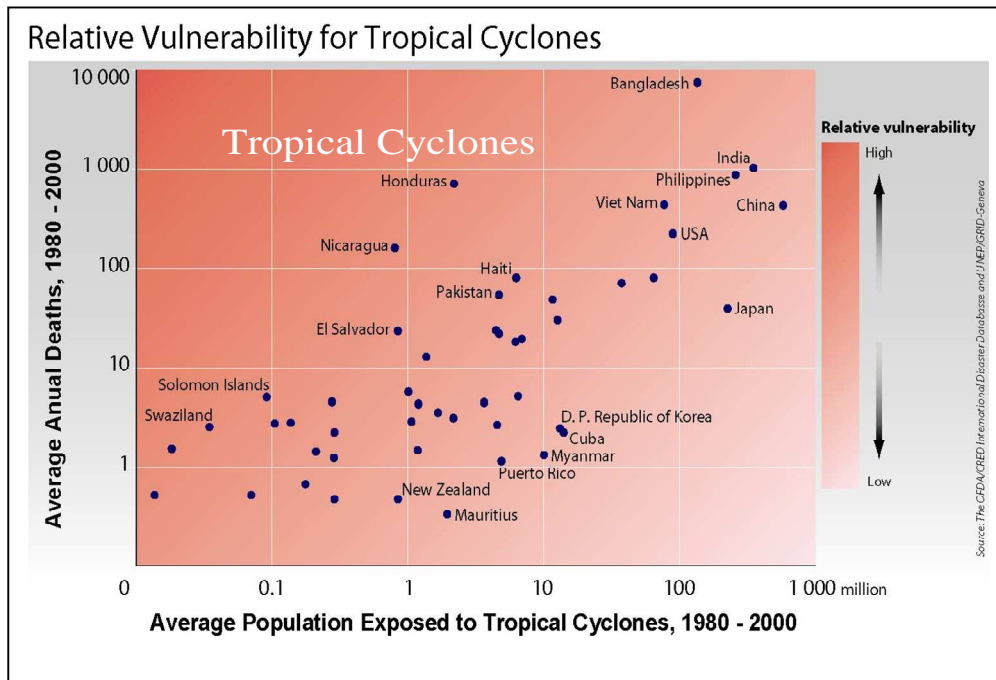


Fig 5. countries exposure and their relative vulnerability to cyclones

This analysis also gets reinforced with the example of the earthquake of San Francisco, California in 1971. The quake registered 6.4 on the Richter Scale with a population of over seven million, suffered only minor damage and 58 deaths. One year later an earthquake with a magnitude of 6.0 struck Managua, Nicaragua and reduced the center of the city to rubbles, killing an estimated 6000 people.

Task :Show the questions below on the power point/flip chart and ask participants to give the answer

## What is the problem in reducing risk and vulnerability ?

- Do we lack knowledge ?
- Do we Lack appropriate skills ?
- Do we lack resources ?
- Do we lack commitment ?
- Do we.....?????????

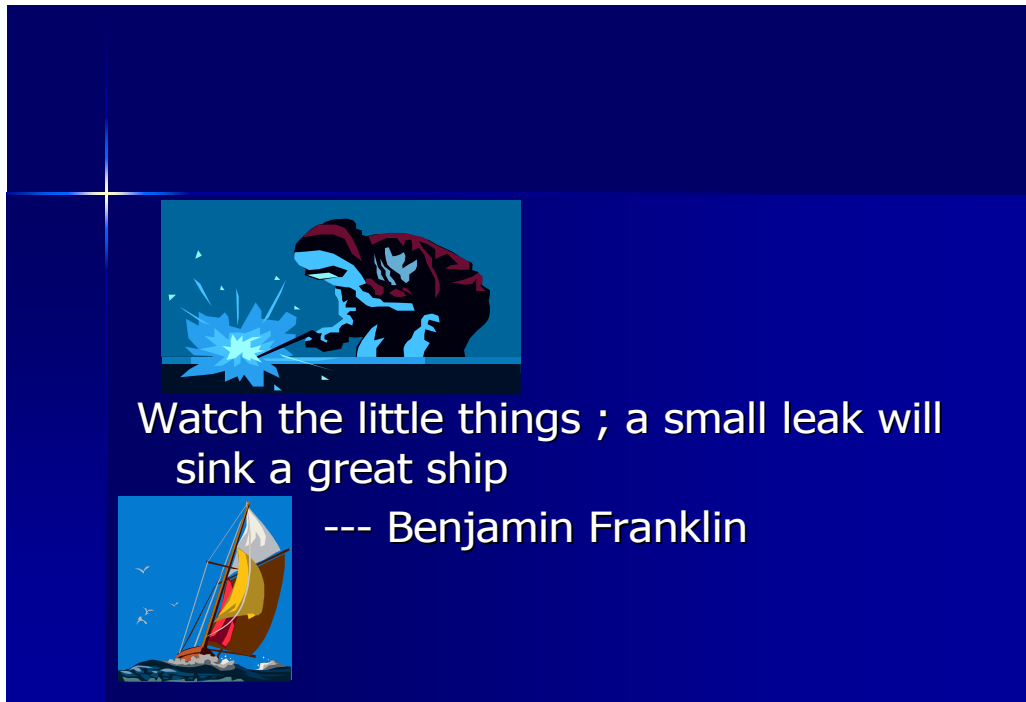


OR, WE LACK RIGHT ATTITUDE

### **The Attitude --**

- A fatalistic attitude – the “hand of God”
- Disasters : natural or “unnatural” – the “hand of man”
- Lack of awareness – knowledge as well as inclination – “I am not likely to come in contact”
- Refusal to learn lessons – multiplication of risks
- Disaster Management? – Oh! it’s someone else’s job
- **Disaster Management Planning? - I do not need it**

**Emphasise on An ounce of prevention is better than tonnes of cure**



Watch the little things ; a small leak will sink a great ship

--- Benjamin Franklin

Fig 6

Discuss the above quotes with the participants and re enforce the point of risk reduction.

There is a clear-cut disconnect between Disaster Managers and Development Managers. Both think in isolation of each other assuming themselves as two different identities. Where as, in reality, both are same wearing different hats at different time. During the peace time they work as development manager and at the disaster time they work as disaster manager and the role of development manager is overwhelmed by disaster managers. But this phenomenon is never realized or always forgotten thinking both are two different a person. See fig 7.

