



How resilient are our communities?

Shesh Kafle discusses a programme launched to enhance community resilience in the aftermath of the 2004 tsunami and outlines a unique method for measuring resilience capabilities

Community resilience is a relative term and refers to an ideal condition of a community in terms of its capacity to anticipate, prepare for, respond to and recover quickly from the impacts of a disaster. The disaster-resilient community is a positive concept, and while complete resiliency is not attainable, every community is striving to achieve it.

Twigg (2007)¹ defines a disaster-resilient community as a community which has the capacity:

- To absorb stress and destructive forces through resistance or adaptation;
- To manage or maintain certain basic functions and structures during disastrous events; and
- To recover or 'bounce back' with specific behaviour, strategies and measures for risk reduction.

According to Geis (2000)², the disaster-resilient community is the safest possible community that we have the knowledge to design and build in a natural hazard context. It seeks to minimise its vulnerability to such hazards by maximising the community capacities through the application of disaster risk reduction (DRR) measures (Twigg, 2007). In practice, the community which has the following elements can be considered as resilient to future disaster risks:

1. Community-based organisations with trained volunteers;
2. Hazard, vulnerability and capacity assessment done and socialised in the community;
3. Community risk reduction plans formulated and implemented;
4. Involvement of women, children and vulnerable groups in decision-making processes;
5. Integration of community plans into local development planning;
6. Linkage development with local government agencies and non-government organisations;

7. Community awareness on key hazards, their vulnerabilities and capacities, and future disaster risk;
8. Diversified local economy;
9. Safe 'critical facilities';
10. Contingency plans;
11. External support; and
12. Community early warning system linked to government early warning system.

Community-based risk reduction framework

After the devastating tsunami event of 26 December 2004, a number of community-based approaches were introduced as part of the recovery operations and disaster risk reduction. The Canadian Red Cross (CRC) together with the Indonesian Red Cross Society (PMI) initiated an Integrated Community-Based Risk Reduction (ICBRR – Figure 1) Programme in 43 communities of tsunami-affected villages in Aceh and on Nias Islands. The goal of the ICBRR programme was to build disaster-resilient communities in the target villages.

Community-based risk reduction is a process in which at-risk communities actively engage in the assessment, implementation of risk reduction measures, and monitoring and evaluation of disaster risks in order to reduce their vulnerabilities

and enhance their capacities. This means that people are at the heart of decision-making. The involvement of the most vulnerable social groups and stakeholders is considered paramount in this process, while the support of the least vulnerable groups is necessary for successful implementation.

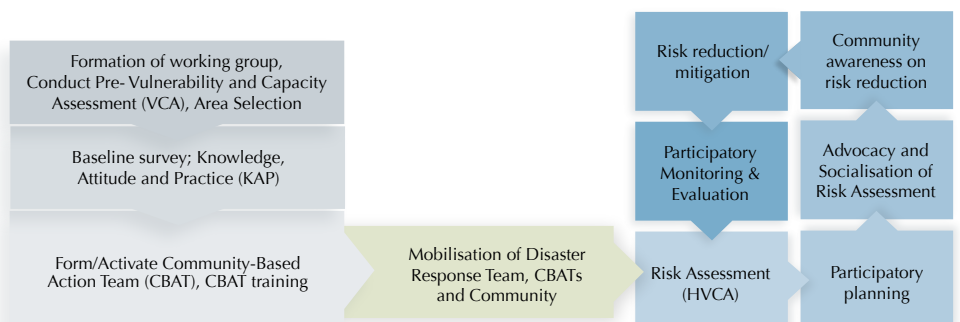
An ICBRR approach aims to address vulnerability and community risks to reduce the disaster impacts by involving other key stakeholders including the local government agencies, and incorporating all aspects of the disaster management cycle.

An integrated approach to reduce disaster risks includes the incorporation of all aspects of disaster management cycle, including: response, recovery and prevention, tackling multiple hazards, dealing with multiple stakeholders and integrating disaster risk reduction activities into development plans of the country.

Key achievements

The formation and strengthening of community-based action teams (CBATs), as well as conducting risk assessments and implementing risk reduction plans in all the programme villages were some of the key achievements of the ICBRR programme (Table 1). As the programme is process-oriented and based on capacity-building

Figure 1. ICBRR Model



intervention, the ten-step ICBRR model was institutionalised and CBATs were mobilised for the community disaster risk assessment, action planning and implementation of micro-level risk reduction projects.

Community resilience index

A conceptual framework was developed to measure the disaster-resilient communities using process and outcome indicators. For the assessment of process indicators, the ten steps of the ICBRR were weighted 'W' (i=1 to 10) based on their importance in the overall risk reduction. For the value of each step a rank 'R' (j=0 to 5) was assigned to each based on its status of achievement.

