

MICRODIS - Integrated Approach to Disasters Impacts Assessment

Natural disasters can have a life-altering impact on the individuals and families. The impact of natural disasters occurs at the community, city and state level, and many times even affects an entire country. How well the impact of a disaster event is absorbed has much to do with the intensity of the impact and the level of preparedness and resilience of the people affected (Sharrieff, M., 2009). Natural disasters exert an enormous toll on development. Annual economic losses associated with such disasters averaged US\$ 75.5 billion in the 1960s, US\$ 138.4 billion in the 1970s, US\$ 213.9 billion in the 1980s and US\$ 659.9 billion in the 1990s (UNDP, 2004). The majority of these losses are concentrated in the developed world and fail to adequately capture the impact of the disaster on the poor who often bear the greatest cost in terms of lives and livelihoods, and rebuilding their shattered communities and infrastructure (UNDP, 2004).

Major emergencies and disasters have occurred through out history, and, as, the world's population grows and resources become more limited, communities are increasingly vulnerable to the hazards that cause disasters. With the modernization of many societies worldwide and the changes our industrial activities have brought to the environment, many weather related natural disasters have gained in both frequency and intensity. This translates to an increased global impact of natural disasters at all levels (Sharrieff, M., 2009). The International Decade for Natural Disaster Reduction (IDNDR, 1990-1999), the creation of the International Strategy for Disaster Reduction (ISDR), the World Conference on Disaster Reduction and the resulting Hyogo Framework for Action (HFA) emphasise a shift from disaster relief

and short-term emergency contingencies to disaster risk reduction (DRR) and long-term societal resilience (UN/ISDR, 2004). DRR and developing resilient communities are now generally recognised as priorities in disaster mitigation and management. At the same time, community involvement and participation are highlighted as important elements of policy decision making as well as of disaster mitigation and management.

In this scenario, the goal of the MICRODIS, an integrated project under the EU Sixth Framework Programme Thematic Priority 6.3 Global Change and Ecosystems to strengthen prevention, mitigation and preparedness strategies in order to reduce the health, social and economic impacts of extreme events on communities is of significant relevance. The MICRODIS consortium consists of 19 partners from 13 countries who are specialized in key areas of disaster related health and social science disciplines. The project is coordinated by the Centre for Research on the Epidemiology of Disaster (CRED)-Université catholique de Louvain, Belgium. The MICRODIS project acknowledges, 'efforts to reduce disaster risks must be systematically integrated into policies, plans and programmes for sustainable development and poverty reduction.'

To achieve its goal the following broad objectives are pursued: To strengthen the scientific and empirical foundation on the relationship between extreme events and their health, social and economic impacts; To develop and integrate knowledge, concepts, methods, tools and databases towards a common global approach; To improve human resources and coping capacity in Asia and Europe through training and knowledge sharing; To specifically aim at developing an

integrated impact methodology; Establishing an evidence-base of primary field research through surveys and; Increasing the coverage accuracy and resolution of global disaster data.

The regions in which MICRODIS project operates have been selected for their high frequency of extreme events and the impact on affected communities. The two regions of focus for the extensive survey implementation of the MICRODIS project have been:

1. The European Union, associated countries and accession states: Belgium, France, Finland, Germany, Italy, the Netherlands, Norway, and the United Kingdom;
2. South and Southeast Asia regions: China, India, Indonesia, the Philippines and Vietnam.

The extreme events of focus have been floods, earthquakes and windstorms because they account for almost 75% of all extreme events (EM-DAT).

Innovative Dimension

The MICRODIS project intends to lead to various new scientific and policy advances related to the prevention and mitigation of extreme events with the following approach:

- A new level of European-Asian cooperation;
- Multidisciplinary yet uniquely integrated research;
- Incorporating previously neglected social sectors;
- A robust evidence base and methodology;
- A harmonised model and tool for measuring extreme event impact;
- A unique dissemination strategy to facilitate policy take-up and;
- Development of a MICRODIS Central Data Hub for field survey data

Project Scope

The MICRODIS project supports the European Union's strategy for sustainable

development by addressing a global issue that has a detrimental impact on long-term sustainable development, particularly in developing countries.

Thematic areas identified are health, social and economic impacts as key to the understanding of extreme events and their relation to human populations with a view of developing an integrated impact assessment methodology. This integrated methodology has been field-tested in disaster-affected communities to ensure its ease of use, applicability and the quality of its outputs. Based on these field tests, the methodology has been re-calibrated and made adaptable to different settings, including different regions, disaster-types and social structures. Performing the integrated assessment methodology in a community will bring to light those factors that make certain individuals or social groups more vulnerable to natural disasters – the first step in understanding risks and developing strategies to address them.

