

DISASTER RISK MANAGEMENT AND THE ROLE OF CORPORATE SECTOR

- The Indian Perspective -



**Ministry of Home Affairs
National Disaster Management Division
Government of India**



Confederation of Indian Industry



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Abbreviations

DRM	:	Disaster Risk Management
CII	:	Confederation of Indian Industry
FICCI	:	Federation of Indian Chambers of Commerce and Industry
GoI	:	Government of India
UNDP	:	United Nations Development Programme
UNV	:	United Nations Volunteer
EMD	:	Environment Management Division
CSR	:	Corporate Sector Responsibility
GDP	:	Gross Domestic Product
PPP	:	Public Private Partnership
CEO	:	Chief Executive Officer
ESF	:	Emergency Support Function
MoEF	:	Ministry of Environment and Forests
DMP	:	Disaster Management Plan
IDRN	:	India Disaster Resource Network
IPF	:	India Partnership Forum
KRL	:	Kochi Refineries Limited
LPG	:	Liquefied Petroleum Gas
DEC	:	District Emergency Coordinator
CRF	:	Calamity Relief Fund
NCCF	:	National Calamity Contingency Fund
GSDMA	:	Gujarat State Disaster Management Authority
SFSP	:	Standard Fire and Special Perils Policy
WSSD	:	World Summit on Sustainable Development

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 shift 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

"..... [Business has] responsibility to itself, to its customers, workers, shareholders and the community.... every enterprise, no matter how large or small, must, if it is to enjoy confidence and respect seek actively to discharge its responsibilities in all directions..... and not to one or two groups, such as shareholders and workers, at the expense of community and consumer. Business must be just and humane, as well as efficient and dynamic."

— Shri Lal Bahadur Shastri
Prime Minister of India in 1965

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 undertaken 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 from 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 proactive and collaborative approach, environmental problems can be addressed in a constructive manner.



CETP (Enviro-Technology Ltd, GIDC, Ankleshwar, Gujarat)

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 upcoming 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.

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 know-how, 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 than 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.

INDIA INC.' RESPONSE – CONTRIBUTION TO TSUNAMI DISASTER RELIEF AND REHABILITATION ENDEAVOR

The President of the Confederation of Indian Industry (CII) has invoked the corporate sectors' social responsibility and appealed for liberal contributions and support to the relief and rehabilitation efforts in the aftermath of the Tsunami tragedy. The gargantuan scale of death and devastation in its wake across countries has been unprecedented. The CII has set up "Tsunami Relief Fund" and has activated helpline offices in Delhi, Chennai and Hyderabad. It has also set up an Outreach Inc. office in Virginia, USA to mobilize resources.

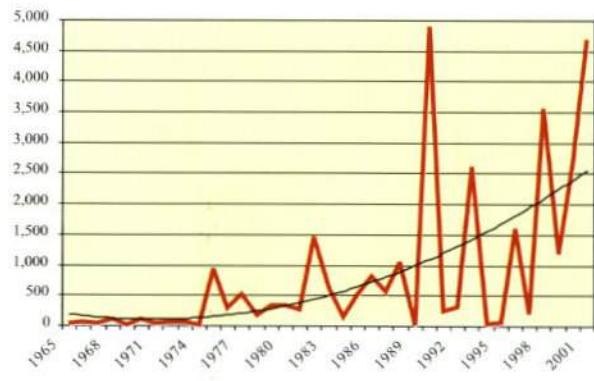
The Confederation is in touch with the Central and State (Provincial) Governments and is collecting feedback on the extent of damage and the immediate requirements of the affected people. Considering the tsunamic proportions of the tragedy and an acute shortage of drinking water especially in the island areas as well as in Tamil Nadu, CII has operationalized four easy-to-use water treatment plants, courtesy a member industry of the CII, in the Andaman and Nicobar Islands to provide clean drinking water to the affected people. Light trucks, generators, pumps and other industrial equipment has also been sent. CII has also deputed volunteers to manage distribution of relief materials through its warehouses.

3. Economic Impact of Disasters on Corporate Sector

At the global level, nearly 700 major catastrophes take place every year affecting billions in different countries. The disasters periodically visit the same geographical regions and set the development clock back by decades. It is similar to taking two steps forward and one step backwards. In some countries, this equation even gets reversed. The repeated occurrence of natural catastrophes undermines the economic viability of the communities as well as the corporate sector – further impoverishing the impoverished and sapping the very soul.

