

## **Training Perspectives in Disaster Management – Indian Journey**

Vinod K. Sharma  
Disaster Management  
Indian Institute of Public Administration,  
New Delhi

Disasters and disaster Management in India is not new. The country has 'Himalaya' in the north, which is comparatively young mountain, having very high seismicity. The north-east region of the country, Uttarakhand, H.P. part of J&K and Gujarat are in seismic zone 5. We have very long coastal region which is prone to cyclones. Floods and Droughts are occurring in almost every State and causing enormous economic loss.

International Decade for Natural Disaster Reduction (IDNDR), UN initiative sensitized all developed as well as developing countries for shifting their strategy from relief towards mitigation and preparedness. India took lead and Ministry of Agriculture (Govt. of India) set up 'National Centre for Disaster Management' (NCDM) at the Indian Institute of Public Administration in 1995. The mandate of NCDM was 'Capacity Building of concerned officers in disaster management'. This was the beginning of paradigm shift in India from relief towards preparedness. Every State was requested to start a Disaster Management cell and start research and training in this area. Some of the States took it as an opportunity and trained their officials in disaster preparedness and mitigation.

In 1999, High Powered Committee (HPC) was set up by the Prime Minister of India under the Chairmanship of Shri J.C. Pant. The HPC report is another landmark in disaster management. The emphasis was given on capacity building and preparedness. The Disaster Management Act, 2005 provided legal framework to the Disaster Management in this country. The National Disaster Management Authority (NDMA) was set up for policy guidelines and to provide overall guidance for Disaster Mitigation, under the Chairmanship of the Prime Minister. Today, National Institute of Disaster Management is working for the capacity building of all role players in Disaster Management and providing support to all the state level Disaster Management cells. The country is in very good position in disaster training and education. The IGNOU played very significant role in distant education of Disaster Management. Several Universities have started Master's programme in Disaster Management. The CBSE put Disaster Management in the school level education in the country.

# Open Learning and Distance Education: Role in Disaster Management

Pardeep Sahni  
Public Administration Faculty, School of Social Sciences  
Indira Gandhi National Open University, New Delhi 110068  
Email: pardeepsahni@gmail.com

India Disaster management has undergone serious changes in the past. Especially after some major disasters in India since 1999, the focus on disaster management has been on '*ideographic*' to '*nomothetic*' that is, from individualistic to universal, and from '*normative*' to '*empirical*', that is, from what it should be? to what it is? Such paradigmatic shift in disaster management has led to more emphasis on pro-active approach for disaster management to substantially mitigate the losses, if not completely eliminate the chances of destruction. In keeping with the fact that disaster management needs to be taken up in a holistic manner and not as a piecemeal strategy, it requires a fairly large number of stakeholders to be educated and imparted requisite skills for effective management of disasters. It is rather difficult and financially unviable to cater to such a vast number of people and institutions through face-to-face learning.

Open Distance Learning system is gaining currency to cater to variety of needs of different segments of the society. It has been recognized as one of the most effective tools of reaching to a large number of clientele. It does not bind learners with the constraints of time and place. ODL also offers flexible opportunities to learners. Thus, ODL system is required to be extensively used for paving the way for educating the clientele and imparting required knowledge and skills to them.

Disaster management education through ODL system shall aim at:

- Wider dissemination of need based knowledge;
- Financial viability;
- Flexible mode of learning;
- Optimum utilization of Information and Communication Technologies;
- Vast reach and accessibility;
- Capacity building in new and multi-disciplinary areas like disaster management;
- Use of multi-media approach; etc.

Though at present, besides Indira Gandhi National Open University, the distance education programmes are offered by 14 State Open Universities and 230 Departments of Distance Education in different universities in India, yet the number of universities offering education programmes in the area of disaster management in India is far too less than required. Over the period of time, while appreciating the need for providing meaningful knowledge and skills to qualitatively manage disasters, more universities shall offer need-based education through distance mode. It would facilitate education on important facets of disaster management at pre-disaster stage, response stage, and post-disaster stage. ODL institutions can garner and analyze field based data on disaster scenario in various parts of the country. Such data can prove to be of immense use for disaster planning ultimately contributing towards effective development planning.

# **Earth Shattering Urgency of "Disaster Management Cells" in Higher Education**

Rajni Srivastava  
Department of Political Science,  
Pandit Deen Dayal Upadhyaya Government PG College,  
Saidabad, Allahabad (UP)

The World Disaster Report 2007, released on 12th Dec. 2007 by International Federation of Red Cross and Red Crescent Societies declares that the number, severity and impact of disasters are on the rise in almost every part of the Earth because of factors such as climate change, unplanned mass - urbanization, rapid population growth and environmental degradation. The World Disaster Report 2007 is full of threats and challenges because climate change which is anthropological, environmental and economic issue will lead to an increase in the frequency and severity, of weather extremes such as floods, droughts, heat waves and tropical cyclones. Global warming is among the world's most dangerous security risks. The planet is a collection of ecosystems - that regulates and organizes itself. Life evolves according to certain principles, such as forming networks, sharing resources, cycling-matter, developing diversity and so on. In this ecosystem' everything is interdependent and all matter moves in a complex web of life, no single variable can be maximized. Maximizing a single variable is the ecological understanding of stress. Human beings have maximized certain variables - population, consumption, among others and we have an economic system that says economies should grow indefinitely while world's Economy is an open sub - system within the closed global Eco-System. Because of this the entire planet is under stress. In our country the fight against climate change has to go down to every village. Our Home Ministry is about to train and appoint 'Climate Managers' whose task will be to create awareness and take steps for sustainable development at the local. They will be trained to handle natural disasters and prepare the villages to face such crises.

