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DPNet Nepal **DISASTER PREPAREDNESS NETWORK-NEPAL**

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नेपाल सरकार

गृह मन्त्री

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निजी सचिवालय

सिंहदरबार, काठमाडौं

च.नं.:-

शुभकामना

प्रकोप पूर्वतयारी सञ्जाल - नेपाल (DPNet-Nepal) ले प्रकोप व्यवस्थापन सम्बन्धी विभिन्न लेख-रचनाहरुको संगालोको रुपमा स्मारिका प्रकाशन गर्न लागेकोमा ज्यादै खुसी लागेको छ ।

प्रकोप व्यवस्थापनका विभिन्न चरणमा कार्य गर्दै आएका सरकारी एवं अन्तर्राष्ट्रिय निकाय र राष्ट्रिय तथा अन्तर्राष्ट्रिय गैरसरकारी संस्थाहरुको साझा सञ्जालका रुपमा स्थापित त्यस संस्थाबाट प्रकाशन हुने स्मारिकाले मुलुकको गरिबी निवारण र विकास प्रक्रियाका निमित्त चुनौतीको रुपमा देखा परेको प्रकोपको क्षति न्यूनीकरण गर्ने विधिवारे समसामयिक ज्ञानको प्रवाह गर्न महत्वपूर्ण भूमिका निर्वाह गर्नेछ भन्ने विश्वासका साथ संस्थाको उद्देश्य प्राप्तिमा पूर्ण सफलता प्राप्त होस् भनी शुभकामना व्यक्त गर्दछु ।

कृष्णप्रसाद सिटौला
गृहमन्त्री

नेपाल सरकार

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(दैवी प्रकोप व्यवस्थापन शाखा)

सिंहदरबार,
काठमाडौं, नेपाल ।

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प्राप्त पत्र संख्या र मिति :-
च.नं. :-

शुभ-कामना

प्रकोप जोखिम न्यूनीकरण एवं व्यवस्थापनका क्षेत्रमा संलग्न प्रकोप पूर्व तैयारी सञ्जाल नेपाल नामक गैर सरकारी संस्थाबाट प्रकोप जोखिम न्यूनीकरणलाई विकासको मूल प्रवाहमा समाहित गरी अगाडी बढ्ने अठोट सहितका लेख रचनाहरुको संगालो स्वरुप प्रकाशित स्मारिकालाई हार्दिक शुभ कामना अर्पण गर्दछु ।

देश भित्र गरिने प्रकोप जोखिम न्यूनीकरणसम्बन्धी यावत कार्यहरुलाई मूल प्रवाहमा समाहित गरेर सम्बद्ध सबै सरोकारवालाहरुलाई एउटै साझा थलोमा भेला गरी व्यवस्थित रुपमा छलफल अघि बढाउन र तत्सम्बन्धमा गरिने प्रयासहरुलाई सशक्त तुल्याउने दृष्टिकोणले राष्ट्रिय कार्यमंचको स्थापना हुन लागेको यहाहरुलाई जानकारी गराउन चाहन्छु । सरोकारवालाहरुबीचको समझदारी र कार्यगत चिन्तन मननले प्रकोप जोखिम न्यूनीकरणका दिशामा साझा अवधारणाको अभिवृद्धिका साथै राष्ट्रिय सहमतिको वातावरण सृजनामा टेवा पुग्ने अपेक्षा राखेको छु ।

समयसापेक्ष रुपमा प्रकोप जोखिम न्यूनीकरणलाई व्यवस्थापन गरी दिगो विकासको अनुभूति दिलाउन प्रकोपजन्य मुलुकहरु प्रतिबद्धताका साथ अगाडी बढिरहेका छन् । यसका लागि यसमा संलग्न सबैले विशेष लगन र निष्ठाका साथ सक्रिय हुन अत्यन्त जरुरी छ । नेपाललाई प्रकोपबाट सुरक्षित राख्न सम्बद्ध सबै पक्षहरु क्रियाशील भै भावी सन्ततीको लागि सुरक्षित भविष्यको सृजना गर्न कटिबद्ध हुनु आजको खाँचो महसुस गरिएको छ ।

