CHAPTER I
INTRODUCTION

The Indian Sub Continent is one of the most vulnerable regions of the World to natural disasters on account of its unique geophysical location, geo climate conditions and unpredictable rainfall. National Capital Territory (NCT) is a multi-hazard state, falling in seismic zone IV for earthquake, prone to floods, urban fires and terrorist related disaster and East Delhi is the most disaster prone out of the 11 districts of the NCT.

1.1 INDIAN CONTEXT

The vulnerability atlas of India prepared by Building Materials Technology Promotion Council, Government of India and National Disaster Management Authority, indicate that 58.6% of the landmass is vulnerable to earthquakes and of 7,516 km long coastline, close to 5,700 km is prone to cyclones and tsunamis (75% of total coastline and 8.5% of total landmass). 3% of land mass, especially in Himalayas in North, North East and along the Western Coast is prone to landslides. Over 40 million hectare area (12 per cent of the land) is prone to floods and river erosion. Hilly areas are at risk from landslides and avalanches. 68 per cent of the cultivable area is vulnerable to drought. In man-made disasters, more than 1.25 lac people die due to road accidents every year, the highest in World. India stands fourth in the World, for the number of casualties as a result of terrorist related disasters, after Afghanistan, Pakistan and Iraq. Terrorist related disasters, cross border terrorism and regional aspirations of people, corruption, bad governance and political insensitivity are reasons, threatening the core values on which our country takes pride. Physical, social, economic and political vulnerabilities, geographical positioning, lack of awareness about disasters, inadequate attention to structural mitigation measures, population growth, urbanization and environmental degradation make the situation still worse. National Disaster Management Policy, initiated by NDMA was approved by the Govt of India in Oct 2009. The developmental gains by India have to be sustained, though Table 1.1 below indicates, India in last two decades has lost 61,267 people and has suffered more than Rs.1.23 lac crore in financial losses as per National Disaster Management Policy – 2010*.
TABLE 1.1: MAJOR DISASTERS IN INDIA: 1990-2011

<table>
<thead>
<tr>
<th>YEAR</th>
<th>PLACES</th>
<th>DISASTER</th>
<th>LOSS OF LIVES (APPROX)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991</td>
<td>Uttarkashi</td>
<td>Earthquake</td>
<td>2000</td>
</tr>
<tr>
<td>1993</td>
<td>Latur</td>
<td>Earthquake</td>
<td>9500</td>
</tr>
<tr>
<td>1997</td>
<td>Jabalpur</td>
<td>Earthquake</td>
<td>200</td>
</tr>
<tr>
<td>1999</td>
<td>Chamoli</td>
<td>Earthquake</td>
<td>2000</td>
</tr>
<tr>
<td>1999</td>
<td>Orissa</td>
<td>S Cyclone</td>
<td>9887</td>
</tr>
<tr>
<td>2001</td>
<td>Bhuj</td>
<td>Earthquake</td>
<td>14000</td>
</tr>
<tr>
<td>2004</td>
<td>SE India</td>
<td>Tsunami</td>
<td>15000</td>
</tr>
<tr>
<td>2004</td>
<td>Assam &amp; Bihar</td>
<td>Floods</td>
<td>700</td>
</tr>
<tr>
<td>2005</td>
<td>J &amp; K</td>
<td>Avalanche</td>
<td>350</td>
</tr>
<tr>
<td>2005</td>
<td>Maharashtra, Gujarat, Himachal Pradesh, Karnataka &amp; Tamilnadu</td>
<td>Floods</td>
<td>1569</td>
</tr>
<tr>
<td>2005</td>
<td>J &amp; K</td>
<td>Earthquake</td>
<td>1336</td>
</tr>
<tr>
<td>2008</td>
<td>Bihar</td>
<td>Floods (Kosi)</td>
<td>300</td>
</tr>
<tr>
<td>2009</td>
<td>West Bengal</td>
<td>Cyclone</td>
<td>264</td>
</tr>
<tr>
<td>2009</td>
<td>Karnataka &amp; Andhra Pradesh</td>
<td>Floods</td>
<td>200</td>
</tr>
<tr>
<td>2010</td>
<td>Andhra Pradesh</td>
<td>Cyclone</td>
<td>25</td>
</tr>
<tr>
<td>2011</td>
<td>Tamil Nadu</td>
<td>Cyclone</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td>61267</td>
</tr>
</tbody>
</table>