MICRODIS thematic literature reviews for health, social and economic impacts of natural disasters have been prepared by the project partners. As per the mandate due to extensive work by each group, complete Generic Models for Extended Health, Social and Economic Impact Assessment have been developed along with the conceptualization of the final generic model for the *integrated field protocol* (MICRODIS Core and Thematic Cores).

Site-specific survey designs and sampling frames were developed and MICRODIS main studies with the broad project objectives and each site having its own research questions have been completed with a diligent and efficient use of the MICRODIS tools in seven Asian survey sites and two European sites.

MICRODIS Survey Progression - Asia & Europe

The second year of the project was governed by the core responsibility of *Empirical Studies* in Asian and European locations. Field surveys in seven Asian survey sites and two European sites using the common protocol adapted to each site have been conducted. Standard procedures for surveys were applied with an inter-site survey coordination training to ensure common rules and principles as much as possible. To facilitate the development and revision of tools, a Training Workshop for the Principal Investigators (PIs) was held at Hanoi, Vietnam during May, 2008 facilitated by Hanoi School of Public Health (HSPH), University of Delhi and Université catholique de Louvain– Centre for Research on the Epidemiology of Disasters (UCL-CRED).

Recruitment of interviewers and data entry staff took place in all settings. Recruitment and the training of interviewers also followed a common approach and pedagogic policy. Training workshops were facilitated for the survey coordinators by the coordinating agency. These coordinators were responsible for transferring and adapting the knowledge gained from these workshops to their local survey teams, in order to create standard methodology and consistent data collection techniques. However, certain adaptations were made depending on the local context.

The questionnaires were then translated into local languages and back translated. Interviewers were trained with these questionnaires. Questions were pre-tested in all settings. The questions were practiced among the interviewers to raise any issues of understanding and clarity and facilitate practice for the field. A common understanding of how to interpret the questions was given, while keeping in mind how to deliver questions to the respondents with the least amount of

bias possible. Samples, focus groups and key informants were identified by the survey teams using appropriate methodologies. This was done in logistic meetings amongst country team members and sometimes with technical assistance from the coordination team. Data entry staff was trained to minimize human error in entry, using the basic quantitative procedures and qualitative data processing techniques given in the survey coordinator workshop.

Through out this process IT specialists of UCL were available to answer questions about data entry and advise partners when appropriate. These and other methods were outlined in the survey coordinator training workshop, thus were passed along to the survey team during their training. Community awareness activities were also planned, thus interviewers and other staff became aware as how the activities will be carried out. Building trust within the community has been an essential element of these surveys, because without the support of the community there could have been little success. A standardized database of country data sets was compiled for both Asia and Europe, along with a standardized codebook that was applicable across all sites.

Exchange of Scientific Expertise

MICRODIS project provided enriching opportunities for an exchange of scientific expertise and experience. In order for this exchange to be as beneficial as possible, each country team as expected was forthcoming in the identification of needs for collaboration in specific areas with the coordination team, which has been through out proactive in identifying an appropriate partner to provide support/cooperation. The coordination team facilitated the sharing of knowledge, expertise and experience amongst project partners.

Preliminary Survey Reports

After the completion of field work, country teams analyzed the data and prepared a preliminary data analysis summary report, shared with all partners for a better idea of the findings in each site. This survey report outlines the general survey experience, sample calculations, the process of carrying out the fieldwork, challenges and achievements, general conclusions about the fieldwork and preliminary observations from the field. The project partners are further into the process of an extended analysis of the data of their survey sites, and cross-site analysis together with different partners.

Summation

Voluntary Health Association of India, one of the member organizations of MICRODIS Consortium having more than 20 years of work experience in the relief-rehabilitation field in the aftermath of natural disasters recognizes the importance of understanding disasters in a wider scope. VHAI's response to major calamities in India, whether natural or man made, has been immediate and far reaching. The approach has been holistic, focusing on livelihood restoration, health care and capacity building of the community, self-help, coordination and networking. It was considered important to ensure that the combined findings of the MICRODIS project reach a wider audience as a learning through the journal *Health for the Millions*. This issue of the journal presents an overview of the MICRODIS project's key accomplishments in conducting thematic literature reviews and field surveys in seven Asian survey sites and two European sites.

