

**EARTHQUAKE RISK  
REDUCTION**  
*in  
Developing Countries*



*An Open Alliance of*

*The United Nations  
Educational, Scientific and  
Cultural Organization  
(UNESCO)*

*The United Nations  
Development Programme  
(UNDP)*

*The United Nations  
International Strategy for  
Disaster Reduction  
(UN/ISDR)*

*and*

*The International Institute  
of Earthquake Engineering  
and Seismology  
(IIEES)*

# An Open Alliance of *UNESCO-UNDP-UN/ISDR-IIEES* For Cooperation on Earthquake Risk Reduction in Developing Countries

## Overriding Considerations

The Bam earthquake disaster provided a unique window of opportunity to raise international awareness of the importance of the effective implementation of a comprehensive earthquake risk reduction program in Iran as well as in hazard-prone developing countries. It gives a challenge to the governments to make the highest use of the existing know-how on earthquakes and its integration into development programs. It also compels the scientific and engineering community to provide more socio-economic-cultural compatible solutions to national needs. Moreover, the public at large should become more concerned about the hazard and increase its own preparedness level.

To initiate such an approach the United Nations Educational, Scientific and Cultural Organization (UNESCO), the United Nations Development Programme (UNDP) and the Secretariat of the International Strategy for Disaster Reduction (UN/ISDR) and the International Institute of Earthquake Engineering and Seismology (IIEES) as the host institute in Iran, decided to work in partnership with other organization and professionals throughout the world to provide leadership for a series of activities that will protect people, building stock, lifelines and critical infrastructure from the impacts of the inevitable future earthquakes in Iran and developing countries.

In the wake of the Bam earthquake, and based on the document "UN Strategy for Support to the Government of Islamic Republic of Iran following the Bam Earthquake of 26 December 2003". UNESCO, UNDP, UN/ISDR Secretariat and the IIEES, agreed to form an Alliance which will be open to a wider partnership among both Iranian and international institutions and organizations. They recognize that to improve human security and life safety in hazard-prone developing countries by reducing the vulnerability to hazards and risks, including earthquake risk, is the overarching primary objective of the Alliance. This Alliance is expected to provide advise in the reconstruction process of Bam and in the prevention of future risks in similar cases.

Iran is recognized among the highly exposed countries to natural hazards, namely earthquakes. The risk of earthquake and other natural disasters is increasing in Iran as a result of population growth, urbanisation, alteration of the natural environment, climate change, vulnerable dwellings, public buildings and lifeline infrastructure. With further population growth, expanding public and private infrastructures, environmental changes and continuing trends towards urbanisation and industrialisation, the risks of greater tragedies stemming from natural hazards are expected to increase in the next years and over the current new century. IIEES, UNESCO, UNDP and the UN/ISDR Secretariat underline that making disaster prevention and mitigation integral parts of development in Iran as well as in other hazard-prone countries requires a genuine **shift in emphasis from post-disaster reaction to pre-disaster prevention and risk reduction actions**. Hence, the new emerging approach, to be spearheaded by the Alliance will stress the merit of preventive approaches through enhancement of research and knowledge capacities, the design and dissemination of risk mitigation measures as well as increased information, education and public awareness.

The Alliance affirms the importance of science and technology in laying the foundations for disaster risk management. As regards Iran, it notes that steady development in earthquake-related knowledge, research and technical applications has occurred since the 1990 Manjil earthquake. This trend ought to be further fostered. Above all the implications of this trend across the whole elements of the disaster reduction sectors and stakeholders should be ensured if significant risk mitigation is to be achieved in the final analysis. Based on the above-mentioned considerations, the Alliance recalls that the establishment of the IIEES based decision taken by the 24th UNESCO General Conference, represents the will of the international community to build capacities in Iran and in the seismically active regions to excel in earthquake risk mitigation. It recognizes that, since its establishment in 1989, the IIEES has gradually succeeded in meeting the challenge of developing in to a Centre of Excellence in earthquake-related studies and the production of knowledge and know-how. Other Iranian competent



institutes, have a recognized role in furthering earthquake fundamental and applied research. Through IIEES and other competent institutions, there is more scientific knowledge and technological know-how than ever before to promote science-based disaster preparedness and prevention and to assist in designing and implementing risk mitigation strategies.

The Alliance emphasizes the importance of international cooperation in support of disaster reduction and in sharing knowledge and experience in disaster reduction practices. It is committed to facilitate the further expansion of the regional and international vocation of IIEES and other specialized institutions toward risk reduction activities in region.

The Alliance notes with much regret the inertia and lack of effective action in enforcing building codes in developing countries. Furthermore, it considers the violation of earthquake-resistant construction norms in cities and rural areas which are at risk, as a major source of concern and risk and therefore **calls for a zero tolerance of code violation.**

The Alliance is committed to encourage that part of post-Bam national and international aid for the reconstruction be used for long-term risk mitigation projects and activities. The Alliance stands prepared to provide technical advise to the Governments for the reconstruction of Bam and other earthquake damaged area .

The Alliance affirms the need for incorporation of components from ethic, science and education to culminate in a preventive culture as an integral part of disaster risk reduction strategy. This techno-ethic in its turn relies on techno-legal concepts.