*Excludes 1200-1500 casualties due to natural disasters every year

1.2 VULNERABILITY OF DELHI

As regards the vulnerability of the National Capital Territory of Delhi, it is a multi-hazard State. As per draft DM Plan of DDMA - 2011, it falls in seismic zone IV for earthquakes, is flood prone (both river and urban floods) and is also vulnerable to urban fires. Being the political
capital and emerging economic hub of India, it is also the most likely target for terrorist related disasters. Its vulnerability is enhanced due to its dense local population, huge floating population, constant migration to Delhi from other parts of India, extensive and largely unplanned infrastructure, such as high rise buildings, fly-overs, underground metro network, congested lanes and by-lanes, hanging and loose electrical wires, over ground telecommunication and TV network, improper sewerage & disposal of waste material and the largest number of vehicles on the road in India. Out of the eleven revenue districts, East Delhi district is the most disaster prone district. Response to floods in September 2010 which dislocated over 10,000 families, living near the Yamuna River Bank and Lalitha Park building collapse in Laxmi Nagar Colony in November 2010, which killed 65 people, Metro over-bridge collapse in 2009 which killed two persons reveal that the community of East Delhi is ill prepared, ill equipped and untrained, to face natural and man-made disasters. It is also one of the densely and most congested districts. The reason for this apathy on the part of the community and the first responders is the grey areas which need to be researched and hence the research scholar has taken this as a challenge and as a subject for research. (Draft DM Plan of DDMA – 2011).

1.3 INTERNATIONAL SCENARIO
At the international level also, as per the World Disaster Report of International Federation of Red Cross and Red Crescent Societies, there is an alarming trend of disaster occurrences across the globe. Asian Region accounts for 52% of total disaster occurrences which mostly Comprises of developing and under-developed and developing countries (Refer Figure 1.1 below). (World Disaster Report (2001) *

* World Disaster Reports are published every year covering the issues relating to disasters by the International Federation of Red Cross Red Crescent Societies
The perception and management of disaster across the globe has undergone a paradigm shift over the past decade and a half, from understanding of disasters as accidents and unforeseen consequence of unpredictable and uncertain natural forces to a more rational and pragmatic view that aims to reduce vulnerability and improve capacities of community to reduce disaster risks.

1.4 CONTEXT

1.4.1 Recognition of Imperative of Community Involvement - The paradigm shift from the traditional relief and disaster preparedness towards a more developmental approach which incorporates hazard mitigation and vulnerability reduction concerns has emerged globally since the 1980s. Parallel with this paradigm shift, there has been growing evidence which shows that prevailing top-down approach in disaster management may lead to equitable, unsustainable and irrelevant results. Many top-down programs fail to address the specific local needs of vulnerable communities, ignore the potential of local resources and capacities and may in some cases even increase people’s vulnerability. Main gaps in disaster mitigation programs implemented by the international agencies and Governments are given below:
a) **Failure to Involve People** - Due to their reliance on specialized technologies and professional skills, many programs are carried out without the involvement of local people and their organizations in planning and decision making. Participation is reduced to provide labour in organized self-help schemes.

b) **Failure to Address the Vulnerability** - Many programs respond to a particular hazard in a specific and limited time period. As such, they cannot address vulnerability, which is a complex relationship between people and their social, physical and economic environment.

c) **Susceptibility to Manipulation** - Due to concentration of power and knowledge within a centralized management, many programs are particularly susceptible to political manipulation by powerful groups. Mitigation becomes an instrument for maintaining the status quo or actually making the poor majority more vulnerable.

d) In the International Decade for Natural Disaster Risk Reduction Conference (IDNDR) at Yokohama, Japan in May 1994, the international community endorsed a new IDNDR strategy that brought social aspects such as vulnerability into much greater prominence. A broad consensus was reached to put more emphasis on community based mitigation programs that involved vulnerable people themselves in planning and implementing mitigation measures. (Maskery – 1989)