It is estimated that 28 developing countries, including India, suffered direct losses of over 1 billion USD each during the past twenty years. In respect of some countries, it amounts to an erosion of over 1% of their annual GDP. In India, the natural disasters eroded 2% of the GDP during 1996-2001 and consumed 12% of the Government revenue during the same period. On an average, the disasters have been affecting nearly six million people annually in India and over six percent of the population is directly hit.

In addition, the natural disasters pose a major threat to economic development in India as disaster-loss figures are rapidly increasing. For example, during 1965-1980, the losses were to the tune of 2.9 billion USD while during 1981-1995, the same increased to 13.4 billion USD. However, this was overtapped in six years during 1996-2001 with loss figures touching 13.8 billion USD. The table below shows the catastrophe losses in India during the period in million USDs.

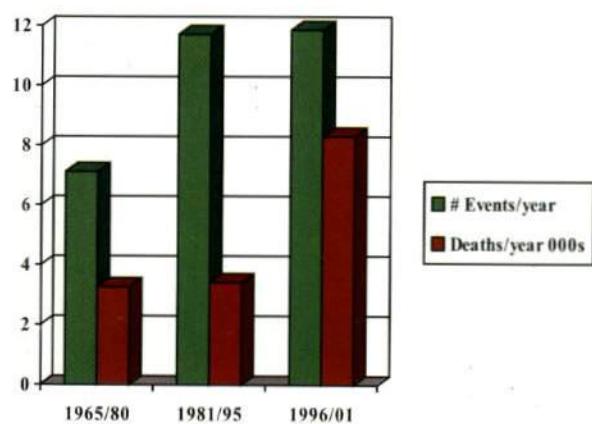


[Source: World Bank Study]

The compounded losses suffered by the industries including direct, indirect and secondary losses are colossal and virtually incalculable.

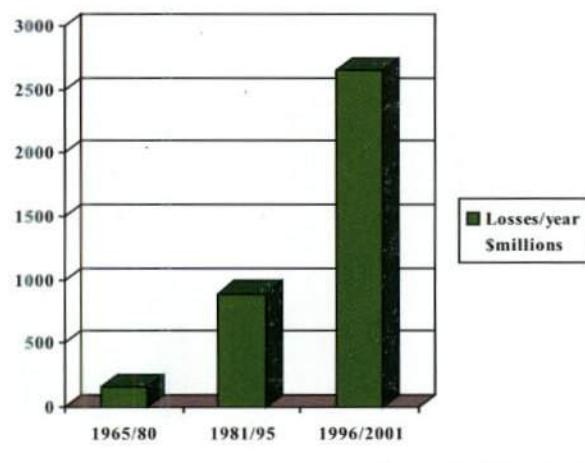
A study reveals that forty three (43%) percent of the industries experiencing a disaster never re-open and twenty nine (29%) percent close for good within two years even if they mobilize resources to restart operations.

At the global level too, the basic disaster frequency and the losses imposed by them are steadily mounting as evidenced by the table below:



The increasing incidence, frequency and severity of natural catastrophes has resulted in steadily

mounting monetary losses, as per the table given below:-



During 1990s, there were *three times more* incidents of natural disasters and *eight times increase* in disaster costs as compared to the 1960s.

The three major natural disasters in recent years to have caused massive losses to the industries and the corporates have been the Gujarat Cyclone of 1998, the Orissa Super-Cyclone of 1999 and the Bhuj Earthquake of 2001.

3.1 The Gujarat Cyclone, 1998:

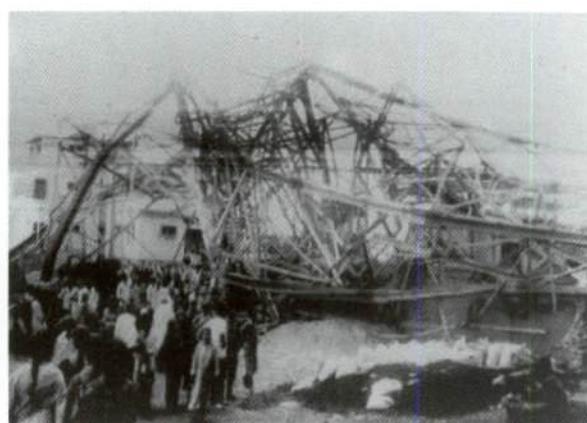
The Gujarat Cyclone of 1998 with two landfalls and a wind velocity between 170-200 kmph, ripped through the industrial heart of Gujarat and inflicted an economic loss of nearly Rupees 2,500 crores. The Kandla Port, gateway to the granaries of north India and the industrial belt of west and north India, and neighboring facilities suffered extensive damage and a loss of nearly 600 crores.

