Public Administration is an activity common to all countries and all levels of government. The global expansion of public related functions and services has made the role of Public Administration as highly important and significances, thus making it a complex and specialized discipline of enquiry.

The basic concern of public administration as a study includes: administrative process, structure of public organization, decision of bureaucratic etc. However, in present global scenario public administration is operating in challenging of global and national issues like environmental, marketing decision, and disaster issues.

Public Administration of any country & state has a responsibility of disaster management mechanism. In modern research scenario, disaster management is an integral part of public administration and University of Grant Commission has also included a subject of research in public administration.

The term 'disaster' owes its origin to the French word 'disaster' which is a combination of two words 'dis' meaning bad and ‘aster’ meaning star. Thus, the term 'disaster' refers to 'bad or evil star'. In earlier day’s disaster were considered to be an outcome or outburst of some unfavorable star.

A disaster may be defined as- “a serious disruption of the functioning of society, coursed widespread human, material and environment metal losses which exceeds the ability of the affected material to cope using its own resources”.

The United Nations of Organization define as -“The
occurrence of a sudden or major misfortune which disputes the basic fabric and normal functioning of a society. It is an event or a serious of events which gives rise to casualties and damage or loss of property, infrastructure essential service or means of livelihood on a scale that is beyond the normal capacity of the affected communities to cope with unaided”.

Disasters pose a serious threat to the normal life as well as the process of development and strike with sudden violence, tearing bodies a destroying lives and structures and throwing apart families. Natural disaster and Man-Made which are both sudden and powerful, damage national economy and cause hardships to a large section of the society.

The report of High Powered Committee of the Government of India (October, 2001) defines Disaster as “an occurrence of a severity and magnitude that normally results in deaths, injuries and property damage and that cannot be managed through the routine procedures and resources of government. It usually develops suddenly and unexpectedly and requires immediate, coordinated and effective response by multiple government and private sector organizations to meet human needs and speedy recovery”.

The Disaster Management Act 2005 defines disaster as “a catastrophe, mishap, calamity or grave occurrence affecting any area, arising from natural or 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 magnitude as beyond the coping capacity of the community of the affected area”.

2
Disaster is a serious disruption of the functioning of society, posing a significant, widespread threat to human life, health, property and/or the environment, whether caused by accident, nature or human activity and whether developing suddenly or as a result of complex, long term processes.

**DISASTER MANAGEMENT**

Disaster Management Act, 2005 defines disaster management as a continuous and integrated process of planning, organizing, coordinating and implementing measures which are necessary or expedient for (1) prevention of danger or threat of any disaster (2) mitigation or reduction of risk of any disaster or its severity or consequences (3) capacity building (4) preparedness to deal with any disaster (5) prompt response to any threatening disaster situation or disaster (6) assessing severity or magnitude of effects of any disaster (7) evacuation rescue and relief and (8) rehabilitation and reconstruction.\(^7\)

Disaster management as an activity involves measures to:

- Reduce the risks associated with disasters through timely measures, short-term and long-term policies;
- Provide required assistance to communities during and after the disasters; and
- Ensure rapid and sustained recovery and rehabilitation after the occurrence of disasters.

The new vision adopted for disaster management focuses on:

- Preparedness rather than post-crisis management
- Coordinated participatory approach
- Technology up gradation and deployment
• Information as a tool of disaster management
• Recognition of linkages between disasters and development
• Connecting specific programmes for management of natural disasters
• Forecasting and warning using latest technology; and
• Disaster management as a continuous and integrated part of development process.⁸

The High Powered Committee defined as “a collective term encompassing all aspects of planning for and responding to disasters, including both pre and post disaster activities. It may refer to the management of both the risks and consequences of disasters”.

It can be defined as the body of policy, administrative decisions and operational activities which pertain to the various stages of a disaster at all levels. Broadly disaster management can be divided into pre-disaster, during disaster and post-disaster contexts. These three stages of activity are taken up within disaster management:

STAGES OF DISASTER MANAGEMENT:

1. Pre-Disaster
2. During disaster
3. Post-disaster

DISASTER MANAGEMENT IN HARYANA CONTEXT

Haryana state is vulnerable to a multitude of disasters and is categorized as a multi-hazard prone state. The state experiences various kinds of disasters of recurrent nature which result in loss of life, livelihood and property (public and private),
and disruption of economic activity. The following hazards in Haryana state:

(a) **Floods:**

(b) **Droughts:**

(c) **Earthquakes:**

(d) **Hailstorms:**

(e) **Health Epidemics:**

**STATEMENT OF THE PROBLEM**

Haryana state has been facing widespread and extensive damages almost every year due to natural calamities and man-made disaster as droughts, floods large fires, road accidents, and swine-flu etc. Due to these problems human life becomes very hard and hazardous.

The losses sustained are so severe that relief and restoration operations without adequate financial resources are not possible despite best efforts of the state to cope up with the emergent situation out of the available scanty resources.

**SIGNIFICANCE OF THE STUDY**

The concept of disaster reduction and sustainable development has complex relationships requiring people-centered approach. Natural disaster reduction is gaining importance with many national and international organizations; governments and the entire UN system have an increasing number of programmes that contribute to disaster prevention in general. Integration of disaster management with the other community activities and programmes contributes to the sustained development. In any disaster management activity, community participation is of primary importance. The present study should be a rewarding
exercise in providing insights into the methods and mechanism adopted by the community, Media, PRIs, NGOs & CBOs. The study should also be useful in pointing/identifying, existing gaps/lacunas in planning policy formulation and implementation of disaster management programmes/activities.

