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Let noble thoughts come to us from all sides

Rig Veda

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Chief Editor's Desk

Handling the Disaster Challenge

Disasters, whether natural or man-made, have been part of man's evolution since times immemorial. It is theoretically believed that the creatures that roamed the Earth before the advent of mankind like the dinosaur, the mammoth, the Siberian tiger, to name a few, are supposed to have vanished from the face of the Earth due to some natural disaster-climate change, loss of habitat or even fall of a meteor. The mysterious disappearance of the Indus Valley Civilisation is also attributed by historians to some disaster - the change of course of a river, a drought or an epidemic. Noah's Ark was built to save species from the floods - a natural disaster.

The Indian subcontinent is among the world's most disaster-prone areas. As per the current seismic zone map of the country, over 59 per cent of India's land area is under threat of moderate to severe seismic hazard. Out of the total geographical area of 329 million hectares (mha), more than 40 mha is flood prone. On an average every year, 75 lakh hectares of land is affected, 1600 lives are lost and the damage caused to crops, houses and public utilities is Rs.1805 crores due to floods.

Disasters are, therefore, not strangers to humankind. Droughts, floods, famines, diseases, earthquakes, tsunami - human kind has seen them all. And, yet survived. That is the miracle of human existence - the ability to adapt to circumstances and overcome hardships. This has been well proved during the recent floods in Chennai when people reached out to each other in a tremendous effort of humanity. However, disaster management cannot be left to human effort alone. Some element of preparedness and planning is necessary to handle disasters both on the part of governments and the community because when disaster actually strikes, the time to prepare would have passed. Care shouldn't start in the emergency room. Organisations like the National Institute of Disaster Management and National Disaster Management Authority are mandated to prepare pre-disaster management plans.

Over the years, losses due to disasters have shown growing trend in terms of lives and property throughout the world due to urbanization, increasing population and increasing degradation of environment. The Bhopal Gas tragedy in 1984, Uttarakhand floods in 2013, Fukushima Daiichi nuclear disaster (2011)which left a trail of death and devastation, were manmade and could have been avoided.

Natural disasters often strike without warning - like the tsunami which hit the Indian Ocean and left death and destruction behind. They are Nature's way of showing its power to mankind. And they have to be handled. Hence the need for post disaster response. Disaster teams which can reach a disaster spot immediately well prepared for any emergency is an urgent necessity. That cry for help from below a fallen wall, or buried underneath the earth should be heeded immediately. Medical teams should be rushed to handle medical emergencies. Post trauma care is the most important requirement at this stage as it may mean the difference between life and death. Locating near and dear ones at the disaster site is another big cause of worry. The National Disaster Response Force was established to fulfill precisely this vital necessity.

Creating awareness among the public is equally important as sometimes a little knowledge can go a long way in mitigating the bad consequences of a disaster. People, especially in disaster prone areas, can be trained to anticipate disaster and to deal with it in case the disaster actually happens. Effective communication is the keyword. The recent floods in Odisha are an ideal example of how a well-thought out communication strategy can assist in disaster management.

But, at the end of the day, disasters do strike. We cannot stop them but we can minimise them and arm ourselves with knowledge, so that too many lives wouldn't have to be lost. As Benjamin Franklin said "An ounce of prevention is worth a pound of cure". ❑

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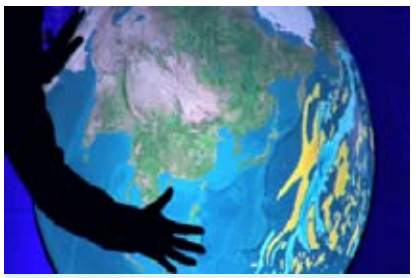
Post Sendai Initiatives and Way Forward

Kiren Rijiju



The outcome documents of the AMCDRR, New Delhi held in November 2016 is a reaffirmation of political commitments in the region and it helps in devising future strategies for identification of risks, challenges and equal distribution of scarce resources ultimately contributing to achieve sustainable development goals.

March 18, 2015 was a historical day as it witnessed adoption of a 15-year plan by 188 UN Member Nations, including India. The plan termed as 'Sendai Framework' was adopted during the 3rd UN World Conference on disaster risk reduction, held in the Japanese city of Sendai in 2015. Interestingly, it is the first major UN agreement on the post-2015 development agenda consisting of four major priority areas and seven targets to be met by 2030. The expected outcome of the framework is to prevent creation of new disaster risks and also to substantially reduce disaster risks. The four priority areas of Sendai Framework include: 1) Understanding Risk; 2) Strengthening Risk Governance; 3) Investing in disaster resilience; and 4) Improving capacities for disaster response as well as for building back better after disasters.

The Sendai Framework has set targets for substantial reduction in losses including reduction in number of deaths from disasters, number of people affected by disasters, economic losses and infrastructure losses. At the same time, it calls for increase in capacities through national and local strategies, international cooperation and improved access to early warning.

The new Framework calls for concrete indicators of progress towards these targets to be measured against the disaster losses in the decade after the adoption of the 2005 Hyogo Framework for Action (HFA), its predecessor. The Sendai Framework is built on elements which ensure continuity with the work done by states and other stakeholders under the HFA and introduces a number of innovations. For India, the framework reaffirms our commitment to address disaster risk reduction and building of resilience to disasters with a renewed sense of urgency.

In furtherance to its commitment to the Sendai framework, Government has taken up several important initiatives post Sendai Declaration. Firstly, as committed during the Sendai conference, India has successfully hosted the Asian Ministerial Conference on Disaster Reduction (AMCDRR) in November, 2016 and adopted 'New Delhi Declaration' and 'Regional Action Plan for implementation of the Sendai Framework'. In line with the all-of-society approach for disaster risk reduction enshrined in the Sendai Framework, the AMCDRR also provided an opportunity for multiple stakeholders to come together and make specific commitments to the implementation of Sendai Framework in Asia and the Pacific. These outcomes of the AMCDRR will guide

The author is Union Minister of State for Home Affairs and UN designated Disaster Risk Reduction Champion for Asian Region.

the implementation of the Sendai Framework in Asia and the Pacific. On one hand these outcomes will help contextualize Sendai Framework for Asia-Pacific, and on the other hand these will infuse a sense of urgency with regards to its implementation in the region. At the AMCDRR, Prime Minister outlined a ten-point agenda, to pursue the implementation of disaster risk reduction efforts in the region with renewed vigour. This ten-point agenda is included in Box A.

Secondly, Government of India has issued a set of priority actions to all the State Government based on the goals, targets and priorities of Sendai Framework 2015-2030. Government of India, during AMCDRR, 2016, has extended the grant of US $ 1 million to UNISDR towards effective implementation of the Sendai Framework for Disaster Risk Reduction in the Asian region.

Thirdly, in line with Sendai priority 4, National Disaster Response Force (NDRF) is strengthened, both in terms of state-of-the-art training and equipment so as to further empower it as a professional disaster response force. Besides, Government of India has approved the creation of National Disaster Response Reserve (NDRR) through a revolving fund of Rs.250 crore to be operated by the National Disaster Response Force. This dedicated fund would enable the NDRF to maintain a ready inventory of emergency goods and services comprising tents, medicines, food items, etc, which are immediately required after any disaster.

Fourthly, the government expressed keenness to share India's expertise and help other countries in disaster response as it did during Japan Earthquake in 2011 and Nepal earthquake of 2015. The government of India is making consistent efforts to promote regional cooperation by hosting the SAARC Disaster Management Centre to reduce disaster risks in the region and promoting knowledge sharing among the SAARC countries. SAARC Disaster Management Exercise (SAADMEX) 2015 held in Delhi provided ideal platform for sharing the government's ideas and experience and reaffirmed its commitment to strengthen the institutional mechanism of regional cooperation on disaster response among the member countries. Similarly, the Indian National Centre for Ocean Information Services (INCOIS), in Hyderabad, provides early warning not only to India but also to 28 countries in the Indian Ocean Rim.

Fifthly, in an effort to augment the capacity building in the field of Disaster management, in August 2015, NIDM has signed a Memorandum of Understanding (MoU) with Jawaharlal Nehru University (JNU) for financial assistance and academic cooperation for establishment of a Centre for Excellence in Disaster Research and Resilience Building at JNU for promoting higher education and research within a multi-disciplinary framework. In addition to this as a part of institutional strengthening, the Government of India has constituted the National Disaster Response Force Academy at National Civil Defence College, Nagpur for training to personnel involved in disaster management and response. The Government has also allocated Rs.205 crores for strengthening and up-gradation of National Fire Safety College to make it a state-of-the-art facility. For mainstreaming DRR into infrastructure development we are also deliberating on the modalities for imparting training to the infrastructure development agencies, especially those working in Hill States, on basic practical aspects to prevent disasters.

The Sendai Framework has set targets for substantial reduction in losses including reduction in number of deaths from disasters, number of people affected by disasters, economic losses and infrastructure losses.

Further, the Government has implemented the recommendations of 14th Finance commission and

Box: A

Prime Minister's 10-Point Agenda on Disaster Risk Reduction Outlined at the AMCDRR

1. Ensure that all development projects - airports, roads, canals, hospitals, schools, bridges – are built to appropriate disaster resilient standards and contribute to the resilience of communities they seek to serve. Build a coalition to support disaster resilient infrastructure.
2. Work towards risk coverage for all – starting from poor households to small and medium enterprises to multi-national corporations to nation states.
3. Encourage greater involvement and leadership of women in disaster risk management.
4. Invest in risk mapping globally for all hazards.
5. Leverage technology to enhance the efficiency of our disaster risk management efforts.
6. Develop a network of universities to work on disaster issues.
7. Utilize the opportunities provided by social media and mobile technologies.
8. Build on local capacity and initiative.
9. Ensure that the opportunity to learn from a disaster is not wasted. Establish a facility for technical support to post-disaster reconstruction of houses.
10. Bring about greater cohesion in international response to disasters.

Asian Ministerial Conference on Disaster Risk Reduction 2016

The Asian Ministerial Conference for Disaster Risk Reduction was held recently in New Delhi with the aim of providing a platform to member countries for sharing best practices in the field of Disaster Risk Reduction. About 4000 participants from the Asian Region participated in the Conference.

This was the first Asian Ministerial Conference for Disaster Risk Reduction (AMCDRR) after the advent of the Sendai Framework for DRR (SFDRR). The SFDRR (2015-2030) was adopted at the Third World Conference on DRR at Sendai in Japan in March, 2015. It identifies targets and priority action areas towards reducing disaster risk by 'reducing the damage caused by natural hazards like earthquakes, floods, droughts and cyclones, through an ethic of prevention'

Established in 2005, the AMCDRR is a biennial conference jointly organized by different Asian countries and the United Nations Office for Disaster Risk Reduction (UNISDR).

The next AMCDRR will be held in Mongolia in 2018

Two important documents - 'New Delhi Declaration' and the 'Asian Regional Plan for Implementation of the Sendai Framework' were adopted at the 3-day Conference.

New Delhi Declaration

The 'New Delhi Declaration' is a political statement spelling out the commitment of participating governments towards preventing and reducing disaster risk, and strengthening the resilience of communities, nations in the Asian region. Recognising the need to accelerate the implementation of global frameworks, it commits to a people-centred and whole-of-society approach towards DRR. It also emphasises the need to enhance the capacity of communities and ensure participation of all stakeholder groups towards achieving resilience.

Asian Regional Plan

The 'Asian Regional Plan for Implementation of the Sendai Framework' focuses on the 'How to' reduce disaster risk at national and local levels. It has arrived at a longer term road map of cooperation and collaboration, spanning the 15-year horizon of the Sendai Framework, as well as a two-year action plan to further disaster risk reduction with specific, actionable activities.

Among the actions highlighted in support of the implementation of the Sendai Framework was a focus on developing national and local strategies, policies and plans for Disaster Resilience and implementing them, including substantially increasing investment in disaster preparedness and to promote and strengthen education on disaster risk reduction. Risk assessment, the quality and availability of data and effective risk information systems for communities were referenced as a cornerstone for community participation and resilience even for those located in exposed areas.

The Conference also commemorated the first World Tsunami Awareness Day to spread awareness on tsunami. The observance of the day stressed on the importance of early warning systems and preparedness of communities in order to mitigate damage from the often devastating natural hazard.

Inaugurating the conference, the Prime Minister had called for regional and international cooperation in building disaster resilience. Reiterating the government of India's commitment to the Sendai Framework, the Prime Minister outlined a ten point agenda for disaster management.

approved an allocation of Rs 61,220 crore (comprising of Rs 47,029.50 crore as central share and Rs 14, 90, 50 crore as state share) in State Disaster Response Fund (SDRF) to all the states for 2015-16 to 2019-20 which is significantly higher than the allocation of Rs.33,580.93 crore recommended by 13th Finance commission for 2010-11 to2014-15. Over and above the provision of the SDRF, funding is supplemented from the NDRF in the wake of disasters of severe nature as per the requirement. During the year 2015-16 total Rs 17,749.18 crore (which includes release of Rs 5,297.22 crore from NDRF) has been released to state Governments to manage the calamities of various nature.

Lastly, while re-emphasizing that State has a primary role in reducing the disaster risk, the Sendai framework also calls upon other stakeholders including the private sector to be involved in disaster preparedness and mitigation planning as well as relief and recovery phase. In the mission of Disaster Risk Reduction there is need of collaboration by all entities, public and private, to strengthen the mechanisms for disaster risk reduction by using and sharing of reliable and affordable modern technology for capacity building. The government of India believes that the sustainable infrastructure must take into account all factors, including secondary hazards that resulted from rapid urbanization. The outcome documents of the AMCDRR, New Delhi held in November 2016 is a reaffirmation of political commitments in the region and it help in devising future strategies for identification of risks, challenges and equal distribution of scarce resources ultimately contributing to achieve sustainable development goals. ❑

Rights of Persons with Disabilities Bill - 2016
Passed by Parliament

The Lok Sabha passed "The Rights of Persons with Disabilities Bill - 2016"on 16th December 2016. The Bill will replace the existing PwD Act, 1995, which was enacted 21 years back. The Rajya Sabha had already passed the Bill on 14.12.2016. Under the Act, the types of disabilities have increased and at the same time provisions for additional benefits have been introduced.

There are strict provisions for penalties for offences committed against persons with disabilities and violation of provisions of the new law.

The new Act has several salient features which will enhance opportunity, equality and accessibility.

The New Act will bring our law in line with the United National Convention on the Rights of Persons with Disabilities (UNCRPD), to which India is a signatory. This will fulfill the obligations on the part of India in terms of UNCRD. Further, the new law will not only enhance the Rights and Entitlements of Divyangjan but also provide effective mechanism for ensuring their empowerment and true inclusion into the Society in a satisfactory manner. Passage of the Act is a landmark moment and will add tremendous strength to Accessible India movement.

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Managing Risks of Disasters for Sustainable Development

P G Dhar Chakrabarti

Implementation of the Sendai Framework in conjunction with the Sustainable Development Goals and Paris Climate Agreement provide opportunities for addressing this hitherto neglected but challenging tasks of disaster risk management in India

Disaster management has evolved a long way from managing events of disaster to managing the risks of disasters. Risk management approach to disasters means that the underlying hazards and vulnerabilities, natural or anthropogenic, are assessed scientifically and necessary measures are taken to prevent the creation of risks ab initio. It also means that existing risks are reduced through a combination of various structural and non-structural measures including innovative mechanisms of risk sharing and risk insurance. For the residual risks that are neither prevented, nor reduced nor insured, there is no other alternative but to get prepared for disasters. Disaster preparedness means getting prepared for responding to disasters effectively as and when it strikes so that lives can be saved and human sufferings reduced to the maximum extent possible through measures like evacuation, search and rescue and humanitarian assistance like shelter and relief. Preparedness further means having policies, strategies and resources in place for 'building back better' livelihoods, houses and infrastructures devastated during disasters.

Disaster risk management has assumed critical importance for sustainable development as damage and losses due to disasters are spiralling despite the plethora of measures taken to reduce such losses. As per an estimate of the UN office for Disaster Reduction (UNISDR) during the past two decades as many as 1.3 million people were killed, 4.4 billion people affected and 2 trillion dollars lost due to disasters.

India had its share of such damage and losses. The World Bank had estimated that the economic losses due to disasters during the late nineties and early years of this century were close to twp percent of the GDP, whereas similar amount was not invested for public health in the country.