Three agencies – (i) Panchayat Raj, (ii) Science & Technology and (iii) Chair for Sustainable Development at Indira Gandhi National Open University (IGNOU) are to implement the scheme of 'Climate Managers'. In this task “Disaster Management Cells” alongwith the environmental programmes in higher education framework of States' Governments can be of great potentials. India is at high risk from natural disasters. 60% of the total landmass is prone to earthquake. 40 million hectares of land is prone to floods. 68% of the area is susceptible to droughts. Cyclones threaten 8,000 km. of our coastline. Disaster is a crisis event that surpasses the ability of the individual, community or society to control or survive its consequences. The United Nations defines disaster as "the occurrence of sudden or major misfortunes which disrupt the basic fabrics and normal functioning of a society or community". Disaster comprises series of abnormal events that lead to casualties, damaging properties, essential services, basic infrastructures and means of livelihood which shatter the normal capacity of the affected community to manage their very odd situations themselves. So disaster is the "catastrophic situation\* that scramble the normal human life in the community or society and invites immediate extraordinary emergency interventions for relief and rescue operation and later on to regulate and sustain human livings and the concerned surroundings. India, the biggest democracy in the World is very rich in human resources: - Its potentiality to be at the top is great. We simply need proper direction to our population around in disaster preparedness and management through

Disaster Management Cells. The recurring disasters continue to erode all the progress made in social and economic developments. This necessitates a paradigm shift from a culture of response to a culture of preparedness. The United Nations' General Assembly Resolution 236 of 1989 tried to alert us by remarking that the focus of attention should be shifted from rescue and relief to prevention, mitigation and preparedness. In fact, warning systems and preparedness measures reduce and modify the scale of disasters. A little investment in disaster preparedness can save many valuable lives and vital economic assets thereby reducing the cost of overall revenue relief. Our educational institutions can contribute a lot to achieve the paradigm shift from a culture of response to a culture of preparedness. The High Powered Committee on Disaster Management has rightly stated in its report at page 122 that "prevention, mitigation and preparedness are possible only through large scale awareness and knowledge generation, for which the education sector needs to play a critical role. Teachers are a critical source for disaster mitigation and preparedness programmes". Besides NCC, NSS, Scout/Guide, Rovers/Rangers, Eco-clubs, "the Disaster Management Cells" also need a special attention from each and every corner of the administration and governance. Because, the very nature and pattern of disaster management is quite different from those of NCC, NSS, Scouts/Guides, or Rovers/Rangers. We know it well that systematically disaster management at community level still needs top priorities. Here Government Degree colleges and Government Post Graduate Colleges that mostly are in rural surroundings can play the critical role in disaster risk management at community level through their very sound networking, environmental actions and awareness and knowledge demonstration. Today's earth shattering urgency is "to create large scale awareness and knowledge generation about prevention, mitigation and preparedness of disasters and for this the best tools are "Disaster Management Cells in States-Governments' Higher Education.

## **Status of Disaster-related Courses in Indian Universities**

P C Joshi

Asia Coordination- Microdis, Department of Anthropology,

University of Delhi, Delhi- 110007

Email: pcjoshi@anthro.du.ac.in

The increased incidences of disasters in the recent decades as well as increase in the awareness of disasters and related phenomena have likewise generated the need to produce systematic knowledge on all aspects of disasters. Since the last two decades, the need and importance of scientifically validated knowledge on disasters have been felt. It is also a fact that Universities, as citadel of knowledge are the right places where such scientific knowledge can be cumulatively and fruitfully generated. In the present study, the available courses offered in Indian Universities have been critically examined. It is seen that while there are few Universities where the structural and management aspects of disasters are covered, there is acute shortage of institutions covering the non-structural and soft areas of disastrology. Intensive courses on anthropological, sociological, economic, psychological, public health, educational and sundry other areas are not available to the students and researchers. While comparing the situation in other countries, we find that USA and UK have emerged as the destinations offering intensive courses in all aspects of disasters. Even in our immediate neighborhood Bangladesh, highly competitive courses on disasters are available. It is felt that there is an urgent need to start such courses in Indian Universities. Therefore, it is recommended that regulatory bodies like the UGC, AICTU, RCI and MCI should specially focus on funding non-structural high end courses on disasters for filling the existing gap in demand for generating such knowledge.

# **Role of Engineering Education in Development of Human Resources for Preparedness and Management of Natural and Man-made Disasters**

Khanindra Pathak,  
Department of Mining Engineering,  
Indian Institute of Technology, Kharagpur - 721302  
Email: khanindra.p@gmail.com

Besides the natural disasters, naturally induced manmade disasters and anthropogenic ally caused natural disaster will be demanding more preparedness in future to reduce the possible damages. The extents of damages due to natural disasters are now far-reaching due to indiscriminant human interference to nature. Recent developments in science and technology can be used to alleviate the impacts of disaster, provided adequate expertise to acquire, handle and process relevant information in time to formulate appropriate decisions are readily available. Persons engaged in disaster management require certain physical, mental and intelligence attributes that can be inculcated through properly designed curriculum and training. Manmade disasters can be results of unethical engineering. Present curriculum of engineering education hardly emphasize on engineering ethics and only few engineering discipline covers safety engineering as compulsory input to their programme. In this paper the author presents his experience of introducing the subject Safety Engineering in the Department of Mining Engineering at Indian School of Mines in 1997 and his present experience of teaching disaster management in the M. Tech programme on Safety Engineering and Disaster Management in Mines offered by IIT Kharagpur. The necessity of incorporating safety engineering and disaster management issues in engineering curriculum through courses like engineering ethics, legislation and policy as well as the requisite for redefining the role of Humanities departments in engineering colleges for need based human resource development will also be highlighted.

## **Education and Training in Earthquake Engineering in India**

D K Maharaj

Asian Institute of Management & Technology,  
Dhaurang, Yamuna Nagar, Haryana, India-135001  
Email: dilip\_maharaj@yahoo.com

In India, the education and training in earthquake engineering was set up at the University of Roorkee in 1960. A school in Earthquake Engineering was established with the assistance of CSIR. Now the school is called as Department of Earthquake Engineering with the financial support from UGC. The department has wide range of facilities. A large number of Ph.D students on various aspects of Earthquake Engineering have been produced from the department of Earthquake Engineering. The department has provided leadership in formulating codes on various aspects of earthquake engineering. The department has world wide recognition. In India all the old UTS like IIT Delhi, IIT Madras, Chennai, IIT Roorkee, IIT Kharagpur, IIT Bombay, HSC Bangalore and IIT Kanpur; NITS, BITS Pilani and BIT Mesra Ranchi have earthquake engineering as courses in their syllabus. The author has taught Earthquake Engineering, Geotechnical earthquake Engineering and earthquake resistant design of structures to PG as well as UG students. Most of the IITs, NITS, BITS Pilani, BIT, Mesra Ranchi conduct the short term courses. Over four decades, teaching and research have been started in Earthquake Engineering in many Institutions of our country. Earthquake engineering group at IIT Kanpur has taken many initiatives in Earthquake Engineering. India has many centers on Earthquake Engineering in Institutions as well as separate schools or Centres. One of the important initiatives includes Disaster Management in curriculum of School and Professional Education has been recommended to Board. Disaster Management training is beneficial and necessary for NGOS. Social work students or volunteers providing support and rehabilitation measure during disasters. The building should be built as earthquake resistant. This is not only true for Cities and towns area but even for villages. Mesons must be trained the earthquake resistant construction. There is lot of scopes for education and training for earthquake engineering in India. Keywords: Education and Training, Centre, curriculum, IITS, NUTS