OBJECTIVES OF THE STUDY

The study has the following objectives:

• To study the institutional structure and coordination of mechanism for Disaster Management in Haryana.

• To evaluate & analyze the role of government and non-government officials in Disaster Management at State Level.

• To evaluate the level of satisfaction of affected community in Disaster Management in the Haryana.

• To make suggestions for future policy & strategies to improve the Disaster Management in Haryana.

HYPOTHESES OF THE STUDY

The study has the following hypotheses:

• The organisation structure of Disaster Management in Haryana is quite satisfactory to deal with natural & man-made disasters calamities and exigencies.

• Level of cooperation and coordination between different government departments dealing with disaster management is upto the mark.

• The role of state government officials in Disaster Management is quite satisfactory.

• The role of state non-government officials in Disaster Management is adequate.
• The level of satisfaction among individuals from affected villages does not vary from village to village.

• In addition to above main hypothesis some more hypotheses are examined in this study which will be discussed later on.

UNIVERSE OF THE STUDY

The state is an important constituent of Indian federation and a common domain of local and central government activities. Haryana State is one of the disaster prone states in India. So it was decided to study Disaster Management in this state as a fair representative of disaster management in India.

RESEARCH METHODOLOGY

The study has used both the primary and secondary data to examine the status of its hypothesis.

Selection of the Sample

To collect the requisite primary information, the study has made use of a multistage, stratified purposive random sampling technique. The sampling scheme are based on the following two observations: First, all the districts/areas in the state is not equally disaster prone i.e. some districts/areas are more disaster prone than others. Therefore the sampling has been purposive, so as to include only the disaster prone districts/blocks in the sampling frame. Secondly, the Disaster Management Act envisages a vital role for the administration at different level in disaster management. This fact should also be given due consideration in any stratification of the state for sampling purposes.

We have accordingly adopted the following existing administrative divisions of the state as the basis of stratification for sampling:
With this background a brief outline of the proposed multistage stratified random sampling technique is as follows:

**Stage I:** One District from each of the four administrative divisions randomly selected amongst from the disaster prone districts of the divisions.

**Stage II:** Two blocks from each of the four districts selected at stage I, were randomly selected amongst from the most disaster prone blocks of the districts.

**Stage III:** From each of the eight blocks selected at stage II, one village was randomly selected for studying the disaster management at the micro level.

The details of the selected districts, blocks and villages are as follows:

<table>
<thead>
<tr>
<th>STRATA</th>
<th>ADMINISTRATIVE DIVISIONS</th>
<th>DISTRICTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Ambala Division</td>
<td>Panchkula, Ambala, Yamunanagar, Kurukshetra &amp; Kaithal</td>
</tr>
<tr>
<td>II</td>
<td>Rohtak Division</td>
<td>Panipat, Sonipat, Karnal, Rohtak &amp; Jhajjar</td>
</tr>
<tr>
<td>III</td>
<td>Hisar Division</td>
<td>Jind, Hisar, Fatehabad &amp; Sirsa</td>
</tr>
<tr>
<td>IV</td>
<td>Gurgaon Division</td>
<td>Bhiwani, Mahendargarh, Gurgaon, Faridabad, Mewat &amp; Rewari</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DISTRICTS</th>
<th>BLOCKS</th>
<th>VILLAGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kurukshetra</td>
<td>Thanesar, Pehowa</td>
<td>Kirmich, Nikimpura</td>
</tr>
<tr>
<td>Karnal</td>
<td>Nilokheri, Assandh</td>
<td>Sikari, Balha</td>
</tr>
<tr>
<td>Jind</td>
<td>Alewa, Julana</td>
<td>Dalamwala, Ramrai</td>
</tr>
<tr>
<td>Faridabad</td>
<td>Ballabhgar, Tigaon</td>
<td>Khandwali, Kheripull</td>
</tr>
</tbody>
</table>
The primary data has been collected through a well structured Interview Schedule. The Interview Schedule has three distinct parts, one each for state officials/functionaries, Non-officials (NGOs, CBOs) and the general public/community. The interview schedule was personally administered by the investigator to the above three groups of respondents.

**Sample Size**

The interview schedule was personally administrated to respondents of three distinct categories as per the details given below:

<table>
<thead>
<tr>
<th>Category</th>
<th>Respondents</th>
<th>No. of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category -I</td>
<td>Government Officials</td>
<td>48</td>
</tr>
<tr>
<td>Category -II</td>
<td>Non Government Officials</td>
<td>48</td>
</tr>
<tr>
<td>Category -III</td>
<td>Individuals from affected villages</td>
<td>200</td>
</tr>
</tbody>
</table>

Total 296

Secondary data for the study was obtained from official records, reports, relief manuals, action plans and memorandum of the State and Districts Revenue Department. The other sources of data such as newspapers, magazines, journals, books, articles and websites was also tapped.