Disaster and Development

Disasters are intertwined with development in a three-dimensional nexus. First, disasters eat away hard earned gains of development of years and decades. Second, lack of development exposes vulnerable communities to the risks of disasters. Third and ironically in an opposite direction, development creates new risks of disasters, such as houses and infrastructure without compliance of zoning and building regulations are vulnerable; mining and industries in ecologically sensitive zones may destroy the natural buffer to disasters, while fossil fuel based production and consumption enhance risks of climate related disasters.

The author has served as Secretary, NDMA, Executive Director, NIDM, Founding Director, SAARC Disaster Management Centre and Member, Advisory Group of UN Secretary General on Central Emergency Response Fund.

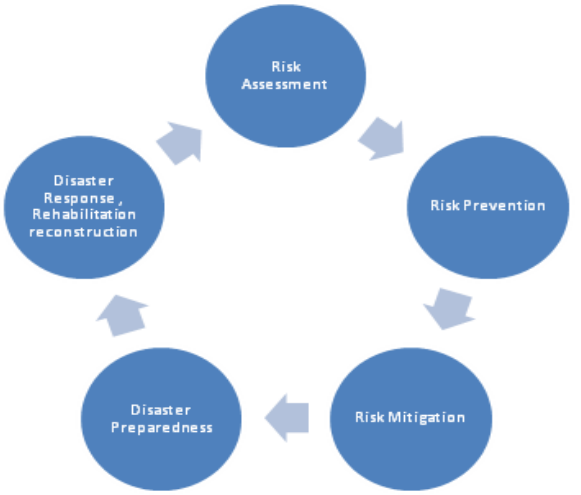

Figure 1 From Disaster Management to Disaster Risk Management

Momentum

Growing global concerns for disaster resilient sustainable development found a new direction and momentum in 2015 when three parallel yet interdependent processes converged to define the development agendas for the next one or half decade and beyond. The first was the *Sendai Framework for Disaster Risk Reduction 2015-2030* that was adopted in Sendai Japan in March 2015. The Sendai Framework for the first time ever, fixed a set of seven outcome-based global targets of disaster risk reduction. These include substantially reducing number of disaster mortalities and affected people and reducing direct economic loss and damages to critical infrastructure, besides increasing access to multi-hazard early warning systems and enhancing international cooperation for disaster management. It identified four priorities of action for disaster risk reduction at local, national, regional and global levels. These are: (i) understanding disaster risks; (ii) investing in disaster risk reduction for resilience; (iii) strengthening risk governance to manage risks; and (iv) enhancing preparedness for effective response, recovery, rehabilitation and reconstruction.

The 2030 Agenda for Sustainable Development adopted by the UN General Assembly in September 2015 embedded disaster risk management in as many as 8 out of 17 Sustainable Development Goals (SDG) with specific targets for building disaster resilience across different sectors of development.

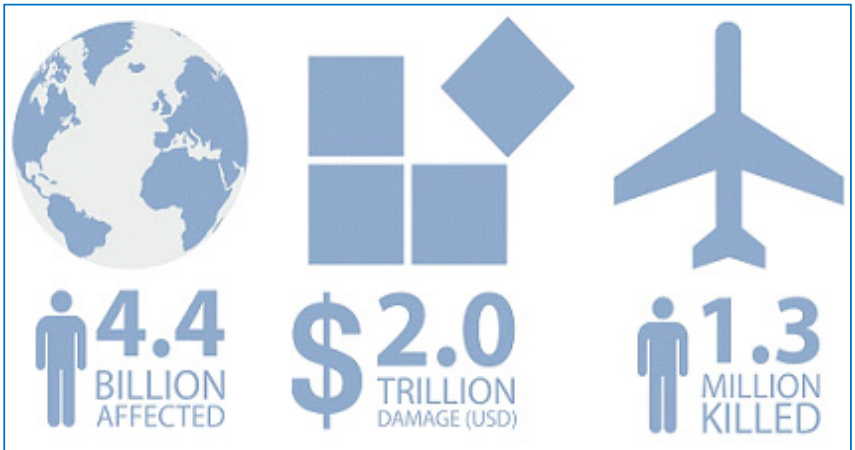

Figure 2 Impacts of disasters (1995-2015)

Figure 3 Three dimensions of disaster-development nexus

Sustainable Development Goals	Targets on Disaster Risk Resilience
Goal-1: Ending poverty in all its forms	Target 1.5: Reduce exposure of the poor to climate related extreme events and disasters
Goal-2: Ending hunger, achieving food security and promoting sustainable agriculture	Target 2.4: Strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters
Goal-3: Ensuring healthy lives	Target 3.6: Develop early warning and reduce risk of health related disasters
Goal-4: Ensuring inclusive and equitable quality education	Target 4a: Build and upgrade educational facilities that are safe from disasters
Goal-9: Building resilient infrastructure	Target 9.1: Develop quality and reliable infrastructure that are resilient to disasters
Goal-11: Making cities and human settlements safe, resilient and sustainable	Target 11.5: Significantly reduce the number of deaths, affected and economic losses by disasters
Goal-13: Combating climate change and its impacts	Target 13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters
Goal-15: Reversing land degradation	Target 15.3: Restore land affected by drought and floods

The Paris Agreement on Climate Change signed in December 2015 outlined eight specific action areas for enhancing 'understanding, action and

support' for disaster reduction. These include: (a) Early warning systems; (b) Emergency preparedness; (c) Slow onset events; (d) Events that may involve irreversible and permanent loss and damage; (e) Comprehensive risk assessment and management; (f) Risk insurance facilities, climate risk pooling and other insurance solutions; (g) Non-economic losses; and (h) Resilience of communities, livelihoods and ecosystems.

Challenges and Opportunities

India played crucial role in the finalization of all three global agreements of 2015. Being the second largest populous country, sixth largest economy and the fastest growing major economy, India has also the largest number of people with abject poverty, children with malnutrition and adults with illiteracy in the world. Therefore India holds the key to achieving the global goals and targets of sustainable development and disaster resilience.

India has put in place legal and institutional mechanisms at various levels and deployed scientific and technological capabilities for disaster risk management with clearly visible impacts on loss of lives, as was demonstrated during some of the recent meteorological disasters like cyclones (cyclones Phailin and Hudhud). However similar results were not seen in hydrological disasters like floods or cloudbursts (Uttarakhand, Srinagar and Chennai) or geological disasters like landslides (Malin and north Sikkim). Technological disasters like industrial or road accidents continue to spiral; threats of biological disasters like epidemics and pandemics loom large, while environmental disasters like depleting water resources and rising level of air pollution in rapidly growing urban settlements are causes of major concerns. India's capability of managing risks of earthquakes have not really been tested after the Kutch earthquake of 2001 and experts have been warning of catastrophic impacts if major earthquake strikes anywhere near thickly populated urban centres.

This provides opportunities for planning, designing and implementing the development projects in different sectors in manners that do not compound the risks but contribute to the process of mitigating the risks of disasters.

India has good base of scientific as well as traditional knowledge and understanding of the natural and anthropogenic processes of risks of disaster, but these are not always feeding into the processes of designing and implementation of social and economic development programmes, activities and projects, with the result that benefits of these projects for disaster risk reduction are not optimised and on the contrary some of these projects are directly or indirectly contributing to the creation of new risks of disasters or exacerbation of existing risks of disasters.

India has embarked on the pathway of rapid economic growth which is expected to be propelled by some of the new initiatives like Make in India, Skill India, Digital India, Swachh Bharat Abhiyan, Smart Cities Mission etc. Probably it would not at all be an exaggeration to say that during the next one and half decade public and private investments for social and economic development of India would far exceed the investments made during the past four or five decades. This provides opportunities for planning, designing and implementing the development projects in different sectors in manners that do not compound the risks but contribute to the process of mitigating the risks of disasters.

Mainstreaming disaster risk reduction into every aspect of development had been in the agenda of disaster management for quite some time, but not much headway has been achieved in this direction. Neither the National Disaster Management Authority has come up with any general or specific guidelines for mainstreaming nor the sectoral ministries and departments of the central or state governments developed concrete plans of action for building disaster resilience in their respective sectors. Implementation of the Sendai Framework in conjunction with the Sustainable Development Goals and Paris Climate Agreement provide opportunities for addressing this hitherto neglected but challenging tasks of disaster risk management in India. ❑

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India needs leaders who are dynamic, proactive, capable and knowledgeable. All professions including Medicine, Engineering, Pharmacy, Management, Law etc. employ educated & skilled people in their respective fields. Then why not in Politics, which is as crucial as it concerns the wellbeing of nation and its populace at large. We have under graduate and post graduate programs to address the challenges of other sectors but none for those who envision to enter into politics in a professional way. When we look at the present political scenario, we all feel that India needs Leaders who have a fair idea about what is happening and what they need to do when they take over the mantle. But how do they go about it? Like getting proper guidance, training, knowledge whereby they can form their own perspective, and giving better guidance when leading the country and its citizens. Today's political environment demands knowledge & skills- like Foreign Policy, Political Economy, International relations, Public Policy, Constitution, Five Tier Structure and grass root politics required to win the elections, Election Management, Constituency Development etc.

The political leaders in their active public life are concerned mostly with Social Work focusing on policies related to betterment of the masses. They require trained/skilled manpower to assist them in this endeavor in the following areas- Political Analyst, Political Strategist, Election Consultants, Constituency Managers, Public Relation officer, Social Media analyst, Brand consultants etc.

All these positions require good analytical, research, managerial, leadership & communication skills along with good decision making power. Many professionals work for government and make excellent money, enjoy security in their positions. Think tanks and private firms also provide job opportunities, although the pay in such cases can vary, depending on the grants received and the group's political affiliations. These professionals represent the country in international forums, indulging in debates of grave importance, having meetings with international leaders, passing of bills in parliament etc. They assist to resolve the internal problems and issues as well as we need to make good relation with the other nation.

As professionals work for a corporate organization to enhance its brand equity, a healthy balance sheet and a good customer feedback, politicians are striving hard for their respective political parties and constituency. MIT School of Government, Pune established in 2005, is the only institute in the country to provide experiential learning and training to the young, dynamic leaders of India to take up challenging positions and leadership roles in the democratic fabric of the nation.

YE-205/2016

Managing Disaster Risk

Santosh Kumar

All states should be engaged with scientific and research institutions, to work more closely together and to create opportunities for collaboration, and for businesses to integrate disaster risk into their management practices for making SDG achievable

Only thing constant is change. All around, things are changing and raising new aspirations and new challenges. Environment, economic, social and political environment across the goble are not the same which used to be in late 80s and 90s. Technology and natural environment have also guided the development discourse. Year 2015 , has been very significant where three major global agreements have been signed. Sustainable Development Goals (SDG), Paris agreement on climate change– cop 21 and Sendai Framework Disaster Risk Reduction 2015-30. International communities have committed themselves for achieving goals and targets set in all three agreements. All the documents have many common ground also where these three are converging. Studies on disaster losses have shown that if we have to achieve sustainable development goals we have to plug disaster losses as priority and for reducing disaster risks, we have to address issues of extreme events and climate change. All these three development, disaster risks and climate change are inter connected. and hence solution are also required to be integrated.

Disaster and SDG Challenges

Disaster risk reduction cuts across different aspects and sectors of development. There are 25 targets related to disaster risk reduction in 10 of the 17 SDGs, firmly establishing the role of disaster risk reduction as a core development strategy.

Building disaster resilience is critical in achieving the goal of eradicating extreme poverty. As one of the key drivers of disaster risk, given the way it creates and aggravates economic and social vulnerability, poverty has significantly contributed to the growth in risk conditions, which further limit the progress of sustainable development. Evidence suggests that the impacts of disasters undermine hard-earned development gains in both developing and developed countries, potentially dragging the poor and most vulnerable even deeper into poverty. By 2030, there could be 325 million people trapped in poverty and exposed to the full range of natural hazards and climate extremes particularly in sub-Saharan Africa and South Asia. This suggests an urgent need to build and strengthen the resilience of poor communities to prevent future disaster events from pulling more people into poverty and to protect their livelihoods and assets to help them recover.

The author is Executive Director, National Institute of Disaster Management. He has long experience in drafting frameworks for Disaster Management at national and global levels.

The Nepal earthquake post disaster damage and loss study has clearly mentioned that this disaster will end up pushing an additional 2.5 to 3.5 percent people of Nepal into poverty in 2015-2016 which translates into at least 700,000 additional poor and damge is of almost US $7 billion. It also reveals that the poorer population residing in the six lowest Human Development Index (HDI) districts that witnessed disaster effects above (National Population Register) NPR 130,000 per person are in Dolakha, Sindhupal chowk, Gorkha, Nuwakot, Rasuwa and Dhading, which confirms that the poorest and the most vulnerable people usually sustain the worst impact of disasters.

The impact of disasters upon our societies has become a major impediment in our vision for achieving sustainable socio-economic development. The economic damage and loss is estimated at billions of dollars, setting back our goals for a prosperous region. With every disaster, there is a significant impact on various sectors of development like agriculture, housing, health, education and infrastructure.

Paradoxically, the increased impact of disasters and people's increased vulnerability to disasters have much to do with unsustainable development activities, such as improper use of land and environmental degradation. Given the increasing frequency and scale of disasters in our region, our countries need to have coordinated solutions in place to protect communities, critical infrastructure and development.

It is essential that the process of development planning identifies and analyzes the underlying causes of current and future social and economic risk and factors in measures to reduce the risk. If national targets for growth and development - including employment and trade- are to be realized, the shift from managing crisis to managing risk must be reflected in public policy frameworks and planning decision processes so as to enable risk-informed investment and practice.

Disaster Management

The very definition of disaster as adopted by United Nations (UN) which also has been coopted in National Act of Disaster Management 2005, has defined as "disaster is a serious disruption of a community or a society functioning, causing widespread human, material, economic and/or environmental losses which exceed the ability of the affected community or society to cope using its own resources. Natural hazards may be prevented through application of careful planning, preparedness and mitigation measures"

Disaster response is visible with high accountability but and hence everyone is willing to respond. On the other hand, disaster preparedness and risk reduction is Invisible but of high outcomes go unattended.

Different stakeholders have understood "Disaster management" differently. Those who respond, for them it is purely a response management. Those who get engaged in relief and immediate recovery, for them it is a humanitarian crisis and relief management. Both are post disaster activities. Pre disaster planning for risk reduction, risk mitigation and preparedness are the new rule of business in the sector. And those who believe in it , for them it is both i.e pre disaster risk reduction and post disaster response . In most part of the world , especially in South Asia and in India too post disaster response was considered as one of the most important activities for disaster management. Hence, Institutional system, manuals, policy, programmes were designed to address these concerns only. Entire governance for disaster management was developed to address post disaster scenario. But, fortunately it is now the story of the past. Now, since last one and half decade, disaster management in India has gone into change and it is is getting redefined on a regular intervals with new experiences.

India , after the Sendai framework adopted in 2015, hosted first Asian ministerial conference in the month of November 2016 to draw a Asian road map for Disaster risk Reduction , predominantly pre disaster activities, for the Asian and Pacific nations. Hon'ble Prime minister of India had inaugurated and guided by giving ten principles for disaster risk reduction and resilient development. Prior to that risk reduction, for the Global Road map, in Sendai (small city of Japan) global conference was organized in the month of March 2015, where more than 185 countries of the world signed the document for disaster risk reduction is called as Sendai framework of Action 2030. India is also one of the signatories.

Disaster response is visible with high accountability but and hence everyone is willing to respond. On the other hand, disaster preparedness and risk reduction is invisible but of high outcomes go unattended. Not much have been done despite lot of conventions and declarations across the globe. Global community have realized with lot many evidences based on success stories that prevention pays. India too has witnessed such example. In case of super cyclone in Odisha, 1999 we lost more than 13000 lives with huge damage to the property. Whereas, in 2013, when cyclone Phylin hit, which was kind of repeat story of 1999 cycole, with almost similar intensity. But the impact was entirely opposite of 1999. The number of death toll reduced to just 22. Of course, damage to property was enormous. This event become the Global Best Practice as how India has been able to reduce the death too substantially low level.

Recent Cyclone in Tamil Nadu Varda has also shown the similar results where death toll is just 14 although the damage to property is huge as in case of cyclone Hudhood. Hence it is clear that with our sincere efforts made in making ex-ante investment in building capacity has demonstrated a positive result in reducing the death toll. Now the concern is how to address the losses occurring to property- roads, brdiges, housing, hospitals, electricity, productive capital loss etc. ?