As the guiding principle of the IDNDR Yokohama Strategy and Plan of Action for a Safer World states, “Preventive measures are most effective when they involve participation at all levels, from the local community through the national government to the regional and international level.” The relevance of the community based disaster management approach is also increasing in the light of radically changing patterns of disaster occurrence and loss. While occasional large catastrophes associated with earthquakes, volcanic eruptions and cyclones continue to occur, it has been documented that the rapid increase in disaster occurrence and loss is due to the exponential increase in the occurrence of small to medium scale disasters associated with socio-natural hazards such as landslides, floods, drought and fires. In the context of these patterns of disaster occurrence and losses, the CBDM approach seems a viable alternative for managing and reducing risks in developing regions such as Asia.
1.5 RATIONALE OF THE RESEARCH
The word ‘disaster’ is not mentioned directly in any of the schedules in our Constitution and hence how to deal with it has not been elaborated in the various chapters in our Constitution. However, poverty alleviation and improvement in the standard of living of poor people, especially vulnerable and downtrodden community finds prominent mention, which indirectly help in building the capacity of the community to face disasters squarely. Management of disasters, gained importance even in the developed world in the 1970s. The United Nations showed concern in mitigation of disasters, especially in the developing and developed world, by declaring the decade of 90s (1990 to 1999) as the, ‘International Decade for Disaster Risk Reduction’. At the international meet on Disaster Risk Reduction at Hyogo in Japan in 2005, in which 178 countries, including India participated, a framework for the period 2005-2015 was formulated and the countries agreed on an action plan to include disaster risk reduction in their plans and programs for sustainable development and poverty reduction. All member states, regional organizations, United Nations System, financial institutions and NGOs were expected to engage fully in supporting and implementing International Strategy for Disaster Reduction and cooperate to advance integrated approaches, to building disaster resilient nations and communities. The countries focus should be on national implementation, through bi-lateral, regional and international cooperation.

Disaster Management is a relatively new subject which is presently not being studied in many Universities in India. Very little research, if any, has been carried out on any of the facets of this important subject. Most of the inputs on various aspects of disaster management are from the literary work and publications from developed countries, which are not really relevant to Indian conditions. In India, like in other developing countries the emphasis has been on the provision of relief, rather than paying attention on phases before the disaster, namely prevention, mitigation and preparedness. In the post disaster also the rehabilitation and reconstruction phases take back seat and are unnecessarily prolonged for vested interests. Disaster Management Secretaries at the State level have come up only after DM Act 2005. Earlier there used to be Relief Commissioners in the States and a Central Relief Commissioner in the nodal Central ministry for disaster management, for providing relief to disaster victims. As per the World Bank report, $1 spent on mitigation can save $ 7 on the distribution of relief. Hence the
emphasis on disaster mitigation for building the capacities of the first responders, namely the community and the first responders, like Police, Fire Services, Medical Services, etc.

The researcher proposed to take up ’empowerment of community in East Delhi District’ as her area of research, as this district is vulnerable to multi-hazards. Although the whole of NCT of Delhi is vulnerable to multiple disasters, the scope would have been too large to handle had the researcher taken up the whole of Delhi. Hence she restricted herself to doing research on its most vulnerable and multi-hazard district. Therefore, the subject of her research has been aptly christened as, ’Building Disaster Resilient Community in Multi-hazard East Delhi District of National Capital Territory of Delhi’.

Community in developed nations is better trained and is well aware of their initial response, during emergencies and hence fatalities during disasters in those countries are much less, though some of them like Japan and USA is some of the most disaster prone countries in the world. India is a regional power and in the process of becoming a World Power in near future. It is important that the development gains must be sustained to attain this stature earlier than envisaged. And for that the community needs to be aware of their role in any perceivable disaster.

Having brought out the relevance of CBDM in building the capacity of the community, the next step is to set the objectives of the research which I intended to pursue. These are given in the succeeding paras.

1.6 OBJECTIVES

The objectives formulated for the research are as follows:

- To study the vulnerability profile of the National Capital Territory of Delhi in general and that of the East Delhi district in particular. (The vulnerability profile to include not only physical but also social, economic, environmental and psychosocial needs).

- To identify the role and importance of the community as first responders to any kind of natural and man-made disaster. (In any disaster, community is invariably
the first responder and they are the most affected also, hence the need to build their capacity to face disasters squarely. Developing the capacity of the community is a big challenge too, as they are not readily available in sufficient numbers to receive useful tips.)

