



**Integrated Health Social and Economic Impacts
of Extreme Events: Evidence, Methods and Tools**

“Funded by the European Community’s Sixth Framework Programme”



Flood affected area in Bahraich, Uttar Pradesh, India. Source: UoD MICRODIS Team

Background and Rationale

MICRODIS is an integrated project with the overall goal to strengthen preparedness, mitigation and prevention strategies in order to reduce the health, social and economic impacts of extreme events on communities. The project looks at the **MICRO** level of **DIS**asters in Asia and Europe. The official name of the project is “Integrated Health, Social and Economic Impacts of Extreme Events: Evidence, Methods and Tools”.

MICRODIS is funded under the European Community’s Sixth Framework Programme - Thematic Priority 6.3 Global Change and Ecosystems (Contract number GOCE-CT-2007-036877).

Disclaimer-“Information given in this presentation reflects the authors’ views only. The Community is not liable for any use that may be made of the information contained therein.”



Rescue operation in Morpeth, Northumberland, U.K. Source: Alex Bennett.

A Brief Insight into the Project

Recent natural disasters all over the world have highlighted the vulnerability of societies to extreme events. It is now internationally acknowledged that efforts to reduce disaster risks must be systematically integrated into policies, plans and programmes for sustainable development and poverty reduction. With its focus on the micro level of disasters, the MICRODIS Project aims at providing much needed integrated health, social and economic inputs to this policy formulation process.

Disaster risk arises when hazards interact with physical, social, economic and environmental vulnerabilities. In the past two decades, more than 200 million people have on an average been affected every year by these extreme events. Environmentally unsound practices, global environmental changes, population growth, urbanisation, social injustice, poverty, conflicts, and short-term economic visions are contributing to the vulnerability of societies.

A particular urgency is emphasized in the face of long-term risks brought about by climate change, which goes beyond environmental degradation or the mismanagement of natural resources.



Community mapping exercise in Orissa, India. Source: VHAI MICRODIS Team

Broad Objectives

- Strengthening the scientific and empirical foundation of the relationship between extreme events and their health, social and economic impacts;
- Developing and integrating knowledge, concepts, methods, tools and databases towards a common global approach;
- Improving human resources and coping capacity in Asia and Europe through training and knowledge sharing.

Project Scope - Thematic areas of health, social and economic are identified as key to the understanding of extreme events and their relation to human populations.

Event Focus - In both Asia and the European Union, three types of extreme events, (i.e., floods, earthquakes and windstorms) account for nearly 75% of the occurrence of all extreme events. The MICRODIS Project focuses on these three types of events.

Regional Focus - The **two** regions which form the focus of the MICRODIS project are:

- European Union, associated countries and new accession states. We have partners from Belgium, France, Finland, Germany, the

Netherlands, Norway, Italy, the United Kingdom and the United States of America.

- South and Southeast Asia regions: we have partners from India, Indonesia, the Philippines and Vietnam and will also do work in China.

Expected Outcomes

The strategic impact of the MICRODIS Project is directly related to the increasing frequency of extreme events and the severity of their impacts. This integrated project involves 19 leading academic and grassroots experts from across Europe and Asia who are specialised in key areas of disaster-related health, economic and social science disciplines.

- MICRODIS aims to contribute significantly to the societal objectives of sustainable development, social and territorial cohesion and improved quality of life both in Europe and Asia, through development of a unique evidence-base of extreme event impacts in the three selected thematic areas.
- By bringing together the strengths of different academic disciplines whilst also merging analytical, conceptual and policy perspectives, the inherent synergies in the MICRODIS Project will play a crucial role in the successful development of empirical datasets and rigorous theoretical frameworks for micro-level disaster analysis. By collating original household-level data using a standard protocol along with qualitative methodological techniques for data collection, the MICRODIS consortium will produce an integrated and coherent body of international survey data.
- Significant contribution to International Disaster Database (EM-DAT) operated by CRED (<http://www.emdat.be/>).
- Various promotional, awareness and policy-oriented documents will be produced by the Consortium which will be adapted for each country or region where partners are located. This information will also be disseminated to affected communities. Many different training and capacity building opportunities are also provided through the MICRODIS Project.

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 approaches:

- 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

MICRODIS Consortium Partners

The MICRODIS Project has 19 partners from 11 countries and is coordinated by the Centre for Research on the Epidemiology of Disaster (CRED)- Université catholique de Louvain, Belgium.