धन्यवाद् ।

(उमेशप्रसाद मैनाली)
सचिव
गृह मन्त्रालय

प्रकाशकीय

प्रकोप व्यवस्थापनलाई प्रभावकारी बनाएर ह्योगो कार्ययोजना २००५-२०१५ द्वारा निर्धारित सुरक्षित भविष्यको निर्माणका लागि सहश्राब्दी विकासलक्ष्यलाई सघाउन राष्ट्रिय रूपमा प्रकोप व्यवस्थापनकर्मीहरूको सञ्जालको आवश्यकता धेरै पहिलेदेखि नै महसुस गरिएको थियो। त्यही आवश्यकताको पूर्ति गर्न नेपाल सरकारका प्रतिनिधि, प्रकोपका क्षेत्रमा कार्यरत राष्ट्रिय तथा अन्तर्राष्ट्रिय गैरसरकारी संस्था, बहुपक्षीय दातृ निकाय र विशेषज्ञहरूको सहभागितामा प्रकोप पूर्वतयारी सञ्जाल- नेपाल स्थापना भएको हो। सञ्जालले आफ्ना सदस्य संस्था तथा सरोकारवाला सबैको क्षमता अभिवृद्धि गर्न विभिन्न कार्यक्रमहरू सञ्चालन गर्दै आएको छ। यसै क्रममा युरोपियन कमिसन ह्युमेनिटेरियन एड डिपार्टमेन्ट, डीपेको प्रोजेक्टको सहयोगमा नेपालस्थित संयुक्त राष्ट्रसङ्घीय विकास कार्यक्रमले यस सञ्जाललाई विभिन्न कार्यक्रम सञ्चालन गर्न सहयोग गरेको छ। प्रोजेक्टको सहयोगमा सञ्चालित कार्यक्रमकै एक अङ्गको रूपमा पूर्वतयारीका अभ्यास नामक स्मारिका प्रकाशन गर्ने सफलता हामीलाई मिलेको छ, जसले प्रकोप व्यवस्थापनका विविध आयामलाई उजागर गर्ने अपेक्षा गरिएको छ।

विश्वका हरेक मुलुकले कुनै न कुनै प्रकोपको पीडाबाट गुज्रनु परेको तथ्य सर्वविदितै छ। नेपालले मात्र वार्षिक सयौं नागरिकको ज्यान र करोडौं रूपैयाँबराबरका भौतिक संरचना गुमाइरहेको छ। प्रकोपले धनी र गरिबबीच भेदभाव नगरे पनि यसको अत्यधिक मार ग्रामीण क्षेत्रका गरिबमै पर्ने गरेको छ। समग्रमा प्रकोपले मुलुकको आर्थिक, सामाजिक, सांस्कृतिक विकासको गतिलाई निकै पछाडि धकेल्दै आएको छ। यस अवस्थामा प्रकोप व्यवस्थापनका कार्यलाई समय र समाज सुहाउँदो आर्थिक तथा प्राविधिक सुझबुझ सहित अगाडि बढाउनु आवश्यक हुन्छ।

वर्तमान समयमा प्राकृतिक स्रोतको विनाश, विकासका अव्यवस्थित क्रियाकलाप र वातावरणीय प्रदूषणका कारण बाढीपहिरो, हुरीबतास, आगलागी, चट्याङ, भुइँचालो, हिमपहिरो, हिमताल विस्फोट, महामारीजस्ता प्रकोपको प्रवृत्ति र आवृत्तिमा व्यापक वृद्धि हुँदै आएको छ। त्यसकारण प्रकोपलाई वातावरण विनाशको एक अभिन्न अङ्गको रूपमा स्वीकार गरी प्रकोप व्यवस्थापन र न्यूनीकरणका क्षेत्रमा जनचेतना अभिवृद्धि गर्नु पनि आवश्यक देखिएको छ। प्रकोप व्यवस्थापनमा कार्य गर्ने सरकारी, गैरसरकारी तथा निजी क्षेत्रका लागि यस प्रकाशनले राम्रो सहयोग पुऱ्याउने अपेक्षा हामीले गरेका छौं।

अन्तमा यो स्मारिका प्रकाशन गर्न सहयोग गर्ने युरोपियन कमिसन ह्युमेनिटेरियन एड डिपार्टमेन्ट, डीपेको प्रोजेक्ट, संयुक्त राष्ट्रसङ्घीय विकास कार्यक्रम, यसलाई ज्ञानको भण्डार बनाउन लेख-रचना उपलब्ध गराउने विद्वान् लेखक र संस्थाका प्रतिनिधि, सम्पादक मण्डल तथा प्रत्यक्ष तथा परोक्ष रूपमा सहयोग गर्ने अन्तर्राष्ट्रिय, राष्ट्रिय तथा स्थानीय संस्थाहरू र यसको साजसज्जा तथा प्रकाशनको कार्यलाई पूर्णता दिने सदस्य संस्था इको-नेपालप्रति आभार व्यक्त गर्न चाहन्छौं।