# **Accessibility Index: Determining Community Access to Critical Services during Disaster**

Shailendra Singh Bisht\*, Vishal Mishra and Sanjay Fuloria  
ICFAI Business School, Hyderabad, Andhra Pradesh  
Email: shailendrabisht@ibsindia.com

The focus of most of disaster management programs is to send resources both physical and human from outside the disaster zone. This inherently implies delay in disaster mitigation efforts and subsequent loss of human lives and economic resources. This also delays the much needed economic and social recovery of the disaster zone. We must explore ways in which the recovery could be fast and also timely. One possible solution is to be able to map out the resources both social and physical available on ground which could be utilized for disaster management and recovery. The present paper argues for development of an index to determine the availability of systemic resources in a geographic region which could be utilized during disaster. Such an index could be based on information collected and disseminated by Census of India. The present paper uses the Indian census data of 2001 and develops the methodology for creating an accessibility index for a geographic unit. The paper also discusses the use of the accessibility index (AI) as a tool for evaluating the preparedness of various administrative units at the block, district and state level. Various variables which were indicators of physical and human resources useful in disaster management efforts were analyzed with Principal Component Analysis using SAS 9.0. The Eigen Vectors were used to create weights for the indicators and subsequently the accessibility index at various administrative levels was computed. This index could be used to map the existing service provision facilities available in the region and can also help the relevant decentralized authorities to evaluate immediate, intermediate and long term recovery needs and resource requirements for the region. Key Words: Index; Decentralization; Local communities; Early recovery.

# **Capacity Analysis for Disaster Mitigation and Reconstruction in the Built Environment: A Stakeholder Framework**

Dilanthi Amaratunga, Richard Haigh and Kanchana Ginige  
School of the Built Environment, The University of Salford, UK

The role played by the built environment in determining the casualties' and monetary costs of disasters emphasizes the need of reducing its disaster vulnerabilities. Enhancing capacities for disaster mitigation and reconstruction in the built environment is vital for reducing its vulnerabilities. It is necessary to identify the existing capacities in the context of disaster mitigation and reconstruction in the built environment to capture any required capacity enhancement. This paper introduces a framework (that was developed to analyse) the existing capacities of the built environment for disaster mitigation and reconstruction. The framework identifies five stakeholders in relation to disaster mitigation and reconstruction in the built environment: national and local governments, international community, non-state actors, private sector and local communities. It further divides each stakeholder group into three tiers such as policy environment, institutions and individuals in order to discuss the existing capacities in the given context. The paper demonstrates the framework with example capacities for each category that were drawn from literature. The institutions, strategies, frameworks, policies, laws & regulations, projects and programmes, which have been developed towards disaster mitigation and reconstruction in the built environment across the globe, are considered as the relevant capacities. Keywords: Built environment, Capacities, Disaster-mitigation, Reconstruction, Stakeholders.

## **Human Resource Issues in Disaster Mitigation and Management**

N V Deshpande,  
Disaster Management Centre, Chhattisgarh Academy of  
Administration, Raipur (CG)

India has significantly contributed particularly on the inception of Disaster Management Act 2005 towards popularization of the Pre-Disaster Culture of Prevention, Disaster Risk Assessment & Reduction, Mitigation (Structural & Non-Structural), Preparedness, *e.g.* Planning Awareness on Disaster Education, Training and Conduct of Mock-Drills, Community Awareness & Participation, Strengthening the Coping Capacities of the local Communities and the Administration in Disaster Vulnerable Areas of various States for efficiently managing the consequences of Natural and Manmade Disasters *vis-a-vis* planned process of Preparedness, Disaster Response and the of induction of alert mechanism during the pre and post Disaster period governing the issues *e.g.*, mainstreaming/linking DM in development process, Recovery, Rehabilitation & Reconstruction, Disaster Audit and promotion to method of safe construction. With this capable thinking on Training & Popularization of Disaster Management it is vital to promote Good Governance and Institutional Development *vis-a-vis* Creation of Task Force, Exposure Visits (National/International) to study best practices on DM, in-house one week course on DM, a suitable Human Development Management (HRM) Policy and processes to bring in greater decentralization, accountability and professionalism, so that efficient management of HRs is able to deliver excellent quality service to public and ensure optimum utilization of available resources, develop Training Strategies including assessment of training needs at all levels and chart a plan of action for training and capacity development at various levels of planning, implementation and monitoring/evaluation needs.

## **Paleoclimatic Reconstructions through Microfossils as Prerequisite to Capacity for Disaster Management: Additional curriculum for Higher Education in Marine Sciences**

S N Bhalla,

Ex-Professor of Geology, Aligarh Muslim University,

Address: A- 525, Sarita Vihar, New Delhi - 110 076

and

Rajiv Nigam,

National Institute of Oceanography, Dona Paula, Goa - 403004

Natural disasters are causing great losses in India which are preventable by proper planning and monitoring of high-risk areas. For improving disaster management strategies, there is a need to have knowledge of cause-effect relationships for many climatic disasters. Based on this information, plans for prevention and preparedness can be drawn for minimizing damage to life, property and environment. The best way to effectively manage natural disasters is to provide the basic knowledge about the facts and figures related to many type of natural/anthropogenic disasters at the level of higher education by suitably adding/amending the curriculum.

We have focused our disaster related discussions for coastal areas as India has more than 7000 km of coast-line and many of our big commercial and densely populated cities are situated along the coast. The coastal areas are victims of fluctuation in sea level, rainfall related changes like droughts or floods, storms/cyclones and tsunamis. The coastal sea may also get adversely affected by pollution [continental and atmospheric] and subsequent changes in fisheries - the main source of economy of coastal areas. Such studies are also relevant as the present world faces multiple environmental problems associated with global warming due to green house effect. Anthropogenic contributions are now considered as cause for accelerated sea-level rise, changes in monsoonal rainfall pattern, increase in intensity and frequency of storms, etc. Obviously, In order to foresee the future variability in climate, there is an increased awareness about the past climatic changes. However climate prediction is a very delicate task and needs a thorough knowledge about the past. Records have been maintained for not more than past 100-150 years beyond which we would need proxies to give us information about the past climate. During the last few decades, microfossils, especially foraminifers in marine sediments, have become the prime source to paleoclimatic reconstructions. The new methodologies and results of such studies need to be emphasized - All such issues, including sea-level fluctuations; monsoonal rainfall; sea storms and/or tsunamis, etc., with Indian examples are discussed. We are of considered opinion that paleoclimatic reconstructions through microfossils need to be introduced in curriculum for Higher Education, particularly in Marine Sciences.