We have divided the whole study into five chapters. Chapter - I introduces the problems, gives a brief account of disaster management in Haryana and its status in the state. The chapter further presents up to date review of literature and state the objectives of the present study. It sets up working hypotheses for the study and the methodology to be used in the study. The main findings of our study as follows:
Main Findings

In chapter – II we have examined the organisational structure and policy framework for disaster management in Haryana. It has been observed that:

1. Districts do not have any digital map plan, because of which there exists wide gap between the different organisation, departments and institutions dealing with disaster management.
2. It is sad to note that there is no single window system which can be helpful to ministers, departments and the stakeholders in implementing the policies at their own level at the time of emergency.
3. There seem to be lack of coordination gaps lacuna in planning, policies formulation and implementation at different levels.

The above findings puts a question mark on the validity of our hypothesis that the organisation structure of Disaster Management in Haryana is quite satisfactory to deal with natural & man-made disaster, calamities and exigencies.

The hypothesis Level of cooperation and coordination between different government departments dealing with disaster management is upto the mark is also invalidated in the process.

In chapter III we have examined the views of government and non government officials regarding disaster management in Haryana. The main findings are divided into two parts. Part – I presents the findings relating to the disaster management in Haryana by Government officials. Part – II presents the findings
relating to the disaster management in Haryana by Non-Government officials.

**Main Findings: Part - I**

Main Hypotheses are examined in the light of more detailed (Subsidiary) Hypotheses relating to disaster management. An evaluation of Government Officials responses are presented in table 5.1 below: Each of the Hypothesis have been examined in the light of the standard deviation of the responses of government officials. Wherever the size of standard deviation of government responses is found greater than 2 the hypothesis is taken as rejected. The hypothesis taken in the course of study and their status are presented below in the table 5.1.

**TABLE 5.1**  
**STATUS OF HYPOTHESES RELATING TO DISASTER MANAGEMENT EVALUATION BY GOVERNMENT OFFICIALS**

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Status accepted / rejected</th>
</tr>
</thead>
</table>
| The views of the respondents of the four sample district are the same in respect of q. no. 1 (Are you satisfied with the national disaster management policy?) | SD = 2.165 which indicates that there are considerable differences in the state Government officials responses in respect of question no. - 1.  
Therefore the hypothesis may be rejected with SD being > 2 as per our rule of thumb |
<p>| The views of the respondents of the four sample district are the same in respect of q. no. 2 | S.D. in respect of question no. 2 is 2.958 which is slightly larger than in question 1. This means |</p>
<table>
<thead>
<tr>
<th>Question</th>
<th>SD</th>
<th>Hypotheses Consideration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you want a separate ministry department for disaster management at national &amp; state level?</td>
<td>that difference in opinion of district officials in respect of question 2 is larger than in respect of question no. 1. Hence hypotheses under consideration may be taken as rejected.</td>
<td></td>
</tr>
<tr>
<td>The views of the respondents of the four sample district are the same in respect of q. no. 3 (Are you satisfied with role of Haryana Government in the course of disaster management?)</td>
<td>SD = 2.861 which is little bit less than SD of responses in respect of question no. 2 but is greater than the question no. 1. Hence it is approximately equal. Therefore hypotheses may be taken as rejected.</td>
<td></td>
</tr>
<tr>
<td>The views of the respondents of the four sample district are the same in respect of q. no. 4 (Are you satisfied with Government of Haryana Preparedness for Disaster Management Policy?)</td>
<td>The SD in respect of question no. 4 is S.D. = 2.772 which is slightly less than question no. 2, 3 and more than question no. 1. Therefore hypotheses under consideration may be rejected.</td>
<td></td>
</tr>
<tr>
<td>The views of the respondents of the four sample district are the same in respect of q. no. 5 (Are you satisfied with the Haryana Government disaster reduction and mitigation policy?)</td>
<td>the SD. in respect of question no. 5 is 1.224 which is least across all the questions. This indicates that difference of opinion of government officials is minimum in respect of question no. 5. Therefore hypotheses may be accepted.</td>
<td></td>
</tr>
</tbody>
</table>
The views of the respondents of the four sample district are the same in respect of q. no. 6 (Are you satisfied with the Haryana Government state dept. /agencies coordination in disaster management?)

The value of S.D. is 4.924. Which is maximum across all other questions. This indicates that difference of opinion of Government official is greater than that in respect of questions 5. It is considerably large so the hypotheses under consideration stands as rejected.

The views of the respondents of the four sample district are the same in respect of q. no. 7 (Are you satisfied with role of Government in enforcing Indian standard codes in construction of buildings?)

The value of standard deviation in respect of question no. 7 is 2.958 which is slightly larger than question no... 1,3,4,5. It indicates difference in opinion of district Government official in respect of question no. 7. Hence hypotheses may be taken as rejected.

The views of the respondents of the four sample district are the same in respect of q. no. 8 (Are you satisfied with Haryana Government financial facility in disaster management mechanism?)

The value of standard deviation in respect of question no. 8 is 1.299 which is smaller than the S.D’s in respect of questions 1 to 4,6,7. Therefore hypothesis may be accepted.