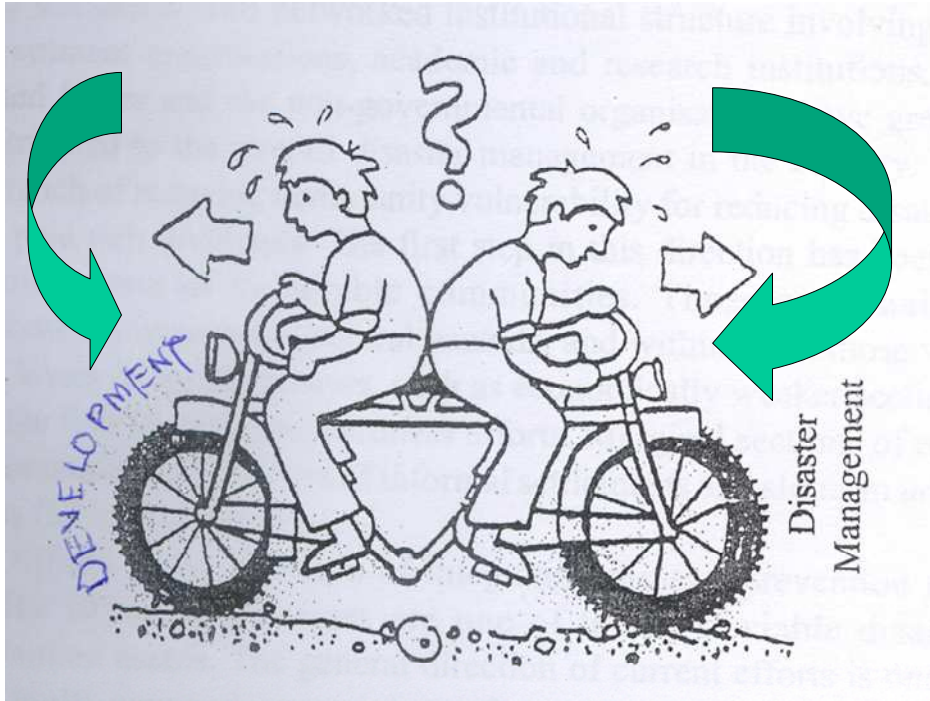


Fig. 7

**Hence the main issue?**

**How to link development with disaster risk reduction?**

**TASK :Divide participants in two –three groups and give them the question as**

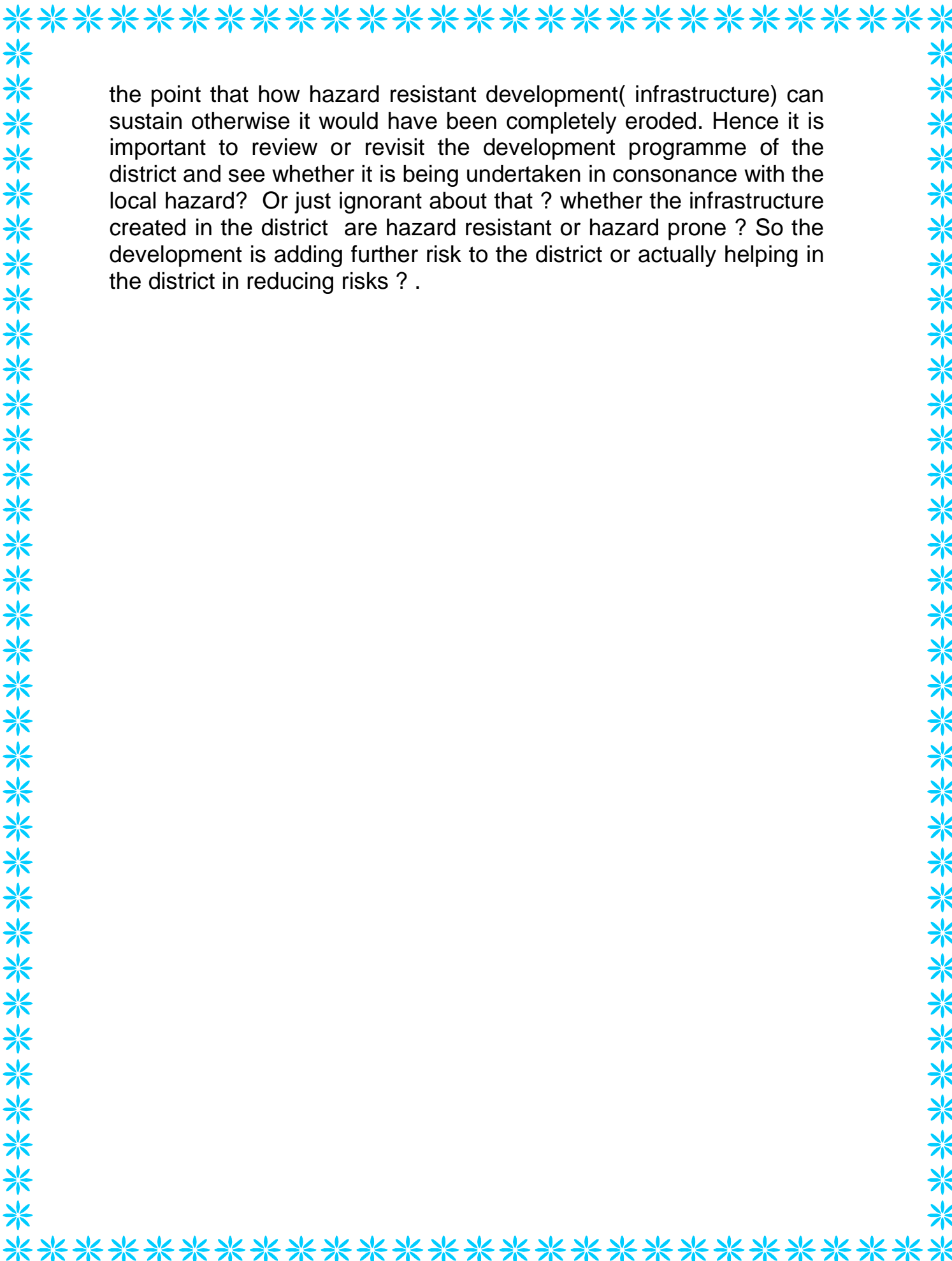
How DRR can be taken to the district ?

How this can be integrated with the ongoing programme of the sector ?

After the presentation is over by each group facilitator may collate all points raised by them and present hir/her analysis.

Development also lead to disaster and disaster risk reduction depending upon the type of infrastructure location etc have been constructed. In case of Gujarat example, lot of sectors/ infrastructure ( housing bridges, roads, dams, school, hospitals, electricity, communication polls, etc) felt the impact and got severely damaged. The damage occurring due to earthquake is making a point that how development is susceptible to disasters. There many infrastructure, despite the impact remained unaffected which explains





the point that how hazard resistant development( infrastructure) can sustain otherwise it would have been completely eroded. Hence it is important to review or revisit the development programme of the district and see whether it is being undertaken in consonance with the local hazard? Or just ignorant about that ? whether the infrastructure created in the district are hazard resistant or hazard prone ? So the development is adding further risk to the district or actually helping in the district in reducing risks ? .

## **Unit II: Disaster Management: Meaning and Concepts**

**Objectives of the Session:** At the end of the session participants would be able to

- Define the concept of hazard in disaster management
- Explain the Definition and types of disasters
- Identify and explain Risk Assessment tools
- Define Linkages with vulnerability

**Duration :** 2 sessions ( If it is only class room inputs, this may be arranged in two sessions.

### **Methods :**

Lecture  
Group Discussion  
Group exercise  
Field Visit

**Exercise** circulate participants three cards each ( of different colors) and ask them to give the one –one definition or example of Hazard, risk and vulnerability .

**Time :** Total 45 mts.  
15 mts for the participants  
30 mts. Discussion

**Collect participants responses and put up on the board. Discuss their definitions with your own example and experience .Summarize with your definition or as given in the text.**

### **Definitions, concepts and illustrations**

A **Hazard** is a threat, a future source of danger with the potential to cause damage to

- People - death, injury, disease and stress

- Property - property damage, economic loss , loss of livelihood and status
- Environment - loss fauna and flora, pollution, loss to bio diversity

Example: Earthquake took place in Gujarat which created lot of damages to the property and lives of the people. To understand hazard in this example it is very clear that – property damaged by which event –i.e earthquake hence earthquake , which is an event, is also a hazard where it interfaces with human being or property

#### **Other definitions:**

**A threatening event or the probability of occurrence of a potentially damaging phenomenon within given time period and area.**

#### **Disaster**

#### **Hazardous Event and interface with society**

Environmental events become hazards once they threaten to affect society and/or the environment adversely. A **physical event**, such as an earthquake, that does not affect human beings is a **natural phenomenon** but not a natural hazard. A natural phenomenon that occurs in a populated area is a **hazardous event**.

A hazardous event that causes unacceptably large numbers of fatalities and/or overwhelming property damage is a **natural disaster**. In areas where there are no human interests, natural phenomena do not constitute hazards nor do they result in disasters. Actually, in real terms, there is no natural disaster. It is natural activity which interfaces life and property. Natural disasters happens because we do not plan ourselves keeping natural activities in mind .It is due to low capacity of our infrastructure and wrong settlement pattern converts natural activities into natural disasters.