- To assess the state of preparedness of the community of the East Delhi District of National Capital Territory of Delhi, against natural and man-made disasters. (This will be achieved through field survey, detailed questionnaire and personal interview methods. Interaction will also be carried out with the Revenue District of East Delhi, Police. Fire and Emergency Services, Medical Services, Civil Defence Volunteers and NGOs who are the other first responders, besides the community).

- To analyse the gaps, if any, existing in the preparedness and mitigation of disasters in East Delhi district. (Analyses will be based on the outcome of the field survey and interaction with the disaster management experts).

- To formulate recommendations and action plan, to enable concerned stakeholders, to achieve the objective of making community of East Delhi disaster resilient. (This will help the Revenue DC, Delhi Police, Fire & Emergency Services, Emergency Medical Services of East Delhi District and East Municipal Corporation, to revisit and update their DM Plans and Standard Operating Procedures, revise building codes and formulate appropriate training modules for the community and first responders).

1.7 OUTCOME OF RESEARCH

The direct and indirect spin-off of the research will be as follows:

- India on an average, every year, loses 4334 personnel due to natural disasters, spends Rs 6000 crore on relief & rehabilitation and Rs 3200 crore on reconstruction. Direct loss amounts to 2.25% of GDP and 12% of expenditure in the Revenue Budget as relief to the disaster victims every year.
• Outcome of research will help the East District authorities of the NCT, to adopt one or a combination of modules recommended for developing the capacity of the community, thus saving lives & loss of infrastructure during disasters.

• The gains of development will thus be sustainable as otherwise every disaster puts back the economy of the State, by ten years.

• The matrix, thus researched would help to strengthen the community at the grass root level, i.e. at the District level in India, which can then be replicated in all the 676 districts (as in 2014) of India, for implementation, if found useful.

• Hence, the outcome of the research becomes significant and relevant to the trend of quantum jump of disasters in developing and underdeveloped world.

1.8 RESEARCH METHODOLOGY
1.8.1 INITIAL PROBE & INTERACTION - The research methodology adopted by the research scholar, after the approval of the synopsis was to review the literature, from the secondary sources, like browsing internet, visit the libraries of the National Disaster Management Authority at NDMA Bhawan, Safdarjung Enclave, New Delhi 110029, National Institute of Disaster Management, Indraprastha Estate, New Delhi 110002, Haryana Institute of Public Administration, Sector 17-A.Gurgaon, Guru Govind Singh Indraprastha University, Sector 16, Dwarka, New Delhi, Geography Department of Delhi School of Economics, Delhi University, Manav Rachna International University, Faridabad, United Services of India, Rao Tula Ram Marg, New Delhi, Indian Red Cross and Crescent Society, 1, Red Cross Road, New Delhi and India Defence and Strategic Analysis, Jawaharlal Nehru University, New Delhi, etc. Browsing of internet was carried out to find out the research which had been carried out on the aspect of Community Based Disaster Management. It was a tiring effort but was productive. It was found that most of the research on this aspect of disaster management had been carried out by the foreign scholars from the developed world. There was hardly, if any, useful publication by the Indian scholars. While visiting the University and professional institutions’ libraries, the researcher interacted with the librarians and also met the concerned teachers /professors and the
students pursuing disaster management courses. This interaction proved very useful and was helpful in designing and formulating the questionnaires for the experts’ interview and for field survey.

1.8.2 EXPERTS INTERVIEW - While continuing efforts to accumulate more information on the subject, experts in disaster management field were searched and those who had deep knowledge on the community based disaster management were shortlisted. The short-listed experts included eminent personalities from the Government, semi-Government and Non Government Organizations. They were contacted on phone and through emails to seek their valuable time for interaction. The experts with whom the researcher had the privilege of discussing the theme of research were as follows:

1. General N.C Vij, Vice Chairman, National Disaster Management Authority, Ministry of Home Affairs, Government of India and ex Chief of the Army Staff.
2. Prof N.V.C. Menon, Member, National Disaster Management Authority, Ministry of Home Affairs, Government of India.
4. Brigadier (Dr) B.K. Khanna, Senior Specialist (Training, Capacity Development and Mock Exercises), National Disaster Management Authority, Ministry of Home Affairs, Government of India.
5. Prof Vinod K. Sharma, Executive Vice Chairman, Sikkim State Disaster Management Authority, Gangtok.
6. Dr Satendra, Executive Director, National Institute of Disaster Management, IP Estate, New Delhi.
7. Prof Santosh Kumar, Director, SAARC Centre for Disaster Management, IP Estate, New Delhi.
8. Dr Amir Ali Khan, Associate Professor, National Institute of Disaster Management, IP Estate, New Delhi.
9. Dr Abhey Srivastava, Head of Department, Disaster Management, Haryana Institute of Disaster Management, Sector 17-A, Gurgaon, Haryana.
10. Dr Bhuvan, Assistant Professor, Department of Disaster Management, Haryana Institute of Disaster Management, Sector 17-A, Gurgaon, Haryana.

11. Dr M.L. Manchanda, Advisor and Course Coordinator, PG Diploma Course on Disaster Mitigation & Rehabilitation, conducted by Indian Red Cross & Red Crescent Society, New Delhi.

12. Dr T.S. Jaya, Health Advisor, Indian Red Cross & Red Crescent Society, New Delhi.

13. Dr Mukta Girdhar, Coordinator, MBA (Disaster Management) Course, Guru Govind Singh Indraprastha University, Dwarka, New Delhi.

14. Dr Rakesh Dubey, Director, Disaster Management Institute, Bhopal, Madhya Pradesh.

15. Prof H.K. Dangi, Associate Professor, Faculty of Management Studies, Delhi University, Delhi.

16. Mr Mihir Bhat, Director, All India Disaster Management Institute, Ahmedabad (NGO), Gujarat.

17. Mr Krishan Mohan Uppu, Deputy Commissioner Revenue, East Delhi District, New Delhi.

18. Ms Surabhi Saxena, District Project Officer, East Delhi District, New Delhi.

The discussions with the experts proved to be very useful in not only designing and formulating the questionnaire for the field survey but also showed me the way forward how to go about in carrying out the research, areas to be stressed, the pitfalls which may befall and the challenges which may have to be surmounted. They were frank in their opinion in suggesting that the questionnaire which may be formulated, must be detailed enough to include various facets of capacity development for the community so that inferences drawn from their responses could help in finding the correct approach in strengthening the responses of the community. Interaction with the district administration, gave me the overview of the state of preparedness of the District to face any type of disaster. Many gaps existing in the system were highlighted, like composition of the community, mostly being vulnerable and their lack of preparedness. Interaction with the NGOs helped in the way they respond to various methods of enquiry and how we have to be patient with the people with negative and rowdy behavior during field survey. The interaction with the experts at the national level, helped in understanding national perspective on community based disaster management and what the Government was doing to build the capacity of the community. The researcher was informed that the National Disaster Management Authority was in the process of formulating guidelines on community based
disaster management and that this study of mine would help them constructively while making the guidelines. The interaction with the training institutions helped in understanding the various subjects being covered while conducting capsules/short courses on community based disaster management.

1.8.3 DESIGN & FORMULATION OF THE QUESTIONNAIRE - The questionnaire or interview schedule serves two major purposes. First, it must translate the research objective into specific questions, the answer to which will provide the data necessary to explore the area set for the research objectives. In order to achieve this purpose, each question in the questionnaire must convey to the respondent the idea or a group of ideas required by the research objective, and each question must obtain a response which can be analyzed so that the results fulfill the research objectives. In the construction of questionnaire and interview schedule, it is of course, very important that the verbal stimuli represented by the interviewer or questionnaire be as clear as possible. The appropriate form of questions depends on the mode of administration, the subject matter, the sample of people to be reached, and the kind of analysis and interpretation intended. While designing the questionnaire and interview schedule, the above aspects were taken into consideration. The questionnaire was also based on the inputs from the book, 'Research Methodology', by Kothari C.R. – 2005. In addition, it was ensured that stress was specifically laid on the following parameters:

a) **Visualization of Problem** - All perceivable facets of the problem selected for study i.e., ‘How to Build Disaster Resilient Community in a Multi-hazard district’, especially in the most disaster prone district in Delhi, viz East Delhi were visualized, to make the research more pragmatic.