The views of the respondents of the four sample district are the same in respect of q. no. 9

The value of SD = 2.772 which is less than the S.Ds. in respect of question no. 2, 3, 6 and 7 but
<table>
<thead>
<tr>
<th>Question</th>
<th>SD or SD Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Does the Haryana Government interact with NGOs, CBOs &amp; VOs for Preventing/Reduction in disaster management process?)</td>
<td>is larger than 1, 5, 8 and 10 below. Therefore Hypotheses under consideration may also be rejected.</td>
</tr>
<tr>
<td>The views of the respondents of the four sample district are the same in respect of q. no. 10 (Does the Haryana Government interacts with Media for spreading awareness in Disaster Process?)</td>
<td>The value of SD is 1.581 which is quite less than S.D.s in respect of all the questions numbering from 1 to 5. The hypotheses may be accepted.</td>
</tr>
<tr>
<td>The views of the respondents of the four sample district are the same in respect of q. no. 11 (Are you satisfied with the Haryana Government public awareness &amp; training programme for Disaster Management?)</td>
<td>The S.D. is respect of question no. 11 is 1.224 which is the smallest of the S.D.s of all the other question. This means that difference in opinion of district officials in respect of question 11 is the maximum. May be accepted</td>
</tr>
<tr>
<td>The views of the respondents of the four sample district are the same in respect of q. no. 12 (Do you feel any the need for district disaster management policy (DDMP))</td>
<td>SD = 1.802776 which is quite less in comparison to S.D.s of question no. 1 to 4, 6, 7 and 9. May be accepted</td>
</tr>
<tr>
<td>The views of the respondents of the four sample district are the same in respect of q. no. 13</td>
<td>SD = 1.224745 which is minimum across all the questions. May be accepted.</td>
</tr>
</tbody>
</table>
(Are you satisfied with the kind of coordination among district agencies in disaster management?)

The views of the respondents of the four sample district are the same in respect of q. no. 14 (Do you feel the need for district disaster reduction and mitigation policy at block level?)

The standard deviation in respect of question no. 14 is 1.47902 which is very less in respect of all the questions. Which is slightly on higher side via-a-vis question no. 5, 8 and 11 Hypotheses under consideration my be accepted.

The views of the respondents of the four sample district are the same in respect of q. no. 15 (Do you feel the need for Village disaster management policy (VDDM)?)

Here the value of SD is 1.47902 which is quite less than the SDs of other questions. Hypotheses under consideration my be accepted.

**Concluding Remarks**

Broadly it may be inferred that our hypotheses relating to questions no. 4, 5, 7, 8, 9, 11, 12, 14, 15 may be accepted while those relating to rest of the questions stand rejected. **Given that these hypotheses deal with disaster management policy by government officials themselves the acceptance of these hypotheses may be taken with a pinch of salt. as has already been cautioned in chapter 3rd**
MAIN FINDINGS: PART - II

Main Hypotheses (Subsidiary Hypotheses) relating to disaster management evaluation by Non-Government Officials are presented in table 5.2 below:

**TABLE 5.2**

**STATUS OF HYPOTHESES RELATING TO DISASTER MANAGEMENT EVALUATION BY NON-GOVERNMENT OFFICIALS**

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Status accepted / rejected</th>
</tr>
</thead>
<tbody>
<tr>
<td>The views of the respondents of the four sample district are the same in respect of q. no. 1 (Are you satisfied with Performance of National/ State/ District Disaster Management Authority?)</td>
<td>SD = 1.920 which indicates that the difference of the opinion of non government officials is minimum. <strong>Therefore hypotheses may be accepted as SD &lt; 2. as per our rule of thumb</strong></td>
</tr>
<tr>
<td>The views of the respondents of the four sample district are the same in respect of q. no. 2 (Are you associated with the State &amp; District Disaster Management Authority &amp; Policy??)</td>
<td>SD = 1.880 which is little bit less it indicates that the difference of the opinion of non government officials is minimum. Therefore hypotheses may be accepted.</td>
</tr>
<tr>
<td>The views of the respondents of the four sample district are the same in respect of q. no. 3 (Are you satisfied with administration cooperation in disaster management process?)</td>
<td>SD = 0.707 which is least across all the questions this indicates that the difference of the opinion of non government officials is minimum. Therefore hypotheses under consideration may be accepted.</td>
</tr>
<tr>
<td>The views of the respondents of the four sample district are the same in respect of q. no. 4 (Are you satisfied with the state &amp; district officials performance to tackle natural &amp; man-made disaster?)</td>
<td>SD = 1.118 which is quite less in respect of question no. Therefore hypotheses under consideration may be accepted.</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>The views of the respondents of the four sample district are the same in respect of q. no. 5 (Do you agree/satisfied with the effectiveness of disaster prevention &amp; mitigation policy?)</td>
<td>SD = 1.118 which is quite less in respect of question no. Therefore hypotheses under consideration may be accepted.</td>
</tr>
<tr>
<td>The views of the respondents of the four sample district are the same in respect of q. no. 6 (Do you agree with the disaster rehabilitation &amp; relief policy of the state?)</td>
<td>SD = 2.236 which is considerably large in respect of question no. Therefore hypotheses under consideration may be rejected.</td>
</tr>
<tr>
<td>The views of the respondents of the four sample district are the same in respect of q. no. 7 (Are you satisfied with the information dissemination system during disaster situation?)</td>
<td>SD = 1.870 which is approximately equal to previous questions. Therefore hypotheses under consideration may be accepted.</td>
</tr>
<tr>
<td>The views of the respondents of the four sample district are the</td>
<td>SD = 1.479 which is slightly less in respect of question no.</td>
</tr>
<tr>
<td>Question</td>
<td>SD Value</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Are you satisfied with the administrative resources to control a disaster Situation?</td>
<td>SD = 1.118 which is quite less in respect of question no. Therefore hypotheses under consideration may be accepted.</td>
</tr>
<tr>
<td>Are you satisfied with the financial mechanism to handle disaster situations?</td>
<td>SD = 2.236 which is considerably large in respect of question no. Therefore hypotheses under consideration may be rejected.</td>
</tr>
<tr>
<td>Are you satisfied with disaster training &amp; awareness programme through administration?</td>
<td>SD = 1.414 which is slightly less in respect of question no. Therefore hypotheses under consideration may be accepted.</td>
</tr>
<tr>
<td>Are you invited in disaster management meetings &amp; committee?</td>
<td></td>
</tr>
<tr>
<td>Do you agree with the coordination among NGOs</td>
<td>SD = 1.118 which is quite less in respect of question no. Therefore hypotheses under consideration may be accepted.</td>
</tr>
</tbody>
</table>
The views of the respondents of the four sample district are the same in respect of q. no. 13 (Does PRIs play active role during disaster management?)

