



THE INTERNATIONAL EMERGENCY MANAGEMENT SOCIETY Newsletter - Special Edition - ISSUE 6 - October 2017

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A TIEMS Special Issue Covering

“Higher Education on Disaster Management: Opportunities & Challenges” workshop in New Delhi



Articles in this issue

This issue is dedicated to

TIEMS 2017 India Chapter Workshop

- ✓ *Workshop on Higher Education in Disaster Management: Opportunities & Challenges (India)*
- ✓ *An Overview of the TIEMS Academy*
- ✓ *Disaster Management through Higher Education: A Case of IFRC-TISS Online Certificate Course in Disaster Management*
- ✓ *Interdisciplinary Bottom-up Approach in Higher Education for Disaster Management*
- ✓ *Building Disaster Resilience through School Education*
- ✓ *Higher Education Opportunities in Disaster Management*
- ✓ *Disaster Management: A Trans-National Approach to Professionalize Military Education and Training*
- ✓ *And more.....*

The International Emergency Management Society Newsletter - Special Edition

TIEMS network constitutes a large international multidisciplinary group of experts, with different educational backgrounds and various experiences. Their knowledge and experience are important to share with other experts worldwide. TIEMS has therefore decided to issue this additional newsletter, which we now call TIEMS Newsletter - Special Edition. This is the sixth issue, which we have dedicated to the Workshop on Higher Education in Disaster Management: Challenges & Opportunities held at the National Institute of Disaster Management, New Delhi, on February 10, 2017. We invite other conferences and workshops, and RTD projects to use the opportunity to present the conference and workshop presentations and RTD projects to present articles of their results in the upcoming Special Edition Newsletters. We plan to have an issue three times a year. Please, give us feedback, and send us new articles for publication.

Alex Fullick
TIEMS Scientific Newsletter Editor

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Message from TIEMS President

TIEMS first workshop in India took place 10th February 2017 in at NIDM (National Institute of Disaster Management) premises in New Delhi, with TIEMS India Chapter as host. The topic of the workshop was « Higher Education in Disaster Management: Opportunities & Challenges». The workshop was co-hosted by NIDM and supported by:

- The Jamsetji Tata School of Disaster Studies, Tata Institute of Social Sciences,
- Ashoka Innovators for Public,
- The Institution of Engineers (India), Rajasthan State Centre, which also provided Workshop Secretariat facilities,
- Integrated Volunteers Network,
- Center for Development and Disaster Management Support Services, and Institution for Disasters, Emergency & Accidents

I like to thank them all for their kind support to TIEMS India Chapter, which made this workshop possible and a great success.

The workshop was attended by experts from all over India, and TIEMS President and TIEMS Education, Training and Certification Chair, George Markowsky, represented TIEMS International, and focused their presentations on TIEMS education, training and certification initiatives within international emergency management and disaster response. TIEMS India Chapter host, Kailash Gupta, emphasized his presentation on the need for quick response research in India and its funding.

In the inaugural session, Santosh Kumar, Executive Director of NIDM gave a welcome address and introduced the theme of the Workshop, followed by Kamal Kishore, Member of National Disaster Management Authority, who inaugurated the Workshop by a video recorded message. Vinod Sharma, Prof. of Disaster Management, Indian Institute of Public Administration presented Higher Education in DRR in India. Before the end of the inaugural session, Sarthak Handa and Ashwin Naik of Ashoka Innovators for Public depicted an Innovation Showcase on “Operation Resilience.”

After the inaugural session, the workshop ran three parallel sessions on:

1. Education
2. Research
3. Careers

All presentations were of high quality and followed by engaged discussions, and it showed that India has excellent expertise and experience in emergency management and disaster response. TIEMS thinks it is very important to share this internationally, and it is therefore important to publish the presentations in this TIEMS Special Issue Newsletter.

TIEMS plan was to follow up the TIEMS 2017 India Chapter Workshop with arranging TIEMS 2017 Annual Conference in India. However, TIEMS has realized that we have to strengthen TIEMS India Chapter organization first, and reaching out all over India. Since India is quite diversified with 29 states and 7 union territories facing different types of disasters, TIEMS has decided to establish a TIEMS India Chapter Advisory Board with a representative from all states and territories, and this way comprise all India when we arrange TIEMS Annual Conference in India in 2019. TIEMS will also seek good partnerships with existing Indian organization with expertise in emergency management and disaster response to strengthen TIEMS engagement in India.

I finally like to thank all participants at TIEMS 2017 Workshop in India for making the workshop a great success!



Oslo 16th October 2017
K. Harald Drager, TIEMS President

Editor's Message



Alex Fullick

Welcome to our latest special edition newsletter. In this edition we focus on the “*Higher Education on Disaster Management: Opportunities & Challenges*” workshop held Friday, February 10, 2017 in New Delhi, India.

The papers presented here represent the various sessions held during the workshop. They highlight some of the current challenges with Emergency/Disaster Management and how to better prepare communities during disasters and provide many recommendations on what to do about the problem(s) going forward.

By all accounts, the workshop was a great success and the first paper is an overall conference summary provided by Kailash Gupta, who leads the TIEMS India Chapter. Dr. Gupta also helped co-edit this newsletter, so a big thank you to him for his valued input. All the papers are well worth the read and congratulations to all presenters and of course, the workshop coordinators for a job well done.

I'd also like to introduce you to my new internet talk radio show called “Preparing for the Unexpected” hosted on the VoiceAmerica.com radio network; a show dedicated to all things Emergency Management, Disaster Planning, Business Continuity, Crisis Management and any and all related fields (<https://www.voiceamerica.com/show/2682/preparing-for-the-unexpected>). The

show airs every Thursday morning at 9am EST time on the Variety Channel.

My first guest was none other than TIEMS President, K. Harald Drager who provided allot of valuable information about Emergency Management, which really hit a chord with listeners. Take a moment and go the link provided above and take a listen to what Harald had to say - it's very informative.

Once you've taken a listen to Harald's how (or any others), let me know if there are any other topics you'd like me to cover - or even if you'd like to be a guest, by sending me an email at info@stone-road.com. TIEMS is full of incredible professionals with many different experiences and specialties, so think about getting your thoughts and work out on the airwaves.

Finally, the 2017 TIEMS Annual Conference will be held in Kiev, Ukraine in December. Keep an eye out for registration and venue details as they become available. It promises to be a great event with our new Ukraine TIEMS Chapter.

In the meantime, happy reading (and listening)!

Alex Fullick, MBCI, CBCP, CBRA, v3ITIL

Editor - TIEMS Special Edition Newsletter



Co-editor's Message



Dr Kailash Gupta
Managing Trustee
The International Emergency Management Society - India Chapter

I am delighted to present for your reading pleasure a summary of the *Workshop on Higher Education in Disaster Management: Challenges and Opportunities* held on Friday February 10, 2017. The Workshop was co-organized by TIEMS - India Chapter (TIEMS-IC) and National Institute of Disaster Management (NIDM), Ministry of Home Affairs, Govt. of India at NIDM, New Delhi.

TIEMS-IC received approval on Dec. 22, 2016, from NIDM to co-organize the workshop on Feb. 10, 2017. That is in 34 working days. It was like a disaster. TIEMS-IC was registered in April 2015 and had not organized any workshop/ seminar/ conference. TIEMS-IC had selected the theme because there has never been a workshop on higher education in disaster management in India. This was also the first time NIDM was co-organizing a program with a non-government organization.

TIEMS-IC left no stone unturned to make the success of the Workshop. We were able to get six organizations supporting the Workshop, although there was no financial support from anywhere, except TIEMS-IC itself. Rajasthan Center of The Institution of Engineers (India) provided Workshop Secretariat.

We received 29 papers and presentations, more than we expected, and had to organize three technical parallel sessions and arrange for a venue even in the neighbouring Indian Institute of Public Administration, due to lack of availability of facilities that day in NIDM. Participants came from all over India, apart from Harald Drager from Norway and George Markowsky from US. TIEMS-IC thanks everybody for the success of the Workshop and looks forward to continued support in our activities.

TIEMS-IC endeavours to work in disaster management areas which are neglected and will benefit large number of vulnerable people.

Workshop on Higher Education in Disaster Management: Opportunities & Challenges

Friday, February 10, 2017, New Delhi, India

Workshop Summary

The National Institute of Disaster Management (NIDM) of Ministry of Home Affairs, Government of India and The International Emergency Management Society (TIEMS) - India Chapter, co-hosted a full-day Workshop on Higher Education in Disaster Management: Opportunities & Challenges on Friday, February 10, 2017, at NIDM, New Delhi. This was the first workshop on higher education in disaster management held in India and also the first workshop organized by the TIEMS-India Chapter.

Co-organized by



National Institute of Disaster Management
Ministry of Home Affairs, Govt. of India, New Delhi

www.nidm.gov.in

&



The International Emergency Management Society - India Chapter

www.tiems-india.org

The Workshop was supported by

- The Jamsetji Tata School of Disaster Studies, Tata Institute of Social Sciences,
- Ashoka Innovators for Public,
- The Institution of Engineers (India), Rajasthan State Centre, which also provided Workshop Secretariat facilities,
- Integrated Volunteers Network,
- Center for Development and Disaster Management Support Services, and
- Institution for Disasters, Emergency & Accidents.

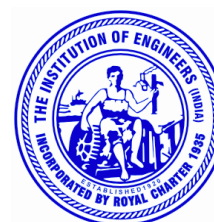


The Jamsetji Tata School of
Disaster Studies, Tata Institute
of Social Sciences, www.tiss.edu



Ashoka India
<http://india.ashoka.org/>

Ashoka Innovators for Public



Institution of Engineers (I)
Rajasthan State Center
<http://ieirajasthan.org>

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E-mail: secretariat@tiems.info



Integrated Volunteers Network
www.ivn.org.in



CDDMASS
 A Strategy Center
 Center for Development and
 Disaster Management Support
 Services, www.strategycenter.in



Institution for Disasters,
 Emergency & Accidents
www.innovoida.in

The Workshop started at 10:00 Hrs. with an Inaugural Session. We received large number of papers for presentation. After the Inaugural Session. We organized three parallel sessions on Education, Research, and Careers. This Special Newsletter contains papers received classified in three sections of Education, Research, and Careers. Due to shortage of conference rooms, we have to organize a parallel session at nearby Indian Institute of Public Administration. The Workshop ended at 17:00 Hrs. with a Concluding Session.

A few highlights:

1. Santosh Kumar, Executive Director, NIDM gave a welcome address and introduced the theme of the Workshop.
2. Kamal Kishore, Member, National Disaster Management Authority inaugurated the Workshop by a video recorded message.
3. K. Harald Drager, President, TIEMS, came from Norway for the Workshop and made a presentation on Global Perspectives on Emergencies and the Role Played by TIEMS in Higher Education in Disaster Management.
4. George Markowsky, Chair, TIEMS Academy and Prof. of Computer Science, University of Maine, came from USA and gave an Overview of TIEMS Academy.
5. Vinod Sharma, Prof. of Disaster Management, Indian Institute of Public Administration presented on Higher Education in DRR in India.
6. Kailash Gupta, Managing Trustee, TIEMS-India Chapter and Convener of the Workshop emphasized the Need for Quick Response Research in India and its funding.
7. Before the end of the inaugural session, Sarthak Handa and Ashwin Naik of Ashoka Innovators for Public, depicted Innovation Showcase “Operation Resilience.”

We are unable to include inaugural video of the Workshop by Kamal Kishore in this Special Newsletter. We also don't have text of his inaugural speech. We are also unable to include in this Special Newsletter slide presentations of speakers of Inaugural Session who have not provided text of their presentations. George Markowsky provided text of his presentation on TIEMS Academy, which is included in the Education section of this compilation of papers. Sarthak Handa has provided updated text of his presentation as of September 10, 2017. An abridged and edited version of text on Operation Resilience follows.



Group photograph of the participants in Workshop on Higher Education in Disaster Management: Challenges & Opportunities, February 10, 2017, New Delhi

“Operation Resilience,” an initiative of TIEMS - India Chapter in close collaboration with Ashoka Innovators for Public was showcased by Sarthak Handa, it’s architect. We are reimagining how societies organize themselves to help people in the aftermath of disasters. In most of the disasters odds of right help, reaching the right people at right place and right time is extremely low. While response agencies on ground struggle to find response and relief resources the outside world struggles to identify where and how can they best contribute to the response and relief efforts. Operation Resilience attempts to systematically tap private and community resources to crowd-source and streamline \$1.4 billion worth humanitarian aid supply chain at all India level.

We are building a response and relief crowdsourcing portal that can proactively reach out to 100M+ online audience via a network of outreach partners (websites & apps) for 4-5 days in the aftermath of a disaster - to crowd-source response and relief resources for India’s leading response agencies - be it, finances, goods, or volunteers.



A session in progress at the Workshop on Higher Education in Disaster Management: Challenges & Opportunities, February 10, 2017, New Delhi

It's an award winning venture that has been recognized as one of the top ten innovative startups in disaster management based on an all India competition by Government of India at the National Platform on Disaster Risk Reduction, Vigyan Bhavan, New Delhi, May 15-16, 2017. Subsequently, Operation Resilience was also presented by Kailash Gupta at the Ignite Stage of the UNISDR Global Platform on Disaster Risk Reduction, Cancun, Mexico on May 22-26, 2017. If you want to know more or willing to collaborate in technical, financial, or marketing development, or testing during a disaster, please send an email to Sarthak at sarthakh.2013@iitkalumni.org.

The inaugural plenary session was followed by three parallel sessions on Education, Research, and Careers. Seven papers on Education, seven on Research, and eight on careers parallel sessions were scheduled. Thus, 29 papers and presentations were scheduled at the Workshop.

The Concluding Session was chaired by Chandan Ghosh, Prof. and Head of the Geo-Hazard Risk Management Division, NIDM. In this session, the summary and recommendations of the discussions in three parallel sessions were presented by parallel session moderators, George Markowsky on Education, Chandan Ghosh on Research, and K. Harald Drager on Careers.

Parallel Session on Education

George Markowsky presented a paper in the Inaugural Session on TIEMS Academy. His paper is included in the Education section of this compilation. Four of the seven scheduled papers were presented in this parallel session. These were by Parama Bhattacharyya, K. Jaysurya, Priya Namrata Topno, and Dipa Vengurlekar. Papers of Pratyush Jaiswal and Mukta Girdhar are included in this Special Newsletter for the benefit of readers, although they couldn't make oral presentation. One author only send his abstract, which is excluded from this Special Newsletter.

Some key observations and recommendations of the four oral presentations in the parallel session and during the interaction following each presentation on education are:

- It is important to link field training to education in emergency management.
- Rural councils need to be better connected.
- There are many fine materials available to teach young children about safety.
- Educational programs should make greater use of the resources and people of villages and NGOs. Both villages and NGOs have extensive experience that can be leveraged in educational programs.
- Integrate emergency management education and development.
- Online education is poised for a more important role.
- India has developed many high-quality books, pamphlets, and courses for emergency management. The India Chapter should organize these materials and make them available on the TIEMS academy website.

Parallel Session on Research

There were 7 presentations in the Parallel Session II on the theme of Research. Diverse areas from technology to community practice were covered at multiple levels of operation from the level of the community to sites of disaster.

1. The first presentation was made by Ashok R. on behalf of his coauthors also Sumati Sidharth and Ekanto Ghosh on 'Integration of Disaster Management and Digital India' in which importance was given to use of mobile technology during catastrophes. The paper stressed the role of disaster management professionals in training citizens to use social media to maintain effective communication with the rest of the world during a disaster. Emphasis was given on the term SMAC (social, mobile, analytics and cloud) components and most clarifications were sought on this area during the question-answer session following the presentation.
2. The second presentation on behalf of N M Prusty and Raman Kumar was made by later on 'Humanitarian and Development Practitioner: Higher Education in Disaster Risk Reduction and Climate Change Adaptation in India.' In this paper, the emphasis was on the training of manpower to deal with emergency challenges. Skill impartment at various levels such as beginner, intermediate, advance, and expert levels were discussed in order to create a humanitarian system of interventions in the context of India. Clarifications were sought by delegates regarding implementation of such a system in reality.
3. The third presentation was made by S. Uma Maheshwari who spoke on 'Synchronizing Research in Disaster Management: Some Suggestions'. She gave an overview of various policies in the domain of disaster and heighted their lacunae.
4. The fourth presentation was made by Aditi Sharan who brought in various examples to support the importance of imparting disaster management training to women. Women are the first responders in a community and with increased skill levels and knowledge, they can perform that role at a greater level of effectiveness. The paper 'Higher Education in Disaster Management in India: From a Gender Lens' was well received.
5. The fifth presentation was on 'Disaster Management and Social Work Education: A Praxis of Learning and Practice' by Neera Agnimitra. She spoke on the spirit of volunteerism and the importance of social work education as a praxis of learning and practice towards a disaster resilient India. The extensive presentation highlighted the role of youth in disaster management.
6. The sixth presentation was made by Chinmayi Sarma on 'Resilience Activist: The Product of Higher Education in the Process of Community Based Disaster Risk Management.' She posits creating an institution called *resilience activist* at the community level to impart building capacity training to - and at - the grassroots. There was a lively discussion after her presentation on the idea of creating a permanent institution as well as defining resilience.
7. The seventh and final presentation was made by Chandan Ghosh who shared valuable insights on 'Research in Disaster Management.' He elaborated and

emphasized on the need of context specific and time specific technology for a disaster resilient India. Chandan Ghosh spoke extempore.

We have included a paper of Gajadhar Chowdhry on Disaster Risks Advances Creating Opportunities for Higher Study and Research in Disaster Management, although he couldn't make oral presentation.

Parallel Session on Careers

There were lively discussions in this parallel session on careers after the presentation of papers. The main conclusions were:

- Military forces can be a valuable added resource in a disaster response situation because the military personnel have general education and training in emergency situations. However, they need to be educated and trained with additional qualifications needed in a civil crisis situation.
- The formalities in having the military involved in civil disaster response, needs to be addressed carefully, to avoid coordination conflicts between military and civil authorities.
- It is important that updated courses and additional education is provided at universities and training institutions for operative disaster response personnel, so that their qualifications are always abreast with the latest updates.
- Volunteers are a huge and additional resource in emergency response situations. It is important to cater to this group so that they are properly trained to understand and meet the challenges of an emergency. They may need additional education to be certified for the skills required.
- A proper screening of the different volunteers may be required, so they are used in situations where they are trained and not become a hindrance during a disasters.

There were 57 participants, including speakers and paper presenters. Participants included academicians, researchers, practitioners, policy-makers, administrators, defense personnel, entrepreneurs, activists, and students. They represented government organizations, defense establishments, research institutions, universities, business organizations, international organizations, not-for-profit humanitarian organizations, professional organizations, independent disaster management practitioners, emergency medical technicians, and nurses. As previously noted, one presenter came from Norway and one from the United States. Within India, participants came from Aizol in Mizoram, Ambala, Bangalore, Guargaon, Hyderabad, Jaipur, Jhunjhunu, Kolkata, Lucknow, Mumbai, Moradabad, New Delhi, Pune, Rishikesh, Srinagar in Pauri Garhwal district of Uttarakhand, and Tripura. The participants represented many states and different regions of India.

PAPERS ON HIGHER EDUCATION

- E1. An Overview of the TIEMS Academy by George Markowsky
- E2. Disaster Management through Higher Education: A Case of IFRC-TISS Online Certificate Course in Disaster Management by Parama Bhattacharyya
- E3. Interdisciplinary Bottom-up Approach in Higher Education for Disaster Management by K. Jayasurya
- E4. Building Disaster Resilience through School Education by Priya Namrata Topno
- E5. Higher Education Opportunities in Disaster Management at Certificate, Bachelors, Masters, and Doctoral Level by Mukta Girdhar
- E6. The Opportunities and Challenges Involved in Higher Education in Disaster Management Globally in General and Particularly in India by Pratyush Jaiswal
- E7. Damage and Need Assessment with Health Management Information System: A Training Prospective by Dipa Vengurlekar

An Overview of the TIEMS Academy

George Markowsky

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Keywords: TIEMS, Education, Training, Certification, GENERATE

Introduction to TIEMS

In 1993, TIEMS (<http://tiems.info/>) was established in Washington, DC, USA, as The International Emergency Management and Engineering Society (TIEMS) and registered in Dallas, Texas, USA, as a non-profit organization. In 1994, The Society was reorganized and changed its name to The International Emergency Management Society (TIEMS), and its registration was moved to Florida, USA. In 2003, The Society's registration was moved to Zurich, Switzerland to be close to other international organizations having operational centres in Switzerland. In 2006, TIEMS moved to Belgium, where TIEMS today is registered as an International, Independent and Not for Profit NGO.

TIEMS is a Global Forum for Education, Training, Certification and Policy in Emergency and Disaster Management. TIEMS is dedicated to developing and bringing the benefits of modern emergency management tools, techniques and good industry practices to society for a safer world. TIEMS accomplishes this through the exchange of information, methodology innovations and new technologies, to improve society's ability to avoid, mitigate, respond to, and recover from natural and human-made disasters.

TIEMS provides a platform for all stakeholders within the global emergency and disaster management community to meet, network, and learn about new technical and operational methodologies. It also aims to exchange experience on good industry practices. TIEMS hopes to influence policy makers worldwide to improve global cooperation and to establish global standards within emergency and disaster management. The following are some primary activities of TIEMS.