# **Reflections on Capacity Building for Natural Disaster Management in Higher Education**

David Devraj Kumar,  
Florida Atlantic University  
Education & Science Building, Room 219  
2912 College Avenue, Davie, Florida 33314, USA

A reflective evaluation of capacity building for disaster management in an institution of higher education in the western hemisphere will be presented. The reflection is drawn from personal experience with natural disasters (hurricanes, e.g., Hurricane Wilma) and experience serving on a leadership team in emergency management at the college level in a large metropolitan multi-campus university in south Florida. South Florida is a known pathway for hurricanes, and parts of it has been affected by hurricanes in recent times (e.g., Hurricane Andrew, Hurricane Wilma). The presentation will address short range and long range planning as well as implementation of simple (e.g., phone tree) and complex (e.g., personnel safety) strategies in preparing for natural disasters, and managing disaster aftermaths. The strengths and weaknesses of the strategies in light of the research, teaching and service missions of the university will be analyzed. How Needs Assessment could play a vital part in various aspects of capacity building will be an integral part of the reflections. Published university procedures for staff, faculty and students in managing emergency situations will be reviewed. Implications for capacity building for disaster management institutions of higher education in developing countries will also be discussed.

# **Multi-to Interdisciplinary Disaster Management Paradigm in Higher Education, Research & Communication: Infusion Models**

Anil K Gupta, Mohammad Yunus<sup>2</sup>, and R M Mishra<sup>3</sup>  
National Institute of Disaster Management,  
New Delhi – 110 002,  
Email: envirosafe2007@gmail.com

2. School for Environmental Sciences / University Science Instrumentation Centre,  
BB Ambedkar (Central) University, Lucknow - 226025

3. School of Environmental Biology, APS University,  
Rewa – 486003, MP

‘Disaster Management’ as a discipline of practice and knowledge is not a new wheel to invent but application of modern technologies are certainly subject of research and innovations. Besides, the ‘climate-change dialogue and business’ regime demystified unintentionally the ‘disaster management’ principles which unfortunately long under the regime of ‘response and relief’ centric approach and an understanding that disasters generate in the environment and human interventions aggravate these to be major loss events.

The wreckage of lines between so called ‘natural’ and ‘man-made’ disasters at knowledge and science tables in understanding the trend-lines of increasing hydro-meteorological disasters. Floods, droughts, extreme events, landslides, fire, pests, diseases, and conflicts worldwide in general, and in developing nations in particular, manifests human failures in managing his regional and global environment within carrying capacities – as the key defaulter. Role of communication in disaster management has been emphasized much focus on “risk communication” and ‘usable form of data products’ is still poor. Role of telecom and print media is also to be re-visited for seeking positive role in implementing ‘culture of prevention’ and ‘preparedness against risk (rather than only disaster)’. At higher education, number of science, social-science and humanities disciplines with specialty-disciplines – disaster management utilizing roles and tools of many or rather most of these in one or other of its stage, step or activity is evident by now.

The termed well ‘disaster management as “multi-disciplinary” has the hazardous challenge of divergence, isolation, conflicts and differences to face especially in the early and young phases of its life-cycle, thus reaches to preparedness phase with less synchrony and . Another term is ‘interdisciplinary’ to be tested as a conceptual alternative towards better.

The conflict arises due to obliqueness (natural) of the central coordination or guiding authority, if for example, a mathematician depending and wanting more on numbers, historian in past records and lessons, political-scientist in dialogues, economist in financing and austerity, geologist in earth-processes, biologist in life-systems, etc. etc. and thus losing balance in holistic approach in solving disaster risk challenge most often weakens planning and decisions. Mutidisciplinary knowledge and skills, therefore, has to be centrally coordinated and managed/guided by interdisciplinary centrality. ‘Interdisciplinary’ must be in terms of blend of sub-disciplines of science(s), social-science and imperative human touch, shall help dissolve the challenge - a notion to be put under thought, already promoted as adaptation agenda by climate-change themes

and the so-called next paradigm of second environmental revolution that is professional rather than emotional in drive.

The disciplines – ‘disaster management’ and ‘emergency management’ have been promoted to develop as disciplines of higher education and practice – during UN-IDNDR, UN-APELL, followed by UNDP-DRM project, initiatives of IUCN, UNEP, UN-OCHA, IPCC, etc. re-established the subject as emergent branch of environmental studies. Dating back to Odum (1983), environmental science as the truest interdisciplinary stream of studies aiming at sustainable development of natural and human environment – with blend of natural sciences (geology, chemistry, physics, biology), social & economic sciences, mathematics and computers, and humanities/psychological aspects of development. The present paper places under screening the different isolated, multidisciplinary and interdisciplinary models of knowledge and skill capacity building curricula and suggests infusion models at various levels of studies for disaster management. A design (modified after author, 1999) of disaster management education at university level and research/communication support system is also suggested for developing nations.

# Networking Higher Education Institutions for Climate and Disaster Resilience

Srikantha Herath and Akhilesh Surjan\*

United Nations University – Institute for Sustainability and Peace (UNU-ISP)

53-70, Jingumae 5-chome, Shibuya-ku, Tokyo 150-8925, Japan.

Email: herath@unu.edu, surjan@unu.edu

While the world is still struggling and learning to ‘live with the disasters’, scientific evidences suggesting human induced climate change added a difficult dimension to the whole discipline. Adapting to climate change is an added challenge in the realms of disaster risk reduction due to: uncertainty of future climate, difficulties in downscaling global changes to local impacts and assessing future development-environment-disaster interactions. One of the key challenges in capacity building for climate and disaster resilience is: how can we reconcile the urgent need for rapid action (i.e. disaster risk reduction), with the longer-term need for robust & informed adaptation (to climate change) measures?

