Capacity Building for Disaster Risk Management in a Megacity Context: the Case of Manila, Philippines

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Abstract. Megacities are complex urban areas with high population density, nested administrative units, heterogenous communities with varying hazardscapes. Based on the action research experience of the authors in Manila, Philippines over a one-year period, the process of building capacity is discussed. The methodology is premised on sustaining a partnership among scientists and engineers from research institutions and NGOs with local authorities. The crosscutting approach utilized in this study shapes the incremental process as stakeholders are involved through the identification of sound practices and participatory workshops. Through an electronic work panel, areas of cooperation are identified: legal framework, training needs assessment, risk communication technologies, risk reduction involving land use planning, multi-stakeholder mechanisms. Emerging issues are analyzed in the context of generating a generic approach for disaster risk management in megacities.

Key Words: disaster risk management, participation, megacity

1. Introduction

Disaster losses have been increasing despite improved knowledge about natural hazards and mitigation technologies. As shown by earthquakes that have occurred in Kobe such as the 1995 Hanshin Awaji earthquake, the problems arising from unprepared societies are enormous. Due to the complexity of large cities or megacities, stakeholders need to be aware of what measures they can take to reduce losses. Participatory processes are not entirely new in disaster management. Twigg, et al. (2001) however observes that participation as a practice in the disaster field has come slower than in development "due to the history, character and culture of disaster work."In order to address these issues, a capacity development program is undertaken. (Note: Capacity development and capacity building are used interchangeably in this paper.)

This paper reports on the progress of a disaster mitigation research and implementation program reported earlier by Mattingly, et al. (2005). The research is a collaboration among researchers and practitioners

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based in Japan, the U.S, and the Philippines under the Crosscutting Capacity Development (3cd) Program. Initially, Metro Manila and Mumbai were selected as pilot cases. This paper focuses on Manila. First, terms are defined to introduce the concepts and the research framework. The objectives, scope and methodology are then described. Using action research (as opposed to mainstream science), the 1-year process involving workshops is explored in terms of capacity development. The results of 3 workshop evaluation questionnaire surveys are discussed. Insights from the analyses are then used to identify future direction.

2. Disaster Risk Management (DRM) a Megacity Context

The local level is the closest level at which improvements can be done by people or felt by them in response to their environmental problems. It is therefore essential to work at the local level or in this study, at the megacity level. Building capacities requires a crosscutting and participatory approach. “Crosscutting” refers to that which takes into account all steps of a program, a process or a plan. It takes into account multiple disciplines, stakeholders, sectors at multiple levels in a way that becomes useful for all those involved. The term “capacity development” is used to denote what individuals, groups, organizations and societies can do for themselves (Lavergne & Saxby 2001). Capacities may be broken down into two parts: technical skills and knowledge, and core capacities (which include managing and resolving conflicts, building consensus and networks) (UNDP 1997).

Metro Manila (or Manila) matches Britton’s definition of a megacity (2004) which is characterized by crowdedness, duality, bureaucracy, nested units, and complexity. Manila is the political and economic center of the Philippines. It has a population of about 10 million with a population density of 15,600 persons/sq km. It is comprised of 13 cities and 4 towns; as a special development region, the Metro Manila Development Authority (MMDA) is responsible for planning, supervising and coordinating basic services in this megacity. The MMDA is therefore a key DRM player.

DRM is a process that deals with vulnerabilities (physical, social, economic) and risks (Fernandez & Britton 2004). Disaster risk is the combination of a hazard event and consequence resulting from it such as losses to elements at risk e.g., population, buildings, public services, infrastructure, economic activities, and environment. The tangible output to guide loss reduction efforts has been called the disaster risk management master plan (DRMMP), following suit from the experience of Istanbul after the 1999 Turkey earthquakes (Fernandez, et al 2004). Stakeholders need to factor risk in daily life and operations through appropriate role sharing, warning system, standards, operating procedure, preparedness plans, information/education and land use control. Capacity building for DRM helps build resilient communities and sustainable cities through heightened awareness and experiential learning.

3. Objectives, and Methodology

The objectives of this paper are to systematically review the 3 workshops held between August 2004 and August 2005 in Manila; to analyze results of the participants’ workshop evaluation; and, to propose the next steps in the research and implementation program. As this paper focuses on these objectives, it does not deal with the broader context of national disaster management in the Philippines. The national context is reflected in the process strategy to involve national

stakeholders.