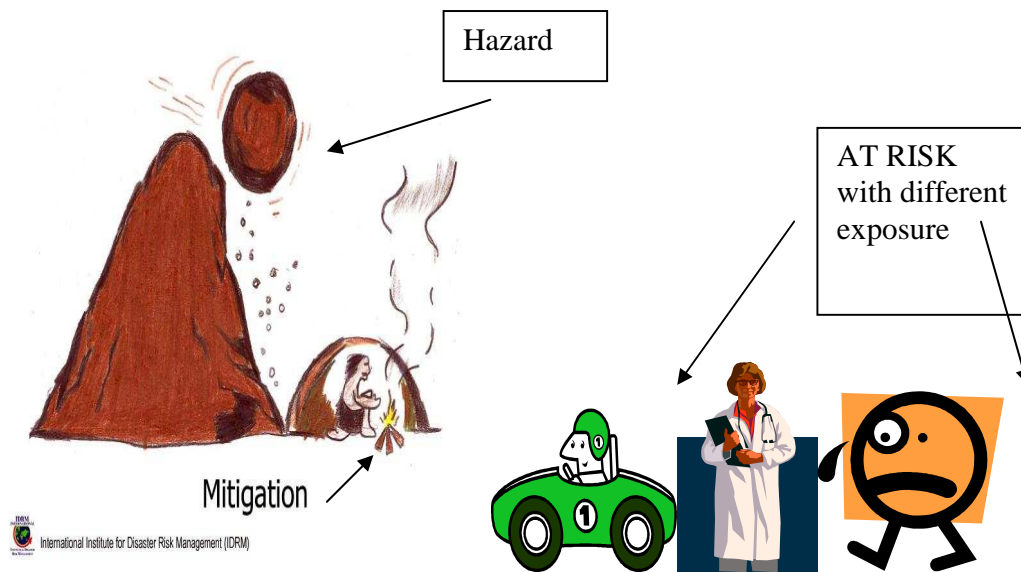
The level of harm to be caused is directly related to

- Magnitude of the hazard

- Frequency of hazard or recurrence
- Intensity at the impact point
- exposure to the hazard
- Density of Population
- Capacity of the community and infrastructure
- settlement pattern
- seasonality and the timings of the occurrence of the events
- level of preparedness

**Vulnerability:** Vulnerability expresses the level of possible loss or injury or damage to humans, objects, buildings and the environment which can result from the natural hazard .Vulnerability expresses the susceptibility and predisposition to be affected or suffer injury or damage. It also captures people's inadequate options or ability to protect themselves against possible damage or recover from the consequences of natural phenomena without outside help. Vulnerability always relates to a concrete hazard. It arises out of the interaction of social, economic, physical and environmental factors

**Risk:** Risk is defined as the product of hazard and vulnerability ( $R=H \times V$ ), or – to put it another way – risk as the probability of an encounter between a specific hazard and an element vulnerable to this is interpreted as the probability of occurrence of loss of life or damage to objects, buildings and the environment as the result of an extreme natural phenomenon with a specific strength or intensity.



**Fig 8** explains the difference between hazard, risk , vulnerability and mitigation ( capacity)

**Disaster :Disaster means a catastrophe, mishap, calamity or grave occurrence affecting any area from natural and manmade causes, or by accident or negligence, which results in substantial loss of life or human suffering or damage to, and destruction of property, or damage to, or degradation of environment and is of such a nature and magnitude as to be beyond the capacity of the community of the affected areas**

$$\text{Disaster} = \frac{\text{Hazard} + \text{Risk} \times \text{Vulnerability}}{\text{Capacity}}$$

### Session III

#### Disaster Management Cycle and Disaster Risk reduction Framework

##### Objectives :

- Disaster vulnerability profile of India/state
- Participants can define different stages of disaster management cycle
- Can explain various components of the cycle
- Participants can describe disaster management framework.

Tools : power point presentation

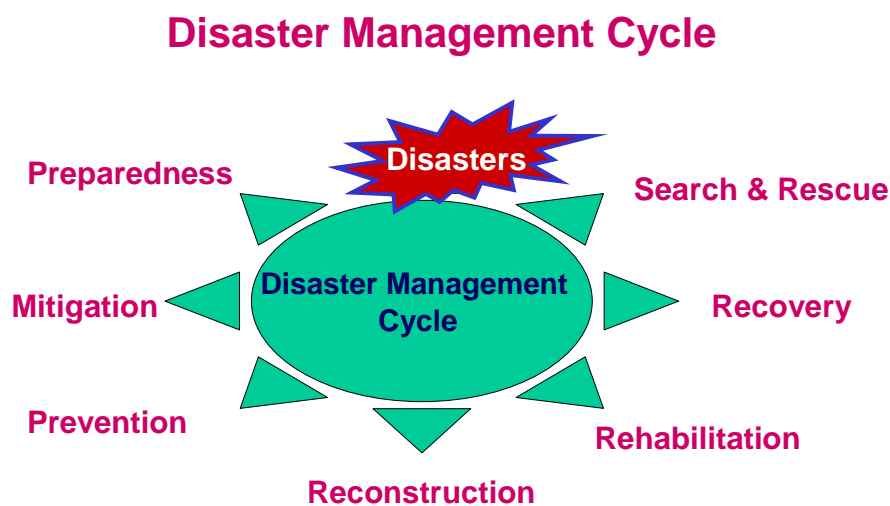


Fig 9 disaster management cycle





Mitigation

 International Institute for Disaster Risk Management (IDRM)

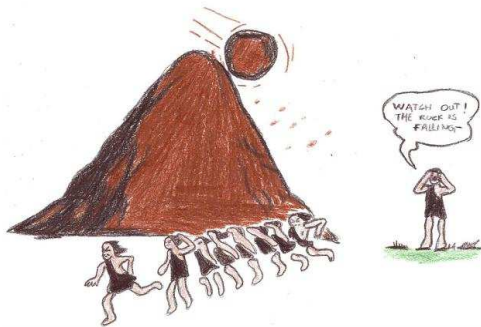


Prevention

 International Institute for Disaster Risk Management (IDRM)