Citizens’ Disaster Response Center (CDRC) – 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)



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. (www.evaplan.org/home.html)

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/)



HealthnetTPO (HNI) – Transcultural Psychosocial Organization –



HealthnetTPO is a Dutch-based knowledge-driven non-profit organisation. It 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\(EN\)/](http://www.healthnetinternational.org/HealthnetTPO(EN)/))

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/)

Hue College of Economics (HCE) - 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)



International Strategy for Disaster Reduction (ISDR) -



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/)

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/)



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/)

Sweco Grøner - SWECO is a private Norwegian multidisciplinary consulting company with special expertise in environmental and health economics (www.sweco.no/no/Norway/)



Tyoeterveyslaitos Finnish Institute of Occupational Health (FIOH) - FIOH is a multidisciplinary research and specialist institute on occupational health and safety. (www.ttl.fi/internet/english)



Université catholique de Louvain – Centre for Research on the Epidemiology of Disaster (UCL) -

UCL was founded in 1425, and is one of the oldest Universities in the world. It 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)



University of Delhi (UoD) - Department of Anthropology at the UoD 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/)



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. (www.nri.org/)



UniversitätsKlinikum Heidelberg (UKL-HD)

- 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/)



Università degli Studi di Firenze (UNIFI)

- 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)

FERURBAT SARL (UPS)

- 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).

Voluntary Health Association of India (VHAI)

- 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/)



Xavier University (XU), Research Institute for Mindanao Culture Inc

- The Research Institute for Mindanao Culture (RIMCU) is the research arm of Xavier University. It aims to pursue high quality social science research to advance the development of the Philippines, in general and Mindanao, in particular. (rimcu.elizaga.net/)





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

Accomplishments to date

First Year (1 February 2007 – 31 January 2008)

- The *MICRODIS Kickoff meeting* during April, 2007 in Brussels was successfully organized by “UCL” as the coordinator of this project. It was duly attended by the representatives of the 16 partners of the Consortium and officials from the UCL as well as from the European Commission.
- *Four thematic workshop sessions* for each the health, social, economic and integration working groups were organized in different settings during the first year of the project.

- Draft literature reviews and preliminary conceptual models for each thematic group were conceptualized. Exploration of integration strategies for conceptual models and survey methodology is in progress.
- A *desk study* on the application of the impact pathway approach to valuation in different economic settings was conducted.
- *EMDAT Research Network* was created and the EMDAT website user interface was enhanced with the inclusion of maps. *Project website* was created along with promotional materials.

Second Year (1 February 2008 – 31 January 2009)

- The *MICRODIS First Annual Meeting and Official Project Launch* were organized in Delhi, India in February 2008. During the Project launch, hosted by UoD and VHAI respectively, in New Delhi, India, along with the MICRODIS partners, many different political representatives,



Lt. General J.R. Bhardwaj, Member, National Disaster Management Authority, Govt. of India (left) formally inaugurated the MICRODIS launch in February 2008 at VHAI, New Delhi, India

academic experts, NGOs and respected dignitaries from all over the world were present. Press sessions were also held.

- The second year was governed by the core responsibility of *Empirical Studies* in Asian and European locations. This comprised of finalization of the tools and methods for each survey site, Health, Social and Economic Working Groups.
- A combined and uniform *Contextual Report* document including each of the MICRODIS survey sites has been prepared by CDRC.
- Complete Generic Models for Extended Health, Social and Economic Impact Assessment were 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.
- To facilitate the development and revision of tools, a Training Workshop for the survey coordinators was held in Hanoi, Vietnam in May 2008 facilitated by HSPH and UCL.

Third Year (1 February 2009 – 31 January 2010)

- A Multi Meeting Workshop in Depok, Indonesia was organised by UCL and UoI in October 2009. The meeting was successful in generating a consensus on common issues like the revision of tools and standard coding methods.



Group Photo of participants in MICRODIS Multi Meeting Workshop in Depok, Indonesia in October 2009. Source: UoI MICRODIS team.

- Annex studies are undertaken by *five partner organisations (UoI, VHAI, HCE, UoD and UoN)*.
- The final generic model for the *Integrated Field Protocol* was developed through an intensive fine-tuning of the thematic and extended questionnaires by HealthnetTPO.
- Completion of the MICRODIS main studies in Morpeth (United Kingdom), Hanoi and Quangnam in Vietnam using the MICRODIS tools.
- UCL successfully organised the Assessing Public Health in Emergency Situations (APHES) summer course for three years. Members of the MICRODIS project were given scholarships and were familiarised with the techniques to determine health impact of disasters and conflicts (qualitative and quantitative methods).

