World Congress on
NATURAL DISASTER MITIGATION

The World Congress on Natural Disaster Mitigation was organised by The Institution of Engineers (India) under the aegis of the World Federation of Engineering Organisations during February 19-22, 2004 at New Delhi. The Congress was attended by nearly 700 Delegates from Asia, Europe, America, Africa and the Pacific. Besides delegates drawn from a spectrum of organisations in India and abroad, several international agencies also participated including WMO, UNDP, EC, ADRC and USAID.

The three-day Congress was structured in four sessions with a plenary session and three parallel sessions each. The four sessions were :

A. Natural Disaster - Global Dimensions and Impact on Development;
B. Capacity Building and Financing for Disaster Mitigation;
C. Engineering for Natural Disaster Mitigation, and
D. Lessons from major Disasters.

The technical sessions were followed by a panel discussion. In all, 104 papers were presented in the Congress, including 24 papers received from abroad. The poster presentation included papers that required intensive, one-to-one interaction between authors and participants.

As an outcome of the deliberations of the Congress, detailed recommendations were evolved and were presented as the "New Delhi Declaration" on the Congress. Further, a Task Force for taking follow-up actions has been created.

NEW DELHI DECLARATION

Preamble

The World Congress on Natural Disaster Mitigation, organized during February 19-22, 2004 in New Delhi, recognized the adverse impact on development caused by all natural disasters. During the decade 1993-2002, natural disasters resulted in 531,000 human deaths, 2.5 billion affected people, and US$ 654 billion property damage. Majority of the material losses in monetary terms appears to be concentrated in the developed world, and therefore, the world community fails to adequately recognize the true impact of disasters on the poor and less developed countries (LDC) who often bear the greatest cost in terms of lives property and livelihoods. While only 11 percent of people exposed to earthquake, tropical cyclone, flood or drought live in countries with low human development, they account for 53 percent of total recorded deaths due to such disasters. Without appropriate action, in the future we may expect an even heavier toll as the risk and vulnerability continues to grow in LDCs. And these losses will destroy years of achievements and material resources invested in development activities. The Congress noted that although societies have always lived with the risk from natural hazards, their occurrence and impact seem to be increasing in recent years. New scientific and techno-economic

regime has created a space for solutions that can be implemented in a dynamic framework to find new solutions and mitigate the impact of disasters.

The Congress appreciated efforts of international agencies like the WMO, UNDP, EU, UNISDR for the initiatives undertaken by them in supporting global, regional and national capacity building for promoting natural disaster mitigation efforts. Also the deliberations reconfirmed that work has already been initiated for policy framework, planning and capacity building in countries like India, Sri Lanka, Nepal, Ghana, Nigeria and others. The Congress took note of the Government of India - UNDP joint initiative on Community Based Disaster Reduction and Recovery through Participation of Communities and Local Self Government Programme; Urban Earthquake Vulnerability Reduction Programme and India Disaster Resource Network. The participants also reaffirmed their support to the commitment to disaster reduction, accepted under the Political Declaration of the World Summit on Sustainable Development, at Johannesburg in 2002.

Conclusions

Causes of Increasing Vulnerability

Major causes and influencing factors for increased vulnerability are identified as follows :

i) Inadequate physical infrastructure, environmental degradation and poor management, inappropriate territorial occupation and land use, and concentration of population in hazard prone areas leading to social and economic vulnerability.

ii) The above causes are directly influenced by pressures of chronic poverty, social and economic exclusion, rapid urbanization, inadequate planning, weak administrative control systems and economic transition on one hand and climate change and climate variability on the other.

iii) Lack of adoption of scientific and engineering advancements that provide the knowledge tools to fight the challenges of the natural hazards due to inadequate support and focus by appropriate government policies and administrative procedures.

Challenges of Natural Disasters

The challenges before the global community were identified as follows:

i) ***Geographic location of countries and repeated occurrence of natural disasters*** - Lack of preparedness and infrastructure to mitigate disaster impact, mainly in the developing and small island countries.

ii) ***Present development model*** -The process of globalization is encouraging developing countries to a life style of higher degree of urbanization, and consequent higher risks and vulnerability to natural hazards.

iii) ***Climate variability and climate change*** - Temperature fluctuations, melting of ice belts and their erratic patterns leading to much higher occurrences of cyclones, floods and droughts affecting mainly the rural and coastal poor populations.

iv) ***Unsafe built environment*** - The building and infrastructure stock not being designed to withstand impact of earthquakes and other hazards mainly due to lack of proper enforcing mechanism to implement scientific provisions of national/local standards and codes.

