THE ROLE OF CORPORATE SECTOR IN DISASTER RISK MANAGEMENT IN INDIAN PERSPECTIVE

Dr. Vinod Kumar
Assistant Professor. Sociology. Government Degree College, Drang, Narla, Mandi.
Himachal Pradesh. India.
Email - vinodkrmnd@gmail.com

Abstract: India has been traditionally vulnerable to natural disasters on account of its unique geo-climatic conditions. In view of India’s high vulnerability profile, the recurrent phenomena of a range of geophysical as well as hydro-meteorological hazards impact millions across the country leaving behind a trail of heavy loss of lives, property and livelihoods. The economic and social costs on account of losses caused by natural disasters continue to mount year after year as disasters occur with unfailing regularity encompassing every segment of national life including the industrial and corporate sector. The present paper to study the role of corporate sector in Disaster Risk Management in Indian Perspective.

Key Words: Disaster Risk Management, Corporate Sector Responsibility, Public Private Partnership, Emergency Support Function, India Disaster Resource Network, National Calamity Contingency Fund.

1. INTRODUCTION:

Unlike the bounty of nature, its fury is a great leveler. Natural disasters affect everyone alike although the nature of impact varies from region to region and sector to sector with the coping capacity of an individual sector being the differentiating factor. The catastrophic fallout of natural disasters on the community and the people is very well documented by now. At the same time, it is their impact on the existence, survival and viability of the economic muscle of a nation, community and region, i.e. the corporate sector, which also merits equally focused attention. The critical and catalytic role the corporate sector can play in mainstreaming disaster management into not only its own functioning but also in other sectors and among the community is now being appreciated and duly recognized as an inalienable part of corporate social responsibility.

India has been traditionally vulnerable to natural disasters on account of its unique geo-climatic conditions. In view of India’s high vulnerability profile, the recurrent phenomena of a range of geophysical as well as hydro-meteorological hazards impact millions across the country leaving behind a trail of heavy loss of lives, property and livelihoods. In many areas of the country, disaster losses tend to outweigh the development gains. The economic and social costs on account of losses caused by natural disasters continue to mount year after year as disasters occur with unfailing regularity encompassing every segment of national life including the industrial and corporate sector.

Traditionally, India had been ‘reactive’ in its approach towards disasters – with precious resources being spent on relief, rehabilitation and reconstruction efforts. Today, after considerable and meticulous planning and a concerted effort, a paradigm shifts in the approach of the Government departments and agencies as well as of other stakeholders including the community, the corporate sector and others has been brought about for building holistic capabilities for disaster management.

The focus has shifted to a balanced approach including pre-disaster aspects such as disaster prevention, mitigation and preparedness since it is felt that appropriate mitigation measures can substantially, if not wholly, reduce the heavy toll of lives and property, the dissipation of developmental, industrial and infrastructural gains and the hard-earned socio-economic infrastructure.

For long, the corporate sector had been viewed as a separate entity perennially ranged at the other end of the spectrum vis-à-vis the society. Over the past few decades, this perception has undergone a complete metamorphosis and the existence of corporate sector is today intimately intertwined with the safety and well-being of the society. Rather the
community today is the very raison d’être of its being. It is the crux lending credence and substance to the world view of the corporates. The corporate sector and the society are being seen as complementary to each other- heavily dependent upon each other for mutual existence and prosperity.

The high vulnerability profile of India also enhances the susceptibility of the corporate sector to multiple disasters and impacts it similarly. The rising ferocity and magnitude of natural disasters and the expanding human and economic infrastructure over the last few decades has led to a greater exposure of the same to hazards of nature. The only way of safeguarding the precious physical infrastructure is to integrate disaster prevention, mitigation and preparedness measures into them. While hazards belong to nature and cannot be wished away, the risks can definitely be reduced and the vulnerabilities can definitely be tackled — and this belongs to us.

The involvement and association of the corporate sector with national risk reduction and risk management initiatives and with dissemination of appropriate and practical structural and non-structural disaster prevention and mitigation measures necessary for their safe and disaster-free functioning has been accorded priority as part of a strategy to systematically mainstream holistic disaster management into the functioning of the corporate sector.

