Real-time Forensic Disaster Analysis

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The Center for Disaster Management and Risk Reduction Technology (CEDIM, www.cedim.de) - an interdisciplinary research center founded by the German Research Centre for Geoscience (GFZ) and Karlsruhe Institute of Technology (KIT) – has embarked on a new style of disaster research known as Forensic Disaster Analysis. The notion has been coined by the Integrated Research on Disaster Risk initiative (IRDR, www.irdrinternational.org) launched by ICSU in 2010. It has been defined as an approach to studying natural disasters that aims at uncovering the root causes of disasters through in-depth investigations that go beyond the reconnaissance reports and case studies typically conducted after disasters.

In adopting this comprehensive understanding of disasters CEDIM adds a real-time component to the assessment and evaluation process. By comprehensive we mean that most if not all relevant aspects of disasters are considered and jointly analysed. This includes the impact (human, economy, and infrastructure), comparisons with recent historic events, social vulnerability, reconstruction and long-term impacts on livelihood issues. The forensic disaster analysis research mode is thus best characterized as "event-based research" through systematic investigation of critical issues arising after a disaster across various inter-related areas.

The forensic approach requires (a) availability of global data bases regarding previous earthquake losses, socio-economic parameters, building stock information, etc.; (b) leveraging platforms such as the EERI clearing house, relief-web, and the many sources of local and international sources where information is organized; and (c) rapid access to critical information (e.g., crowd sourcing techniques) to improve our understanding of the complex dynamics of disasters. The main scientific questions being addressed are: What are critical factors that control loss of life, of infrastructure, and for economy? What are the critical interactions between hazard – socio-economic systems – technological systems? What were the protective measures and to what extent did they work? Can we predict pattern of losses and socio-economic implications for future extreme events from simple parameters: hazard parameters, historic evidence, socio-economic conditions? Can we predict implications for reconstruction from simple parameters: hazard parameters, historic evidence, socio-economic conditions?

The M7.2 Van Earthquake (Eastern Turkey) of 23 Oct. 2011 serves as an example for a forensic approach.