Globally, regionally and at the local levels, mainstreaming risk reduction in development process has been an important agenda but remains complex undertaking with many challenges. We have to learn from our past if we are to build a resilient future.

There still remains a need for knowledge sharing among the larger DM community and we need a common platform to create a versatile interface among policy-makers in the Government and disaster managers at all administrative levels.

This means that at national and local levels, plans should be harmonized to incorporate awareness generation of adopting disaster resilient building byelaws, land use zoning, resource planning, establishment of early warning systems, and technical competence. To this end, it is also necessary to take help of and disseminate new science and technology innovations, early warning systems, and capacity development and integrate them into national, subnational, and sectoral policy planning.

In most of the success stories, where certain commonalities can be underlined for future lessons which could change the entire discourse of disaster management. Ex-ante investment in pre disaster time is prudent than just focusing on response and relief. And, this lesson is not new in India. Just to quote 1956 Earthquake in Anjar, Gujarat. One of best practices of disaster risk reduction in Gujarat was after the earthquake, the state government had relocated the construction of city and a disaster resilient construction was carried out. In the Bhuj earthquake of 2001, half a century later, most of the houses in the town of Anjar had witnessed great devastation, except those, which were in the relocation site of 1956. This shows one of the best examples of mainstreaming disaster risk in development sector but unfortunately, was forgotten over time. We need to document and learn from our past experiences and to use these to reduce vulnerabilities at regional, national, and local levels. Kutch earthquake 2001 of Gujarat , in long term reconstruction programme mainstreaming DRR was the key principle which lead to an exemplary recovery programme as Build Back Bettr. It has also been conferred UN Sasakava Award for best practices and recognized globally.

Globally, regionally and at the local levels, mainstreaming risk reduction in development process has been an important agenda but remains complex undertaking with many challenges. We have to learn from our past if we are to build a resilient future.

Numerous economic and financial studies have described the needs and advantages of disaster risk reduction. According to an UNESCO estimate, today only $4 out of every$100 allocated for humanitarian assistance are spent on risk reduction measures despite research illustrating investments in disaster risk reduction saves a significant amount in prevented disaster losses. To reduce negative impacts of human activity on the environment and to build the capacity of vulnerable populations to protect themselves against natural hazards, disaster risk reduction should be an important aspect of global poverty reduction initiatives in the coming years.

Sendai framework 2015-30

The Sendai Framework is the successor instrument to the Hyogo Framework for Action (HFA) 2005-2015. Building the Resilience of Nations and Communities to Disasters. The HFA was conceived to give further impetus to the global work under the International Framework for Action for the International Decade for Natural Disaster Reduction of 1989, and the Yokohama Strategy for a Safer World: Guidelines for Natural Disaster Prevention, Preparedness and Mitigation and its Plan of Action, adopted in 1994 and the International Strategy for Disaster Reduction of 1999.

The Sendai Framework is built on elements that ensure continuity with the work done by States and other stakeholders under the HFA and introduces a number of innovations as called for during the consultations and negotiations. Many commentators have identified the most significant shifts as a strong emphasis on disaster risk management as opposed to disaster management, the definition of seven global targets, the reduction of disaster risk as an expected outcome, a goal focussed on preventing new risk, reducing existing risk and strengthening resilience, as well as a set of guiding principles, including primary responsibility of states to prevent and reduce disaster risk, all-of-society and all-of-State institutions engagement. In addition, the scope of disaster risk reduction has been broadened significantly to focus on both natural and man-made hazards and related environmental, technological and biological hazards and risks. Health resilience is strongly promoted throughout.

The Sendai Framework also articulates the following: the need for improved understanding of disaster risk in all its dimensions of exposure, vulnerability and hazard characteristics; the strengthening

of disaster risk governance-including national platforms; accountability for disaster risk management; preparedness to "Build Back Better"; recognition of stakeholders of new risk; resilience of health infrastructure, cultural heritage and work-places; strengthening of international cooperation and global partnership, and risk-informed donor policies and programs, including financial support and loans from international financial institutions.

The new National Disaster Management Plan will maximize the ability of our country to cope with disasters at all levels by integrating disaster risk reduction into development activities across all sectors. The NDMP will also takes into account global trends in disaster management and incorporates the approach laid out in the Sendai Framework for Disaster Risk Reduction 2015-2030 to which India is a signatory.

Conclusion

For reducing disaster impact, in resource scarce nations/ states, it is important to make ex-ante risk reduction investment in development planning . Moving from risk blind to risk informed decisions for making investment would be a prudent choice. Projects planned for the future in high disaster prone areas should mandatorily undertake disaster risk audit of the projects. Whether it is private or public investment it should be made as basic principle for protecting development gains and attaining resilience. There has to be a broader and a more people-centred preventive approach to disaster risk. Disaster risk reduction practices need to be inclusive and accessible in order to be efficient and effective. Governments should facilitate, incentivize and engage with relevant stakeholders especially private sector in the design and implementation of policies, plans and standards. There is a need for engaging women as leader, youth, children, civil society, academia for making it inclusive. Also, all states should be engaged with scientific and research institutions, to work more closely together and to create opportunities for collaboration, and for businesses to integrate disaster risk into their management practices for making SDG achievable.

Readings

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YE-208/2016

Quick Disaster Response: A Specialized Task

International developments like the Yokohama Strategy and the Hyogo Framework coupled with national developments in the form of serious calamities in quick succession, like Odisha Super Cyclone(1999), Gujarat Earthquake (2001) and Indian Ocean Tsunami(2004), brought about the realization of the need of having a specialist response mechanism at the national level to effectively respond to disasters. This led to the enactment of the Disaster Management (DM) Act on December 26, 2005.This Act provides for the effective management of disasters. Consequently, National Disaster Management Authority was formed in the year 2006 to supervise disasters in India. A multi skilled, highly professional " National Disaster Response Force" comprising of eight battallions (two battallions each from BSF, CRPF, ITBP and CISF) were raised to tackle/mitigate all types of disaster. In 2010 two battalions (one each from CRPF and BSF) and in 2015 two more battalions from SSB (Sashastra Seema Bal) were added in NDRF. As on date, NDRF is having a strength of 12 battalions each with authorized strength of 1149 personnel.

Vision :

The vision of NDRF is to emerge as the most visible and vibrant multi-disciplinary, multi-skilled, high-tech force capable of dealing with all types of natural as well as manmade disasters and to mitigate the effects of disasters.

Role of NDRF

NDRF is serving the needs of all classes of people irrespective of their caste, creed or economic position. The force is working with great enthusiasm and courage in various fields like CBRN (Chemical, Biological, Radiological and Nuclear Defense), floods, earthquakes, cyclones, tsunamis, major accidents, etc. The role of NDRF is as follows:

1. Provide specialized response for rescue and relief in case of disasters-natural and manmade.
2. Deployment in case of impending disasters.
3. Assistance to civil authorities in distribution of relief material during/after disaster.
4. Co- ordination with other agencies engaged in rescue/relief work.

NDRF Tasks

- Deployment in case of impending disaster.
- Provide specialist response in case of disasters which covers:
- NBC Disaster (Decontamination of the area and personnel).
- Removal of debris.
- Extrication of victims-live or dead.
- First medical response to victims.
- To extend moral support to victims.
- Assistance to civil authorities in distribution of relief material.
- Co-ordination with sister agencies.
- Providing assistance to foreign countries if asked.
- Capacity building.
- Imparting training to SDRF.
- Community awareness- Target groups-villagers, school children, NGOs, volunteers and state administration.

Disaster response calls for humanitarianism, fortitude and professionalism which are the hallmark of National Disaster Response Force. NDRF is possibly the single largest dedicated disaster response force in the world, trained and equipped as per international standards to handle and manage disaster situations across the country or region.

Training

The aim of disaster response training is to build the capacity of Responders of NDRF for improving preparedness and response at all levels before, during and after disasters and to give all components of the movement the means

to work together in a coordinated manner. The focus of disaster management training is generally on improving the technical skills of the responders, but also on personnel and team management. It aims to encourage an exchange of experience and knowledge and the creation of networks amongst the disaster managers. It also aims to improve coordination of disaster response and the quality and availability of disaster management tools.

A Community Awareness Programme on Disaster Response in progress

NDRF personnel undergo a variety of training where emphasis is being given on refreshing the skill acquired as well as to raise the expertise level upto international standards.

Training also includes imparting the knowledge to other stakeholders as well as the common population by various methods like conducting community awareness programmes, organising lectures, demonstrations and mock exercises.

Familiarization/Community Awareness Programme

- In respective Area of Responsibility to provide opportunity to the personnel to acquaint themselves and acquire knowledge about topography, demography, route, terrain and the availability of resources such as medical support, water points, earth moving equipments etc.
- It also provides opportunity to the Commanders to acquaint themselves with local inhabitants and liaise/ coordinate with the officials who invariably are the first responders or stake holders at the time of disaster.
- To carry out Community Awareness programme .

Further, the team commanders are assigned particular area to collect information during Familiarization regarding important telephone numbers of the district, the resources available in the district, the pattern of disaster that normally occurs in the area, etc. In case of any disaster, the same team is sent to the incident site where the team has conducted Familiarization/ Community Awareness Programme/School Safety Programme as the team is well aware of the area. Till date over 47 lakh people have been benefitted from these programmes.

In 2016, 1623 Programmes (433 School Safety Programme and 1190 Familiarization Exercise/Community Awareness Programme) were conducted by NDRF.

Mock Drill

NDRF also conducts Mock drill to ensure proper coordination among various agencies in disaster situation. Mock drills are also organizeds by state governments and various institutions/ NGOs with the help of NDRF and civilians are also part of such mock drills like a Mega Mock Drill on Earthquake/Cyclone/Train accident etc. was organized in which many civilians alongwith various state agencies and CAPF took part. Such type of mock drills helps to know about the Do's and Don'ts and the action required to be taken when any disaster happens. Till date total 879 mock exercises have been conducted in the Area of Responsibilities of respective NDRF battalions with the participation of over 5 lakh people.

Mock Drill on Disaster Response

Operations:

Since its raising NDRF has conducted many operations and saved many precious lives and retrieved dead bodies of victims. Some of the major operations of NDRF includes Kosi Flood in Bihar in 2008, AILA cyclone in May'2009 in WB, Train accident in Jhargram (WB) in May'2010, Chlorine leakage at Shiwadi, Mumbai (MH) in July'2010, Cloud Burst in Leh in 2010, Mayapuri Radiation, New Delhi in April 2010, Sikkim earthquake in 2011, Collapse of factory building in Jallandhar in 2012, Assam Flood in 2012. NDRF has also responded during

Quick Disaster Response: Need of the hour

Tsunami followed by leakage of radiation from the nuclear reactor in RifuCho, Japan, in the last week of March'2011. Uttarakhand Operation-2013, Mumbai building collapse, Cyclone Philine, Flood-2013, Mandi operation-2014, Chennai building collapse-2014, J&K flood, Assam & Meghalaya flood, Cyclone Hudhud, Pune land slide operation-2014, J&K Flood-2015, Kolkata Flyover collapse-2016, Flood-2016,Uttarakhand Forest Fire-2016, Shavitri bridge Collapse Mahad-2016 Train derailment-2016,Cyclone Vardah-2016 has also been responded to by NDRF .During these operations NDRF saved 5,50,641precious lives and retrieved 2551 dead bodies.

Current Status and Future Plans :

Disaster response calls for humanitarianism, fortitude and professionalism which are the hallmark of National Disaster Response Force. NDRF is possibly the single largest dedicated disaster response force in the world, trained and equipped as per international standards to handle and manage disaster situations across the country or region.

NDRF has played a pivotal role in disaster management in the country. The emergency response as well as community capacity building programme conducted by NDRF has installed a sense of confidence in the countrymen regarding responsibility of Government machinery in providing quick response during disaster or disaster like situations.

It is appropriate to mention here that, the frequency of disasters and the operational commitment of NDRF is increasing day by day. The present strength of NDRF is not adequate to give an immediate response across the country due to its vast geographical area and huge population. The area of responsibility of few battallions is too big for quick response. Hence after analyzing the vulnerability profile of the country carefully, there is a need to raise more NDRF batallions. ❑

Source: Office of the DG, NDRF

J&K WINDOW

NATIONAL INSTITUTE OF SOWA RIGPA AT LEH

The Government has approved the establishment of National Institute of Sowa Rigpa at Leh in Jammu and Kashmir Tibetan Medicine system is known as Sowa Rigpa (Amchi). The System of Sowa Rigpa is practiced in many parts of India, including Ladakh in Jammu and Kashmir; Sikkim; Darjeeling, Kalimpong in West Bengal; Mon Tawang and West Kameng regions of Arunachal Pradesh; Lahaul, Spiti, Kangra and Kinnaur regions of Himachal Pradesh. Sowa Rigpa has been recognized by Government of India by amending the Indian Medicine Central Council (IMCC) Act, 2010.

REHABILITATING KASHMIRI MIGRANTS

The Union Cabinet has cleared a proposal worth Rs 2,000 crore for rehabilitating Kashmiri migrants. Additional 3000 government jobs and 6,000 transit accommodations will be provided to Kashmiri migrants in the valley. The Union Cabinet has also enhanced monetary assistance for people displaced from the hilly areas of Jammu region. The provision of jobs will cost the exchequer Rs 1,080 crore whereas Rs 920 crore will be spent on provision of accommodation — Rs 200 crore on purchasing of land and Rs 720 crore on construction. Earlier in 2008, a package of Rs 1618.40 crore was announced to facilitate the return of the migrants to the Kashmir valley.

Under this package, 3000 state government jobs were to be provided to the Kashmiri migrants with central funding, of whom 1963 jobs have already been provided and process for the rest was underway. Nearly 470 transit accommodations have been constructed in the Kashmir valley which have been allotted to the newly appointed migrant employees on sharing basis.

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Training and Capacity Building

R K Jain
V Thirupphugazh

A long-term plan is needed for building sustainable capacities of all stakeholders. Networking among the various institutions involved in capacity building within and outside the country is also essential. The programmes, projects and trainings for capacity building should be constantly evaluated to make them relevant and suitable

Capacity is defined as the ability of individuals, organisations, organisational units and /or systems to perform functions effectively and in a sustainable manner. It is also defined as "the process through which individuals, organisations and societies obtain, strengthen and maintain the capabilities to set and achieve their own development objectives over time." Simply put, if capacity is the means to plan and achieve, then capacity development describes the way to those means (UNDP n.d.). Capacity development covers strengthening of institutions, mechanisms, and capacities at all levels of all stakeholders. The United Nations International Strategy for Disaster Reduction (UNISDR) defines 'Capacity Development' for DRR as follows:

The process by which people, organisations and society systematically stimulate and develop their capability over time to achieve social and economic goals, including through improvement of knowledge, skills, systems, and institutions – within a wider social and cultural enabling environment. (United Nations, 2009)

Capacity building is an important component of investing in disaster risk reduction. In the domain of disaster risk management, the Sendai Framework emphasises the need for enhancing the technical, financial, and administrative capabilities of institutions, governments, and communities to deal with the identified risks at different levels. The Framework calls for reinforcing the capacity to implement and enforce risk reduction measures. Capacity development commonly refers to a process that is driven from inside and starts from existing capacity assets (UNDP n.d.). The Sendai Framework underlines the need for capacity development of women in disaster management and building their ability to participate effectively in managing disaster risk. Building capacity for reducing risk is also necessary for achieving the Sustainable Development Goals (SGDs).

Levels and Types of Capacity Building

There are three levels of capacity development: individual, institutional and enabling environment. Capacities at the level of the enabling environment relate to such things as policies, legislation, institutional arrangements, leadership, political processes, power relations and social norms. The organisational level of capacity pertains to internal policies, systems and strategies, arrangements, procedures and frameworks that allow

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an organisation to operate and deliver on its mandate by enabling individual capacities to work together and achieve goals. The individual level pertains to the skills and knowledge that are vested in people which includes individuals, communities, groups and teams (CDARi n.d.).

The two modes of enhancing capacity are functional and technical. While the functional capacities are needed to formulate, implement and review policies, strategies, programmes and projects (UNDP 2008), the technical capacities are those associated with particular areas of need and with particular sector requirements or themes (CDARi n.d.).

The emphasis is not only on developing human resources, but also on developing the necessary infrastructure and institutional capacity for risk reduction, and hence capacity building cannot be the responsibility of the state alone. As the Sendai Framework puts it aptly, we need an all-of-society approach. In short, there is a need to build the capacity of the state organisations, communities, professionals, experts, private sector, Non-Governmental Organizations (NGOs), and other non-State actors.