Disaster Risk Assessment and Management

Disaster Risk Management needs to be considered under two categories :

a) ***Prospective Disaster Risk Management*** should be integrated into sustainable development planning. Development programmes and projects need to be reviewed/audited for their potential to reduce vulnerability to natural hazards.

b) ***Compensatory Disaster Risk Management*** should stand alongside development planning and focus on the amelioration of existing vulnerability that has accumulated through past development practices.

Following issues can impact disaster mitigation measures :

i) Appropriate governance is fundamental if risk considerations are to be factored into development policy and planning strategies for mitigating existing risks of natural hazards.

ii) Developing innovative approaches to accelerate sustainable post-disaster recovery, promoting the inclusion of disaster reduction measures into rehabilitation and re-construction.

iii) Building public-private partnerships and promoting networks to facilitate cooperation at international, regional and national levels.

iv) Facilitating the development and delivery of high quality training and human resource development activities as well as capacity building in institutions for disaster management.

v) Focusing on the following in preparedness and relief, recovery and rehabilitation :

   (a) early warning systems for weather climate change based on vulnerability assessment and hazard analysis

   (b) preparedness and emergency management

   (c) knowledge network

---------- RECOMMENDATIONS ----------

Policy and Planning

i) Government should lay down policies for integrated approach at all levels to ensure prospective as well as compensatory disaster risk management.

ii) Government policies should focus on appropriate governance to factor hazard risk considerations into development planning and mainstreaming disaster reduction into development policies, strategies, plans and programmes.

iii) Government policy should promote 'public-private' partnerships, and support creation of networks and facilitation of cooperation at international, regional and national levels.

iv) Disaster Management Plan should focus on disaster mitigation efforts to reduce the incidence and impact of complex environmental and technological emergencies in disasters and to accelerate the recovery process.

v) National and local level planning should focus on disaster risk assessment, mainly, the context driven risk assessment, rehabilitation and reconstruction programme, and disaster preparedness plans.

vi) National plan must incorporate guidelines for promoting techno-legal, techno-financial and techno-managerial regimes to mitigate impact of natural disasters.

vii) Suitable legislation should be enacted to regulate engineering profession, which would in turn ensure safety in design and construction of disaster resistant structures.

Capacity Building

i) There is an urgent need for capacity building of engineers and architects in safe design and construction of new buildings and life-line structures and for strengthening of existing unsafe buildings and structures through retrofitting. A time-bound training programme should be prepared and executed so as to ensure immediate action towards safer stock of buildings and structures.

ii) For a sustained supply of trained Engineers and Architects in Disaster Resistant Construction, suitable course modules on this subject need to be included in the B. Engineering and B. Arch course curricula. To achieve the goal, enough teachers from the professional colleges will need to be trained for carrying out the teaching work.

iii) In view of large-scale informal construction in the country, training of workmen-particularly of masons and bar benders in Disaster Resistant Construction will also be necessary on large scale.

Financing and Insurance Issues

i) National financial regime should regulate aid finance and commercial finance to support disaster mitigation impacting technologies and approaches; and develop manpower for certification for insurance/financial sector.

ii) Insurance and re-insurance of built environment should be promoted to transfer risk from local to global level.

iii) A capital pool may be created for financing research and development, training and capacity building in natural hazard prediction and developing disaster resistant technology with the aim to reduce impact of natural hazards on the developmental activities.

Risk and Damage Assessment

i) Standardization of risk, damage and vulnerability assessment should be promoted to facilitate global, inter-country and inter-regional comparisons.

ii) Codes and methods of analysis for seismic performance of different types of buildings and structures should be developed and made available to professionals.

iii) Damage probability matrix for buildings for different hazards should be developed for damage assessment, which should be used for establishing benchmark for retrofitting.

Technology Intervention

i) GIS and remote sensing based microzonation and hazard maps be developed for disaster prevention, preparedness, mitigation and overall disaster management; and information utilized for revising and updating the Vulnerability Atlas.

ii) Disaster resistant technology in construction should be promoted and its cost advantage projected to ensure its acceptability.

Knowledge Network

i) Global Disaster Knowledge Networks and partnerships should be promoted at regional and national levels, and should have information on R&D institutions, experts, technologies, best practices, equipment availability and their appropriateness to different types of hazards; and should have connectivity to district headquarters.

ii) International joint observation mechanism should be developed to ensure dissemination of technical and scientific knowledge to all countries especially the developing countries.

Codes Bye-laws and their Enforcement

i) Disaster-resistant features should be specified in national building codes and made mandatory through local bye-laws for different stages of building plans, approval, construction and completion.

ii) Appropriate mechanism should be put in place so as to ensure enforcement of the bye-laws.

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