Recognizing that capacity development is not independent of research and hence useful methodologies have been adapted by the United Nations University (UNU) to facilitate rapid transfer of research into action on the ground by way of nurturing closely-knit academic networks and offering state-of-the-art training programs to in-service professionals from lifeline agencies. Climate change not only brings hazards but affects all aspects of life and livelihood, hence UNU’s uniquely carved ‘Integrated Capacity Development’ approach brings researchers, educationalists and local government together and its context based, tailor-made capacity building programs equip them with required methods and tools. UNU has come up with two strategic products targeting practitioners and learners as follows:

**For Practitioners:** Technical training workshops in association with the national agencies, local frontline agencies and universities in Asian countries on rainfall downscaling and flood inundation modeling; managing water resources at local and basin level. The training module focuses on downscaling rainfall forecasts from global scale to local scale, the application of GIS software for the hydrological analysis; application of a distributed hydrologic model for the flood inundation simulation and risk and damage analysis for the flood disaster. It also enhances understanding of scenarios under extreme climate, using appropriate methods and tools to assess risk and take policy relevant decisions.

**For Learners:** UNU engaged Presidents, Deans and Heads of the Departments of top Asian universities including educators, researchers, policy makers and administrators in recent consultation conferences and established a regional network to develop postgraduate educational and research programs on climate change adaptation. Work is progressing swiftly towards joint curriculum and course development, resource sharing, and joint research. This network of universities in the most vulnerable region of the world (Asia and Africa) is unique and timely. The regional networks will provide the foundations for a comprehensive postgraduate educational program to produce the necessary students, educators, and research needed for effective adaptation to climate change and enhancing disaster resilience. Eminent participants shared information on existing climate-related teaching and research within their institutions, and

shared innovative ideas for a regional curricula, joint research projects and resource sharing, as well as future action plans.

Challenges posed by changing climate, growing natural hazards and deteriorating ecosystem services can be best dealt by integrating disciplines and drawing synergies from each other to produce informed 'leaders of tomorrow' (by offering appropriate curricula to today's graduates) and also to reinforce existing human resource capabilities (by training in-service professionals). India Disaster Management Congress (IDMC) is a unique platform to bring academic and practitioners together. UNU's regional level initiatives and its benefits can trickle down to national and state level through IDMC while enhancing mutual learning and knowledge sharing with other Asian partners.

## **School Disaster Management: Lessons from Community-wide Drills**

Marla Petal  
Risk RED, Geneva, Switzerland  
Email: [mpetal@riskred.org](mailto:mpetal@riskred.org)

In California an annual community-wide "ShakeOut" earthquake drills are attracting involvement of thousands of schools and millions of children. This opportunity to think about risk reduction, and practice response skills is a significant long-term method for sustaining and improving preparedness. Risk RED, and the Coalition for Global School Safety teamed up with Earthquake Country California to study school readiness and resilience, and the impacts of these annual drills. The results of literature review of 75 years of school disaster management advocacy, and surveys of readiness and resilience indicate that while California has come a long way in terms of school structural safety, non-structural mitigation, and response-preparedness training, there are still significant challenges ahead. The infrequency of earthquakes makes transfer of knowledge across generations and to new urban migrants extremely important. Tangible progress in safety comes about as the result of the willingness to address structural and non-structural safety issues as a school community. Good practices in school disaster management emphasize a strong grasp of response functionality and flexibility. The power of drills in stimulating awareness, reflection, problem-solving, and leading to a mitigation action may all be more significant than the benefits of rehearsal. The rote knowledge of 'drop, cover and hold on' may not sufficiently stimulate imagination and understanding. Experiential learning and solid evidence-based advice are both of vital importance. School principals, teachers, students, parents and community members all have important roles to play. Impact and effectiveness research continue to be priorities.

# **Child Right to Disaster Safe Education - Case Study of School Safety Programme in Delhi**

Amir Ali Khan

National Institute of Disaster Management

New Delhi – 110 002

and

Shagufta Naseem Khan

Freelance consultant working for Child Rights in Disaster Risk Reduction,

Email: shagukhan@gmail.com

Among various rights, children have the right to safe, healthy and conducive environment for education. Under this right, it is an obligation on the society to provide sufficient and necessary safety at schools not only against natural and human made disasters but also from other conditions, which may cause harm to them. It has been observed from the past disasters resulting due to events like earthquakes and fires that school going children constitute one of the most vulnerable population group during such situations. It had been observed that during disasters, school buildings are destroyed, taking away the precious lives of children and teachers, and stalling access to education in the aftermath of a disaster. It is very costly and time consuming to rebuild the educational infrastructure in such situations. It has been documented from the past disasters that school buildings had been destroyed due to earthquakes and other natural disasters through out the world, causing deaths to large number of students, teachers and other functionaries of the schools. Few of the prominent earthquakes like Sichuan (2008), Kashmir (2005), Bam (2003), Bhuj (2001) and Armenia (1988) had caused huge devastations to the school buildings taking away thousands of precious lives of school going children and teachers. Schools provide tremendous opportunity in developing the culture of preparedness and culture of prevention against hazards like fire and earthquakes. Similarly, resources available with schools like buildings can be utilized for emergency shelters and relief centers. Vulnerability of schools in Delhi is quite high, where schools are being run in all sorts of buildings and premises with limited know-how about disaster (earthquake and fire) safe construction. Placement of non-structural components increases the level of vulnerability of majority of school buildings and putting them on higher risk due to earthquakes and fires. Government of Delhi is making an attempt to reduce the vulnerability of schools by taking structural and non-structural measures at school levels. The paper explores the efforts of the state government in dealing with the situation. The paper will explain in detail about the non-structural mitigation measures which come with little effort and are least costly, but contribute volumes to safety. In the paper an effort will be made to document the lessons learnt through case study of school safety programme in Delhi. Key words: children, earthquake, school, safety, structural & non-structural mitigation

## **Multi-Hazard Risk Model: Innovative Tool for Assessing the Degree of Risk within School based DRR**

Mehboob Ali Ajani

FOCUS Team

Email: mehboob.ajani@focushumanitarian.org

Assessing the degree of risk within a target community is a crucial process of Disaster Preparedness. Logically, it would constitute the primary first step within intervention efforts. Risk assessment requires a scientific base, sound methodology and an extensive reach. Thus far, varied risk models have emerged, each catering only to a specific geographical target community. A deeper analysis of school-based DRR reveals a lack of innovations in risk modeling and a dependence on Participatory Risk Assessment (PRA) techniques. PRA though valuable in risk identification, does not always allow for an exhaustive risk analysis. Hence, there is a current pressing need for novel risk assessment models that are replicable, scientific and facilitate a thorough analysis of the degree of risk present.

