Report on Disaster Risk Reduction & Resilience

Reflection • Collaboration • Transformation

SEWA INTERNATIONAL

This report is dedicated to disaster survivors whose courage and determination we salute.

They inspire our continued perseverance in protecting persons and building disaster-resilient communities

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Acknowledgements

The Conference on Disaster Management was organised by Sewa International in partnership with --

Ministry of Road Transport and Highways

Vivekanand Education Society's Institute of Management Studies & Research

Indian Council of Social Science Research

ORACLE

And in celebration of 75 years of India's Independence

75 Azadi Ka Amrit Mahotsav

Sewa International would like to thank

- Our partners V.E.S. Institute of Management, Ministry of Road, Transport and Highways (MoRTH), Oracle, and the Indian Council of Social Science Research (ICSSR) for their generous support
- Our Chief Guests Sh. Santosh Gangwar and Sh. Pratap Chandra Sarangi, both Members of Parliament, Lok Sabha for their counsel
- Our Guest of Honour Narendra Bundela, Inspector General, NDRF and Lt Gen Syed Ata Hasnain (Retd), Member, NDMA both executive members of National Disaster Management organisations for their encouragement and support
- Our keynote Speakers Prof. Sachin Chaturvedi, Director General, RIS, and Dr G. Satheesh Reddy, Chairman, DRDO for their expert guidance and support

Sewa International would like to thank the participants and delegates from across the country for their interest and active participation throughout the conference. Sewa International was pleased to observe this interest from the delegates and was impressed with the conference as a model for innovation and collaboration. We are grateful to all our panellists for their participation, attention and dedication to mutual learning, allowing for necessary reflection on effective practices from across the country.

ABOUT HOST ORGANISATION

Sewa International began as a movement in 1993 to engage the Indian Diaspora (NRIs) worldwide. We encouraged them to remain connected with Indian roots through contribution to humanitarian causes locally and in India, especially in times of natural calamities. We are an organization with a mission to nurture institutions of social impact and serve humanity when in distress. In our two decades of work, we have worked across the length and breadth of the nation to inculcate the spirit of sewa as a means for societal transformation or parivartan. We have relentlessly served humanity in distress irrespective of caste, creed, colour, religion, race or region. We work across three key themes: Himalayan Development, Disaster Management, and Nurturing Societal Leadership, while working actively with other grassroots organizations, civil society, domain experts, and government institutions. Our work spans 15+ states as an India team, and globally across 25+ countries supporting the SDG goals defined by the UN for achieving lasting peace and prosperity for the people and the planet. Our expertise in Disaster Management is demonstrated by our more than 25 years of disaster relief and response in more than 50 disasters across the country (from the 1993 Latur earthquake to the 2022 Assam floods)

ABOUT PARTNER ORGANISATION

Ministry of Road, Transport and Highways (MoRTH) is an apex organisation under the Central Government and is entrusted with the task of formulating and administering, policies for Road Transport, National Highways and Transport Research with a view to increasing the mobility and efficiency of the road transport system in the country.

Indian Council of Social Science Research (ICSSR) is an organisation established by the Government of India to promote research in the social sciences. ICSSR provides grants for projects, fellowships, international collaboration, capacity building, surveys, publications etc, to encourage research in social sciences in India.

Vivekananda Education Society Institute of Management is a leading business school with a humanistic approach to management education. The approach is complemented by transformative pedagogic practices, an interactive and experiential teaching methodology, and a growing distinguished alumni network of professionals. The Institute strives to create socially responsible business leaders of tomorrow.

Oracle Corporation is multinational computer technology and database management company. Oracle's corporate citizenship efforts are steadfast, clear-eyed, and effective. Over the last 5 years, Oracle has supported non-profit and non-governmental organizations working to advance education, protect the environment, and strengthen communities in India.

Sh. Ashok Goel

Chairman, Sewa International

Chairman's Desk

Sewa International has closely worked with local communities in the area of disaster management for more than 25 years. Our continuous efforts in supporting relief and rehabilitation in more than 45 disasters have highlighted the importance of protecting public health, securing people's livelihoods, and reducing economic and infrastructure damages through innovative solutions.

In the last decade, there has been a rise in the number and frequency of disasters, resulting in loss of lives, livelihoods, and development. Despite our collective knowledge about preparedness, response, and recovery, there is a need to create awareness about disaster risk reduction and resilience.

Building on our insights, the logical step was to increase our horizons by exchanging knowledge and developing collaborative multilateral interventions. This led to the idea of

a focused conference in the area of disaster management. The Conference on Disaster Management planned by us and our partners was topical and timely. The COVID-19 pandemic and numerous disasters that India has witnessed reminded us of the need for communities and stakeholders to work together by incorporating a participatory approach to disaster management.

The experts and panellists presented the extraordinary wealth of knowledge and practical abilities that exists today about disaster risk reduction – which requires a better application from the relevant stakeholders. It was an opportunity for the stakeholders to redefine the disaster management strategies. We built consensus on a disaster management framework which integrated technology, supported capacity building and facilitated community resilience through traditional knowledge mapping.

The present report provides a platform for stakeholders to reflect on the existing disaster management strategies. This report is unique as it documents expert comments and analyses the recommendations for better disaster risk reduction strategies. I hope, this report, a small contribution from our end, shall act as a guide to nurture collaborations and transform our responses to focus on disaster risk reduction and resilience.

Key Highlights

40 No. of Panellists	**12** Executive Member of disaster management organisations	**20** Participant Organisations
290 No. of participants	**6** Sessions	**110** Recommendation
16 Hours	**3** Days	**12** State representation
Government Officials	Policy & Think Tanks	CSO
Academia	Media	Corporate

Executive Summary

This report summarises and analyses the outcomes and recommendations of the Conference on Disaster Management hosted by Sewa International in New Delhi from March 28 to 30, 2022, in partnership with V.E.S. Institute of Management, Ministry of Road, Transport and Highways (MoRTH), Oracle and the Indian Council of Social Science Research (ICSSR).

The Indian region is highly exposed and vulnerable to natural hazards and the adverse effects of climate change. The country is witness to a large number of disasters which are projected to further increase in the coming decades. This conference on disaster management was developed to enable discussion on issues such as technology integration, capacity building, community resilience and localised strategies for innovation and collaboration in the area of disaster management.

The conference brought together technical experts and stakeholders from across the country. A small number of national and international experts on disaster management and resilience were also invited to share their substantive expertise.

OBJECTIVES OF THE CONFERENCE

The conference's main objective was to provide a space for the panellists and participants to share and exchange information on good practices, lessons learned and experience in disaster risk reduction and management.

The objective of the conference was as follows:

- Build multilateral and resilient infrastructure systems
- Engage Indian Diaspora and international agencies
- Develop localised strategies and response eco-system for region-specific disasters through capacity building.
- Leverage and integrate technology in disaster management
- Develop participatory model of community immersion

SUMMARY OF SESSIONS

The six sessions at the conference were on various aspects of disaster management. Reflection was conducted on the existing disaster management framework while charting a roadmap for future changes, focus was drawn on integrating technology in disaster management strategy and capacity building of various stakeholders. Discussion was also held on the institutional architecture of disaster management while pondering ways to localise SDGs in relation to disaster management. Further, tangential issues of disaster management such as gender equality, mental health, and volunteerism were discussed at length during the conference.

OUTCOME

Through presentations by panellists, workshops conducted by NDRF, and ample dialogue and reflection sessions, this conference generated nationally and regionally relevant 'take-away' learnings and ideas for each delegate to take home. Proposals for new or strengthened provisions for DRR strategy were discussed, areas for further exchange or collaboration were identified and policy and implementation strategy for integration of technology in disaster management was developed. The conference was able to provide a structured platform for collaborators to work together for disaster mitigation and management.

KEY RECOMMENDATIONS & WAY FORWARD

Based on this three-day conference, Sewa International complied the following main points as possible future steps to be taken.

- Integration of technology with DRR including the development of indigenous technology
- Capacity building and training of communities to support disaster preparedness and mitigation
- Disaster management plan at the national, state, district, and village levels through an implementation perspective
- Equality in disaster response to ensure accessibility of facilities to all without discrimination

- Integrating sustainability in disaster management strategy and reviewing the same on a regular basis
- Bridging the gap between research and implementation through collaboration between academic institutes, CSOs and NGOs
- Collating indigenous knowledge by developing knowledge centres in each state
- Audit of policies and laws post-disaster to update DRR strategy

Major General Ajay Seth (Chair) and panellist Dr. Disha Shah (VESIM) during session 'How can aligning SDG goals support localised solutions for disaster management?'

List of Acronyms

CSO	Civil Society Organisation
DRDO	Defence Research and Development Organisation
DRR	Disaster Risk Reduction
FEMA	Federal Emergency Management Agency
INSARAG	International Search and Rescue Advisory Group
JNU	Jawaharlal Nehru University
MP	Member of Parliament
NDMA	National Disaster Management Authority
NDRF	National Disaster Response Force
NGO	Non-governmental Organisation
NVOAD	National Voluntary Organisations Active in Disaster
ODRAF	Odisha Disaster Rapid Action Force
OSDMA	Odisha State Disaster Management Authority
RIS	Research and Information System for Developing Countries
SFDRR	Sendai Framework on Disaster Risk Reduction

Delegate Organisations

- Bennett University
- Bharat Vikas Sangam
- Bhavishya
- BotLab Dynamics
- Centre for Health Research and Innovation
- Chinmaya Organization for Rural Development (CORD)
- FAB Techno Overseas
- Gandhi Smriti and Darshan Samiti
- Global Tree Initiative
- Gram Chetna Kendra
- Gramin Yuva Evam Bal Vikas Parishad
- Hindi Aid
- Hindu Emergency Aid and Relief Team (HEART)
- Human Life Society
- Indian Institute of Technology (IIT), Roorkee
- Indian Coast Guard
- Indira Gandhi National Open University (IGNOU)
- Indraprastha College for Women, Delhi University
- Info International Educational and Welfare Society (IIEWS)
- Kaivalya Education Foundation
- Madras School of Social Work
- Manan Sewa Sansthan
- Miranda House, Delhi University
- My Home India
- National Cadet Corps
- National Institute of Disaster Management (NIDM)
- National Institute of Food Technology Entrepreneurship & Management (NIFTEM)
- National Law University, Odisha
- Nehru Yuva Kendra Sangathan
- Odisha State Disaster Management Authority
- ONGC Foundation
- P.G. College, Delhi University
- Sanjeevani Foundation
- Shaheed Bhagat Singh College, Delhi University
- Special Center for Disaster Research, Jawaharlal Nehru University (JNU)
- Tata Institute of Social Sciences (TISS)
- The Resilient Foundation
- United Nations Children's Fund (UNICEF)
- United National Development Programme (UNDP)
- Vaibbhav Ashok Goel Charity Foundation
- Youth for Integration Trust
- Youth For Sewa

Panellists

Welcome Session

- Sh. Santosh Gangwar, Member of Parliament, Lok Sabha
- Lt Gen Syed Ata Hasnain (Retd), Member, National Disaster Management Authority (NDMA)
- Prof. Sachin Chaturvedi, Director General, Research and Information System for Developing Countries (RIS)
- Sh. Narendra Bundela, Inspector General, National Disaster Response Force (NDRF)
- Sh. Ashok Goel, Chairman, Sewa International
- Sh. Shyam Parande, General Secretary, Sewa International
- Sh. Nishant Aggarwal, Executive Director, Sewa International

Session 1

Azadi ka Amrit Mahotsav: Reflection on and vision of disaster management

- **Dr. Anil K. Gupta, Director of COEs & Projects, National Institute for Disaster Management (NIDM) [Chair]**
- Dr. P.K. Joshi, Professor, School of Environmental Sciences, Jawaharlal Nehru University (JNU)
- Sh. Rahul Dey, Regional Coordinator, Asia Pacific Miyamoto International
- Sh. Sanjeev Kumar, Director, Indian Academy of Highway Engineers (IAHE)

Session 2

Why critical understanding of institutional architecture of disaster management is the need of the hour?