The values and weights were given by the author based on their relative importance and his experience while designing and implementing the programme. The weight and scores for the values were verified and adjusted in consultation with the community members. The five-point scores given for value are expected to minimise the personal error of the evaluators.

Weight (rank) was given to the process indicators as per their importance in the overall disaster risk reduction; whereas their corresponding values were given based on the completion of the task, quality in terms of participation of stakeholders, clarity of the process to the stakeholders and the level of outputs. Similarly, outcome indicators were identified based on the programme proposals, UNISDR (2005)³, Kafle (2006)⁴, ADPC (2006)⁵, and Twigg (2007). The five thematic areas of the Hyogo Framework for Action (UNISDR 2005) provided the basis of choosing the outcome indicators. The thematic areas were:

1. Governance
2. Risk assessment
3. Knowledge and education
4. Risk management and vulnerability reduction
5. Disaster preparedness and response.

For the calculation of the outcome index, ranking and values were given in a similar way to that of process indicators. The measurement of community resiliency was done using the following index:

$$i=10, j=5 \quad i=28, j=5$$

$$\text{Overall score (OS)} = \sum P (W_i * R_j) + \sum O (W_i * R_j)$$

$$i=1, j=0 \quad i=1, j=0$$

OS = Overall score expressed in percentage

P = Process indicators ranging from 1 to 10

O = Outcome indicators ranging from 1 to 28

W_i = Weight of process and outcome indicators

R_j = Rank or value of process and outcome indicators

Altogether ten process and 28 outcome indicators were identified in order to measure the level of community resilience. The overall

No.	Indicators	Planned (Number)	Achieved (%)
1.	Community-Based Action Team (CBATs are able to recruit, train, support and motivate community volunteers for DRR and work together to do so)	43	100
2.	CBATs trained as Red Cross volunteers	860	100
3.	Training courses organised for CBATs	43	100
4.	Persons in the community (both villages and schools) with knowledge of hazards, vulnerability and risk	6,000	87
5.	Hazard, Vulnerability and Capacity Assessment (HVCA) completed in participatory process including representatives of all vulnerable groups	43	100
6.	CBAT members including vulnerable groups and women involved in the plan formulation process	1,060	100
7.	Villages submitted proposals for the community risk reduction plan implementation	43	100
8.	Programme support villages linked with PMI Early Warning System (EWS)	43	100
9.	Number of PMI staff, volunteers and potential facilitators received training	432	100
10.	EWS focal points at CBATs appointed and trained	43	100
11.	Implementation of risk reduction plans by CBATs	43	95

Table 1. Key Performance Indicators and Achievements

index value of all 43 communities was 63 whereas the process and outcome indicator values were 63 and 61.5 respectively.

This tool can be used to measure community resilience as an outcome of a community-based DRR intervention. This can be used for baseline survey, progress monitoring of the Community Based Disaster Risk Reduction (CBDRR) programme, and benchmarking for programme evaluation. The core components of this tool are process and outcome standards. The tool has been developed with an assumption that both the process and outcome standards are equally important in building disaster-resilient communities. The combination of both standards is an impetus to the quality change in the community. Process indicators are important for community understanding, ownership and the sustainability of the programme; whereas outcome indicators are important for the real achievements in terms of community empowerment and capacity building.

A measure of resilience

The concept of a disaster-resilient community can best be described by the processes the community follows, and the outcomes it achieves. The process of the CBDRR approach varies by country and location as per the level of community awareness and organisational strategy, and can therefore be modified accordingly. However, core elements such as the formation of community groups, mobilising those groups in risk assessment and community risk reduction planning should be present in all the countries or locations. As this study shows, community resiliency can be measured; however, any such measurement must be both location and hazard specific.

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1 John Twigg 2007. *Characteristics of a Disaster Resilient Community: A Guidance Note*. DFID DRRICG.

2 Geis DE 2000, 'By Design: the Disaster Resistant and Quality-of-Life Community'. *Natural Hazards Review* 1(3): 152.

3 UN ISDR 2005 *Hyogo Framework for Action*: <http://www.unisdr.org/eng/hfa/hfa.htm>.

4 Kafle, Shesh Kanta 2006. *Integrating Community-Based Disaster Risk Management into Government Policy and Planning in Southeast Asia*. In: Walter J. Ammann, Jordahana Haig, Christine Huovinen and Martina Stocker (Eds.), IDRC, Davos, Switzerland.

5 ADPC, 2006. *Critical Guidelines: Community Based Disaster Risk Management*, Bangkok. Asian disaster Preparedness Centre.