For capacity development for DRR (Disaster Risk Reduction), one needs to engage with the stakeholders, particularly the communities. This engagement is necessary to understand the existing capacity, needs and the gaps. In short, a capacity needs assessment through both formal and informal engagement with the various levels mentioned above is essential. Hence, Capacity Building programmes should be formulated based on the needs assessment. After identifying the gaps in capacity of different stakeholders on the basis of their role in disaster management, training programmes should be developed. Apart from class room training, a wide range of learning opportunities such as on-the-job trainings, immersion programmes, networking, exchange programmes, regular academic courses, attachments with other institutions, mock exercises, joint drills can be used based on the requirement.

National Policy and Plan for Capacity Building

The need for capacity development of all the stakeholders for disaster risk reduction (DRR) is emphasised in the National Policy for Disaster Management in India. The National Policy notes that capacity development must address the challenge of "putting in place appropriate institutional framework, management systems and allocation of resources for efficient prevention and handling of disasters." Based on the above philosophy, the National Disaster Management Plan (NDMP) identifies the themes for capacity building under three broad categories: prevention and mitigation for risk reduction, effective preparedness and response, and recovery and build back better. The Plan also identifies the hazard-specific needs for capacity building, the stakeholders whose capacity need to be built and the agency responsible for capacity building (for details, refer to the National Disaster Management Plan 2016).

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Institutional Arrangements

The primary responsibility for disaster management lies with the state governments. The local self-governments also have a major role to play. The role of the central government is supportive and supplementary.

The disaster management systems differ across the States in India. While almost all the States have set up State Disaster Management Authorities, post-disaster response and relief is mainly with the Commissioner of Relief. While many states have set up State Disaster Response Forces, some of them still depend on the Fire and Emergency Response Services. Again, there are variations within the system of Fire and Emergency Reponses Services across different States. While most of the States have centralised Fire Services under the State Government, in some States, it is with the Municipal administration. Depending on the structural and institutional arrangements, the arrangements for capacity building vary across States. Some States, such as Gujarat and Odisha, have set up or in the process of setting up full-fledged training institutions, while the rest basically depend on their Administrative Training Institutions.

Government of India, in order to support the State Governments, has set up several institutions which undertake a wide range of activities for capacity building. The overall coordination of disaster management vests with the Ministry of Home Affairs (MHA). The Cabinet Committee on Security (CCS) and the National Crisis Management Committee (NCMC) are the key committees involved in the top-level decision-making with regard to disaster management.

The National Disaster Management Authority (NDMA), set up in 2005 as the nodal agency for disaster management in India, is chaired by the Honourable Prime Minister. It lays down the policies, plans, and guidelines for disaster management for ensuring timely and effective response to disaster and long-term disaster risk reduction. The Authority has been working on the two basic aspects of capacity building namely, creating an enabling environment and building organisational capacity. In order to make the environment more enabling, NDMA has prepared various hazard-specific guidelines and reports. The NDMP has identified and suggested several hazard-specific capacity building measures.

In addition to the above, NDMA has also been directly undertaking

various capacity building measures for institutions and communities. NDMA conducts mock drills and simulation exercises at the district, state and the regional level to improve the response capacity of the State governments. The National Cyclone Risk Mitigation Project, the largest cyclone risk mitigation project under implementation, aims not only to empower the governments but also the communities at large, particularly women. It is arguably the biggest community capacity building exercise undertaken in the country. Another important initiative is the National School Safety Programme to build the capacity of students and teachers for better preparedness. NDMA has also been guiding other ministries in preparing their disaster management plans.

While NDMA's main focus is on building the capacity of organisations, the National Institute of Disaster Management (NIDM) also undertakes training alongwith research, documentation and development of a National level information base. It networks with other knowledge-based institutions and organises training for trainers, Disaster Management officials and other stakeholders. The NIDM strives to emerge as a 'Centre of Excellence' in the field of Disaster Management. It plays an important role in developing and facilitating the implementation of a National training schedule for Disaster Management. National Disaster Response Force (NDRF), a national-level professionalised search and rescue force, is also engaged in training programmes. NDRF imparts training on a continuous basis not only to the State Disaster Response Forces, but also to the communities. In addition to the above mentioned agencies, trainings on various aspects of disaster management are also given by Lal Bahadur Shastri National Academy of Administration, Indian Police Academy and other premier national level institutions.

As mentioned earlier, many institutions are imparting training and building capacity at the state level. State Disaster Management Authorities, the Disaster Management cells in all Administrative Training Institutes, Police Academies, State Institutes of Rural Development, and Institute of Local Self-Governments also provide training on issues related to disaster management. The focus of these training programmes is on building the capacity of the lower tiers of government such as Districts, Municipalities and Panchayats and also the officers and employees engaged in disaster management, particularly emergency response.

Disaster Management is as old as the mankind itself. The history of humanity is the history of human beings succeeding or failing to cope up with disasters. In the year 2015 alone, in the 346 reported disasters, 22,773 people died and 98.6 million people were affected. The total economic loss was to the tune of US $ 66.5 billion (CERD 2016). Though the number of lives lost in disasters is coming down, the economic losses are mounting. This is due to several reasons, such as fast urbanisation, settlements in high risk areas, technology dependent life, secondary economic consequences in areas not directly affected by disaster, impacts of climate change and increasing population (Coppola 2015). Hence, the need of the hour is to build the capacity of all the stakeholders in all the aspects of disaster management, particularly for long-term risk reduction.

The Sendai Framework notes the need to build the knowledge of civil society, communities, and volunteers on disaster risk reduction. Capacity building has to include awareness, sensitisation, orientation, and developing skills of communities and community leaders.

Mitigation is always local. All major aspects of governance related to disaster prevention and mitigation, such as land use planning, town development, ensuring the safety of the built environment and enforcement of building codes, are with the local self-governments. They are the first to respond among public institutions during a crisis situation. It is imperative that their capacity is built in terms of human resources, equipment and training. Capacity development is also necessary for empowerment of the bodies of local self-governance. The elected leaders and officials of Panchayats and Urban Local Bodies (ULBs) should be trained to competently handle different types of crises, contribute to disaster preparedness, make proper use of available warnings, organise operations such as search, rescue, relief, medical assistance, and carry out damage assessment. They should also have a sound understanding of the needs of proper post-disaster rehabilitation. The local leadership can play a key role in disaster management at all stages. Capacity development must aim at increasing the competence of local bodies in all aspects of disaster management, mainstreaming DRR, and in promoting a culture of disaster prevention and DRR (NDMP 2016).

The National Plan also emphasises the need for training communities. Enhancing the capacity of communities, as they are the first responders to disasters, is a significant part of the capacity development process. The Sendai Framework notes the need to build the knowledge of civil society, communities, and volunteers on disaster risk reduction. Capacity building has to include awareness, sensitisation, orientation, and developing skills of communities and community leaders. The National Plan too identifies the areas and agencies for capacity building for disaster risk reduction for a number of activities including early warning, communication, emergency operation centre and strengthening disaster governance.

In order to enhance search and rescue capabilities during all kinds and levels of disasters, government can encourage volunteers and civil society to set up voluntary fire and rescue services. In the west, many such models

of voluntary fire services are available. Many state governments have already started training volunteers for flood rescue. NDMA has also launched a new scheme for training volunteers for flood rescue. In addition, there is a need to train people in the private sector such as private medical practitioners and engineers for medical response and disaster resilient construction respectively. The capacity of private organisations should also be built so as not only to respond to their needs but to the needs of the surrounding communities as well. Capacity of the NGOs and Civil Society should also be built for emergency response, relief and also to mainstream disaster management in development projects.

For adequate capacity building, human resources and equipment should also be provided to the local self-governments, fire and rescue services.

Conclusion

Capacity building is not a one-time activity. It is a continuous process. As the risks are dynamic, capacity building programmes have to keep changing and evolving. It is, as mentioned earlier, the responsibility of all the stakeholders. A long-term plan is needed for building sustainable capacities of all stakeholders. Networking among the various institutions involved in capacity building within and outside the country is also essential. The programmes, projects and trainings for capacity building should be constantly evaluated to make them relevant and suitable. The outcome and impact of the programmes should be measured and documented. Targeted, disaggregated data should be collected and analysed for reporting purposes, as well as for continued quality assurance. Indicators should include changes in knowledge, attitudes, and practice among beneficiaries (IFRCRCS 2010). Several research findings have pointed out issues with top down model of capacity building approaches. Hence, in future, the efforts for capacity building should be more demand driven, based on the understanding of the requirements of the community and context. The efforts should be participatory and empowering to achieve sustainable risk reduction. As the Sendai Framework emphasises, the efforts should focus on developing the capacity of women and aim at social inclusion by developing the capacity of the vulnerable population. Thus, appropriate and timely capacity building can help us in building a resilient India.

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Creating a Cashless Society

- India has nothing but faith and faith only and supreme confidence in her hundred and twenty five crore countrymen that they will certainly fulfill their resolve. And our country will emerge shining like gold does after a test by fire. And the reason for that is you, the citizens of this country. The route to this success also has been paved only because of you.
- ... some people are trying to save their black money. I want to tell such people today – whether you reform or not is up to you, whether you respect and follow the law or do otherwise is again up to you; of course, the law will take its own course to decide on the requisite action
- ...I want to tell our small trader brothers and sisters that this is a ripe opportunity for them too to make their entry into the digital world. You too download Apps of Banks on your mobile phones. You too keep a POS machine for transactions in Credit Cards. You too learn to do cashless business
- ...the great task that the country wants to accomplish today is the realisation of our dream of a 'Cashless Society'. It is true that a hundred percent cashless society is not possible. But why should India not make a beginning in creating a 'less-cash society'? Once we embark on our journey to create a 'less-cash society', the goal of 'cashless society' will not remain very far
- ...take a resolve today itself that you will yourself become a part of the 'cashless society'.... You have to voluntarily lend your leadership to this great campaign, this Maha Abhiyan, to create a 'cashless society', to eradicate corruption from our country, to abolish the scourge of black money and to help people in overcoming their difficulties and problems.

(Extracts from 'Mann ki Baat' November 2016)

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YE-196/2016

GLOBAL SCENARIO

An International Perspective

Kamal Kishore

There is a clear recognition that we need to move away from disaster management to disaster risk management. This requires us to pursue all development activity in a manner that it leads to reduction of disaster risk

Over the last two decades, there has been an increasing recognition that disasters undermine our efforts to achieve sustainable development. This can be highlighted by the following statistics:

Over the past 20 years, nearly 1.35 million people were killed by natural hazards, of which more than half died in earthquakes, with the remainder due to weather- and climate- related hazards.[1] A disproportionately large number of these deaths occurred in low- and middle-income countries. The poorest nations paid the highest price in terms of the numbers killed per disaster and per 100,000 population.

Even the most developed countries are not immune from the impact of disasters. The triple nuclear, earthquake and tsunami disaster which overtook Japan in 2011, also Hurricane Katrina in New Orleans in 2005, and the 2003 heatwaves which claimed 70,000 lives in Europe are a reminder of this fact.

Disasters cause immense economic burden often on those countries that can least afford them. Over the last two decades recurrent disasters have compromised efforts to achieve sustainable development in many low and middle-income countries.

Changing nature of disaster risk:

The word is now confronted with the reality of climate change, which is likely to increase the frequency and scale of disasters. A 50-year analysis of data on number of disasters (source: EMDAT, 2016) is presented in Figure 1.

The graph in Figure 1 looks at trends of number of disasters related to three principal hazards — earthquakes, floods and storms. What is evident is that while the number of earthquake disasters over the 50 year period (1966-2015) has remained largely the same, there is a clear signal that the number of flood and storm disasters have increased.[2] There could be multiple reasons behind this ranging from better reporting of climate related extremes to environmental degradation (e.g. same level of rainfall may be now causing greater flooding) to more people living in flood and storm prone areas.

Figure 2 looks at number of deaths related to disasters emanating from all natural hazards over the 50 year period 1966-2015. It shows that in absolute numbers, the trend in mortality has remained largely flat punctuated by

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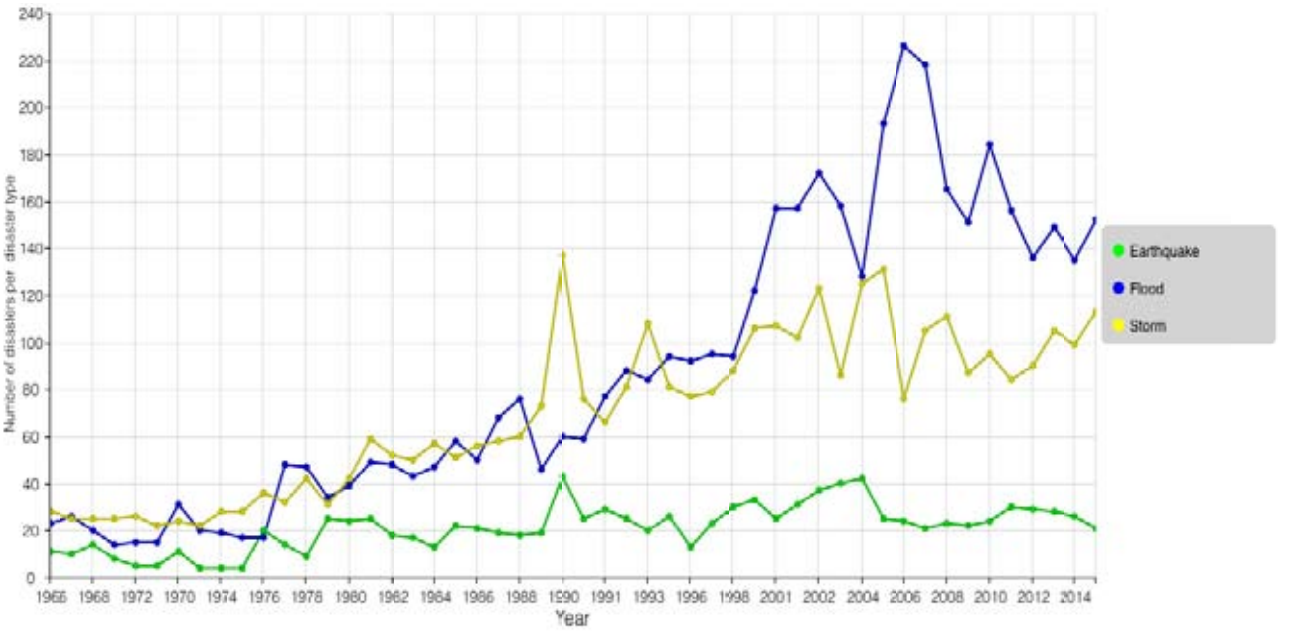
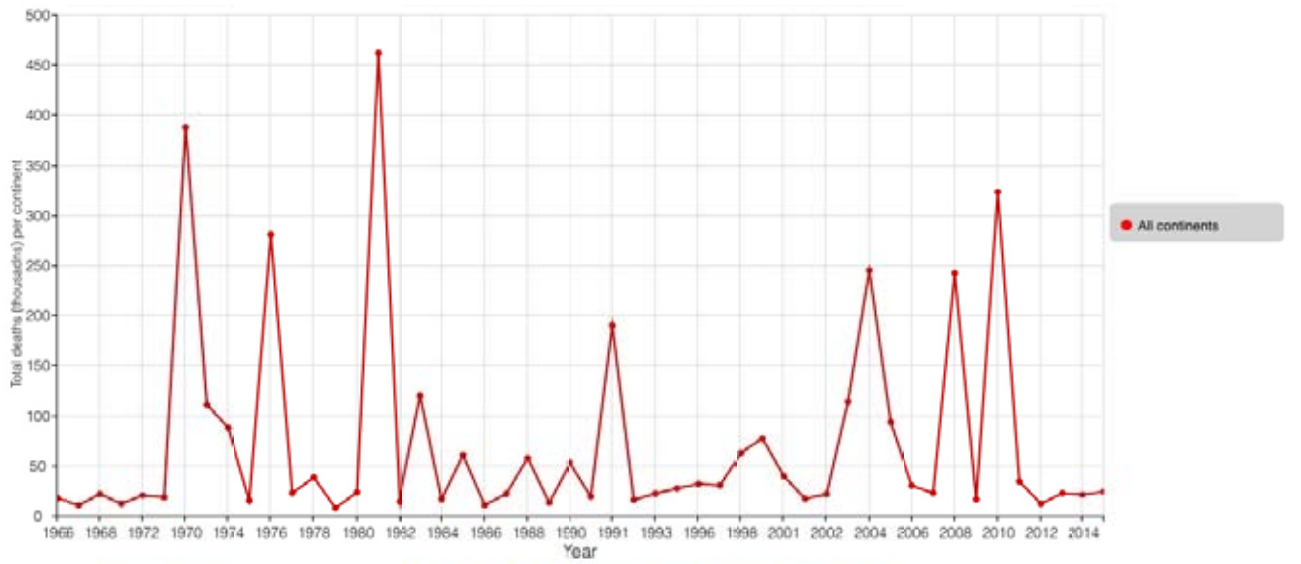
Figure 1: Number of Disasters in the world over 1966-2015 by hazard type



EM-DAT: The OFDA/CRED International Disaster Database-www.emdat.be-Universite Catholique de Louvain, Brussels-Belgium

Figure 2: Number of "Natural" Disaster Related deaths in the world 1966-2015



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large scale events every few years. However, even these peaks over the last twenty years (eg. 2004, 2008, 2010) are much lower than the peaks of 1970s and 1980s (eg 1970, 1976, 1981). If we normalize these figures by the total population, the mortality appears to be actually trending down. This can be attributed to improvement in early warning systems, better communication, and more responsive governments. However, this can not be a cause for complacency. The three peaks in mortality marked in this graph over the last twenty years – 2004 Indian Ocean Tsunami, 2008 Cyclone Nargis in Myanmar, and 2010 Haiti Earthquake represent mega disasters when more than 100,000 people diad in each of these events. These events indicate that low-frequency, high-impact event could cause very high levels of mortality even in the twenty first century! There is a need for the governments to reduce the risk of such mega-disasters and prepare for worst case scenarios.