सम्पादकीय

नेपालको सन्दर्भमा प्रकोप व्यवस्थापन तथा पूर्वतयारी वा प्रकोपको जोखिम न्यूनीकरण जटिल र संवेदनशील विषयका रूपमा देखिएको छ। मुलुक राजनीतिक सङ्क्रमणबाट गुज्रिरहेको वर्तमान अवस्थामा प्रकोप व्यवस्थापनका मुद्दाले उचित स्थान प्राप्त गर्न नसक्दा पनि यसको जोखिम बढ्दो क्रममा रहेको छ।

प्रकोप जोखिम न्यूनीकरण र यसको समग्र व्यवस्थापनलाई प्रभावकारी बनाउन सरकारको भूमिकाले नै सर्वाधिक महत्व राख्ने भएकाले सरकारले आवश्यक संयन्त्रको विकासमा ध्यान पुऱ्याउनु जरूरी हुन्छ। सरकारले प्रकोप व्यवस्थापनका कार्यलाई प्रभावकारी बनाउने प्रयासस्वरूप राष्ट्रिय कार्यमञ्चको स्थापना गर्ने, प्रकोप जोखिम व्यवस्थापनका लागि राष्ट्रिय रणनीति बनाउने, प्रकोप व्यवस्थापन नीति र ऐन ल्याउने तयारी पनि गरिरहेको छ। यद्यपि राजनीतिक उतारचढावका कारण यी प्रयासले ज्यादा समय लिएको अनुभव सबै पक्षबाट भइरहेको छ।

जनसङ्ख्या वृद्धि, गरिबी, प्राकृतिक स्रोतमाथि अत्यधिक चाप तथा स्रोतको अनुचित उपयोगका कारण प्रकोपको पुनरावृत्ति तथा आवृत्तिमा पनि बढोत्तरी आइरहेको छ। यसबाट विश्वका कुनै पनि समुदाय सुरक्षित रहने नैसर्गिक अधिकारबाट वञ्चित भइरहेको अनुभूति गर्न थालिएको छ। भुइँचालो, ज्वालामुखी, हुरीबतास, अतिवृष्टि, अनावृष्टि, खडेरी, महामारीजस्ता प्रकोपका घटना पनि अब विशुद्ध प्राकृतिक प्रकोपका रूपमा रहेका छैनन्। मानवीय क्रियाकलापले प्रकृतिका हरेक पक्षमा हस्तक्षेप गरेका कारण नै प्रकोपको जोखिममा वृद्धि भएको छ र यसको मारमा पुनः मानिस नै बढी पर्ने गरेको छ। प्रकोप जोखिमको विस्तारको यही कारणले सुरक्षित भविष्यको विश्वव्यापी दृष्टिकोण समेत ओझेलमा परेको छ।

प्रकोपको जोखिम वृद्धिका स्थानीय, राष्ट्रिय, क्षेत्रीय र विश्वव्यापी कारणको पहिचान गरी जोखिम न्यूनीकरणका प्रयासमा विश्वव्यापी चासो बढेको वर्तमान सन्दर्भमा नेपालले पनि त्यसअनुरूप स्थानीय र राष्ट्रिय कार्यक्रम तयार गर्नु सान्दर्भिक हुन्छ। प्रकोप जोखिम व्यवस्थापनका राष्ट्रिय रणनीति, नीति र ऐन जारी भएका अवस्थामा मात्र सरकारले वर्तमान समयमा देखाएको चासोले सार्थकता पाउने भएकाले पनि यसतर्फ उसको ध्यान जानु जरूरी देखिएको छ।

विश्वको तथ्याङ्कअनुसार प्रकोपबाट प्रभावित हुने मानिसमध्ये ५६ प्रतिशत दक्षिण एसियाका छन्। दक्षिण एसियाका विकासशील मुलुकका करिब आठ करोड मानिस हरेक वर्ष प्रकोपबाट प्रभावित हुन्छन्। यी मुलुकमध्ये प्रकोपबाट प्रभावित भएर मृत्यु हुनेको दर नेपालमै सर्वाधिक रहेको छ। प्रकोपको सर्वाधिक जोखिम रहेका विश्वका मुलुकमा नेपाल अग्र स्थानमा पर्छ भने यसको ६० प्रतिशत क्षेत्रफल सधैं प्रकोपको जोखिममा रहेको छ। त्यस्तै, नेपालको झन्डै आधा जनसङ्ख्या एकैसाथ उत्पन्न हुनसक्ने चार प्रकारका प्रकोपको जोखिममा रहेको विशेषज्ञहरूको विश्लेषणले देखाएको छ। विगतको तथ्याङ्कीय विश्लेषणअनुसार नेपालमा प्रकोपका कारण वर्षेनी औसत ६०५ जना मानिस मर्छन्, झण्डै २२ हजार परिवार प्रत्यक्ष प्रभावित हुन्छन् र करिब ७४ करोड रूपैयाँ बराबरको आर्थिक क्षति हुने गरेको छ।