**Multi – Hazard Risk Model:** To bring a more scientific approach to school risk assessment in India, FOCUS India has developed a multi – hazard risk assessment model as part of its community- based school safety project and applied it within 265 schools to identify 25 of the most vulnerable. The algorithm based risk model was developed over several months of collective brainstorming with varied stakeholders and technical experts. The team drew other comparable methodologies created by the international Federation of Red Cross, United Nations Development Programme and the Asian Disaster Preparedness Centre.

The model enables DRR actors to quantify the risk posed by each hazard present in a school environment, gauge the school’s vulnerability to each of the hazards and measure its capacity to withstand the effects of that particular hazard. It is through such a detailed, focused and precise analysis of the degree of Risk present in school that DRR actors are able to zero in on the most vulnerable communities and intervention gaps. The Multi – Hazard Risk Model is thus a spring board for intervention.

**Application:** Such a risk model empowers the school authorities in managing the overall risk by understanding and minimizing the impact of the appropriate risk factors. The risk assessment protocol developed will be simplified so that it can be easily used by all school communities. This will make the DRR outcomes more locally sensitive, objective, effective and sustainable. This paper aims to share the risk assessment model and the facilitating methodology developed under this project with practitioners and experts in school safety. So as to enhance the mutual sharing of approached, methodology and processes for more effective school -based DRR in South Asia.

## **Disaster Management in Ten Vulnerable Secondary Schools of Subarnapur District in KBK Region of Orissa: A Societal Need**

Satyanarayan Hota

Sri Ganeswar Government High School, Panchamahala,

Joint Secretary, District Red Cross Branch, Subarnapur

& Member, SORT, IRCS, State Branch , Bhubmeswar, Dist-Subarnapur – 767034.

Email- [hsatyam111@rediff.com](mailto:hsatyam111@rediff.com)

Orissa is a flood, drought and cyclone prone state. KBK region of Orissa comprises the eight newly formed district of undivided Koraput, Balangir & Kaiahandi. In Subarnapur district rivers - Mahanadi, Tel, Suktel, Ong are create flood. The vulnerability of people comes under high risk. Enrollment of students is very poor in six vulnerable pockets with 10 secondary schools Karlamuhan. Brahmani, Digsira, Binka, Haradakhol, Lachipur, Panchamahala, Dhamiasal, Subalaya & Duleswar in rainy season . In Duleswar secondary school four district students are reading having forest and river as natural barrier. The above secondary schools this year adopted as vulnerable schools by the District Administration. Subarnapur and school safety programmes has been started. CBDP, First Aid, Search and Rescue, Non structural safety measures concepts are introduced through orientation training and Mock Drill method through the nodal teachers of the schools. Child mental health is also a core component to combat vulnerability. Children are the very important member of the society. Through them we reach to the parents. They are now aware how to prepare for flood and earth quake particularly in these schools. A detail study has been made by taking these ten schools as the pilot project area. The involvement of PTA, Community by forming School safety team is an essential component. Rural Academy for Research Enrichment is the nodal NGO which is organizing different workshop for all the programmes and providing technical support. New thrust area like access of students, gender issues and poverty how it is related and affected are highlighted in the main paper by the contribution of the stake holders. However the role of children in DM is necessary.

## **Disaster management through the EduSAT**

Irfana Begum

Vigyan Prasar, C - 24 Qutub Institutional Area, New Delhi -110 016

Email: begum.irfana@gmail.com

EduSat Communication network is a new technology for the informal education. With the help of Satellite, named EduSAT promote all types of education programme for every one. EduSAT is a strongest medium to reach the maximum people at a time without organizing any big meeting and conference. With the help of EduSAT it is also possible to do curriculum-based education, effective teachers training and community participation. It is mainly proposed for science communication/ science popularization purpose and also for disaster management. With the help of new technology EduSAT. It is easy to reach at a time with many people. Training through the EduSAT network is the strongest medium to aware the people (students, teachers and all) for the disaster and its management.

# **Challenges of Technical Education in the era of Globalization**

Gaurvendra Dwivedi,  
USIT, Guru Gobind Singh Indraprastha University, Delhi

Technical Education system is dynamic in nature. It faces many challenges in responding to societal, technological and economic changes in the local and global environment. The issue today is not so much about the value and role of Technical education in the social and economic development of a nation. Technical education is widely recognized as an important part of the total education and training system. The real challenge is how to reposition it in response to the global forces driving change in a knowledge-based economy. In this respect, I will draw upon and share my experience from an international perspective. It is hoped that this paper will provide some useful insights on the underlying philosophy, policies, choices and rationale, which have helped to shape the systems of technical education and training in India and other countries "When the winds of change blow, some build walls, others build windmills" (Chinese proverb)

The era of rapid scientific and technological advancement that we live in has spawned a communications revolution that is pervading every region of the world and creating a global information society. Indeed, though new information and communication technologies are dramatically changing the way people in many parts of the world live, learn, work or think about work. Meanwhile, progress in other areas of science and technology indicate that food production and health care may be revolutionized in the next two to three decades. Yet, there is a growing consciousness that the present pattern of socio-economic development cannot be sustained indefinitely because of its harmful impact on the environment. A shift towards a developmental paradigm that holds sustainability as its central requirement is therefore widely considered an imperative for the new millennium. To succeed in providing individuals with the right skills to keep the companies in our society competitive, universities have to attract individuals interested in reaching a certain level of excellence. This requires commitment by the students. The universities will face a big challenge in attracting good students to the technical education programs. To succeed in this task, the universities will have to develop their marketing activities, raise their image and understand the young students' point of view.