The ever-expanding extent, sweep and scale of natural disasters has made it imperative for the corporate sector to initiate and integrate disaster risk prevention and mitigation measures in all facets of their functioning and operations with the objective of safeguarding the painstakingly built industrial assets from the impact of natural disasters. During the last decade, the frequency and fury of disaster occurrences in different parts of the country has imposed a colossal economic cost in terms of financial losses, disruption in industrial activities, retardation of expansion and growth plans and dissipation of investment and precious resources on rebuilding the same assets and infrastructure to make the operations sustainable. It is an ‘encounter’ of the worst kind with the dice firmly loaded against the human and physical infrastructure.

Today, the corporate sector has become an inalienable part of our socio-economic and national life and a vibrant industry is not only better placed to make itself sustainable but can also act as a composite foil to the governmental efforts at holistic disaster management.

Recognizing the importance of integrating the corporate sector and their nodal organizations in disaster prevention, mitigation and preparedness agenda, the National Disaster Management Framework drawn up by the Ministry of Home Affairs, Government of India envisages “involvement of corporate sector in awareness generation and disaster preparedness and mitigation planning” through sensitization, training and co-opting of the corporate sector and their nodal bodies in planning process and response mechanisms. Similarly, the GoI- UNDP Disaster Risk Management Programme also entails promotion of partnerships with the private sector in awareness generation and sensitization leading to development of disaster risk management plans.

The recent major disasters have clearly indicated the need for interweaving of disaster risk reduction and management concerns in order to minimize the losses— both human and economic. This underscores the necessity of involvement of all stakeholders, from the Government, at all levels, to Community Based Organizations, international and national organizations, the community and, of course, the corporate sector.

2. The Role of Corporate Sector

In keeping with the paradigm shift in its approach to disaster management brought about by the Government of India and the recurring phenomenon of natural disasters impacting all sectors of socio-economic life, including the corporate sector, and inflicting heavy economic losses, focused attention has been given to risk mitigation endeavors to systematically reduce the vulnerabilities. The new approach stems from the premise that development in any sector, more so in the corporate world, cannot be sustainable and viable unless risk reduction and mitigation measures are built into the development processes and that investments in mitigation are much more cost-effective than expenditure on relief, rehabilitation and reconstruction.

Recognizing the gargantuan proportions of the challenge posed by recurring incidence of natural catastrophes, association and involvement of corporate sector and their representative nodal organizations for initiating disaster risk management measures has been considered as integral to success of disaster management initiatives.

The corporates in every country have always played a major role in post-disaster relief, rehabilitation and reconstruction efforts in the affected regions. In India, the contribution of the corporate sector has been notable especially in the
aftermath of the devastating super-cyclone in Orissa in 1999 and the Bhuj earthquake (Gujarat) in 2001. The industrial and corporate organizations like the Confederation of Indian Industry (CII), the Federation of Indian Chambers of Commerce and Industry (FICCI), the PHD Chambers of Commerce and Industry and other industry and area-specific manufacturers and traders associations have been in the forefront of providing much-needed succor to the affected populace for ameliorating their sufferings.

The Confederation of Indian Industry (CII), with a direct membership base of nearly five thousand industrial and corporate houses and an indirect associate membership of around fifty thousand companies from 283 national and regional sectoral associations, was the first industry organization to constitute a Disaster Management Committee in May 2001 as part of its corporate set-up to advise and assist its member industries in initiating disaster risk reduction steps to insulate industrial establishments, infrastructure and processes from the vagaries and damaging potential of natural and man-made (industrial/technological) disasters.

CII had under taken extensive relief, rehabilitation and reconstruction work in the aftermath of Orissa super-cyclone and Bhuj Earthquake – adopting villages and contributing to the reconstruction of social and community assets. Apart form addressing natural disasters, CII has established an Environment Management Division (EMD) involved in research and propagation of environmentally sound industrial systems and processes. It has been deeply involved in advising and developing systems and methodologies for safer and disaster-free handling of chemicals and other hazardous substances in production processes and procedures. The EMD has also been assisting the industries in development and implementation of on-site and off-site disaster management plans for ushering into an environment friendly industrial scenario, especially in the light of experience of the Bhopal Gas Tragedy.