b) **Constructing Questionnaire** - Thereafter preparation for the questionnaire was started, keeping the advice of the experts in mind. While constructing the questionnaire, it was ensured that there was no vagueness or ambiguity in the language. To promote clarity, long questions and words with double meaning were not included. The unfavourable reaction normally gets intensified when the questions are long, the subject trivial in importance, the items vaguely worded and the form poorly organized. Unless one is dealing with a group of respondents, who have a genuine interest in the problem under investigation, who know the researcher personally or who have some common loyalty to a sponsoring institution or
organization, the rate of returns has been found to be disappointing and provide a flimsy basis for generalization. While constructing questionnaire, it was ensured that it dealt with a significant topic, one the responders would recognize as important enough to warrant spending his/her time too. The questions sought only that information which could not be obtained from other sources. The questionnaire was long enough to get the essential data required for the research. It was attractive in appearance, neatly arranged and was got printed, rather than getting cyclostyled. The directions were clear and complete, important terms were defined, each question dealt with a single idea, all questions were worded as simple and as clear possible. The questions were objective, with no leading suggestions as to the responses desired. Prefacing unfamiliar or unusually uncomplicated questions with an explanatory paragraph or illustration were similarly avoided. Follow up questions or probes were adopted at many points, to enable the responders to understand the theme of the question. Rather than a single question on a particular point, a set of several questions were put across. Blunt and uneasy questions causing antagonism and withdrawal were avoided. Questions were indirect and implied concern. Arrangement of the questions also received special attention. Every effort was made to make the questionnaire appear logical to the responder. The questions have been presented in good psychological order, proceeding from general to specific responses. The questions were put in such a manner as to make them easy to tabulate and interpret. In addition, following aspects were taken note of while formulating questionnaire :-

i) The questions which were placed in the beginning of the questionnaire were the easiest to answer.

ii) Placing a question early in the questionnaire that can affect answer to later questions was prevented wherever it was possible.

iii) A time sequence was adhered in the arrangement of the questions.

iv) Subject matter in sequencing of questions was likewise considered very important and as far as possible all questions pertaining to one aspect of the problem for research were grouped together, like mitigation, preparedness and personal data.
1.8.4 PILOT TESTING OF QUESTIONNAIRE - Before the questionnaire was used, it was pre-tested on sample size of 50 people in East Delhi District consisting of district officials, other first responders and selected community members. The respondents included high, middle and low income groups and also those, who were educated and illiterate. The pre-testing not only provided a test of clarity of questions on the correctness of interpretation, but also afforded possibility of discovering new aspects of the problem of my research which were not anticipated in the planning stage. In short, pilot testing provided a means of detecting mistakes on procedures before they could exact heavy penalties in the form of low proportion of return or of replies due to lack of reliability and validity. Pilot testing proved essentially a trial and error procedure where-in a couple of trials were repeated and errors were avoided while formulating the final questionnaire. Pilot-testing helped to appease the critics who have so frequently and justly condemned the questionnaires often for their validity.

1.8.5 SAMPLE DESIGN - The primary purpose of any research is to discover principles that have universal application. Research therefore, needs adequate and accurate data for this purpose. In order to obtain the data, investigations were conducted in the given population, viz the East Delhi District population. Information can often be derived quickly and cheaply and with sufficient accuracy from a sample of the total. Sampling thus refers to the investigations into a given population. A statistical sample is a miniature picture or cross-section of the entire group or aggregate from which the sample is taken. The entire group or aggregate from which a sample is chosen is known as the ‘population’, ‘universe’ or ‘supply’. In short sample represents the whole population and by observing the sample, certain inferences may be made about the population. For collecting representative data, samples were not selected haphazardly but a set procedure was adopted, so that the influence of chance and probability could be estimated. The important consideration taken into view, while selecting the sample, was to see that it was closely representative of the universe. The actual selection of the sample was so done that every item in the universe, under consideration, i.e. community of East District of Delhi had the same chance for inclusion in the sample. At the same time the sample had to be representative of the universe or population. It also had to be adequate in size in order to be reliable.

Keeping the above parameters in view, simple random sampling method without replacement was adopted. It is considered to be most simple procedure of drawing a sample
from a given population. The sample units were drawn at random without showing any regard to the characteristics of the population units. As such each unit had an equal chance of being selected in the sample. Though the process of selection was random in character, it has often been observed that a random sample is usually a representative sample and gives reasonably accurate data. The sample size chosen was 600 drawn from different segments of community.

