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Survey on Analysis of Damage and Need Assessment in Post Disaster Environment

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ABSTRACT: Disaster is an undesirable and unfortunate extreme event. It causes great damages to human beings, livestock, infrastructures & communications, socio-economic status and many more. During and after math of disaster, controlling authority at the national and international levels mainly depend on rapidly acquired information to evaluate impacts, set priorities, identify needs, plan early recovery, organize resources. In this paper, we focus on post disaster needs assessment and damage analysis by surveying different post disaster needs assessment prepared by different relief organizations and Governments.

KEYWORDS: Disaster, needs assessment, post disaster, damage, relief.

I. INTRODUCTION

A **serious disruption** is the loss of human life, or illness or injury to humans, and/or widespread or severe property loss or damage; and/or widespread or severe damage to the environment. A **disaster** is serious disruption in a community, caused by the impact of an event that requires a significant coordinated response by the State and other entities to help the community recover from the disruption. **Disaster management** means arrangements about managing the potential adverse effects of an event, including, for example, arrangements for mitigating, preventing, preparing for, responding to and recovering from a disaster [3]. During and after math of disaster, controlling authority at the national and international levels mainly depend on rapidly acquired information to evaluate impacts, set priorities, identify needs, plan early recovery, organize resources. Convenient and justified information on post-disaster environmental impacts and possible risks to health, livelihoods and the environment and ecosystem services is a crucial contribution to these efforts [1]. Despite a growing recognition of the important links between the environment and other life-supporting systems, environmental information to inform decision making is often inaccessible in a post-crisis situation. The cause-effect relationship between environmental degradation, poverty and disasters is much more complex now-a-days and has been the subject of analysis in the field of research work.

This paper is organized as follows. Section 2 describes related work. Section 3 explains needs assessment in post disaster situation. Section 4 describes addresses issues related to strategies, methodologies, approaches and best practices of needs assessment in post disaster scenario. Section 5, 6 and 7 describe Practices for Risk Deduction and Rapid Responses in developing countries, preparation and mitigation for managing disasters and role of ICT in disaster management. Section 8 enlists names of some of the relief organizations engaged in environmental crisis (disaster).

II. RELATED WORK

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During last decade people have already faced a lot of disasters like Tsunami in Japan and the earthquake in Niigata, Japan, the earthquake in Pakistan and the recent most disastrous flood in the history of Pakistan and Thailand has make the attention of people to think on the different ways to cope with these calamities [10]. Humanitarian technologies are the tools and infrastructure necessary to help disaster-prone communities to better prevent, mitigate and prepare for disasters and, in their wake, respond, recover and rebuild more effectively [12]. The primary objective of any post–disaster damage assessment and need analysis is to provide a clear, concise picture of post disaster situation, to identify

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relief needs, and to develop strategies for recovery. Ideally, an assessment should take into consideration the direct and indirect losses, which have both short and long term effects on communities. In order to create a holistic picture and plan out a timely and appropriate response strategy, an assessment method must incorporate both the scale of destruction and the victim's needs [11].The Sphere Project, established by a group of non-governmental organizations and the Red Cross Red Crescent Movement to improve the quality of their actions during disaster response and to be held accountable for them, has defined a number of minimum standards and core process standards (Sphere, 2011) [12].

III. NEED ASSESSMENT IN POST DISASTER SITUATION

If officials(different NGOs and Govt. Organization) are responsible for organizing post-disaster relief operations to make effective decisions about the deployment of resources , it is essential that they must be properly informed. They must have appropriate and timely information about what has happened, what needs to be done, and what resources are available. Their decisions can save lives, minimize injury damage and loss, prevent escalation, prevent secondary hazards and inform people who need to know. Well-organized response will also help to build confidence and enhance credibility. Relief operations are, in essence, the management of information and resources, based on assessments and reports. Information is needed at all levels of administration but the nature of the information required will vary from one level to another. Good assessments and reporting require forethought; the assessment and reporting system should be established in preparedness planning. There is a clearly defined sequence to the process of managing information converting raw data to useful information [4]:

- Information "in"
- Sorting (grading, collating, discarding what is unreliable)
- Evaluation
- Decision making
- Information "out" (dissemination)
- Action

Addressing environmental consideration features as part of this process and, in a bid to highlight the many ways in which environmental issues need to be considered during early recovery, this guide has been commissioned. Development of this guide in support of early recovery and as part of the broader post-disaster needs assessment (PDNA) is intended to help [1]:

- Identify environmental impacts and risks caused by the crisis and relief operations as well as potential environmental pressures from recovery.
- Identify the negative response-related activities or coping mechanisms resulting from an emergency that can impact the environment or create new environmental risks.
- Assess institutional capacities at the national and local levels to mitigate environmental risks and manage environmental recovery.
- Provide a forward looking plan that aims to integrate environmental needs within early recovery programming and across the relevant relief and recovery clusters.
- Provide a standard reference point for future environmental assessments in the post-crisis setting, in spite of the fact that this tool is expected to be modified to suit the needs of different situations.