The methodology is participatory action research wherein researchers take part in the DRM process. The benefits of action research have been recognized in the disaster field (UN/ISDR 2004, 278-9). In action research, researchers develop a learning environment. As Allen (2001) writes: "The focus is action to improve a situation and the research is the conscious effort as part of the process, to formulate public knowledge that adds to theories of action that promotes or inhibit learning in behavioural systems." Qualitative and social methods of research such as the case study, group process diagnosis (participant observation, non-participant observation, structured and unstructured interview, focus groups or FGs), questionnaires, and workshop methodologies, are used.

The research team of scientists and engineers partner with local actors in the city. The local actors are comprised of research/academic institutions, local authorities, national government institutions, and civil society (non-governmental organizations, civic organizations). The research team did field work on Aug 16-23, 2004, Apr 17-22, 2005, and Jul 31-Aug 6, 2005; at each time, meetings and workshops were held. The typical workshop format was as follows: a plenary that introduces the themes at hand, discussion (in small groups (SGs) of 15-25 participants or in a large group (LG) equivalent to a plenary), and a final plenary. One to three facilitators guided a highly interactive discussion to achieve exchange of information, ideas and opinions. The utility of the evaluation survey instrument was proven in the first workshop (Fernandez, et al. 2005) and thereafter similar questionnaires were prepared and used for the next two workshops. Except for two "yes/no" questions, the 16-item questionnaire used a 5-point satisfaction scale with a score of 5 denoting complete satisfaction. Workshop objectives were explicitly stated on the questionnaire. In the third survey, a 17th item on the respondent's resolve to plan new activities on what he/she learned specifically was added.

4. Analysis of Process and Survey Results

In May 2004, soon after the authors respectively assumed the tasks as coordinators of building a sound practice knowledge database and the capacity building components, a "research plan" with timetable was proposed. The earliest proposed series of stakeholder arenas comprised of the first workshop which focused on determining "where we are" and visioning; the second on self-assessment; and the third on implementation needs. The first workshop took place as planned. However, the productive interaction between researchers and stakeholders led to an incremental process suggestive of Lindblom's thesis (1959). This is not entirely unexpected where government's administrative decisions are involved. The field experience of external support agencies (e.g., World Bank) in the practice of participatory development and project planning using "participation technologies" like project cycle management are not viewed favorably by some development specialists (e.g., Chambers, 1997, pp 42-44). The planning field is not lacking in structured tools (Coyle, 2004) for supporting development projects and programs; none are directly related to disaster mitigation and preparedness. Unlike the environmental field, the disaster field has had no platform like local Agenda 21, which offers a communication mechanism through participatory workshops to deal with environmental problems like garbage. For years, disasters have been regarded as the area for response and humanitarian relief personnel. Meanwhile, structural mitigation has

progressed technologically in terms of better flood control works and earthquake proof buildings. While "soft" tools that mainstream disasters into development (e.g., vulnerability and capacity assessment) have emerged, reconciling differences between disasters and development remains a big challenge.

Characteristics of the conducted workshops are shown in Figure 1. Workshops 1 involved Quezon City and Makati City, and Marikina City agreed to participate in Workshops 2 and 3. A thorough review of the wider context of DRM in Manila had been undertaken before Workshop 1; the result was a city DRM profile. The profile took into account the findings of the Metro Manila Earthquake Impact Reduction Study conducted through the Japan International Cooperation Agency (2004). From this study, the 3cd project director prepared a discussion document detailing a 10-point action plan (Mattingly 2005). Under MMDA's auspices, Workshop 2 was held for 1 day with the action plan as springboard for discussion to move along the development of DRMMP. Actions were prioritized by the LG using a ranking scheme. It became evident that the research team had had to refine the group output into a work plan (2005-10) to be pursued with MMDA by the 3cd team. The work plan was generated through e-exchanges among a 16-member panel using a planning questionnaire devised by the first author, who acted as moderator. After 6 updates, the e-panel did its task from April 25 to May 9. Feedback was obtained from 50% of the panelists. The work plan prioritized objectives, determined action items for the team to pursue with local stakeholders, and indicated a timeframe.

Figure 1. Disaster risk management workshop characteristics held in Manila, Aug 2004-Aug 2005.