The corporate sector including Reliance Industries' Jamnagar oil refinery suffered losses



Damaged berthing facilities at Kandla Port, Gujarat

amounting to Rupees 100 crore and Gujarat State Fertilizer Corporation's output was disrupted to the tune of 2,000 tonnes per day. The wind lifted the heavy cranes and machinery and twisted the transmission towers.



Twisted 325 foot Microwave Tower, Porbander Gujarat

3.2 The Orissa Super-Cyclone, 1999:

The Orissa Super-Cyclone in 1999 inflicted a cumulative loss of nearly 1,000 crores on the industrial sector. The major industries like the Paradeep Port, Oswal Fertilizers and CESCO suffered heavy losses. A large number of industrial units remained inundated for days together.



Devastation caused by the super-cyclone, Orissa



[Source: Earthquake Reconnaissance Report, EERI]

2) Collapse of roof at potash storage facility —



[Source: Earthquake Reconnaissance Report, EERI]

3) collapse of salt manufacturing factory-



[Source: Earthquake Reconnaissance Report, EERI]

4) collapse of conveyor belt —



[Source: Earthquake Reconnaissance Report, EERI]

The performance of lifeline and industrial structures left much to be desired and underlined the need to integrate risk reduction and mitigation measures while planning and setting-up industrial units. The pictures tell the tale of the damages inflicted by the killer quake on the developmental, lifeline and industrial infrastructure.

1) Non-structural damage to manufacturing facility of IFFCO fertilizer plant —

5) structural failure of observation tower –



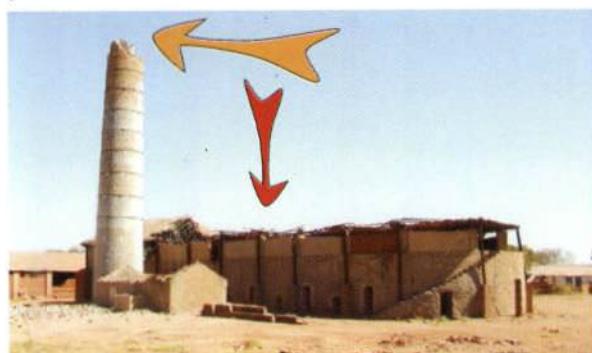
[Source: Earthquake Reconnaissance Report, EERI]

8) disruption of rail and road networks –



[Source: IIT Kanpur]

6) non-structural damage at IFFCO fertilizer plant –



[Source: Earthquake Reconnaissance Report, EERI]



[Source: IIT Kanpur]

— a collapsed railway station

7) damaged brick kiln –



[Source: IIT Kanpur]



[Source: IIT Kanpur]

— damaged bridges



[Source: IIT Kanpur]

— damaged bed blocks of a bridge



[Source: IIT Kanpur]

— stone arch railway bridge



[Source: IIT Kanpur]

9) Impact on electric power supply –

Collapse of an electric sub-station in Anjar, Gujarat



[Source: IIT Kanpur]

Damage to Line Beakers Poles



[Source: IIT Kanpur]

10) Damage to health infrastructure –

– Bhuj General Hospital



[Source Earthquake Reconnaissance Report, EERI]

– Jubilee Hospital, Bhuj



[Source: Earthquake Reconnaissance Report, EERI]

It is estimated that nearly ten thousand industrial units went out of production at the hands of the earthquake and an overwhelming majority of the remaining ones operated at only fifty percent of their output capacity. The economic loss on account of disruption of industrial and commercial activity for over a month is pegged at more than rupees two thousand crores. The earthquake eroded nearly two percent of the GDP of the State of Gujarat – one of the most industrially advanced States in the country.