Box-1: Disaster Risk Reduction in Sustainable Development Goals

Goal 1: End poverty in all its forms everywhere

Target 1.5, which relates to building the resilience of the poor, further strengthens the position of disaster risk reduction as a core development strategy for ending extreme poverty.

Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture

Target 2.4 supports the immediate need to advance actions in mainstreaming disaster risk reduction and climate adaptation into agriculture sector planning and investments in order to promote resilient livelihoods, food production and ecosystems.

Goal 3: Ensure healthy lives and promote well-being for all at all ages

Target 3.d, which relates to strengthening early warning and risk reduction of national and global health risks presents an opportunity to further actions to promote resilient health.

Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

Target 4.7 focusing on building and upgrading education facilities and promoting education for sustainable development, contribute significantly to resilience-building in the education sector.

Goal 6: Ensure availability and sustainable management of water and sanitation for all

Target 6.6, which relates to protecting and restoring water-related ecosystems, will significantly contribute to strengthening the resilience of communities to water-related hazards.

Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

Targets 9.1 related to developing sustainable and resilient infrastructure development are vital not only to protect existing infrastructure but also future infrastructure investments.

Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable

Action targets under this goal (11.1, 11.3, 11.4, 11.5, 11.b and 11.c) focusing on upgrading urban slums, integrated urban planning, reducing social and economic impacts of disaster risk, building the resilience of the urban poor, adopting and implementing urban policies in line with the Sendai Framework and building sustainable and resilient urban infrastructure are strategic opportunities to ensure increase capacity to support cities, protect current and future development prospects and build safer, more resilient cities throughout the world.

Goal 13: Take urgent action to combat climate change and its impacts

Target actions under this goal, focusing on strengthening resilience and adaptive capacity, capacity building and integrating climate change measures into policies and plans, awareness raising on climate adaptation and early warning (Targets 13.1 to 13.3 and 13.a to 13.b) provide opportunities to strengthen the integration between disaster and climate resilience to protect broader development paths at all levels.

Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development

Target action 14.2, focusing on the sustainable management and protection as well as strengthening resilience of marine and coastal ecosystems, can contribute to reducing disaster risk and increase in demand for healthy marine and coastal ecosystems.

Goal 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

Target actions 15.1 to 15.4 and 15.9, focusing on managing and restoring forests, combating land degradation and desertification, conserving mountain ecosystems and their biodiversity and integrating ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies, all contribute to resilience building. These targets are also in line with the Sendai Framework's focus on building environmental resilience through the inclusion of ecosystems in risk analysis and planning.

Figure 3: Total Economic Losses from Disasters Globally

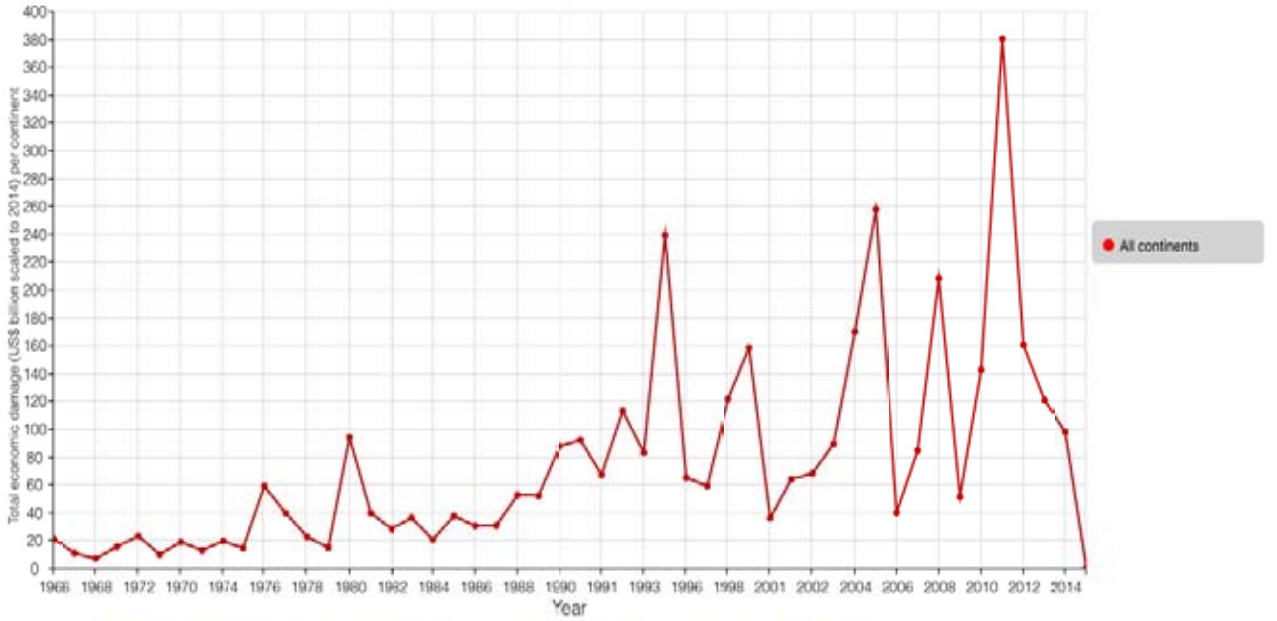

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Figure 3 turns our attention to total economic losses globally resulting from disasters emanating from natural hazards. This graph has been plotted based on data obtained from CRED-EMDAT.

Figure 3 indicates that there is a clear long term trend of escalation of economic losses even when all the losses are adjusted to 2014 prices. This seems to indicate that there are ever larger number of capital assets as well as economic activity is located in areas prone to natural hazards. This combined with Figure 2 (mortality) indicates that the world is making gradual progress on reducing the loss of lives from disasters but almost no progress in preventing economic losses and loss of livelihoods.

The Future of Disaster Risk Management

From 2005 to 2015, global efforts on disaster risk reduction were guided by the Hyogo Framework for Action. In March 2015, the international community came together in Sendai, Japan at the World Conference on Disaster Risk Reduction and adopted the Sendai Framework for Disaster Risk Reduction (SFDRR) for the period 2015-2030.

The SFDRR has been informed by some of the global trends presented in the previous section. The SFDRR establishes loss reduction targets for mortality, number of people affected by disasters, economic losses and infrastructure losses. It also sets targets related to disaster risk reduction capabilities in terms of plans and strategies, international cooperation and access to early warning.

...on reducing the loss of lives from disasters but almost no progress in preventing economic losses and loss of livelihoods.

In tandem with the SFDRR, the other international policy frameworks adopted in 2015 also recognize the importance of disaster risk reduction. Out of 17 Sustainable Development Goals, 10 include targets related to disaster risk management. See Box 1 for a a summary of disaster risk reduction elements in the Sustainable Development Goals.

From the above it is clear that in the international policy arena, this establishes disaster risk reduction as a core development strategy as opposed to a marginal, one-off crisis management issue. There is a clear recognition that we need to move away from disaster management to disaster ***risk*** management. This requires us to pursue all development activity in a manner that it leads to reduction of disaster risk.

Endnote

1 Source: 2015, CRED and UNISDR, "Poverty and Death: Disaster Mortality 1996-2015"

2 It is important to highlight here that in the global dataset EMDAT, a disaster is recorded not on the basis of mere occurrence of a hazardous event but only when the losses – mortality and number of people affected – crosses a certain threshold. ❑

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SPECIAL ARTICLE

Role and Importance of Immediate Trauma Care

Amit Gupta
Mahesh C Misra

We need to learn the lessons from disaster prone nations like Japan where they have set up a system for prehospital trauma care as well as disaster management. There is a need for setting up a command center and an emergency information system where all the hospitals should report the number of causalities and the need for assistance

It is said that whosoever touches the injured patient first, determines the outcome". It simply emphasizes the point that pre-hospital rescue and care along with prompt transfer to an appropriate Trauma care Facility within the "Golden Hour". "Golden Hour" is termed as the first hour after sustaining injury. In India, I also say that many injured patients reach emergency departments after several hours i.e. 4 – 6 hours and beyond. I term these hours as "Silver Hours" and "Bronze Hours". We need to turn the first hour in our emergency departments as "Golden Hour", even if injured patient arrives in Silver/ Bronze hours, many of these severely injured patients can be returned to society functional and productive for the Nation.

A disaster is defined as: "A serious disruption of the functioning of the society, causing widespread human, material, or environmental losses which exceed the ability of the affected society to cope using its own resources." A disaster occurs when a hazard (natural or man-made) strikes a vulnerable society. Vulnerability is defined as "the extent to which a community, structure, service, or geographical area is likely to be damaged or disrupted by the impact of a particular hazard, on account of their nature, construction, or proximity to a hazard prone area".

India is vulnerable, in varying degrees, to a large number of disasters. More than 58.6 per cent of the landmass is prone to earthquakes of moderate to very high intensity; over 40 million hectares (12 per cent) of its land is prone to floods and river erosion; close to 5,700 kms, out of the 7,516 kms long coastline is prone to cyclones and tsunamis; 68 per cent of its cultivable area is vulnerable to droughts; and, its hilly areas are at risk from landslides and avalanches. Moreover, India is also vulnerable to chemical, biological, radiological and nuclear (CBRN) emergencies and other man-made disasters.

A typical Disaster management continuum comprises six elements; the pre-disaster phase includes prevention, mitigation and preparedness, while the post-disaster phase includes response, rehabilitation, reconstruction and recovery.

The Union Ministry of Home with the nodal body the **"National Disaster Management Authority"** along with other ministries like Ministry of Defence (MoD), Ministry of Health

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Fig. 1: Disaster management cycle. (Reference: Are you Prepared? Learning from the Great Hanshin-Awaji Earthquake Disaster - Handbook for Disaster Reduction and Volunteer activities)

and Family welfare (MoHFW); Railways; Atomic Energy; Finance; Agriculture; Environment and Forests; Power; Rural Development; Science & Technology; Space and Telecommunications; Water Resource and the Ministry of Road Transport and highways (M/oRTH), have been engaged in disaster management in a big way.

The NDMA had come into existence after the Disaster Management Act 2005 was gazetted. The NDMA has the Prime Minister as the Chairperson, Vice Chairman/ Secretary and nine members. The responsibilities of NDMA include laying down policies, plans, guidelines; Approve plans of various ministries and states; Coordinate enforcement and implementation of policy; Recommend provision of funds for mitigation; Take other measures for prevention, preparedness and capacity building and to effectively command and control disaster response within the country as well as support other countries when called upon to do so.

The Disaster Management Act 2005 also calls for setting up of state and district level disaster management authorities with the District Collector/ Magistrate being the nodal focal point at the ground level.

Medical Response in Disasters

In India, as per the NDMA - National Guidelines for Medical Preparedness in Mass Casualty Management (NG-MPMCM); In disaster settings, the Emergency Medical response division of DGHS is the focal point for implementing the Emergency Support Function (ESF) plan that includes identification of nodal officers for coordination , crisis management committee and quick response teams at headquarters and field level, resource inventory etc. The decision making body is the crisis management group under the secretary, health and family welfare, which is advised by the technical advisory committee under DGHS.

The disaster management programme needs to be set up at district, state and national level and for accomplishing this target, M/oH&FW is in the process of institutionalising the mass casualty management training programme in the country. The training of instructors for hospital preparedness during emergencies has been undertaken and so far 100 instructors have been trained. The primary agency for Hospital contingency planning and training are the National Institute of Disaster Management (NIDM) and National institute of Health and Family Welfare (NIHFW). These instructors were drawn from state government hospitals/medical colleges. In the next phase, for mainly outbreaks and biological emergencies hospital managers upto the district level will be trained Training in investigating and managing outbreaks is being done by NICD under the IDSP programme. For investigating outbreaks, NICD is the nodal agency. NICD/ICMR institutions provide teaching! training, research and laboratory support. Most of the states have a regional office for health and family welfare and the regional director liaisons with the state government for effective management of the health consequences of disasters.

The M/oH&FW has taken initiatives for upgrading selected government hospitals to strengthen emergency facilities for road safety and disasters. In addition, establishment of trauma centres every 100 km and an ambulance every 50 km along the highways in the Golden Quadrilateral Network has recently been initiated in coordination with the Ministry of Road Transport. A total of 26 Level I, about 250 Level II Trauma Care facilities have been envisaged with the support of M/oHFW, Government of India.

The establishment of Apex Trauma Center at AIIMS in 2006-07 is a step forward in providing an apex institution for quality trauma patient care facilities, has a mandate to act as a role model to other trauma centers of the country. More than providing

best patient care facilities the role of this apex trauma center has been envisaged as an apex research and training institution which will help the nation's administrators to formulate policies regarding organization of trauma care facilities throughout the country.

The Jayaprakash Narayan Apex Trauma Centre has all the specialties needed for trauma care with dedicated faculty and residents working 24 hours. Currently it receives about 60,000 patients annually with over 6000 major surgical procedures being performed. Currently having around 190 beds, 37 ICU beds, 6 OT's and 35 bedded ED and Triage, it is being expanded to have 260 beds with added 16 ICU beds, 3 OT's, 30 bedded ED and Triage, addition of Private wards and Patient attendant hostel with helipad is also progressing swiftly. There is further plan to increase the capacity of this Apex Trauma Centre to 750 beds in the next 5-6 years, plans for which are already underway.

To support the medical care in disaster settings, M/oH&FW is also procuring a prefabricated, self contained,, container based mobile hospital which is in an advanced stage of procurement. This 100 bed container based hospital can be transported by rail, road or air to the incident site. It has facilities like operation theatre (OT), ICU, post operative care, water purification unit, kitchen, sanitary unit and power backup.

The armed forces invariably provide the first organised response to any disaster or natural calamity. The Armed Forces Medical Services has well- trained and equipped personnel, ready to respond to any eventuality at short notice. All service hospitals, spread out across the country have exhaustive and well-rehearsed DM plans catering to all types of disasters. The hospltals have 3,000 special crisis expansion beds authorised to them. These can be utilised in case of emergency for management of mass casualties from within their existing resources. These beds are always maintained and kept in a high state of readiness Equipment and medical stores for disaster management are identified, segregated and kept ready to move out at short notice in all medical units and hospitals. Adequate portable emergency medical equipment is also held for on-site treatment and management of casualties en route. The also have mobile field hospitals and mobile surgical teams which can be moved to the affected areas as and when required at short notice. These mobile hospitals are self-contained in terms of medical stores, drugs, equipment, beds and tentage. Identified personnel are kept earmarked in all medical units, to move out in times of disasters Even ambulances and transport are earmarked for emergencies Transport can also be pooled from other army units, if required.