## A Mitigation

## B Prevention



Preparedness

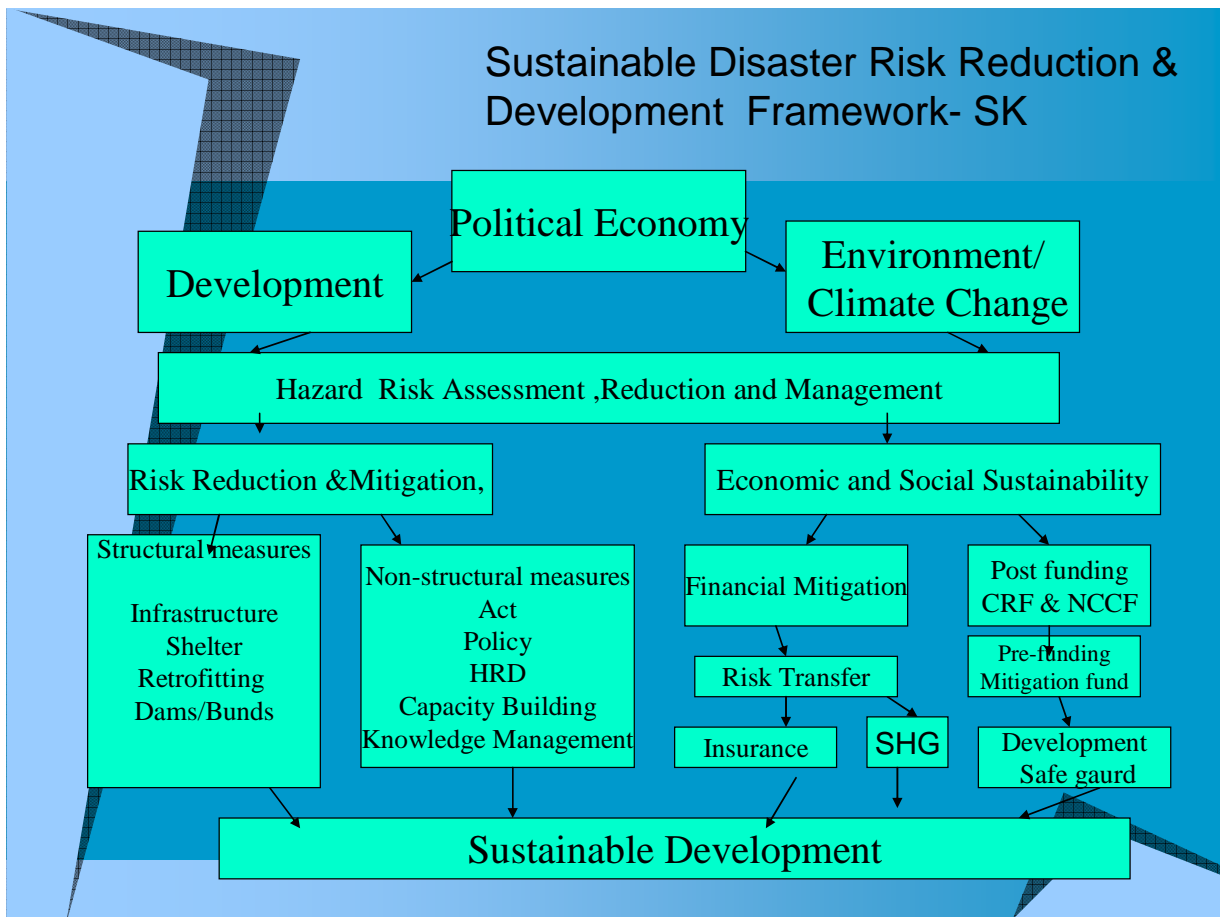
 International Institute for Disaster Risk Management (IDRM)

## C Preparedness

Consequence of disaster can be reduced provided risk reduction measures are taken. Non structural measures are relate to policy, Act, institution, systems and programmes are developed and strengthened on a sustainable basis. As explained abobe in the three figures A,B and C..

Fig 1 . is indicating that how community has been able to reduce the visible loss. t how community has been able to build up its capacity by taking structural measures and keeping himself safe from the falling stone (hazard) . In the second picture hazard can be prevented

by taking some structural and non structural initiatives ( policy, legislation, bye laws , zonation etc.) And, the third one is showing as how preparedness can help in reducing risks. If hazard type and time of occurances is known in advance , by building capacity of early warning , dissemination of information as last mile connectivity and community action on those would lead to substantial risk reduction.



**Fig 10 Disaster management and sustainable development framework**

The framework can be explained by the facilitator as , if we wish to do the disaster risk reduction we may like to adopt the DM framework which may help them in moving ahead in risk reduction planning and disaster management action.

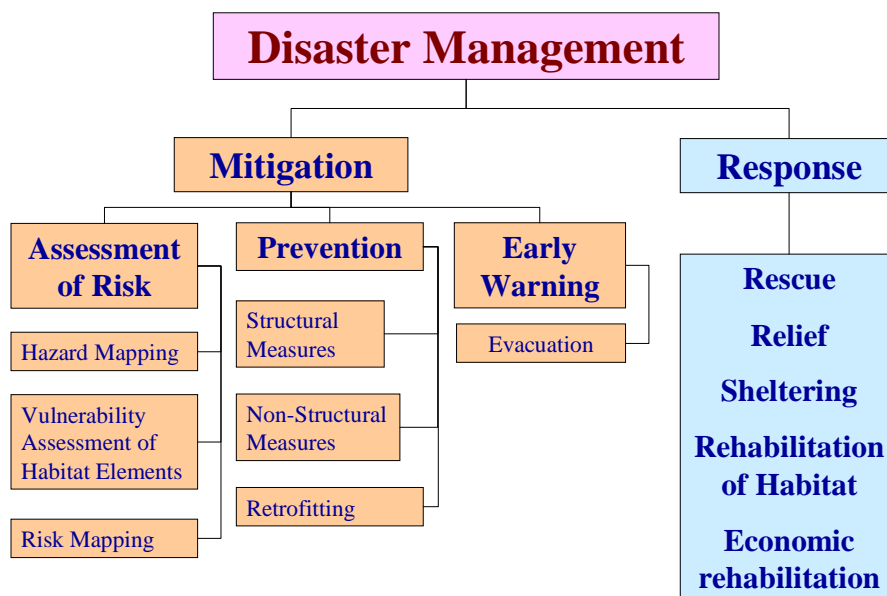
The framework is discussing that for any risk reduction initiative there is a need of strong political will at the highest level. The strong commitment at the highest level will lead to formulation of policies,

techno-legal guidelines, allocation of resources- human, technical and financial. In other words it would create an enabling environment for disaster risk reduction.

The other two boxes are taking about the linkages between the two. DRR , climate change and other environmental issues- post disaster debris management, forestry management, pollution and other anthropogenic factors) should be seen as integrated format. Any DRR solutions should not be made in isolation of the environmental impact. After the analysis of initiatives , there is a need for developing a mitigation plan divided into structural and non structural. On the other hand, for economic and social recovery , we need to develop some financial tools for addressing the need of the finance. The ex-ante and ex-post financial planning is required. In the ex-ante not much tools have been developed but a few are there which are running in Turkey, china, USA as a successful model.

Facilitators should give some examples of Risk financing, sharing and risk transfer as a tool for addressing financial risks. Example from Gujarat of insurance in the reconstruction scenario could be a good example.

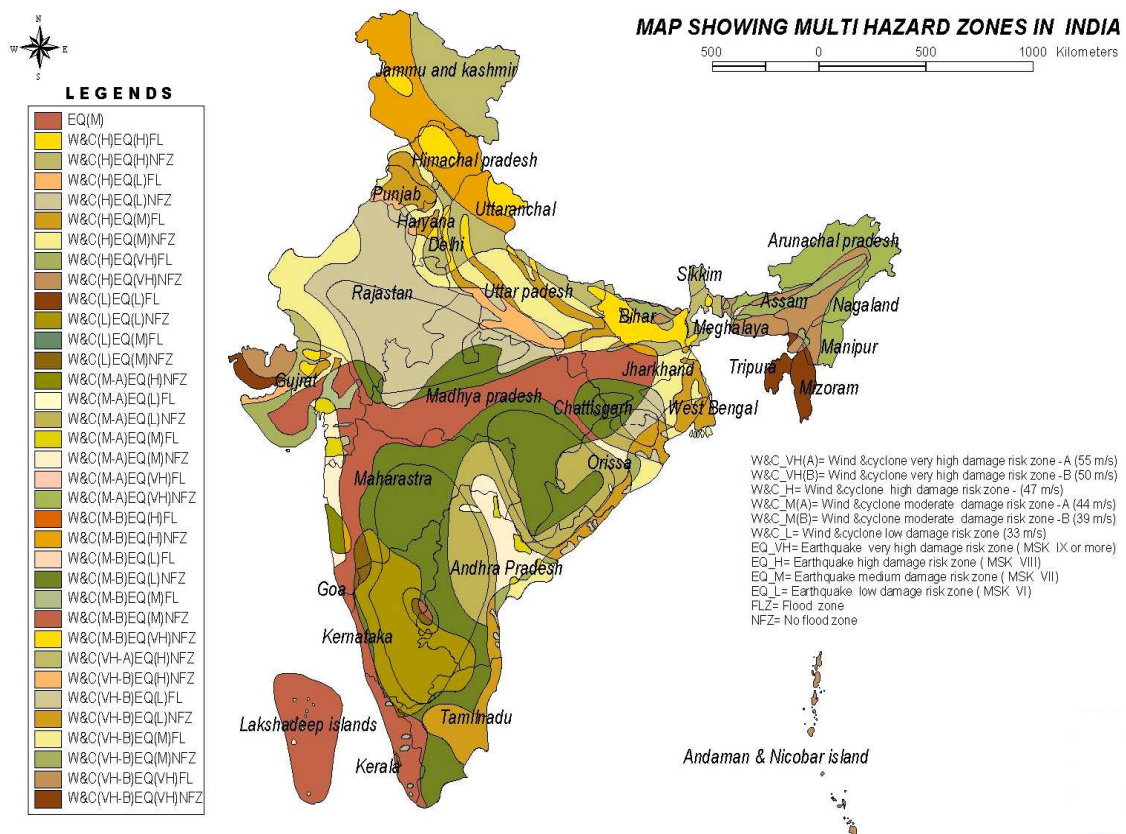
**Hence, The District Disaster Management Plan should be addressing on these issues.**