- **Dr. Suresh Jain, Founder, Acylin Therapeutics [Chair]**
- Sh. Srikanth Gundavarapu, President, Atlanta Chapter - Sewa USA
- Sh. Sarthak Mohapatra, Deputy General Manager, Odisha State Disaster Management Authority (OSDMA)
- Sh. Nilesh Solanki, Founder, PricewaterhouseCoopers (PwC) Hindu Network
- Sh. Heramb Kulkarni, Founder & Director, Strategy and Development, Council for Creative Education (CCE) Finland
- Sh. Rajeev Issar, Policy Specialist, Climate Risks and Risks Governance United National Development Programme (UNDP)

Session 3

How to equip Civil Society for effective community resilience building?

- **Dr. Angeli Qwatra, Director, Philanthrope [Chair]**
- Dr. Mahesh Kamble, Assistant Professor, Centre of Disasters and Development, Tata Institute of Social Science (TISS)
- Sh. Raghunath Singh, Director, Indian Society of Disaster Mitigation and Management
- Sh. Bharath Govind, Former Convenor, Inter-Agency Group, Thiruvananthapuram District, Kerala

Panellists

How does technology support evolution of future disaster response?

- **Sh. Hari Babu Srivastava, Director General, Technology Management, Defence Research and Development Organisation (DRDO) [Chair]**
- Sh. Sumant Puntambekar, Entrepreneur, Advanced Engineering Technologies
- Ms. Sarita Ahlawat, Co-founder, BotLab Dynamics
- Dr. Gajendra Pratap Singh, Assistant Professor, School of Computational and Integrative Sciences, Jawaharlal Nehru University

How addressing tangential issues complete the eco-system of disaster response?

- **Dr. Indira Khurana, Vice-Chairperson, Tarun Bharat Sangh [Chair]**
- Ms. Swathi Ram, Executive Director, Samarpaka
- Ms. Anjali Rimi, President, Parivar Bay Area
- Sh. Govind Madhav, Chief Operating Officer, Hindu Emergency Aid and Relief Team (HEART)

How can aligning SDG goals support localised solutions for disaster management?

- **Maj Gen Ajay Seth VSM (Retd.), Indian Army [Chair]**
- Sh. Milind Vaidya, Chairman, Center for Disaster Management and Studies (CDMS)
- Dr. Disha Shah, Associate Professor, VES Institute of Management (VESIM)
- Dr. Jyoti Chandwani, Associate Professor, VES Institute of Management (VESIM)
- Dr. Roopam Shukla, Assistant Professor, Indian Institute of Technology (IIT) Roorkee

- Sh. Pratap Chandra Sarangi, Member of Parliament, Lok Sabha
- Dr G. Satheesh Reddy, Chairman, Defence Research and Development Organisation (DRDO)
- Sh. Panna Lal Bhansali, Rashtra Seva Bharti (RSB)
- Sh. Rakesh Mittal, Treasurer, Sewa International

INTRODUCTION

Disaster Management is a subject which essentially deals with the management and coordination of resources and information as far as a disastrous event is concerned. In the past two decades urbanization, increasing population and increasing degradation of the environment have increased the frequency of disasters, which in turn has led to the loss of lives and property throughout the world. The Indian sub-continent, with a very large population, spans several bio-geographic, hydro-meteorological and agro-climatic zones. India has been vulnerable to disasters wherein the risk is not homogenously distributed. The government of India has undertaken both legal and policy measures to shift from a relief-centric approach to a comprehensive, proactive approach focused on disaster risk reduction encompassing all aspects of the disaster management spectrum.

Traditionally, the approach towards disaster management was on relief and rehabilitation post-disaster with very little effort concentrated on disaster mitigation and preparedness. In March 2015 the United Nations adopted the Sendai Framework for Disaster Risk Reduction (DRR) 2015 – 2030 which reaffirmed the member states' continued commitment to reducing disaster risk and losses. The Sendai Framework was followed by three other major intergovernmental agreements: the Addis Ababa Action Agenda on financing for development, July 2015; The 2030 Agenda for Sustainable Development, September 2015; and Paris Agreement under the UN Framework Convention on Climate Change in December 2015. These documents firmly established the role of disaster risk reduction as a core development strategy.

The Indian government in turn adopted the National Disaster Management Plan (NDMP) and prescribed a number of policy guidelines at the macro and micro levels for incorporating disaster management practices into development plans. This was reflected in the Eleventh Five Year Plan 2007-2012 (Planning Commission 2008) which states, — "There is a need to look ahead and plan for disaster preparedness and mitigation in order to ensure that periodic shocks to our development efforts are minimized". The new approach proceeded from the conviction that development cannot be sustainable unless disaster mitigation is built into the development process.

Sewa International with an experience of more than 20 years in the area of disaster management recognised that despite the progress made in disaster response and rehabilitation in India there was a need for achieving collaborative and multilateral interventions in the area of disaster management. The year 2021-22 is being celebrated as Azaadi Ka Amrit Mahotsav (आज़ादी का अमृत महोत्सव) across the country. This celebration presented the perfect opportunity to conduct a dialogue on the contemporary challenges confronted by stakeholders and their evolving role in the disaster management eco-system. The focus of the Conference on Disaster Management was to discuss India's progress in developing the disaster management eco-system while charting a roadmap for future collaborative and multilateral interventions.

Sewa International along with its partners VESIM, Ministry of Road, Transport and Highways, Oracle, and sponsor Indian Council of Social Science Research (ICSSR), conducted the Conference on Disaster Management in New Delhi on March 28-30, 2022.

The objective of the conference was developed to allow discussion on issues such as technology integration, capacity building, community resilience and localised strategies. The conference was conducted with the following objectives:

- To engage key stakeholders in holistic conversations around disaster management and risk reduction
- To build multilateral and resilient infrastructure systems for effective response to natural and human-induced disasters.
- To discuss and further streamline the engagement of the Indian Diaspora and international agencies in supporting disaster management interventions.
- To facilitate discussion on localised strategies and response eco-system for region-specific disasters through capacity building.
- To leverage and integrate technology for disaster risk reduction and management
- To develop a participatory model of community immersion in preparedness and response.

Further, the tagline 'Reflection, Collaboration, and Transformation' was developed keeping in mind the objective of the conference.

The thematic sessions of the conference were developed to ensure that the objectives of the conference could be discussed. The thematic session of the conference was as follows:

- Thematic Session 1 - Azadi ka Amrit Mahotsav: Reflection on and vision of disaster management
- Thematic Session 2 - Why critical understanding of institutional architecture of disaster management is the need of the hour?
- Thematic Session 3 - How to equip Civil Society for effective community resilience building?
- Thematic Session 4 - How does technology support evolution of future disaster response?
- Thematic Session 5 - How addressing tangential issues complete the eco-system of disaster response?
- Thematic Session 6 - How can aligning SDG goals support localised solutions for disaster management?

The main outcome achieved through the conference was the formation of a structured platform for collaborators to work together for disaster mitigation and management which included:

- Knowledge sharing between stakeholders
- Effective communication, coordination, and collaboration of stakeholders
- Mapping technology interventions
- Capacity building and volunteer mobilisation of partners

(From top to bottom) Deep Prajawalan for Inaugural Session; Volunteers & Delegates with Sh. Suresh Jain (Chair) & Sh. Sharthak Mohapatra, Sh. Srikanth Gundavarapu; Sh. Sharthak Mohapatra & Dr. Roopam Shukla and Dr. P. K. Joshi as delegate

WELCOME REMARKS

The welcome remarks were given by the host organisation and key dignitaries from disaster management organisations. The dignitaries set the tone and vision for the conference.

66 *Need for civil society to engage more actively during disasters as it will connect communities, provide rehabilitation and make the affected community better economically, culturally, educationally and health-wise.*

SH. SHYAM PARANDE
General Secretary, Sewa International

Sh. Parande shared his experience of the Diviseema cyclone of 1977 in the Krishna-Guntur coastal region of Andhra Pradesh in which thousands of people lost their lives. Despite abundant funds being generated it could not be utilized due to a lack of awareness and identification of the victims and stakeholders. He informed that the current scenario has changed when it comes to the identification and assessment of the needs of the impacted communities and stakeholders. At present, the state and other agencies are prompt in saving lives. He emphasised the major role played by civil society organizations in connecting agencies and the communities. He highlighted the role played by Sewa international in training women artisans post-2001 earthquake in Gujarat and the post-Kedarnath flood devastations in Uttarakhand. He stressed the need to empower women in disaster-prone communities. He focused on the need for an organized way of dealing with disasters.

66 *Cooperation and coordination with the civic agencies and state authorities are very important during disasters*

SH. NARENDRA BUNDELA
Inspector General, NDRF

Sh. Bundela highlighted the importance of coordination between government agencies, CSOs, and local communities due to the limited capacity of government agencies alone in dealing with disasters. The journey of NDRF was shared with the audience highlighting the fact that NDRF still lacks the mandate to deal with certain disasters such as forest fires. The NDRF responds to a disaster only when they have occurred and not prior, although in the meantime when no disasters occur, the agency focuses on training the general public and in capacity building to prepare against upcoming disasters.

He concluded that there is a need for a pre-planned deployment and a robust standard operating procedure as well as smooth logistics for effective mitigation of disaster risks, along the lines of the International Search and Rescue Advisory Group (INSARAG).

LT GEN SYED ATA HASNAIN

Member, NDMA

Investment in global risk mapping technologies is crucial to gather information about the potential areas of disasters and will enhance disaster risk management efforts

Lt. Gen. Hasnain acknowledged the role of CSOs in providing relief, aid, and help to the affected to regain their livelihood options. Post-2004 tsunami governments across the country became more conscious of disaster risk mitigation through preparedness interventions. CSOs play an instrumental role in disaster risk reduction, for they have rich institutional memories which must be capitalized on by disaster stakeholders. The man-made disaster of the Russia-Ukraine war has a major logistic challenge in rescue and relief in a war-torn region in the absence of administrative and logistic backings. Gender inclusiveness in DRR is absent as a result, there is a need to be gender-sensitive while managing disasters. Harnessing technology for DRR is vital to developing future disaster management strategies. Speaking on the Prime Ministers's 10-point agenda he suggested that the eleventh point should have been the integration of CSOs with government agencies and various other stakeholders such as city planners, industries, academia, and communities. Communities are the potential victims as well as the first responders to disasters and they should be accurately apprised of the on-ground situation. Therefore, imparting Aapda Mitra training to them and coupling them with NCC and civil defense to form a trilogy will add tremendously to their capacity building.

Need to develop a network of universities to work on disaster issues and social responsibilities

SH. SANTOSH GANGWAR

Member of Parliament, Lok Sabha

Sh. Gangwar applauded the work done by CSOs and the compassion shown toward fellow human beings, especially during the COVID pandemic.