1. To provide a forum for policy guidance to government bodies concerning the management of emergencies and disasters.
 2. To raise awareness of technical solutions involving computers, communication, and information technology and social sciences to provide emergency and disaster managers with helpful decision support.
 3. To help bring modern tools of emergency and disaster management into the marketplace and to provide high-quality emergency and disaster management industry practices around the world.
 4. To address emergency and disaster management in the context of its impact on the environment and society.
 5. To monitor the evolution of global good industry practices in emergency and disaster management.
 6. To establish a multi-disciplinary "all-hazards approach" to tackling emergencies and disasters.
-

7. To bring together stakeholders such as governments, industry leaders, academics, volunteer organizations and other subject matter experts in emergency and disaster management.
8. To advance awareness of research and future development concerning technologies from various diverse fields such as simulation, operations research, knowledge-based systems, decision support systems, information systems, psychology and other behavioural sciences.
9. To propose, initiate, develop and participate in relevant research activities, contributing to global standards within emergency and disaster management.
10. To contribute to the improvement of educational methods and standards for emergency and disaster managers.
11. To initiate and establish a quality certification process for emergency and disaster managers.
12. To assist and excite students to increase global interest in emergency and disaster management studies.
13. To increase society's common knowledge of risk management, potential hazards, and means and remedies to avoid and reduce the impact of, and to assure a speedy recovery from, incident, crisis, emergencies, and disasters.

TIEMS has chapters in the following countries.

1. BeNeLux (Belgium, Luxemburg, and the Netherlands)
2. China
3. Finland
4. India
5. Iraq
6. Italy
7. Japan
8. Korea
9. MENA (The Middle East and North Africa)
10. Nigeria and West Africa
11. Romania
12. Ukraine
13. USA

TIEMS Education Task Force

The TIEMS Education Task Force was created to focus TIEMS activities in the areas of education, training, and certification. It supports, directly and indirectly, most of the primary activities of TIEMS listed in the preceding section. TIEMS members represent a group whose collective talent is unmatched in the world. The Task Force will work toward making this expertise available throughout the world. The following represent some areas of special interest to TIEMS.

- *Educating the Public:* the 2004 Indian Ocean and Tsunami illustrates how even a minimal level of disaster awareness could have saved many lives. It is important to collect disaster-related knowledge all over the world and relate it locally.
- *Educating Children:* one of the best ways to educate the public is to educate children. TIEMS will prepare a wide range of free materials that can be used in K-12 education to inculcate an interest in emergency preparedness among young students.

- *Educating Officials*: many officials do not have training in emergency management. It is important to reach out to this group of people and give them all the support possible since they will undoubtedly be involved in the very early stages of each disaster.
- *Improving Preparedness*: it is shocking to realize how few localities have disaster response plans that are good. TIEMS must find ways to convince local officials to devote more time and resources to emergency preparedness.
- *Offering Courses and Training*: this will be a principal activity that will support other activities. Some areas in which TIEMS has the expertise and the ability to present courses include the following.
 - Risk Assessment
 - Disaster Management
 - Earthquake Management
 - Exercise, Planning, Training and Assessment
 - Information Systems for Disaster Management
 - Critical Infrastructure
 - Crisis Communications
 - Community Resilience
 - Incident Command
 - Emergency Management Education
- *Helping Certify Expertise*: because emergency response can be a life or death event, it is important that we can certify that people have the necessary expertise. For this reason, the Education Task Force wants to make certification a priority.
- *Build and Distribute Emergency Management Tools*: TIEMS seeks to help people prepare for emergencies by distributing appropriate tools. All tools need to be freely available and easy to use. TIEMS will work with universities and other suitable groups to ensure the steady development of new tools and regular improvement of old tools.

The GENERATE Project and the TIEMS Academy

The GENERATE (Global Educational Network for Emergency Resilience and Training Excellence) Project is a TIEMS initiative to create a network of participating organizations and an online resource to improve access to the world's collective knowledge and experience in emergency management. To meet this goal, GENERATE will:

- Develop an internationally shared understanding of emergency management elements, qualifications, and terminology
- Help students find and connect with useful live and online educational resources
- Make increasing amounts of emergency management knowledge available online, especially vulnerable societies
- Provide a platform to share critical lessons learned from disasters and emergencies

GENERATE will create a community of emergency management educators, practitioners, and students, who will share knowledge and work together to improve capabilities worldwide. To support this community, GENERATE will develop a platform that will include:

- An eLearning and Certification platform that will foster, across the international community, shared, common understanding of emergency management elements, standards, and terminology;
- A directory of educational resources, described within a common framework, including live and online degree programs, courses, workshops, and knowledge bases;
- An online portal that will make emergency management educational resources, from established educational institutions and initiatives, broadly available to students worldwide.

The core of these educational resources will be developed and provided by a network of GENERATE Centres of Excellence. To simplify terminology, we have decided to use the name TIEMS Academy as a synonym for the GENERATE project since the term academy is very widely understood. The primary focal point of the TIEMS Academy and the GENERATE project will be its website which has the URL <http://TIEMS.Academy>. This website will provide access to all the materials that TIEMS produces as part of the GENERATE project. The website will feature royalty-free courses, royalty-free materials, and royalty-free emergency management tools with supporting documentation. <http://TIEMS.Academy> will have sections so that each chapter can post relevant news and materials in local languages. The website will have extensive search capabilities and cross-indexing so that it will be easy to find appropriate materials.

A key design philosophy of the TIEMS Academy is to keep costs as low as possible while reaching the largest possible audience. With this in mind, we have set up a YouTube Channel named TIEMS Academy. We have started collecting TIEMS related materials and have used playlists to organize the videos. This YouTube channel is still in the early stages, and a lot of design work remains to be done.

Next Steps

The TIEMS Education Task Force will be undertaking the following steps between now and July 1, 2017.

1. It will create a board of advisors to oversee the TIEMS Academy
2. It will identify regional editors for the TIEMS Academy website
3. Decide on naming conventions and categories so that materials can be organized and retrieved efficiently.
4. It will identify resources and centres of excellence in emergency management from around the world
5. It will solicit course and other materials, along with easy to use, royalty-free tools.

The TIEMS Academy will start out using FreeConferenceCall.com (<https://www.freeconferencecall.com/>) as its platform for eLearning. FreeConferenceCall.com makes it easy to have online courses and meetings with up to 1,000 simultaneous participants. It also has local numbers for joining its meetings in 59 countries.

Acknowledgements

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Disaster Management through Higher Education: A Case of IFRC-TISS Online Certificate Course in Disaster Management

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ABSTRACT

Globally disasters are on the rise and hence capacity building is considered of utmost importance due to the rising shortage of trained manpower in this field. To cater to the rising need of certified professionals in the Disaster Management field Tata Institute of Social Sciences (TISS) in partnership with International Federation of Red Cross and Red Crescent Societies (IFRC), Geneva launched a global online certificate program in disaster management in the year 2013. This course addresses all stages of disaster management in a comprehensive and holistic manner. The current paper outlines the learnings and challenges in attempting to run a professional course through distance learning (online) mode from the faculty and course coordinator's perspective.

Keywords: Disaster, Distance education, Online teaching, Disaster management

Introduction

Globally, disasters are on the increase, impacting communities and nations with grave social and economic consequences and threatening the survival, dignity and livelihoods of the vulnerable sections of their populations. In 2011, 332 natural disasters were registered, less than the average annual disaster frequency observed from 2001 to 2010 (384). However, the human and economic impacts of the disasters in 2011 were massive. Natural disasters killed a total of 30,773 people and caused 244.7 million victims worldwide. Economic damages from natural disasters, estimated at US\$ 366.1 billion, were the highest ever registered. This shows that there is a clear and urgent need for professionally trained, well-informed and socially committed Disaster Management personnel globally.

Web-based Technology in Higher Education

With the advancement of information technology web-based education has become popular among all levels of schooling and is generating huge interest in the instructional technology R&D community (Khan 1997, 1998). Carr-Chellman (2000) observed the increasing role that distance education plays in bringing systemic change in higher education. Khan (2003) noted that there is a tremendous demand for affordable, efficient, easily accessible, open, flexible, well-designed, learner-centric, distributed and facilitated learning environments. According to Khan (2003) e-learning can be viewed as an innovative approach for delivering well designed, learner-centric, interactive, and facilitated learning environment to anyone, anyplace, anytime, by utilizing the attributes and resources of various digital technologies along with other forms of learning materials suited for open and distributed learning environment.

Disaster Management through Distance Education in Higher Education

Disaster Management studies is recognized as an multi-disciplinary field that combines decades of ground-level experience of the IFRC, the Red Cross/Red Crescent Movement

and other humanitarian actors with the core principles of humanitarian action, drawing on theoretical perspectives and conceptual understanding from a variety of academic principles. The multi-disciplinary nature of the subject requires the humanitarian professionals to be equipped with the right blend of academic knowledge and practical expertise. Disaster Management training enables them to reduce vulnerabilities and risks from hazards, while building the resilience of nations and communities to disasters. But to train a large manpower together in a traditional classroom setting requires sufficient resources and time. And therefore the utility of online education comes which can offer training to a large number of professional at their convenient time and geographical location.

IFRC-TISS Online Certificate Course: A Brief Overview

The program has been designed to recreate a classroom learning environment but in an online platform. Participants engage fully with the programme content and with their peers via lectures, discussion boards, group work, online chat, question and answer sessions. It includes online course work together with supervised and graded field internship. The duration of the programme is 12 months.

Key Learnings

This section deals with the faculty's personal experience with teaching and coordinating the online course for participants who are spread across globe. Though the faculty had more than 8 years of teaching experience before she was given this role to coordinate and teach the subject online, she did have her own reservations and prejudices on the most appropriate pedagogy to teach the particular subject online.

Advantages

i) Opportunity to connect with disaster management professional across globe: This course helped the faculty members to connect to the disaster management fraternity across globe. Sharing their work with disaster management professionals across globe immensely benefited the faculty to improve their understanding on several issues. That in turn helped the faculty to use that knowledge in classroom teaching as well.

ii) Understanding of different perspective of a common concept: The online interaction and forum discussion with participants facilitate the understanding of different perspectives of a common concept. For example the concept of development was discussed and a range of different perspective was brought in by the participants who were located in different location with different development status of their country.

iii) Appreciation from the participants: The particular course so far has successfully conducted six cohorts. Words of appreciation on quality of teaching material and the efficient management of the programme helped the team of faculty to continue the hard work. It was heart-warming to receive words of appreciation from senior level professionals considering it was the first ever attempt to try the online teaching of disaster management by TISS. The following quote from one of the past participants is an example of such appreciation.

"I believe that the course is absolutely perfect for the students who want to venture into the Disaster Management field. It provides a lot of outlook and information for those already working in the field but lacking some information. The topics are extremely interesting and the people working on the content and administration are very committed"

which makes a participant feel less alone and more appreciated knowing there is a 'human being' at the other end of the email correspondence."

Challenges

There are few challenges as well to coordinate this kind of course. They are mainly the following:

- i) Difficulty due to different time-zone:** In many occasions despite of several attempts it becomes extremely difficult to fix a common time for a real-time discussion on any topic.
- ii) Lack of opportunity to interact the students face-to-face:** Due to the mode of delivery there is actually very less opportunity to meet the students face-to-face which sometimes becomes less motivating as it lacks the personal touch of a classroom setting.
- iii) Increased faculty time:** Teaching in online mode requires more time in preparation in comparison to the classroom teaching. As there is no scope for lecturing on a particular topic, it becomes crucial to make study material in a language which is easy to comprehend.
- iv) Dealing with Technical issue:** Dealing with technical issues sometimes becomes extremely frustrating for a coordinator as participants across globe often experience difficulties in accessing the course in a seamless manner.
- iv) Difficulty in keeping semester break as per the host university schedule:** As this course is a global online course, there is an expectation from the participants to run it throughout the year which becomes sometimes very challenging for the programme team and the faculty as it interferes with the host university's schedule.
- v) Difficulty in keeping the course as per schedule:** A major problem faced during managing the course is to keep the modules as per schedule. As this particular course is meant for field professional, many of them were working full-time, hence could not manage to keep up with the deadlines for assignments and tasks. This in turn delayed submission and deferment of modules.

Conclusion: The IFRC-TISS online certificate program in disaster management is considered as an effective programme for capacity building in disaster management. The course content and methodology are highly appreciated by past participants who have developed deeper understanding on issues of development and disasters. It exposes participants to new and emerging focus areas and technologies while building a solid contextual background.

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Interdisciplinary Bottom-up Approach in Higher Education for Disaster Management

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ABSTRACT

Disasters have been increasing in frequency in the last few decades and climate change can be cited as one of the leading reasons for it. The socio-economic diversity in India makes disaster management a very complex subject. This paper discusses the need for an interdisciplinary bottom-up approach to disaster management which needs to start at the higher education level and the need for a holistic approach to disaster management.

Keywords: Climate change, vulnerable communities, interdisciplinary approach, higher education

Disasters all over the world have seen an upward trend in terms of frequency. “About two-thirds of the increase is real and the result of rises in so-called hydro-meteorological disasters” Guha-Sapir said. “These disasters include droughts, tsunamis, hurricanes, typhoons and floods and have been increasing over the past 25 years. In 1980, there were only about 100 such disasters reported per year but that number has risen to over 300 a year since 2000.” (Than, 2005)

According to the New England Journal of Medicine, the scale of disasters has expanded, owing to increased rates of urbanization, deforestation, environmental degradation and to intensifying climate variables such as higher temperatures, extreme precipitation and more violent wind/water storms. (Steady Increase in Climate Related Natural Disasters, 2013)

India is among the many countries that have not historically contributed to the global stock of greenhouse gases in the atmosphere, yet suffer the consequences just the same. The Industrial revolution in many currently developing countries, the extensive use of fossil fuels, deforestation and intensive agriculture has led to a drastic rise of CO₂ to levels. Even if one were to leave aside the political debate about Common but Differentiated Responsibility (CBDR) and about the choice of development strategies for India in the future to ensure a low carbon footprint growth, one cannot ignore the additive effect of the already existing stock of greenhouse gases on the economic growth and social fabric of India.

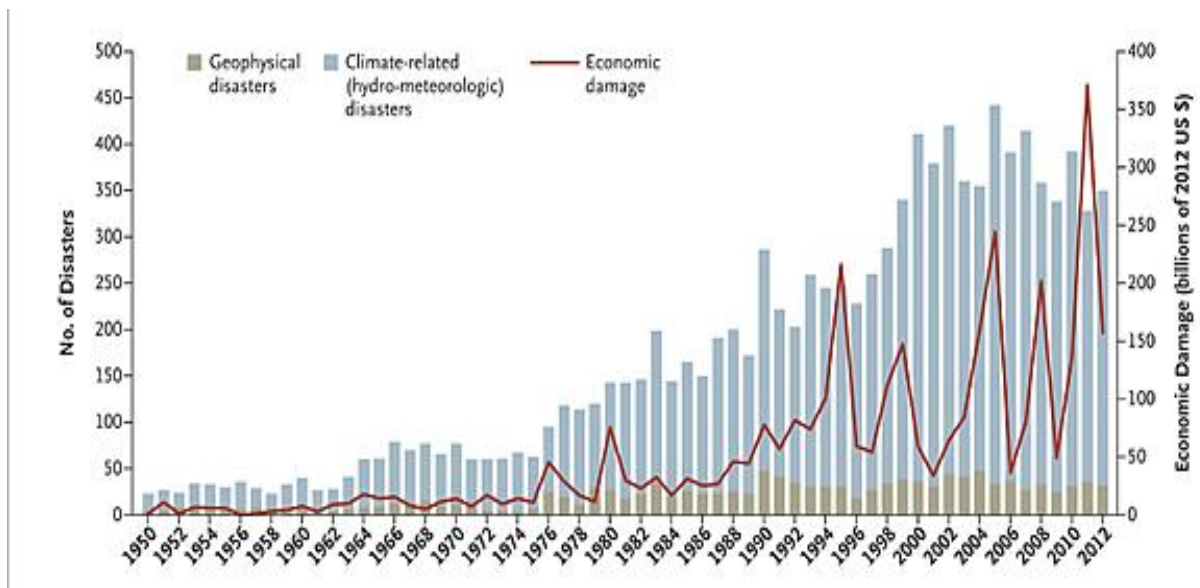


Image courtesy of EM-DAT International Disaster Database, Center for Research on Epidemiology of Disasters, University of Louvain

India is a home to diverse communities with diversity at multiple levels, from language to class, caste and religion. Not all of these communities are at par with each other in terms of social and economic development. Many by virtue of the ascribed status or roles are involved in professions that in today's globalised and capitalist society hold little or no economic value. Many tribes and lower castes who traditionally had various types of artisanal or craftsman works have now shifted to agriculture. Some of those who do not own lands of their own become agricultural labourers working for meagre wages under wealthy landowners. Most often than not, they are a part of climate sensitive means of livelihood.

Climate change, although a universal phenomenon affects certain communities more than it affects others. Since many of the calamities are due to climate change and related phenomena, in my opinion in order to understand disaster risks and to come up with effective risk avoidance strategies, we must approach the subject slightly differently.

Disaster management has been getting some space in classroom discussions, university spaces, public offices etc. however, compared to the magnitude of damage and devastation that even small natural irregularities cause in a country like India, there is an urgent need to address disasters at a scale much larger than what currently exists.

The system currently in place seems to be taking a top down approach. What's wrong with a top down approach to disaster management is that the vulnerable communities are often not a part of the disaster management process. This increases the pressure on state agencies during time of disasters. With a bottom up approach, one can make sure that communities are aware of the potential disasters and their role in mitigation of disasters can be greater. But bottom up policies are a very complex subject. With various climatic zones and geographical terrains in India, the nature of vulnerabilities, and the kinds of disasters that different communities are prone to vary from region to region and cannot be covered under one blanket policy.

A committed team with a thorough understanding of these regions is necessary to put into place a policy that suits the needs of each region. To build such a team in different parts

of the country, there is a need for an interdisciplinary training to dedicated persons in relevant disciplines like sociology, gender studies, rural/urban development, resource management, public relations etc. Higher education in disaster management should not just be about the technicalities of the processes of mitigation that follow a natural calamity or a manmade disaster but also about the wholesome understanding of various factors like the socio-political and economic conditions in an area that is prone to disasters. In India there is an urgent need for courses on climate change and its effects on indigenous communities as a part of higher education. Climate sensitive livelihoods, lifestyles and the communities associated with it must be studied in depth.

Leaving select few universities, like the Institute of Tropical Meteorology, Pune, climate change is not addressed adequately in India as compared to the effects it has on our society, polity and economy. There is no course at the under-graduate level in India which deals with the burgeoning crisis of climate change. Sustainable development is key to both contribution to climate change which causes disasters and to post- disaster risk reduction. Therefore, it is imperative that aspects related to sustainable development be made part of not just courses related to disaster management and climate change but also mandatorily in technical subjects like engineering and industrial studies.

So in my opinion when one talks of disaster management as being part of higher education, it is also very necessary to make part of higher education a course on what leads to calamities becoming disasters and how to deal with disasters most effectively. There is an urgent need to address issues at a policy level, so that structural changes may be made in order to ensure long term returns.

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Building Disaster Resilience through School Education

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ABSTRACT

Disasters are inevitable and disaster preparedness is the way out. Education plays a major role during disaster situations and helps make society resilient. Disaster education is an effective tool to save lives. Disaster education is not limited to school based initiatives and public information campaigns but it also includes public pedagogies. Disaster education is not an event; rather it's a process of learning. Disaster education is a co-learning process through transferring proper knowledge for reducing damages. Disaster education enhances resilience for students to make informed decisions during emergencies and disasters. Disaster resilience can be achieved through education on disaster management.

Keywords: Disaster, Resilience, Disaster education, Risk reduction

Introduction

“Education is an ornament in prosperity and a refuge in adversity”

- R.K. Bhandari

Disasters increase vulnerabilities, as it can strike at any time and any place. Disasters are inevitable yet disaster preparedness is the only way out. Disasters have huge impact upon the society as well as on environment and can create both challenges and opportunities.

Education plays a major role during disaster situation and helps make society resilient. According to Ivanov & Vladimir, children who are educated about disasters know how to react and respond in hazardous situations to protect themselves and alerting others about potential threats. A prime example of good disaster education for children can be taken from Thailand where a girl, who was about 10 years old was able to save 100 tourists' lives during a Tsunami by warning them about the tsunami, which she learnt in her geography lesson. Similarly, when past experiences are passed from one generation to other, which can be termed as 'generational knowledge transfer', can help to save many lives. The formal - as well as informal - education, creates awareness among individuals to protect their own and others' lives.

Disaster education is an effective tool to save oneself, as well as the lives of community members. Disaster education can reach out to various segments of the community through school curriculums, certificate and diploma courses and other higher education studies. Students are engaged pro-actively in partnership with neighbourhoods to reduce disaster risks. Disaster education is not limited to school based initiatives and public information campaigns but it also includes public pedagogies. Public pedagogies include public adult learning, family and community learning and popular culture. According to Dr Shiroshita, disaster education is a co-learning process through transferring proper knowledge for reducing damages occurred due to disasters.

Knowledge transfers are needed with a clear understanding of causal connections between hazards and damages (Shiroshita, 2013). It should break the school boundary and reach out to families and communities. According to R. K. Bhandari, disaster education is the sharpest weapon of hope against disaster which leads to the culture of safety through planning, capacity building, preventive actions and swift responses. Disaster education can be provide even to those who hate reading through loads of materials. Disaster education is essential to create safe and resilient societies through formal as well as informal education. Disaster education can build the culture of strategic thinking, prevention, preparedness a culture of quick response. It provides wisdom to wisely invest in pre-disaster planning and for reducing disaster vulnerabilities (Bhandari, 2014).