## Session IV : Disaster vulnerability of India, state and the district

Facilitator will explain the vulnerability profile ( if data and information is available for India ref Vulnerability Atlas 2007, BMPTC)

Vulnerability profile of India , respective state where DDMP is being developed plus the risk profile of the particular district.



**Fig 11 Multi hazard map of India showing every district of the country, are prone to one or the other disaster.**

**India :** India has been traditionally vulnerable to natural disasters on account of its unique geo-climatic conditions. Floods, droughts,



cyclones, earthquakes and landslides have frequently recurred to create one of the most hazard-prone areas in the world. About 57% of the landmass is prone to earthquakes and over 40 million hectares (12%) is prone to flood. More than 8000 kilometers of coastline (8%) is prone to cyclones and 16% of the country's geographical area is susceptible to drought and about 3% is prone to landslides. The Tsunami disaster, which struck five coastal States/UTs of India in December 2004, has further highlighted our vulnerability. Fire incidents, industrial accidents, and other man-made disasters are additional hazards which have underscored the need for strengthening mitigation, preparedness and response measures. In the above figure, India's map indicates high multi hazard vulnerability. There is no place in the map which looks safe.

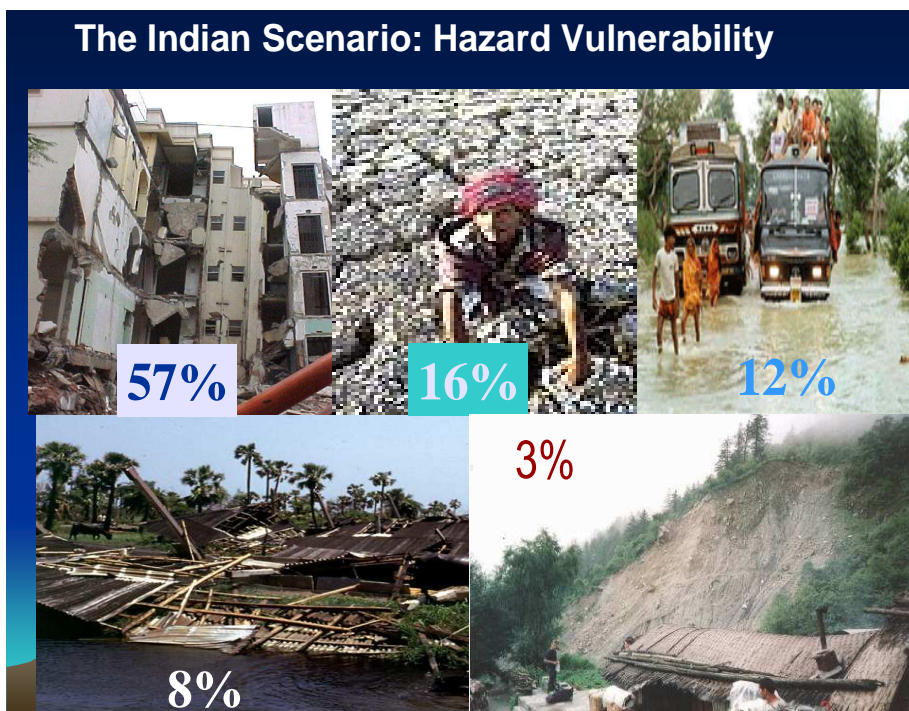


Fig 12 showing that 57% of the Indian land mass is prone to eq, 16% drought, 12% floods, 8% cyclone and 3% drought.

### **Multiple hazards**

When more than one hazard event impacts the same area, there arises a multiple hazard situation. These different hazard events may occur at the same time or may be spaced out in time. In India almost all the states are multi hazard states for example Gujarat is prone to earthquake, cyclone, floods, drought as natural hazards and others

are fire, industrial and chemical and biological etc. All these are occurring in Gujarat at different points of time but few hazards may occur at the same point of time. Say earthquake may lead to fire and other industrial dam failure disaster. In flood situation there is a chance of outbreak of epidemic etc.

### **Secondary hazards**

These are hazards that follow as a result of other hazard events. Hazards secondary to an earthquake may be listed as follows to illustrate the concept. Primary hazard is the earthquake. Secondary hazards are

- Building collapse
- Dam failure
- Fire
- Hazardous material spill
- Interruption of power/ water supply/ communication/ transportation/ waste disposal
- Landslide
- Soil liquefaction
- Tsunami

### **Classification of Hazards**

There are many different ways of classifying hazards and the widely used classification is as under-

I. **Natural hazards** such as earthquakes or floods arise from purely natural processes in the environment.

II. **Man-made hazards** – accidents, war, pesticide toxicity, accidental release of chemicals or radiation from a nuclear plant. These arise directly as a result of human activities.

The natural and man made hazards can get converted into disasters and these hazards may further be classified into natural disaster and man made disasters. This also being debated that all hazards causing into disasters are not natural but actually it is human induced . Disasters may be classified between natural and man made disaster as follows:



# TYPES OF DISASTER

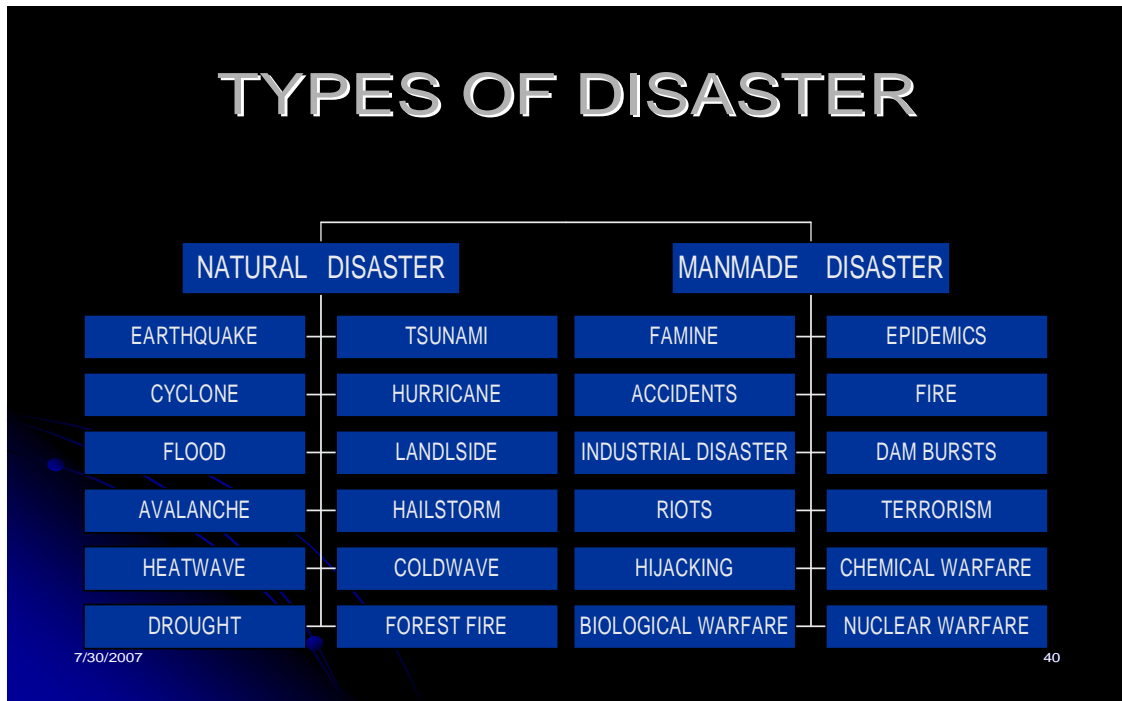


Fig 13 classification of natural and man made disasters

All these hazard type may also be further classified in the form geological, hydrological, atmospheric, biological, technological nuclear, chemical etc.

The natural and human induced Hazards may be classified as follows:

<b>Meteorological Hazards ( climate and weather related)</b>	Cyclones, floods, Tropical storms, Drought, climate change
<b>Hydrological Hazards</b>	Floods, cloud bursts, Rapid glacier advance
<b>Geological Hazards</b>	Earthquakes, Volcano, landslides, Mudflow, Tsunami
<b>Human Induced Hazards</b>	Terrorism, industrial and Chemical accidents, Gas leakages
<b>Atmospheric Hazards</b>	Excess rainfall Freezing rain (glaze)

	Hail Heavy snowfalls High wind speeds Extreme temperatures
<b>Biological Hazards</b>	Epidemic in humans Epidemic in plants, Pest Attack Epidemic in animals Locusts

### **Know Your Risk (The District)**

Facilitator need to discuss the hazard, risk and vulnerability profile of the district .Participants should be shown the vulnerability map of the district, historical profile of various disasters happened in the past, their impacts on the district and how district is able to cope with that . What is the capacity of the district now? Whether the district would be able to handle the disaster if is hit now? what is the present capacity of preparedness of the districts administration or ( DDMA) for search and rescue, relief distribution, logistics, ensuring life line services, providing security and safety to the people, law and order situation, resource mobilization, etc.

Facilitator should get District Collector or any district official on the board and request for this presentation from him/her .This would give an idea of the capacity of the district and also give direction to start planning .

Facilitators then consolidate risk of the district and take the session forward.

## **Session III: Perception of Disaster Risk**

**Objectives of the Session:** At the end of the session participants would be able to

- Perceive the Risk at Community level

**Duration :** 1 session ( If it is only class room inputs, this may be arranged in one session.

### **Methods :**

Lecture  
Group Discussion  
Group exercise

**Exercise:** Circulate three cards to each participant. Show the photograph one by one and ask the participants to write their perception about the displayed photograph.

**Time :** Total 15 mts. For all the photographs  
2 mts for the participants and 3 mts. Discussion for each photograph

**Collect participants' responses and put up on the board.**

### **What is perception and how it differs?**

Mankind is a wonderful creation of God Almighty as he/she can think and analyse. Different people think, perceive, analyse and act differently in different situations. We all know the story of seven blind men trying to identify and describe an elephant. This is hoe one perceives. Now let us know how perception differs through following three photographs:

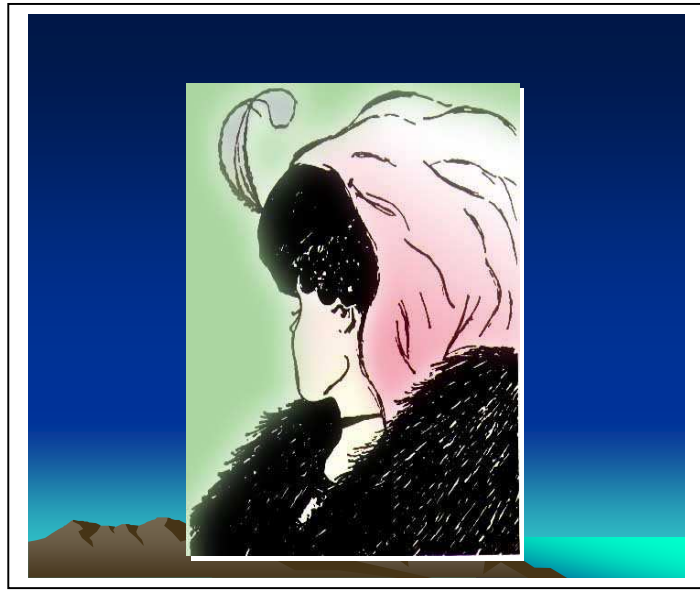


Fig 18

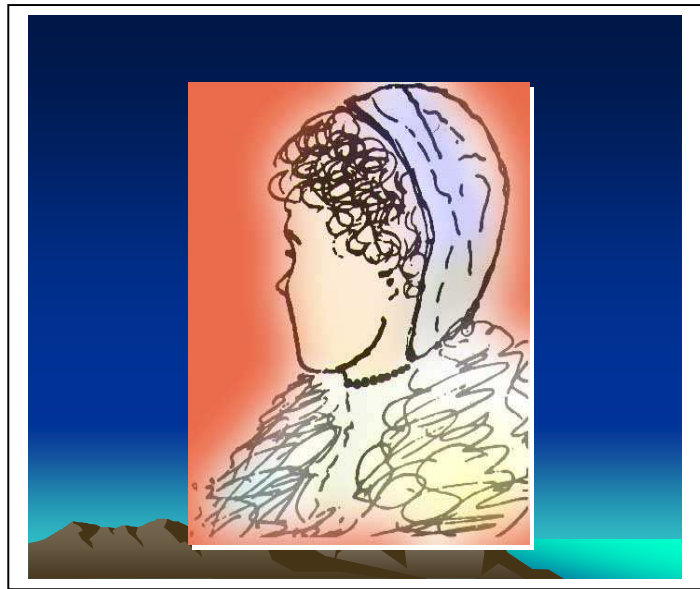


Fig 19

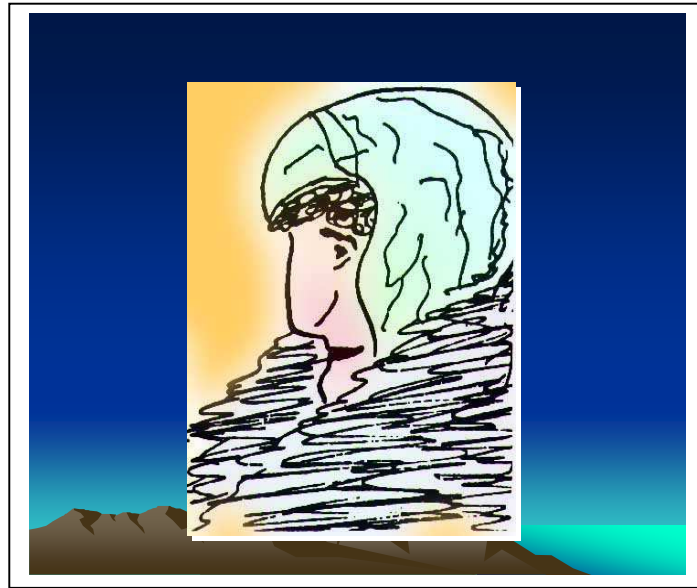


Fig 20

## **SESSION IV: Disaster Management System in India**

**Objectives of the Session:** At the end of the session participants would be able to

- Explain the DM system in India and its linkages with the state and district
- Describe provisions of National Disaster Management Act 2005 and state disaster management Act
- Describe provisions of DM Act pertaining to DDMA

**Duration :** 1 session (If it is only class room inputs, this may be arranged in one session)

### **Methods :**

Lecture  
Group Discussion

**Disaster Management System in India**

India has integrated administrative machinery for disaster management at the National, State, District and Sub-District levels. The Federal Government supplements the State relief efforts by initiating supportive action. An elaborate procedural mechanism and the allocation of resources to facilitate emergency management operations is outlined in relief manuals and codes backed by the Contingency Action Plan. The Contingency Action Plan (CAP) facilitates the relief operations, procedures and focal roles of Central Ministers and Departments. The Crisis Management Group headed by the Cabinet Secretary and consisting of nodal ministries (particularly the Ministry of Home Affairs and Agriculture) oversee the response coordination, carry out an assessment, and make recommendations for assistance. The role of community and NGOs is not clear.