| SD = 2.958 which is maximum across all other questions |
| Therefore hypotheses under consideration may be rejected. |

The views of the respondents of the four sample district are the same in respect of q. no. 14 (Does media play positive role in bringing awareness during disaster situation.)

| SD = 1.479 which is slightly less in respect of question no. |
| Therefore hypotheses under consideration may be accepted. |

The views of the respondents of the four sample district are the same in respect of q. no. 15 (Are you satisfied with training programmes on disaster management organized by Administration?)

| SD = 2.236 which is maximum across all other questions |
| Therefore hypotheses under consideration may be rejected. |

Concluding Remarks

Broadly it may be inferred that our hypotheses relating to questions no. 1,2,3,4,5,7,8,9,11,12,14 may be accepted while the hypotheses relating to rest of the questions are rejected.

Thus we have examined fifteen hypotheses out of which Three Rejected and Eleven accepted. According to non government officials stand point the status of disaster management in Haryana may be taken as satisfactory/adequate.
In view of the above our hypothesis (i) The role of state government officials in Disaster Management is quite satisfactory. (ii) The role of state non-government officials in Disaster Management is adequate are quiet satisfactory and adequate stands validated.

In chapter IV we have examined the views of individuals affected regarding disaster management in Haryana. The status of hypotheses relating to disaster management evaluation by Individual from affected villages are presented in table 5.3 below. It has been observed that

**TABLE 5.3**

**STATUS OF HYPOTHESES RELATING TO DISASTER MANAGEMENT EVALUATION BY AFFECTED VILLAGES**

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Status accepted / rejected</th>
</tr>
</thead>
<tbody>
<tr>
<td>The views of the respondents of the four sample district are the same in respect of q. no. 1 (Are you satisfied with the role of Haryana Government in disaster management?)</td>
<td>The computed value of $\chi^2$ statistics ($= 1.604$) $&lt; \chi^2.05$ with 3d.f ($=7.815$), the hypothesis may be accepted.</td>
</tr>
<tr>
<td>The views of the respondents of the four sample district are the same in respect of q. no. 2 (Are you satisfied with performance of disaster prevention &amp; mitigation policy?)</td>
<td>The computed value of $\chi^2$ statistics ($= 3.687$) $&lt; \chi^2.05$ with 3d.f ($=7.815$), the hypothesis may be accepted.</td>
</tr>
<tr>
<td>The views of the respondents of the four sample district are the same in respect of q. no.3 (Are</td>
<td>The computed value of $\chi^2$ statistics ($= 4.843$) $&lt; \chi^2.05$ with 3d.f ($=7.815$), the</td>
</tr>
<tr>
<td>Question</td>
<td>Hypothesis</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Are you satisfied with the Haryana state disaster rehabilitation &amp; relief Policy?</td>
<td>hypothesis may be accepted.</td>
</tr>
<tr>
<td>The views of the respondents of the four sample district are the same in respect of q. no. 4 (Are you satisfied with relief &amp; rescue operation during disaster situation?)</td>
<td>The computed value of $\chi^2$ statistics ($= 23.08$) $&lt; \chi^2_{.05}$ with 3d.f ($=7.815$), the hypothesis may be accepted.</td>
</tr>
<tr>
<td>The views of the respondents of the four sample district are the same in respect of q. no. 5 (Is the role of NGOs, CBOs &amp; VOs effective in disaster management?)</td>
<td>The computed value of $\chi^2$ statistics ($= 2.488$) $&lt; \chi^2_{.05}$ with 3d.f ($=7.815$), the hypothesis may be accepted.</td>
</tr>
<tr>
<td>The views of the respondents of the four sample district are the same in respect of q. no. 6 (Is their any role of the armed forces &amp; police in disaster management in Haryana state?)</td>
<td>The computed value of $\chi^2$ statistics ($= 2.308$) $&lt; \chi^2_{.05}$ with 3d.f ($=7.815$), the hypothesis may be accepted.</td>
</tr>
<tr>
<td>The views of the respondents of the four sample district are the same in respect of q. no. 7 (Are you satisfied with the coordination between different disaster functionaries &amp; agencies?)</td>
<td>The computed value of $\chi^2$ statistics ($= 2.308$) $&lt; \chi^2_{.05}$ with 3d.f ($=7.815$), the hypothesis may be accepted.</td>
</tr>
<tr>
<td>Question</td>
<td>Chi-squared Test Results</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Are you invited at disaster management meetings?</td>
<td>The computed value of $\chi^2$ statistics (= 2.817) &lt; $\chi^2$.05 with 3d.f (=7.815), the hypothesis may be accepted.</td>
</tr>
<tr>
<td>Are you satisfied with the public awareness training programme of disaster management?</td>
<td>The computed value of $\chi^2$ statistics (= 2.336) &lt; $\chi^2$.05 with 3d.f (=7.815), the hypothesis may be accepted.</td>
</tr>
<tr>
<td>Are you satisfied with the role of media in disaster management?</td>
<td>The computed value of $\chi^2$ statistics (= 2.183) &lt; $\chi^2$.05 with 3d.f (=7.815), the hypothesis may be accepted.</td>
</tr>
<tr>
<td>Are you satisfied with the role of PRIs in disaster management?</td>
<td>The computed value of $\chi^2$ statistics (= 2.817) &lt; $\chi^2$.05 with 3d.f (=7.815), the hypothesis may be accepted.</td>
</tr>
<tr>
<td>Are you in favour of public-private partnership in disaster management?</td>
<td>The computed value of $\chi^2$ statistics (= 1.248) &lt; $\chi^2$.05 with 3d.f (=7.815), the hypothesis may be accepted.</td>
</tr>
<tr>
<td>The views of the respondents of the four sample district are the same in respect of q. no. 13 (Are you satisfied with training involved at the Haryana Institute of public Administration in disaster management??)</td>
<td>The computed value of $\chi^2$ statistics ($= .452) &lt; \chi^2.05$ with 3d.f ($=7.815$), the hypothesis may be accepted.</td>
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<tr>
<td>The views of the respondents of the four sample district are the same in respect of q. no. 14 (Does Civil Society play an effective role in disaster management??)</td>
<td>The computed value of $\chi^2$ statistics ($= 1.248) &lt; \chi^2.05$ with 3d.f ($=7.815$), the hypothesis may be accepted.</td>
</tr>
<tr>
<td>The views of the respondents of the four sample district are the same in respect of q. no. 15 (Are you aware of the Disaster Management Act-2005??)</td>
<td>The computed value of $\chi^2$ statistics ($= 1.538) &lt; \chi^2.05$ with 3d.f ($=7.815$), the hypothesis may be accepted.</td>
</tr>
</tbody>
</table>