> *CSOs should support government agencies to increase their capacity for mitigation and rehabilitation work*

He focused on the vision and institutional architecture preparedness of civil society leveraging technological means for disaster risk mitigation. He called upon communities from diverse backgrounds to come together, collaborate and work for disaster risk reduction. Highlighting the role of active citizenry in disaster risk reduction measures, he sought to recommend proper channelization of efforts and energy of the general public and direct them towards DRR.

> *Civil Society should be included in the process of decision making for synergetic disaster response*

PROF. SACHIN CHATURVEDI
Director General, RIS

Prof. Chaturvedi began by appreciating the role of Sewa International in Mozambique. The major emphasis of the speaker was on the economic losses accrued over the world due to the increasing frequency and intensity of disasters. He also brought to the spotlight, how India progressed from a net disaster relief receiver to a net relief and aid provider and offering humanitarian assistance. Speaking on the Prime Ministers' commitment toward disaster risk reduction he informed that the "neighbourhood first" policy of India has significant overlapping with humanitarian assistance and made India a key leader in the South Asian region. He revealed that some foreign NGOs have a partisanship approach toward working for DRR in India which is against the developmental goals of the nation. Therefore, it becomes imperative to develop a robust network and ecosystem of indigenous CSOs to work towards disaster risk mitigation in the country. He concluded that loss of biodiversity in itself is a disaster and is least recognized while framing disaster policies

> *Neighbourhood first policy in disaster management helps to build India's leadership in the international community*

Deep Prajawalan of Inaugural Session by Sh. Sachin Chaturvedi, Sh. Santosh Gangwar, and Sh. Narendra Bundela

CHALLENGES
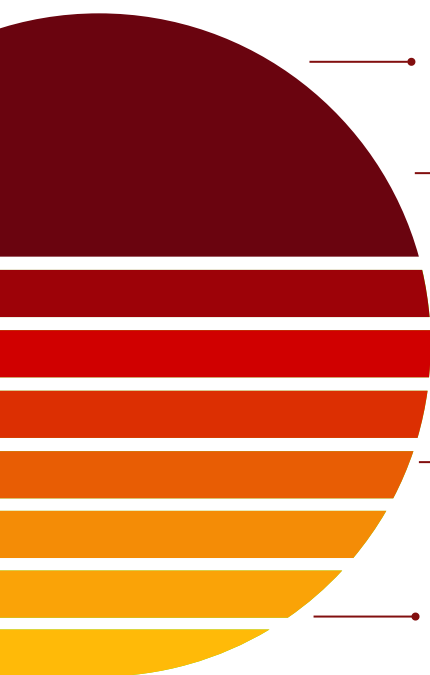
Lack of role clarity of institutions at grass-root level.

Lack of coordination with local authorities and regional response centres

Lack of specialized capacity building training between international agencies and Indian DRR institutions

Absence of feedback mechanism between civil society and government agencies

Absence of documentation of resilient risk management measures by CSOs

RECOMMENDATIONS

- Need for active engagement of civil society during disasters
- Need to shift from unorganized to organised disaster operations
- Role clarity of agencies at grassroots level
- Coordination with state authorities for rescue operations
- Availing the help of local authorities for knowledge assistance
- Investment in global risk mapping technologies
- Develop a network of universities researching on DRR
- Leverage social media and mobile technologies
- Develop mobile applications to support DRR
- Strengthen community response.
- Develop greater cohesion in international response.
- Civil Society should be included in the process of decision making

AZADI KA AMRIT MAHOTSAV: REFLECTION ON & VISION OF DISASTER MANAGEMENT

The session analysed the evolution of disaster response in India while drafting an implementation agenda for the next 25 years for sustainable disaster management. The focus area of the session included a comparative analysis of international, regional and national disaster response, evolution of disaster management in India and a vision for disaster response and management.

DR. ANIL GUPTA
Director of COE & Projects, NIDM

Dr. Gupta talked about policy formulation by the governing agencies and its implementation by CSOs. He informed that the major events that led to the evolution of a new understanding of Disaster Management were the super cyclone of 1999 in Orissa and the Bhuj Earthquake of 2001. He talked about the paradigm shift in disaster management from relief and rehabilitation to preparedness and mitigation. The involvement of the youth is imperative in planning long-term disaster risk reduction strategies as they will be the future implementors. Training volunteers, strengthening local capacity, and exchange and transmission of knowledge are key to mitigating the impact of disasters. For sustainable management of disasters, it is also crucial to take flora and fauna into consideration while planning for DRR measures. The focus should be on sensitising the community, educating, enforcing and engaging people to upscale the processes and use of new engineering tools.

66 *Analysis or Audit of previous disasters in necessary to prepare effective strategies for future disasters*

Leverage traditional knowledges and infrastructure to strengthen disaster mitigation and resilience

SH. RAHUL DEY

Regional Coordinator, Asia Pacific Miyamoto International

Sh. Dey mentioned that disaster management should be in consultation with local people. Traditional methods of conservation should be used in DRR strategies. Coordination with the State Disaster Management Committee should be periodically reviewed. Mapping of crops and biodiversity which is resilient to disasters assists in the resilience building of local communities. Communities are first responders in any disasters. Therefore, it is the need of the hour to work collaboratively with communities and build inclusive models of disaster response. Mapping of community specific knowledge to develop better strategies for region specific disasters is a must, he said.

Establish a techno-social-legal system which is inclusive of social challenges

There is need to bridge the gap between research and implementation

DR. P. K. JOSHI

Professor, School of Environmental Sciences, JNU

Dr. Joshi informed the audience about international and national disaster management frameworks. He reflected on the Bhopal Gas Tragedy and recommended that it is essential to include man-made disasters such as these including riots and war as part of disaster management. He expressed his concern about the smaller number of disaster management stakeholders compared to the number of disasters and their frequency in the country. In a disaster, ownership is missing amongst the stakeholders. Therefore he recommended that we learn from our past mistakes and work collaboratively towards efficient service delivery during disasters. Mapping disasters and their impact on communities are essential to developing effective policies on mitigation. Indicators of development should be reviewed to include resilient infrastructure. Capacity building is key to reducing the error of concept. Therefore, investment in disaster management awareness and capacity building is vital. Regular audit and review of disaster processes is needed. The four Es - Engineering, Education, Engage, and Enforcement should form the basis of disaster response. Investment in people, processes and property/assets is necessary which can be achieved only through better community participation.

SH. SANJEEV KUMAR

Director, Indian Academy of Highway Engineers (IAHE)

" *Road safety awareness should be undertaken by NGOs and CSOs*

Sh. Kumar informed about the planning of highways and how accidents and disasters have been reduced by the right use of technology. The various national and state level policies have been reviewed and enforced as a part of the disaster management policy. However, the gap remains as there is lack of rules and people abiding the same. Drivers need to be more engaged in discipline to avoid fatality. He presented data on the number of road accidents in the country and informed us that awareness of traffic rules is necessary to reduce road accidents to reduce. He informed that the government has undertaken steps to increase roads connecting cities and villages in the country. During disasters, roadways play an integral role in the transport of essential items to disaster-struck areas. During the COVID-19 pandemic, when ait-traffic and trains were shut, it was only through the roadways that emergency medicines and food items were transported.

Delegates paying attention to the presentation of the panellists.

CHALLENGES

Inadequate stakeholders in comparison to number of disasters and their frequency

Absence of understanding of challenges confronted by the district administration

Concern for environment, ecology, biodiversity is missing

Gap between intent and implementation

Ownership is missing among various stakeholders

Absence of publicly available information

Absence of resilient infrastructures in disaster prone areas

Duplication and overlapping of authorities and their interventions

A holistic and quick understanding of disaster and the identification of the impacted population is missing.

(Clockwise) Token of appreciation presented to Dr. P. K Joshi; Presentation by Dr. Anil Gupta; Welcome of Sh. Sanjeev Kumar;; Token of appreciation to Sh. Rahul Dey

RECOMMENDATIONS

- Linkage of DRR with ecology, technology and economics for sustainable disaster management.
- Build local capacities of volunteers, communities and NGOs & inclusive models of disaster response.
- Identification of local good practices
- Expanding the role and participation of different communities at the local level
- Voluntary disclosure of infrastructure resilience as part of infrastructure development
- Indicators to development should be revisited and improved
- Mapping of traditional knowledge and acceptance of the same in policy formulation
- Create forums for youth campaigns
- Analysis or audit of previous disasters for future DRR strategies
- Leverage technology including future technologies in disaster management
- Psycho-social issues of impacted communities as part of disaster response
- Mapping of disaster-resilient crops and biodiversity
- Disaster awareness in regional languages for accessibility and preparedness.
- Establish a techno-socio-legal system inclusive of social challenges to reduce the error of intent.
- Investment in people, processes and property/assets through better community participation
- Bridge the gap between research and implementation
- Road safety awareness by NGOs and CSOs

WHY CRITICAL UNDERSTANDING OF INSTITUTIONAL ARCHITECTURE OF DISASTER MANAGEMENT IS THE NEED OF THE HOUR?

The session introduced the established institutional framework and facilitated networks between various stakeholders including their interaction with the institutional framework. This session witnessed a discussion on the local adoption of disaster policy framework in India, the role of armed forces in disaster management, inter-stakeholder coordination of disasters, Standard Operating Procedures (SOP) on disaster risk reduction, and a review of existing institutional architecture.

SH. SURESH JAIN
Founder, Acylin Therapeutics

Sh. Jain shared a few examples and experiences related to disaster management. He quoted examples of the 1989 earthquake during the World Series in San Francisco, the 1993 Kobe earthquake, and the 2005 Hurricane Katrina. In all these cases the number of casualties was minimum. He compared these with the tsunami of 2004 in Orissa, and how the number of deaths was high. He highlighted the importance of institutional infrastructure. He briefed about man-made calamities by referring to the COVID pandemic. According to him, it was partially man-made, and the lack of awareness and ignorance in this matter provided a lot of lessons about institutional infrastructure. He further added that India is the capital of diabetes, cancer, and all kinds of man-made disasters requiring an institutional infrastructure.

" *Collaborative efforts from all stakeholders are required to tackle large scale disasters*

SH. SRIKANTH GUNDAVARAPU

President, Atlanta Chapter, Sewa USA

Sh. Gundavarapu shared some of his personal encounters with disasters. He emphasised learning from other countries, specifically from the US. He covered the legal framework of disaster management in the US focusing on the Federal Emergency Management Agency (FEMA). The goal of FEMA is to coordinate responses related to disasters at the local, state, and national levels. FEMA is responsible for coordinating all government efforts related to relief. He explained the four different functions of FEMA - - Disaster Preparedness, Relief and Response, Rehabilitation, and Mitigation with the example of Hurricane Katrina. One single national agency FEMA coordinates all stakeholders which are effective and ensures swift mobilisation of resources and Effective and quick decision-making. He also briefed about NVOAD (National Voluntary Organizations Active in Disasters) started in 1976 as an NGO for coordination. They have a combined voice and they have a seat in the FEMA administration.

" *Socio-legal measures and structures need to be revised post-disaster to ensure better protection and strategy for the next disaster.*

SH. SARTHAK MOHAPATRA

Deputy General Manager, OSDMA

As a government official, Sh. Mohapatra has seen ten cyclones and managed three with zero casualties. He shared the history of cyclones and informed us that in Odisha every month is cyclone month barring January and February creating a challenge for disaster management strategies. He explained that the changing pattern of the cyclones creates new challenges. He informed that the 1999 super cyclone was a watershed moment and it helped to build the institution and rapid action forces. In the 1999 cyclone, there was no institution, no knowledge, and no infrastructure. In 2014, there was a turnaround where Odisha provided Andhra Pradesh with food, restoration of power and infrastructure due to strong institutional development. He briefed about the institutional framework of disaster management in Odisha.OSDMA trains the Odisha Disaster Rapid Action Force(ODRAF) jawans on a skill matrix. At the local level, the District Magistrate has freedom and power for the requisition of ODRAF. The fire services have a good connection with the community leaders. One thousand cyclone centres are created which are owned by the community with the Sarpanch as the president and Women Self-Help Groups (SHG) are part of this committee.