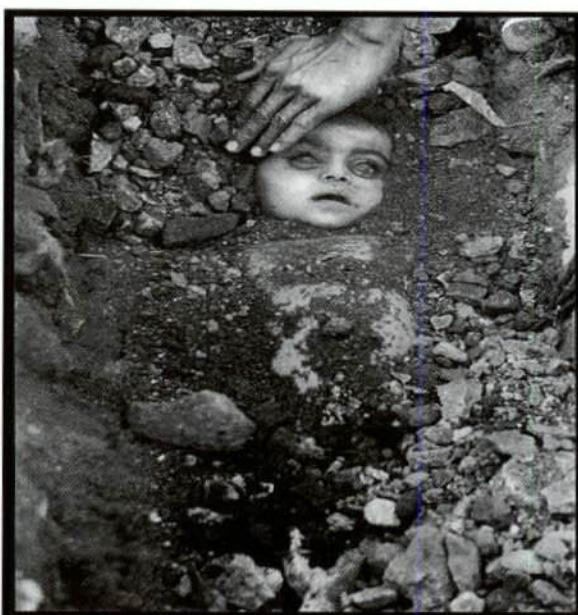
3.4 Industrial and Chemical disasters:

In addition to the onslaught of natural disasters casting a long shadow over the viability of the economic sector, susceptibility to industrial and chemical hazards also poses a major threat to the healthy and safe functioning of corporate sector.

The industries employ many production processes involving a wide range of chemicals and hazardous raw materials, intermediates, waste and final products. These disasters, though normally caused by irresponsible handling of hazardous substances or due to their improper and unauthorized use or due to inadequate attention to maintenance of manufacturing processes, have the potential to substantially undermine the very functioning of industries in the region in the aftermath of any untoward incident since such incidents have widespread ramifications and long-term impact on the society and environment. Between 1970 and 1990, about 180 severe industrial accidents occurred worldwide, leading to the release of various chemical compounds into the environment and killed nearly eight thousand people, injured more than twenty thousand and

led to hundreds of evacuations involving thousands of people. The scenario becomes scary and horrendous if one takes into account the generational and genetic impact on the community for years to come.

The Bhopal Gas Tragedy of 1984, involving a sudden release of about 30 tonnes of methyl isocyanate (MIC) at the Union Carbide plant due to poor safety management practices, poor early warning systems and lack of community preparedness led to death of nearly three thousand people, caused severe health and respiratory problems and birth of deformed and still-born children.



[Burial of an unknown child – source:Greenpeace]

It is estimated that the incident caused damages varying between USD 30 million to as high as USD 3 billion. The deleterious effects of the tragedy can still be felt even after twenty years.

It is the world's worst industrial and chemical disaster. Toxic gas leakage from the poorly maintained and understaffed plant has rendered

over one hundred twenty thousand people chronically ill. The safety systems designed to prevent such a disaster at the plant had been shut down to save money. The survivors, denied adequate compensation, suffer from debilitating illnesses and the heavily polluted site of the plant has not been cleaned up and poisonous chemicals continue to seep into the ground water further compounding the misery of the residents.



[The abandoned plant – Source:Greenpeace]

The victims and sufferers of the tragedy are bearing the brunt of the after-effects of gas leakage.



[Sources: www.webdrive.service.emory.edu]

The Bhopal Gas Tragedy has highlighted the responsibilities of units handling hazardous

substances including development of on-site and off-site emergency plans, notifying the authorities and the community around about the processes and materials used, their storage, handling and transportation and the possible hazards emanating there from and the requisite precautionary measures.

However, even after the worst chemical tragedy, forty two major industrial disasters have taken place since then taking a toll of over two hundred fifty persons in India and exposure to hazardous materials and wastes to explosives in metal scrap continues unabated. In spite of numerous environmental and regulatory laws, the chemical and hazardous industries continue to generate and discharge tonnes of potentially dangerous wastes every day, posing a grave danger to people's health, lives and environment.

In spite of stupendous human and economic cost of natural phenomena in myriad forms resulting in breakdown of support infrastructure and services compounding loss and trauma of the affected, the factors aggravating these continue to multiply introducing newer hazards and accentuating the vulnerabilities of human and industrial infrastructure.

The situation is leading to an enhanced expenditure on emergency response and relief and diversion of developmental resources as re-investment in restoration of socio-economic infrastructure. It has impeded and retarded industrial growth leading to a fall in industrial production and revenues generated there from.

The corporate sector as well as the community has to depend increasingly upon external

borrowings to meet its immediate needs and to make the industrial units operational.

The natural as well as man-made disasters cast a tremendous social, human and developmental cost with a major impact on the overall human development indices and industrial growth,

stability and prosperity in the affected regions. It is only through adoption and integration of comprehensive disaster risk reduction and mitigation measures that the long shadow of the deleterious impact of natural and industrial/chemical catastrophes can be contained.

4. The Confederation of Indian Industry and the National Disaster Management Framework

Working in tandem with the Framework developed by the Ministry of Home Affairs envisioning strengthening and development of capacities at all levels for holistic disaster risk management and sustainable development, the Confederation of Indian Industry (CII) has up scaled the scope of its association with the national disaster management agenda and has emerged as the flag-bearer of initiatives for integrating the same into the functioning of the corporate sector.