In addition to the above, a number of secondary objects might be highlighted, these being the opportunity to [1]:

- Generate strategic baseline data that could eventually feed into a monitoring and evaluation system to track implementation of environmental recovery interventions.
- Identify initiatives that can be strengthened to provide or help rebuild livelihoods and sustain human security – especially those that depend on the environment and natural resources.

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- Identify how environmental degradation may have contributed to the underlying causes of the emergency and how environmental vulnerabilities can be addressed during recovery.
- Identify opportunities to re-orient livelihoods along sustainable pathways, using environmentally sound construction practices and/or alternative energy options, by identifying ecosystem restoration requirements.
- By mainstreaming disaster risk reduction, it provide an understanding of the specific vulnerabilities that women and other groups in the communities face, and identify their capacities and needs to engage in the environmental recovery process.

Post Disaster Need Assessment (PDNA) focus on the following sectors [6][7]

- Protection against Trafficking
- Shelter & Clothing
- Water
- Sanitation
- Medical Health
- Education
- Livelihood(Agriculture, Horticulture, Livestock, Fisheries, Tourism Linked Livelihoods, Micro, Small and Medium Enterprises)

Based on damages in different sectors, following are the assessments [4] in table 1.

Table 1. Damage Assessments

% Damaged	Meaning
100	Structure is unusable. Cannot be repaired.
> 75	Major structural damage. Unsafe for use. Repairable within 1 month.
> 50	Significant structural damage. Unsafe for use. Repairs will take more than 1 week
> 25	Some structural damage but safe for limited use. Repairable within 1 week
< 25	Minor structural damage. Usable

It is clear from the table (table.1) that meaning of damage is varied based on situation. In case of 100% damage, infrastructure cannot be repaired. In case of less than 75% damage, it is unsafe to use the infrastructure. In case of less than 25% damage, infrastructure can be used.

IV. STRATEGIES, METHODOLOGIES, APPROACHES AND BEST PRACTICES OF NEEDS ASSESSMENT IN POST DISASTER SCENARIO

Strategies

- Undertake post-disaster assessment across the phases of prevention, preparation, response and recovery to review the effectiveness of disaster management including the determination of the social and economic costs of disasters (tangible and intangible).
- Implement a knowledge management framework to capture and implement lessons identified.
- Maintain a log of strategies that work well and opportunities for improvement before, during and after a disaster event [3].

A. Assessment methodology

Data

Field Data was collected by teams of enumerators including men and women from participating agencies. Each district was coordinated by agency team leaders in the field ensuring that teams targeted the districts following the sampling strategy and minimizing duplication and gaps. Data includes household surveys, focus group discussions, key

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informant interviews and observations. Secondary Data, collected from external sources provides the backdrop of reported needs and context.

Sampling Strategy

Due to the localized damage caused by the floods and landslides, this assessment purposely sampled geographic areas based on the districts, blocks and villages identified as being the most affected by the rapid assessments conducted by participating agencies.

The assessment used the following sampling prioritization:

District Level – A target of a minimum of 4 of the most affected districts

Block Level – At the block level, the assessment targeted the following for undertaking sampling:

- Selection of the worst affected blocks
- Study the damages to shelters in both urban as well as rural areas
- Within the urban and rural areas, study the damage to homes belonging to members of SC community as well as non-SC community

Village level – conduct a minimum of 5 representative household surveys [8].

Approaches and Best Practices

A number of different approaches used for the assessment of needs were identified by means of a review of literature and of the practice of organizations in related fields. The main selection criteria for their inclusion in the analysis was their importance as inter-agency and multi sectoral approaches; this included the Development Assistance Committee (DAC) Guidelines, the Office for the Coordination of Humanitarian Affairs' (OCHA) Common Appeal Process (CAP), the Common Country Assessment (CCA) of the UN System and the Country Assistance Strategy (CAS) of the World Bank Group [5].

The review of assessment approaches starts with an analysis of the conceptual basis of common assessment approaches and considers specifically how the assessments can contribute to a needs assessment in post-conflict situations. The assessment approaches reviewed are grouped according to the main context of application: (1) Crisis and conflict analysis, (2) emergency and humanitarian aid and (3) development cooperation [5]. Table 2 provides an overview of the assessment approaches [5]. There are assessment approaches like crisis and conflict, humanitarian an emergency aid, Development Corporation etc.