" *ODRAF Jawans aware of the topography of the region, the language and the population resulting in smooth interaction with the communities.*

" *There is need to develop knowledge centers in each state*

SH. NILESH SOLANKI

Founder, PwC Hindu Network

Sh. Solanki gave a glimpse into Sewa UK's services and the various initiatives carried out in India. He also gave information about how Sewa UK provided humanitarian support during the early phase of the Russia-Ukraine war. Sewa UK provided four key things to volunteers: Strategy, Logistics, Coordination, and Collaboration. First responders during the war were the CSOs and NGOs, so their capacity building is key to effective disaster response.

❝ *Volunteers provided ground intel and supported the transport of Indian students and refugees across the border*

SH. HARAMBE KULKARNI

Founder & Director, Council for Creative Education (CCE) Finland

Sh. Kulkarni presented information on how Sewa worked in the early phases of the Russia-Ukraine war despite the lack of experience of volunteers working in a war zone. He mentioned the importance of SewaBhaav (spirit of service) in overcoming challenges. Within four days they were able to mobilise more than 500 volunteers. An online form was created to help students and other affected individuals and more than 6,000 people completed and submitted this form. Technology was used effectively in this process. Three layers of volunteer support were created in the form of E-helpline Volunteers, Border and Ground volunteers, and Ukraine Online Volunteer. Management of anxiety, chaos, and misinformation during an ongoing war should be part of disaster management. It is vital that to ensure a quick response and reaction to such a dynamic situation we have a structured evacuation plan and strategy. CSOs need to understand their role during disasters, especially in unprecedented and dynamic situations which persist long term

❝ *·Swift dissemination of verified and reliable information essential*

SH. RAJEEV ISSAR

Policy Specialist, UNDP

Sh. Issar shared his ideas on the need to create an institutional structure. According to him, for the institution to be operational and effective over a longer period, we need to keep it simple, nimble and agile.

UNDP supported more than 120 countries to set up institutions but only twenty were given financial support. He pointed out that the landscape of the disasters changing drastically in that disasters is not stand alone anymore. Due to the evolving risk landscape, there needs to be one institution to handle risk. Disasters happen because we have made a wrong development choice or decision. It is needed that we situate an institution within a larger risk governance set-up. Socio-economic dimensions and environmental issues also need to be considered. Disaster management is everybody's business. Institutions do not have a character on their own, but it is the people working in the institutions who bring out the characteristics.

CHALLENGES

Identification of routes for mobilisation is difficult

Volunteers are not conversant with geography of region

Need for leadership on ground

Disaster preparedness is absent in non-disaster prone areas

Lack of good condition roads hamper disaster response

Difficult to obtain transport services in disaster impacted area

Absence of strategies to address multi-risk and multi-dimensional disasters

Delegates interacting with Sh. Suresh Jain between the sessions

RECOMMENDATIONS

- Collaborative efforts from all stakeholders to tackle large-scale disasters
- Diseases as man-made disasters with the development of appropriate infrastructure to respond to such disaster
- Revision of socio-legal measures post-disaster for disaster preparedness
- One single national agency to co-ordinate all stakeholders for swift mobilisation of resources and decision-making
- Funding through loans and other measures be included in rehabilitation initiatives
- Combined response by NGOs and government agencies in disaster response.
- ODRAF Jawans are trained on skill matrix-oriented capacity building
- Easy community interaction as ODRAF Jawans aware of the topography, language and population of regions
- Autonomy at the local level for the requisition of disaster response force.
- Fire services should have good contact with the community leaders.
- Proactive involvement of community members essential
- Constitute Village disaster management committee to include women SHGs
- Need to develop knowledge infrastructure in each state
- Disaster and pandemic management should be part of the academic curriculum
- Training modules should be developed for every government employee, elected representative, and community-based organisations
- Leverage impact-based forecasting and machine learning to assist disaster preparedness and mitigation
- Volunteers support ground intelligence
- War management capacity building of CSOs and NGOs
- Management of anxiety and misinformation
- Swift dissemination of verified and reliable information is essential
- Clarity of role of CSOs in disaster
- The structure of an institution with a long-term objective should be simple, nimble, and agile.
- Vital to review and ensure sustainable development by integrating disaster risk reduction
- Evolve risk governance eco-system (laws, policies, plans, capacities)
- Vertical and horizontal integration (i.e. global, regional, national, state and local integration with agencies and institutions across the board)
- Vital to integrate socio-economic, and environmental dimensions

HOW TO EQUIP CIVIL SOCIETY FOR EFFECTIVE COMMUNITY RESILIENCE BUILDING?

The session identified areas of intervention and adopted measures to equip civil society become mediums of effective community resilience. The focus of the panellists during this session was on capacity building and mobilisation of civil society, especially youth, developing community participatory approach to disaster response, coordination and collaboration for effective service delivery, civic accountability and ethics.

> " *Need for civil society to engage more actively during disasters as it will connect communities, provide rehabilitation and make the affected community better economically, culturally, educationally and health-wise.*

DR. ANGELI QWATRA
Director, Philanthrope

Dr. Qwatra talked about community resilience, identification of leadership, decentralizing the decision-making process, establishing dedicated staff of coordinators and integrating the same with existing networks. She emphasised on partnering with local area community groups to have an effective disaster management system. Community resilience is possible if all local area communities understand their roles and are part of decision making. Partnership of impacted communities with organisations from outside the region support resource procurement. This creates opportunities and incentives for vulnerable sections to participate. She said that we cannot prevent disasters from occurring, but we can certainly try to lessen their impact on people's lives, livelihoods, and the environment by enhancing community capacity-building exercises

DR. MAHESH KAMBLE
Assistant Professor, TISS

Dr. Kamble focused on the role of civil society in building a resilient community. He said that an understanding of the susceptibility to disaster is necessary. He defined disaster as the impact on people and resilience as how people absorb, face, cope, adapt, and recover from disaster.

He said that the survivors are first responders. He explained that community quarantine centres were good examples of community participation. He suggested that purchasing goods from impacted areas supports the community. Regular livelihood and scheme implementation should be effective pre-disaster. He also explained that the reversal of vulnerability happens by reversing the power structure of the society (safe locations, hazard-resistant infrastructure, and diversification of income opportunities). The strategy to build resilience should come from strengthening the five capitals of the community -- natural capital, physical capital, social capital, finance capital and human capital.

SH. RAGHUNATH SINGH

Director, Indian Society of Disaster Mitigation and Management

Sh. Singh explained that disasters mean loss of life, property and environment and that disasters have long-term impacts. He said that disasters cannot be managed but awareness can be created to mitigate or minimize losses. He explained the difference between natural and man-made disasters with the example of the Bombay Blast. He said that sustainability should be integrated into disaster management. He informed about the disaster helpline -- 1077 -- and urged the delegates to create awareness of disaster management.

SH. BHARATH GOVIND

Former Convenor, Inter-Agency Group, Thiruvananthapuram District, Kerala

Sh. Govind said that the community is the best responder while giving the example of fishermen in Kerala. He said that involving civil society and the survivors of the disaster in disaster management planning is important. He explained that COVID restrictions were met with resistance in some areas of the country. Only when the community leaders were involved that the restrictions successful. Communication with the impacted community is essential. He informed that disaster information and region topography information in schools are needed to raise awareness. Further, he added that decentralization of DRR efforts and, budget allocation for natural resources are important.

CHALLENGES
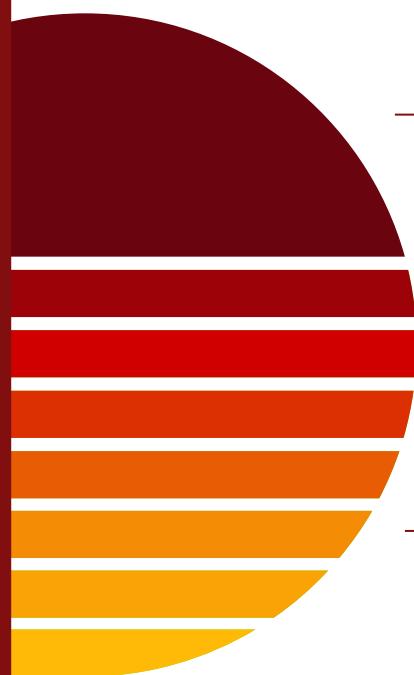
→ Lack of understanding of risks among community member

Lack of revision of disaster response based on the difference in impact

Lack of research on the susceptibility of communities to disasters

Vulnerability to disaster stems from dynamic pressures and root causes

RECOMMENDATIONS

- A strong collaboration structure requires leadership, decentralised decision-making, and integration with existing networks.
- Resource procurement is supported by a partnership with organisations from outside the region
- Create opportunities and incentives for the vulnerable to participate in DRR.
- Develop metrics for regularly evaluating collaborations
- Capacity building of communities
- Procurement of resources in local markets to support local economies
- Volunteerism from local communities
- Reversal of vulnerability can be done by achieving safe conditions for communities (safe locations, hazard-resistant infrastructure, diversification of income opportunities)
- Building of natural, physical, human, financial and social capital
- Communication with the impacted communities during a disaster
- Involve and engage the communities in climate action

(Top to Bottom) Sh. Bharat Govind, Dr. Angeli Qwatra, Dr. Mahesh Kamble & Sh. Raghunath Singh on dias (left to right); Dr. Angeli Qwatra giving her presentation; Delegates posting on Idea wall; Delegates listening to the panellist's presentations

HOW DOES TECHNOLOGY SUPPORT EVOLUTION OF FUTURE DISASTER RESPONSE?

The session guided the discussion on integration of technological measures including appropriate technology that reduces vulnerability and response lag, increases preparedness and strengthens resilience. The focus area of the session was the role of technology in data-driven decision-making with the focus on transparency and accountability, harmonization of policy and technology to support disaster management, models of indigenous technology solutions, and role of Big Tech in disaster risk reduction measures

DR. HARI BABU SRIVASTAVA
Director General, Technology Management, DRDO

Dr. Srivastava said that technology can help in providing aid during disasters. He informed that the Government of India has implemented mathematical and statistical models that play a very crucial role in disaster management. They help in predicting what will happen when and where, what preventive measures to take, etc. Different models are utilized for different disasters and the models are valid as per region. The next important element to the integration of technology is Management Information Systems (MIS). This helps in managing which model will work for which area thereby supporting decision making. The cause-and-effect analysis is done thoroughly. Data collected from satellites do not provide holistic information. Therefore, low power devices, transmitting data at some frequency, are essential

> **"** *Need to develop specific models suited to our country's specific conditions*

MS. SARITA AHLAWAT
Co-founder, BotLab Dynamics

Ms. Ahlawat addressed the use of drones in disaster management. In 2019, IIT Delhi built a platform that connects multiple drones. Individual drones are part of a swarm. What one drone can do, multiple drones can do better. It helps to make the systems work effectively. Drones help map the area of the affected region. This helps in search and rescue operations. The data is then collected in real time. This data is then sent to the Air Force which arranges for helicopters for help and rescue. Data secrecy is a very sensitive aspect. Avoiding leakage of data should be ensured. Technology cannot be imported right away. It needs to be India-specific. Drone technology should be supported by Indian stakeholders for indigenous development of this technology.