The *first section* presents *summarized version of the literature reviews* by the respective authors. The articles intend to engage with the current international literature, including theoretical aspects, to ensure that

the issue becomes part of the international/global dialogue on impact of disaster.

The *second section* presents a summarized version of each of the nine *MICRODIS main studies* completed thus far in both Asia and Europe. The results presented here are preliminary findings identified on the base of the data analysis reports submitted as deliverables by partners from each Asian and European survey site. This part does not cover the annex studies done in different countries, following up on research ideas on data collected in the main MICRODIS studies.

We hope the readers find it useful as an introductory document to the multidimensional issues involved in the post-disaster realities.

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Compiled by Anjali Gupta

Anjali Gupta is the Associate Editor of Health For the Millions journal and Sr. Programme Officer in Voluntary Health Association of India

MICRODIS Consortium Partners...

The MICRODIS Project has 19 partners from 13 countries and is coordinated by the Centre for Research on the Epidemiology of Disaster (CRED)-Université catholique de Louvain, Brussels, Belgium.

Partner Organisation	Team Members
Citizens' Disaster Response Center (CDRC) – The CDRC is a non-governmental organisation based in the Philippines that has pioneered and continues to promote community-based disaster management since 1984. (www.cdrc-phil.org/cdrc.HTM)	<i>Team Leader:</i> Mrs. Lourdes Louella Escandor <i>Members:</i> Suyin Jamoralin
Hanoi School of Public Health (HSPH) - A group of interdisciplinary researchers from departments of Epidemiology, Environmental Health and Disaster Management of the school works closely with the Vietnamese Ministry of Health in the development of training and research related to health management in disasters. (www.hsph.edu.vn/english/)	<i>Team Leader:</i> Dr La Ngoc Quang <i>Co-leader:</i> Dr Le Thanh Ha <i>Members:</i> Ha Van Nhu, Hanh Tran Thi Tuyet
HealthnetTPO (HNI) – Transcultural Psychosocial Organization – HNI-TPO is a Dutch-based knowledge-driven non-profit organisation. HealthNet TPO implements projects in war and disaster torn countries in Africa and Asia with 4 major spear points: disease control, mental and psychosocial health, health system development, and health finance (www.healthnetinternational.org/HealthnetTPO(EN)/)	<i>Team Leader:</i> Dr Ivan Komproe <i>Member:</i> Tim Wind
Health Research Center for Crisis and Disaster (HRCCD), Faculty of Public Health, University of Indonesia (UoI) - HRCCD is a new research center founded in August 2006. This center focuses its activities on conducting research, training & community services closely related to the management of health problems due to crisis and disaster in Indonesia. (www.fkm.ui.ac.id/)	<i>Team Leader:</i> Dr Mondastri “Maqo” Korib Sudaryo <i>Members:</i> Besral, Meidy Prameswari
Hue College of Economics (HCE) - is a college member of Hue University (http://www.hueuni.edu.vn/hueuni/en/index.php), a state university in Central Vietnam. (hce.edu.vn/english/index.htm)	<i>Team Leader:</i> Dr Tuan Huu Tran <i>Members:</i> Tinh Bui Duc, Xuan Mai Van, The Bui Dung
International Strategy for Disaster Reduction (ISDR) - The ISDR of the United Nations Office for the Coordination of Humanitarian Affairs strives to improve societies' resilience to natural hazards and related technological and environmental disasters. (www.unisdr.org/)	<i>Team Leader:</i> Dr Helen Molin-Valdez <i>Members:</i> Dr Reid Basher
Jadavpur University (JU) - The Department of Economics of Jadavpur University carries out research in assessing economic impacts of natural disasters and identifying integrated approaches for the development of coping strategies. (www.jadavpur.edu/)	<i>Team Leader:</i> Dr Tuhin Das <i>Members:</i> Dr Debesh Chakraborty, Dr Ivy Das Gupta