Schools propagate collective values in children. Disaster education should be introduced to school children, teachers and non-teaching staff to raise awareness within the school community; building a culture of prevention and to making school buildings safe (ISDR, 2007). Children act as good messengers to transfer knowledge. Even most of the parents accept the suggestions and gather information from their children.

The development of a 'safety culture' is the goal of disaster mitigation and risk reduction where education and public awareness play a crucial role. Izadkhah and Hosseini (2005,) developed a model of disaster mitigation circle to identify the areas of public awareness and stated that education can raise awareness among the public. They broadly said that by educating children, knowledge can be transferred to their families. Children are quick in learning therefore the disaster prevention, mitigation and preparedness must be taught in schools. Children are the next generation of leaders and can raise awareness in the community (Izadkhah & Mahmood, 2005).

Disaster Education in India

The Tenth Five Year Plan emphasizes on the integration of disaster management into Indian educational systems. As a result, the government of India recommended the Boards include disaster management in school curriculums and professional education. This was done to empower the future of India (younger generations) to have the basic idea of how to respond during disaster situations. The Central Board of Education (CBSE) has integrated the Disaster Management course in school curriculums in Social Sciences for class VIII in 2003, class IX in 2004 and class X in 2005.

The concept of School Safety has evolved for generating knowledge among students about the do's and don'ts while facing hazards through the help of regular mock drills. Street plays, rallies, essay writing and debates, poster painting and slogan competitions have enhanced students' capacity to understand the negative impacts of disasters and also provides with for innovative ideas on how to deal with disasters. These efforts are done to sensitize students and teachers about hazards and create disaster awareness and to spread the precautionary and preventive measures among them.

There must be a shift in approach from disaster preparedness to disaster resilience. This could be achieved by younger generations, as they are the source through which various information regarding disaster management could reach family elders and the larger community. The proverb 'educating a child is educating a family' can be a useful tool to create awareness in society. Along with the incorporation of disaster education in school curriculums, extensive teacher training programs are being conducted across the country. The School and Community Disaster Management Plan also include the training on First Aid,

Search and Rescue (Sharma & Dey).

Role of school disaster education and higher education institutions

Schools are the primary learning centre which provide basic information about disasters, building skills, confidence and create awareness among students, teachers and parents. The knowledge gained by children can be transmitted to families and the local community. Parents must be included in educational processes because they play the primary role in imparting basic knowledge in the process of a child's education. Specialized education regarding disaster risk, is a long term measure to escape the impact of disaster through education on preventive and pre-disaster awareness. Formal education on disaster engages the entire community in risk reduction processes.

Knowledge development is done through formal education so that students can spread knowledge to their family and local community. Educational processes including knowledge, understanding, activities and perceptions, play an effective role in disaster risk reduction. Apart from primary disaster education, higher education in the disaster field is also necessary. Disaster management education is a multidisciplinary subject, as it requires a comprehensive instructional program along with the focus on theoretical knowledge and research in a related field. Disaster education should not be limited to schools or institutions rather it should reach out to every individual or our society. Disaster education is not an event, rather it should be process of learning (Ivanov & Vladimir).

Conclusion

Resilience should be the centre approach to address disasters. A society will be resilient when it is equipped with disaster education. Children are quick to learn therefore the topics related to disaster must be introduced to school curriculums. Disaster education must be in the textbooks of preschool, elementary, secondary and higher school levels.

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Higher Education Opportunities in Disaster Management at Certificate, Bachelors, Masters, and Doctoral Level

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Education in Disaster Management

Trained manpower is the first requirement for mitigation, monitoring and management of disasters. There are number of universities and institutes offering certificate, Post Graduate Diploma, Master's and Research degrees. The basic requirement for certificate and bachelor course is 10+2 and for P.G. diploma and Master's Degree, bachelor's degree (B.A./B.Sc./B.Com.) with 55% marks. For Ph.D. degree, Master degree with 55% marks is required. However, the entrance qualifications vary from university to university. The course in disaster management is suitable to all subjects' students but for sociology, social work, economics, public administration, psychology, geography, geology, meteorology and agriculture students, it is most suitable. These subject persons can use the basic knowledge of their particular subjects in disaster management. Following universities/institutes are offering courses in disaster management:

Disaster Management collage in different states

Delhi

Indira Gandhi National Open University, New Delhi (www.ignou.ac.in)

- Certificate in Disaster Management
- P.G. Diploma in Disaster Management

Guru Govind Singh Indraprastha University, Delhi (www.ipu.ac.in)

- Centre for Disaster Management
- MBA (Disaster Management) Weekend Programme.

National Institute of Disaster Management (NIDM), New Delhi (www.nidm.gov.in)

- Short-term specialized training programmes in campus and online.

Amity Institute of Disaster Management, Noida

- M.Sc. and Ph.D. in Disaster Management

Andaman and Nicobar Island

- Pondicherry University, Port Blair campus, Port Blair, Post Bag No.26, Junglighat, Port Blair (Andaman and Nicobar Islands) - 744103

Maharashtra

[Jamsetji Tata Centre for Disaster Management \(JTCDM\), Mumbai](#) (Maharashtra)

- Tata Institute of Social Science, Malti and Jal A.D. Naoroji (New Campus), Lala Jamnadas Gupta Marg, Off V.N.Purab Marg, P.O.BOX 8313, Deonar, Mumbai (Mumbai Dist.) - 400088

[Asian Fire Engineering College \(AFEC\), Nagpur](#) (Maharashtra) Mecosabagh, primary school campus, Kadbi chowk, Nagpur Distt- 440004

National Civil Defence Collage, Nagpur (Maharashtra)

Centre for Disaster Management, Pune,

- Research and training programmes
-

Utter Pradesh

Indian Institute of Technology, Kanpur (www.iitk.ac.in)

- Department of Earthquake Engineering,
- M. Tech. (Earthquake Engineering) and Ph.D.

Rajrshi Tandon Open University, Allahabad

[Amity Institute of Disaster Management, Noida](#) (Uttar Pradesh)

- Amity University Campus (D-Block, 4th Floor), Sector-125 , Noida (Gautam Buddha Nagar Dist.) - 20130

Arunachal Pradesh

[Rajiv Gandhi University: Faculty of Environmental Science, Itanagar](#) (Arunachal Pradesh), Rajiv Gandhi University, Rono Hills, Doimukh, Itanagar (Papum Pare Dist.) - 791112

Arunachal universities of Studies,

Faculty of skill development and vocational studies

Haryana

Haryana collage of fire and safety (HCFSM) Rohtak, Haryana, 209210, 2nd floor, Meghna complex, Rohtak 124001, Morni community college, Panchkula (Haryana)

Kerla

Imperial Institute of Fire and Safety, Kochi (Kerla)

Institute of Land and Disaster Management (ILDM) Thiruvananthapuram)

PTP Nagar, 695038

Archbishop Powathill Assumption Community College (APACC)

Changanassery (Kerla)

Megalaya

Techo Global University, Shillong (Meghalaya), Khasi Hill Distt

North Eastern Hill University, Shillong, Meghalaya

Uttarakhand

Indian Institute of Techno-logy, Roorkee (www.iitr.ac.in)

- Centre of Excellence in Disaster Mitigation and Management
- P.G. Diploma in Disaster Management

Indian Institute of Remote Sensing, Dehradun (www.iirs-nrsc.gov.in)

- Certificate/Awareness in Geo-hazards
- P.G.Diploma in Geohazards
- M.Sc. Geohazards

Maya Collage of Disaster and Conflict Management, Dehradun

Sikkim

Sikkim Manipal University of Health, Medical and Technological Sciences, Gangtok (www.smu.ac.in)

- M.Sc. in Disaster Mitigation (Distance education)

Tamil Nadu

Annamalai University, Annamalai Nagar, Tamil Nadu
(www.annamalaiuniversity.ac.in)

- M.A. in Disaster Management (Distance education)

Punjab

Panjab University, Chandigarh (www.pu.ac.in)

- M.A. in Disaster Management

Rajasthan

Malaviya National Institute of Technology, Jaipur

- M.Tech. (Disaster Mitigation & Assessment)

Vardhman Mahaveer Open University, Kota (www.vmou.ac.in)

- Certificate in Disaster Management
- P.G. Diploma in Disaster Management

Institute of Advance Studies in Education Deemed University, Sardarsahar

Madras

Madras University, Chennai (www.uom.ac.in)

- International Centre of Madras University, Chennai
- P.G. Diploma in Disaster Management

Anna University, Chennai

Allagappa University

Nagaland

The Global Open University, Kohima, Nagaland

- B.A. in Disaster Management
- M.A. in Disaster Management
- M.Phil. in Disaster Management

Tripura

Tripura University, Suryam-aninagar, Tripura (www.tripurauniversity.in)

- Department of Geography and Disaster Management
- M.A. Disaster Management

West Bengal

North Bengal University, Darjeeling, West Bengal (www.nbu.ac.in)

Gujarat

Environment Protection Training and Research Institute, Hyderabad

Disaster Mitigation Institute, Ahmedabad

- Research and training programmes

M S University, Vadodara

Bihar

Nalanda Open University, Patna

Madhya Pradesh

Disaster Management Institute, Paryavaran Parisar, Arera Colony, Bhopal

- Training and Research in Disaster Management

Dev Ahilya University Indore

Telangana

National Institute of Rural Development, Rajendranagar, Hyderabad

- Centre for Agrarian Studies and Disaster Mitigation
- Research and Training in Disaster Management

Higher Study - Ph. D and Post-Doctoral Research

There are number of universities and institutes conducting research programmes/facilitating in disaster management in the country, such as the Centre of Excellence of Disaster Management in Indian Institute of Technology, Roorkee; Department of Earthquake Engineering in Indian Institute of Technology, Roorkee; Centre of Earthquake Engineering in Indian Institute of Technology, Kanpur; National Institute of Disaster Management, New Delhi; Centre of Disaster Management, Guru Govind Singh Indraprastha University, Delhi; Department of Geography, Punjab University; Indira Gandhi National Open University, New Delhi; SAARC Disaster Management Centre, New Delhi; India Meteorology Department, Lodhi Road, New Delhi; Indian Agricultural Research Institute, New Delhi; [NATURAL](#) Resources Data Management System (NRDMS) Division, Department of Science and Technology, Govt. of India, New Delhi; Council of Scientific and Industrial Research (CSIR), New Delhi; National Institute of Ocean Technology, Chennai; National Institute of Rural Development, Hyderabad; National Remote Sensing Centre, Hyderabad; Indian Institute of Remote Sensing, Dehradun; Space Applications Centre, Ahmedabad; and State Remote Sensing Applications Centers.

The fellowship varies from Rs.12000/- plus HRA to Rs. 23,000/-plus HRA depending on the qualification and experience of the candidate. In foreign countries, there is good number of fellowships available for Ph.D. degree and Post-Doctoral research. After completing the research, there is good scope of employment in universities, institutes, NGOs, policy and planning organizations within country and abroad.

The Opportunities and Challenges Involved in Higher Education in Disaster Management Globally in General and Particularly in India

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ABSTRACT

The main purpose of presenting this paper is to create awareness with regards to the growing demand of disaster management in society, as well as growing career opportunities. This paper includes the introduction of disaster management and its history, growth and need of education in disaster management. The Disaster Management Act, 2005 was an initiative by the Government of India for effective focusing of disaster management in India. With this effort National Institute of Disaster Management was established and various other institutes came under existence and started providing education in disaster management from undergraduate courses to doctoral level of courses. There are list of various well known education institutes which offer such degrees. There are various organizations working in India in the field of disaster management and provide a good career opportunity. As disaster management is a niche field people face various challenges in their career span. Finally, I conclude that the disaster management is a good and growing career opportunity.

1. Introduction to Disaster Management

Disaster is a sudden accident or a natural catastrophe that causes great damage or loss of life. Disaster can be further divided into two major categories.

- Natural Disasters-Floods, Tsunami, earthquake etc.
- Manmade Disasters-Accidents, terrorism, fire etc.

Disaster Management

Disaster Management can be understood as the organization and management of resources and responsibilities for dealing with all humanitarian aspects of emergencies, in particular preparedness, response and recovery, in order to lessen the impact of disasters.

1.1 Definitions of Disaster management

According to UNO Disaster management is defined as-serious disruption of the functioning of a community or a society. Disasters involve widespread human, material, economic or environmental impacts, which exceed the ability of the affected community or society to cope using its own resources.

The Red Cross and Red Crescent societies define Disaster management as the organization and management of resources and responsibilities for dealing with all humanitarian aspects of emergencies, in particular preparedness, response and recovery in order to lessen the impact of disasters.

2. History and growth of disaster management in higher education

In the academic year 2003-2004, India took a pioneering step of starting disaster management education as part of social sciences in class VIII. In the subsequent academic year 2004-2005 disaster management, was added to class IX. In the following academic years disaster management was progressively added to classes XI and XII. This was done by the Central Board of Secondary Education.

The Government of India has long been thinking of a **National Disaster Management Authority**. The Gujarat earthquake gave extra impetus for having a national disaster management authority. The Indian Ocean Tsunami of 2004 really gave a jolt for this decision process. Finally on December 23, 2005 the **Disaster Management Act, 2005** was enacted by the Government of India. The act also provided for creation of National Institution of Disaster Management. The Government of Gujarat for the first time in India enacted the Gujarat Disaster Management Act, 2003.

3. Higher Education in Disaster Management

In our country (India), the Ministry of Home Affairs is the nodal agency which monitors and manages disasters. There are various universities and institutes offering certificate, Post Graduate Diploma, Master's and Research degrees in Disaster Management.

Following institutes/universities are offering courses in disaster management:

1. Devi Ahilya University, Indore (M.P.) (www.dauniv.ac.in)
 - a. M.B.A in Disaster management
2. Indira Gandhi National Open University, New Delhi (www.ignou.ac.in)
 - a. Certificate in Disaster Management
 - b. P.G. Diploma in Disaster Management
3. Sikkim Manipal University of Gangtok (www.smu.ac.in)
 - a. M.Sc. in Disaster Mitigation (Distance education)
4. Indian Institute of Ecology and Environment, New Delhi (www.ecology.edu)
 - a. M.Sc. in Disaster Mitigation (Distance education)
5. Annamalai University, Tamil Nadu
 - a. M.A. in Disaster Management (Distance education)
6. Panjab University, Chandigarh
 - a. M.A. in Disaster Management
7. Guru Govind Singh Indraprastha University, Delhi (www.ipu.ac.in)
 - a. Centre for Disaster Management
 - b. MBA (Disaster Management)
8. National Institute of Disaster Management (NIDM), New Delhi (www.nidm.gov.in)
 - a. Short-term specialized training program in campus and online.
9. Madras University, Chennai
 - a. P.G. Diploma in Disaster Management
10. Indian Institute of Remote Sensing, Dehradun
 - a. P.G. Diploma in Geo hazards
 - b. M.Sc. Geo hazards
11. National Civil Defence College, Nagpur
 - a. Degree/Diploma in Fire Engineering and Safety
12. Disaster Mitigation Institute, Ahmedabad
 - a. Research and training program.

13. Centre for Disaster Management, Pune
 - a. Research and training program.
14. Disaster management institute, Bhopal M.P.
 - a. Training and Research in Disaster Management
15. Indian Institute of Technology, Kanpur
 - a. Department of Earthquake Engineering M. Tech. (Earthquake Engineering)
16. Tata Institute of Social Sciences, Mumbai (www.tiss.edu)
 - a. Jamsetji Tata Centre for Disaster Management
 - b. M.A./ M.Sc. in Disaster Management

3.1 Higher Study-Ph.D. and Post-Doctoral Research

To groom professionals to handle various kinds of emergencies different governments have started up **Disaster Management Centers** to conduct research and teaching programs.

Doctor of Philosophy (Ph.D.) and post -doctoral research are also conducted in disaster management and like-minded fields. There are a number of universities and institutes conducting research programs in disaster management in the country:

1. Centre of Excellence of Disaster Management in IIT, Roorkee.
2. Centre of Earthquake Engineering in Indian Institute of Technology, Kanpur
3. National Institute of Disaster Management, NIDM New Delhi
4. Centre of Disaster Management,
5. Guru Govind Singh Indraprastha University, Delhi
6. SAARC Disaster Management Centre, New Delhi
7. Natural Resources Data Management System (NRDMS) Division,
8. National Institute of Ocean Technology, Chennai
9. Indian Institute of Remote Sensing, Dehradun
10. Space Applications Centre, Ahmedabad

The fellowship varies from Rs.12000/- plus HRA to Rs. 23,000/-plus HRA depending on the qualification and experience of the candidate.

Online Education

The online courses are the first of their kind in India, which helps different users in acquiring knowledge in disaster management. The training materials are in the form of CDs, which are sent through the post and can also be accessed through online course platforms. The programs include discussions, queries, clarifications, assignments and end-of-course projects which are evaluated by experienced course facilitators. **NIDM** is pioneer in providing online course facilities in disaster management.

4. Employment Opportunities & Challenges

There are good employment opportunities in disaster management within the government, as well as in private organizations.

Some organizations having likely employment opportunities are as follows:

1. States Revenue and Disaster Management Authorities.
2. GSDMA, Gandhinagar, Gujarat.
3. National Institute of Disaster Management (NIDM), New Delhi.

4. SAARC Disaster Management Centre, NIDM Building, New Delhi.
5. Indian Institute of Public Administration (IIPA), New Delhi.
6. Haryana Institute of Public Administration (HIPA), Gurgaon.
7. Disaster Management Centre, Bhopal.
8. Disaster Mitigation Institute, Ahmedabad.
9. Indian Red Cross Society, New Delhi and States Units.
10. National Remote Sensing Centre, Department of Space, Hyderabad.
11. Space Applications Centre, Department of Space, Ahmedabad.
12. National Institute of Ocean Technology, Chennai.
13. United Nations Development Program (UNDP) of national level and State Units.
14. National and international level Non-Governmental Organizations (NGO) working in the field of Disasters Management.

4.1 Job Profile

A person can look at these various job profiles after completing their disaster management course:

1. Consultant in Disaster Management
2. Disaster Preparedness Specialist/ Coordinator
3. Emergency Planner/ Project officer
4. Emergency Preparedness Program Specialist
5. Hazard Mitigation Officer.

4.2 Challenges of employment

1. Few vacancies in disaster management.
2. Lesser pay as compared to other fields.
3. Continuity in job is a major issue because most of the jobs are contractual.
4. No scope for less experienced people in getting a job again.

5. Conclusion

India has also shown a path for starting disaster management education from middle and high school. This generation of middle and high school students will make a revolutionary approach to community based disaster management, which is the only proven method of disaster management. It is hoped that India would be world leader in disaster management. Casting a legal duty upon citizens for providing help during disasters will show that India is leading the way.

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Damage and Need Assessment with Health Management Information System: A Training Prospective

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Introduction

The parliament of India has passed a Disaster Management Bill in 2005. It defines the disaster as a catastrophe or calamity which results into substantial loss of human life or damage and destruction of property of a magnitude beyond the coping capacity of the community of the affected area.

India has a diversified range of natural features and geo-climatic conditions making it vulnerable to disasters. About 60% of the landmass is prone to earthquakes of various intensities; over 40 million hectares is prone to cyclones and 68% of the area is susceptible to drought (1). Purohit et al is of the opinion that disasters occur at amazing frequency in India and as society has adapted itself to regular occurrences, the economic and social costs continue to mount year after year (2).

Resilient health system based on primary healthcare at community level can reduce underlying vulnerabilities, protect health facilities and services and ramp up responses to meet the wide range of health needs in disaster (3).

The Sendai framework for disaster management is an important framework for disaster management. The main aim of Sendai Framework for Disaster Management is to save lives. It aims to achieve “The sustainable reduction of disaster risk in lives, livelihoods and health and in economic, physical, social, cultural and environmental assets of persons, business, communities and countries” (4).

Role of Hospitals in Disaster

The Sendai Framework calls on member states to enhance the resilience of national health systems by integrating disaster management into primary, secondary and tertiary health care, and by promoting and enhancing training capacities in the field of disaster medicine. Lack of medical care can aggravate and even become the cause of disability. Diabetes, Hypertension, Coronary Heart Disease and Asthma require daily medications, which if not provided can result in fatal outcomes. The crowding of infected and susceptible hosts can weaken the public health infrastructure and interrupt ongoing vector control programmes. Public confidence in government recovery efforts can falter if the health infrastructure fails or is not built properly (5).

Role of Healthcare in Recovery Strategy

Recovery is possible if the strategy of equity, effectiveness, appropriateness and efficiency is in place. “The Six Core Health System Building Blocks- Key Consideration during Recovery” by the World Health Organization (WHO) describes leadership & governance, human resources, financing, medication & technology, information, and service delivery as an important steps in recovery. Human resources, medicine, technology & information are the important components from a healthcare prospective. Emergency preparedness involves drug supply chain system strategies with

the establishment of central pharmaceutical stores based on an analysis of prevailing conditions, which prevents wastage of medicines.

Health Management Information Systems (HMIS) that collect relevant, reliable, sex & age disaggregated data and provide a sound basis for short term and long term planning. HMIS will help in the reconstruction and recovery by utilizing a damage and need assessment. Damage and need assessment collects following facts:

- Overall approach & key principles for reconstruction strategy.
- Understanding access to primary & secondary healthcare services by different groups.
- Targeting populations with special needs.
- Designing detailed needs assessment and the mapping of vulnerable populations.
- Understanding the coordination between health and differing sectors.
- Understanding the capacity of health sectors and healthcare workforces.
- Assessing health promotions and diseases.