In addition, many area-specific industrial and commercial associations have also been contributing towards the well-being of the community around them by adopting socio-economic practices aimed at improving the living conditions and generally benefiting the people at large. For example, the Ankleshwar Environment Preservation Society in Ankleshwar, Gujarat along with Ankleshwar Industrial Association has set up joint effluent treatment plants for medium and small-scale industries in the industrial belt with predominantly chemical industries and has also taken up disposal and treatment of solid and hazardous waste generated by industries and the cities with their own expertise and finance. Industries at Ankleshwar have shown that through a pro-active and collaborative approach, environmental problems can be addressed in a constructive manner.

The corporate sector possesses huge resources – human, material, technical and financial – and has significant presence in every region in the country. It also works and interacts with the community very closely and has an important stake in the well-being and prosperity of the community as its own progress and viability is largely dependent upon a resilient and safe community. The accountability of the corporate sector in terms of its Corporate Social Responsibility (CSR) has also increased as the value and reputation of a company is being increasingly adjudged by its social behavior and by its contribution to the economic well-being and development of the communities in which it operates.

However, in keeping with the change in focus to the pre-disaster aspects of prevention, mitigation and preparedness to mount an all-round assault on vulnerabilities and building of capacities at all levels, a lot of emphasis has been laid on integrating the disaster risk reduction and risk management aspects into the functioning and processes of industries. With a view to achieve this objective, active collaboration with representative industrial organizations like the CII, FICCI etc. is being forged for assessing and meeting the needs of corporates to have their assets and infrastructure analyzed from the point of view of retrofitting of existing structures and ensuring safety of up-coming industrial assets and establishments against the vagaries of nature.

The strategic framework envisages involvement of corporate bodies in entire gamut of issues connected with integrating disaster management concerns in the developmental efforts of the private sector – with a specific emphasis on pre-disaster aspects.

Moreover, the corporate sector organizations have linkages with other similar organizations in different countries and regularly exchange and supplement each others’ information and resources in times of need. It is, therefore, imperative for the success of initiatives in the area of disaster risk management that corporate sector organizations and their networks are associated with different facets of disaster management.

3. Corporate Social Responsibility and Disaster Management:
Corporate Social Responsibility (CSR) permeates every aspect of the functioning of corporate sector. The corporates always look for ways and means to enhance the brand value of their company and their products. It is in this context
that corporate social responsibility makes good business sense. It is a business strategy that works. Nowadays, the value and reputation of a company are increasingly being seen as its most valuable assets for retaining the loyalty and trust of the public to ensure a bright and sustainable future.

The business corporations, because of their high visibility, are being adjudged not merely on the basis of their bottom lines but also on their social behavior. By integrating CSR into its business strategy as a core value, the corporates not only make a significant contribution to a better society but are also recognized for doing so. This has obvious benefits for the company. In fact, enormous rewards are there both for the business/industrial community as well as the society. The companies are motivated to achieve profitability, sustainable growth and human progress by placing corporate social responsibility in the mainstream of their business practice.

As part of their corporate social responsibility, the companies are encouraged to conduct business responsibly by contributing to the economic health and development of communities in which they operate; create healthy and safe working conditions to attract and retain a quality workforce; manage risk more efficiently and minimize the negative impact of its activities on the environment and its resources; be accountable to all stakeholders through dialogue and transparency regarding economic, social and environmental impacts of business activities; operate a good governance structure and uphold the highest standards and ethics while conducting business.

The corporate sector is an integral part of the society. As a member of the community, it is its responsibility to contribute to sustainable development and to integrate social and environmental concerns in its business operations as well as in its interaction with other stakeholders.

It can play a leading role in supporting and building the knowledge, capacity and skills of the community in comprehensive risk-based disaster management activities ranging from prevention, mitigation and preparedness to response and recovery. It can offer human and financial resources and can also be a precious source of technical knowledge, as for example in the case of identification and research on technological solutions to prepare for and respond to natural disasters.

In addition, the recovery of the community cannot be complete if the business community itself is seriously affected as disasters can have serious negative fall-out on the corporate sector. For them to acquire capacity in disaster risk management would also entail protection of their employees and dependents.

Corporate sectors’ cooperation in reducing people’s vulnerabilities to natural disasters would also help it in protecting its market catchment areas. In the aftermath of a catastrophe, the resources of the community are more likely to be utilized in protecting and rebuilding livelihoods rather in acquiring goods and services offered by the corporate sector. Thus, their involvement in minimizing the impact of a natural event or in facilitating speedy and sustainable recovery should be viewed as a form of investment in protecting and securing its own “sources of livelihood”.