> *Indigenously developed drones is crucial to ensure protection of data and national security*

SH. SUMANT PUNTAMBEKAR
Entrepreneur, Advanced Engineering Technologies

Sh. Puntambekar informed us that technology saves time and reduces loss of life and property. The Early Warning System in Orissa is an example of technology-supported disaster management. All the villages are connected with this system with one control room that warns them all. There is a siren or flashing lights to warn people prior to a calamity or disaster. Updating systems is required and civil engineering is critical in this space. In situations of earthquakes - dams, houses, and roads are all adversely affected. Hence, while constructing buildings we need to ensure that they can withstand earthquakes. Further technology also helps in rational decision-making. The topological study for flood, weather, and calamity is undertaken and an analysis of the data is done. Satellites monitor climate changes. They analyse and track the data. Drones, robots, and Artificial Intelligence can help without physically going to the affected area which is a boon.

> *Development of evacuation plan should integrate existing technologies*

DR. GAJENDRA PRATAP SINGH

Assistant Professor School of Computational and Integrative Sciences, JNU

Dr. Singh explained the topic of disaster management from a mathematical angle. Mobile connectivity with minimum connection and network can be built by an algorithm with the help of technology. This can be beneficial in disaster situations and can also be offered as a service for common platforms in the industry. Techniques such as Analytic Hierarchy Process (AHP), where decisions are made on the basis of some criteria, are useful. The best-suited option should be picked. It plays a role in which scheme is apt for which disaster, and gives preferences and inputs from experts. It is unbiased. Limited work has been done with this in India. The other technique is the Petri Net which helps to study difficult topics or complex things like the human body. It helps to generate all the possible states and then map a strategy as to which path will be optimal and takes less time and is cost-effective. The initial step is to build the algorithm, then train the device, apply Artificial Intelligence (AI) and machine learning and get the data mined.

> " *Machine Learning and mathematical models can support swift and precise decision making during disaster.*

CHALLENGES

Data is a casualty. Accessibility and authentication of data is a challenge.

Instability of the site of impact creates risk to the lives of the rescuers.

RECOMMENDATIONS

- Develop specific models suited to our country's specific conditions
- Creation of data sets is key for model validation.
- Development and integration of indigenous GIS systems
- Remote sensing technology to reach inaccessible areas
- Development of low-powered data capturing devices which support analysis
- Mining of data from public domain and social media
- Use of blockchain technology to identify trusted data sources
- Mathematical modelling of snow dynamics and atmosphere
- Development of drone technology that can map large areas and identify people
- Development of indigenous drones
- Development of evacuation plan should integrate existing technologies
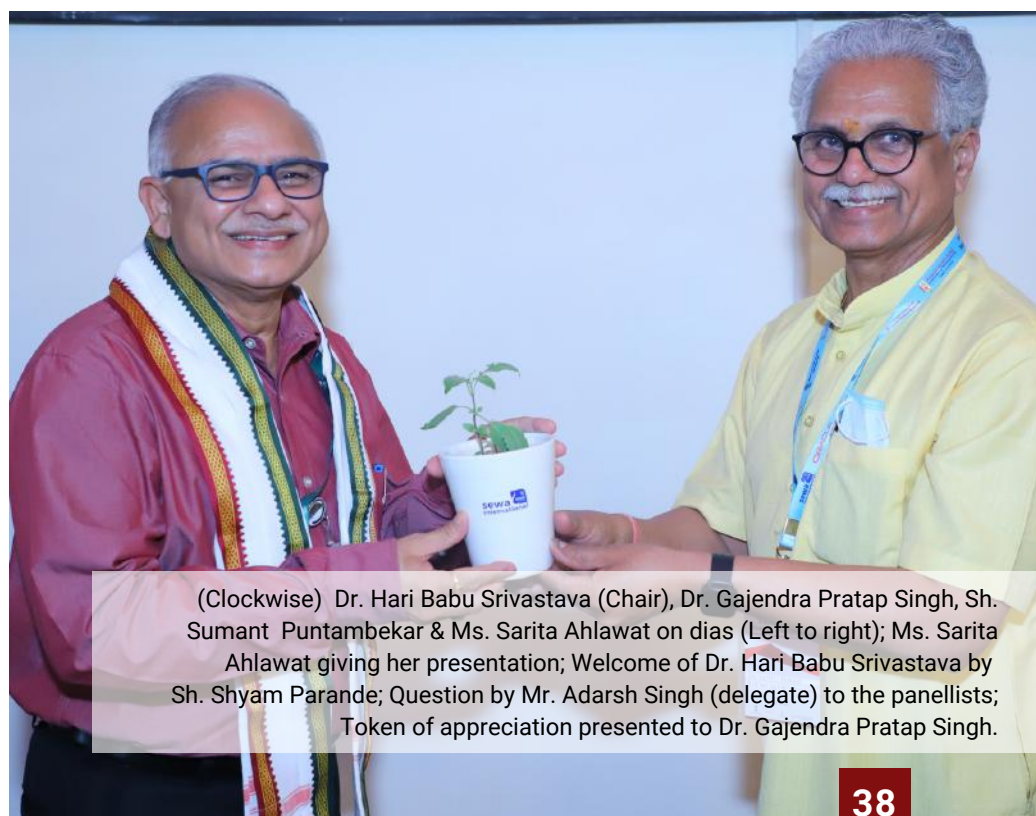
(Clockwise) Dr. Hari Babu Srivastava (Chair), Dr. Gajendra Pratap Singh, Sh. Sumant Puntambekar & Ms. Sarita Ahlawat on dias (Left to right); Ms. Sarita Ahlawat giving her presentation; Welcome of Dr. Hari Babu Srivastava by Sh. Shyam Parande; Question by Mr. Adarsh Singh (delegate) to the panellists; Token of appreciation presented to Dr. Gajendra Pratap Singh.

HOW ADDRESSING TANGENTIAL ISSUES COMPLETE THE ECO- SYSTEM OF DISASTER RESPONSE?

The session identified and addressed the tangential impacts of disasters, and collating good practices. The session focused on managing mental health and addressing trauma, developing mechanisms for achieving equity in recovery, and addressing intersectional gender identities: challenges and solutions, and access to justice.

DR. INDIRA KHURANA
Vice Chairperson, Tarun Bharat Sangh

> " *There should be a responsibility on all stakeholder to ensure that there is equality in disaster response*

Dr. Khurana talked about how biodiversity needs to be preserved, especially in sensitive areas. She indicated how rivers are important for human lives and health. There exists a symbiotic relationship between water and groundwater. Eighty per cent of groundwater is used in rural areas and sixty per cent for agriculture. The estimated economic global burden of a disaster is huge. There is an increase in inequality in the country. Also bridging the gender gap is essential. We need to see how best we can build resilient responses, she said. The COVID-19 pandemic saw the largest disruption of the education system. Children lost two years of their academic lives. Online learning can affect psychological and mental health. When disaster strikes, those with the least power get affected most -- such as children, women, weaker sections, LGBTQ+ persons etc.

MS. SWATHI RAM
Executive Director, Samarpaka

Ms. Ram emphasized the volunteering aspects of disaster management. She informed us that volunteers are the eyes and ears of CSOs in any disaster. The role of volunteers was seen as a valuable resource for NGOs.

> *Environmental impact of disaster management operations should be considered and integrated to ensure sustainable disaster management*

Through Sewa International 10,000 oxygen concentrators were distributed across the country due to the efforts of volunteers. Volunteers included employees and workers, college students, women, etc. Sometimes volunteers did household services in remote areas. Diligent and equitable distribution could happen only through volunteers. Some of the volunteers started preparing ration kits. A large number of volunteers were giving their time. The engagement of volunteers can be seen as a community building for local communities. Systematic change or mindset is brought through volunteering, she said.

MS. ANJALI RIMI
President, Parivar Bay Area

> *All efforts should be undertaken to ensure equality in access of key facilities*

Ms. Rimi said that *Hijra Kinnar* the third gender, is not new to the Indian community. Many Hindu gods assumed third genders for the greater good of the world as per mythology. The Pandemic took over the lives of *hijras*, they starved, and they were neglected. The intersectional burden was identified by her indicating 90 per cent of the trans persons are living below the poverty line. She emphasized gender equity achieved through collaboration as it is the need of the hour. Creating awareness about the hijra community by educating society helps remove the stigma of trans people and address transphobia. Assessment and resource allocation for transgender folks and implementation of transgender protection laws passed by the Government of India should be undertaken. Access to educational and leadership opportunities for Hijrah Kinnar folk, and extending hospital and medical facilities providing essentials and better living conditions were some of her recommendations.

> *Need assessment is necessary prior to the formulation of any rehabilitation initiative*
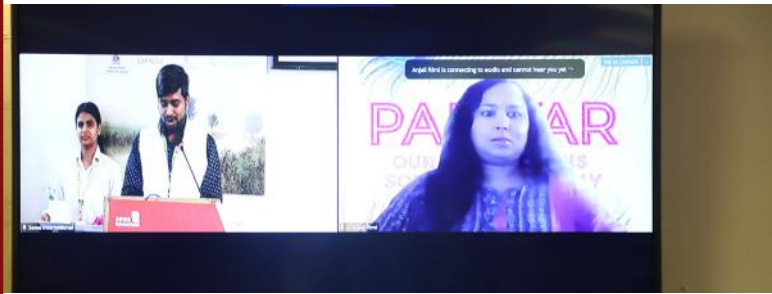

Sh. Govind Madhav,
Chief Operating Officer, HEART

Sh. Madhav presented a case study of nurturing a disaster. The case study was of an urban disaster. He talked about the flooding that happens in urban societies. In the past 15 to 20 years it is noticed that urban buildings and housing colonies that are developed get flooded.

> *Compliance with laws and policies to ensure sustainable and resilient infrastructures*

The residents of these societies have to live without power, without drinking water in high rise tower. The societies are built in low lying and flood prone area. Further society has been developed without lack of proper flood control measures. He concluded that the authorities and developers nurtured the disaster. The authorities failed to scrutinise the documents and gave certifications. Further, developers failed to check supplementary conditions to ensure resilient infrastructure.

(Clockwise) Presentation by Ms. Swathi Ram; presentation by Sh. Govind Madhav; Delegates listening to the panellists; Token of appreciation presented to Dr. Indira Khuranna (Chair); Question by Ms. Anuja (delegate); Comment by Sh. R. K. Anil (Delegate); Ms. Anjali Rimi ji giving her presentation.