1.8.6 COLLECTION OF DATA - Collection of data is essential for the research proposal. Once the purpose of the statistical investigation has been defined, the problem is to collect the data which are relevant to the purpose, to analyze these data and present them in a meaningful manner. Statistical data for research investigations may be primary or secondary. The former are original observations collected by the research scholar or his agents for the first time whereas the latter refer to the data that have already been collected by the same or a different agency. The secondary data would include published and unpublished material, government publications, semi-official publications, reports of committees and commissions, articles published in journals, news papers, annual reports, etc. Data which are primary at one time may become secondary at another. Once primary data have been made use of, it loses its original character and becomes secondary. For the purpose of research secondary data collected was extensively used through the published material as also through internet. Primary data was obtained from regulator and policy makers at the Centre (National Disaster Management Authority), State (Delhi Disaster Management Authority) and District (East Delhi Disaster Management Authority) and Municipal Corporation of Delhi, elected representatives, community to include house-wives, school children, shop-keepers, doctors, resident welfare associations, non-government organizations, and volunteers. Keeping in mind the nature, purpose and the scope of the research, collection of data through the questionnaire and schedule and personal interview methods was adopted. These devises have been previously used for the collection of personal preferences, social attitudes, beliefs, opinions, behavior pattern, group practices and habits and such other data. The method was adopted as increased number of social scientists have been emphasizing on quantitative measurement of uniformly accumulated data. Contrary to the general perception that through questionnaire method non-response is high, in present research it was found that the responses were almost 90%. Of course, the researcher had to persuade the responders to respond to the questionnaire, by ringing them up a number of times. Rather than sending the questionnaire by
post, a few leaders among the various segments of community were selected, like housewives, students, doctors, traders, personnel in Government Service, etc, who were first briefed on the purpose of the study and then were given a set of questionnaire, to be distributed by them in their area of influence. May be due to the peer pressure, the response was rather good. Six enumerators were also engaged, who went from door to door and filled up the form after getting the responses from the population to the specific questions in the questionnaire. This schedule method got almost 99% responses.

1.8.7 DATA ANALYSIS - After the data was collected, the same was analyzed, through a number of closely related operations such as establishment of categories, like urban and rural. Descriptive statistical methods were considered like mean, frequency distribution charts and correlation has been applied keeping in view the purpose of the study. The data has been represented pictorially with the help of bar and pie diagrams. Editing was carried out to improve the quality of data for coding. The real value of the research lies in its ability to arrive at certain generalizations which would be useful for the decision makers in the NCR to formulate appropriate policy and guidelines to build the capacity of the community in NCR to make it disaster resilient. The details of the survey and the analysis have been given out subsequently in Chapters 8, 9 and 10 of the thesis. The researcher also formulated three training modules for school children, retired personnel & housewives and working class personnel, for building up their capacity to be self reliant.

1.9 SCOPE
Although the outcome of this research would affect the community living in other parts of Delhi as well, this research has been confined to the East Delhi district of NCT of Delhi. Disasters affect all, but the scope of this research is limited to their effect on the community of East Delhi District and how it should be prepared to face them squarely. This research does not take into consideration the role of community once the Armed Forces or the National Disaster Response Force have taken over the management of the disaster. It has solely targeted the community in the East Delhi District. To that extent there may be a requirement to carry out more research in other fields of disaster management, like the role of Resident Welfare Associations and Non Governmental Organizations in reducing the disaster risks of the community living in vulnerable
areas, socio economic effect of disasters on the community and developing the capacity of schools to manage disasters before the arrival of the first responders.

1.10 CONCLUSION
East Delhi district of NCT of Delhi is one of the most vulnerable districts not only within the State of Delhi, but also amongst all the districts in the country. It is multi-hazard district and has faced many a man-made and natural disasters. We know from experience that the community is invariably the first responder to any disaster. Is the community of East Delhi district well prepared or are there gaps in the system or response mechanism or mitigation? The researcher has gone about methodically without any prejudice to find & analyze the gaps and recommend solution/s, so that the community of East Delhi is adequately prepared to face the disasters squarely.

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