Gaps between Disaster and Trauma Care

Health is a state subject. The administrative responsibility for medical preparedness and management of mass casualty events primarily rests with the state health departments. The health system of the states is structured as a three-tier system. It comprises of:

- PHCs and CHCs at block level.
- District hospitals at district level.
- Tertiary care institutions at state headquarters in major cities.

However, the states show wide variation in the multiplicity of agencies/departments which administer these institutions such as medical education/public health/ medical services under local bodies. The infrastructure at block level is not adequate to support mass casualty events. The sub district hospitals and the district hospitals are 100 to 250 bedded and are planned to provide secondary level care including trauma care. But there is wide difference among the states in the range and quality of services provided by the district level hospitals. The state capitals and other major cities have medical college hospitals or other tertiary care institutions run by the state health departments or municipalities. All these institutions are overwhelmed even with the routine load and their surge capacity is limited

The important reasons of increased mortality in developing countries like India are non-availability of Trauma Systems in a given geographical area, which include care from the injury site till rehabilitation. In a nutshell a trauma care system works towards "getting the right patient in the right time to the right health care facility for the right care".

a. Pre-Hospital Care

i. Absent in many states, and in some states are very primitive without the state of the art ambulances, trained manpower and proper organization in a definite geographical area. Some states have adopted the Universal Emergency Number 108 for Ambulance/ Police and Fire. The current systems run on GPS/ GPRS Systems, but are not backed by proper legislative and regulatory control over manpower training and organizational aspects.

b. In-Hospital Trauma Care

Infrastructure*:* The secondary (CHC/ District Hospitals) and tertiary (University/ Teaching Hospitals) healthcare infrastructure presently cannot cater to the needs of multiple injured patients. There is a lack of well-equipped Emergency departments across the country. The well-equipped ED's of private hospitals do not provide holistic care to all due to economic constraints of the injured patients.

ii *Trained Manpower:* There is lack of trained manpower that can effectively cater to the seriously injured patient at all the levels of health care (Primary, Secondary and Tertiary). The concept of a Trauma Team is non-existent and often the persons taking care of the patients are not adequately trained/ skilled in life saving protocols and procedures.

1) Lack of trained doctors and nurses in emergency departments (CMO's and GDMO's)
2) Absence of Trauma Surgeons/ trained surgical specialists in trauma
3) Insufficient numbers of super specialists in various fields, taking care of an injured patient (neurosurgeons, trauma intensive care etc.)
4) Insufficient numbers of rehabilitation professionals in hospitals

Capacity development requires all round development of human resource and infrastructure for establishment of a well-focused and functional DM medical system. This will be developed by pooling the resources available with MoD, MoR, M/oH&FW, MoL&E and NGOs. It should include training of all stakeholders including doctors, nurses, paramedics and other resource persons as well as pooling of other identified resources for DM.

National Capacity Building Efforts by JPN Apex Trauma Centre

Short term courses in the form of ATLS, AUTLS, ACCC, ATCN, PHTLS and long term courses in the form of training of in service doctors of armed forces and state governments has been running since long. Recently, super speciality course in the form of MCh in Trauma surgery and critical care was also started making AIIMS as the first institution in India to start a formal degree course for surgical specialist to be trained in trauma surgery.

The Apex Trauma Centre has already completed the NDMA supported Pilot Project on Capacity Building for Advanced Trauma Life Support in India, training doctors, nurses and paramedics in Basic and Advanced Trauma Life Support from three states. The Extended project on Capacity Building for Advanced Trauma Life Support for training medical personnel is already underway which aims to train about 1800 doctors and nurses in advanced trauma care over the next 4 years.

Finally, we need to learn the lessons from disaster prone nations like Japan where they have set up a system for prehospital trauma care as well as disaster management. There is a need for setting up a command center and an emergency information system where all the hospitals should report the number of causalities and the need for assistance. ❑

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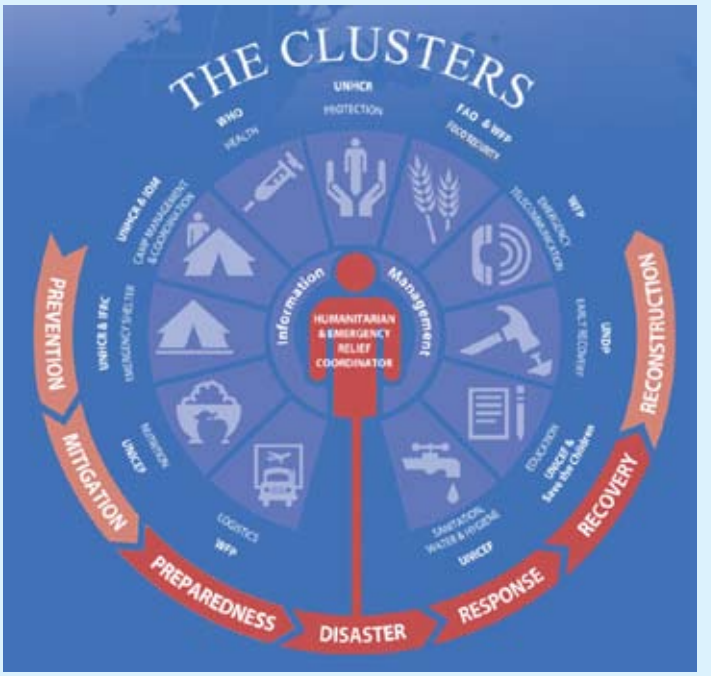
DO YOU KNOW?

UNITED NATIONS DISASTER ASSESSMENT AND COORDINATION (UNDAC)

The United Nations Disaster Assessment and Coordination (UNDAC) is part of the international emergency response system for sudden-onset emergencies. The office for the Coordination of Humanitarian Affairs (OCHA) at the request of the government affected by a disaster dispatches a UNDAC team to the country within 12 to 48 hours anywhere in the world. After a sudden-onset disaster, UNDAC team provides technical services, principally in tasks such as damage, assessment, and on-site coordination and information management.

UNDAC was created in 1993 with the aim to facilitate close links between country-level, regional and international response efforts. When deemed appropriate, the United Nations also sets-up an On-site Operations Coordination Centre (OSOCC) to help local authorities in a disaster-affected country to coordinate international relief. UNDAC consists of more than 70 members and participating countries, together with staff from OCHA and 16 international and regional organizations including UN agencies.



In addition, OCHA has established a structure of clusters as a way for UN agencies to work together with non-UN agencies like NGOs to deliver humanitarian assistance in a coordinated fashion. There are eleven different clusters, each one focussing on a specific set of tasks or functions. Each cluster is headed by one or two UN organizations or agencies. Both the UNDAC team and the OCHA clusters coordinate their efforts with the UN Resident Coordinator and the UN Humanitarian Coordinator in the country affected by the disaster.

While most clusters operate during the response phase, the United Nations Development Programme UNDP has established the Early Recovery Cluster that focuses on the more long-team needs related to recovery. Through this cluster, UNDP links humanitarian efforts with development work. The aim of this cluster is to gradually turn the dividends of humanitarian action into sustainable crisis recovery, resilience building and development opportunities. ❑

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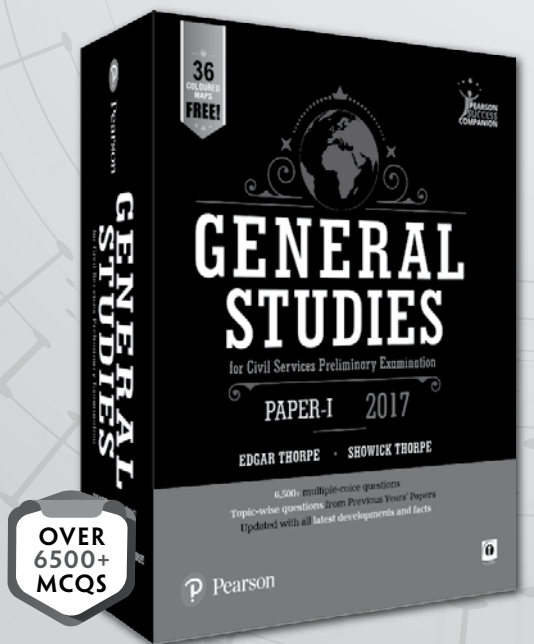

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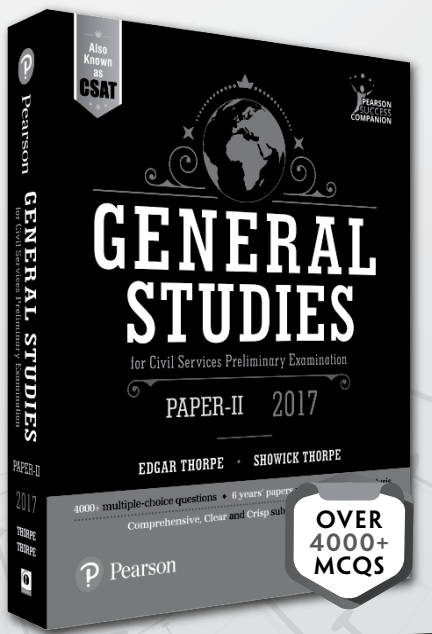

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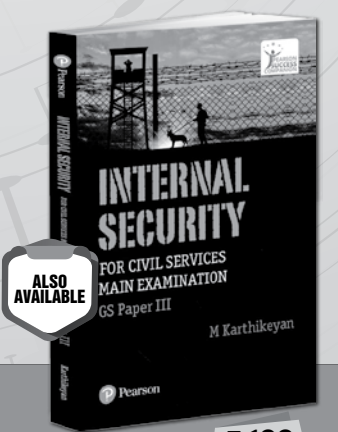

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YE-206/2016

Chemical Disasters: Prevention and Response

M Surianarayanan

The result of a chemical disaster has effects through generations of populations which are almost irreparable and the cost of that to the affected people is unimaginable

The Indian chemical industry through its performance and potential has contributed to 2.11 per cent of the country's GDP with 10.49 billion dollars as FDI in the last five years. It is estimated that the Indian chemical industry would grow at 11 per cent per annum to USD 154 billion by 2020.However, major chemical disasters disrupt its growth and it is preventable. Chemical disasters may arise at any stage of the plant/process life cycle such as commissioning, storage, manufacturing, maintenance, disposal and transportation etc. The loss of contaminant of hazardous chemicals can lead to fire, explosions, toxic release or combination of them. At a time when the population density is high and more and more residential colonies are brewing up around the industries, a major mishap at a chemical plant can spill catastrophe to the people and environment. Besides fire and explosion hazard, the release of toxic chemicals can cause irreparable damage that can last long to people as well as to the environment.

One of the major drawbacks in India as compared to West is the non-availability of accident investigation agency and exclusive chemical accident data base which will be useful to learn lessons from the past and investigate the root causes of accidents and prevent its recurrence. Chemical disasters usually result due to failures of many critical factors and it is essential to understand which critical factors ultimately led to the disaster and which did not.

The Ministry of Environment and Forest (MoEF) is the nodal Ministry for the management of chemical disasters and National Disaster Management Authority (NDMA) has prepared guidelines to direct ministries, department and state authorities for the preparation of disaster management plans. Since the Bhopal gas tragedy in 1984 there has been a paradigm shift in the government's approach to safety in industries from a reactive to proactive safety culture. The objective of this article is to let the readers understand the factors that cause chemical disaster, how it can be prevented and the actions that are needed to be taken if a chemical disaster were to take place.

Causative Factors

Ageing of process plants and inadequate steps to pace with modern technologies in Indian chemical industry has increased vulnerability to chemical disasters. Fire, explosion, toxic release and combinations of all can occur during transport, storage and processing due to number of reasons such as temperature and pressure deviations from set limits (process

The author is Principal Scientist at the Cell for Industrial Safety and Risk Analysis, CSIR-Central Leather Research Institute. His research areas of interests are chemical process safety, thermo kinetic analysis of chemical process reactions, occupational safety and health, accident database, charge transfer polymerizations, drug delivery systems and Biocalorimetry. Dr. Surianarayanan has over 120 publications in peer-reviewed journals.

deviations), runaway reactions, mixing of incompatible materials, catastrophic rupture of reactors, storage vessels, pipelines, leaks, failure of hardware systems, inadequate mixing or agitation failures, improper design of reactor vents, inadequate process hazard analysis etc.

Organic solvents are the most common source of fires and explosions in the chemical industry. The major distinction between fires and explosions is the rate of energy release. Fires release energy slowly, and explosions release energy rapidly, typically in the order of microseconds. Fires can also result from explosions and explosions can result from fires. The severity of the explosions is dependent on the moving pressure or shock wave and can be classified either as detonation or deflagration. Confined explosions cause injury to the building inhabitants and results in heavy damage, while unconfined explosions are usually the results of loss of containment of a flammable gas or liquid, which can disperse in air and explodes when it gets contact with an ignition source, therefore it has the potential to cause damage away from the source of release and is called as unconfined vapour cloud explosions (UCVE). Solid chemical dusts when in contact with ignition sources can result into dust explosions, again releasing large amounts of energy. Often, fires and explosions are accompanied by toxic release to the environment. Loss of containment of non-flammable gases, liquids and dusts can contribute to toxic load to the environment.

A majority of the industrial accidents occur due to human erroras a result of non-compliance of Standard Operating Procedures (SOPs) that have been put into place by the company. Piper alpha accident is a classical example of how human error can lead to chemical disasters, wherein a worker accidentally activated a pump under maintenance without safety valve in place that lead to gas leak and subsequent explosion.

Chemical disasters have also Occurred due to defects in design; absence of SOP's to mitigate an early warning in the process, poor coordination between different departments within the chemical company. In addition to the above there is an increased threat due to terrorist activities and sabotages. Natural disasters such as floods and earthquakes have also caused a major disaster in chemical industry.

Another common cause that results in chemical disaster is the improper maintenance of equipment. Regular maintenance at scheduled intervals following the manufacturer's recommendations is important for ensuring that the equipment runs smoothly and safely. When a piece of equipment is not properly maintained, it can malfunction and ultimately fail resulting in a catastrophic explosion. The Flixborough incident is a prime example of improper maintenance which lead to the death of 28 people and injured many.

Non-availability of an emergency response team to mitigate accidents during the transportation of hazardous chemicals have also resulted in major disasters in several locations in India. Hazardous waste processing and its proper disposal needs special attention as these activities can also contribute to fire, explosions and toxic releases to the environment.

Prevention and Response

1. Role of Industry:

As far as chemical accidents are concerned, prevention is the best proactive approach rather than the reactive methods to chemical disasters. Each of the following stakeholders has a role and responsibility.

(a) Identification of hazardous activities

A good knowledge about the safety aspects of the industrial operations would enable the prevention and control of accidents.

A knowledgeable and dedicated team of qualified professionals to evaluate the hazards and risks arising from the day to day activities is essential. Use of appropriate hazard identification tools such as checklists analysis, safety audit, HAZOP, FTA/ ETA, FMEA and LOPA would help in mitigating the hazards.

Based on the above study, a proper hierarchy of safety controls such as elimination of hazardous activity, substitution with safer chemicals, isolating the activity that could pose hazard and providing engineering controls would ensure preventing chemical disasters.

(b) Maintenance of the plant facility and equipment

Proper maintenance of all the equipment and machinery need to be carried out at regular intervals Regular site safety and health inspection needs to be carried out to ensure that the plant facility is safe and all the equipment's are operating in the intended method.

(c) Installation of vapour/gas detection system

Installation of gas/vapour detection system with alarms to detect leak even at micro levels would ensure that the leaks are attended at the early stages.

(d) Compliance with existing rules and regulations

Various rules and regulations of the state and centre should be strictly adhered for a sustainable and safe process.

(e) Development of human resource management

Human resource management is complex and requires a constant monitoring and behaviour based safety program should be implemented.

A good human resource management must be setup by the industry comprising of the top most officials to improve the safety systems in the chemical industry.

A congenial environment to be created for smooth interaction between the top management and the employees so that the workers could report substandard practices or hazards in the plant.

(f) Emergency preparedness

The industry must have a good emergency response team that can react swiftly to mitigate propagating disasters.

Frequent mock drills need to be conducted so that workers are adequately knowledgeable to react to emergency.

2. Role of Government

(a) Setting up of accident investigation board and chemical accident database

An accident investigation board in similar lines of chemical safety board of USA can be set up in India to investigate the chemical disaster and bring out guidelines based on the lessons learnt in each incident would be helpful to prevent its reoccurrence. Similar initiatives are required in setting up accident reporting system and exclusive chemical accident case database. An online portal would help industries tackle a wide range of concerns from experts around the world that would help in preventing of any unforeseen conditions arising out of the plant operation.