MICRODIS Promotion

- MICRODIS Website – www.microdis-eu.be - A new version of the website has been created by UCL, with a public and a private domain. The public site gives information about the project, our progress, partner information, survey information, press citations, promotional materials and important project documents.



MICRODIS Website home page. Source: www.microdis-eu.be

- Promotional Package – led by VHAI and CDRC, this includes a MICRODIS scientific poster, survey posters, field briefs, MICRODIS field site calendar, two MICRODIS survey documentaries, a disaster manual for neo-literates, various photo documents, updated brochures and dissemination products for the project.
- Special edition of VHAI's 'Health for the Millions' journal on MICRODIS

- At the University level –
 - HSPH has developed a *teaching manual* on disaster management in Vietnam.
 - *A Review Report* of the existing disaster related university courses has been compiled by the Xavier University.
 - The Department of Anthropology, Delhi University has approved an *optional course for the Master's Programme entitled 'Anthropology and Disasters'*
 - *Lectures by academic institutions and training sessions by NGOs about MICRODIS data and experience sharing*
 - University of Indonesia (UoI), has been regularly conducting a course on disaster epidemiology and disaster management for Bachelor and Master Degree Programmes in Public Health.

Conferences

- Economics Valuation of Environmental and Natural Resources Conference in Hanoi, Vietnam; National Forum for Environment and Health Research in Liceo de Cagayan, Philippines
- The COP13 United Nations Climate Change Conference in Bali, Indonesia 12-13 December 2007 (by HRCCD-UoI and Evaplan/ University of Heidelberg)



Members of the MICRODIS Health Working Group at Thematic Workshop in Orissa, India in August 2009. Source: VHAI MICRODIS Team.

- The COP14 United Nations Climate Change Conference in Poznan, Poland in December 2008 (by CRED and University of Delhi)
- As a member of the National Disaster Management Authority of the Government of India, VHAI had meetings with the NDMA senior officials.
- SAARC Disaster Management Center and Global Forum for Disaster Reduction, India and Asian Disaster Reduction Center, Japan (by UoD).
- Coordination meeting in Manila and Cagayan de Oro, 12-24 April 2008 (by UoD)
- 3rd Australian Hazards Management Workshop Series 2009 in Melbourne Australia (by UoN)



Members sharing data findings at MICRODIS Multi-Meeting Workshop in Depok, Indonesia in October 2009. Source: UCL MICRODIS Team.

Current & Upcoming Activities

- *European Field Work* - small annex studies on specific topics in Europe. Addition of our new consortium partner in Italy to perform empirical research on the 2009 Abruzzo earthquake;
- *Health impacts study* in Sichuan, China after the recent earthquake by UCL;
- *Cleaned and validated data sets* for the MICRODIS data portal;
- *Individual and joint analysis of MICRODIS data* leading to scientific publications from each partner in the four thematic groups on health, social, economic and integrated impacts of extreme events;
- *Asian and European Symposiums* on disaster impacts;
- *Geo-referencing of disasters* in MICRODIS countries with maps created;
- *Participation and presentations* at international, regional and national conferences (World Conference on Disaster Management, International Disaster and Risk Conference, Development and Disasters Conference, etc.)
- *Priority policy needs briefs* and powerpoint presentation;
- *Professional report* on MICRODIS Project;
- *Visiting lectures* and *training* program participation, along with attendance of various *conferences* to share knowledge and create partnerships;
- *Statistical briefs* and common coding report.



CDRC MICRODIS Field Team, Albay, Philippines. Source: CDRC MICRODIS Team.

Survey Site:

Albay, Philippines

Lead Partners: Citizens'

Disaster Response Centre/
Xavier University

Rationale-Disaster experience: Albay is one of the most typhoon-prone provinces in the Philippines. In November 2006, Albay was one of the areas hardest-hit by Typhoon Reming (International name: Durian). The typhoon brought 466 millimetres of rainfall, the highest in 40 years. A number of communities in Albay were immediately buried under tons of rocks and mud from the Mayon Volcano's slopes during the typhoon. Recently, back-to-back super typhoons battered the Bicol Region once again. Typhoons Lando (Hagibis) and Mina (Mitag) affected 69,465 families in Region V last year (November 2007). Both typhoons caused flashfloods and landslides.