CHALLENGES
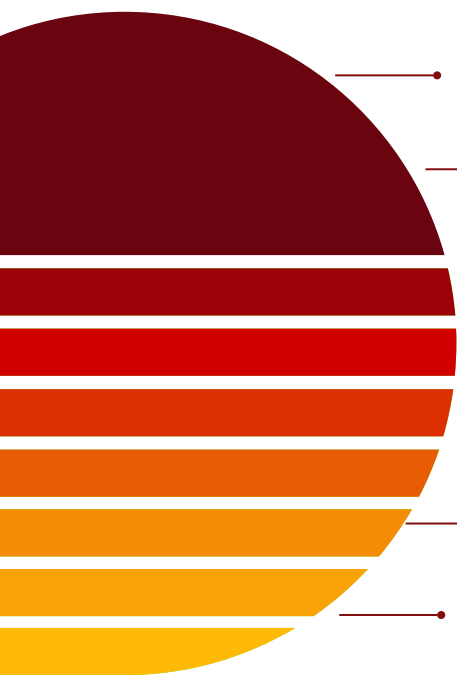
Non-compliance of laws by private sector nurture disaster

Discrimination leads to inaccessibility of basic facilities

Transgender persons lack proper housing and education, mental health support

Disaster impacts vulnerable persons differently

Loss of education of children due to COVID-19

Inequalities of income increase vulnerabilities in disasters

RECOMMENDATIONS

- Equality in disaster response responsibility of stakeholders
- Need assessment of marginalized communities for modelled disaster response
- Environmental impact of disaster management operations reviewed
- Partnership with disaster survivors for systemic change
- Community participation to leverage their lived experience and knowledge
- Equality in accessibility to key facilities
- Community sensitization and awareness for marginalized communities in society
- Specific allocation of resources and funds for marginalized persons
- Compliance with existing laws and policies
- Accountability through strict penalties of private actors for safety non-compliance
- Mandatory disclosures on the resilience of infrastructure
- Streamlined and quick complaint procedures to ensure justice to victims
- Need for urban planning by authorities

HOW CAN ALIGNING SDG GOALS SUPPORT LOCALISED SOLUTIONS FOR DISASTER MANAGEMENT?

The session provided space for deliberation on measures for effective integration of SDGs within the DRR framework while supporting localised solutions for building community resilience. The session focuses on building resilient infrastructures, measures to mitigate distress migration, mitigating the ecological impact of disaster and climate change and the impact on DRR

MAJ GEN AJAY SETH
VSM (Retd.), Indian Army

Maj. Gen. Seth said how disasters are affecting the implementation of sustainable development goals which are adopted by the UN to end poverty, work towards clean energy and make sure every person enjoys peace and prosperity. He shed light on how the SDG goals could be adopted so that the target to have a world with zero poverty, zero hunger, and zero crime is achieved. He recalled his past experiences in giving relief to the victims of disasters and rescuing them safely. He shed light on how the armed forces play a major role in emergency service or rescue operations and also gave a brief summary of how the Army helped people in Uttarakhand during a disaster which is considered to be the most severe disaster in the last 80 years.

SH. MILIND VAIDYA
Chairman, Center for Disaster Management and Studies (CDMS)

Sh. Vaidya explained disaster management by saying "The more you sweat in peace, the less you bleed in the war". He informed about the need to shift from relief and rehabilitation to mitigation and preparedness.

> *Focus on mandatory insurance of living beings (persons and animals) to reduce the economic burden from disasters*

> *Third party audit is needed of projects and schemes to ensure effective utilization of resources*

Very few states and districts in India have documented plans for disaster management. Documentation on pre-disaster management should include information about vulnerable groups, vulnerable properties and how much damage is expected during a disaster. Need for clarity on the disaster plan at the grass-root level and formulation of the plan from an implementation perspective. He explained four major components to reduce the effects of disasters resulting due to climate change. These components are developed roads, underground electrical lines, mangrove development, and cyclone shelters. Prevention, mitigation and then preparedness can help in development. Also, for all that we do during disaster management, capacity building is essential.

DR. DISHA SHAH
Associate Professor, VESIM

Dr. Shah explained the difficulties faced during the COVID pandemic and how we sustained a community-level spread of infection. She presented the International Impact Study which was conducted during the pandemic. Through the logic model, outcomes were achieved with the help of inputs about those that were involved in the activities that were conducted during the pandemic, how long they were able to sustain support through the entire course of the pandemic, and so on. Each patient that was served through The Logic Model was given questionnaires to be filled out which focused on the details of that particular patient for the month in every state of the country. Oxygen concentrators were provided throughout India through Sewa International. They made sure that there was outreach and inclusivity without any kind of biases. Over 60,000 patients were served, and over 78000 families were helped. With the efforts that were put together by over 60,000 volunteers, 50,000 non-Sewa volunteers, student volunteers, and volunteers from various age groups, the SEWA case study was completed.

DR. JYOTI CHANDWANI
Associate Professor, VESIM

Dr. Chandwani showcased interview snapshots taken during the International Impact Study. The study was divided into three categories: Humanity over religion, poverty line, tribal, challenging places, and Volunteers. For the first category, she showcased how there was absolutely no discrimination in helping people during such trying times. For the second category, she gave examples of patients who were helped despite being below the poverty line or residing in tribal areas which are usually challenging in terms of transportation. For the third category, she mentioned how people of various ages and backgrounds offered to be volunteers. People and students want to give back to the community, she said.

DR. ROOPAM SHUKLA
Assistant Professor, IIT Rorkee

" *For localizing SDGs, we must interact with the locals.*

Dr. Shukla mentioned how understanding SDGs and the Sendai Framework on disaster risk reduction was needed to localise SDG in DRR. She informed us that for localizing SDGs, we must interact with the locals. They are the ones who will bring forward the issues of their communities. Identifying local priorities and setting goals according to them. Local agenda and resources need to be considered while setting goals. Evaluation of uncertainties such as shortage of resources or capacity should also be considered. It is necessary to create flows and paths which will be reproducible in the future whenever needed. The highlight of her talk was the work she has been doing with the Centre of Excellence in Disaster Mitigation and Management in IIT Roorkee. Using holistic and sustainable guides, they have been more engaged in disaster recovery. She informed the audience about the IIT study which seeks to identify what facilitates recovery of impacted communities. Communities have a good understanding of what they need and how the solutions need to be implemented. She mentioned that organizations like Sewa International play a very crucial role in helping communities recover from disasters.

DR. SATISH MODH
Director, VESIM

" *Capacity building and training of local communities vital for mitigation of disaster impact*

Dr. Modh mentioned the importance of community participation viral for DRR. He reminisced about the time when the Army used to be notified to help during disasters. There was no institution or department created specifically for helping people during a disaster. Then the Disaster Management Act was passed. He explained how important it is to sensitize and train local communities as people in the communities are the one helping in the first 72 hours of the disaster. If local communities are not trained, then it becomes difficult for search and rescue operations to work. Volunteers can be trained and certified for search and rescue operations and only they should be allowed to go into disaster areas. With like-minded people, it would be easy to manage such a framework where community participation will be streamlined

(Clockwise) Question by Sh Abhishek Kumar; Welcome of Dr. Disha Shah; Dr. Satish Modh connecting online; Presentation by Dr. Disha Shah; Maj. Gen. Ajay Seth (Chair), Dr. Disha Shah; Dr. Jyoti Chandawani on Dias

CHALLENGES
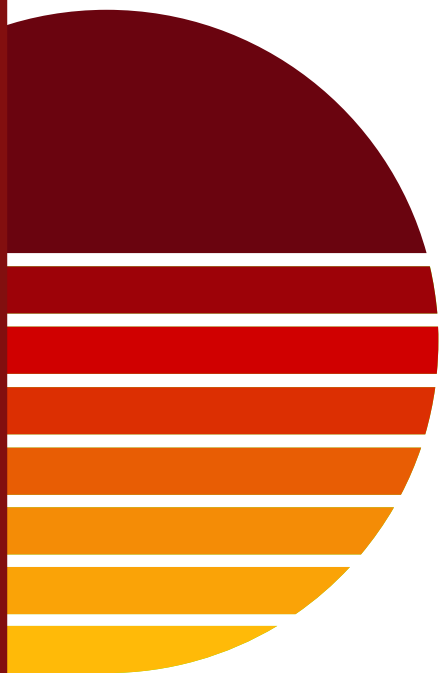
Absence of monitoring and evaluation of projects

Climate change action is missing in DRR

RECOMMENDATIONS

- Pre-disaster assessment identifying vulnerable groups, areas and properties.
- Separate department in government for analysis and monitoring of disasters
- Disaster plan at all levels of administration
- Mandatory insurance of living beings (persons and animals)
- Capacity building of all stakeholder and at all levels
- Awareness on disaster management
- Third party audit of projects and schemes
- Preparation of guidelines on the allocation and utilisation of funds available to district administration
- Interaction with locals
- Joint framing of local goals on basis of local agenda and resources
- Evaluation of critical uncertainties and barriers
- Only trained and certified volunteers to assist in search and rescue operations

CLOSING REMARKS

The conference was concluded by the closing remarks by dignitaries who summarised the discussions on various aspects of disaster management of the past 3 days while shining light on the way forward for all the panellists and delegates.

MAJ GEN AJAY SETH

VSM (Retd.), Indian Army

> *It is crucial to ensure dignity in death of all those who lost their lives to disasters*

Maj. Gen. Seth explained the role played by the Indian Army in rescue operations during disasters. He supported this through an example of how the army rescued persons from snow-clad mountains in Kashmir. He said that the courage of both the rescuer and the victim was key to a successful rescue operation. He summarised the various points presented by speakers during the sessions of the conference. He saluted the efforts of all the volunteers and stakeholders of disaster management. He hoped that the stakeholders could collaborate to bring changes to the existing disaster ecosystem for a more resilient disaster management framework in the country. There is a need to create greater cohesion in response to disasters and, it is vital to building disaster management strategies on local capacities and local knowledge, he said.

SH. PRATAP CHANDRA SARANGI

Member of Parliament, Lok Sabha

Sh. Sarangi said that responsible behaviour by people and government authorities is imperative. The present society is the product of modern scientific discipline. Science and technology have enabled us to predict disasters. Sharing knowledge, information, and experiences with others will help in the development of the best practices required for effective disaster mitigation. Proper food security measures should be arranged in advance in disaster-prone areas, for those who cannot be evacuated, including wildlife.

He talked about the post-disaster assessment and appropriate compensation to be provided to the affected such as habitable and resilient *pakka* houses and the number of cyclone shelters and relief camps should also be increased. As an individual being in the society, one serves herself/himself by serving the society. *Seva bhav* is of prime importance for effective dealing with disasters.

DR. G. SATHEESH REDDY
Chairman, DRDO

Dr. Reddy said that mitigation, preparedness, response and recovery are the parameters of a disaster management cycle and reducing or avoiding losses i.e disaster risk reduction, assistance to the victims and achieving rapid and effective recovery are the goals of disaster management. Above all, how people are motivated and ready collectively to respond to disasters, coordination and collaboration between multiple organizations is a very crucial aspect of tackling disasters. He highlighted how the role played by DRDO in producing tools and safeguarding equipment such as PPE kits, masks, ventilators, oxygen plants, UV blasters sanitisation measures and various other healthcare services, inspired multiple other institutions in the country to prepare and mitigate the impact of the pandemic crisis.

SH. PANNALAL BHANSALI
Rashtriya Sewa Bharati

Sh. Bhansali was concerned about the lack of disaster awareness and preparedness. He advocated inclusivity in DRR. Since serving humanity is serving God hence one must try to find ways to help the needy. Sewa International has provided selfless services for *gramya arogyam, gramya safai, Harijan seva*, and women's and tribal empowerment. He entrusted the delegates of the conference with further responsibilities for doing more for the people.