## **Toxic-Waste Disasters in Indian Scenario – Issues for Research, Education and Capacities**

S V S Rana

Toxicology Laboratory, Department of Zoology, Institute of Environmental Studies,  
Ch. Charan Singh University, Meerut – 250004

According to Ministry of Environment & Forests, Govt. of India (MEF), more than 13,000 licensed industries generate about 4.4 million metric tons of hazardous waste every year. The production of petrochemicals, pesticides, pharmaceuticals, textiles, dyes, fertilizers, leather products, paints and chloralkali has significantly grown. These industries produce wastes containing heavy metals, cyanides, pesticides and complex aromatic compounds such as polychlorinated biphenyls. They should deposit the waste at disposal sites set up by State Governments. Fifteen states were given funds to identify land fills sites, however, none were opened till 1997. Although India joined the Basel Convention in 1992, the nation's hazardous waste rules were brought into compliance only in 2000. In the absence of disposal mechanisms, industries either store the waste onsite or dump them in the open. They leach into the soil and then groundwater. Although the polluted water is not fit for irrigation, the people continue to drink it and are likely to suffer from various diseases including cancer. Although India woke-up to the dangerous realities of industrial hazards after the Bhopal disaster in 1984, the hazardous waste rules were formulated in 1989. However, in recent years, the Supreme Court has spurred major environmental actions expanding the scope of "the right to life", a concept enshrined in constitution of India to include the right to a clean and healthy environment. Nonetheless, several reports confirm the adverse effects of industrial wastes on communities and ecosystems. A few examples are ship breaking activity at Alang-Sosiya (Gujrat), arsenic poisoning in West Bengal, uranium poisoning in Punjab. Small scale industries also make their significant contribution in generating toxic wastes making a serious occupational health problem. These toxic sites need to be reclaimed and managed. A hazardous waste management policy in India is the need of the hour.

# **Disaster Management Capacity Building Initiatives in Pakistan: Integration with Environment & Development in Higher Education**

Baloch Allah Wadhayo

Faculty of Natural, Applied and Environmental Sciences;

Disaster Research Institute (DRI), Preston University Kohat, Islamabad Campus,

Plot # 85, Street # 3, Sector H-8/1, Islamabad, PAKISTAN.

Email: driprestonunibaloch@yahoo.com, balochaw@yahoo.com

Man made and natural disasters, calamities in Pakistan. Constitutional responsibility of state to help its citizen affected by natural disaster and calamities; responsibility of community, civil society to help its citizen affected by natural disaster and calamities. Cultural patterns of the societies. Brief discussion of the old Legislation, and summary of the old legislations and practices. Unwritten social norms, values and practices, to help people in distress during natural calamities- flood , fire, communal, ethnic riots and socio economic disorders. The need to have the new legislation and other constitutional measures taken in the wake of the October 2005 earthquake; the violence pattern in societies and the radical groups.

An introduction of the Ministry of Education, the Higher Education Commission Pakistan (HEC). General Guide lines for setting universities in Pakistan. Standard procedure of developing new curriculum, revising the curriculum with the changing patterns of subject and requirements of the society, industry and employment opportunities of the country. Policy decisions of HEC how to introduce new subjects and departments, of developing and up-dating curriculum. in Pakistan. Introduction of subjects of Disaster Management, environment, environment management for sustainable development. Development of curriculum for first aid water borne diseases causing health disasters, specially during the off seasons when there is lower water flow in rivers. Establishment of Ministry of environment (MO-Env), Environment Protection Agency (EPA), National Disaster Management Authority (NDMA), Earthquake Reconstruction and Rehabilitation Authority (ERRA). The new role and nomenclature of the partly defunct Civil Defence and Fire Fighting organizations of the country. The legislation, constitutional position, oganograms, and the charters of these establishments. Summary of the Curriculum developed by a public sector university and a private university - Preston university Kohat in Pakistan, to strengthen and reinvigorate National Programmes for Capacity Building of managers of natural and man-made Disaster.

## **Planning for Higher Education in Disaster Management**

Rajive Kohli,  
Centre for Continuing & Distance Education,  
Manav Rachna International University, Faridabad  
Email: [director.ccde@mriu.edu.in](mailto:director.ccde@mriu.edu.in)

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. After the declaration of 1990s as the IDNDR there has been a marked interest in the propagation of this as a vital subject. Education in disaster management was initially dominated by the USA after the earlier civil defence system of the UK, but what has been seen is a demand for safety management and sustainable development with emergency management being developed as ingenious systems. Hence disaster management is linked to wider governance policy issues.

The need to develop better understanding of disaster management and its inclusion in all aspects of planning, projects and activities to not only save lives and property but also to ensure reliability and efficiency implies its systematic and proper study. Although risk administration had been considered vital since long, a key component is to focus on the 'management' component rather than limiting to 'emergency'. The education of disaster managers would reflect regional, national and local requirements interweaved by the socio-economic framework and cultural context. This has led to the country evolving and refining its own disaster management system reflected in new legislations, organisations and systems that should meet its own specific requirements.

This paper would cover the professional disaster management system to better appreciate the requirements at the higher education level. Institutes like NIDM are doing yeomen service in this respect and some universities are having specific courses at certificate, diploma, under graduate and post graduate levels, but this is not enough in a vast country like India. Not only this, our disaster management education should also cater to the SAARC, Afro-Asian and global regions. In addition to focusing on the management systems, its inclusion in technical education and the social science aspects are pertinent where it need not be an extra burden but highlighted in the existing syllabus intervening with relevant disaster/emergency/safety related aspects. Research, in such related issues and those linking with them, needs to be encouraged. These need to be holistically planned so that the academic knowledge is logically extended into-practice and systems created for the benefit of the people. This would ensure that emergency managers are suitably trained and competent to perform their functions. Thus through such educational measures, disaster management would link to sustainable hazard mitigation and sustainable development without being overly restrictive but to encourage innovation and provide

empowerment at the grass-root level along with supporting the overarching national emergency management strategy

# **Disasters in India - An Overview and Issues for Research & Education**

Md. Muzamil Bhat\*<sup>1</sup>, Taiyyaba Yazdani<sup>1</sup>, Kamini Narain<sup>1</sup>, Mohammad Yunus<sup>1</sup> and Ravinder Nath Shukla<sup>2</sup>

1. School for Environmental Sciences, Babasaheb Bhimrao Ambedkar (Central) University, Lucknow (U.P.)

2. School of Environmental Biology, Awadesh Pratap Singh University, Rewa (M.P.)

Email: [bhatenv@rediffmail.com](mailto:bhatenv@rediffmail.com)

India is often exposed to disasters which include droughts, floods, severe cyclones, tsunamis, volcanic eruptions, hurricanes, landslides, avalanche, snowstorms, and earthquakes. The country is more vulnerable to natural disasters due to the tropical climate and unstable landforms, coupled with high population density, poverty, illiteracy and lack of adequate infrastructure. Many parts of the Indian sub-continent are susceptible to different types of disasters owing to the unique topographic and climatic characteristics. About 54% of the sub-continent's landmass is vulnerable to earthquakes while about 12% are vulnerable to floods, 28% is vulnerable to droughts and 8% of the land is vulnerable to cyclones. India is mostly prone to floods causing a number of deaths and property loss which affects the overall development of the country. In the recent years there has been a marked shift in the approach towards disaster management in India. More focus is laid on preparedness, mitigation and prevention. The administrative framework is being streamlined to deal with various disasters. Efforts are also being made to make disaster management a community movement where in there is greater participation of the people. Key words: Disasters; Landforms; Management; Tropical climate.