Research Focus: To investigate the impact of natural disasters which, cuts across the different aspects of people's lives.

Methodology: The pre-survey site visits were conducted by the Country Team. In order to facilitate a smooth entry of researchers in the survey sites, courtesy calls to local government officials were conducted. The entire survey was conducted in close collaboration with the Xavier University. The survey questionnaire was adapted to the local context and the core questionnaire was extended to include reproductive health questions as a focus issue. The tools used for data collection were both qualitative and quantitative in nature. Sampling was done using multi-stage cluster design.



Interviewing the flood affected village households in Bahraich, Uttar Pradesh, India. Source: UoD MICRODIS Team.

Survey Site:

Bahraich, Uttar Pradesh, India

Lead Partner: University of Delhi

Other Partners:

UniversitätsKlinikum

Heidelberg and

Northumbria University

Rationale-Disaster experience: Bahraich district of Uttar Pradesh falls into the Gangaetic plain and experiences floods almost every year due to the massive flow of the Himalyan river Ganges. Fakharpur, the maximum affected block which comes under Mahsi tehsil of Bahraich district, Uttar Pradesh was selected for the study.

Research Focus: To study the social impact of floods in the Indian context. Besides establishing evidence based primary field research, it will also try to develop an integrated impact methodology.

Methodology: The random sampling technique was used and the field area comprised of eight villages-four affected and four unaffected villages. For quantitative data 304 questionnaires among the control group and 318 questionnaires among the experimental group were employed to collect data on household information and to capture social impacts of floods. Qualitative information was collected through focus group discussions, participatory rural appraisal, key informant interviews, disaster narratives and secondary sources.



A child being weighed in Bojonegoro, Indonesia.
Source: UoI MICRODIS Team.

Survey Site: Bojonegoro, Indonesia

Lead Partner: University of Indonesia

Rationale-Disaster experience:

Natural disasters like floods, landslides, hurricanes and fires represent routine occurrence in Bojonegoro each year. In 2005, both major hurricane and fire disasters occurred, with over 1,654 billion rupiah (Indonesian currency) loss. Floods in December 2007 were much bigger than in previous years. Due to this flood, sixteen sub-districts (out of 27) in

Bojonegoro were flooded and more than half of the districts inundated with about 3 meter high flood waters.

Research Focus: To achieve the general objective of studying the health, social and economic impacts due to December 2007 huge flood in Bojonegoro.

Methodology: Prior to survey, UoI team drafted the questionnaire followed by its first pre-testing in one of the flooded areas in Kampung Melayu, Jakarta. The second instrument pre-testing was done in a study site in one Bojonegoro village during the preparation phase of the study. A population based survey was conducted in Bojonegoro district, East Java in November 2008, together with qualitative data collection through FGDs and in-depth interviews. Relevant secondary data on demographic and health profiles were also collected and verified by the team. Primary data collection started in the second week of November 2008 towards 485 households in 50 villages, through structured interviews, followed by anthropometric measurements of the under-five children population.



Flood affected road in Hanoi, Vietnam. Source: HSPH MICRODIS Team.

Survey Site:
Hanoi, Vietnam

Lead Partner:
Hanoi School of
Public Health,
Vietnam

Other Partners:
Hue College of
Economics

Rationale-Disaster experience: Long and heavy rains with high intensity and large magnitude in Hanoi during the end of October and the first week of November, 2008 resulted in a historic flood in Hanoi capital city in the past 35 years (ever since 1973). According to a preliminary evaluation of the 10 days of heavy rains and flooding, 22 people died, 3 were injured with an economic loss of at least 200 million USD.

Research Focus: To identify the differences between flood affected and non-affected households in mortality and morbidity patterns and; to identify the relationships between social and economic factors and health related problems.

Methodology: A cross-sectional study was carried out. In each district a commune/precinct seriously flooded and a commune/precinct less severely flooded was chosen to collect information. Pilot studies were implemented both in Hue and Hanoi. Quantitative part: 871 households in 4 selected communes/precincts with a total of 3910 individuals. Qualitative part: 12 in-depth interviews.



Enumerators Training in Orissa, India. Source: VHAI MICRODIS Team.