State Governments have the responsibility for undertaking rescue and relief measures in the event of a natural calamity through the State Relief Commissioner, Relief and Rehabilitation Department or the Department of Revenue.

District Coordination and Review Committee headed by the Collector involves the participation of related agencies, departments and NGOs.

### **Legislation**

The Government has enacted the National Disaster Management Act (NDM Act), 2005 on December 26, 2005 to provide for institutional mechanism for drawing up and monitoring the implementation of the disaster management plans ensuring measures by various wings of Government for preventing and mitigating effects of disaster and for undertaking a holistic, coordinated and prompt response to any disaster situation. The Act provides for setting up of a National Disaster Management Authority (NDMA) under the chairmanship of the Prime Minister, State Disaster Management Authorities (SDMAs) under the chairmanship of Chief Ministers and District Disaster Management Authorities (DDMAs) under the chairmanship of District Magistrates. The Act further provides for constitution of National Executive Committee (NEC), National Institute of Disaster Management (NIDM) and National

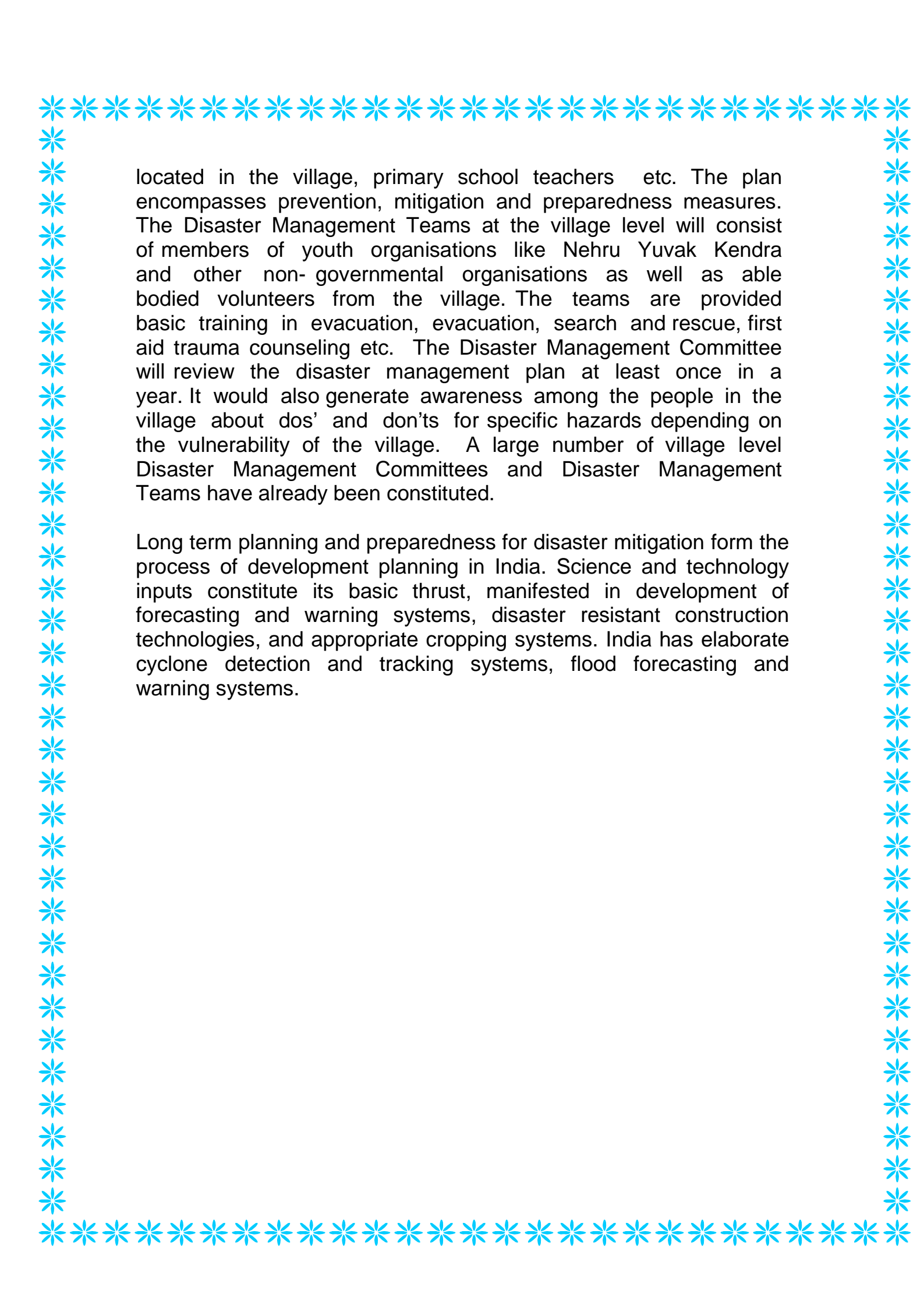


Disaster Response Force (NDRF). It also provides for the concerned Ministries and Departments to draw up department-wise plans in accordance with the national Disaster Management Plan. In addition, the Act contains provisions for constitution of National Disaster Response Force (NDRF). It also provides for the concerned Ministries and Departments to draw up department-wise plans in accordance with the National Disaster Management Plan. In addition, the Act contains provision for constitution of National Disaster Response Fund and National Disaster Mitigation Fund and similar funds at the state and district levels. The Act also provides for specific roles to local bodies including Panchayati Raj Institutions (PRIs) and Urban Local Bodies (ULBs) in disaster management. The NDMA, NEC and NIDM have since been constituted, in accordance with the provisions of the Act, to discharge the powers and function envisaged for them under the Act.

At the district level, the DM Act 2005 provides for the constitution of District Disaster Management Authorities under the chairmanship of the District Magistrate/ Collector while the elected representative of the local authority would be the co-chairperson. In those districts where Zilla Parishads exist, the Chairman would be the ex-officio co-chairperson of the District Disaster Management Authority. The District Authority shall act as the planning, coordinating and implementing body for disaster management in the district and take all measures for the purposes of disaster management in the district in accordance with the guidelines laid down by National and State Authorities.

The concept of disaster management plan at different levels has received a new orientation with the passage of the Disaster Management Act. Earlier such plans were being prepared at the district level only. Under the UNDP-DRM programme such Plans are being prepared at the village level as well.

The planning process has been carried down to the sub-divisional, block and village levels. Each village in multi-hazard prone district will have a Disaster Management Plan. The Disaster Management Committee which draws up the plans consists of elected representatives at the village level, local authorities; Government functionaries including doctors/paramedics of primary health centres



located in the village, primary school teachers etc. The plan encompasses prevention, mitigation and preparedness measures. The Disaster Management Teams at the village level will consist of members of youth organisations like Nehru Yuvak Kendra and other non-governmental organisations as well as able bodied volunteers from the village. The teams are provided basic training in evacuation, search and rescue, first aid trauma counseling etc. The Disaster Management Committee will review the disaster management plan at least once in a year. It would also generate awareness among the people in the village about dos' and don'ts for specific hazards depending on the vulnerability of the village. A large number of village level Disaster Management Committees and Disaster Management Teams have already been constituted.