It is hearting to find that individuals from the affected villages hold high opinion about disaster management arrangement made in the Haryana state, as has already been cautioned in chapter - IV.

**In view of the fact that the level of satisfaction among individuals from affected villages does not varies across the villages. Our hypothesis in the regard is fairly validated.**

**SUGGESTIONS**

The following suggestions may be made on the basis of our main findings:
1. **Restructure the National & State Disaster Policy:** There is an urgent need to restructure the National & State Policy on disaster management. The policies must reflect the holistic approach involving prevention, mitigation and preparedness in pre-disaster phase with appropriate additional funding, along with the so far existent policy of the *post-disaster relief and rehabilitation* under crisis management. There is a strong need for adopting a holistic and integrated approach of strengthening disaster preparedness, mitigation and emergency response in the country.

More specifically, there is a need to take the following steps:

a. **Appropriate amendments:** Appropriate amendments in the legislative and regulatory instruments (National & state laws, master plans, development area plan rules, building regulations and bye-laws of local bodies) along with strengthening of the enforcement mechanisms at different levels.

b. **Effective coordination & implementation of National, State and District level Authority:** There is need of effective coordination and implementation for disaster reduction & control in any disaster situation. All authority should be managed to disaster policy, training programme, financial facility and use of disaster emergency material at all places.

c. **Separate Ministry & Departments for the “Disaster Management”:** There is a need for having a separate Ministry for Disaster Management at the national level.
Most of the States have Department of Disaster Management and Relief but there is a need to establish full-fledged department exclusively for “Disaster Management” at the state level.

d. **Coordination between all Ministry & Department at all levels:** There is a strong need to bring all disaster management departments like disaster, relief, fire, civil defence and home guard under one umbrella with adequate coordination links.

e. **Effective coordination & implementation of National, State and District level Policy:** The role of National, State Government & District Administration should clearly be spelled out in effective implementation & coordination of disaster management policy. Thus, there is a need of effective implementation of all phases of disaster policy like preparedness, preventive, reduction, mitigation, relief and rehabilitation policies etc.

f. **Interacts with Civil Society:** There is need of coordination & cooperation with NGOs, CBOs & VOs in all phases of disaster management. The Government of Haryana & disaster management administration must create awareness and sensitization training programmes through state ATI for disaster management with practical demo for all government departments including NGOS, CBOs and civil societies.

g. **Interacts with Media:** An appropriate publicity management plan/media publicity Plan for disaster management will be very useful in imparting timely and correct information to the public. The role of this growing
sector needs to be tapped for disseminating preparedness aspects of disaster management among all sections of society and making special provisions for the more vulnerable sections of the community viz. women and children. Media should play an active role not only in terms of creating awareness but also in terms of accurate and informed reporting of events. The media could establish dedicated channels during the aftermath of a calamity to provide specific information about the local people and conditions. Role of media of Nepal disaster is noteworthy.