Survey Site:

**Jagatsinghpur district,
Orissa, India**

Lead Partner: Voluntary
Health Association India

Other Partners:

University of Delhi,
Northumbria University,
UniversitätsKlinikum
Heidelberg and Universite
catholique de Louvain

Rationale-Disaster experience: Jagatsinghpur district is disaster prone due to its geographic location. In the last decade, 5 disasters have affected the district. The major disasters that occurred in the district are Super Cyclone of 1999, gas leakage in Paradeep Phosphet Ltd. in 2001, heavy flood in 2005 and another heavy flood in 2007. In the year 2008 the district was struck by one more flood of a very high intensity causing massive devastation and affecting a larger geographic area.

Research Focus: To analyse the social, economic and health impact of repeated disasters on the vulnerable communities in Jagatsinghpur district of Orissa, India. Specific emphasis has been given to understand the impacts of floods on health, nutrition, water and sanitation aspects of the location. The Orissa flood in September 2008 has been taken as the reference disaster for this study.

Methodology: An exploratory research design has been used. Data collection has been through both qualitative and quantitative techniques. Followed by a literature review and adaptation of the Generic MICRODIS tool to the Indian context, a pilot study was done in the same district. The study covered 757 respondents from the test group and 816 from the control group and 42 health institutions.



Flooded street in Morpeth, Northumberland, United Kingdom.
Source: Alex Bennett.

Survey Site:

Morpeth, United Kingdom

Lead Partner:

Northumbria University

Other Partners:

Universite catholique de Louvain, HealthnetTPO

Rationale-Disaster experience: Morpeth experienced a flood on 6 September 2008. The event was caused by heavy sustained rainfall in the preceding 24 hours. The Wansbeck River rose well above its banks and inundated the town's flood defences around 1500 BST, causing damage to 995 properties, 906 of which were residential. More than 400 residents were evacuated and 995 properties in Morpeth town centre were directly affected by the flood water. Early estimates suggest that damages could be over £10 million. At the peak of the flood, Morpeth High Street (Bridge Street) was under 0.6m (2ft) of water. Not since 1963 had the main street been flooded.

Research Focus: To assess the integrated impacts of a flood in Morpeth, with a specific focus on the impact of the flood on social capital and mental health.

Methodology: Data was collected through household questionnaires. Interviewers were directed to cluster areas with a list of the affected households in the cluster which were chosen as affected areas, and no systematic sampling frame was followed.



Enumerator interviewing a household member. Source: HCE MICRODIS Team.

Survey Site: Quang Nam province, Vietnam

Lead Partner: Hue College of Economics, Vietnam

Other Partners: Hanoi School of Public Health and Sweco Grøner

Rationale-Disaster experience: Quangnam province is one of the most severely flood affected provinces in Central Vietnam in 2007. According to the Quangnam Provincial People Committee's report, four big floods occurred in the province in only 30 days. The rainfall reached nearly 3000 mm, in about 1 month; 64 communes were inundated with about 1.5-1.7 meter water level. This killed 67 people and 339 people injured with a total damage cost of VND 2000 billion.

Research Focus: To assess the flooding event in 2007 in the Quangnam province in Vietnam.

Methodology: The study design has two main parts: The first part is to conduct the MICRODIS Integrated Questionnaire Survey (MIQ) that was jointly developed by the partners of the MICRODIS Consortium. The second part consists of economic in-depth case studies. This study involves a combination of qualitative and quantitative methods including secondary data collection; questionnaire survey; key informant interview and focus group discussion have been used.



Flooded street in Tewkesbury, United Kingdom.
Source: Severn & Avon Valley Combined Flood Group.

Survey Site:
**Tewkesbury,
Gloucestershire,
United Kingdom**

Lead Partner:
Northumbria
University

Other Partners:
Universite catholique
de Louvain and
HealthnetTPO

Rationale-Disaster experience: The Tewkesbury district has a long history of flooding due to its location, geography, topography, geology and ageing drainage systems. Tewkesbury received 80-90 mm of rain on 20 July 2007, which amounts to almost two months rainfall in just one day and caused severe flooding of the town. An estimated 810 properties were affected by flooding in Tewkesbury. On 22 July, Severn Trent Water's Mythe water treatment works in Tewkesbury was flooded. This left 350,000 people across Gloucestershire without water for up to 18 days. 1,500 buildings were flooded in Tewkesbury by both flash and fluvial flooding.

Research Focus: To assess the integrated impacts of disaster in Tewkesbury.

Methodology: The Generic MICRODIS tool was adapted to the European/UK context but keeping most of the MICRODIS core for comparison across countries. A pilot study was conducted in Morpeth, Northumberland. Interviewers comprising of mostly Masters level students were trained. Data collection methods were mostly quantitative and less qualitative.