Extending its support in the area of disaster management since 1999 especially in disaster response, rehabilitation and reconstruction, CII has partnered with the Government initiatives and development organizations like the United Nations Development Programme (UNDP) for effective implementation of disaster risk reduction activities and has been regularly organizing summits and symposiums to promote the same. The "Public-Private-People (PPP) Partnership for Natural Disaster Risk Management" is the off-shoot of these initiatives.

In order to vest its initiatives vis-à-vis disaster management for corporate sector and the community a greater depth and substance and in consultation with the Ministry of Home Affairs, the CII has delineated a sustained programme of action to deepen and strengthen its work addressing the entire socio-economic sector. It is intended to minimize the impact of natural and man-made disasters and to preclude disruption of economic activity impeding

achievement of national developmental goals. The joint work plan evolved with the Ministry of Home Affairs primarily entails association of CII in the entire gamut of issues connected with integrating disaster management concerns in the developmental efforts of the private sector. The broad identified themes are –

4.1 —

- **Awareness Generation:** (i) to make people aware of their vulnerabilities and the need for prevention, mitigation and preparedness measures. (ii) preparation of a booklet containing information on various hazards and the steps to be taken for mitigating the same by CEOs of industries. (iii) co-opting CII as a member of the Steering Committee for Mass Media Campaign. (iv) sponsoring awareness generation capsules in print and electronic media.

For awareness generation, a booklet has been designed and developed targeted at the CEOs for inducing a culture of safety and risk management. CII will shortly disseminate the same to its member industries. CII has also been co-opted as a member of the Steering Committee for Mass Media Campaign. The slogans/ messages developed by the Ministry of Home Affairs have been sent to member industries for printing on corporate stationery and utilizing them for initiating awareness generation activities through other mediums.

4.2 —

- **Training:** (i) training of industrial personnel, nearby community and volunteers in disaster management. (ii) Development of training modules and identification of

Master Trainers. (iii) Linking the trained personnel with the Disaster Management Teams under the District Administration.

The process of development of training modules has already been initiated and the training of industrial personnel is commencing shortly to develop capacities in different facets of disaster management vis-à-vis industries. Under the programme initiative, some industries have already started conducting mock-drills jointly with the district administration. Such mock-drills have been conducted in Kochi (Kerala), New Delhi, Ankleshwar and Vadodara (Gujarat) and many other places to test and enhance the capabilities for an efficacious response during an emergency.

4.3 —

- **Mock Drills:** Conducting mock-drills at regular intervals to enhance preparedness levels and linkages with the District Administration and other Emergency Support Functions (ESF) departments/agencies, especially targeted at chemical, mining and pharmaceutical sectors.

4.4 —

- **Development of on-site and off-site Disaster Management Plans** as per the guidelines issued by the Ministry of Environment and Forests (MoE&F).

The development of on-site and off-site plans has also been initiated by industries in consultation with the district administration. At some places, these plans have already been formulated and shared with the administration for linking with the District DM Plans. The

process of development of on-site and off-site DM plans entails identification of the hazards to which the industry, the neighboring areas and the region is susceptible; estimation of vulnerable zones using credible worst case scenarios; enumeration of characteristics of socio-economic conditions of human population viz. number, concentration, health conditions, social infrastructure and support systems in the vulnerable areas; listing of critical facilities in these areas; analysis of risks posed by each industry based on readily available information on the likelihood of severity of consequences; prioritization of industries on the basis of estimated risks; ranking of risks; compilation of information on community safeguards, response capabilities and previous accident records; assessing probability of occurrence of disasters; enumeration of resources available within the premises, in the neighborhood and likely to be mobilized along with their sources to meet the eventualities likely to occur; conducting mock-drills to test the viability of the DM plan etc.

In Gujarat Province, the Gujarat State Petroleum Corporation and the Gujarat State Petronet Limited have well-developed on-site and off-site DM plans. Similarly, the Ankleshwar Industrial Association has been assisting its member industries in development of on-site plans and conducting mock-drills.

In Delhi, Bharat Petroleum Corporation Limited, Indian Oil Limited and Hindustan Petroleum Corporation Limited have well developed on-site and off-site plan and have also conducted mock-drills in tandem with the local administration.