Table 2. Assessment Approaches

1. Crisis and conflict analysis
1.1. DAC-Guidelines, Helping Prevent Violent Conflict, OECD
1.2. Conflict Analysis Framework, World Bank
1.3. Conflict Related Development Analysis, UN System
1.4. Conflict Assessment , DFID
1.5. Conflict Analysis, GTZ
2. Humanitarian and emergency aid
2.1. SPHERE-Handbook
2.2. Consolidated Appeals Process (CAP), UN System
2.3. Disaster Assessment Methodology, ECLAC
2.4. UN Disaster Assessment and Coordination, UNDAC
2.5. Humanitarian Needs Approach, IFRC
2.6. Emergency Needs Assessment, WFP
2.7. Rapid Assessment of Nutrition, GTZ
2.8. Rapid Needs Assessments in Crisis Response and Reconstruction, ILO
Development cooperation (planning tools)
3.1. Country Assistance Strategy/Transitional Support Strategy (CAS/TSS), World Bank Group
3.2. Poverty Reduction Strategy (PRS), World Bank Group
3.3. Common Country Assessment and Development Assistance Framework (CCAUNDAF),UN System

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V. PRACTICES FOR RISK DEDUCTION AND RAPID RESPONSES IN DEVELOPING COUNTRIES

- ICT in emergency planning and civil protection.
- Case studies related to particular incidents and learned lessons.
- Benchmark and case studies in e-governance for disaster management.
- Case studies of the use of social media and networks.
- Innovative uses of technologies adapted to the readiness status of developing countries [13].

VI. PREPARATION AND MITIGATION FOR MANAGING DISASTERS

- Prediction and early warning.
- Remote sensing.
- Risk assessment, modeling and simulation tools for crisis situations.
- Healthcare crisis information systems.
- Multimedia-based communication skills for citizens and civil servants.
- E-government and population education [13].

VII. ROLE OF ICT IN DISASTER MANAGEMENT

The term 'ICT'(Information & Communication Technology) supports a range of technologies for getting, storing, and retrieving, processing, analyzing and transmitting information. This includes networks, computers and any other processing and transmitting equipment and software. It can cover a wide range of system designs and configurations. (Business Tech Research Inc., 2010). ICT activities must operate within a framework of availability during normal and emergency conditions and that information is secured by means of risk management procedures. The intention is to cost-effectively plan for abnormalities in normal circumstances from the viewpoint of operational demands and to create a solid foundation for ICT preparedness in emergency conditions. Moreover, software and hardware platforms must facilitate knowledge management initiatives within and between institutions within the region. The ICT capacity and capabilities must be strengthened to facilitate greater collaboration and learning [2].

VIII. LIST OF SOME OF THE RELIEF ORGANIZATIONS [9] ENGAGED IN ENVIRONMENTAL CRISIS (DISASTER)

- Indian Red Cross Society (Indian Red Cross)
- Institute of Peace and Conflict Studies (IPCS)
- Int'l Crops Research Institute for the Semi-Arid Tropics (ICRISAT)
- Inter Agency Group Orissa (IAG Orissa)
- International Initiative for Impact Evaluation (3ie)
- Independent Election Commission of Afghanistan
- Indonesian Red Cross (PMI)
- Indus Institute for Research and Education (IIRE)
- Integrity Watch Afghanistan
- Inter-Agency Standing Committee Sri Lanka (IASC Sri Lanka)
- International Centre for Diarrhoeal Disease Research (ICDDR,B)
- International Centre for Integrated Mountain Development (ICIMOD)
- International Force East Timor (INTERFET)
- International Recovery Platform (IRP)
- International Steering Committee for Global Mapping (ISCGM)
- International Water Management Institute (IWMI)
- InterNet Campaign to help North Korean Flood Victims (ICHNKFP)
- American Red Cross

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- Center of Excellence in Disaster Management and Humanitarian Assistance
- ReliefWeb
- UN Office for the Coordination of Humanitarian Affairs
- Humanitarian Early Warning Service
- The Centre for Research on Epidemiology of Disasters
- United Nations Children's Fund (UNICEF)
- The Office of U.S. Foreign Disaster Assistance (OFDA)
- Action Against Hunger (AAH)
- CARE
- Doctors Without Borders
- Emergency Nutrition Network (ENN)
- International Committee of the Red Cross (ICRC)
- International Federation of Red Cross and Red Crescent Societies (IFRC)
- International Organization for Migration (IOM)
- International Rescue Committee (IRC)

IX. CONCLUSION

In this paper we have studied post disaster needs assessments from different disaster preparedness programs. We have addressed issues like objective behind needs assessment, strategies, methodologies, and practices for assessment. We also enlisted some of the relief organizations involved in disaster. In future, we intend to address the issues like post disaster needs assessment using Delay Tolerant Network.

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