The Alliance emphasizes that a coordinated approach should be systematically pursued in the design and implementation of the UN initiatives related to risk reduction, as well as those involving specialized non-governmental entities, capitalizing and building on national capacities. The Alliance believes that a partnership of this kind could provide opportunities to UN agencies and bilaterals to make use of state-of-the-art knowledge and experience gained from the post-Bam earthquake recovery and reconstruction into the developing country programme facing similar situations.

## **Vision**

The Alliance affirms the following principles for action:

- Expanding scientific and applied research, technical infrastructures and capacities for implementation of an effective risk mitigation action.
- Reducing of risk of all types of structures, lifeline and infrastructure; especially low-cost traditional buildings, and ensuring that the future constructions are seismically safe.
- Enhancing the level of disaster preparedness by increasing public awareness and promoting collective prevention culture.
- Developing initiatives for the mitigation of earthquake risk in the rural areas with emphasis on the provision of Realistic, Doable, Affordable, Simple methods and methodologies.

## **Goals**

The short-term goal is to provide useful contribution to: (i) a successful, rapid, and cost-effective recovery in Bam; (ii) the process for achieving an earthquake-resilient Bam with due consideration given to the social, cultural and economic aspects of the region; and (iii) the facilitation of laboratories and other technical facilities to enable the researchers to meet growing challenges inherent to the process.

The long-term goal is to enhance disaster prevention and mitigation in towns and cities at risk as a national agenda to be adopted and pursued, making all new construction earthquake-resistant and implementing measures to reduce the vulnerability of the existing human and physical environment.

## **Partnership Activities and Initiatives**

### ***Post-Bam Earthquake Actions:***

- Post-earthquake scientific and technical studies and investigations (earth sciences, water, environment, engineering) with a view to produce a comprehensive and authoritative publication on lessons learnt from the earthquake and guidelines for reducing future losses in similar cases. This publication will capitalize on the different findings from various post earthquake reconnaissance and investigation missions that have been done on Bam.
- Promote the development and establishment of a "prototype facility" including a "prototype" school and a hospital using advanced technology such as base isolation, adapted to the culture, traditional architectural fabric and urban morphology of Bam.
- Contribution to the restoration of the "Arg-e-Bam citadel" and other cultural heritage properties in the Historic city of Bam to protect the cultural identity and authentic characteristics of Bam.

### ***Long-term Earthquake Risk Mitigation***

The Alliance should support and ensure that the following actions for earthquake risk mitigation would be implemented:

- Detailed investigations of active faults in the high hazard zones;
- Comprehensive seismicity studies and enhancing the capability of the seismic monitoring and early warning system.
- Seismic hazard zonation and microzonation studies for the most vulnerable inhabited areas.
- Geotechnical microzonation project devoted to important cities for appropriate city planning
- Activities on enhanced application of the integration of both traditional and new building technologies to be promoted in cities and rural areas at risk.
- Promoting activities related to the seismic safety of schools and educational institutions.
- Enhancing seismic safety of lifelines and special structures, in order to prevent technological related disasters.
- Integration of seismic safety considerations in to the restoration and strengthening of cultural heritage.
- Integration of earthquake risk prevention in educational programmes at all levels.
- Socio-cultural and economic considerations of earthquake risk mitigation in areas at risk and on aspects related to social behaviour and public policy.
- Integration of an appropriate techno-ethical and techno-legal regime for the enforcement of building codes and standards toward the effective implementation of risk reduction.
- Establishment in IIEES of a UNESCO Chair UNITWIN Programme on research and applications related to the assessment and mitigation of earthquake risk.
- Expansion of regular training program such as "Aseismic Design and Construction of Structures" for the benefit of the countries in the region.

*The Alliance objectives has been endorsed by*

*UNESCO General-Director (Mr. Koichiro Matura), Administrator of UNDP (Mr. Mollach Brown), Under-Secretary-General for Humanitarian Affairs and Emergency Coordinators (Mr. Jan Egeland), and Iran's Minister of Science, Research and Technology (Prof. Jafar Tofighi)*



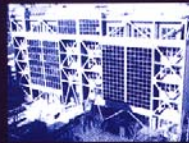
*The Bam earthquake provided a unique window of opportunity to raise international awareness of the importance of the effective implementation of a Comprehensive, Realistic, Usable, Doable, and Affordable Earthquake Risk Reduction program in hazard-prone developing countries.*

*The Alliance believes that making disaster prevention and mitigation as integral parts of development process in hazard-prone countries, requires a genuine shift in emphasis from post-disaster reaction to pre-disaster prevention and risk reduction actions.*

*The Alliance regret the inertia and lack of effective action in enforcing building codes and violation of earthquake resistant construction norms in cities of developing countries and calls for zero tolerance of code violation.*

*The Alliance affirms the need for incorporation of components from ethic, science and education to culminate in a preventive culture as an integral part of disaster risk reduction strategy.*

*The Alliance emphasizes that a coordinated approach should be systematically pursued in the design and implementation of the UN international initiatives related to risk reduction.*



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