Preparation of on-site and off-site DM plans by the industries helps the industry to establish necessary linkages with the authorities and the community. It is also a mutually beneficial arrangement as it enables the industry to summon immediate help in case of an emergency within its premises. The corporates view it as an logical extension of the principle of Corporate Social Responsibility (CSR) as earning the confidence and trust of the community goes a long way in forging strong ties with the community and enhances the viability of the industry.

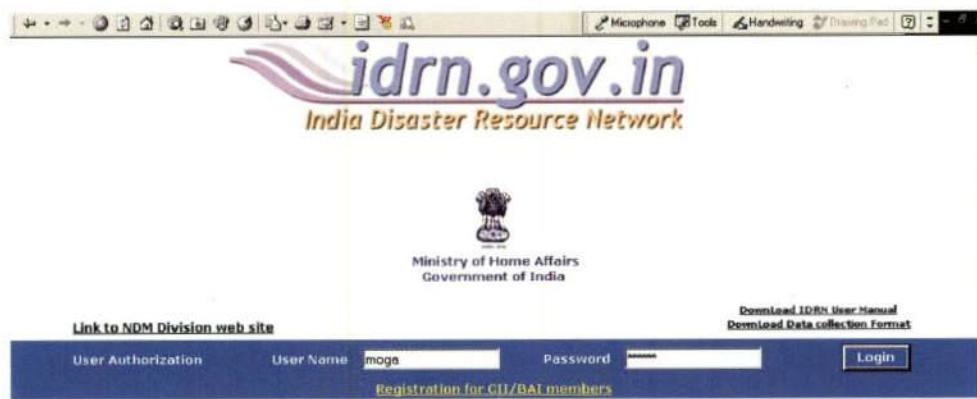
4.5 —

- **Preparation of inventory of resources**, machinery, equipments and man-power available with the private sector for mobilization in the event of an emergency for being uploaded on the India Disaster Resource Network (IDRN).

Inventorization of resources is a pre-requisite for mounting a speedy and effective disaster response. An on-line web-enable resource inventory has been developed and

commissioned to capture the resources in terms of specialized equipments, machinery, manpower etc. in the India Disaster Resource Inventory (IDRN). The web-enabled inventory IDRn already has more than eighty thousand records of resources available with Government machinery at the Central and Provincial (State) levels across 550 districts in the country.

In order to ensure corporate sector contribution to a speedy and effective disaster response, a module has been developed embedded in the IDRn for the contribution of corporate sector towards national endeavors for mounting a timely response. CII would list the manufacturers of specialized equipments. The CII module, embedded in the national portal, would also facilitate networking with and between CII members through independent access to enter resource details directly to the database. The system requires on-line registration of each CII member to be endorsed by CII office on-line before data entry is undertaken. The process of entering the records has already been initiated by the industries. A proto-type of the IDRn 'Home Page' is reproduced below —



This is a secured site for Inventory resources of Government of India. Only users authorized by Government of India should access this site.
If you are not an authorized user please exit from the site.

Resolution 1024 by 768 pixels and Internet Browser Version : 5.0 or more advance version can be best suited for the portal

4.6 —

- **Sensitization programmes** for building a mindset of safety and mitigation among industries and industrial personnel through State Chapters of Confederation of Indian Industry.

As per the work plan, a number of sensitization programmes have already been conducted in different provinces (states) in association with the State Government authorities and the Ministry of Home Affairs and over one thousand five hundred senior functionaries and personnel from industries across the country have been sensitized to induce a mindset of disaster risk reduction and mitigation. These sensitization programs have been conducted in New Delhi, Chennai, Coimbatore, Jamshedpur, Bhubaneswar, Guwahati, Dimapur, Agartala, Jallandhar, Amritsar and a few more are in the offing.



Chief Secretary, Tamil Nadu inaugurating the programme on 17th July, 2004 in Chennai



Industries Minister, Government of Assam inaugurating the programme on 25th May, 2004 in Guwahati (State of Assam)



Industries Minister, Government of Orissa inaugurating the programme on 3rd September, 2004 in Bhubaneswar (Orissa)

The sensitization programmes have primarily concentrated on informing the industries about the hazards and the risks keeping in mind the vulnerability profile of the country; the requisite structural and non-structural mitigation measures necessary to protect industrial assets and infrastructure against earthquakes, cyclones, floods and others; the need to make the manufacturing processes and procedures inherently safe especially against chemical and fire hazards; importance of developing on-site and off-site disaster management plans and establishing linkages with the district administration as also about the role of corporate sector in overall disaster risk reduction and mitigation initiatives.