2. **Awareness Programme for Personal/ Public in Disaster Management**: awareness for disaster reduction is must amongst policy makers, decision makers, administrators, professionals (architects, engineers and others at various levels) financial institutions (banks, insurance, house financing institutions) and NGOs and voluntary organizations. Thus, Public awareness must be created through many tools of awareness like T.V, Radio, meetings & committees.

3. **Need for Specific Disasters Policy from Villages to District Level**: There is no specific disasters policy at village to district level. As many places are affected in various types of disaster like droughts, floods & fire etc., disaster reduction policy should be formulated from village to district level.

4. **Community Participation**: It is being realized from the experience that the community is emerging fastly as the most powerful institution among the entire mechanism of disaster
administration. In event of actual disasters, the community, is required to reduce the damage caused by the disaster. Awareness and training of the community is particularly useful in areas that are prone to frequent disasters. Haryana Government should encourage involvement of communities in disaster reduction activities. Thus, people can play important role in disaster management process.

5. **Information Technology:** The technological advancements especially in the information and communication sector have provided a real yardstick to warn, prepare, share, respond, quickly to a disaster for minimizing its impact and in some cases it is even possible to avoid the damages. Following latest technologies can be helpful in the reduction of damage by a disaster.

- **Remote Sensing technique:** can be helpful to read possible threats of any weather disturbances through its weather and other observation satellites. It helps in gathering data by means of radiation from electromagnetic spectrum.

- **Geographic Information System:** integrates stores, edits, analyzes, and shares geographically referenced data and is helpful during floods, landslides, earthquakes.

- **Global Positioning System:** is a technology by means of which one can pinpoint the exact place where disaster has struck. The exact damage site then can be visited to start rescue operations. This can be very effective for search and evacuation of displaced people or people buried under debris.
• **Mapping:** Destination Disaster Free India will be unattainable without ensured availability of reliable maps, especially for areas of known hazard. For the national programme of production of Hazard maps to succeed, it is imperative that we ensure availability of topographic and other maps at appropriate scales. Once the base maps are available other factor maps, such as those of geology, hydrology, landuse etc can be produced. And their eventual integration could then lead to single and multi hazard maps. The digitized version of the hazard maps when overlaid on infrastructure map can help us identify elements at risk and the consequent economic worth of loss, for any given disaster scenario. The vulnerability Atlas of India provides a broad-brush picture of hazards due to earthquakes, cyclones and floods on a small scale. Developmental Planners, architects and engineers do require large scale maps, preferably of scale 1:10 000.

• **Communication Technology:** is particularly effective in mitigation, preparedness, response and recovery. Internet, Fax, Mobile phones, E mail, Radio and Television can all be used to spread and share information relevant during and before any disaster.

• **WWW and Internet:** provide a global platform for instant and automatic sharing of information regarding a disaster and its management. The latest tools, methods, technologies, weather forecasting, satellite images and other relevant data can be put on web for sharing and exchange.
• **Information Database:** A robust and sound information database is the backbone of any system and it facilitates any strategic planning, even disaster response with a prioritisation of activities and optimisation of resources. It is therefore felt that access to such information is primary and the following efforts should be made, as a part of the Disaster Knowledge Network initiative to be spread all over the country.

• A database of all area/region giving the land use, demographic, socio-economic data, infrastructure (like road, rail network, hospital etc.), geography, etc. should be maintained at national, state and local levels.

• Resource Inventories of governmental and non-governmental systems, personnel and equipment should be made and networked.

• There is a need in disaster management to have access to current information on the climate, weather and man-made structures as a source of data to aid in the planning, warning and assessment of disasters. To date, such information has been compiled by many organisations and stored in multiple formats and media making it difficult to bring the data together on one platform to support disaster management operations.

• Historical documentation of previous disasters should include location of disasters, history, causes, mitigation, details, financial etc. available and accessible for future planning.

6. **Insurance:** Government should setup a comprehensive
insurance policy that covering all types of natural & man-made disaster accidents as well as provision of compensation should be taken over by insurance.

7. **Early Warming Mechanism:** (I) The early warning systems for different disasters should be in place so that the concerned administrative machinery and the communities can initiate appropriate actions, to minimize loss of life and property.

(a) **Warning and Forecasting System:** plays a vital role in determining the possible action of a disaster. The potentially affected area can be evacuated and people can be moved to safer places even before the disaster. It is effective for floods, cyclones. Earthquake Warning System is being used these days to warn people against its possible strike.

(b) These should be based on the parameters developed for the trigger mechanism and give an indication of the level or magnitude of the mobilisation required by the responders.

8. **Capacity Building:** Capacity building is complex, long-term phenomenon requiring the development of human resources, the establishment of well functioning organisations within a suitable work environment and a supportive socio-political environment, for improving the performance of institutions and personnel. For planning at all levels Capacity Building is critical. Appropriate level of training and knowledge availability is required otherwise such plans would tend to be incomplete and short sighted. A step towards disaster mitigation and in an effort to
reduce the scale of losses, the component of building
capacities of the vulnerable communities and the other role
players such as government, international aid agencies,
public and private sector, NGOs/ CBOs gains significant
importance and needs to be woven into the development
policies and programmes initiated by the government. The
basic aim underlying such action is to strengthen awareness
and response.