<p>Northumbria University (UoN) - The Disaster and Development Centre focuses on the link between disaster management and sustainable development through research, teaching and learning, internationally, regionally and locally. (www.northumbria.ac.uk/sd/academic/sas/rande/research/ddc/sid/)</p>	<p><i>Team Leader:</i> Dr Maureen Fordham <i>Members:</i> Supriya Akerkar, Manuela Scharf</p>
<p>Sweco Grøner - Sweco is a private Norwegian multidisciplinary consulting company with special expertise in environmental and health economics (www.sweco.no/no/Norway/)</p>	<p><i>Team Leader:</i> Dr Kristin Magnussen <i>Member:</i> Dr Stale Navrud</p>
<p>Tyoeterveyslaitos Finnish Institute of Occupational Health (FIOH) - The Finnish Institute of Occupational Health is a multidisciplinary research and specialist institute on occupational health and safety. (www.ttl.fi/internet/english)</p>	<p><i>Team Leader:</i> Dr Kai Salvolainen <i>Member:</i> Dr Virpi Väänänen</p>
<p>Université catholique de Louvain– Centre for Research on the Epidemiology of Disaster (UCL-CRED) - Université catholique de Louvain was founded in 1425, and is one of the oldest universities in the world. CRED promotes research, training, and information dissemination on disasters, with a special focus on public health, epidemiology, structural and socio-economic aspects. (www.uclouvain.be, www.cred.be)</p>	<p><i>Team Leader:</i> Prof. Debarati Guha-Sapir <i>Members:</i> Barbara van den Oever, Bernadette Dubus, Laura Irvine</p>
<p>University of Delhi (UoD) - The Department of Anthropology at the University of Delhi was founded in 1947 and has evolved into one of the foremost centres of anthropological teaching and research in the world. (www.du.ac.in/)</p>	<p><i>Team Leader:</i> Prof. P.C. Joshi <i>Members:</i> Dr Soniya Kaushal, Prashant Khattri</p>
<p>University of Greenwich (UoG), School of Humanities - The Natural Resources Institute is based at the Medway Campus of the UoG, in Chatham (about 50 km east of London). There is a knowledge base related to hazards especially related to drought, environmental management, and the analysis of social vulnerability. UoG is not a part of the consortium past month 20.</p>	<p><i>Team Leader:</i> Dr Terry Cannon</p>
<p>EVAPLAN (EVAP) – Department of Tropical and Public Health - With its continuing close ties with the prestigious University of Heidelberg, EVAPLAN represents a broad source of knowledge and expertise within such fields as training and operational research, health politics and health in disaster and post-conflict situations. EVAPLAN is not a part of Consortium past month 12 and was replaced by The UniversitätsKlinikum Heidelberg (UKL-HD). (www.evaplan.org/home.html)</p>	<p><i>Team Leader:</i> Dr Michael Marx</p>
<p>UniversitätsKlinikum Heidelberg (UKL-HD) attached to the prestigious University of Heidelberg was founded in 1962. The Institute of Public Health operates in six thematic units. The mission of the Institute is to contribute to the improvement of health through research, teaching and direct services (patient care, consulting) in developing countries and at home. (www.heidelberg-university-hospital.com/)</p>	<p><i>Team Leader:</i> Dr Michael Marx <i>Member:</i> Revati Phalkey</p>
<p>FERURBAT SARL - FERURBAT is an organisation specialising in geographical and spatial analyses, management of mountainous regions and flood plains in France, Europe and the developing regions of the world as well as analyses of environmental impacts. The organisation is associated to the Université Paris Sorbonne (Paris IV).</p>	<p><i>Team Leader:</i> Prof. Guy Chemla</p>

<p>Voluntary Health Association of India (VHAI) is a non-profit, registered society formed in the year 1970. It is a federation of 27 State VHAs, linking together more than 4500 health care institutions and grassroots level community health programs spread across India. (www.vhai.org/)</p>	<p><i>Team Leader:</i> Alok Mukhopadhyay <i>Members:</i> Shisir Ranjan Dash, Anjali Gupta</p>
<p>Xavier University (XU), Research Institute for Mindanao Culture Inc - The Research Institute for Mindanao Culture aims at the pursuit of high quality social sciences to advance the development of the Philippines in general and Mindanao in particular. This is the research arm of the Xavier University. (rimcu.elizaga.net/)</p>	<p><i>Team Leader:</i> Dr Sharon Linog <i>Member:</i> Isaias Sealza</p>
<p>UNIFI - Università degli Studi di Firenze - The University of Florence is a University of 60,000 students with facilities in various parts of the capital city of Tuscany Region, Italy. CESPRO is one of the University's officially designated Centres of Excellence. It is an interdisciplinary unit dedicated to the study of hazards, risks, disasters and emergency response. (www.cespro.unifi.it/mdswitch.html)</p>	<p><i>Team Leader:</i> Prof. David Alexander</p>



MICRODIS Kickoff meeting in April 2007 in Brussels, Belgium. Source: VHAI MICRODIS Team.