नेपालको सन्दर्भमा, प्रकोपको जोखिमयुक्त स्थानमा बस्नु गरिबीजन्य बाध्यता हो भने प्रकोपका कारण विस्थापित हुनेको सङ्ख्या वर्षेनी वृद्धि भइरहनुको प्रमुख कारण पनि गरिबी नै देखिएको छ। गरिब नै शिक्षा, स्वास्थ्य र स्वच्छ खानेपानीजस्ता आधारभूत आवश्यकताबाट सधैं वञ्चित रहन्छन् र प्रकोपको तारो पनि उनीहरू नै हुन्छन्। प्रकोपको यही पीडालाई कम गर्न मुलुकमा केही वर्षयता विभिन्न सरकारी निकाय र गैरसरकारी संस्था सक्रियताका साथ लागेका छन्। त्यसैले अबको समयमा यस क्षेत्रमा कार्यरत संस्थाहरूबीच साझेदारी र समन्वयात्मक सञ्जालको विकास गर्दै अगाडि बढ्नु जरूरी छ। त्यसो भएमा प्रकोप व्यवस्थापन तथा जोखिम न्यूनीकरणका कार्यक्रमले सार्थकता पाउनेछन्।

विषयसूची

The Role of the Non-governmental Organizations in Disaster Management

Meen B. Poudyal Chhetri, PhD*

ABSTRACT

The occurrences and effects of natural disasters in various parts of the world have shown the necessity to intensify mutual cooperation among the disaster management stakeholders to reduce the impact of potential disasters. The impact of disasters can be reduced by adopting preventive measures and such measures should be taken from the government as well as Non-Governmental Organizations (NGOs) in due time. For this the government and the NGOs should work in close cooperation and coordination. For an effective disaster mitigation, early warning system, insurance system, emergency rescue and relief operation, rehabilitation and recovery plans should involve activities such as training, post-disaster evaluation, monitoring of relief works, review and cooperation and coordination of central, district and local level preparedness, rehabilitation, reconstruction and research works. To accomplish these goals, political determination, pragmatic policy formulation and implementation, public awareness raising programs and people's participation are highly needed.

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1. Introduction

Most governments of the world have, nowadays, realized that the government alone can not provide all services required for the public at large. Particularly, the government machinery may not be able to go to the grassroots level, especially in remote, rural and hilly areas. While NGOs, basically local NGOs could go and see each and every nook and corner and provide services as per the existing rules and regulation of a given country. In such a way, the NGOs could support the government initiatives on the one hand and play an important role in the country's development by bringing specialized knowledge, technical expertise, research capacities, local contacts and community support to the process on the other.

United Nations Economic and Social Council (ECOSOC) have defined the NGOs as "Any international organization that is not founded by an international treaty."

John O'Sullivan, Editor-In-Chief, United Press International says: "There is at the moment a very important revolution in world politics going on. The NGO revolution is possibly the biggest change in world politics since the defeat of the Soviet Union and the end of the Cold War."

"The Government recognizes that NGOs can play an important role in the country's development by bringing specialized knowledge, technical expertise, research capacities, local contacts and community support to the process, and we firmly believe that with an increased involvement of NGOs and other civil society groups, we will be able to improve the quality of our assistance. Therefore, ADB supports the Government's efforts to strengthen its partnership with NGOs and to create the conditions in which NGOs can maximize their contribution to poverty alleviation" said Rolf Zelius, Chief of ADB's Office of Environment and Social Development. The unit headed by Mr. Zelius includes a recently established NGO Center.

The advent of NGOs as international actors as well as shapers of national policy is one of the most important movements in international relations. NGOs include the entire range of civil society: from lobbying for better health, protection of the environment and development of education for all; to delivering humanitarian relief and securing and protecting basic civil and political rights.

2. Types and Roles of NGOs

On the whole NGOs are being classified into two groups namely; National Non-governmental Organization (NGO) and International Non-governmental Organization (INGO). The major functions of the NGO and INGO can be summarized as following:

- NGOs and INGOs should work as selfless, voluntary and non-profit making organizations.
- The services to be provided by the NGOs and INGOs should be non-discriminating.
- They should work as the auxiliary to the government. In other words their basics should be to support government plan, programs and policies.
- NGOs and INGOs programs should not contradict with the government policies and the law

of the land in any manner.