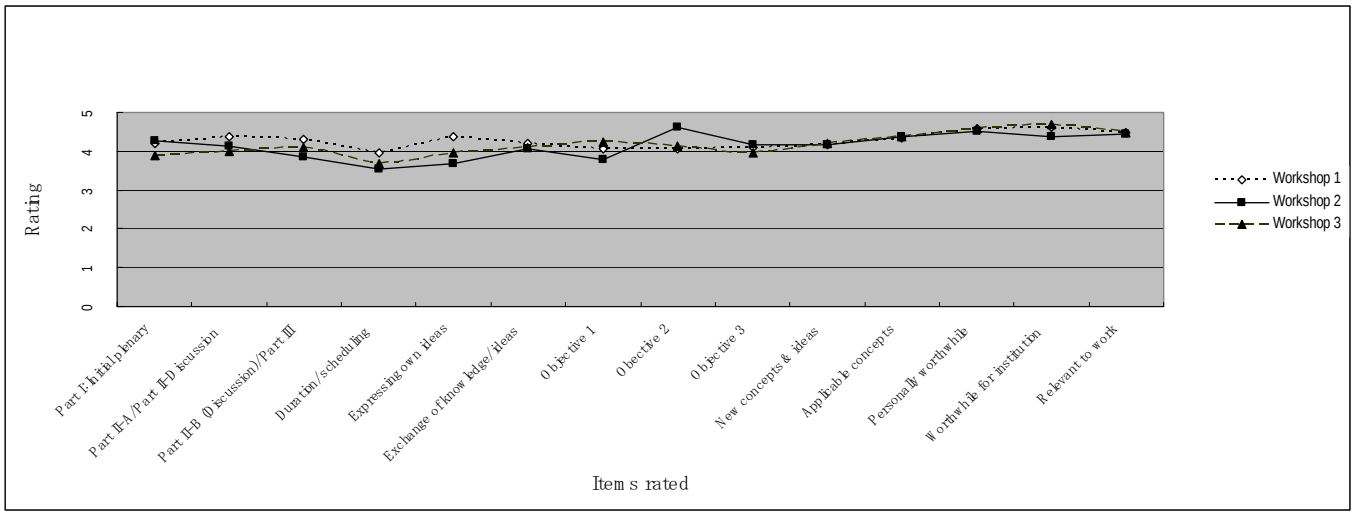
Workshop*	Structure	Objectives	Composition of participants**/Response rate to questionnaire
1	I-Plenary presentations; II.A-Discussion on vision by 5 small groups (functional sectors); II.B-Discussion on practices by 5 small groups of mixed sectors; III-final plenary	1-1 Better understand current disaster risk management organization structures 1-2 Better understand "sound practices" in disaster risk management 1-3 Better understand the 3cd program	Total: 123 LG: 87 (70.7%); NG: 2 (2.4%); UR: 9 (7.3%); Pri: 7 (5.7%); CS: 10 (8.1%); Oth: 7 (5.7%) Response rate: 50.6%
2	I-Plenary presentations; II-Plenary discussion; III- Final plenary	2-1 Engage stakeholders 2-2 Obtain feedback on 10-point framework 2-3 Understand the disaster risk management master plan (DRMMP)	Total: 46 LG: 25 (54.3%); NG: 12 (26.0%); UR: 3 (6.5%); Pri: 1 (2.2%); CS: 0 (0%); Oth: 5 (11.0%) Response rate: 32.6%
3	I-Plenary presentations; II-Discussion of 5 small groups on priority areas of cooperation; III-Final plenary	3-1 Share views, experiences, and information concerning the context of identified areas of cooperation 3-2 Reach agreements on suggested actions to improve current situation 3-3 Constitute a permanent discussion/ working group in each identified areas.*	Total: 73 LG: 39 (53.4%); NG: 6 (8.2%); UR: 9 (12.3%); Pri: 2 (2.7%); CS: 8 (11.0%); Oth: 8 (11.0%); NK: 1 (1.4%) Response rate: 55.1%

Note: *Workshop 1-Aug 17, 2004,Quezon City Hall; Workshop 2-Apr 20, 2005, Metro Manila Development Authority; Workshop 3-Aug 5, 2005, Makati City Hall. ** LG: local governmnet; NG: national government deparments; UR: universities, research and training institutions; Pri: Utilities and private companies; CS: civil society (including non-governmental and professional organizations; Oth: Others including international organizations and institutions based elsewhere; NK: not known.

Based on the knowledge gained, the team selected 5 areas of cooperation to build capacity and support the implementation of DRMMP, namely: risk communication technologies; risk reduction involving land use planning; DRM training needs assessment; multi-stakeholder mechanisms; and legal framework. Workshop 3 discussion consisted of 5 SGs, each dealing with an area of cooperation. The SGs served as FGs in the respective specialized fields. Workshop 3 objectives indicate that a certain level of commitment by local stakeholders will have been reached. It is useful to obtain indication on the extent at which local participation may have developed to reach the goal of capacity building.