Higher Education Significance in Shaping Human Resource

The training of resources in HMIS for the collection of damage and need assessment materials is very important and have a definite outcomes. It is not compulsory that a person should be trained in this programme or has medical qualifications. Anyone who is familiar with computer operations can learn it. In the event of disaster, voluntary participation from these trained people should be allowed to maximize the output of human resources involved in impact assessment operations. The collection of this primary data based on evidence in the field, will help in the development of strategic operational plans.

Presently the rescue operation in the field of disaster management is aided by approximation, which results in the improper utilization of sanctioned aid and as a result, the disaster affected areas take a longer time to recover or return back to it working capacity. Case studies in Indonesia after the Tsunami disaster of 2004 states that proper utilization of HMIS can result in fast recovery in the field by providing healthcare and the reconstruction of damaged property.

Specialised courses in training people in HMIS should be undertaken by governments for a nominal fee and people from various background should be trained in the collection of data. It should be opened to all irrespective of their basic qualifications. Many youngsters are willing to contribute towards the disaster management and rescue operations but are unaware of the means of how to contribute. As a result charitable collections are the only source available for them to contribute. If such courses are designed for the students of colleges, which give them the knowledge of impact assessment of disaster and collection of data through HMIS, it would enable to make more fruitful contribution towards the most lagging component of impact assessment. Basic introduction of the course in NCC and NSS at school levels can help youngsters to take up this course in the near future. Age limits for the eligibility of these courses should be kept so as to maximise adult participation. It will also make youth more accountable toward national duties and responsibilities.

Conclusion

India is progressing at a very rapid pace and it is necessary to reduce constraints by working on vulnerabilities. Disaster is one such vulnerability which nullifies the hard earned economic and health achievements of India. The introduction of Information technology into the strategic management of post-disaster timeframes can quicken the recovery and reconstruction process. The cost estimation of healthcare needs based on actual field data can be done using HMIS, which can help in both short term & long term recovery plans for a robust future.

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PAPERS ON RESEARCH

- R1. Integration of Disaster Management and Digital India by Sumati Sidharth, Ashok R, and Ekanto Ghosh
- R2. Higher Education in Disaster Risk Reduction and Climate Change Adaptation in India by N. M. Prusty and Raman Kumar
- R3. Synchronizing Researches in Disaster Management: Some Suggestions by S. Uma Maheswari
- R4. Higher Education in Disaster Management in India: From a Gender Lens by Aditi Sharan
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Integration of Disaster Management and Digital India

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ABSTRACT

The purpose of this paper is to open new avenues of disaster management by applying technology. It also aims at extending the role of disaster management professionals into disaster management education for citizens.

Keywords: Disaster, Management, Digital, Mobile, MOOC

Introduction

The human race wants to avoid disasters, predict them with a certain level of accuracy but cannot avoid them. A disaster management plan, which is assumed to be well-known to citizens along with the response team, can help negate the after-effects of the disaster. This can be achieved by the integration of disaster management and Digital India. The aim is to provide a framework in which disaster response is digitally or technically aided for the citizens who are aware of disaster management.

Digital Technology Aiding Disaster Management

Mobile, along with Social, has already proved their effectiveness during the Kashmir floods (2014), Nepal earthquake (2015) and the Chennai Floods (2015) where Twitter was effectively used for disaster management. With Analytics also being heavily used in the back-end to create the data maps and tweet maps, it is like majority of the SMAC (social, mobile, analytics and cloud) components at play. In these three incidents of the Indian sub-continent, the mobile infrastructure was still functioning even if not at its full capacity. Consider the scenario where mobile infrastructure too is completely crippled due to the disaster. Twitter as a social media app would be of no use. This gap can be filled in by mobile apps like FireChat which were extensively used during the Hong Kong's Umbrella Revolution and Taiwan's Sunflower Student Movement. Apps like FireChat use the mobile phone's WiFi and Bluetooth capabilities to build a mesh network with other phones. In a mesh network, mobile devices connect to other mobile devices, and anyone can become a node, as long as they're within about 40 to 70 yards of just one other node. Such apps would help propagate disaster relief information effectively eliminating the need for cellular/internet connectivity.

Let us consider an earthquake scenario which has knocked down cellular infrastructure. A person trapped in a cavity beneath the rubble with his mobile device would need to switch on his WiFi and/or Bluetooth and activate the emergency app. It would broadcast a relief request. The rescue team instead of waiting for complex equipment like infra-red devices to arrive can use a simple mobile device instead to detect a distress call or relief request, and respond without losing precious time. It also reduces the dependency on social media apps which are in turn dependent on the cellular network infrastructure.

The Government would need to be careful as well as open for innovative ideas from the technology companies offering their expertise in disaster management. This would prevent the re-inventing of the wheel scenario. The hint of caution is because the distress data being routed through a third-party could open up the possibility of an ambush for the rescuers who are usually from the military or para-military services.

Disaster Management Education

Most well-known organizations in the IT/ITES industry, educate and certify their employees including the new joiners about their business continuity plans (BCP) at least at the project level and further up the chain to the country level on a need to know basis. The reason for this is to eliminate any scenario of business non-continuity to avoid non-compliance of Service Level Agreements (SLAs). BCP is considered a very important because monetary repercussions are involved.

Considering that human life is priceless, it is of high importance to have disaster management plans (equivalent to BCPs) at the block level going higher right up to the state level and country level. Like a team member in an IT project team who is aware of the BCP, citizens in the basic block of governance (block level or going lower right below to apartment level or neighborhood level) need to be educated about disaster management and how they can respond. The mode of educating the citizens are diverse depending upon the literacy levels ranging from conduction of live classes to massive open online courses (MOOCs). It should be taken into consideration that the content of the courses are relevant locally in terms of the language in which they are delivered, types of disasters covered (a tsunami response may be irrelevant for a mountain dweller), etc. Such courses for the citizens should aim to certify the citizens at various levels like Basic, Intermediate and Skilled. The local body of government (like the panchayat, municipal corporation, etc.) should aim to undertake disaster management course drives for the citizens and ensure high levels of citizen certification. This should be pushed for like the immunization drives because a well informed citizen would aid in an efficient disaster relief operation. Refresher courses with updated content should be administered at regular intervals. This would be required because the integration of technology with disaster management would constantly be creating knowledge gaps and it would be needed to be filled to attain updated disaster management certifications for the citizens.

Employment Generation

The development of courses on disaster management can open up a wide array of opportunities for disaster management professionals. Besides being relevant only during the aftermath of the disasters, these professionals can be engaged in the development and updation of the disaster management courses for the citizens. As these courses would be available in wide range of modes, the disaster management professionals with good inter-personal skills can undertake the classroom and hands-on sessions whereas the tech-savvy ones can become content creators for the visually engaging and informative online courses. Setting of targets for the local bodies to undertake certification drives for the citizens would ensure all year round employment for the disaster management professionals throughout the country. With the opening up of the disaster management arena for the citizens, innovative disaster response methods and procedures along with preventive measures can be invited from the citizens. These entries can be studied and verified by panels consisting of disaster management professionals. The selected and valid entries can be included in the course updates.

Future Scope Of Study

The paper only touches upon the framework due to restriction of words. Each of the sections (sections two and three) can be substantiated in greater detail. The use of mobile technology in disaster management is fast evolving and a deeper technical study can be undertaken. The concept of having a framework in which the citizens are educated and made aware of disaster management and the possible responses can be studied in greater depth. The new employment opportunities for the disaster management professionals can be studied in detail to find the possible hurdles and solutions.

Conclusion

The paper aims to give a glimpse of the possibility of overhauling the country's disaster management setup with the aid of technology and bringing in a tectonic shift in the mind-sets of the citizens by educating them about disasters and how to respond to them by following a set framework which includes role expansion of the disaster management professionals. It also aims at citizen participation and ensuring that the citizens are not caught unaware of how to respond in the wake of disasters.

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Higher Education in Disaster Risk Reduction and Climate Change Adaptation in India

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Context and Introduction:

The increased growth in the number of disasters is well documented and understood by most stakeholders across the world. In the 1960s, worldwide, approximately 58 natural disasters were annually recorded; by the 2010s, this figure had increased to 439 per year. Similarly, annual economic losses that averaged approximately US\$1.8 billion per year in the 1960s have grown to approximately US\$108.8 billion per year since 2000. Globally, the expected average annual losses (AAL) from earthquakes, tsunamis, tropical cyclones and river flooding are now estimated at US\$314 billion in the built environment alone. This figure would be even higher if it included other hazards, such as drought, and other sectors, such as agriculture.¹

India's geo-climatic conditions as well as its high degree of socio-economic vulnerability, makes it one of the most disaster prone country in the world. During the last thirty years' time span the country has been hit by 431 major disasters resulting into enormous loss to life and property. According to the Prevention Web statistics, 143,039 people were killed and about 150 crore were affected by various disasters in the country during these three decades. The disasters caused huge loss to property and other infrastructures costing more than US \$ 4,800 crore.

Issues and challenges:

Despite increasing disaster risks within the country (and region), awareness and understandings of risks among individuals and institutions including governments, remains low. As an emerging topic, exposure and vulnerability to natural hazards and their consequential impacts are not yet at the forefront of development agenda. This is the case in the region despite the fact that mitigating the unforeseen consequences of disasters and climate change are important for achieving development goals as envisaged in the Sendai Framework for Action, Sustainable Development Goals and the Paris Agreement on Climate change.

There is huge gap in specific context of knowledge, understanding and skills for disaster risk reduction (DRR) and climate change adaptation (CCA) among various stakeholders such as international organizations, NGOs, Government, Business community, academia, and general community. It is largely due to the cross-sectoral nature and rapidly changing context & challenges of disaster risks and climate change. The emerging ideas to address DRR and CCA are of recent origin and the traditional education and training systems in our country have not addressed it appropriately. Effective disaster management requires trained manpower to deal with complex situations effectively and speedily to reduce the impact of disaster on human life and property. It is necessary to build capacity amongst those who are handling disaster

¹ UNISDR Global Assessment Report on DRR, 2015

prevention, mitigation, preparedness, response, reconstruction and also creating awareness amongst people, institutions (including civil society and business) and the government.

Capacity Development needs in India

Capacity Development is an integral process of knowledge and skill building. Capacity may include physical, institutional, social or economic means as well as skilled personnel or collective attributes such as leadership and management. Capacity Development is much more than training and it includes human resource development, equipping individual with understanding, skills and access to information, and knowledge and training to enable a person to perform effectively. This is very much in need for the common person. They must have an understanding of risks and resilience and community institutions. They also need to understand civil society institutions and how to better equip and support the vulnerable community against natural as well as human induced disasters. Finally, they need to understand business as well as government workings to ensure uninterrupted governance and the supply of goods and services in society.

India's external assistance program today has a dominant focus on capacity building and technical assistance a clear shift from infrastructure development. India is becoming a major responder in emergency for our neighbours as well as other friendly countries. Under such circumstances need for greater capacity in DRR and CCA in the country seems to be high.

Capacity development can be seen in the following components:

- **Awareness:** Awareness is generally defined as knowledge created through interaction between an agent and its environment. It cannot be simply referred to as "knowing what is going on." This concept of awareness involves state of knowledge as well as dynamic processes of perception and action.
- **Training:** It is a learning process that involves the acquisition of knowledge, sharpening of skills, concepts, rules, or change of attitude and behaviour to enhance the performance of individuals associated with different departments and institutions. Training gives skill. This seems to be quite skeletal in the country. There is only one dedicated National level training institution and a few state institutions are in infancy. Looking at the huge need for DRR and CCA skills, it cannot be disputed that we need many more.
- **Education:** Amidst changes of the past decades, school education sector, the most discussed topic of national importance, is planning for more contextual, practical and application oriented curriculum for students at different levels of schooling. Some efforts to bring in DRR and CCA are seen in social science streams like sociology and anthropology but there is nothing of this sort in the professional education streams like architecture, engineering, urban planning, rural development, medical, health science, agriculture, animal science, forestry, fishery, management etc. Without relevant education, it is difficult to prepare the new generation professionals equipped with the knowledge of DRR and CCA. Rather the professional institutions should introduce refresher courses to offer this knowledge to the present day professionals. Without appropriate knowledge skill development through training will remain far away from contemporary learning.

- **Research:** Research is an organised and systematic way of finding answers to questions. Systematic because there are certain things in the research process which are always done in order to get most accurate result. May be except TERI, it will be difficult to find out any research institutions in India engaged in this trans-disciplinary subject. Without continuous research, new methods, approaches and technology will not be available to this most critical domain of DRR and CCA.

The National Policy on Disaster Management's (NPDM) the approach to capacity development includes:

1. The priority to training for developing community based DM systems for their specific needs in view of the regional diversities and multi-hazard vulnerabilities,
2. Conceptualisation of community based DM systems at the national level through a consultative process involving the States and other stakeholders with the state and local level authorities in charge of implementation,
3. Identification of knowledge-based institutions with proven performance,
4. Promotion of International and Regional cooperation,
5. Adoption of traditional and global best practices and technologies,
6. Laying emphasis on table-top exercises, simulations, mock drills and development of skills to test the plans,
7. Capacity analysis of different disaster responder groups at State, District, and local levels.

NPDM further elaborates on national priorities, institutional capacity development, training of communities, professional technical education, DM education in schools, the training of artisans, training of other groups and licensing & certification.

Managing disaster incidents holistically is a highly specialised and skilled job, which cannot be approached in an ad hoc manner. Disaster Management comprises of multi sectoral issues and accordingly calls for all sectors that play a pivotal role in managing exigencies to develop their human resource capacities accordingly. In the field of capacity development, priority is to be given to training of DM officials, functionaries, trainers and elected representatives and community representatives. Due importance requires to be given to DM training and orientation of professionals like doctors, engineers and architects apart from those engaged in response and relief. A basic level of understanding (primarily, Do's and Don'ts for specific disaster scenarios) for community level i.e. every individual of the country, and some basic training to the huge cadre of volunteers in the field of disaster management would also have utmost importance in the capacity building plan for India. DM training further requires being included in curricula of educational institutions at all levels of schooling and should include practical instructions as well.

Higher education in Disaster Management in India:

There are a number of institutions, universities, colleges, agencies currently involved in training, capacity building and education programs on disaster management and related arenas. They had been useful in bringing a first level of understanding on the subject to stakeholders. However, a visible gap is seen in the modules and the curriculum that is being practiced by the many players. There is a need for

standardization of the courses and curriculums in the field of disaster risk reduction and climate change adaptation which are currently being offered by various universities/colleges/institutions in India.

The higher education in the field of DRR and CCA would require addressing the needs of building cadre of professionals/managers to effectively and efficiently manage disaster incidents. They should have different kinds of skill sets at different levels. For the purpose of understanding, it is put in different levels as follows:

Level 1: Beginners in humanitarian system

This level defines the group of individuals who aim to begin their career in the area of disaster management and humanitarian actions. They may have some prior understanding of the subject but would require a basic capacity building on the key concepts and issues in the humanitarian sector. Assuming this to be at least 100 such professionals in each district, the required number for the capacity building would be approx. 64,000 in the coming years.

Level 2: Middle level professionals in humanitarian system

The level 2 refers to the professionals required at the district level at District Disaster Management Authorities (DDMAs) in all districts of India. These set of professionals require little advance understanding on the subject and should be well-versed with disaster management planning and its implementation at district level. Considering the requirement of approx. 10 such professionals at each district of India, there would be requirement of 6,400 such professionals in the coming years.

Level 3: Advance level of professionals in humanitarian system

This level refers to the professionals carrying advance knowledge and understanding of the subject. They can contribute in the government and community preparedness (Continuity of Operations/ Continuity of Government Planning), or private business preparedness ([Business Continuity Management Planning](#)) etc.

The key skill sets can be developed on the themes ranging from public information and media relations to high-level incident command and tactical skills such as acute humanitarian crisis management, manmade emergency management, terrorist attacks, or controlling an emergency scene.

This level may be required for each State Disaster Management Authority and disaster management departments in the states. Considering a minimum requirement of 20 such professionals in each state, there might be a requirement of building approx. 700 such professionals.

Level 4: Experts and Leaders in humanitarian system in India

This is the group of professionals and experts who provide strategic vision and guidance to country directions and planning in the current disaster management scenario as well as the emerging future challenges such as climate change, challenges emerging from rapid urbanization, acute water challenges etc.

This peer group comprises of the experts with experience of national and international level and they form the advisory group to the humanitarian system in India including Govt., civil society, corporate and academia etc.

Synchronizing Researches in Disaster Management: Some Suggestions

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ABSTRACT

The dynamic geosphere and the anthropogenic activities on lithosphere, hydrosphere and atmosphere at times triggers disasters and thus become a great challenge for the biosphere on the earth and for sustainable socio economic cultural development. The issues related to disasters are global and multidisciplinary nature, an integrated approach is required for reducing risks and for management of disasters. Recent independent researches by scientists, technocrats and social scientists substantially suggested some ways and means for reduction risks and for planning mitigation measures aiming towards sustainable development but considerable suggestions not yielded desirable result because of lack of coordination among the stakeholders involved in the process of disaster management. The author in this paper discusses on the dire need for synchronizing action researches in Universities related to Disaster management aiming towards achieving the real purpose of the researches.

Keywords: Risk reduction, Disaster management, Sustainable development, Action research

Introduction

Worldwide serious efforts are taken for reduction of disaster risks. The Hyogo Framework for Action, 2005-2015: Building the resilience of nations and communities to disasters and the Sendai Framework for Disaster Risk Reduction, 2015 are two serious instruments which geared up almost all the governments to make plans as enumerated in the frameworks. As a scientific understanding of the entire gamut of disaster management, several researches on mitigation and management of natural disasters are undertaken by individuals, private sector, governmental organizations non-governmental organizations, and the academic and research sectors. Though various stakeholders are involved in the research related to disaster management, it's primarily a service that needs to be provided by Government.

Issues in Disaster Management Researches

About 60% of the area of India is prone to multiple hazards. In India, research on the reduction of disaster risks are undertaken by individuals, the private sector, governmental organizations, non-governmental organizations (NGO), and the academic and research sectors. Research on Disaster Management in Indian Universities geared up from the last decade of the twentieth century consequent upon University Grant Commission notification to all universities of the country to introduce a course on "Environmental Studies". Subsequently during first decade of twenty first century when the topic of Disaster Management is included in Indian civil services examination, universities established either a school or department or centre for disaster management and encouraging researches in modern disaster management which goes

beyond post-event disaster assistance and includes pre-disaster planning and preparedness activities, organizational planning, public relations, and many other field crisis management. The principles of disaster management apply in both routine and crisis situations. Routine management relates to those activities that occur during non-crisis periods, such as disaster mitigation and disaster reconstruction. Crisis management applies to emergency operations and includes both the preparedness phase and the immediate post-event periods. The main conclusion of a study which focused on disaster mitigation efforts in Bangladesh, Ethiopia and Ecuador is precisely that preparedness for many type of disaster is better undertaken as part of the general development process. For some researchers and practitioner local knowledge is information stock that can be of use for disaster management. For some others, local knowledge is regarded more as a source of political and economic empowerment of local/affected people. There is something true in both views; a comprehensive disaster management plan should be flexible to adopt knowledge and practices developed by communities at risk.

Present Research Scenarios in Indian Universities

The researches in the Higher Education may be broadly classified into two types. The first is the scholars pursuing research for M.Phil. / Ph.D. / D.Litt. / D.Sc. degree and the second is by the Teachers undertaking research for the grants given by various funding agencies. The University Grants Commission is providing financial assistance to selected departments in Universities under the scheme of Special Assistance Programme (SAP). Quite often, the scholars who primarily aim to get research degree seldom bother about the implementation of the purposes of the research as such the outcomes of most of the research done by them remain in the University Library itself as a document for future literature survey; likewise the outcomes of most of the research done by the faculty primarily aimed to submit a report to the funding agencies utilizing the funds seldom bother about the implementation of the purposes of the research. Therefore, when the thesis or research report is submitted to the University Grants Commission and to the funding agencies, a copy of it need to be submitted in University not only to the Library but also to a cell which should document the findings and suggestions and monitor implementation of the outcomes of the researches by continuous interaction with the all stake holders concerned. The cell may be called Society Welfare Cell and in every University, and the cell may be established to facilitate Society University interaction aiming towards sustainable socio economic cultural development.

Conclusions

A review of literature resulted to infer the following conclusions:

- Focusing on the various concerns on disaster management in India, especially on preparedness, mitigation, response, recover and rehabilitation, thousands of research articles and case studies are published in newspapers, journals and books every year by research scholars and teachers.
- A research is considered good if it is systematic, logical, empirical, can be replicated and the result is useful for the society. Researchers in India on disaster management are facing number of problems particularly in process of data collection and analysis.
- Universities in India have an obligatory role to the society in disaster management area by undertaking inter or multidisciplinary researches making

use of knowledge in the discipline like geosciences, geography, environmental economics, Psychology, Social Work, Public Administration etc.

- The researches in Indian Universities are considered significant for making the country more resilient from both natural and man-made disasters.
- The involvement of District Administration, the local emergency response organization and the local community depends on the knowledge coming out from the result of researches.
- Most of the time, the outcomes of the researches are not put into action thereby considerable wastage of resources Researches and slow progress in the development activities.

Therefore, the dire need of the hour is to encourage researchers in higher education on disaster management, as it is a promising way of empowering the local community for disaster risk reduction, environmental protection and sustainable socio economic development. In Universities, many research initiatives are ongoing with Disaster Risk Reduction and Climate adaptation from a local point of view.