- The NGOs and INGOs should work and act as the watchdog as well as casting critical eye over the current events.
- They should carry out awareness and educational programs through publications and mass media.
- They should collect, share and disseminate data and information.
- They should build capacity of themselves and the community.
- Work as the contact point between the government and the communities or coordinate between them.
- The NGOs and INGOs should also make positive and constructive influence on the government's policy decisions as and when the government makes a mistake.
- The NGOs and INGOs should try to address the public interest.

3. Significance of the NOGOs

It is well-known that with an increased involvement of NGOs and other civil society groups, we will be able to improve the quality of our services to the people. For example NGOs could implement programs to increase agricultural productivity, expand economic and social opportunities for women, provide health care, build schools and training centers, protect the environment, and increase access of the poor to financial resources through micro credit, poverty reduction and so on.

It is to be noted that NGOs have been found instrumental to plead for human rights and fundamental freedoms in a given country. Such types of NGOs courageously defend human rights activists, despite the high risk of their survival. These NGOs build on a legacy of championing human rights through norm-setting and monitoring. They have often helped to shape international agreements, instruments, institutions, human rights mechanisms and even UN Charter over decades.

In fact NGOs today are helping to establish and strengthen democracy in three key ways, namely; by working to establish awareness of and respect for the right of individuals to exercise freedom of expression, assembly and association, which is crucial to participatory democracy; by ensuring that there is a level playing field upon which candidates for elective office can compete and that the entire election process is free and fair; and finally by working to build and strengthen the rule of just laws and responsive and accountable institutions of government, so that the rights of individuals are protected regardless of which persons or parties may be in power. Following are the main significances of the NGOs:

- NGOs have easy access to the grassroots level than the government,
- NGOs are able and willing to go door to door,
- Due to the presence in the field, NGOs have more accessibility and contact with the community people,
- Hence, the community people have more trust and narrow gap with NGOs than the government,

- While government officials think they are the masters not the servant of the public, which is incorrect, however, NGOs enjoy a high degree of public trust,
- NGOs have been found instrumental to raise public awareness and educate general public
- Donors love to support NGOs due to easy and short work process of NGOs,
- To organize a meeting or appointment with a NGO is very easy for the donors in comparison to the government. In other words, they are easily accessible,
- NGOs have less hassle and red tapism while performing any job or task,
- NGO networks are helpful to address sustainable development issues at grassroots level.

4. Problems

NGO are not problem free, however. They are facing the problems of lack of funding, inadequate training, incomplete legal framework, difficulties in registering international NGOs and lack of competent personnel etc. Besides, most NGOs, particularly in developing countries are centre based. They often look for easily accessible areas where they can approach without any difficulties. The have been criticized as being tempted to comfort and luxury sometimes. NGOs are also condemned by blaming that they speak the voice of donors and stand for them not for the country, the government and the people. The relationship between the NGOs and the donors has been found unnatural by sidelining the government in many instances.

Even though the NGOs have been considered as the non-profit making organizations, the charge of "dollar farming" is bestowed upon them while they have been considered as taking more interest in making profit rather than serving the country and the people. Some NGOs, particularly in developing countries, have been found that they submit the same project proposal to a number of donors and get support for the single program from multiple agencies while they spend the resources given by a single agency and save the resources given by others.

Several NGOs have been found run by family members and close friend circle which, of course, is not a good practice. Trying to abide or ignore the law of the land and being opaque and unaccountable are other charges that are often levied upon the NGOs.

A number of NGOs have also been charged that they spy for the donors. Hence, they deceive the country, the government and the people of their own country. And some are being charged that they have been indulged in changing the religion of poor and uneducated people. Hence, they have been considered as evil in many cases.

In the same way, they are criticized that their works are not usually tangible, because they work mostly in software part than the hardware part. Even some governments consider the NGOs as a threat. Hence, in some countries, attempts have been made to coerce, restrict or shut them down by imposing restrictive laws and regulations. Besides, NGOs have no tradition in society. They started mushrooming recently, because donor agencies looked for new channels for their funding. Moreover, many NGOs are not transparent and accountable.

Government control and political will, appropriate legislation and supervisory bodies are required to ensure that NGOs actually carry out their specified work and use donor funds effectively. The lack of governmental supervision of NGO's activities encourages the formation of briefcase organizations by political leaders and civil servants together with their social networks, who, after decades of donor assistance to government, are the most familiar with the oratory, application procedures and reporting formats of donor agencies.

