

Chapter 6

Disaster Informatics: Information Management as a Tool for Effective Disaster Risk Reduction

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ABSTRACT

From risk identification to emergency response and recovery, information plays a vital role and the effective use of information is instrumental to reduce the impact of disasters. With the advancement of information and communication technology in the last few decades, lack of information is no longer a major issue for disaster risk reduction. The major issue, rather, is managing the information, translating it into a comprehensive knowledge for decision making and disseminating it to the communities at risk for action. The advancement of technology and reach of communication tools at a grassroots level have created an opportunity to increase effectiveness of disaster risk management with the optimum use of disaster informatics. This chapter presents an overview of disaster informatics, a conceptual framework for information management for disaster risk reduction, a review of existing approaches of information dissemination through the Internet and a review of the combined potential of Internet with tools which are widely available at grassroots levels.

INTRODUCTION

The significance of gearing up efforts towards disaster risk reduction and mainstreaming it in the sustainable development agenda is ever increasing in today's world. There are three basic reasons for its increasing significance: First, the hazards affecting the human beings from time

immemorial have not decreased even with the advancement in technology. Natural hazards like earthquakes, floods, landslides and tsunamis are still very frequent and remain major challenge for human civilization. The frequency and severity of some of the hazards such as floods, droughts and landslides have increased because of impact of global warming and climate change. The efforts so far have been able to contain human losses from these disasters to some extent in developed

DOI: 10.4018/978-1-61520-987-3.ch006

countries; however, the losses in terms of affected people and property have increased in the past years both in developed and developing countries. A comparison of the numbers of disasters in the three decades from 1973 to 2000 points to the fact that the numbers of disasters from natural hazards have doubled in each decade. Although the numbers of people killed in the last decade from these disasters is less than that of previous decades, the numbers of affected people and amount of economic losses have increased by double in each decade (UNISDR, 2004).

The second reason for increasing significance of disaster risk reduction is that the risk has been accumulating historically because of inappropriate development choices and more so in the developing and the least developed countries. The 2004 UNDP report states that “while only 11 percent of the people exposed to natural hazards live in low human development countries, they account for more than 53 percent of total recorded deaths” (UNDP, 2004, pp. 13). Third reason for increasing significance of disaster is management is because of the significant surge in the new threats such as armed violence, terrorism and other man-made disasters.

On the one hand there is increasing concern for reducing the impact of growing frequency and severity of disasters – natural and man-made - and on the other hand the phenomenal advancement on Information and Communication Technology (ICT) has laid out promising possibilities for effective and optimum use of information resources for building resilient communities to disasters. The challenge, then, lies on how to capitalize the potential of ICT for reducing impact of disasters and building resilient communities to disasters.

This chapter presents an overview of disaster informatics, conceptual framework for information management for disaster risk reduction, review of the existing approaches of information dissemination through internet, integrated system of ICT and future direction of disaster informatics on use of combined potential of internet (large

information available at one click) with mobile phone and radio (widely available at grassroots).

BACKGROUND

Disaster risk reduction is “the conceptual framework of elements considered with the possibilities to minimize vulnerabilities and disaster risks throughout a society, to avoid (prevention) or to limit (mitigation and preparedness) the adverse impacts of hazards, within the broad context of sustainable development” (UNISDR, 2004, pp. 17). Disaster risk reduction has become a mainstream agenda in the sustainable development (UNDP, 2004) and efforts are underway to put more money on prevention which not only saves development efforts being washed from disasters but also will result in reduction of the resources spent on relief and recovery. The evolution and progress in disaster management (Alexander, 1997) has shifted the focus from emergency response to building resilient communities to disasters (UNISDR, 2005).

In the evolution of disaster management, the importance of information for effective disaster management has been firmly grounded. Information is a vital form of aid in case of disasters (IFRC, 2005) and people need information as much as water, food, medicine or shelter. Information can save lives and information can save resources. Information management is collection of the information, processing it, translating the information into knowledge and action and disseminating them to the communities in need. However, the emphasis of institutions working in the field of disaster management is much on collection of information and the later stages of information management are not in priority. ICT has advanced by leaps and bounds in the last couple of decades and its advancement has opened the possibility of efficient and effective information management for disaster risk reduction.

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