Suggestions

Considering the present state of researches on disaster management, following suggestions are made to ensure economic as well effective study as the higher education system in India can substantially play a vital role in disaster management by synchronizing the researches in Universities:

- Every research or project may be encouraged to register with the University Grants Commission (UGC) which in turn may facilitate sharing of the related earlier research data available with them as well to make use of the findings for reducing risks and for planning mitigation, relief, and rescue and rehabilitation measures.
- The action researches related to mitigation and managements of floods, droughts, etc., which having a direct bearing on life, agriculture, irrigation, health, etc. are to be undertaken in all universities as a part of implementation of Sendai Framework for Disaster Risk Reduction, 2015.
- Every University needs to encourage researches in disasters related areas in the local and adjoining geographical areas with a purpose to reduce risks.
- The particular hazards in the local area need to be identified by the Universities and facilitate interaction with the nodal agency for particular disasters and other stakeholders as far as possible extend.
- With academic supervisor one more co supervisor who is an environmental specialist in the area of disaster needs to be made as joint research supervisor to enable research activities in a right direction with right spirit
- Before defending the doctoral research thesis during Viva-Voce Examination, the scholar should provide a copy of thesis to the local district Collector with a request to depute one concerned representative for participation in the Viva-Voce Examination.
- The total grants for action researches need to be integrated with major projects and part grants are to be released every year based on the findings and realistic valuable contribution made in reducing the risks and in successful execution of the projects.

- Society Welfare Cell may be established to facilitate Society University interaction aiming towards sustainable socio economic cultural development and happy community at local level.
- Geo governance should be a subject of research in Public Administration, Social Work, Geosciences, etc.,

Thus the dire need for synchronization of research in the Universities in Disaster Management is advocated for sustainable socio economic development.

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Higher Education in Disaster Management in India: From a Gender Lens

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ABSTRACT

Gender is an important social determinant with the vulnerability to hazards. The traditional roles and meanings attributed to gender categories, get further intertwined with factors like caste, class, ethnicity, age, etc., which intensifies the susceptibility to disasters for certain sections of society. In order to have a well-rounded understanding of Disasters and its management, it is essential to include this dimension in the education system for the disaster management professionals. This paper emphasizes on the relation between gender and disasters, its significance in Disaster Management education and a broad overview of the current course structures of a few educational institutions in India.

Keywords: Gender, Disasters, Disaster management, Education

Introduction: Gender and Disasters

Gender is a socially constructed category, because of the attributed social meanings associated with being a man or a woman, in a given society. It therefore, defines a set of behaviour patterns, characteristics, aptitudes and roles for the two sexes (Ariyabandu and Wickramasinghe, 2005). In the context of disasters, gender becomes a significant social factor determining the vulnerability to hazards. According to Anderson (1994), women are more vulnerable due to the traditional gendered roles attributed to them; hence an approach with a gender outlook is necessary to understand and address these vulnerabilities. Scholars have argued, that an approach with gender analysis can improve community disaster preparedness and mitigation. However, there are gaps in the literature available on gender analysis, as tools to analyse and address the differential needs and capacities of women and men in times of disasters, throughout the Disaster Management cycle (Sohrabizadeh et al., 2014).

Men and women experience disasters differently and as a matter of fact, women are more affected than men in various aspects. In the name of gender-sensitive approaches, it is observed that gender is often taken into consideration just as demographic variable (Fothergill, 1996), without understanding the connotations behind this quantitative data. Women are habitually represented as universal disaster victims, who are tearful, beleaguered and flabbergasted, while men are denied emotion, are considered to be stronger physically as well and represented as strong and resourceful (Enarson and Meyreles, 2004). Defining all women as vulnerable, is not only oversimplifying the whole phenomenon but at the same time, it reinforces the stereotyped gender roles and has negative consequences on their recovery (Fulu, 2007). Therefore, planning and making policies with a gender lens does not just mean “add women and stir” (Women and Health Care Reform, 2009), rather both must be considered as equal partners in all processes involved in disaster management. In other

words, mainstreaming gender does not mean adding a “women’s” component into the already existing activities that are carried out before, during and after the disaster.

Nothing in disaster work is “gender neutral” which suggests that the gender-responsive approach where data must be disaggregated by gender and sex-specific needs must be identified and addressed is extremely important. If not incorporated in the working cultures of disaster managers, trainers and teachers and their basic knowledge, then human rights are violated or definitely endangered (Women and Health Care Reform, 2009). In India, most disaster management professionals and first responders tend to be (Police, NDRF, and Army) and it is viewed as a male dominated field, since conditions of work could be very tough in catastrophic disasters. Without considerable time spent on understanding and cultivating gender sensitivity, a disaster management professional could end up reproducing gender bias in the way they work in disaster situations. Its absence leads to the same inequalities reiterated in society. So, it is important to see what part of their training includes gender awareness? Do the various institutes which train people in Disaster Management spend enough time on understanding the gendered aspects of their behaviour and foster gender sensitivity in their education and training?

Disaster Management Education in India

In disaster management, education and training plays an integral role for better capacity building and improved response, mitigation and prevention (Thayaparan et al., 2014). Disasters can be opportunities to learn about the various social phenomenon, social and political relations and they often reveal the social problems of a given society or community. Hence, disasters can be described as social and political events in such contexts, within which gender is essential dimension of the social structure. This dimension had been underdeveloped in disaster studies for a very long period of time (Fothergill, 1996).

In the Indian context, awareness about disasters increased due to the growing frequency and severity of disasters, along with the ensuing loss of life and property that further resulted in social and economic disruptions (Sharma, 2003). For higher education, Disaster Management programmes are relatively new. Until 2005, disasters were not a part of pedagogic undertaking, neither at school, nor at university levels. Approximately, 8.8 million people got enrolled in nearly 10,000 colleges and 303 universities in India, however, there were no courses on disasters and its management. Generally, writing a thesis is major part of the higher education programmes; and the dearth of research in India in the field of disasters can be observed in the small number of doctoral theses produced in this area of study. According to the All India Association of Universities, 2003, there were 177,745 doctoral theses produced between the years 1860 and 2003. Out of these only 125 were on disasters, constituting about 0.07 percent of the total number (Kapur, 2005).

In the current Indian scenario, the number of educational institutes which offer courses in this field (mostly at post-graduation level) has increased. The following tables show an overview of the main focus of the curriculums of few Indian Universities for Disaster Management.

Programmes in Disaster Management

MASTER'S PROGRAMEE (2 YEARS)			
	COURSE TITLE	MAIN FOCUS	COVERAGE ON GENDER
UNIVERSITY 1	M.A./ M.Sc. in Disaster Management	<ul style="list-style-type: none"> • Risk and Vulnerability • Policy and Governance • Disaster Risk Reduction and Development 	<ul style="list-style-type: none"> • Gender discussed under various units on Risk, Vulnerability, Public and Mental Health and Development with relation to Disasters • No separate coverage on gender
UNIVERSITY 2	MBA in Disaster Management	<ul style="list-style-type: none"> • Geoinformatics in Disaster Management • Disaster Economics • Geographical understanding of hazards 	<ul style="list-style-type: none"> • No coverage on gender specifically • Concept of vulnerability discussed as part of one unit under Risk Assessment
UNIVERSITY 3	Disaster Management included within M.A. in Environment and Development	<ul style="list-style-type: none"> • Geographical understanding of hazards • Tools and technologies used in Disaster Management 	<ul style="list-style-type: none"> • No coverage on gender specifically • Concept of vulnerability discussed as a part of Social and Environmental impacts of Disasters
UNIVERSITY 4	M. Tech. in Disaster Mitigation and Management	<ul style="list-style-type: none"> • Geological and Geographical understanding of hazards and disaster management • Climate Change • Geoinformatics in Disaster Management 	<ul style="list-style-type: none"> • Vulnerability discussed through probability and other statistical models • Also, discussed under Socio-Economic Aspects of Disaster Management, which is an elective. • No separate coverage on gender

Table 1. Main focus and Coverage of Gender in course curriculums for Master's

Certificate Courses on Disaster Management

TRAINING/ CERTIFICATE PROGRAMME (3-6 Months)			
	COURSE TITLE	MAIN FOCUS	COVERAGE ON GENDER

UNIVERSITY 1	Certificate course on Disaster Management	<ul style="list-style-type: none"> • Hazards, Vulnerability, Risk • Basics of GIS and Remote Sensing • Introduction to Environmental and Political dimensions 	<ul style="list-style-type: none"> • Discussed under vulnerability and risk
UNIVERSITY 2	Certificate course on Disaster Management	<ul style="list-style-type: none"> • Geological and Geographical understanding of hazards • Legal provisions for Disaster Management • Operations Management 	<ul style="list-style-type: none"> • Discussed under Psychological and Social dimensions in Disasters

Table 2. Main focus and Coverage of Gender in course curriculums for

Linking the tables and information gathered from personal interviews with course directors of some of these Universities, it can be said that, the concept of vulnerability itself is not deliberated adequately for most of them. Therefore, the inclusion of 'gender' becomes even less likely. Though some Programmes have paid attention to these aspects, it is observed that mostly, the programmes cover the technical and structural aspects of disaster management. According to other studies, there is an acute shortage of educational programmes that deal with the non-structural aspects, including courses on anthropological, sociological, psychological and related facets (NIDM, 2009).

Conclusion

In India and abroad, there are certain challenges in the development of course curriculums and training modules. These include, first, the availability of a body of knowledge and qualified faculty in the field of Disaster Management (Neal, 2000), i.e., lack of skilled and trained human resources (Thayaparan et al., 2014).

Secondly, it is observed that, the most convenient approach is to study disasters. For instance, to understand earthquakes, a study of geology, geography, or civil engineering may be involved, while studying drought may involve atmospheric or hydrological sciences, sociology, geography, etc. (Kapur, 2005). Hence, a lot of aspects are missed while trying to confine a particular hazard to certain fields of study.

Third, the bureaucratic nature of the university governance, especially in India, makes it difficult to formulate swift and frequent changes to curriculums. Also, these educational programmes need to be designed in a way, that it is responsive to the industrial needs and prepare the students for careers in this field (Thayaparan et al., 2014). However, for a holistic understanding of the subject, social dimensions like gender, need to be incorporated in the course curriculums on Disaster Management. Acknowledging these challenges, the question that needs to be pondered upon is that, what are the ways in which this can be done, more importantly in the technical courses.

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Disaster Management and Social Work Education: A Praxis of Learning and Practice

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Disasters, natural and manmade, severely and irreversibly impact the lives of affected communities and cause physical, economic and psychosocial havoc for survivors. The increasing frequency and intensity of disasters tend to greatly enhance the vulnerabilities of regions and populations, besides subverting the developmental bonus accruable to the country. In this context, human resource and capacity developments for Disaster Management and Risk Reduction assumes a great level of significance. Since higher education plays an important role in creating knowledgeable and skilled human resources who can be expected to play a meaningful role in with the core issues confronting the region and the nation, the role of college and university education in developing a pool of competent professionals to participate in the different components of disaster management for the creation of an aware citizenry. Subject domains like agriculture, geography, ecology, geology, engineering, management and social work, among others, possess a distinct scope for integrating disaster management courses/ modules within them.

The socially oriented schools have a significant role to play in creating a mind-set and commitment among students to reach out to traumatic interjections in the lives of their valued constituencies. This paper focuses on the significance of a disaster management course within the education of social work.

The curriculum of the Department of Social Work (Delhi School of Social Work) University of Delhi integrates a semester based elective course titled "Social Work and Disaster Management". Since its conception, this course has evolved as a popular elective, which is opted for by a significant proportion of students pursuing the M.A programme in Social Work. The course has been designed with particular focus on the nature of roles that social work professionals can play in the pre and post disaster contexts. Together with this curricular thrust, the Department has also sought to reach out and respond to the agony of disaster impacted communities across the country on a consistent basis. Such initiatives have provided meaningful opportunities for the departmental teams to apply, integrate, learn, validate and affirm all that is taught in the classroom in the domain of Disaster Management and Community Based Disaster Response and Mitigation.

The two UDAl (University for Development and Integrated Learning) initiatives of the Department represent a set of unique engagements in the realm of disaster management. The nomenclature UDAl signifies their dual emphasis on integrated learning through development work. The UDAl initiatives did not only construe meaningful interventions for provisioning relief and fostering rehabilitation of disaster impacted communities, they also brought experiential learning back to the University system. While the primary aim was to assist in relief distribution at the most impacted

sites and to the most marginalised families; contribute to a streamlining of the relief initiatives of agencies working at disaster sites; meet the most urgent needs and requirements of the affected populace; and partner with the communities to enable them to transit into a more stable recovery and rehabilitation phase, it was also envisaged that the UDAI interventions would demonstrate and consolidate the concept of *University beyond classroom* and a *campus which is alive to critical social realities*. They represented unique opportunities for the mobilisation of human, financial and material resources to initiate and sustain disaster rehabilitation work, while providing an array of insights and learning opportunities for the budding social workers, as also the University constituents at large. In the context in which we are placed, urban based University youth are losing a connect with the larger social milieu, and therefore engagements like those that were created under the aegis of the UDAI projects enabled this constituency to integrate a sense of civic responsibility and societal engagement with issues of core importance.

The attempt to create experiential learning and indigenous teaching learning material also incentivised the Department to commit to such engagements. It was also envisaged that the student participants would procure the opportunity to act, learn, reflect and share their experiences with the wider student body, leading to a consolidation of the much 'talked about' praxis.

Under the UDAI I initiative, the Department mobilised the University of Delhi community to respond to the severe earthquake that devastated the Kutch region of Gujarat in the year 2001. Under the leadership of the Department, a multi-disciplinary team comprising of faculty members and students from diverse disciplines like psychology, engineering, education, law, geography, social work and others identified the worst impacted areas; conducted needs assessment; and drew up comprehensive plans to provide short term relief, followed by long term rehabilitation to communities in six disaster impacted areas of Gujarat. The plan of action materialised at two levels, viz. the field and University levels, and work was undertaken to provide housing, health, education, psycho-social support, employment generation, and environmental and legal awareness to the survivors of the disaster.

The project activities were demarcated in four phases: Preparatory Phase; Action Phase; Consolidation Phase; and Termination Phase, spanning the time period April, 2001 to March, 2002. Apart from providing the much needed support to disaster stricken communities, UDAI represented an actualisation of praxis and volunteerism. The project established Village Reconstruction Centres in six villages, each of them covering 200 to 250 families working under representative participatory decision making bodies called Village Reconstruction Groups. The project was planned to ensure a continuous presence of volunteers in the field on a rotation basis after receiving rigorous training in essential components of context specific disaster management. Almost 400 volunteers comprising of the 60 University faculty, 256 students; non-teaching staff and research scholars worked through the formation of 26 batches, with each batch working for 13 to 15 days with an overlap period, wherein the incoming and outgoing batches worked together to facilitate a satisfactory handover of responsibilities. The project was quite cost effective and an exemplar of low cost rehabilitation intervention by a University community.

UDAI- II Sahyatri arose as a spontaneous response of the Department to the humongous tragedy of the Kosi floods that befell the people of Bihar. It was the desire to pitch in and provide instantaneous solace and succour to the endless number of people ravaged by the fury of the flood that sparked the initiative, which went on to become the mainstay for student and faculty participation in one of the longest and perhaps the most pulsating engagements with the 'field'. While the process that was assumed transformed as per the needs of the context, the initiative was once again instrumental in providing relief and succour to a vast community of affected families on the one hand, and a reinforcement of faith among the social work fraternity in their own commitment, competencies and resources for meaningful action, on the other. Uday-II Sahyatri symbolised co travel.....co-travel with the trajectory of the disaster, and with the communities which became the unfortunate victims of the disaster. From August, 2008 to January, 2009, eighteen teams of students, faculty and staff from the Department and other colleges of the University formed a chain of human professionals, who persevered to reconstruct the lives and the spirit of the Kosi impacted. As one team tapered off its engagement, the subsequent one stood empowered to resume the process without a gap or even a kink. From putting together a makeshift *hospital* (hospital), to creating *pathshalas* or spaces for joyful learning for children, to fostering social capital through *sakhi sangis* (women's groups) and *hum yuva* (youth groups) to spearhead rehabilitation, the initiative also entailed a shared journey of the faculty and the students of the Department with the local teams and the communities at the twenty villages that were adopted for relief and rehabilitation work. It lucidly demonstrated the sustenance of a meaningful relationship between an academic institution imparting knowledge and competencies to its learners and the disaster impacted communities.

The noteworthy lessons learnt through the UDAI initiatives include:

1. UDAI-I & II provided strong credibility to the idea of *University beyond classroom* and the possibility of *a campus that is alive to critical social realities*. Education certainly needs to move beyond the narrow confines of the classroom and a structured syllabus, and conjoin with the lived reality of people. Working towards the creation of a campus that is the seedbed of a diversity of ideas and perspectives, and one that is alive and attuned to reflection and action is the only way to generate citizens who are sensitive and 'engaged' with the critical social realities, and who show a proclivity to side with the huge constituency of the vulnerable and the marginalized in the country.
2. Long term sustainability of the interventions was successfully ensured due to dependence on local energies, leadership and enterprise. Right from the beginning of the endeavour, the ownership of the initiatives was reposed in the local volunteers and communities. The approach enabled the UDAI teams to hand over the functioning of the programme to a community based organisations which steered it forward.
3. A disaster context provides a natural laboratory for the social work fraternity to test its knowledge, competency and commitment to spontaneously participate and contribute to a situation of monumental human crisis. The disaster responses tested the tenacity of the Department to assume the challenge of reaching out and persisting in providing the much needed shoulder of support to the most 'unprovided for' communities of people. It enabled the participants to persevere with the several odds and to approach the disaster challenge in many unique ways. The

emergent response assumed a structure and functions based on ground realities and the needs of the affected populace and in doing so were able to contribute in a manner which we in social work describe as truly 'contextual'.

4. The process of engagement with the disaster not only demonstrated to its participants the physical fragility of vast human settlements to a consistently calamitous existence on account of their location in the area of influence of a natural hazard, it also validated the overwhelming presence of a socio-economic fragility that remains integral to people's overall vulnerability and peripheral status. Vast communities of people manifest a predisposition to enhanced disaster impact on account of their accentuated marginality and social segregation in human settlements. They confront gross disadvantage which emanates from their social and economic positioning, and which impinges on them even in the normal, non-disaster context, and which translates into an almost total lack of resilience in the eventuality of a disaster situation. The vulnerability of these constituencies of people was not only seen and assessed; it was also 'experienced' by the team. It revealed that many people are rendered vulnerable by the development process itself, by virtue of it not recognizing their presence and thereby, passing them by. It brought to fore the fact that disasters are embedded in the political structures, economic systems and social order of the societies in which they occur.
5. The initiatives also brought into cognisance the imperative of disaggregating disaster impact, risk, vulnerability and resilience, and the need to build short term and long term disaster responses on these disaggregated profiles of the disaster impacted.
6. People's interface with disasters provides them with ways in which they can cope with the effects of the disasters. People who live with the frequent threat of disaster frequently evolve strategies or coping mechanisms for dealing with the same, and these are often quite effective. Recognising their worth and significance can be critical and can lead to empowering the local people to assume an active role in their management.
7. Government systems or institutionalised structures in charge of addressing disasters through facilitating preparedness, prevention, and mitigation have not assumed an effective edge, which can be attributed to a lack of political will and lack of faith in the pre disaster phases of disaster management. While the paradigmatic shift in disaster management from a reactive to a preventive and proactive stance is recognised beyond doubt, the same is yet to find expression in action. Within the context of the UN International Decade for Disaster Reduction during the nineties, the prevention of disasters and risk management was the fundamental strategy for sustainable development, but the same has not found its due place in the formulation of prevention and mitigation activities, especially with communities in the lead. Even in the response and aid phase, the government machinery was found to be unwieldy, slow and disconnected to the needs of the critical masses of people who seemed to be struggling under the burden of rebuilding their lives after the disaster.
8. There was also evidenced a politics in the provision of relief, and support for reconstruction, recovery and rehabilitation in favour of certain constituencies and in disfavour of certain others, and which was accepted without any misgiving. This was assumed to be a natural outcome of a hegemonic discourse propagated by the privileged to appropriate the largest share of the benefits and entitlements.
9. Inadequate resources and infrastructure do not make or break interventions. Non-conventional and field driven approaches can lead to successful outcomes. A

synergised engagement of the teams of student volunteers and the local volunteers, who formed a chain of disaster responders could create an effective, ongoing, constantly evolving, need based, and phase centric intervention.

10. A process of recovery through building and renewing social capital is the surest way of creating resilience. Developing people's organisations, social support mechanisms and networks can empower the community to be the first and the ultimate responder to all the hazards which translate into disasters for them. The community becomes the key factor in this process of scaling up disaster resilience. Building the capacities and the confidence of the community to acquire rights, entitlements and resources is an effective and achievable way of consolidating the resilience of the community to confront the challenges arising out of the hazards and even the pressures of daily living.
11. Last, but not the least, the UDAI initiatives demonstrated the enormous potential of social work education to create an accomplished and sensitive cadre of professionals to lead and participate in the disaster management. The special proclivity of social worker graduates to work with communities gives them the most special edge in engaging with community based disaster management. On account of the strong field based learning that social work student learners assimilate, a praxis between theory and the field is a natural outcome, rather than an engineered possibility.