5. Prospects

However, NGOs could foster by sharing information to identify potential partnerships, direct funding from the government and international agencies and adoption of laws that give local NGOs clear legal standing to raise funds, cooperate with foreign organizations, and carry out their activities. Similarly, more research on the requirements of the poor in different regions and greater support from international NGOs and donors in skills transfer and development of human resources are also equally important for the sustainability of the NGOs. At the same time as the role of the government is reducing, the role and functions of NGOs are at rise.

6. Role of NGOs in Disaster Management

NGOs can and do contribute to the well-being of society by working in various sectors including the disaster management sector. Although disasters cannot be stopped, the impact of disasters can be reduced by adopting preventive measures. Such measures should be taken from the government as well as Non-Governmental Organizations (NGOs) in due time. For this the government and the NGOs should work in close cooperation and coordination. Moreover, the effects of natural disasters in various parts of the world have shown the necessity to intensify international cooperation for disaster mitigation. With this in view, disaster mitigation, early warning system, insurance system, emergency rescue and relief operation, rehabilitation and recovery plans should involve activities such as training, post-disaster evaluation, monitoring of relief works, review and cooperation and coordination of central, district and local level preparedness, rehabilitation, reconstruction and research works. Political determination, pragmatic policy formulation and implementation, disaster awareness raising programs among the vulnerable population and people's participation are highly necessary to attain the above mentioned objectives.

We should not forget that in the time of disasters, local people are the main responders. Usually local police, local administration and the central government come into the picture afterwards. Often it is too late when international communities come to the disaster site. Therefore, local community is a very important element for immediate response during disasters. So it is pertinent to educate, enable and empower the local community and the people to strengthen their capabilities in order to carry out rescue and relief works efficiently and effectively.

NGOs can easily reach to the communities than the government. In many instances the NGOs

have been seen efficient and effective due to their field level presence and accessibility, and contact with the local people. The community people also trust and believe the NGOs persons more than the government officials. Actually, the government alone can not carry out disaster management activities efficiently and effectively. In the disaster sites where the government can not provide services, NGOs have been found helpful in providing the services. In such circumstances, the role of the government is to facilitate the NGOs in disaster management activities. Nowadays, many governments of the world have adopted the strategy of reducing their role and presence from the center and empowering the local government and NGOs through devolution procedure. However, the government has always the lead role on the one hand and the role of the NGOs is inevitable and very important on the other. And, thus, NGOs have enormous responsibilities to go in the disaster sites and work in accordance with the law of the land and the direction of the government. At the same time, the activities of the NGOs should be monitored and evaluated by the competent government authorities. Local or community level NGOs should be promoted, particularly to address the needs of the disaster affected population, because the local or community level NGOs have been found assimilated and intermingled with the local community and people.

Another important aspect in the field of disaster management is the enhancement of cooperation and coordination between the government and NGOs and among the NGOs themselves. Such initiatives are highly necessary to avoid duplication of works, over flow of relief materials and the dearth of relief items.

Finally, disaster management is a multi-sectoral activity. In view of the complexities and diversities of the disaster management activities - concrete, effective and practicable policy formulation is needed for which political commitment is very necessary. It is also believed that lack of coordination, insufficient funds and resources, and their mobilization problems have to be addressed through the effective implementation of the practicable policy. And again the government should encourage, support and empower NGOs for their efficient service. At the same time cooperation and coordination among the disaster management related stakeholders must be enhanced in order to reduce the losses from disasters.

7. Conclusion

Now we must acknowledge that the legitimacy, role, functions and significance of NGOs and INGOs cannot be ignored. These days they share with the governmental and corporate dominion a social responsibility to address the contemporary burning issues. The NGO and INGO communities have significant influence over the issues of human rights, disasters, disease, terrorism, weapons of mass destruction, education, business, politics, environment, economy, family and many other fields. NGOs have forged an effective middle ground between the governmental and corporate realms. Besides, they are now impacting policies, delivering services, and advancing initiatives that once were totally the government responsibilities.

In view of the above situation, it is vivid that NGOs can bring change in the society and contribute

towards sustainable development for which the government should encourage, support and empower them. NGOs have the capacity of providing independent advice and action. At the same time cooperation and coordination among the NGOs as well as the government must be improved.

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Human Resource Development and Capacity Building for Disaster Risk Reduction in Nepal

By Dipendra Purush Dhakal*

The intensity and incidences of hazards are increasing due to quick changes in the global climate, while at the same time the use of vulnerable areas for settlement is also increasing. In addition, practices of unplanned urbanization have put the cities at high risk of natural calamities like never before.