As an inalienable part of its CSR, the corporate sector can play an essential role in leading and supporting the community in comprehensive risk management activities and in mobilizing human and financial resources as well as materials for utilization during a disaster situation. In addition to this, the corporate sector can be a precious source of technical knowledge, as for example in the case of identification and research on technological solutions to prepare for and respond to natural disasters.

On the whole, corporate sector has the potential for strengthening and promoting its own safety and protection against natural catastrophes as well as in assisting the community at large in reducing its vulnerability to disasters.

4. RISK TRANSFER MECHANISMS:

Apart from disaster risk management measures to arrest the spiraling cost of disasters and their wider socio-economic import, a nascent beginning has also been made in India towards addressing them through risk transfer mechanisms.

One of the major mechanisms for risk transfer is the insurance sector and the proposed instrument is the insurance-linked savings-cum-loan-cum-subsidy scheme. The logic behind cross-sectoral risk transfers being that the transferor takes on the risk as a part or consequence of its core business and his incentive being that the cost of transferring or hedging the risk is calculated to be lower than the cost of retaining it.

However, insurance in India is yet to receive due recognition as a socio-economic issue with the result that the insurance market in India, both life and non-life, has not been able to fulfill its potential and achieve higher penetration levels. The
cover for natural disasters is today considered as part of the cover against the fire hazard. The need of the hour is to view disaster insurance as a step towards disaster preparedness. In some countries, a typical insurance strategy for catastrophic risk allows insurance against “layers” of risk up to 100 to 500 years with the underlying rationale being that losses up to certain limit can probably be sustained without major difficulties whereas for rarer but more catastrophic events risk transfer needs to be undertaken.

Under the sensitization programmes for the corporate sector, a capsule on risk transfer mechanisms is also included to familiarize them about these through a representative of one of the prominent insurance companies. It is well known that most industries would lose critical operational capability after an ‘encounter’ with a natural catastrophe.

Each risk is evaluated and ranked according to its probability and severity and the strategy is to purchase insurance in order to transfer the financial risk. However while going in for insurance, the company should make sure that the insurance company is financially stable with a long-term commitment; review risk financing options yearly; prepare early and be proactive for insurance renewals and under writers and appraise the market realities viz. higher deductibles, sizeable premium increases and limitations.

The overall benefit of the strategy being that the mechanism is an enabling instrument allowing for exchange of uncertainty of financial risk for the certainty of a premium. It indicates an acceptance of the risk and shows that the sector is aware of the hazards it is exposed to and is expected to protect itself against. In view of the same, it wishes to lower the impact and the probability of occurrence. The strategy helps in business continuity planning since it has taken care of the impact of risks and helps remove or reduce the cause or source of threat and exposure to a considerable extent. Catastrophe insurance helps in more ways than one – it helps in removal of the cause, reduction of the severity of the event, mitigation of consequences and their impact and facilitates internal-external-social funding interface.

Currently, there are two funding mechanisms in India for relief and rehabilitation efforts — the Calamity Relief Fund (CRF) and the National Calamity Contingency Fund (NCCF). This mechanism is reviewed by the Finance Commission every five years and makes recommendations regarding division of tax and non-tax revenues between the Central and the State Governments. The size of CRF is determined after taking into account the expenditure on relief and rehabilitation over the past ten years. The Central Government contributes 75% of the revenues while the States contribute the remaining 25% of the corpus.

However, where the calamity is of proportions beyond the capacity of the concerned State Government, they can seek assistance under the NCCF — a fund created at the Central level. For the period 2001-2005, the Finance Commission has allocated roughly Rupees ten thousand crores for the CRF.

In view of the increasing basic disaster frequency and the rapidly mounting disaster-related monetary losses, the insurance sector can provide the requisite risk transfer instruments. However, the private insurance market is struggling to meet the challenge due to low penetration levels. India’s general insurance market is at a nascent stage and is considerably underdeveloped in spite of the fact that it has a huge potential. Yet the catastrophe insurance purchasing is insufficient as major insurers do not have accurate up-to-date accumulation data.

It is well known that natural disasters pose a threat to India’s development and a formal risk management strategy incorporating risk transfer mechanisms is required. The States could be advised to prepare such strategies with fiscal incentives and technical support. The government could also make insurance mandatory at least for those taking out mortgages. At the same time, disaster funding strategies need to be based on probabilistic determinations of loss potentials and funding gaps and where possible should use private risk financing markets. Since loss potentials vary across regions, this should determine the urgency of risk transfer mechanisms.