(b) Awareness Campaigns

The government can provide awareness regarding the hazards arising arise out a chemical disaster to the workers as well as the public. A good knowledge about the hazards by the workers themselves would help in reducing unsafe acts as well as in tackling the disaster if it were to happen.

(c) Research and Development

Research and development initiative to newer technologies that can minimise the toxicity of the by-products of chemical industries can be carried out by the government. Research into newer methods of producing the product with less toxicity can substantially reduce the adverse effect if any accident were to happen.

(d) Offsite Emergency Planning

The purpose of offsite emergency plan is to ensure that the local authority adequately discharges his duty to minimize the consequences of major accident to people and environment in MAH located sites. This planning exercise should be performed as per our rule and regulations. Creating public awareness about the hazards and its consequences is

utmost important so that they can contribute in mitigating and post-disaster activities.

(e) Transportation of Hazardous Chemicals

Swift and timely availability of emergency response for disaster during transportation of hazardous chemical will help in mitigating and rescue the public involved. Recently Indian Chemical Council (ICC) has initiated a program called "Nicerglobe" (nicerglobe.in) which provide GPRS tracking of trucks right form its origin to the place of destination. The Nicerglobe platform is well linked to the emergency response providers. Chemical companies are advised to join in this initiative of ICC to protect their hazards good transportation.

3. Role of Public

A general awareness of the risk associated with any chemical accident would help in reducing the outcome of the accident

A mutual aid group can be setup to organise the general public in case of any disaster and provide training and awareness about the potential actions to be taken in case of any chemical leakage.

Disaster is a rarity in the chemical industry, but negligence or misfortune can so easily result in devastating consequences. Aside from the immediate implications surrounding a major incident, such as loss of life, a threat to the environment or the destruction of plants and surrounding buildings, the damage to the industry's reputation is almost irrevocable. The result of a chemical disaster has effects through generations of populations which are almost irreparable and the cost of that to the affected people is unimaginable. ❑

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FROM OUR READERS ...

Yojana's November and December issues on Tax Reforms and Science for Development are truly commendable. I wish to thank the entire team of Yojana for their efforts. The articles are really awesome and very helpful for us i.e. for Civil service aspirants. I would request to publish some issues on Terrorism (inter state/cross border), Indian Bureaucracy, Communalism/Socialism etc.

Rakesh Kumar

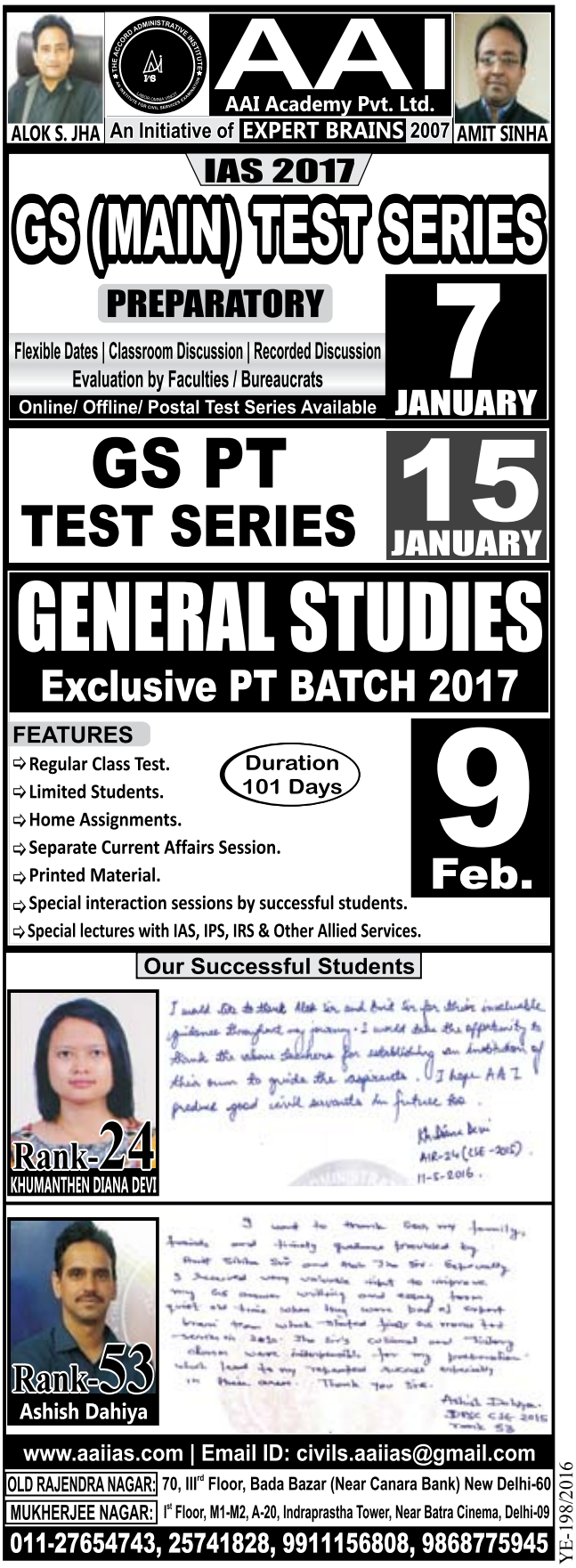
Response from Yojana Team

We are really grateful to our readers who take time out to send in encouraging words and valuable suggestions. It makes our work seem worthwhile.

We do try to incorporate your suggestions in our journal whenever possible. We will definitely consider them while planning our issues.

Please do write in with your feedback on our issues. It will help us in planning our issues.

Thanks once again



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YE-200/2016

Biological Disasters: Causes and Way Forward

Archana Sood

Biological hazards can kill. Or they may cause discomfort and affect the health and performance of employees at the very least. We have to be vigilant in preventing and controlling biological hazards to make the work environment a safer and healthier place

Biological disasters define the devastating effects caused by an enormous spread of a certain kind of living organism – that may spread a disease, virus, or infestations of plant, animal or insect life on an epidemic or pandemic level. Cholera and influenza H1N1(Swineflu) outbreaks are examples of biological disasters. Epidemic-level biological disasters affect large numbers of people within a given community or area, whereas pandemic-level biological disasters effect a much larger region, sometimes spanning entire continents or the globe. Cholera is an epidemic-level biological disaster, while swine flu is a pandemic. Other epidemic examples include Ebola, dengue fever, malaria and the measles.

Biological hazards, also known as biohazards, refer to biological substances or organic matters produced by parasites, viruses, bacteria, fungi and protein that pose a threat to the health of living organisms, primarily that of humans. This can include medical waste or samples of a microorganism, virus or toxin (from a biological source) that can affect human health. It can also include substances harmful to other animals. Transmission of these micro-organisms into our body is through the respiratory system, by contact with body fluids of the infected or by contact with contaminated objects. The harmful effects posed to human health by these biological hazards are mainly of three types - infections, allergy and poisoning.

Biohazards and its associated symbol are generally used as a warning, so that those potentially exposed to the substances will know to take precautions. The biohazard symbol was developed in 1966 by Charles Baldwin, an environmental-health engineer working for the Dow Chemical Company on the containment products. It is used in the labeling of biological materials that carry a significant health risk, including viral samples and used needles. In Unicode, the biohazard symbol is U+2623

Natural hazards are severe and extreme weather and climate events that occur naturally in all parts of the world. Natural hazards become natural disasters when people's lives and livelihoods are destroyed. In general, biological disasters develop when some form of malignant agent (usually bacteria or virus) enters a population that is vulnerable to it's actions and which lives in an environment that is conducive to the agent's propagation. There is no clear consensus on precisely when an outbreak becomes an epidemic and when and epidemic becomes a disaster.

The author is Head of Deptt., Biochemistry, ESIC Dental College and Hospital, Rohini, Delhi and has an experience of more than 20 years of teaching as well as managing clinical laboratories. She is also Technical assessor appointed by NABL, Ministry of Science and Technology responsible for accrediting various clinical laboratories all over the country as per international standards.

Biological disasters could be Natural Hazards or Biological Warfare.

Ministry of Health and Family Welfare is the nodal ministry for handling epidemics, decision-making, advisory body and emergency Medical Relief provider. According to the onstitution, health is a state subject. The primary responsibility of dealing with biological disasters rests with the state government. The National Institute of Communicable Diseases (NICD) is the nodal agency for investigating outbreaks. The NICD/ Indian Council of Medical Research (ICMR) provide teaching/training, research and laboratory support.

Biological warfare (BW)—also known as germ warfare—is the use of biological toxins or infectious agents such as bacteria, viruses, and fungi with the intent to kill or incapacitate humans, animals or plants as an act of war. Biological weapons (often termed "bio-weapons", "biological threat agents", or "bio-agents") are living organisms or replicating entities (viruses, which are not universally considered "alive") that reproduce or replicate within their host victims. Entomological (insect) warfare is also considered a type of biological weapon. NBC is the military acronym for nuclear, biological, and chemical warfare using weapons of mass destruction . There is an overlap between biological warfare and chemical warfare, as the use of toxins produced by living organisms is considered, it may also be considered as bioterrorism.

Ministry of Home Affairs (MHA) is the nodal ministry for BW and partners with Ministry of Health & Family Welfare in its management. MHA is responsible for assessing threat perceptions, setting up of deterrent mechanisms and providing intelligence inputs.

WHO contributes to global health security in the specific field of outbreak alert and response by: (i) strengthening national surveillance programmes, particularly in the field of epidemiology and laboratory techniques; (ii) disseminating verified information on outbreaks of diseases, and also by providing technical support for response; and (iii) collecting, analysing and disseminating information on diseases likely to cause epidemics of global importance.

The United States Center for Disease Control (CDC) categorizes biological hazards that could potentially cause a biological disaster into four bio safety levels or BSL 1-4.

- BSL1-Bacteria and viruses including *Bacillus subtilis*, canine hepatitis, *Escherichia coli*, varicella (chicken pox), some cell cultures and non-infectious bacteria. Precautions at this level are minimal, most likely involving gloves and some sort of facial protection.
- BSL 2 - Bacteria and viruses that cause only mild disease to humans, or are difficult to contract via aerosol in a lab setting, such as hepatitis A, B, and C, some influenza A strains, Lyme disease, salmonella, mumps, measles, scrapie, dengue fever, HIV. BSL 2 takes more extreme precautions for safety purposes, including the use of autoclaves for sterilizing and biological safety cabinets.
- BSL 3- Bacteria and viruses that can cause severe to fatal disease in humans such as anthrax, West Nile virus, Venezuelan equine encephalitis, SARS virus, MERS coronavirus, hantaviruses tuberculosis, typhus, Rift Valley fever, Rocky Mountain spotted fever, yellow fever, and malaria. Among parasites *Plasmodium falciparum*, which causes Malaria, and *Trypanosoma cruzi*, which causes trypanosomiasis, also come under this level. It requires much more stringent safety protocols including the use of respirators to prevent airborne infection. Biological hazards in this group generally have known vaccines or treatments.
- BSL 4- Viruses that are potentially fatal to humans for which there is no known treatment or vaccine, such as Marburg virus, Ebola virus, Lassa fever virus, Crimean–Congo hemorrhagic fever, and other hemorrhagic diseases. Variola virus (smallpox) is an agent that is worked with at BSL-4 despite the existence of a vaccine, as it has been eradicated. Protective measures include the use of a positive pressure personnel suit, with a segregated air supply. The entrance and exit lab should contain multiple showers, a vacuum room, an ultraviolet light room, autonomous detection system, and other safety precautions designed to destroy all traces of the biohazard. Multiple airlocks are employed and are electronically secured . All air and water service going and coming to lab will undergo decontamination procedures to eliminate the possibility of an accidental release. Currently there are no bacteria classified at this level.

Legislation

There are a number of legislations that control and govern the nation's health policies. The government can enforce these legislations to contain the spread of diseases.

1. The Water (Prevention and Control of Pollution) Act, 1974
2. The Air (Prevention and Control of Pollution) Act, 1981
3. The Environmental (Protection) Act, 1986, and the Rules (1986) This Act also provides for the Biomedical Waste (Management

and Handling) Rules, 1998 with a view to controlling the indiscriminate disposal of hospital/ biomedical wastes.

4. The Disaster Management Act (DM Act), 2005, provides for the effective management of disasters and for all matters connected therewith or incidental. It provides for an institutional and operational framework at all levels for disaster prevention, mitigation, preparedness, response, recovery, and rehabilitation and for biological disasters, necessary quarantine measures will be legally instituted using private sector health facilities also for comprehensive patient care.

Occupations and workplaces where people may come into contact with biological hazards

- Medical staff, cleaning staff and laboratory technicians in the medical profession;
- Healthcare services;
- Cleaning services and property management;
- Employees in environmental hygiene services such as liquid waste and rubbish collection and disposal;
- Agriculture, fishery, veterinary services, and manufacturing industries that use plant- or animal based raw materials, such as paper and paper products, textile, leather and furs and related products;
- Indoor workplaces in enclosed areas with central air-conditioning like hotels and restaurants Furnishing materials like carpets and wallpapers, the potted plants and places that are wet and damp or utensils that hold water are likely to be the breeding ground for microorganisms.

Preventive and control measures at work place

Elimination of the source of contamination is fundamental to the prevention and control of biological hazards.

Engineering controls such as improvement of ventilation, partial isolation of the contamination source, installation of negative pressure and separate ventilation and air conditioning system (e.g. in medical wards for infectious diseases) and the use of ultraviolet lamps can help contain the spread

Personal hygiene like washing hands before and after work or before and after wearing protective clothing with liquid soap is the simplest and most basic method to avoid infection.

Personal protection The employees must use personal protective equipment and adhere strictly to the practice of personal hygiene. The personal protective equipment includes masks, gloves, protective clothing, eye shields, face shields and shoe covers.

a. ***Protective clothing***-Protective clothing includes protective cover all with attached hood, gown, apron, head and shoe covers; should be waterproof or impervious to liquids to protect the body from contamination by blood, droplets or other body fluids and prevent these contaminants from getting into the body through open wounds or contaminating the worker's own clothing, thus reducing the chance of spreading of pathogen and cross-infection. Protective clothing is disposable in most cases though some can be reused after sterilization; should be checked before use and replaced if damaged.

b. ***Goggles/Face shields***-Safety goggles/glasses and face shields can protect the eyes from contacting pathogen-carrying blood, droplets or other body fluids which may then enter the body through the mucosa.

c. ***Gloves***-Gloves protect the hands from contacting blood, droplets, body fluids and other body tissue of the infected, or pathogen-contaminated objects and can avoid infection when touching the eyes, mouth or nose afterwards. Gloves can also protect open wounds from contamination by pathogen; most gloves are disposable after use; Gloves might be worn in handling highly hazardous substance.

d. ***Shoe covers***-Shoe covers prevent pathogens from being carried outside the workplace. Shoe covers are usually disposable and should be water resistant and skid proof. The size should fit so as not to hamper movement and also prevent entry of contaminants onto feet.

Sterilization is the process using ultra heat or high pressure to eliminate bacteria, or using biocide to eliminate microorganisms, including spores in bacteria. A complete sterilization process should include disinfecting the contaminated premises and thorough cleaning of any residual toxic substances, to ensure that employees would not be harmed through exposure in the risk area.

Respiratory protection. Using the appropriate respiratory protective equipment is important for the securing an adequate protection from biological hazards.

- Surgical masks –It generally consists of three layers of non-woven fabrics. It provides a barrier protection against large respiratory droplets;

- N95 or higher level respirators – This type of respirator filters out particulates and liquid droplets in small particle size, therefore providing protection from inhaling aerosols and microorganisms that are airborne.
- Powered Air Purifying Respirator, PAPR. This type of respirator uses an electric blower to bring the air through the filter to the user, making it more comfortable to wear.
- Air-supplying respirators. Clean air is supplied by air compressor or high-pressure cylinder through a hose.

The type of biological hazard, the nature of work and the work environment will determine the choice of respiratory protective equipment

Biological hazard rubbish bag marked with "biological hazard" warning and label

After use the mask, gloves, biologically contaminated protective clothing should be put in a bag or wrapped with paper before disposal. Seal The bag can be sealed and place it in designated location for special disposal.

Medical treatment. Facilities for emergency medical treatment for any emergency situation and specific treatment should be available.