# **Climate Change: It's Effect on Living Beings – Risk Management and Research Agenda**

Taiyyaba Yazdani\*, Kamini Narain, Mohd Muzamil Bhat and Mohammad Yunus  
School for Environmental Sciences,  
Babasaheb Bhimrao Ambedkar (Central) University,  
Lucknow (U.P) 226 025, India  
Email: taiyyaba09@gmail.com

The Earth's climate has changed in the past and is continuing to change. The geological and archaeological record provides evidence of past climate change and human adaptation. Extreme weather events such as the flooding in the autumn and winter of 2000 have shown that climate can have a big impact on our society, with associated financial costs. The impacts of climate change are likely to become increasingly evident in the coming decades. The combined effects of rising temperature, falling summer rainfall, lower relative humidity and a longer growing season will affect the growth of trees and woodland. Because of the long-term nature of tree growth and woodland management, it is vital to take climate change into account when planning for the whole of the 21st century and beyond. Developing countries are faced with immediate concerns that relate to forest and land degradation, freshwater shortage, food security, air and water pollution. Climate change will exacerbate the impacts of deforestation and other economic pressures, leading to further water shortages, land degradation and desertification. Increasing global temperatures will result in rising sea levels. Populations that inhabit small islands and/or low-lying coastal areas are at particular risk of severe social and economic disruptions from sea-level rise and storm surges that could destroy cities and disrupt large coastal livelihoods. The widespread retreat of glaciers and icecaps in the 21st century will also lead to higher surface temperatures on land and increasing water stress. Sustainable development has become part of all climate change policy discussions at the global level, particularly due to adoption of Agenda 21 and the various Conventions resulting from the UNCED-1992. Sustainable development has become an integrating concept embracing economic, social and environmental issues. Sustainable development does not preclude the use of exhaustible natural resources but requires that any use be appropriately offset. Key words: Archaeological, Coastal, Deforestation, Desertification, Flooding, Geological, Livelihoods and storm.

# **Disaster Management Higher Education and Research in India: Prospects and Challenges**

Vedant Pandya,  
Management (MBA) Programme, and Post Graduate Programme in Disaster Management,  
Bhavnagar University, Bhavnagar 364 002 Gujarat  
Email: vedantvp@yahoo.com

Disaster mitigation strategies include higher education and research in the field of disasters, which in turn lead to better understanding of the causes and effects of disasters and also of the ways of effective mitigation of disasters. Universities and research institutions have a vital role to play in this regard. Adequate higher education and research policies coupled with allocation of sufficient resources result in long term effective mitigation practices at regional level. Higher education system at the national level has the most vital role to play. This paper attempts to provide a description of higher education and research of disaster management domain in Indian context and compares with such international practices. This paper argues that though higher education and research of disaster management in India has been a success story, it has yet to get a consolidated and integrated shape. Internalizing of disaster studies and research into other domains and branches of study in India needs to be given more importance and focus.

# **Role of Microfinance in Disaster Management: Issues and Challenges in Developing Implementation Capacities**

S.K.Singh and H.P.Mathur  
Faculty of Management Studies, Banaras Hindu University  
Varanasi - 221005.  
Email: hpmathur@gmail.com

The paper aims at underlining the role of microfinance in natural disaster risk reduction at the household and community and also to explore the mechanism of providing micro finance in the wake of natural disaster. The study has been conducted in the context of Indian sub continent. The united nation has brought into sharp focus the miseries of vulnerable groups particularly those who are dependent on agriculture for there livelihood and has emphasized the need for exploring the suitability and possible applications of micro finance for natural risk and disaster reduction. Many micro finance institutions (MFI) are involved in credit linkage with community based institution and efforts and strategies are to be explore and evolved for managing liquidity and protecting the integrity of the loan portfolio during natural calamities thereby sustaining the livelihood income of the family.

Micro finance intervention have been effected introducing idiosyncratic risks faced by the poor household and may also be applied to reduce the impact of natural disaster. Micro finance programs can diversify income by fostering different types of job and generating regular employment throughout the year.

The micro finance should be recognized as one of the series of measures and instrument that should be the part of a comprehensive disaster risk management strategy design to help poor households. Further micro finance along with eco friendly farming could be the best instrument in overcoming poverty and in providing livelihood for poor households in developing country like India. **Keywords:** Micro finance, Micro economics, micro financial institution, and idiosyncratic risks.

## **Role of Private Sector in Disaster Finance and Risk Reduction: Need to Mobilize Training and Motivation**

H.P. Mathur and S.K. Singh  
Faculty of Management Studies, Banaras Hindu University  
Varanasi - 221005.  
Email: [hpmathur@gmail.com](mailto:hpmathur@gmail.com)

Of late, the country is exposed to relatively high levels of risk from earthquakes to tropical floods. The rapid expansion of the population into areas that are susceptible to such disaster has placed millions of people and new areas of economic activity in harm's way. To address the financial and economic effects of such risks, households and businesses have relied on private insurance, state-sponsored funds and /or emergency disaster assistance to manage their natural hazard risk. In the aftermath of tsunami economic experts stress the government and policy makers to find ways to expand private-sector participation in disaster finance and risk reduction. The possible areas of public private participation have been discussed in the present paper are ,priority investments for prevention and alleviation, pilot programs financing of early warning system, institutional and policy development, creation and improvement of financial instruments (calamity funds, insurance etc.) Natural calamities are old; they are restlessly engaging the attention of every nation since recent times. The world civic bodies are awake to the situation and arousing every community to rise to the nuances and manage the disasters more effectively than in the past. There has been a Shift also in the emphasis now. Managing the activity after the event, whereas now the emphasis is managing the event before it occurs or in Other words engaging in disaster risk management and not mere disaster management. Forecasting and monitoring of hazards, studies and surveys to prepare an inventory of damages and prepare reconstruction and rehabilitation plans. Keywords: Tsunami, Private sector, Disaster management, and financial instruments.