Resilience Activist: The Product of Higher Education in the Process of CBDRM

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Keywords: Resilience activist, Community Based Disaster Risk Management (CBDRM), Higher education, Capacity building, Community trusteeship

Introduction

Disasters, that are expected to become more frequent and severe, cause damage to the built and human environment (Thayaparan, Malalgoda, & Keramimiyage, 651: 2014). The present proactive paradigm of managing disasters seeks to formulate strategies, which need to be in place and measures taken before the catastrophe to mitigate its effects and minimize losses. (Saikia, 2390: 2005). Various measures have been taken at the global, national and local levels, ranging from Community Based Disaster Risk Reduction to integration of Disaster Management Knowledge in Higher Education.

The Necessity

It has been pointed out that the level of preparedness and education of the exposed country and community influences the magnitude and the impact of disasters (Rouhban, 2011). Education and training is an integral part of capacity building in the disaster management discipline, as trained personnel respond much better to different disasters and will take proactive measures of mitigation and prevention (IDKN, 2009). In this light, some premier institutes have dealt with Disaster Management at the level of Higher Education but given the diversity of risk, multi-layered vulnerability and developmental challenges which are very region and culture specific, disaster management at higher levels must be decentralized. One such strategy could be to have a course on Disaster Management in District Level Colleges. The purpose of which would be to train disaster management professionals who will work in the village or domicile. Selected District level colleges in collaboration with State Disaster Management Authority and Civil Societies, should have disaster management training programs. As an example, 'Resilience Activists Training Program' for those youth who have completed graduation or are currently enrolled in like-minded programs. The content of the course will be divided into two parts theoretical and action based. While theoretical will consist of technical information, social, economic, geographic and psychological aspects of managing disaster, the action part will mean application of theory into local context and undertaking viability analysis. Such training programs should be for a one (1) year duration and trainees should have four (4) years of constant practice in the field, which would be the village of their domicile.

The Resilience Activists' (RA) will be required to work in the interface between the village and the district. Every village would have one Resilience Activist for a period of five years (inclusive of the training period). He or she would work in close collaboration with the Village Panchayat, SHGs of the Village, the ASHA Worker and the School

Management Committee. Since Disaster Management is a dynamic discipline, the Activist should not be a permanent one and most preferably a youth, possessing adequate knowledge on disaster management being the key requisite for building a resilient society. This was first pointed out in the Hyogo Framework for Action (HFA). It is also the fact that higher education is considered as a social structure for the control of advanced knowledge and technique. Higher education in disaster management through a regionally suitable, inter-disciplinary curriculum structure, inclusive of field based action is the key to make DRR more responsive.

The primary idea why Community Based Disaster Risk Management (CBDRM) emerged was to fight the inadequacy of top-down management in addressing the needs of vulnerable communities. Having a Resilience Activist who would be technically trained in preparedness and mitigation would ensure people's capacity building. She or he would have multiple roles, such as mobilizing people to prepare the village Disaster Management Plan, Ongoing Situational Analysis of the Village, Hazard Analysis, Vulnerability Analysis, Capacity Analysis, Risk Analysis and providing Skill Training to youth. This would be in conjunction with the Panchayat and Mock Drills for school children in collaboration with Schools, she or he can also be responsible to identify High Risk Groups (e.g. pregnant and lactating mothers) to build their capacity. Since the Resilience Activist is expected to be a graduate she or he should also have a say in maintain the Community Contingency Fund while the Gram Sabha decides on it. Depending upon the type of hazard that led to disasters in the past, in the community, such as flood, drought, cyclone, landslide, snow or communal conflict, she or he would undertake Vulnerability Mapping and Capacity Building for the concerned.

The Benefits

The idea behind dedicating one person per village to take a leadership role to prepare and mitigate disasters, is to ensure accountability. If CBDRM has to be a sustained activity with people's participation is to be its permanent feature, an enabler is indispensable. Disasters are unforeseeable events and in-spite of much preparation, it creates much chaos. But having a dedicated manager will ensure all information and resources are in place, thereby reducing confusion.

No village in India is alike. There may be similarities in geography, culture or livelihood activity but problems would definitely be unique to its people, requiring context specific solutions. A dedicated Resilience Activist will keep in mind local needs within a broader global framework.

The logic behind having a local person is that there will be a sense of ownership and trusteeship towards the community and the community leaders would be his or her natural ally. The caste-class dynamic of the village will already be known and activities can be planned keeping in mind the individual needs of various sub-groups of the village. One problem which civil societies face today is that they may be seen as outsiders requiring the need to undertake icebreaking or rapport building initiatives. But for a person within the community, such conditioning will not be required. Besides, every village may not have access to civil society organizations or operational SHGs. So, having a Resilience Activist in line of an ASHA worker who will create awareness of potential hazards and risk in the community, will bring the same to the awareness of the Panchayat/ Block/ District. They would collaborate with other public resources like ASHA workers (to provide for emergency medication) and others, which

would be a game changer. Since such a person would be educated, networking with civil society organization will not be difficult. In the aftermath of a catastrophe she or he can also provide psycho-social support, which is usually rare in rural areas.

Such an Activist will have an autonomous status being evaluated by District Administrations and periodically monitored by the Panchayat. The reports which will be prepared by him or her will make for a rich literature base, since it will be unique to every village, its problems with socio-cultural and historical roots and solutions reflecting global and indigenous knowledge. Some of such documentary evidence can become global best practices, given similar situation.

Conclusion

Community Based Disaster Preparedness was introduced as a collaboration between Gol-UNDP in 2000s to undertake the institutional strengthening, training of village-level volunteers and community capacity building but it did not create any permanent body.

Disasters are temporary but risks of various natures are becoming permanent. To monitor different types of risk and evolving vulnerabilities of people, a permanent body will become essential in the grass-roots in the times to come.

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Disaster Risks Advances Creating Opportunities for Higher Study & Research in Disaster Management

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ABSTRACT

The world economic vulnerability was only 54 billion US\$ in the year 1980, became 63 billion US\$ in 1990, 210 billion US\$ in 2011 and finally to 300 billion US\$ in 2015. Expected future disaster losses, climate change US \$ 100 billion, by 2050, 40% of the global population will be living in the river basins in Africa and Asia. Global average annual loss is estimated to increase up to US\$ 415 billion by 2030. Asia has average economic damage in the 1990 was 12 billion US\$ became 43 US\$ in 2015. According to the report, says India's average annual economic loss due to disasters is estimated to be \$9.8 billion in 2015, this includes more than \$7 billion loss on account of floods.

The Economic vulnerabilities exacerbate the impact of a disaster and make the process of recovery and rehabilitation very high opportunity costs. Developing Countries in Asia start losses 2-15% GDP annually. Global risk investment required US\$ 6 trillion yearly for 15 years, Asia and India need to evaluate 'Words into Action', 'Vulnerability into Resiliency' based on Sendai Framework, 2015 towards Information to disaster, Infrastructure to risk and Incentives to community for future disaster risk reduction. An Investment up to 2.4 US\$ trillion (40% of US\$ 6 trillion) average annually required for resilient mitigation towards development of cities on clean energy and sustainable adaptation towards green energy to make vulnerable community resilient towards disasters in Asia.

Resilient mitigation needs US\$ 6 trillion investments per year in renewable, clean and green technology to make people and planet disaster resilient. Only now 0.1% investment in clean and mitigation technology has increased 6% of job opportunities in disaster management.

Keywords: Economic loss, Sustainable development, Paris agreement, Opportunity and challenges, Disaster management

Introduction

Due to increased government spending in this area disaster management is rapidly growing field with a variety of jobs. India is seventh largest country in the world and is highly prone to natural and anthropogenic disasters. The geographical and geological set up of the country makes it highly susceptible to disasters. In the world 90% of disasters occur in developing countries. These percentage figure show that there is need of trained and expert manpower that can assist in planning and mitigation project.

More people and assets are located in areas of high risk. Over the past 30 years, the world's population has grown by 87 percent. The proportion of the population living in

flood-prone river basins, steep hills, arid and semi-arid areas has increased by 114 percent and on cyclone-exposed coastlines by 192 percent. More than half of the world's large cities with populations ranging from 2 to 15 million are currently located in areas of high risk of seismic activity and 600 cities of the world are in danger to submerge due to climate change sea rise impacts.

Making development sustainable:

As the global community moves towards establishing objectives and targets under the Sustainable Development Goals (SDGs), which for the first time will be framed for universal application, there is an urgent need to reinterpret disaster risk reduction so that it weaves and flows through development as a set of mutually supportive approaches and practices. Without effective disaster risk management, sustainable development will not be sustainable and the SDGs will not be achieved.

Integration of global goals targets are golden opportunities in Disaster Higher Education. Business across the world sees opportunities in all 17 Sustainable Development Goals. Disaster management expert will drive new markets for the next 15 years.

India adopted 19 sustainable development goals: UN 17 SDGs:

1. No poverty 2. Zero hunger 3. Good health and Well-being 4. Quality Education, 5. Gender equality 6. Clean water & Sanitation 7. Affordable clean energy, 8. Decent work and economic growth, 9. Industry, innovation and infrastructure, 10. Reduce inequalities, 11. Sustainable cities & communities, 12. Responsible consumption and production 13. Climate Change, 14. Life below water 15. Life on Land, 16. Peace justice and strong institution 17. Partnership for the goals, 18. Finance for research 19. Finance for awareness.

United Nations announced 17 Sustainable Development Goals with 169 targets. Only 101 out of 169 targets applicable to India. India announced two more targets, finance for research and finance for awareness. Higher Institutions may create opportunity from finance for research on disaster management.

Risk

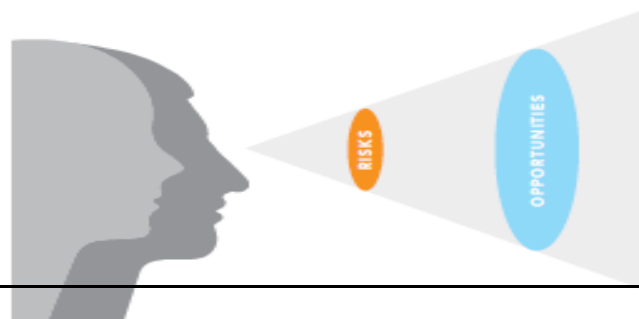
A risk has to be systemic in nature. Systemic risks have the ability to break down an entire system as opposed to only impacting individual parts or components of it. Systemic risks are fuelled by globalization and the rapid rise of technology. Faster communication, digital connectivity, increased mobility, and shorter trade and investment links are bringing people closer together. The opportunity here derives from risk information to risk knowledge.

OPPORTUNITY MINDSET: EMBRACING RISKS TO SEE OPPORTUNITIES

Opportunity

Opportunities are avenues of action that stakeholders in business,

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politics, finance, and civil society can choose to pursue when addressing global risks. An opportunity is always inspired by a global risk and effectively works to address it. Therefore, it has the potential to change an entire system. Policy ambitions, such as the UN Sustainable Development Goals, can pave the way for new opportunities through the development of policies and financial incentives to encourage governments, business, and other stakeholders to engage in systemic climate change and disaster risk management.

Survey the opportunities in disaster higher education

The attractiveness of the opportunities on global survey involving more than 5,500 private and public sector leaders from across the globe. This included evaluating its benefit for society and the capabilities the responses to these disaster risks form the basis of the general ranking of opportunities.

Trends of increasing opportunities after announcement of UN 17SDGs & COP21

Opportunities in 2015	Opportunities in 2016
1. Water Efficient Agriculture	1 Smart Farming
2 Everyday Health Enablers	2 The Digital Labour Market
3 Fresh Water Production	3 Closing the Skills Gap
4 Green Consumer Choices	4 Reduce Food Waster
5 Smart Water Regulation	5 Precision Treatment
6 Regulated Energy Transition	6 Antibiotic-Free Food
7 Innovative Finance for a Health Generation	7 Regenerative Ocean Economy
8 Energy Autonomy	8 New Business Model for Antibiotics
9 Early Warning and Forecasting Services	9 Flexible Mobility
10 Smart Cities	10 New Diets
11 Combat NCDS with Mobile Technologies	11 Future Entrepreneurs
12 Rural Growth Initiatives	12 Crown Transport
13 Compact, Green and Connected Cities	13 Closing the Loop
14 Cost-Effective Adaptation	14 Smart Ocean
15 Investments in Resilience	15 Low Transport Cities

Advocacy for global opportunity in Sustainable Development Goals



GLOBAL OPPORTUNITY REPORT

Business is the new activist:

Business is perceived to be among the top advocates for all 15 opportunities. Only civil society is perceived as a stronger advocate in western countries. In India civil societies advocacy not strongly supported by private & public players.

The business sector in general is perceived to be an actor pushing for sustainable change. It is also evident that business and civil society are on the same page regarding the opportunities they can be expected to advocate most strongly for. Hence, we can expect new forms of solution alliances to emerge between business and civil society for collaborative actions to change societies from the bottom up through higher studies in disaster management.

Technology & Management is an opportunity driver in Disaster higher education:

Technology will play a significant role in enabling private and public Institutions to act in an effective manner. Technological capacity is consistently perceived to be the lowest barrier to change. Hence, technology is a strong driver of all 30 opportunities. Only 'Build Back Environment 'has created 4 lakhs of job.

MBA in Disaster Management:

Currently India needs to be expertise in Disaster management through MBA, particularly to project management. It is personally observed that more UNISDR, UNDP vacancies are revised due to lack of degree and experiences in disaster management expertise.



Progress in Higher education in Disaster Management can lead this Asia

INDIA TO INVEST 1 TRILLION IN CLEAN ENERGY BY NEXT FIVE YEARS



PAPERS ON CAREERS

- C1. Disaster Management: An Emerging Career Opportunity by Farha Naz and Dolly Ahuja
- C2. Higher Education in Disaster Management: Educating Built Environment Professions to Reduce Damage by Arun Kumar Rana and Deepti Pandey
- C3. Disaster Management: A Trans-National Approach to Professionalize Military Education and Training by Maj. Gen. Amardeep Bhardwaj
- C4. Volunteerism in Higher Education for Mainstreaming Disaster Risk Reduction by W G Prasanna Kumar and A S Vadivel
- C5. Community Based Disaster Preparedness: Issues and Challenges by Sharad Kumar
- C6. Role of Higher Education Institutions in Disaster Management: Opportunities and Challenges by Navneet Shekhar Singh and Vinod Kumar Pandey
- C7. Disaster Management in India: Issues and Challenges by Ajay Kumar

Disaster Management: An Emerging Career Opportunity

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ABSTRACT

Under the two significant categories of disasters - natural and manmade - disasters cause death and huge losses. When a dedicated team of professionals' works at handling and preventing such hazards are called disaster managers and the entire process from planning strategies to specific training is called Disaster Management. Thus the field of disaster management is very broad and needs thorough study and a dynamic approach due to changing environments. Since the disasters can be environmental or economical, and it can affect to any level of groups; area, region or country wise, it has become a challenge globally. Developing countries are initiating different government policies and continuously working to grow this field for making it effective and preventing losses, India is one of them. As a result the field is getting recognition and has enough career scope.

Apart from ongoing disaster management schemes, higher education programs on Disaster Management would not only help to invent the useful theories for preventing the disasters but will also train professionals and reduce the growing ratio of disaster impacts.

Keywords: Disaster management, Higher education, Career opportunities

Introduction

Disaster is a sudden drastic environmental or economical change which causes deaths, disabilities and harms the masses associated with the affected area. There are various reasons of growing ratio of disasters i.e. urbanization, environmental change and so on. It can be divided into two categories:

- 1) Natural Disaster and
- 2) Manmade Disaster

Which can be further subdivided into various types:

Natural Disaster

- a) Volcanoes
- b) Earthquakes
- c) Floods
- d) Tornados: Typhoons, cyclones

Manmade Disaster:

- a) Nuclear leaks
- b) Chemical leaks
- c) Spill over

d) Terrorist activities

The various kinds of disasters need various mitigation techniques hence their preparedness and response required is also varied. A group of experts to reduce such hazards and cope with the emergency situation is called Emergency Management of Disaster Management.

Personnel dealing with any disasters need specified training and knowledge to mitigate the problems. Particularly manmade disaster managements need more clued-up and scientific scholars to do to study for avoiding disasters happening due to pesticides, pollution, and environmental thrash.

The developing countries suffer more than the develop countries. So, India, being a developing country has started various education and training programs on higher level to train the disaster managers for serving in different private and government sectors. Thus apart from the challenges, there are various career opportunities in the field. Not only in India, the well trained disaster managers are required in every developing as well as developed country and in all sectors.

Ongoing Disaster Management Programs

For effective management of disasters and for issues related with it, the government is running several Disaster Management Policies under the Disaster Management Act such as establishment of National Disaster Management Authority (NDMA), [8] Constitution of National Executive Committee(NEC), state and district level disaster management authorities etc.

Henceforth numbers of central and state level universities are offering different courses for particular disasters.

- Indira Gandhi National Open University (New Delhi)
- University of North Bengal (Darjeeling)
- International Centre of Madras University (University of Madras)
- Mahatma Gandhi University (Kottayam)
- Disaster Management Institute (Bhopal)
- Centre for Disaster Management (Maharashtra)
- The National Civil Defence College (Nagpur) and
- National Institute Of Disaster Management (Delhi).

These universities are also providing online courses which are self-study programmes.

Challenges to make India the world disaster resilient:

Though there are various challenges, incorporating disaster management facility, few of the distinguish scarcities are:

- Lack of awareness about various disaster management policies running by the Indian Government
- Lack of clarity about the hazards occurs from the different disasters
- Vulnerability of ideas for recovering the losses
- Unavailability of Disaster Management Experts
- Irregular forecasting system
- Lack of technical support

- Neglecting approach by the government and other sectors
- Poor construction inspections
- Corruption
- Absence of proper guidelines
- Poor planning

Higher education will reform the policies and provide better technological solutions, since most of the challenges are due to the lack of knowledge about the disasters and concrete planning. The professional training and Socio education will be helpful to solve most of the problems to make India the world disaster resilient. Research and study of disaster management will be very helpful to grab the emerging career opportunities in the field.

Need of Higher Educational Programs in Disaster Management:

As per the study and previous records, the developed countries have reported less destruction in comparison with developing countries like India, need to incorporate few more government policies to enhance the awareness and educational program of disaster management.

Indian universities need to provide wide variety of allied professional courses to educate the citizens for not only lessening the problems occurring from the different disaster but to reduce the ratio of growing disasters.

Scope of Disaster Management:

In the age of industrialization and rapidly growing business economies, disaster management has worldwide scope. From fertilization to security management, it has become a necessity. Almost all the business or capital includes the disaster management as a major part of planning while developing any business. Thus it has been calculated that Disaster Management has emerging career opportunities, worldwide.

If any community works in the area of disaster management then it needs to focus on plans to reduce the effect of disasters. The resources may include trained manpower who knows best to deal with such situations.

If taken as a business opportunity, it would help not only in providing a worldwide recognition but will gain enough demands and creative appreciation. It will be rewarded for social cause as well as noble step towards to betterment of society by providing them overall safety.

Thus there are various promising career opportunities in disaster management; few of them have been categorized.

Professional Scope:

Employment:

There are number of job opportunities in private and government organization in the field of disaster management.

Government agencies:

- There are number of departments in Government organizations offering good career opportunities such as Drought Management, Fire department, Relief agencies, law enforcement authorities, chemical and fertilizer industry, natural resources management and insurance companies.
- Requirement of Professional Managers in disaster management Cell

Private sectors:

- Recruitment in Different insurance companies
- Business opportunities for setting up own company of consultancy, training and rehabilitation etc.

Opportunities in NGOs:

- Scope in social work
- Non-government organizations are also looking for experts in medical health, environment, technology etc.

Research and Training:

- There is wide scope of disaster management in research field such as teaching, consultancy, forecasting and practical work
- Training and mock driller expert
- Database analyst

Conclusion:

This paper is focusing on the various opportunities in the field of Disaster Management and the role of higher education for conquering over the various challenges for making the country disaster resilient. The government has launched so many programs and policies to reduce the hazardous occurring by the manmade or natural disaster. Disaster preparedness is necessity at this present stage for all the developing countries like India.

Apart from the various challenges, it has wide career opportunities in almost all the sectors. Higher education, awareness programs, training, workshops, and conferences would be helpful to educate and accomplish the requirement of professionals in the field.

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Higher Education in Disaster Management: Educating Built Environment Professions to Reduce Damage

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ABSTRACT

Effective mitigation and preparedness can greatly reduce the threat posed by hazards and post-disaster response helps to reduce the impact of disasters and minimize the broader economic and social damage that may result otherwise. There has been a growing recognition that the construction industry and associated built environment professions are vital components of this capacity. Present paper analyze the needs, issues and challenges in preparing built environment professionals for effective disaster management.

Keywords: Higher education, Disaster management, Built environment professionals, Preparedness

Introduction

Key areas of effective disaster management are skills and knowledge, requirement of disaster resilience, lifelong learning and higher education. The level of preparedness and education of the exposed country and community influences the magnitude of the impact of disasters (Rouhban, 2011). Knowledge and education is comprised of the elements such as information management and exchange; curriculum; training of teachers and materials; community training and public awareness (GNDR, 2009). Education and training is an integral part of capacity building in the disaster management discipline as trained personnel respond much better to different disasters and can take proactive measures of mitigation and prevention (IDKN, 2009).

However, there is gap exists between the growing recognition of the importance of teaching about disaster risks and actually doing it, mainly due to the slower rate of incorporation of such issues within the educational curricula (UNSIDR, 2005). Despite the realization of the educational needs for disaster management, there are still capacity gaps identified in the area of disaster risk reduction in the built environment. Among these gaps, lack of disaster management related awareness; lack of proper education and training; and lack of skilled and trained human resources (Bosher et al., 2007) are directly related to education.