Routine measures

- Eat nutritious and balanced food.
- Immunisation state should be upto date.
- Prevent overcrowding.
- Good ventilation.
- Protect from hot and cold weather.

Prevention of Biological Disasters

Prevention and preparedness shall focus on the assessment of biothreats, medical and public health consequences, medical countermeasures and long-term strategies are useful in reducing vulnerability and in mitigating the post-disaster consequences.. The important components of prevention and preparedness would include pre-exposure immunisation (preventive) an epidemiological intelligence gathering mechanism , a robust surveillance system that can detect early warning signs, decipher the epidemiological clues to determine whether it is an intentional attack; and capacity building for surveillance, laboratories, and hospital systems that can support outbreak detection, investigation and management. The important means for prevention of biological disasters include the following:

1. Vulnerability Analysis and Risk Assessment

2. Environmental Management

i) Safe Water supply and proper maintenance of sewage pipeline will go a long way in the prevention of biological disasters and epidemics of waterborne origin such as cholera, hepatitis, diarrhoea and dysentery.

ii) Personal hygiene Necessary awareness will be created in the community about the importance of personal hygiene, and measures to achieve this, including provision of washing, cleaning and bathing facilities, and avoiding overcrowding in sleeping quarters, etc.

iii) Vector control-The important components of vector control programmes are:

a. Environmental engineering work and generic integrated vector control measures.

b. Elimination of breeding places by water management, draining of stagnant pools and not allowing water to collect.

d. Outdoor fogging and control of vectors by regular spraying of insecticides.

e. Keeping a watch on the rodent population

iv) Burial/disposal of the dead Dead bodies

Prevention of Post-disaster Epidemics The risk of epidemics is higher after any type of disaster, whether natural or manmade. Preventive measures will be taken to deal with such eventualities.

Integrated Disease Surveillance Systems The surveillance team will monitor the probable sources, modes of spread, and investigate the epidemics.

Detection and containment of an outbreak would entail four basic steps:

a. Recognition and diagnosis by primary health care practitioners

b. Communication of surveillance information to public health authorities

c. Epidemiological analysis of the surveillance data

d. Delivery of appropriate medical treatment and public health measures

Pharmaceutical Interventions: Chemoprophylaxis, Immunisation and Other Preventive Measures

Biosafety and Biosecurity - There must be a system for inventory control in the laboratories dealing with bacteria, viruses or toxins which can be a source of potential causative agents for biological disasters.

Buildings and Offices Protection of important buildings against biological agents wherever deemed necessary, can be done by preventing and restricting entry to authorised personnel only, by proper screening. Installing HEPA filters in the ventilation systems of the air conditioning facilities will prevent infectious microbes from entering the air circulating inside critical buildings. The post-exposure approach will include effective decontamination and safety procedures.

Training of personal and public health education.

Biological hazards can kill. Or they may cause discomfort and affect the health and performance of employees at the very least. We have to be vigilant in preventing and controlling biological hazards to make the work environment a safer and healthier place. ❑

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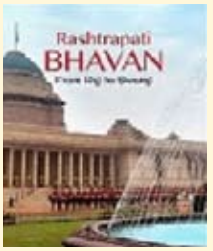
Three Books on Rashtrapati Bhavan Released



Three books on Rashtrapati Bhavan 'Life at Rashtrapati Bhavan'; 'Indradhanush – Volume II' and 'Rashtrapati Bhavan: From Raj to Swaraj' were released at a function held at Rashtrapati Bhavan on December 11, 2016 by the President of India, Shri Pranab Mukherjee, Vice President of India, and the Prime Minister, respectively. All these three books have been published by Publications Division of the Ministry of Information and Broadcasting, Govt. of India.

The book 'Rashtrapati Bhavan: From Raj to Swaraj' is a book for children which recreates the story of Rashtrapati Bhavan from its inception as Government House, a symbol of imperial might, to the present day.

The book 'Life at Rashtrapati Bhavan' is an attempt to record the human history of the residents living in the President's Estate. This documents the period under the colonial state right up to the current presidency and brings in the perspectives of past and present residents of the estate, the permanent staff of the household and secretariat, as well as the officials who have served under different presidencies.

The book 'Indradhanush Volume-II' is a compendium of music, dance, theatre and cinematic presentations organized at Rashtrapati Bhavan from mid 2014 to September 2016.

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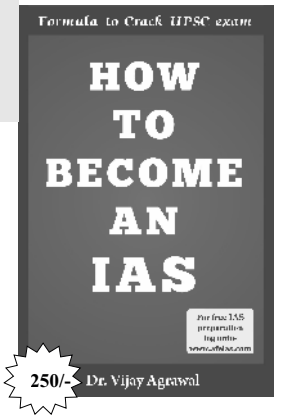

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YE-204/2016

Psychological First Aid: A Way to De-Stress during Distress

Hariharan
Ambreen Khan

The concept of psychological first aid aims at providing immediate supportive response to someone who is suffering in wake of disaster however, psychological and social impact of traumatic events and disasters is not limited to the early phases. Such experiences can also undermine the long term mental health and psychosocial well-being of the affected individuals

India has been vulnerable to natural calamities ranging from Floods, droughts, cyclones, earthquakes, Tsunamis and landslides which appear to be recurrent phenomena regionally across the country and affect individuals of all age, sex, caste and creed. Several regions in the country are such that children have grown up experiencing violence inflicted by terror groups leading to loss of lives, dysfunctional communities as well as unaccounted impact to mental health and well being which often leave the affected society paralyzed. Managing such adversities and disaster preparedness occupies an important place in this country's policy framework as it is the under-privileged who are worst affected on account of such disasters/calamities and adversities. Paradigm shift in approach to disaster management has been brought by the Government of India however, the aspect of mental health and preparedness to address the trauma faced by the individuals affected and afflicted by disaster have been overlooked hence, there is an urgent need for a spearheaded approach for promoting natural recovery to restore functionality among the people affected by traumatic event, disasters through extending appropriate and timely interventions.

People affected by traumatic event experience different degrees of distress, destructive events that cause loss of life, property and livelihoods, injury and damage to communities which at times become irreparable in absence of appropriate and timely care and support. For an individual this may mean the loss of a loved one or losing one's family, becoming homeless, feeling of hopelessness regarding one's own life and future, loss of livelihood and above all loss of confidence and self worth which needs immediate intervention for the purpose of restoration of functionality among those who are worst affected in wake of such calamities.

After an emergency, people often lose confidence in the norms, networks, and trust in the society that is supposed to protect them. Therefore, first objective in the aftermath of disaster shall usually be focused on ensuring that immediate practical needs of survivors are met. This involves helping people to feel physically safe through provision of temporary housing, setting up of reception centres to help people to be able to locate the

Dr. Hariharan has been working as a medical professional for the past 35 years and also contributed to field of public health as a consultant. His experiences include directing the Sehyog, a project on Juvenile de-addiction, and coordinating the "Drinking and Driving Intervention Project" in partnership with Delhi Legal Service Authority. He was also the Chief Executive, Indian Alcohol Policy Alliance- a global partner of Global Alcohol Policy Alliance (GAPA), U.K. and affiliated with FORUT Norway.
Ambreen Khan is currently working as Program Coordinator at Society for Promotion of Youth & Masses (SPYM)

family members or their loved ones, to help in developing a sense of feeling connected to others and realize that they are not only the one's who are suffering, to remain calm and hopeful, to access physical, emotional and social support, and to make them feel capable of helping themselves.

It is evident that in wake of a traumatic event or disaster, meeting basic medical and physical needs of those people and those needs which require emergent care is essential moreover, emphasis shall be laid upon assessing the basic functional capacity of the survivors to ascertain that the person in crisis is capable of meeting basic essential needs of daily living. Once the physical needs of a person in crisis are met to a rudimentary level people often need interpersonal support in terms of affection and acceptance from family, community and caregivers to return back to normal life.

In practical, interventions are largely predicated upon the idiosyncratic needs of the person in distress. Assessment of the degree of distress in based on physical and psychological status which is derived from a reflective listening and conversation from survivors own narrative. There are three identified groups namely, eustress, distress and dysfunction group which exhibit different degree of impairment and corresponding recovery rate based on those who are in most need of care can be identified and interventions can be accordingly prioritized.

First group of individuals i.e. eustress are the ones who are seemingly unhappy about the adversity but are capable of moving on and are usually able to discharge the demands of daily needs. No particular intervention is required among this group however; continuous observation to monitor progress is required. Also, timely availability of support is also essential as and when this group might seek out for support in terms of medical care, shelter and other necessities.

Majority of individuals in the second group, the distressed group, are capable of moving on without any direct aid except provision of medical care, food and shelter. Such people may not appear particularly well but they are capacitated of doing things they need to do to reduce the mild distress they are subjected to. Despite this, it is essential that continuous monitoring and observation of progress is done. In contrast, there is a section of people facing mild distress in this group who regress in their ability to perform activities of their day to day living, as a result, they at times move into the third group known as dysfunction group. Individuals in distress group often exhibit Confusion, reduced problem solving capacity, are unable to concentrate, feel obsessed, suffer from nightmares and often relive the traumatic event followed with sadness, anxiety, anger and frustration. Other behavioural reactions may involve sleeping disturbance, eating disturbance, avoiding people, places, doing things based on irrational fear, getting startled easily, hoarding food, water, clothes etc which impairs their mobility.

Individuals falling in the category of dysfunction group are those who face severe incapacitated impairment which tends to interfere in almost all spheres of their life. They often exhibit incapacitating confusion, diminished cognitive ability, hopelessness, suicidal thoughts, hallucinations and delusions other symptoms may include panic attacks, Posttraumatic stress disorder (PTSD), depression while behavioral patterns may involve persistence avoidance, violent behavior, compulsions, self medication, abusing prescription drugs, alcohol etc. and other risky behavior. Dysfunction group is the one which experience more lasting impairment therefore, it becomes essential to identify, assess and intervene among the people who are in need of help and to ensure that this group of people has access to all the basic support which they may require. Since this group need utmost support and assistance in meeting their daily needs, availability and accessibility to support and care is crucial. Yet, there will be a few survivors who would show recovery on their own, in such situation any intervention may interfere with the natural process of resilience hence altering the capability of an individual. Thus, observation is recommended till the time people seek out for external help on their own.

The concept of psychological first aid aims at providing immediate supportive response to someone who is suffering in wake of disaster however, psychological and social impact of traumatic events and disasters is not limited to the early phases. Such experiences can also undermine the long term mental health and psychosocial well-being of the affected individuals. Support is essential to protect and promote mental health and psychosocial well-being, coordinated action among government and non-government agencies is required in order to achieve this. This may involve brief supportive interventions for children and families in the early weeks including emotional support, social support, practical assistance, information gathering and provision, and linking with collaborative services. The World Health Organization (WHO) has developed a framework consisting of three action principles to assist in the delivery of psychological first aid which provide guidance for how to view and safely enter an emergency situation (LOOK) in order to understand the needs of affected people (LISTEN) and link them with the information and practical support they need (LINK).

Therefore, the first responders, primary care givers and disaster relief workers shall be equipped with basic minimum skills to extend immediate care and support in terms of psychological first aid to every person who survives through calamities including adults, adolescents and children, as well as disaster relief workers and first responders themselves to address emotional and practical needs and concerns above all and to restore functionality and make the individuals capable to help themselves and others who are in need of support. ❑

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Role and Importance of Effective Communication

C K Nayak

Modern communication also came to use when thousands of persons were evacuated before the cyclone Phalin hit the Odisha coast since the warning equipment were in place beforehand

With rapid change in climate and increasing conflicts in the society across the globe, sheer number of disasters whether natural or manmade has increased in recent times by manyfold. And so also the disaster management. With rise in cases of disaster management, role and importance of communication has swelled too.

In the days of breaking news and making headlines journalists who mostly play the role of communicators in such emergencies often come in conflict with the personnel handling disasters even though the aim of all is to help the affected at the earliest. As a result all three stake holders-the disaster management personnel, the victims and the scribes are affected if there is no proper coordination.

There is nothing to train the victims except making them aware in general beforehand in a mass scale. Same applies to the management personnel since they are already trained. But there is a need to train the journalists covering disasters starting from how to reach the spot till what precautions they should have. Hence, the task is to prepare the journalists to cover the disasters in smooth way which in the process will help rather than hinder the other two parties-victims and disaster management personnel.

Communication during and immediately after a disaster situation is an important component of response and recovery, in that it connects affected people, families, and communities with first responders, support systems, and other family members. Reliable and accessible communication and information systems also are key to a community's resilience.

The word "communication" holds a very significant place in all walks of human life. A person is an element of society, nation and the world and cannot live his or her in isolation. He or she has to interact with his or her fellow human beings in normal circumstances and more so during disasters.

There are two distinct facets of communication first is the physical one where we use a variety of means using ever progressing technology. Due to modern technology and use of Satellites we broadcast television programmes all over the world. Satellite phones and internet have added new dimensions to global and almost instantaneous communication. Thus there is no lacking of any type of Hi-Tech. means to communicate. Media (print and electronic) serve as credible and influential agents of communication.

The author is a senior journalist with over 30 years of experience in news agencies, English dailies, periodicals and other media. He has also delivered lectures on journalism and disaster reporting and has published over 100 articles.

The other aspect which is far more important is the conceptual one. It is necessary to ensure that recipient of communication understands the contents of the message being conveyed and that he responds to it in the desired manner. This apparently simple requirement carries behind its giant efforts of thorough knowledge, clarity and conciseness. The originator must realize the capacity and capability of the receiver to appreciate the message and to react correctly. Thus, content and clarity have to be the essential features of the message being communicated. The content has to be specific, to the point, brief and couched in simple, understandable and clear language with no ambiguity. In its modern concept "communication" transcends its traditional meaning of transmission of message but includes the quality of the message itself especially the content, conciseness and comprehensibility.

Application of communication technology has a role in all the four distinct phases of disaster management namely, mitigation, preparedness, response and recovery. But most of the application has traditionally been in response and recovery phases. The new communication and information technologies that have emerged over the last two decades lend themselves to greater possibilities of integration of different communication systems. The interoperability of various communication systems including internet, mobile- phones, fax, e-mail, radio and television is increasingly becoming functional. As a result, the possibilities for application of communication technologies in mitigation and prevention of disasters are also increasing.

In crisis events and emergencies which are mostly chaotic, communications is critical at all phases of disaster management. Communications during emergencies incorporates a wide range of measures to manage risks to communities and the environment. Before disasters strike, telecommunications can be used as a conduit for disseminating information about the impending danger thus, making it possible for people to take the necessary precautions to mitigate the impact of these hazards. Other telecommunication applications, including remote sensing and global positioning system (GPS), have critical roles to play in tracking approaching hazards, alerting authorities, and warning. Journalists who are covering the disasters must be trained about use of such latest instruments.

The new communication and information technologies that have emerged over the last two decades lend themselves to greater possibilities of integration of different communication systems.

There has to be close coordination and the journalists who act as communicators during such disasters starting from reaching the place to cover the mishap and doing a post mortem. At the same time they should be knowing the dangers which is basically the line up to which they can go and no further. A disaster management personnel can enter into a collapsed house since he knows how to save himself while rescuing a trapped victim but an over a reporter or cameraman should not follow him since he cannot save himself if immediate further mishap happens.

The journalists and the disaster management personnel should also identify the danger spots and map the area accordingly. The journalists should also take care of their communication equipment like mobile phones and computers which hold vast amounts of data vulnerable to attack. Losing or compromise of this data can derail a story or worse put yourself, or a source at risk.

Consider what information is important, vulnerable and how you will protect it and turn off computers when you leave the office / hotel room. One should clear history, re-cycle bin and password and ensure wireless networks are secured and password protected. Sat phones, mobile phones and radios can be traced, even when turned off, so minimize usage in hostile areas and remove battery when not ii use. Ensure mobile phones are password protected with auto lock activated and turn blue tooth off when not in sue, to prevent hackers from accessing phone.

Role of communication was best experienced during the super cyclone and floods in Odisha. When all the telephone lines were down and mobile towers were razed to the ground. The then Andhra Pradesh Government rushed its modern technology phones which came into immense use. Modern communication also came to use when thousands of persons were evacuated before the cyclone Phalin hit the Odisha coast since the warning equipment were in place beforehand. ❑

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YOJANA WEB- EXCLUSIVES

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We are carrying the following article under the Web-Exclusives section of Yojana for January 2017.

- Role of Business Continuity Plan (BCP) to Manage Disaster by Dibakar Lenka

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