RECOMMENDATIONS

- Greater cohesion in disaster response
- Develop disaster management strategies on local capacities and knowledge
- Ensure dignity in death
- Create a central list of volunteers and provide regular training
- Collate best practices in disaster mitigation
- Appropriate food security measures in disaster-prone areas
- Post-disaster assessment and review with appropriate compensation be provided
- Increase the number of cyclone shelters and relief camps
- Government support necessary in the national response to disasters

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NDRF Training on essential medical & life saving techniques

Cultural program performed by Sarvam Shakti, Mastane Band and Ganesh Natyalaya
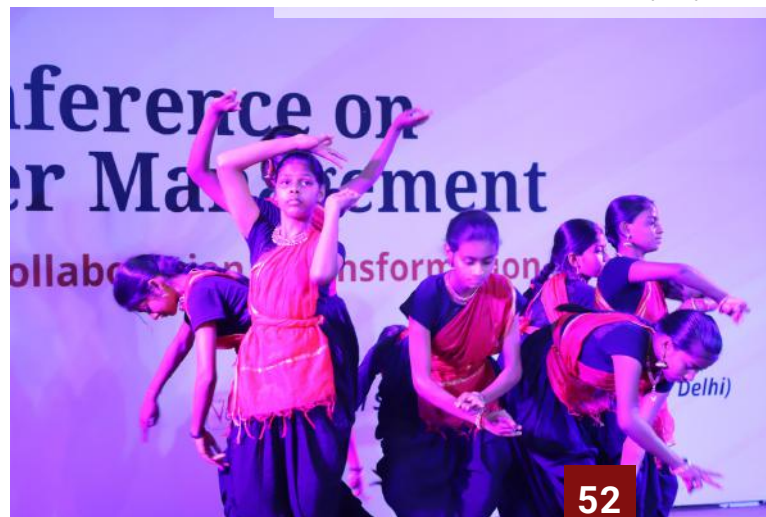
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India

Santosh Gangwar lauds work of social organisations, says inner feeling inspires people

ANI

28 March, 2022

APN NEWS

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GENERAL

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5 Companies Using Technology for leveraging Education

Sewa International hosts a three-day national conference on Disaster Management

Published on April 6, 2022

The three-day conference centered on the importance of immediate response in times of disasters or natural calamities

The three-day conference hosted dignitaries from NDRF, RIS, COE, and other prominent institutions

Sewa International, a global non-profit organization, organized a three-day national conference on disaster management at Gandhi Samiti & Darshan Samiti (GSDS), New Delhi.

With the world gearing up to prepare for future disasters, India is also stepping up to spread awareness on how to combat disasters. Institutions and organizations play a key role in instilling the necessary infrastructure to combat any calamity or tragedy beforehand. As Sewa International has been working relentlessly for the past

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Sewa International hosts a three-day national conference on Disaster Management

Team India Sentinels Monday 28th of March 2022 10:00 PM

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मुखपृष्ठ > Delhi > The new way of handling disasters

The new way of handling disasters

Aashish singh ⊙ मार्च 29, 2022

New Delhi: On the second day of the Three-Day conference on disaster management SHRI Haribabu Srivastava , Director General (technology management) DRDO said – Nation's will is required to avert disasters, Technology is not a block ".

मुखपृष्ठ > Delhi > Sewa will always be there in the time of need

Sewa will always be there in the time of need

Aashish singh ⊙ मार्च 29, 2022

ANI

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Former Union Minister Santosh Gangwar (Photo/ANI)

Santosh Gangwar lauds work of social organisations, says inner feeling inspires people

ANI | Updated: Mar 28, 2022 22:33 IST

New Delhi [India], March 28 (ANI): Former Union Minister Santosh Gangwar on Monday lauded the role of civil society during the COVID-19 crisis and of social organisations during difficulties faced by people.

Gangwar, BJP MP from Bareilly, who was the chief guest at a conference on disaster management in Delhi organised by Sewa International, lauded the work done by the organisation for the welfare of society.

आपदाओं से लड़ने के लिए समाज को जागरूक करने की आवश्यकता : गंगवार

जागरण संवाददाता, नई दिल्ली : कोरोना से पहले जब भी कोई आपदा आती थी, थोड़े वक्त में चली जाती थी। किंतु कोरोना काल ने दुनिया को नए तरीके से सोचने के लिए मजबूर किया है। हम सब को भी आपदाओं से लड़ने के लिए समाज को जागरूक करने की आवश्यकता है। ये बातें सोमवार को सेवा इंटरनेशनल द्वारा आपदा प्रबंधन पर आयोजित तीन दिवसीय सम्मेलन के उद्घाटन सत्र को संबोधित करते हुए पूर्व केंद्रीय मंत्री व लोकसभा सदस्य संतोष गंगवार ने कहीं।

सम्मेलन
- आपदा प्रबंधन पर तीन दिवसीय सम्मेलन में बोले पूर्व केंद्रीय मंत्री
- संघ से जुड़ी संस्था सेवा इंटरनेशनल ने किया आयोजन

पूर्व केंद्रीय मंत्री संतोष गंगवार

उन्होंने कहा कि आपदा प्रबंधन में जागरूकता के लिए संस्थाओं

आपदाओं को टालने के लिए राष्ट्र की इच्छा आवश्यक : हरिबाबू श्रीवास्तव

जागरण संवाददाता, नई दिल्ली : गांधी दर्शन समिति परिसर में सेवा इंटरनेशनल आपदा प्रबंधन पर तीन दिवसीय सम्मेलन आयोजित कर रहा है। इसके दूसरे दिन रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) के महानिदेशक प्रौद्योगिकी प्रबंधन हरिबाबू श्रीवास्तव ने कहा कि आपदाओं को टालने के लिए राष्ट्र की इच्छा आवश्यक है। इसके लिए प्रौद्योगिकी में भी विस्तार की जरूरत है।

सम्मेलन
- आपदाओं की भविष्यवाणी के लिए गणितीय माडल पर भी दिया जोर
- प्रौद्योगिकी में भी विस्तार करने की आवश्यकता बताई

हरिबाबू श्रीवास्तव

'देश ने कोरोना काल में लिए अप्रतिम निर्णय'

जासं, नई दिल्ली : रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) के चेयरमैन डा. जी. सतीश रेड्डी ने कहा कि कोरोना काल में हमने बहुत कुछ खो दिया। किंतु इस महामारी में देश ने अप्रतिम निर्णय लिए। डा. रेड्डी बुधवार को सेवा इंटरनेशनल के तीन दिवसीय आपदा प्रबंधन सम्मेलन के समापन सत्र को संबोधित कर रहे थे।

डा. जी. सतीश रेड्डी

RECOMMENDATION ANALYSIS

Community Participation

Pre - Disaster

- Linkage of DRR with ecology, technology and economics
- Include youth voices
- Constitute village disaster management committee & include women SHGs
- Involve and engage the communities in climate action
- Need assessment and identify challenges of marginalised communities to prepare for community-specific disaster response.
- Build inclusive models of disaster response.

Disaster

- Volunteers support ground intel and transport in humanitarian crises
- CSOs' role during unprecedented and dynamic disasters especially should be identified
- Procurement of resources be undertaken in local markets to support local economies
- Open communication with the impacted communities key for their support and active participation.

Post - Disaster

- Organisations should go beyond the rehabilitation initiatives and create partnerships with survivors to bring systemic change
- Need assessment is necessary prior to the formulation of any rehabilitation initiative
- Expand the role and participation of different communities

Collaboration

Pre - Disaster

- Road safety awareness by NGOs and CSOs
- Establishing a strong collaboration structure requires identification of leadership, decentralization of decision making, and integration with existing networks.
- Develop metrics for evaluating collaboration success & conduct regular evaluation & recording of tangible evidence
- Arrange food security measures in advance in disaster-prone areas, for those who cannot be evacuated including the wildlife.
- Vertical and horizontal integration i.e. global, regional, national, state with all stakeholders

Disaster

- Management of anxiety, chaos and misinformation during an ongoing war should be part of disaster management
- Foster partnership of impacted communities with organisations from outside the region to support resource procurement.

Post - Disaster

- Funding through loans and other measures for disaster-impacted communities should be incorporated as part of rehabilitation initiatives

Technology

Pre - Disaster	Disaster	Post - Disaster
• Leverage impact-based forecasting and machine learning for preparedness and mitigation • The creation of data sets for model validation • Develop and integrate indigenous GIS systems • Develop low-powered devices for data capturing and analysis • Mathematical modelling for disaster prediction (Ex: Avalanche) • Develop drone technology for real-time mapping. (data protection and national security) • The evacuation plan should integrate existing technologies	• Swift dissemination of verified and reliable information • Use of blockchain technology to identify trusted data sources • Management Information Systems (MIS) for model and data application • Data collection, models and MIS for better decision making and analysis of cause and effect • Develop Remote sensing technology to reach inaccessible areas • Develop technology for data mining from the public domain and social media	• Utilise technology for developing rehabilitation initiatives

Capacity Building

Pre - Disaster	Disaster	Post - Disaster
• Disaster awareness in regional languages to ensure accessibility and preparedness. • Disaster and pandemic management included in the academic curriculum • Develop training modules for government employees, elected representatives, CSOs • Only trained and certified volunteers are tasked with search and rescue operations	• Psycho-social issues such as mental health should form part of disaster response • Awareness of the impact of the disaster on the marginalised communities in the region to ensure accessibility and support	• Community sensitization towards marginalised communities in the region

Miscellaneous

Pre - Disaster	Disaster	
- Make disaster an issue every day - Civil engineering plays a crucial role in ensuring that loss of life due to infrastructure instability is minimised - Environmental impact of disaster management operations should be considered and integrated - Focus on mandatory insurance of living beings (persons and animals) to reduce the economic burden from disasters		- It is crucial to ensure dignity in the death of all those who lost their lives to disasters

Research

Pre - Disaster	Disaster	Post - Disaster
- Mapping of traditional knowledge - Identification of local good practices - Analysis or Audit of previous disasters for devising strategies - Bridge the gap between research and implementation - Specific diseases or conditions affecting specific communities be identified - Need to develop specific models suited to our country's specific conditions		- Review and ensure sustainable development by integrating disaster risk reduction - Third party audit is needed of projects and schemes to ensure effective utilization of resources

Institution Building

Pre - Disaster	Disaster	Post - Disaster
• Voluntary/mandatory disclosure of infrastructure resilience • -Establish a techno-social-legal system which is inclusive of social challenges to reduce error of intent. • Dedicated response force trained on skill matrix-oriented capacity building & awareness of the topography of the region, the language and the population supporting community interaction • Develop knowledge infrastructure in each state • Compliance with laws and policies	• One single national agency to co-ordinate all stakeholders • At the local level the District Magistrate should have freedom and power for the requisition of the response force.	• Socio-legal measures need to be revised • Disaster needs to be a political issue for there to be a push for effective disaster management • Accountability of private actors for nurturing disasters • Strict penalties for non-compliance with laws regarding safety

Research & Knowledge Management

- Mapping of traditional knowledge
- Identification of local good practices
- Analysis or Audit of previous disasters to prepare effective strategies for future disasters
- Bridge the gap between research and implementation
- Specific diseases or conditions affecting specific communities be identified
- Need to develop specific models suited to our country's specific conditions
- Link risk and development interface. Disaster happens because we have made wrong development choices or decisions. Vital to review and ensure sustainable development by integrating disaster risk reduction
- Third party audit is needed of projects and schemes to ensure effective utilization of resources
- Evaluation of critical uncertainties and barriers: Evaluation of uncertainties such as shortage of resources or capacity should also be considered

Policy Framework

- Need to establish a techno-social-legal system which is inclusive of social challenges to reduce error of intent.
- Develop knowledge infrastructure in each state
- Evacuation plan should integrate existing technologies
- One single national agency to co-ordinate all stakeholders which is effective and ensures swift mobilisation of resources and decision-making
- At the local level, the District Magistrate has freedom and power for the requisition of the response force
- Socio-legal measures need to be revised post-disaster
- Situate institutions with a larger risk governance context.
- Vertical and horizontal integration i.e. global, regional, national, state and all stakeholders across the board
- Preparation of guidelines on the allocation and utilisation of funds made available by the government for district administration.
- Joint framing of local goals: Identifying local priorities and setting goals according to them. Local agenda and resources need to be considered while setting goals.