Being prepared for a major disaster is the most effective way to minimize the damage suffered by the affected population (Banerjee and Gillespie, 1994). Emergency management officials and disaster planners recognize that for the first 72 hours after an earthquake or other disaster strikes, individuals and families should be prepared for self-sufficiency because services and supplies can be disrupted and emergency assistance might not be immediately available (Basolo et al., 2009). Preparedness is also associated with successful evacuations (Dash and Gladwin, 2007) and improvements in individuals' resilience in coping with trauma.

Higher education is considered as a social structure for the control of advanced knowledge and technique with teaching in its system predominantly (Clark, 1986). Higher education should be at a level that can qualify someone to work in a professional field and it is usually be taught in an environment, which also includes advanced research activity. Higher education institutions are therefore required to take the responsibility of educating, training, and supporting the disaster response, by imparting sufficient disaster related knowledge to the Risk Management professionals to make them more responsive to the needs and challenges of a disaster management environment.

Role of Built Environment Professions in Disaster Management

Effective mitigation and preparedness can greatly reduce the threat posed by hazards and post-disaster response helps to reduce the impact of disasters and minimize the broader economic and social damage that may result otherwise. There has been a growing recognition that the construction industry and associated built environment professions are vital components of this capacity (Thayaparan, et. al., 2014).

Built environment is one of the components that are likely to be damaged by all kinds of disasters. Thus clearing, salvaging, rehabilitation and reconstruction work fully or partly require serious effort of the construction sector. Much of the physical damage from disasters is to products of construction industry and therefore construction industry and built environment professionals have a vital role in the rectification of physical damages of disasters (Ofori, 2004). Thus disaster management and the built environment have close relationship with and dependencies on each other. In agreement to this, Pena-Mora (2005) suggests construction professionals have a key role to play within the role of disaster management because they possess valuable information about their projects, and that information can be critical in disaster preparedness, response and recovery. Further, the peculiar nature of disaster reconstruction demands the professionals to demonstrate specialized knowledge and skills to contribute to disaster risk reduction and to effective rebuilding (Thayaparan et al., 2010). The level of preparedness and education of the exposed country and community influences the magnitude of the impact of disasters. This reflects the importance to educate the built environment professionals involved in disaster management activities with the appropriate knowledge and skills (Siriwardena et al., 2013). Thus possessing adequate knowledge on disaster management is a key requisite for built environment professionals, as it will help them to understand the process of mitigation and the recovery.

As built environment professionals are responsible for integrating resilience into design, construction and operation process, obtaining the necessary level of disaster management education is therefore vital for them. This situation will lead the professionals to be able to demonstrate a good level of specific knowledge and skills to cater the dynamic and emerging needs in the industry especially in a disaster management context. Higher education institutions are therefore required to take the responsibility of educating, training, and supporting the disaster response (McClellan, 2006), by imparting sufficient disaster related knowledge to the built environment professionals to make them more responsive to the needs and challenges of a disaster management environment. As such, higher education institutions need to play a critical

role in improving the capacity of the built environment professionals to address post disaster reconstruction challenges.

The way of addressing disaster risks and needs will either vary depending on the type and magnitude of disasters. Therefore, in order to be effective, a continuous supply of knowledge for the built environment professionals will be more appropriate than providing the knowledge through a one-off engagement with students. Hence, HEIs need to engage with their students on a continuous basis, even after they graduate and while they are working in the industry. This engagement will facilitate a two way communication and collaboration between HEIs and the learners, in this case the built environment professionals. While providing the necessary knowledge and skills to the professionals, the HEIs are in a position to get a feedback from those who work in the industry on any mismatch between what is required and what is provided. As such maintaining a continuous engagement with students will not only benefit the learners but also will help the institutions to be more responsive to the market needs. This continuous engagement is a key to obtain lifelong learning.

Disaster management is an important part of national development where emphasis is on measures for disaster prevention, mitigation and preparedness along with capacity building. This is possible through training and education whereby disaster management is incorporated in the education curriculum at all levels along with encouraging its practice by inclusion in every activity. Disaster management is to be taken as a separate discipline requiring exhaustive study and research but it is also omnipresent thus should be included as part of all subjects (Kohli, 2012).

Conclusion

The complex and multidisciplinary nature of disaster management education also pose a challenge to the higher education institutions to prepare students for careers in disaster resilience purely through the delivery of formal curriculum. Further, the time consuming process of making changes to formal curriculum limits the opportunities for HEIs to respond faster to the changing needs. Considering the flaws in the provision of disaster management education through formal approach, it was suggested to provide the knowledge through a combination of formal, non-formal and informal approaches. In short, formal learning is achieved through organised programmes delivered through schools and other providers and is recognised through a qualification or part of a qualification; non-formal learning is achieved through an organised programme or instruction, but is not recognised through a qualification; and informal learning is achieved outside of organised provision.

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Disaster Management: A Trans-National Approach to Professionalize Military Education and Training

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Scaling-Up the Military's Knowledge of the Disaster Management Paradigm

The need for formal education and training of the military in the field of DM is universally recognized by almost all countries. Accordingly, some sort of mechanisms already exist in every country to impart DM training to a select percentage. Generally this has been a very small number servicemen. However, the true state of affairs in this regard can be ascertained from some of these questions:

- a) Are adequate number of servicemen being trained in DM aspects?
- b) Is the education & training being imparted institutionalized or ad-hoc?
- c) Is the requisite training infrastructure in place? How good are the trainers, the training material and training aids?
- d) Have training requirements been scientifically deduced and formalized in to a well-structured, realistic and purposeful curriculum?
- e) Is formal certification being provided? If so, how professional is the evaluation? How good is the certification vis-a-vis the best global standards?
- f) Are the training institutes accredited? If so, how does the accreditation compare with the highest standards, world-wide?
- g) What is the quality of the training and what are the real takeaways? Is it realistic and practical or overly pedagogic and academic?
- h) How effective has the training proved in actual disaster operations?

Although answers to these questions differ from country to country, one thing that stands out is that “much more needs to be done”. In fact, honest answers to these questions may even bust a commonly held notion: that the Armed Forces possess adequate specialized skills for disaster related operations. As a matter of fact, objective enquiry reveals that a soldier - being ‘optimally’ trained for combat tasks - is (by self-inference) ‘sub-optimally’ trained for other types of non-combat duties, including DM. On the other hand, the science of managing disasters has, over the last few decades, metamorphosed itself in to a complex and specialized field encompassing a wide range of subjects. Today, in the field of DM, the focus is clearly on ‘specialization and super-specialization’, the implication being that ‘effective’ DM now requires optimally - not generally or casually - trained professionals in each of its specialized domains.

This is not to say that the average military soldier is unfit for DM duties, just that by virtue of his/her current education and training, he / she needs further grooming to become a more efficient DM manpower resource, thereby being able to deliver higher levels of performance when engaged in such duties. In fact, viewed collectively, the militaries of the world represent a humongous pool, a vast untapped potential, of

excellently trained and disciplined manpower that can, with relatively little effort, be converted in to skilled DM professionals. Some scholars even argue that “war is nothing but a man-made disaster”. Going by this logic, if one were to look for an ‘eminently suitable candidate’ to receive specialized DM training, the soldier would perhaps figure right on top of the list.

From the above it can be safely concluded that, globally, a bona-fide need exists to institutionalize DM education and training for the Armed Forces.

Suggested Pathways to Institutionalize Military DM Education and Training

For the purposes at hand, since no two militaries are comparable, a common-sense approach would be to evolve a bouquet of options, leaving each military free to choose which option - or combination of options - suits it best. Some of the macro-options are listed below:

- a) Option - 1: Define a certain percentage, say 10 - 20% of personnel per ‘Major Unit’ (typically a Battalion or Regiment) and 5 - 15% per ‘Independent Minor Unit’ (typically a Company or Squadron), to be formally trained in DM tasks.
- b) Option - 2. Within each military ‘Formation’ (typically a Division or Corps), select 10 - 25% units/sub-units for specialized DM tasks and train each as an entity for a specialized DM role. When deployed for specific DM tasks, this may entail temporary re-organization of the standard military structure, for the duration of the envisaged role. For example, a ‘Company’ tasked to provide succor to an earthquake affected area may have to reorganize itself in to Rubble Clearance, Trauma Relief, SAR and First-Aid Teams.
- c) Option - 3: Learn from the experts: formalize DM training with UNOCHA, UNHCR, UNDAC, ICRC, INSARAG, etc. and either send servicemen on deputation to these international organizations or organize formal education and training with their expertise. Similarly, the expertise of specialist DM organizations available within each country, could be utilized to train its military personnel in the desired DM functionalities.
- d) Option - 4: Task-based education and training. Each Govt. specifies duties that the military must perform in a DM situation. Accordingly, a ‘Systems Approach to Training’ (SAT) could prove very useful in training the military to deliver optimal performance in the envisaged roles. In this method, the ‘formation’ level tasks would have to be successively broken down in to unit, sub-unit, sub-sub- unit and even individual tasks, each component being trained in specific relation to its visualized tasks. The task list could include: Setting-up of a Unified Comd HQ, Establishing a Communications Grid in a disaster zone, SAR, Establishment of relief camps and so on.
- e) Option - 5: Hazard-centric approach. Most militaries maintain a presence in every province / sub-region of a country. By linking military locations to hazard-zoning and vulnerability assessments of the regions, military units can be trained to handle specific types of disasters which are more likely to occur in their vicinity. Thus, for example, a unit located in / near a flood plain could be trained specifically in Flood Management, another for Industrial Emergencies and so on. Similarly, specialized competencies could be developed in the military to professionally handle Earthquakes, Cyclones, Avalanches, Tsunamis, CBRN and other emergencies. A corollary to such ‘regional hazards’ approach

- would be pre-provisioning of DM equipment specific to each hazard, adjacent to the disaster-trained military units, in each of the country's regions.
- f) Option - 6: Formalize training for disaster relief and response by including it in the curriculums of current military training formats like SAT (Systems Approach to Training), ITC (Individual Training Cycles), Collective Training, etc. being already run at their training institutions. The detailed syllabi and content of such training would need to be aligned to particular types of disasters, specific to each country, and the military's envisaged role in them.
 - g) Option - 7: Specialist training, including SAR, in varied contingencies should preferably be institutionalized and conducted at the Tri-Services / Joint Services level under the aegis of Joint Command / HQ like the IDS in India. It should be supported by a sound training philosophy. Another sub-option in this would be to train 'jointly' for common specialist skills (like collapsed building SAR, slithering, etc.) but leave the imparting of Service - specific DM skills to each Service. By way of example, the Navy could conduct disaster related deep-sea-diving and scuba-diving, the Army could take on rescue techniques in snow bound and high-altitude areas while the Air Force could train in aerial re-supply and airdrop of food and aid.
 - h) Option - 8: Another option is to standardize all DM training under one specialist institute (like the Indian NIDM). These institutions have disaster-specific departments, where personnel from various stakeholder organizations (NDRF, Civil Defense, Home Guards, Police, Military, NGOs, Volunteers, etc) are already being imparted training. If their capacities to train large number of military-men are expanded, excellent DM training could be imparted in a systematic and well organized manner. The value addition in this option is that inter-stakeholder pollination would take place, yielding benefits of organizational synergy and interoperability between disparate players in the DM field. Moreover, it would usher-in standardization and formal certification for all trainees as well as accreditation of the training institutes themselves.

Task-Based Subjects of Study

The key issue here is to align DM education and training of the military to its envisaged roles/tasks/duties in such operations. Ensuring such congruence is essential to derive maximum benefit from these efforts. Therefore, as a start point, the training needs have to be assessed or ascertained very realistically, a 'systems approach' followed in shaping the syllabi and effective feedback ensured for continuous improvement. The main training requirements have to be military specific hence must focus on its 'core competencies'. Historically, these have been SAR, provision of communications, establishment of relief camps to provide immediate health and medical succor and logistics involving large-scale relocation / transportation of people as well as relief materials.

Therefore, before the 'training specialists' come in the military will first need to do some homework itself i.e. define its 'tasks-list' for DM operations in-synch with its envisaged roles as well as its core competencies. This will allow the trainers to deliver a more specialized and focused training package to ensure that the training effort is fully optimized to obtain a highly efficient disaster response from the military during actual relief operations. Full freedom must be allowed to each military to draw up its own task-list, based on its unique operating environment. Nonetheless, when viewed

from a global perspective, realization dawns that significant commonalities exist, across nations, in the tasking of military forces for disaster response.

Key Areas of Focus

1. *Make Training Dynamic and Inter-Agency* - Constant advancements in DM related equipment, techniques and training methodologies makes it imperative for the military establishment to make its DM related training dynamic so that its efficiency during such operations is not only maintained but is, in fact, enhanced. This cannot be done in a 'stand-alone' manner, involvement of the other stakeholders in DM is essential. With the onset of the 'knowledge age', in which knowledge is 'exploding' at an astounding pace, the Armed Forces have no option but to stay abreast and keep themselves updated at all times in all their employment domains, including the field of DM.
2. *Evolve a 'DM Training Doctrine' based on each country's philosophy of employment of its military* - There is a need to evolve and enunciate a doctrine for the military's DM training. This must include aspects like aim of training, the end-state visualized on completion of training, training objectives, methods, concepts, drills, procedures and so on. All these must conform, and not be at variance with, the formally articulated role of the Armed Forces in DM. In doing this there is a need to share wisdom across organizational and national borders.
3. *Categorize Skills and Expertise using a database and maintained by all militaries, of their personnel trained in various aspects of DM* - This will enable digital categorization of the skill-sets available within the Armed Forces, thus facilitating better Human Resource Management and HR Development of their workforce. It will allow a Commanding Officer to assign the right man for the right job in a disaster-relief operation. The same will hold true at formation and higher levels also where this HR database can be co-related to different types of terrain as well as disasters to optimally compose forces and exploit the available expertise. Categorization of DM related skills and expertise is, therefore, a must and such databases can prove to be very handy for the Armed Forces to sharpen their response to disasters.
4. *SAR* - Across the globe, the military is invariably utilized to execute the 'Search and Rescue' (SAR) function in a disaster situation. However, not much formal training is being done in this field by most militaries. This shortcoming can be easily corrected by a two stage process; Step - 1 would involve taking stock of the existing SAR capabilities of the Army, Navy and Air Force while Step - 2 would seek to upgrade the same by incorporating newer concepts, skills and technologies in this field. Gaps in the military's SAR capabilities can thus be plugged by laying down pragmatic training objectives and acquiring the desired capabilities.
5. *Incident Command System* - Every nation has some sort of an early-warning system to alert the general public of an impending disaster. When integrated with a nation-wide disaster response mechanism it can be called an 'Incident Command System (ICS)'. There is a need for the Armed Forces to participate in such nation-wide efforts so that their disaster response is synergized with all other participants, as per the ICS. Joint education and training with the other stakeholders can iron out all the niggling interoperability/compatibility issues before hand, thus promoting the efficiency of the overall, coordinated disaster response.

6. *Formulation of SOPs and Training / Operating Manuals* - Other than the occasional lecture, mock-drill or short capsule, most militaries do not carry out much long-term (more than six months) structured training in DM, neither do they provide formal certification for the same. Similarly, military SOPs and Training Manuals on Disaster Response offer considerable scope for improvement. This state of affairs can be greatly improved by introducing systematic, long-term and specialized education-cum-training courses specifically oriented to the Services. Aspects that could be included are : mobilization for DM, composition of response teams, distribution of specialist equipment, damage assessment, induction in to the disaster affected areas, establishing communications and logistics, interaction with other agencies, dealing with the civil administration, visualized contingencies and so on. Finally, the learning from such training endeavors must be captured, by way of objective feedback, in to periodic revision and updating of the relevant 'Operating and Training Manuals' for each type of disaster role.
7. *Joint Training* - One 'big' lesson that emerges from all major disasters is that a coordinated, rather than fragmented, response by all stakeholders is, by far, the most effective. Similarly, within the military, the Army, Navy and Air Force need to coordinate amongst themselves to accrue greater synergies in DM. Consequently, 'Joint Training' is no longer an option, it is now an operational necessity - be it for war-fighting or for DM. The number of stake-holders in the field of DM being large, there is a need to promote this integration, through sustained education and training, embracing the para-military forces, civil-defense organizations, Home Guards, fire and rescue services, voluntary aid agencies and the police. While this concept is well understood by most nations, there is a need to now graduate from 'theory' to 'implementation' in order to strengthen the unified / combined response to future disasters.
8. *Performance Audit* - There is a need to put in place a formal mechanism to assess the performance of military units / teams participating in disaster relief. This will reveal shortcomings and 'grey' areas which can then be addressed during training with a view to overcoming the same. Experiential learning shows that inefficient and poorly trained personnel involved in disaster response often turn out to be a liability rather than an asset. Their lack of education and training in DM can therefore prove to be counter-productive to the relief effort. The military, with its penchant for promptness, reliability and efficiency, would be the last agency to be identified in such a manner. To obviate such an eventuality it is imperative that the military ensures continuous monitoring of its own efficiency for DM tasks and takes its DM training seriously.
9. *Archiving, Record keeping and Learning from Experience* - The Armed Forces need to 'learn the right lessons from past mistakes' in the execution of DM operations. The ground reality is that professional documentation, archiving of records and critical after-action appraisals of employment of most military forces, relating specifically to DM duties, are - more often than not - prepared and maintained in a rather cavalier fashion. This frustrates attempts to seriously study and critically analyze such operations with a view to ensure that our future responses are more efficient and the same mistakes are not repeated. Formal education and training in the DM discipline, especially by way of real life 'case studies', can greatly assist in overcoming this lacuna and ensuring that lessons of past disasters do not stay 'un-learnt'.

10. *New Management Techniques* - Like every other field, the science of DM has also been swamped by a host of new management 'mantras', techniques, concepts and tools. PERT (Program Evaluation and Review Technique) and CPM (Critical Path Method) are but two examples of these. Such techniques and processes, if applied correctly, can significantly enhance decision-making and contribute towards greater efficiencies in disaster response, mobilization and allocation of resources. To master these new management tools, long-term education specific to DM is required. These techniques hold enormous potential to assist the decision maker during disaster relief operations and the Armed Forces, could benefit hugely from them to further upgrade their efficiency in DM.
11. *Application of MIS and IT* - Besides modern management techniques, recent advances in the fields of 'Information Technology' and 'Management of Information Systems' hold great promise in the context of rescue and relief operations. Through classroom learning as well as practical usage, the Armed Forces can use these technologies to make a major contribution towards improved DM practices.
12. *Mock Up Drills and Simulation Exercises* - It is a truism that simulation exercises, mock-drills and rehearsals are the best form of any practical training in DM. Structured education, including practical training, can help to build-in realism as well as inter-organizational synergy in to such preparations. A powerful new 'gaming' tool is disaster simulation/modeling, including immersive and inter-active experiences in 'virtual reality' environments and scenarios. Such Artificial Intelligence based applications can go a long way in up-skilling the military's disaster responses.

Conclusion

This paper, based on the author's extensive study of how various militaries engage in DM, makes a case for taking a trans-national view of the subject with a view to substantially upgrade the military's efficiency in disaster response. Putting in place an institutionalized system of DM education and training for the militaries of the world, as broadly outlined in this paper - making due allowance for individual variations and idiosyncrasies - will, it is felt, significantly enhance their effectiveness in DM operations.

Volunteerism in Higher Education for Mainstreaming Disaster Risk Reduction

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Keywords: Volunteering, Curriculum interventions, Higher education, Disaster risk reduction

Volunteerism promoted through a higher education system has a contribution to make for building community resilience and managing vulnerable communities. Both theoretical classroom learning as well as on practical field experience are critical parts of volunteerism. Higher education, including graduate and post graduate education, needs to make provisions for curricular and non- curricular engagement of enthusiastic young generation in course of their education with their local community issues, more so in rural community. Volunteerism can fill the huge gap between the textual knowledge and evolving contextual practices, especially on rural India. Promoting volunteerism in building disaster resilience is building a community's ability to anticipate, and where possible, prevent or at least minimize the potential damage a disaster might cause. It includes Disaster risk reduction by way of volunteers' participation in identifying and addressing the vulnerability aspects focusing on community coping capacity.

There are three types of volunteers. The first are the Community-based volunteers who come from the community and have a will to help others in their neighbourhood or elsewhere. They are mostly the first respondents in case of any event or incident or disaster. The next type is the Functional volunteers who are those who are equipped with specific skills, such as first aid, nursing, psychological support and disaster response. The third are professional volunteers who have professional qualifications, such as a doctor, nurse, engineer and accountant. While they have different skills and qualifications, they can participate in the relevant part in the disaster management cycle, namely Disaster Response, Recovery / Rehabilitation, Risk Reduction and Preparedness.

The student volunteers can participate in:

1. pre monsoon and monsoon disaster preparedness,
2. crowd management during fairs and festivals,
3. rescue and evacuation drills for road, rail, snake bites, fire and water accidents and incidents,
4. supporting preparation and implementation of District, City and Village Disaster Management Plans including Disaster Risk Resilience, Reduction and Preparedness activities
5. mock drills, managing evacuation, rescue, relief activities and rehabilitation camps and collection,

6. transport and distribution of relief material (e.g. food, water, blood and medicines)
7. managing temporary kitchens, schools and medical camps,
8. first aid and casualty management,
9. participation in community mobilization, and
10. training in community based disaster risk management.