Long term planning and preparedness for disaster mitigation form the process of development planning in India. Science and technology inputs constitute its basic thrust, manifested in development of forecasting and warning systems, disaster resistant construction technologies, and appropriate cropping systems. India has elaborate cyclone detection and tracking systems, flood forecasting and warning systems.

## **Session V: Tools & Techniques of Hazard, Risk and Vulnerability (HRV) Assessment**

**Objectives of the Session:** At the end of the session participants would be able to

- List the HRV assessment tools
- Describe the HRV assessment tools
- Apply the Tools in HRV Assessment

**Duration :** 2 sessions ( If it is only class room inputs, this may be arranged in two sessions) and a full day field exercise on subsequent day.

### **Methods :**

Lecture  
Group Discussion  
Field Exercise

Field Exercise: Participants will be taken to a hazard affected village, where they will be asked to apply

### **HAZARD ASSESSMENT**

***Hazard Assessment is the process of estimating, for defined areas, the probabilities of the occurrence of potentially-damaging phenomenon of given magnitude within a specified period of time.***

### **UNDRO**

Disasters result from the impact of a hazard on a vulnerable community or group. The first step in community risk assessment is hazard assessment.

The purpose of a hazard assessment is to specify the nature and behavior of the potential hazards and threats that the people in the community face.

The hazard may be assessed on following elements-

- Local hazards - **Location & Probability**
- The extent to which they threaten local populations - **Severity**
- Ease with which their effects can be averted – **Manageability**

In identifying and assessing the characteristics of the hazards, which threaten the community, the following points have to be considered:

i) Some hazards also cause secondary hazards. Example, earthquakes cause landslides; floods might cause epidemics; etc. In such instances, one should consider the main force of primary hazard.

ii) Although hazard assessment is based on past hazard patterns, we should not forget to look at possible disaster threats that are new for the community and are likely to happen. There are an increasing number of threats due to changes in natural, economical, social and political trends. Threats unnoticed before, simply because nothing was exposed to them, can easily turn into major problems that no one had predicted (ethnic conflicts, industrial hazards).

iii) There are many local threats: the number of small scale, localized hazards that do not hit the headlines or appear in disaster statistics, is increasing collectively, these can present a more serious problem than any catastrophic event. For example, in densely populated shanty towns, fires, floods, landslides, and epidemics are increasingly common events.

iv) The more rare a hazard occurs in a given area, the less historical information there is to work with. Therefore, other sources should be consulted to provide more reliable information about their prediction and possible behavior.

## **Hazard Assessment Tool**

Mapping or risk mapping shows the type and degree of hazard represented by a particular natural phenomenon on a given geographic location. Microzonation risk mapping is done at a very micro scale. In a given area there are numerous geographical variations which required to collected with minute scientific details. However, hazard mapping can be done at the local level while collecting the details as given in the format. While doing hazard analysis of the given area , many of the answers, of the format given below, can be collected from the published information . Other information may be generated, collected and verified by using PRA methods with the local community.

**Task : explain tool to the participants and ask them to analyse this in respect to the information available in the district ( Vulnerability atlas, district census, district gazetteer , contingency plan of the district –irrigation deptt plan, etc) and answer the questions given in the assessment questionnaire**

### **The Format**

#### **Hazard:**

Hazard Type

Use published information and verifies it during discussion

#### **Location:**

Name of the place

#### **Characterization of hazard**

Natural  technological  human  secondary  complex

#### **Probability of occurrence**

Calculable  hypothesized  unknown  independent of past events  dependent of past events

#### **Frequency of hazard**

Regular (e.g. seasonal)  some regularity  random

#### **Pattern of impact**

Sudden catastrophe  rapid build-up (<24h)  slow on set

**Duration (how long the event may continue)**

Seconds  minutes  hours  days  weeks  months  years

**Area of Impact**

widespread  local  site specific

**Short-term predictability (forecast capability)**

**Location**

predictable  variable but generally known  unpredictable

**Timing**

highly predictable  very predictable  somewhat predictable  highly unpredictable

**Warning capability**

very high  high  moderate  low  very low

**Controllability (can physical process be stopped?)**

definitely  probably  possibly  no

**General assessments**

**Vulnerability**

very high  high  moderate  low  very low

**Risk levels**

very high  high  moderate  low  very low

**Preparedness levels**

very effective  effective  unknown  ineffective  lacking

**Structural and semi-structural preparedness**

very effective  effective  unknown  ineffective  lacking



**Infrastructure preparedness**

- very effective  effective  unknown  ineffective  lacking

**Probable future impact levels**

- very effective  effective  unknown  ineffective  lacking

**Staff / community awareness of hazard**

- very effective  effective  unknown  ineffective  lacking

**Support for mitigation and preparedness measures**

- very effective  effective  unknown  ineffective  lacking

**General assessment of mitigation situation for this hazard**

- very effective  effective  unknown  ineffective  lacking

**Hazard Profile Worksheet**

HAZARD PROFILE WORKSHEET

**HAZARD:**

POTENTIAL MAGNITUDE (Percentage of the facility that may be affected):

- o Catastrophic: More than 50 %
- o Critical: 25 to 50%
- o Limited: 10 to 25%
- o Negligible: Less than 10%

**FREQUENCY OF OCCURRENCE:**

- o Highly likely: Near 100% probability in next year.
- o Likely: Between 10 and 100% probability in next year, or at least one chance in next 10 years.
- o Possible: Between 1 and 10% probability in next year, or at least one chance in next 100 years.
- o Unlikely: Less than 1% probability in next 100 years.

**PATTERN:**

AREAS LIKELY TO BE AFFECTED:

PROBABLE DURATION:

POTENTIAL SPEED OF ONSET (Probable amount of warning time):

- o Minimal (or no) warning
- o 6 to 12 hours warning
- o 12 to 24 hours warning
- o More than 24 hours warning

**EXISTING WARNING MECHANISMS:**

**COMPLETE VULNERABILITY ANALYSIS:**

- o Yes
- o No

**Hazard map**

- ◆ Functions of hazard map

The functions of a hazard map are to know the phenomenon and to make it known to the residents and all stake holders.

- ◆ **Objective of hazard map**

The objective of hazard maps is to provide residents with the information on the range of possible damage and the disaster prevention activities. It is the important point to provide residents with understandable clear information.

- ◆ **Types of hazard map**

There are two types of hazard maps:

(1) **community-educating type:** This type of map has the main objective to inform the residents living within the damage forecast area of the risk of danger. The information on areas of danger or places of safety and the basic knowledge on disaster prevention are given to residents. Therefore, it is important that such information is represented in an understandable form.

(2) **Administrative information type:** This type of map is used as the basic materials that the administrative agencies utilize to provide

disaster prevention services. These hazard maps can be used to establish a warning system and the evacuation system, as well as evidence for land use regulations. They may also be used in preventive works. The hazards map are also used for linking disaster risk reduction into development planning. This may be used as a guiding map for making investment decisions for disaster risk reduction in general and in building disaster resilient infrastructure in particular.

#### Unit 4 : District Disaster Management Plan

##### Session 1. Meaning and concepts of disaster management plan

###### Objectives :

- To explain the concept of Disaster management planning and feature of the district disaster management plan
- To Identify the contents of the plan
- Explain the process of preparation of workable plan

###### Methods ;

Facilitators Tip: The facilitators need to emphasise on the need for DDMP for better risk reduction. In the process they may like to highlights the practice initiated in the other districts and the states. Also may emphasize

he value of the plan as it is just not