The system of insurance should be accessible to all including the rural and the poor alike. It should compensate for catastrophic income losses to protect consumption and debt repayment capacity and the private sector should be able to extend the same with little or no government subsidy. As long as the instrument is voluntary and unsubsidized, it will only be purchased when it is a less expensive and more effective alternative to existing risk management strategies.

Accordingly, adequate insurance protection must be made available especially in high-risk areas to low and moderate-income house owners. It is imperative that the cost of disasters is minimized through strong mitigation measures and these must include apart from governments, the business sector and the insurance industry. Deductibles, co-insurance and surcharges are all ways of ensuring insurance protection. Moreover, any insurance programme must strategically aim to dissuade location of industries and buildings in high-risk areas and the pricing mechanism should be as per the
level of risk and exposure. In high-risk areas, a pooling together of multiple catastrophe risks would also promote coverage.

In the Province (State) of Gujarat, the Gujarat State Disaster Management Authority (GSDMA) has launched a Housing Insurance Programme seeking to address monitoring and implementation of recovery programmes and long-term disaster management planning. Under it, more than two hundred thousand households, newly constructed after the earthquake, were insured for ten years against fourteen types of risks including natural hazards and human-induced accidents. Over twenty one hundred thousand houses reconstructed were insured to mitigate the effects of disasters through risk sharing mechanisms. The Standard Fire and Special Perils Policy (SFSP) was launched with a one-time premium of rupees 360/- (three hundred sixty rupees) to cover risks for a period of ten years up to a value of rupees one hundred thousand. It was made mandatory for all reconstruction programs.

Apart from the above-mentioned Government of Gujarat model of obtaining group insurance for the community, the Municipalities and Development Corporations can add a small levy to the property tax to utilize the same for buying insurance against catastrophes. The Group Housing Cooperative Societies in urban areas can be authorized to recover insurance premiums along with maintenance charges. In addition, all lending financial institutions, banks and housing loan corporations must cause insurance to be obtained compulsorily against catastrophes. At the same time, all house building societies and organizations like Urban Development Authorities, City Development Authorities etc. associated with construction and development projects must be mandated to insure against catastrophes.

Taking a cue from the experience in community insurance in Gujarat, it would be in fitness of things to explore the possibility of group insurance for the corporate sector on the basis of a cluster of industries in an industrial estate or industrial zone. This will help generate awareness on the issue of securing the industrial assets and adopting a common approach to disasters.

In view of the underdeveloped nature of India’s insurance market, the need is to increase penetration and to optimize catastrophe risk capacity. With shift in approach towards disasters, insurance can and should feature as a means of durable finance. It is a principal tool for hedging against financial loss to make the damage suffered bearable at an affordable minimal premium.

5. THE ROAD AHEAD:

In view of the imperative need to meet the gigantic challenge posed by natural hazards, the successes achieved, the experience garnered and the onerous task ahead to secure safety and disaster-free functioning of the corporate sector in the larger interests of the nation and the people, the Confederation of Indian Industry (CII) has decided to up scale and deepen its engagement with integration of disaster management agenda into the corporate sector functioning to minimize losses and prevent disruption of economic activity hampering achievement of developmental goals.

In this context, CII is expanding the scope of its activities in association with the Ministry of Home Affairs and the United Nations Development Programme (UNDP) to facilitate sustainable economic growth through disaster risk reduction and mitigation. This envisages an entire gamut of issues connected with mainstreaming disaster management concerns in the developmental efforts at all levels and across a spectrum of sectors. The main themes to be addressed are —

- Ensuring that existing and upcoming industrial assets and infrastructure are disaster-resistant.
- Ensuring proper citing of industrial establishments considering hazard parameters.
- Making industrial processes and procedures inherently safe.
- Ensuring that transportation, storage, handling and usage of chemicals and other hazardous raw materials does not pose a threat to the nearby areas and environment.
- Development of on-site and off-site DM plans by industries in association with the District Administration.
- Conducting mock-drills at regular intervals to determine the efficacy of the DM plans.
- Preparation of inventory of corporate resources and uploading them on the IDRN – India Disaster Resource Network.
- Large-scale association with awareness generation initiatives aimed at building the knowledge, attitude and skills of the common people for a safer habitat.
- To move away from relief-centric approach to a pro-active assault on vulnerabilities through risk management measures and capacity building of industrial personnel.
- Assessment and retrofitting of existing industrial infrastructure.
Training of a core team of Structural Engineers for advising member industries on requisite mitigation measures in association with the Ministry of Home Affairs.