Some important educational streams of focus for disaster risk reduction efforts could be: social work, education, tourism, media, development administration and infrastructure engineering. A structured approach is required to address these concerns. The higher educational institutions have a key role in defining the boundaries and initiating volunteering education activity in this regard. For this partnerships are to be built. Thus there is an imminent need for development of a curriculum framework for student volunteer engagement in disaster risk reduction and building resilience. Such an effort is facilitated by institutionalisation of volunteering in disaster risk reduction through curriculum development, curriculum standardisation and finally curriculum accreditation.

As volunteering opportunities available for students of universities three schemes are available: 1. National Service Scheme, 2. National Cadet Corps and 3. UGC scheme on the Centre for Fostering Social Responsibility and Community Engagement (CFSRCE).

National Service Scheme was launched in Gandhiji's Birth Centenary Year 1969, in 37 Universities involving 40,000 students with the primary focus being on the development of personalities of students through community service. Civil defence and disaster management are part of NSS curriculum proposed by the Ministry of Youth Affairs and approved by the Ministry of Human Resource Development. Today, NSS has more than 3.2 million student volunteers on its roll spread over 298 Universities and 42 (+2) Senior Secondary Councils and Directorate of Vocational Education all over the country. From its inception, more than 3.75 crores students from Universities, Colleges and Institutions of higher learning have benefited from the NSS activities, as student volunteers.

Adoption of Villages and slums is one important activity under NSS, which can help in conducting the Participatory Rural Appraisal and preparation of an outline of Village Disaster Management Plan and City Disaster Management Plan for urban neighbourhoods with the local resources mapped on it with the participation of local formal and informal leaders and support of officers from relevant departments. Selected villages are within the reach of the college for being in regular contact. The assistance from teachers and students of agriculture, economics, commerce, geography, statistics, home science, social work, medicine, psychology and education is sought for this purpose.

Conducting socio-economic surveys is an interesting field activity, which has direct bearing on the curriculum of economics, commerce, statistics, and psychology and health education. The report of such a survey provides up-to-date information on the challenges and response potential of the village and help in programme planning for mainstreaming disaster risk reduction and climate change adaptation in village development. The applied field work will help the students in increasing their analytical ability and deepens their thinking. This will also help them to identify the

challenges which are left unnoticed. NSS volunteers can disseminate information helping in disaster risk reduction and preparedness. Mainstreaming of disaster risk reduction and climate change adoption could be among the topics for awareness programmes proposed by the NSS volunteers. In August 2015 the UGC requested all universities to offer NSS as a curriculum.

The present content of training for National Cadet Corps training in disaster management aims to train cadets to assist Civil Administration in performance of selective duties during disasters. The course content in NCC related to disaster management includes basic information about Civil Defence Organisation and its duties, maintenance of essential services and providing assistance to civil administration in various types of emergencies during natural disasters, Civil Defence Organisation and its duties/NDMA, types of emergencies / natural disasters, fire services & fire fighting, traffic control during disasters under police supervision, essential services and their maintenance, assistance during natural/ other calamities: flood/ cyclone/ earthquake/ accident, setting up of relief camp during disasters and collection & distribution of aid material by using examples of assistance provided by NCC cadets in the past as case studies for ease of assimilation. In November 2016, UGC requested that NCC be offered as an elective.

In order to get community engagement to all parts of the university system, including teaching and research activities in all streams of education, the UGC has launched an arrangement, to provide for the establishment of the “Centre for Fostering Social Responsibility and Community Engagement (CFSRCE)”. This UGC can be utilized to deepen and strengthen the partnership between university and community as well as civil society to work together in addressing some of the critical socio-economic challenges around the university including building community resilience and disaster risk reduction. Community engagement is for mutual learning not just for changing the communities with regard to their interest in building resilience and promoting disaster risk reduction.

Mainstream disaster risk reduction needs to be a part of handling drinking water, water logging, sanitation, electricity, drainage, health and welfare services as well as life and living conditions. The students turn into community investigators for preparing community profile, workers for supporting community leaders, programme aides when launching programmes and community organizers for establishing rapport. The above three schemes and programmes provide ample opportunities to universally cover Disaster Risk Reduction aspects.

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Community Based Disaster Preparedness: Issues and Challenges

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ABSTRACT

In order to address the complexities of natural hazards, India needs to develop a vigilant, quick and disciplined response. It is the community that has to respond immediately to any disaster, and hence, a culture of preparedness needs to be inculcated in the minds of citizens. Thus, a community based disaster preparedness (CBDP) education programme is a priority. This paper analyses the need, issues and challenges in community preparedness for disaster management in India. This paper concludes that improving preparedness by educating and preparing the community will certainly reduce the loss of lives and property due to any natural calamity.

Keywords: Natural hazards, Disaster management, Community preparedness

Introduction

In India, 60% of the land is prone to earthquakes, 12% is susceptible to floods and 8% is vulnerable to cyclones. 22 states are categorized as multi-hazardous and an 8,000 kilometre long coastline is exposed to tropical cyclones, storms and floods (CBSE, 2004). The vulnerability of the country is compounded by indiscriminate and short-sighted economic development, environmental degradation and the resultant changing topography. The immeasurable loss of human life and damage to property not only drains the resources of the state and damages the economy, but also affects the social fabric of society. In order to address the complexities of natural hazards, India needs to develop a vigilant, quick and disciplined response. It is the community that has to respond immediately to any disaster, and hence, a culture of preparedness needs to be inculcated in the minds of citizens. Thus, a community based disaster preparedness (CBDP) education programme is a priority.

The community, as an institution is emerging as an effective player in the mechanism of disaster administration. In the event of actual disasters, the community, if well aware of the preventive actions it's required to take, can substantially reduce the damage caused by the disaster. Community awareness and training is particularly useful in areas that are prone to frequent disasters (Sharma & Kaushik, 2012). Lack of awareness about many things that the Community does or does not do, has also contributed responsible for the extensive damages caused by disasters (Kumar, 2012:8).

Community participation has important benefits, such as "information and ideas on public issues, public support for planning decisions, avoidance of protracted conflicts and costly delays, reservoir of goodwill that can carry over to future decisions, and spirit of cooperation and trust between the agency and the public" (Cogan & Hertberg, 1986).

Community Based Disaster Preparedness

For the successful implementation of a CBDP education program, cooperation of the community leaders and the facilitating groups are very important. In order to implement the CBDP education program and to enable the functionaries to perform their roles effectively, capacity-building of VDRMT is essential. Each functionary needs to be trained with appropriate skills to perform the roles assigned. Also, all teams need to operate in perfect coordination with all other functionaries. Taking this as a framework, a core set of modules and manuals were developed and field-tested in the workshop organized with the community and NGO representatives for local relevance and cultural appropriateness.

With better planning, preparedness awareness and mitigation measures we can significantly reduce the impact of disasters for our people in the near future (Kumar, 2012:9).

Fisek and others (2002) found that while people were aware of the risk, only 20.5% of respondents said they had taken preventive actions either inside the home (13%) or for the building (9%). Only about half those who had taken no action invoked high costs as a reason for inaction. Such seemingly inconsistent behavior warrants an explanation, and many are turning to the recent findings of behavioral economics.

In the conventional sense of the term 'resilience', the end point of community resilience is to return to normalcy as it existed before the disaster struck. However, resilient communities should not only be able to return to their previous state but also be able to retain normalcy as much as possible during the crisis and rebuild their physical environment and social, political and economic structures in a way that is safer, more sustainable and more resourceful than before.

Reducing risk and vulnerability is not a matter just for specialists (Cortez et al., 1998); it also requires the institutionalized participation of local communities, namely citizens and civil society organizations (CSOs). Their participation should be sought to mobilize resources, stimulate knowledge contribution, and claim rights. Participation is not a favour given to people; it is primarily a right.

There are various forms of participation, such as individual and collective, organized and informal, institutional and non-institutional. This chapter (and indeed this report) supports a transformative approach to participation (which is understood as essential for communities to be truly resilient), shifting existing power structures by ensuring decision-making is more democratic and inclusive, and by strengthening participants' capabilities, rather than merely improving existing conditions. Participation also has its pitfalls, such as the risk of leaving people out (deliberately or otherwise), and the over-representation of some interested actors leading to their getting more benefits (Hordijk et al., 2014).

Issues and Challenges

Indian villages are characterized by hierarchic caste structures, social dominance, divergent power structures and multiple leadership structures. The biggest challenge remains in bringing people of different socio-economic backgrounds together, and managing social dynamics and multiple leaders. Mainstreaming underprivileged sections

and vulnerable categories into the project requires special effort. Social factions in villages found to be barriers in bringing people and leaders together as one. Most of the villages do not have well founded CBOs, without which organizing VDRMT is found to be difficult. The absence of a preparedness culture and lack of self-reliance among people is also another challenge to overcome in promoting the CBDP programme. However, local NGOs enjoy high credibility and active youth organizations of villages can play a catalytic role in bringing them all together.

Community participation can, however, be particularly challenging where local capacities and resources are limited, and the policy environment is fragile. Since in the long run the local communities must be prepared to handle disasters with the help of the state or other organizations, sensitization of ordinary people is a clear necessity. It is a well-known fact that the community dynamics is quite complex in a country like India and often the most vulnerable communities are also the weakest and marginalized; their participation in restoration of society's common property is vital and would require their empowerment. Therefore, the development perspective must necessarily involve eliminating social exclusion and marginalization of the poor segment of the society.

Conclusion

Sustainability is the key word in the development process. Development activities that do not consider the disaster loss perspective fail to be sustainable. The compounded costs of disasters relating to loss of life, loss of assets, economic activities, and cost of reconstruction of not only assets but of lives can scarcely be borne by any community or nation. Therefore, all development schemes in vulnerable areas should include a disaster mitigation analysis, whereby the feasibility of a project is assessed with respect to vulnerability of the area and the mitigation measures required for sustainability.

Focusing on preventing death and destruction from "natural" disasters, it concludes that governments can appreciably increase prevention. It is confirmed that prevention is often cost-effective. It requires many actions, and some important ones are under government control. But they are not always obvious. Improving preparedness by educating and preparing community will certainly reduce the loss of lives and property due to any natural calamity.

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Role of Higher Education Institutions in Disaster Management: Opportunities and Challenges

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ABSTRACT

Higher education is predominantly considered a social structure for the control of advanced knowledge and techniques. The role of higher education institutions (HEIs) in disaster management include disaster education, relief and support to affected communities and the management of the situation from a research perspective. The role of higher education institutions in disaster management is discussed in following paper.

Trained manpower is the first requirement for mitigation, monitoring and management. This paper concludes that HEIs can play a significant role to produce trained manpower and also can provide suggestions for policy development to address basic needs.

Keywords: Disaster management, Disaster resilience, Higher education institutions, trained manpower

Introduction

Frequent and intense natural and manmade disasters are having devastating impact at global and local level. Disasters, which are expected to increase in severity and frequency, cause damage to the infrastructure and human environments. All stakeholders who are likely to engage with disaster situations have a responsibility to develop their capacity to prepare, mitigate, respond and recover. Effective mitigation and preparedness can greatly reduce the threat posed by hazards of all types and post disaster responses will help reduce the impact of disasters, this would minimize the broader economic and social damages that may result otherwise. There has been a growing recognition that the construction industry and associated infrastructure professions are vital components of this capacity (Thayaparan, et. al, 2014).

Key areas of disaster management include skills, disaster resilience, a desire for lifelong learnings and a higher education. The level of preparedness and education of the exposed country and community influences the magnitude of the impact of disasters (Rouhban, 2011). Knowledge and education is comprised of the elements such as information management and exchange; formal education (curriculum); formal education (training of teachers and materials); community training and public awareness (GNDR, 2009). Education and training is an integral part of capacity building in the disaster management discipline as trained personnel respond much better to different disasters and will take proactive measures of mitigation and prevention (IDKN, 2009).

Community awareness regarding disaster response has increased over the decade because of the frequent occurrence of disasters and the increased visibility of disaster

response through the news and other mediums. In addition, the public itself is a major human resource during a disastrous event. Disaster Risk Reduction needs to be included in the curricula in Schools and Colleges to inculcate the culture of safety and prevention among the children (Kumar, 2012:7). Higher education institutions need to develop and organize a comprehensive educational disaster programs or curriculum for the community (Galliara and Prabhawalkar, 2012).

Role of Higher Education Institution

To accelerate the process of disaster related knowledge and information dissemination, higher education institutions (HEIs) can play a larger role in influencing young minds to develop a culture of disaster preparedness and mitigation. Institutions of higher education can undertake relevant research initiatives in the areas of disaster management and play an advocacy role for reviewing and revising disaster management policies and approaches adopted by the Nation (Galliara and Prabhawalkar, 2012).

Trained manpower is the first requirement for mitigation, monitoring and the management of disasters. Trained manpower helps in quick rehabilitation of those affected and understands their psychological conditions to help in their post disaster settlement. In the planning and policy making, trained and experienced personnel are highly required to give better suggestions. There are good employment opportunities in disaster management in government as well as in the private sector. The work profile varies from teaching, research, consulting, and documentation, training coordination, field training and mock driller facilitation.

The roles of higher education institutions in disaster management include disaster education, relief and support to the affected community, and a basic understanding of disaster situations from a research perspective. They also have a role in educating, developing scenarios, and providing basic and advanced training to the volunteers. Universities and other institutions of higher education provide a universe of knowledge and expertise that can be readily mobilized when needed. It is often in the interdisciplinary overlap of professional domains where a solution lies.

The way of addressing disaster risks and needs will either vary depending on the type and magnitude of disasters. Therefore, in order to be effective, a continuous supply of knowledge for Risk Management professionals would be better than providing knowledge through a one-off engagement with students. Hence, HEIs need to engage with their students on a continuous basis, even after they graduate and while they are working in the Disaster Management field. This engagement will facilitate a two-way communication and collaboration between HEIs and learners. While providing the necessary knowledge and skills to professionals, the HEIs are in a position to get feedback from those that work in field on any mismatch between what is required and what is provided. As such maintaining a continuous engagement with students will not only benefit the learners but also will help the institutions to be more responsive to market needs. This continuous engagement is a key to obtain lifelong learning (Thayaparan, et. al. 2014).

However, there is gap exists between the growing recognition of the importance of teaching about disaster risks and actually doing it, mainly due to the slower rate of incorporation of such issues within the educational curricula (UNSIDR, 2005). Despite the realization of the educational needs for disaster management, there are still

capacity gaps identified in the area of disaster risk reduction in the built environment. Among these gaps, a lack of disaster management related awareness; lack of proper education and training; and a lack of skilled and trained human resources (Bosher et al., 2007) are directly related to education.

Higher education is considered as a social structure for the control of advanced knowledge and technique with teaching in its system predominantly (Clark, 1986). Higher education will be at a level that would qualify someone to work in a professional field and it will usually be taught in an environment, which also includes advanced research activity (Thayaparan, et. al. 2014). Higher education institutions are responsible for educating, training, and supporting disaster responses, by imparting sufficient disaster related knowledge to Risk Management professionals to make them more responsive to the needs and challenges of a disaster management environment (Thayaparan, et. al. 2014).

Conclusion

The way of addressing disaster risks and needs will vary depending on the type and magnitude of the disaster. Therefore, in order to be effective, a continuous supply of knowledge for professionals will be better than providing the knowledge through a one-off engagement with students. Hence, HEIs need to engage with their students on a continuous basis, even after they graduate and while they are working in the industry. While providing the necessary knowledge and skills to the professionals, the HEIs are in a position to get feedback from those who work in the industry on any mismatch between what is required and what is provided. As such, maintaining a continuous engagement with students will not only benefit the learners but also will help the institutions to be responsive to market needs. Continuous engagement is a key to obtaining lifelong learning.

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Disaster Management in India: Issues and Challenges

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ABSTRACT

India is one of the ten worst disaster prone countries of the world. The basic reason for the high vulnerability of the country to natural disasters is its unique geographical and geological situations. Direct losses from natural disaster are up to 2.25% of the India's GDP and 12.15% of the annual revenue. Damages and economic losses caused by natural disasters are far exceeding acceptable levels and are wiping out the hard earned gains of development. This can be considerably minimized if adequate preparedness levels are achieved. An attempt is being made in present study to analyse the issues and challenges in Disaster Management in India. Prevention and mitigation contribute to lasting improvement in safety and should be integrated in the disaster management.

Keywords: Disaster management, Prevention, Preparedness, Mitigation

INTRODUCTION

Nature signifies power, no one has control over it. Whenever, in the history of the world, a natural disaster has struck, the results have always been devastating and will continue to be so unless we learn to manage such calamities (Vera, 2012:12). Natural disasters like floods, cyclones and drought occur repeatedly in different parts of India. Many districts of India are prone to multiple hazards and face different disasters around the year. Earthquake, hailstorms, avalanches, and landslides also occur in some parts of India but the impact depends on the magnitude of the event and the vulnerability of the location (Kumar, 2012:5).

According to Global Assessment Report (2014), among the disaster-prone countries in South Asia, India is the highly vulnerable country. In India, as many as 200 million people are exposed to recurring floods every year. According to an estimate by the World Bank (2015) direct losses from natural disaster are up to 2.25% of the India's GDP and 12.15% of the revenue annually due to natural and man-made disasters. More importantly, the impact of most of the disasters is disproportionately high on the poor. With better planning, preparedness awareness and mitigation measures, we can significantly reduce the impact of disasters for our people in the near future.

It is evident that the damages and economic losses caused by natural disasters are far exceeding acceptable levels and are wiping out the hard earned gains of development from the disaster affected areas. Further, the deployment of scarce resources for post-disaster relief, reconstruction and recovery are making a dent on resources which are required by sectors like health, education, social welfare, etc. It is in this context that an attempt is being made to analyse the issues and challenges in Disaster Management in India.

DISASTER MANAGEMENT IN INDIA

National Disaster Management Act, 2005

The Parliament of India enacted the National Disaster Management Act in November 2005, which brings about a paradigm shift in India's approach to disaster management. The centre of gravity stands visibly shifted to preparedness, prevention and planning from an earlier response and relief centric approach. The Act provides for the establishment of:

- National Disaster Management Authority (NDMA)
- State Disaster Management Authority (SDMA)
- District Disaster Management Authority (DDMA)

Institutional and Policy Framework

- The Central Relief Commissioner (CRC) in the Ministry of Home Affairs is the nodal officer to coordinate relief operations for natural disasters.
- National Crisis Management Committee (NCMC) gives direction to the Crisis Management Group as deemed necessary.
- Crisis Management Group chaired by Central Relief Commissioner reviews contingency plans and measures required for dealing with natural disasters coordinate the activities of the Central Ministries and the State Governments in relation to disaster preparedness and relief.
- An Emergency Operations Center (Control Room) exists in the nodal Ministry of Home Affairs, which functions round the clock, to assist the Central Relief Commissioner in the discharge of his duties.
- A National Contingency Action Plan (CAP) identifies the initiatives required to be taken by various Central Ministries/Departments in the wake of natural calamities, sets down the procedure and determines the focal points in the administrative machinery.
- A Calamity Relief Fund (CRF) has been set up in the State as per the recommendations of the 11th Finance Commission. State can get assistance through National Calamity Contingency Fund (NCCF).Also through Prime Minister Fund.
- At the State level, response, relief and rehabilitation are handled by Departments of Relief & Rehabilitation. The State Crisis Management Committee is set up under the Chairmanship of Chief Secretary in the State. This Committee reviews the action taken for response and relief and gives guidelines/directions as necessary.
- At district level Collector/Dy. Commissioner is the focal point in the preparation of district plans and in directing, supervising and monitoring calamities for relief.

In addition to these, the Government has established specialized forces to respond the disasters, set up the National Institute of Disaster Management to undertake training and research and has established mechanisms to provide funds for response/relief. It has also outlined the need for establishing funds for undertaking various mitigation measures.

Issues and Challenges

In disaster situations, a quick rescue and relief mission is inevitable; however damage can be considerable minimized if adequate preparedness levels are achieved. Indeed, it has been noticed that as and when attention has been given to adequate preparedness measures, the loss to life and property has considerably reduced (Sharma and Kaushik, 2012). Now, approach to disaster management is also undergoing a change from a relief centric to more proactive approach encompassing all phases of disaster management without limiting it to relief (Padmanabhan, 2012).

Most modern nations have adopted innovative systems, techniques and technologies to improve the effectiveness of disaster management. The applications of ICT, mobile communication for dissemination of early warning and alert messages, Geographical information Systems, Scenario Analysis and Modelling etc. are being increasingly used by many countries. In India, a judicious mix of indigenous traditional knowledge and modern technology is required to reach various stakeholder groups for greater public awareness on disaster risk and vulnerability. Apart from these, India has several challenges in dealing with disasters across the states. Most recurring disasters are caused due to hydro-meteorological hazards, which incidentally have been increasing in number and intensity. The current level of preparedness in the most hazard prone areas is not adequate to deal with such extreme events which deviate from the earlier pattern.

CONCLUSION

Disaster is not the problem of disaster management per se but is a larger development issue for protecting development gains and making development sustainable. Prevention and mitigation contribute to lasting improvement in safety and should be integrated in the disaster management. It has to be recognized that the temptation to claim post-disaster relief by state governments without shifting the emphasis to strengthening disaster preparedness, prevention and mitigation is like a futile attempt to trying to drain an overflowing sink without looking at the root cause of the leaking tap. It would be more effective to make efforts to close the tap or change the washer to stop the leak, rather than simply trying to drain the sink. If we do not move in that direction, we will continue to be spending scarce resources on providing post-disaster relief for damaged property, assets and infrastructure and continue to take away resources from competing needs for provision of most essential services for those sections of the society deprived of these basic needs for generations.

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