Natural disasters of varied nature have been leading to stressful life of the South Asians. While floods, landslides, fires, cyclones and epidemics have been hitting South Asian countries hard almost concurrently every year -the earthquake of Gujarat (Richter scale 7.9) on January 2001 claimed around 13,000 lives as against a similar earthquake in Seattle, United States, which resulted in the death of only one senior citizen due to heart attack. The Indian Ocean Tsunami of December 26, 2004, which caused multi-country repercussion; and the disastrous Pakistan Earthquake in September 2005, which claimed the lives of 73,000 people and razed many villages in the affected countries, have had enormous socioeconomic impacts. Needless to mention, the hardest hit by such disasters in the developing countries are mainly the poor and people residing on the marginal lands. As the countries have to prioritize its actions to uplift the living conditions of the poor, investments in disaster risk reduction activities always falls behind other development initiatives. Thus, they end up with very little expenses in disaster preparedness activities compared to huge amount of resources that have to be spent during and post-disaster relief.

Catalogue of few major disaster events of Nepal

Since Nepal is located along the Himalayan earthquake belt, it is on the hot cradle of earthquake, which can occur at any time in the future. The historical development of earthquakes also supports the assumption that the country has to be ready to experience this disaster not very late in this century. Nepal has faced ten large earthquakes since the first ever recorded of devastating earthquake in 1161 AD. The recurrences of earthquakes were also recorded in 1408, 1681, 1810, 1833, and 1866. A few major earthquakes and it's impact in the recent past that has imprinted in

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history are summarized in the following table:

Year	Magnitude	Dead	Building Damage	Remark
1934	8.4 R.S.	8,519	over 43,000	
1980	6.4 R.S.	46	25,000	
1988	6.6 R.S.	721	21,786	Around NRs. 5 billion loss

Management of water-induced disaster is one of the burning issues for socioeconomic development as well as poverty alleviation in the country. More than 300 people are killed annually due to flood and landslides in Nepal. The worst flood of 1993 caused the death of 1,500 people and over 90,000 people were directly affected by it in Nepal alone. Other events of disastrous floods were in 1945, 1968, 1970, 1971, 1974, 1975, 1978, 1981, and 1983. This year's (2007) monsoon flood has also taken away lives of 94 persons in Terai region alone.

Few notable fire hazards occurred in Biratnagar in 1968; Central Secretariat of the Government, Singha Durbar at Kathmandu in 1971; and recent great fires in Terathum and Taplejung.

Considerable drought situation was observed in Nepal in 1973 and 1980. Similarly, talking about epidemic, 1,000 people died of cholera in 1963 alone. And, Stampede in the national stadium of 1987 took away 71 lives is an instance of conflict.

The location of specific types of natural calamities in Nepal can be summarized as follows:

Type	Location		Live of loss	Reason
	Major	Minor		
Earthquake	Hill	Tarai	727	Indo Eurasian plate collision
Flood	Tarai	Hill	6,982 (incl. landslide)	Heavy rainfall, siltuation, dike failure
Landslide	Hill	-	-	Young geology, steep topography, deforestation, encroachment of marginal lands
Fire	Tarai	Hill	1,191	Lack of awareness, hazardous and inflammable construction materials, close dwellings, thatched roofs
Epidemic	Hill	Tarai	11,933	Poor sanitation, food shortage, lack of health services

Natural hazards do not necessarily lead to disasters unless the people are exposed, ill equipped to respond, and incapable to cope with the hazard. Due to the advancement of science and technology in the world, most of the disasters can be predicted and mitigated, impacts reduced, and communities

protected. However, the inability to reap the benefits of such global advancements, the people of Nepal are left with no choice other than facing disaster and trying to get prepared to minimize the negative impacts. Because of different facetious of disaster, people have to know about the characteristic of the hazard, self-exposure to the vulnerability, and capability to plan and execute appropriate actions during disasters.

Capacity building

Capacity building encompasses a host of holistic processes such as identifying, developing, and enhancing the existing capabilities and coping strengths of communities. The key lessons learned during regional workshop on Best Practices in Disaster Mitigation, held in Bali, Indonesia on September 2002 had suggested the capacity building activity to include: (i) understanding the context of capacity building, (ii) targeting the right groups and designing a process in which they are involved, (iii) answering issues of language and contents, and the appropriate duration of training, and (iv) monitoring the impact of training. It, thus, includes multitude of activities such as skill development through formal training and informal education, knowledge transfer, awareness building, policy and institutional endorsement, community organizing, other disaster governance issues, replication of best practices, effective emergency response and enhancement of capacity in disaster risk reduction.

Capacity building is a continuous process. However, in case of disaster risk reduction, the vulnerability and the existing coping strengths of the target groups have to be seriously assessed before identifying the areas of intervention. A reasonable capacity building program should always be able to respond multiple questions such as who? when? why? and how? the situation has become vulnerable, how capable the would-be affected groups are to handle the disasters? and the packages of supportive actions needed to make them able to mitigate the negative impacts.