Mainstreaming private sector participation in disaster management.

Establishing linkages between private sector and the community.

Networking knowledge on best practices and tools for effective disaster management.

Development and implementation of appropriate risk transfer mechanisms.

In addition, it is also proposed to secure active participation of corporate sector in risk mapping of the area hosting the industry and in training and capacity building of the community in its disaster preparedness activities. It is also envisaged to create an industry-led voluntary force for search and rescue and first-aid etc.

Given the destructive potential of man-made disasters, the activities will also aim at addressing the needs and concerns relating to management of man-made and industrial disasters. This envisages a regular interaction and involvement of the Ministry of Environment and Forests and other institutions associated with research and study of chemical and industrial hazards. A deeper engagement with such organizations and institutions has already been initiated and the process is being intensified to make it more substantive.

Development and enforcement of an appropriate techno-legal regime is another dimension receiving greater attention. It involves examining and reviewing the existing building by-laws and codes, the town and country planning acts and development control rules etc. to bring them in tune with disaster risk perceptions and mitigation needs. The enforcement of techno-legal regime and its application during the stages of building permit, supervision, completion certificate, occupancy permit and the annual renewal certificate is being done and efforts are being made to undertake training and capacity building of local bodies. It is also proposed to make it mandatory for an engineer/architect to undergo a capsule course in EQ engineering and their association/ certification of the structure is also being made essential.

In addition, the techno-financial regime is also sought to be put into place with the provision that all building constructions by public, private, corporate, cooperative, community, joint and individual sectors receiving funds from any source must adopt techno-financial regime without exception. The financial institutions and banks must insist on disaster-resistant construction and incorporation of disaster-resistant features as a precondition for providing loans or grants for projects. A provision is also proposed to be made for inspection and periodic audit and renewal certificate to move towards an enhanced and voluntary compliance. Even the fixation of insurance premium is also proposed to be linked to the incorporation of disaster-resistant features at the construction stage itself. The establishment of a sound techno-financial regime would facilitate mainstreaming disaster risk management into all aspects of corporate and industrial sectors.

6. CONCLUSION:

Disaster Management being an all-encompassing and multi-disciplinary activity spanning across all sectors of development, a coordinated action in conjunction with all stakeholders including the corporate sector is a sine qua non for overcoming the vulnerabilities and minimizing the risks. It will not only help pooling of resources but would also facilitate exchange of information and expertise across sectors, learn from each others’ experience and best practices.

The objective of disaster management initiatives is to consciously move towards strengthening the national capabilities in accordance with the status acquired by India as a self-sufficient and self-respecting nation well-positioned to mount an effective and substantive disaster response and to take care of the concerns vis-à-vis disaster management across different sectors. In the aftermath of the recent tsunami crisis too, the response of the government, the civil society, the voluntary organizations and the corporate sector has been exemplary in spite of the geographical constraints and the extent and sweep of operations and has earned appreciation from the international community. The governmental efforts have received commendable support from individuals, organizations, the corporate sector and the society at large. The crisis has brought out the best in our society and the entire nation has risen as one entity to meet the grim challenge posed by this unprecedented catastrophe of gigantic proportions through voluntary and meaningful contribution from every stakeholder.

However, effective disaster management is a long-drawn battle against the formidable forces of nature and necessitates devising a comprehensive strategy and work plan based on the lessons learned and experiences gained from every disaster. The shortcomings and gaps need to be addressed and successes built upon.
The Government of India as well as other stakeholders including the corporate sector have reaffirmed their commitment and resolve to achieve the objective of moving towards a disaster resilient and safe nation. The task is arduous and the challenge ominous. However, the roadmap is well-defined and clear. No effort will be spared and no constraint would be allowed to impede the progress towards creating a safe and disaster-free nation and the challenge thrown by successive disasters will be converted into an opportunity for further strengthening disaster risk management measures.

REFERENCES:

13. Dr.Loya, Union Carbide’s official Doctor in Bhopal, commenting on Methyl Isocyanate, after the tragedy.