9. **Public–Private–Partnership & Corporate Sector:** There
is a need to identify the infrastructure, equipment expertise
and other resources of large private and public sector units
and its incorporation into the local, state and national
disaster management plans. There should be draft contracts
prepared for supply of equipment and relief material which
could be activated on occurrence of calamities. Corporate
sector should take up components of disaster management
activities as part of their social marketing. A silent disaster
is the phenomena of massive rural-urban migration. The
corporate sector can play a vital role in this context. They
can help create markets for the produce of our cottage and
village industries to generate gainful rural employment by
extending this facility through their own marketing
networks.

10. **Health & Medical:** Disaster Management Plans at all
levels should have Medical assistant teams, mobile
hospitals, epidemic prevention measures, trauma
counselling etc. Nursing & paramedics should be specially
incorporated in the medical plans. Disaster specific medical
plan would incorporate the special needs.
11. **Help Lines:** Establish information centres at pre-designated locations for giving details of the disasters and answering public queries etc. Telephone numbers of all such information centres should be given wide publicity in electronic media. Tracing mechanism be a part of the response plan.

12. **Disaster Knowledge Network:** A National Disaster Knowledge Network be established to cover natural, manmade and biological disasters in all their varied dimensions. The proposed Disaster Knowledge Network should be a network of networks, tuned to the felt needs of a multitude of users like disaster managers, decision makers, affected communities and media. It should also serve as an interactive platform, and in fact a huge black board in cyberspace for all players, major and minor.

13. **International Co-operation:** International cooperation in Science and Technology of Disasters is being pursued by the Departments of Science and Technology of the Government of India. International cooperation encouraging voluntary contributions in terms human resource sharing and financial support from governments, international organisations, UN agencies, and other sources deserves added care. Bilateral or multilateral assistance programmes in the framework of mutually agreed protocols for cooperation in tackling disasters, should be accorded high priority both in pre-disaster and post-disaster situations. Enhancing the activities of cooperation between international organisations, programmes of United Nations, inter-governmental organisations, non-governmental
organisations and the private sector for efficient use of existing resources. Define responsibilities for assisting and receiving organisations in the areas of humanitarian response and relief operations, enhancing awareness, establishing and strengthening sustainable institutional mechanisms. International disaster assistance programmes not to be limited to geographic area of the calamity but also have a component to build nationwide resilience.

14. **Financial Discipline**: It is important to know that this is not the ‘be all and end–all’ of funding, funds are available under Plan Schemes, various schemes of Government of India, say for drinking water, employment generation, inputs for agriculture and flood control measures etc., Then there are facilities for rescheduling of short term loans taken for agriculture purposes upon certification by the District / State Administration. Central Governments assets / infrastructure are to be repaired/ rectified by the respective Ministry / Dept. of Government of India. Besides this – at the occurrence of a calamity of great magnitude funds flow from donors, both local and international for relief and rehabilitation and in few cases for long-term preparedness/ preventive measures. Funds for the latter purposes are also available from multilateral funding agencies like the World Bank.

15. **Planning**: The most important component of preparedness is planning for all contingencies. The plans have to be linked with different support departments, linking district plans to state plans and state plans to national plan i.e. horizontal and vertical integration. Recognizing this, the
committee recommends the following measures to be taken:

- It is felt that each Ministry, Department and organisation at national level should formulate comprehensive district disaster management plans that should link to the state and national plan. These must be kept ready, practiced and updated periodically, preferably once a year.

- Each State to develop integrated “all hazard” disaster management plans on priority, which too must be practiced and updated periodically.

- Community, family and individual level plans to be prepared for disaster management developing individual kits for survival that can be kept handy.

16. **Forecasting, warning and alert systems**: There is a need to improve communication links, forecasting, control rooms, by modernising the existing facilities in Haryana state at the state to village levels.

17. **Police & Para Military Force**: The trained manpower available with country has to be further strengthened to help channelize them better for disaster management. Police is primary to response in case of emergencies and therefore there is a need to identify them better for the purpose of disaster management.

- The police organisations should have trained and equipped disaster rescue teams as part of the local plans.

- A coordinating agency amongst the para military forces be nominated for disaster management.

- Certain Paramilitary forces having resources like
medical, air transport, temporary shelters etc earmarked in designated areas of their presence in partnership with other governmental or non-governmental organisations.

18. **Armed Forces:** have invariably played an important role in all major disasters in the country. The following could be implemented:

- The Armed Forces should have a dedicated component of personnel and equipment at the battalion level for disaster management.

- The five army commands may have fully equipped centres in the five command regions at appropriate locations that may have heavy equipment necessary to carry out relief and rescue activities in the region at short notice.

- Use of Territorial Army to be incorporated in disaster management plans. In highly disaster prone states, it could be considered raising specialized Disaster Management Battalions similar to Ecological Battalions.

- Border Road Organisation, where available be suitably incorporated in disaster management plans. A Military Coordinating Officer should be part of the disaster management team at the national and state level.

- The potential of ex-servicemen available throughout the country be tapped for disaster management. They should be employed for creating disaster task force at the local level.

- Armed Forces should be resorted to in an appropriate manner. The employment of Armed Forces should be
limited for short duration, about 15 days, with a provision of extending the period with approval of the Ministry of Defence.

19. **Youth movement:** NCC, Boy Scouts and the Girls Guides, National Service Scheme and such organised youth should include Disaster Management as one of their main activities. They could be incorporated into the local level relief and awareness programmes. NYKS, Youth Clubs and Mahila Mandals at the grass-root level to be organised for creating a mass movement for disaster preparedness.