Discussion on the data findings. Source: XU/CDRC MICRODIS Team.

Survey Site: Southern Leyte, Philippines

Lead Partner: Xavier University/
Citizens' Disaster Response Centre

Rationale-Disaster experience: The province of Southern Leyte, according to the Mines and Geo Sciences Bureau (MGB), is one of the ten provinces in the country that is highly prone to natural disasters. On 17 February 2006, several mudslides caused by heavy rains (amounting to over

200cm) and a minor earthquake destroyed at least one town and various commercial and residential infrastructure, leaving hundreds dead. The municipality of St. Bernard was one of the worst hit areas, where up to 200 were estimated dead and another 1,500 missing. Barangay Guinsaugon, a mountain village with 2,500 people, was almost completely leveled.

Research Focus: To investigate the impact of natural disasters which, cuts across the different aspects of people's lives

Methodology: The selection procedure follows a multi-stage cluster design. The first stage is the selection of two municipalities/cities by probability proportional to size of barangays. Hinunangan and St. Bernard were selected for the province of Southern Leyte. The second stage selection began with the construction of a frame for affected and least affected communities. From each frame, two barangays were randomly selected, fifty (50) households were selected by systematic sampling from each of the 8 sample communities. Facilitative factors in data collection have been good coordination with the community and the local authorities.

MICRODIS Annex Studies

Annex Studies in Asia

Health Annex Studies in Asia

1. Survey Site - Fakkharpur block, Bharach district, U.P., India

Lead Partner – University of Delhi

Research Focus - To estimate the nutritional status of children aged 6-59 months by assessing the anthropometric measurements, identifying the malnutrition symptoms, immunisation status of the children.

2. Survey Site - Hanoi, Vietnam

Lead Partner – Hanoi School of Public Health, Vietnam

Research Focus - To evaluate mosquito larva and related factors of dengue hemorrhagic fever (DHF) in 4 precincts, Hanoi, 2009

3. Survey Site - Jakarta (May – October, 2007), Indonesia

Partner – University of Indonesia

Research Focus - To investigate the possible impact of flood and climate towards the occurrence of leptospirosis and Dengue Hemorrhagic Fever (DHF) in Jakarta.

4. Survey Site - Jagatsinghpur district, Orissa, India

Lead Partner – Voluntary Health Association of India

Research Focus - To estimate the nutritional status of children aged 6-59 months by assessing the anthropometric measurements.

5. Survey Site - West Sumatra, Indonesia

Lead Partner – University of Indonesia

Research Focus – To investigate the effect of injury on the occurrence of disability and decrease in quality of life among adults and also to

understand the individual coping mechanisms of injured adult survivors of 2009 earthquake in West Sumatra, Indonesia.

6. Survey Site – Sichuan, China

Lead Partner – University catholique de Louvain

Research Focus - To estimate the direct health impact in Chengdu immediately and close to one year after the earthquake: focusing on injuries, trauma and death found from hospital-based secondary data and a small scale patient follow up study in the most affected areas.

Economic Annex Study in Asia

1. Survey Site - Quang Nam province, Vietnam

Lead Partner - Hue College of Economics

Research Focus - To conduct an analysis of flood risk (i.e. flood exposure) and an in-depth study of the socio-economic vulnerability of flooded communities and adaptation measures to extreme flooding events in Quang Nam.

Annex Studies in Europe

The Northumbria University MICRODIS Annex Studies:

1. *Survey Site* - Bahraich, Uttar Pradesh, India; Rights in Disasters
2. *Survey Site* - Morpeth, UK
 - i Impact on displaced persons due to the Morpeth flood
 - ii The role of flood insurance in disasters – a review of the flood insurance experiences of the residents of Morpeth
 - iii Educating children about disasters: the use of play
3. *Survey Site* –Tewkesbury, UK
 - i To what extent did church membership/ spirituality shape individual mental health experiences of the 2007 Tewkesbury flood and its aftermath?



www.microdis-eu.be

Integrated Health Social and Economic Impacts of
Extreme Events: Evidence, Methods and Tools

For more information contact:

Coordinator: Prof. Debarati Guha-Sapir, Director,

CRED - Université catholique de Louvain - Ecole de Santé Publique

30.94 Clos Chapelle-aux-Champs, 1200 Brussels, Belgium

Tel: +32 (0)2 764 33 27 - Fax: +32 (0)2 764 34 41 - Email: contact@cred.be

Conceptualized and Printed by

Voluntary Health Association of India