4.7 —

- **Organization of an annual event** to promote Public-Private-Partnership and to facilitate technology transfer and information exchange in the field of disaster management with other institutions, organizations and corporate sector bodies within and outside the country.

The CII launched the 'India Partnership Forum' in February, 2001 in New Delhi in partnership with the United Nations Development Programme (UNDP) to promote and strengthen multi-stakeholder dialogue on Corporate Social Responsibility (CSR) issues and a common understanding of good corporate citizenship particularly through evolution of a common code. The Forum also seeks to promote and pilot new and innovative initiatives in corporate partnership for development.



Launch of India Partnership Forum in New Delhi in 2001.
[Source: www.indiapartnershipforum.org]

Over hundred companies across various sizes and sectors have confirmed their interest in the adoption and implementation of the IPF Social Code. This initiative towards mainstreaming CSR in the business excellence model has supported future efforts at integrating CSR into corporate functioning. Consultations on disaster

management and preparedness with the private sector to sensitize them have also been held.

[Photo public-private-partnership]

CASE STUDY OF AN OFF-SITE DISASTER MANAGEMENT PLAN AND THE MOCK-DRILL TO TEST ITS EFFICACY IN KOCHI REFINERIES LIMITED

In Kochi (Kerala), a mock-drill was conducted in Kochi Refineries Limited (KRL) in association with District Administration, Ernakulam District Crisis Management Group and the National Safety Council. The drill also involved the Fire Department, Police, Municipal authorities, Hospitals and other departments/agencies mandated to provide emergency support to judge the efficacy of the disaster management plan.

The mock-drill was on a probabilistic scenario of "leakage of LPG from a flange pipe connecting one of the LPG spheres due to an earthquake" with a view to test the District Emergency Plan; to monitor the response of various authorities; the promptness of personnel and to find the lacunae and suitable modifications to the plan.

A pre-mock drill meeting was held the previous day and objectives of the exercise were set. The observers, drawn from different industries, are posted at important points to make a record of messages etc. The enactment of the scenario was started with announcement of an earthquake at 0900 hrs. and detection of leakage in LPG storage sphere. The Fire Station is alerted, fire emergency procedure is activated. At 0930 hrs. the situation worsens and leak spreads and the on-site emergency plan is activated. By 1000 hrs. the leak

spreads outside the premises of KRL and the Police control Room is informed. The veracity of the Report is reconfirmed and the District authorities are informed. The Collector activates the off-site DM plan and assumes charge as District Emergency Coordinator (DEC) and sets up Control Room. The movement of traffic is restricted and concerned departments are informed. Local control room is set at the site and information is passed along with coordination of operations. The Police, District Fire Officer, Industries Department, District Medical Officer and other Government functionaries are also informed.

Around 1130 hrs. the leak is plugged and the emergency is declared over. The important observations arising out of the mock-drill were as follows:-

- Communication failure was noticed with high time lag between passing of messages.
- Plan to be updated regularly with changed telephone numbers.
- Delay in calling Fire Services leading to delay in rescue and lifting of casualties from the site.
- Telecommunication is a major problem during an emergency and alternate communication network needs to be established at the local control room.
- Training of Police and other departments on importance of Disaster Management Plans.
- Delay in response time.

5. 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 underwriters 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.

In the Bhuj earthquake, insurable losses were more than USD 2 million whereas the actual

losses were around USD 16 million.

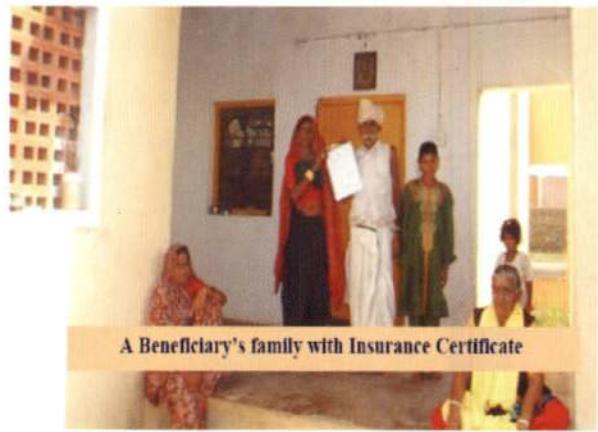
It is well known that natural disasters pose a threat to India's development and a formal risk management strategy incorporating risk transfer mechanisms is required. The States could be advised to prepare such strategies with fiscal incentives and technical support. The government could also make insurance 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.