Comparing the 3 workshops, the weighted scores pertaining to 11 items of the surveys are shown in Figure 2. Workshop 3 has higher overall scores (max: 5). Scores regarding structure of workshops 1 and 3 show a similar pattern. Results also show participants' satisfaction about SGD (1 and 3) rather than the LG (2). (Refer to Figure 1 for workshop objectives.) This will be subject to further analysis. Lastly, workshop 3 data are analyzed by correlation analysis (Table 1). Overall assessment is positively correlated with opportunities to express and exchange knowledge and ideas as well as exposure to new concepts. It is least correlated with plenary presentations. Motivation to take action after the workshop strongly correlated with the same factors that induce better assessments, as well as FG presentation. Achievement of objectives 2 and 3 is only moderately correlated to overall assessment, which indicates that further attention is needed in building partnerships with local stakeholders. These statistical analyses are part of a continuing broader analysis to monitor and evaluate DRM capacity building specially in areas of concern shared by researchers and local stakeholder.

Figure 2.Weighted scores according to participants' evaluation of three Manila workshop held between Aug 3005-Aug 2005.



Note: (1) Part I is common to all workshops. Part II-A and II-B are small group discussions held consecutively in Workshop 1. Parts II and III are the final plenary sessions in Workshops 2 and 3. (2) All workshops had three objectives, each workshop having different objectives as stated in Figure 1.

5. Emerging Issues, Conclusions and Future Directions

A systematic method through a structured procedure (workshop design) and feedback process

(questionnaires, interviews) was presented. This is deemed important and pragmatic to validate action research results and plan next interventions. Through attention to participatory learning processes, the 3cd Program has shown its catalyzing role in DRM capacity building as future actions are interactively planned with Manila stakeholders. The 15-month investigational scheme shows possibilities for developing a mechanism for stakeholder participation in DRM in a similar to development processes imbedded in successful environmental impact assessment system. Flexibility has characterized the research team's actions; thus, the DRMMP process is an incremental one. Although local stakeholders started to initiate activities on their own, it is useful to review who participates to sustain an inclusive learning environment. The local initiatives will facilitate a redefinition of the role of the foreign-based research team as external support agent fitting for true DRM capacity building.

Table 1. Correlation matrix of workshop evaluation attributes pertaining to Workshop 3 held August 2, 2005, Manila.

	Vary 1	Var 2	Var 3	Var 4	Var 5	Var 6	Var 7	Var 8	Var 9	Var 10	Var 11	Var 12	Var 13	Var 14	Var 15	Var 16
Var 1	1.000															
Var 2	0.721	1.000														
Var 3	0.785	0.868	1.000													
Var 4	0.989	0.760	0.754	1.000												
Var 5	0.905	0.849	0.704	0.945	1.000											
Var 6	0.810	0.971	0.958	0.817	0.840	1.000										
Var 7	0.632	0.991	0.860	0.671	0.771	0.954	1.000									
Var 8	0.533	0.934	0.886	0.553	0.614	0.923	0.968	1.000								
Var 9	0.857	0.882	0.987	0.838	0.775	0.966	0.858	0.861	1.000							
Var 10	0.837	0.909	0.984	0.816	0.804	0.980	0.887	0.870	0.979	1.000						
Var 11	0.380	0.902	0.759	0.426	0.545	0.839	0.951	0.974	0.730	0.752	1.000					
Var 12	0.360	0.887	0.745	0.407	0.520	0.823	0.939	0.969	0.719	0.731	0.999	1.000				
Var 13	0.149	0.732	0.672	0.173	0.262	0.687	0.815	0.913	0.609	0.616	0.947	0.954	1.000			
Var 14	0.155	0.730	0.682	0.176	0.258	0.690	0.813	0.915	0.618	0.623	0.943	0.951	1.000	1.000		
Var 15	0.171	0.732	0.708	0.182	0.264	0.705	0.815	0.919	0.635	0.652	0.937	0.941	0.995	0.996	1.000	
Var 16	0.240	0.822	0.694	0.281	0.403	0.755	0.891	0.945	0.648	0.668	0.987	0.990	0.983	0.980	0.973	1.000

Note: The variables (VAR) are as follows: 1-Plenary session; 2-Focus group presentations; 3-Focus group discussion; 4-Group presentations; 5-Duration/scheduling; 6-Expressing own ideas; 7-Exchange of knowledge/ideas; 8-Obj 1 Share ideas; 9-Obj 2 Reach agreements; 10-Obj 3 working group; 11-New concepts; 12-Applicable concepts; 13-Personally worthwhile; 14-Worthwhile for institutions; 15-Relevant to work; 16-New activities to apply.

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