Accountability & Transparency

- Voluntary disclosure of infrastructure resilience
- Compliance with laws and policies to ensure sustainable and resilient infrastructures
- Mandatory disclosures on the resilience of infrastructure developed to disasters
- Accountability of private actors for nurturing disasters
- Strict penalties for non-compliance of laws regarding safety
- The environmental impact of disaster management operations should be considered and integrated to ensure sustainable disaster management

Miscellaneous

- Make disaster an issue everyday
- Focus on mandatory insurance of living beings (persons and animals) to reduce the economic burden from disasters
- It is crucial to ensure dignity in death of all those who lost their lives to disasters
- Disaster needs to be a political issue for there to be a push for effective disaster management

Technology

- Leverage impact-based forecasting and machine learning for preparedness and mitigation
- The creation of data sets for model validation
- Develop and integrate indigenous GIS systems
- Develop low-powered devices for data capturing and analysis
- Mathematical modelling for disaster prediction (Ex: Avalanche)
- Develop drone technology for real-time mapping. (data protection and national security)
- The evacuation plan should integrate existing technologies
- Swift dissemination of verified and reliable information
- Use of blockchain technology to identify trusted data sources
- Management Information Systems (MIS) for model and data application
- Data collection, models and MIS for better decision making and analysis of cause and effect
- Develop Remote sensing technology to reach inaccessible areas
- Develop technology for data mining from the public domain and social media
- Utilise technology for developing rehabilitation initiatives

Capacity Building

- Disaster awareness in regional languages to ensure accessibility and preparedness.
- Disaster and pandemic management included in the academic curriculum
- Develop training modules for government employees, elected representatives, CSOs
- Only trained and certified volunteers are tasked with search and rescue operations
- Psycho-social issues such as mental health should form part of disaster response
- Awareness of the impact of the disaster on the marginalized communities in the region to ensure accessibility and support
- Community sensitization towards marginalized communities in the region

Collaboration

- NGOs and CSOs conduct road safety
- Establishing a strong collaboration structure through leadership identification, decentralized decision making, & network integration
- Develop metrics for evaluating collaboration success & conduct regular evaluation
- Food security measures in disaster-prone areas
- Vertical and horizontal integration
- Anxiety, chaos and misinformation management necessary
- Foster partnership of impacted communities with organisations from outside the region to support resource procurement.
- Funding through loans and other measures for disaster-impacted communities should be incorporated as part of rehabilitation initiatives

Community resilience

- Linkage of DRR with ecology, technology and economics
- Include youth voices
- Village disaster management committee to include women SHGs
- Involve and engage the communities in climate action
- Need assessment and identify challenges of marginalised communities to prepare for community-specific disaster response.
- Build inclusive models of disaster response.
- Volunteers support ground intel and transport in humanitarian crises
- CSOs' role during unprecedented and dynamic disasters especially should be identified
- Procurement of resources be undertaken in local markets to support local economies
- Open communication with the impacted communities
- Create partnerships with survivors to bring systemic change
- Need assessment prior to the formulation of any rehabilitation initiative
- Expand the role and participation of different communities
- Increase the number of cyclone shelters and relief camps

Stakeholder based matrix

National	State	District/Village
• Investment in global risk mapping technologies • Leverage social media and mobile technologies • Develop greater cohesion in international response • Linkage of DRR with ecology, technology and economics • Traditional knowledge part of policy formulation • Establish a techno-social-legal system inclusive of social challenges to reduce error of intent. • One single national agency for coordination • Develop knowledge infrastructure in each state • Evolve risk governance eco-system (laws, policies, plans, capacities) • Guidelines on fund utilisation	• Involve local authorities for knowledge assistance • Investment in global risk mapping technologies • Leverage social media and mobile technologies • Revise & improve development indicators • Traditional knowledge part of policy formulation • Disaster awareness in regional languages • Response force trained on skill matrix-oriented capacity building • Response force understands topography, language and population • Need to develop knowledge infrastructure in state • Evolve risk governance eco-system • Remote sensing technology to reach inaccessible areas • Integrate technology in evacuation plan • Increase number of cyclone shelters and relief camps • Guidelines on fund utilisation by district • Autonomy at the local level for the requisition of disaster response force	• Role clarity of agencies at grassroots level • Coordination with the state authorities for rescue operations • Build local capacities of NGOs, communities and volunteers • Identification of local good practices • The fire services should have good contact with the community leaders • Constitute Village disaster management committee to include women SHGs • Reversal of vulnerability by achieving safe conditions for communities • Remote sensing technology to reach inaccessible areas • Integrate technology in evacuation plan • Need assessment of marginalised communities for modelled disaster response • Pre-disaster assessment identifying vulnerable groups, areas & properties • Joint framing of local goals on basis of local agenda and resources • Develop disaster management strategies on local capacities and knowledge

- Analysis or Audit of previous disasters for future DRR strategies
- Leverage technology
- Mapping of disaster resilient crops and biodiversity
- Diseases as man-made disasters with development of appropriate infrastructure
- Revision of Socio-legal measures post-disaster for disaster preparedness
- Funding through loans and other measures be included in rehabilitation initiatives
- Disaster and pandemic management should be part of academic curriculum
- Training module should be developed for every government employee, elected representative, community-based organisations
- Leverage impact-based forecasting and machine learning to assist disaster preparedness and mitigation
- Swift dissemination of verified and reliable information essential
- Vital to review and ensure sustainable development by integrating disaster risk reduction
- Vital to integrate socio-economic, environmental dimensions
- Create opportunities and incentives for the vulnerable to participate in DRR
- Develop specific models suited to our country's specific conditions
- Development and integration of indigenous GIS systems

- Development of low-powered data capturing devices which support analysis
- Mining of data from public domain and social media
- Use of blockchain technology to identify trusted data sources
- Development of drone technology that can map large areas and identify people
- Environmental impact of disaster management operations reviewed
- Specific allocation of resources and funds for marginalised persons
- Accountability through strict penalties of private actors for safety non-compliance
- Streamlined and quick complaint procedures to ensure justice to victims
- Need for urban planning by authorities
- Separate department in government for analysis and monitoring of disasters
- Disaster plan at all levels of administration
- Third party audit of projects and schemes
- Appropriate food security measures in disaster prone areas (both humans and animals)
- Post disaster assessment and review with appropriate compensation be provided
- Civil Society part of decision making process

Academia

National	State	District/Village
• Develop a network of universities researching on DRR	• Develop a network of universities researching on DRR • Identification of local good practices • Indicators to development should be revisited and improved • Need assessment of marginalised communities for modelled disaster response • Pre-disaster assessment identifying vulnerable groups, areas and properties	• Identification of local good practices • Pre-disaster assessment identifying vulnerable groups, areas and properties

- Mapping of traditional knowledge
- Analysis or Audit of previous disasters for future DRR strategies
- Mapping of disaster resilient crops and biodiversity
- Bridge the gap between research and implementation
- Vital to review and ensure sustainable development by integrating disaster risk reduction
- Develop metrics for regularly evaluating collaborations
- Develop specific models suited to our country's specific conditions
- Creation of data sets is key for model validation
- Mining of data from public domain and social media
- Development of drone technology that can map large areas and identify people
- Development of indigenous drones

Civil Society Organisations

National	State	District/Village
• Need for active engagement of civil society during disasters • Linkage of DRR with ecology, technology and economics for sustainable disaster management	• Need for active engagement of civil society during disasters • Coordination with the state authorities for rescue operations • Linkage of DRR with ecology, technology and economics for sustainable disaster management	• Need for active engagement of civil society during disasters • help of local authorities for knowledge assistance • Linkage of DRR with ecology, technology and economics for sustainable disaster management • Road safety awareness • Communication with the impacted communities during disaster

- Training module should be developed for every government employee, elected representative, community-based organisations
- War management capacity building of CSOs and NGOs
- Develop metrics for regularly evaluating collaborations
- Environmental impact of disaster management operations reviewed
- Community sensitization and awareness for marginalised communities in society

Volunteers

National
- Create forums for youth campaigns

State
- Create forums for youth campaigns

District/Village
- Role clarity of agencies at grassroot level
- Volunteerism from local communities
- Community sensitization and awareness for marginalised communities in society

- Volunteers support ground intel
- Only trained and certified volunteers to assist in search and rescue operations
- Create central list of volunteers and provide regular training

Private Sector

- Develop mobile applications to support DRR
- Voluntary disclosure of infrastructure resilience as part of infrastructure development
- Creation of data sets is key for model validation
- Development and integration of indigenous GIS systems
- Remote sensing technology to reach inaccessible areas
- Development of low-powered data capturing devices which support analysis
- Mining of data from public domain and social media
- Use of blockchain technology to identify trusted data sources
- Interaction with locals
- Development of drone technology that can map large areas and identify people
- Development of indigenous drones
- Compliance with existing laws and policies
- Mandatory disclosures on the resilience of infrastructure

General

- Collaborative efforts from all stakeholders to tackle large scale disasters
- Combined response by NGOs and government agencies in disaster response
- Equality in disaster response responsibility of stakeholders
- Equality in accessibility of key facilities

- Capacity building of all stakeholder and at all levels
- Awareness on disaster management
- Ensure dignity in death
- Collate best practices in disaster mitigation

NGOs

National	**State**	**District/Village**
• Leverage social media and mobile technologies • Develop greater cohesion in international response	• Coordination with the state authorities for rescue operations • Leverage social media and mobile technologies • Disaster awareness in regional languages for accessibility and preparedness • Need to develop knowledge infrastructure in each state • Partnership with disaster survivors for systemic change	• Need to shift from unorganized to organised disaster operations • Engage local authorities for knowledge assistance • Identification of local good practices • Build local capacities of communities and volunteers • Road safety awareness • Resource procurement supported by partnership with organisations from outside the region • Reversal of vulnerability can be done by achieving safe conditions for communities. • Volunteerism from local communities • Communication with the impacted communities during disaster • Involve and engage the communities in climate action • Need assessment of marginalised communities for modelled disaster response • Community sensitization and awareness for marginalised communities in society • Joint framing of local goals on basis of local agenda and resources

Second row (spanning National and State columns):

- Leverage technology
- Psycho-social issues of impacted communities as part of disaster response
- Mapping of disaster resilient crops and biodiversity
- Bridge the gap between research and implementation
- Funding through loans and other measures be included in rehabilitation initiatives
- War management capacity building of CSOs and NGOs
- Management of anxiety and misinformation
- Swift dissemination of verified and reliable information essential
- Vital to review and ensure sustainable development by integrating disaster risk reduction
- Create opportunities and incentives for the vulnerable to participate in DRR
- Develop metrics for regularly evaluating collaborations
- Environmental impact of disaster management operations reviewed
- Pre-disaster assessment identifying vulnerable groups, areas and properties
- Third party audit of projects and schemes

Community

National	**State**	**District/Village**
	• Strengthen community response • Investment in people, process and property/assets through better community participation • Capacity building of communities • Community participation to leverage their lived experience and knowledge	• Role clarity of agencies at grassroot level • Strengthen community response • Expand the role and participation of different communities at local level • Proactive involvement of community members essential • Constitute Village disaster management committee to include women SHGs • Capacity building of communities • Procurement of resources in local markets to support local economies • Volunteerism from local communities • Involve and engage the communities in climate action • Mandatory insurance of living beings (persons and animals)