[Source: GSDMA]

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.

" 7.4 Insurance is a potentially important mitigation measure in disaster-prone areas as it brings quality in the infrastructure & consciousness and a culture of safety by its insistence on following building codes, norms, guidelines, quality materials in construction etc. Disaster insurance mostly works under the premise of 'higher the risk higher the premium, lesser the risk lesser the premium', thus creating awareness towards vulnerable areas and motivating people to settle in relatively safer areas."

— Extract from a Chapter on 'Disaster Management – The Development Perspective' in the Tenth Five Year Plan Document by the Planning Commission of India [2002-2007]

6. 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 upscale 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.

Sustainable Development:

To many business executives, the concept of sustainable development and business remain abstract and quite simply do not go together. But the perception is being rapidly reversed and it is now being widely accepted with the recognition of linkages between protecting a corporates capital base and the natural resources. It is becoming an accepted practice to integrate sustainable development into the planning and measurement systems of business enterprises.

Sustainable development for corporates would entail adopting and implementing business

approaches which meet the needs of the industry and its stakeholders while at the same time protecting, sustaining and enhancing the human and natural resources for the future. It means that economic development must while satisfying the needs of the enterprise protect the community by ensuring that the natural and human resources are not exploited to their detriment.

There is an umbilical bond between sustainable development and disaster risk management and the business organizations are recognizing it so. Integration of risk management measures has to be an all-pervasive activity by the corporates across the industrial spectrum and must not remain a one-off activity. It would seek minimization of expenditure on rehabilitation and reconstruction to obviate dissipation of precious developmental resources and help interweave a culture of safety and preparedness in every walk of national life and more so in the corporate sector so that the development efforts are both socially safe and commercially viable and sustainable. The need is to bring about a change in perceptions, attitudes, pre-conceived notions and mindsets among the corporate sector about the way the things are approached now.

The challenge posed by the issue of sustainable development has been engaging the mind and thought of the international community and the need to achieve equitable and balanced socio-economic development has been acutely felt. Sustainable development envisions integration of economic and social development with environment protection as interdependent and mutually reinforcing pillars. The overarching

objective being to change the existing unsustainable patterns of production and consumption.

The World Summit on Sustainable Development (WSSD) defines sustainable development as "*development that meets the needs of the present without compromising the ability of future generations to meet their own needs.*"

The Johannesburg Plan of Implementation has made a fervent plea to the private sector to improve efficiency, alter existing production patterns and consciously move towards sustainable use of natural resources for all-round development. It also calls for sound management of chemicals throughout their life cycle and of hazardous wastes for sustainable development so as to ensure that use and production of chemicals causes minimum adverse effects on human health and environment through scientific risk management measures.

The sine qua non for safe and sustainable development is promotion of corporate social responsibility and accountability, strengthening of public-private-partnerships and continuous attention to improvements in corporate sector practices and processes. For the corporate sector, it is imperative to usher into not only sustainable but also safer development for which harmonization of socio-economic and environment concerns is a must. A multi-hazard approach addressing the disaster management concerns in the corporate sector and the corporates in turn complementing the disaster management endeavors at all levels will ensure a strong and concerted attack on our vulnerabilities.

Green Business Centre –

CII has launched a CII-Sohrabji Godrej Green Business Centre in association with the Government of Andhra Pradesh and the Godrej corporate house in March 2000 as a Centre of Excellence for energy efficiency, environment, water conservation and use of recycled products and renewable energy. In addition to making the business profitable, the activities **seek to contribute towards sustainable development and a healthy economy.** The objective being to make the world a better place to live in by providing world-class 'green' services. The Center is involved in promoting 'green' concepts leading to higher efficiency, equitable growth and sustainable development.

In order to achieve the lowest specific energy consumption levels in the world, tools like benchmarking with international norms and identification of ways and means to achieve the same are promoted. It facilitates construction of 'green buildings' viz. a place which is environmentally responsible, profitable and a healthy place to live and work in. The 'Green Audit' presents an opportunity for better utilization of raw materials, consumables, water, energy at every stage of the manufacturing process. A Technology Centre provides a platform to showcase and demonstrate innovative 'green' products and technologies. The Green Business Incubation entails handholding of entrepreneurs to develop green products/technologies till they reach the stage of commercialization.

It envisions futuristic business opportunities depending on how 'green' the business is since it can leverage access to local and international markets, reduction of manufacturing costs and improving profitability and attract environmentally conscious customers.



7. 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.

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