In the above context, few main non-structural measures of capacity building that are in practice in Nepal can be summarized as the Disaster Mitigation Education Training, Disaster Mitigation Education Teaching, Participatory Rural Appraisal Training, Video Shows, Drawing Competitions, User's Group Awareness Workshops, preparation of Disaster Preparedness Maps, Evacuation Drill, Simulation Exercises, and Street Drama, etc.

Transfer of Technology

Over dependence on foreign technologies and expertise with no transformation to locals has remained as the common problem in most of the developing nations. In order to mitigate flood impacts, numerous flood control techniques including Sabo works, as well as designing, were carried out under Japanese assistance in Philippines, which were solely run by Japanese expertises. Realizing the weakness in technology transfer, a second project was again brought in to transfer the Sabo technology to Philippino engineers and technicians to sustain the previous works. These experiences educated Japanese to build a closer relation with the University of Indonesia to transfer Sabo technology for the volcanic as well as non-volcanic areas in Indonesia. In similar fashion, Japan helped Chinese water resource engineers in china as well as in Japan under the training of trainers program.

The South Asian nations, including Nepal, have ample examples where the projects are taken up

under turnkey basis, and are heavily influenced by foreign expert's practices and procedures, that remain unapproachable for the national technicians during and post project period.

Awareness raising initiatives

Publicity of materials: In order to educate people about the consequences of disasters and abiding specific norms before, during, and after disaster, a number of organizations have produced information booklets and have widely disseminated them to the vulnerable areas. Most of such materials are published in Nepali language. Such materials have been published on the theme of earthquake, flood, fire, and landslide, and community based disaster management initiatives. Among others, few frequent contributors include Nepal Red Cross Society (NRCS), World Health Organization (WHO), United Mission to Nepal (UMN), National Society for Earthquake Technology (NSET), Nepal Centre for Disaster Management (NCDM), ECO-Nepal, Kathmandu Metropolitan Corporation (KMC), Lutheran World Federation (LWF), CARE Nepal, Oxfam GB, Practical Action, and Planners and Designers Associates.

Audio Visuals: The FM radio stations are running sponsored and own programs on disaster risk reductions. Similarly, TV shows and documentaries are also prepared for the public consumptions.

Hazard maps: Few landslide hazard maps along some of the major highways of Nepal are available. Similarly, the government has planned to prepare maps of possible areas of flood, earthquake, and landslide. The district level database are also planned to be developed gradually.

Public campaigns: The government, in collaboration with the active non-governmental stakeholders, has been observing the Earthquake Safety Day on January 16 each year (mostly organized through the entire week) to commemorate the devastating earthquake of 1934 in Nepal since 1999. This programme includes parades, exhibitions, shaking table demonstrations, seminars, plays, radio and television shows, etc. Similarly, the United Nations International Strategy for Disaster Reduction (UNISDR) Day is also observed on the second Wednesday of October at the central and district levels. These programs have tremendously helped in raising people's awareness about disasters.

Building Code : Department of Urban Development and Building Construction (DUDBC) was instrumental in drafting and enforcing National Building Code since 1995. Presently, it is enforced in 58 municipalities of the nation. DUDBC has also begun incorporating the earthquake resistant provisions in the design of important government buildings. Lalitpur Sub Metropolitan City in Kathmandu valley was the first local body in Nepal to enforce the National Building Code since 2003 AD.

Indigenous Knowledge and Disaster Mitigation

Indigenous knowledge (IK) seldom receives priority in the disaster risk reduction agenda of the nation. It is neither incorporated in modern education system nor recorded in any systematic form. IKs are found to be more alive and stronger in relatively homogenous and cohesive community than in migrant communities in Nepal. Communities can notice several events prior to the occurrence

of landslide such as new cracks on the surface, emergence of new water sprouts, changed posture of trees, etc. Similarly, sudden unpleasant and peculiar smell of mud, dead aquatic species, sudden migration of abnormally large number of fish to downstream, entry of wild animals in villages, frightened domestic animals behaving abnormally, and rise in the waterbeds are few indication of occurrence of flood in the near future. In order to mitigate the vulnerabilities, they have their own way of dealing with housing and settlement pattern, afforestation, agro-forestry, making terraces and terrace walls, mixed and inter cropping, constructing ponds, strengthening the riverbanks, dry wall and bio-fencing etc.

We are receptive to the Japanese indigenous knowledge of Sabo techniques but ignore our own local systems.

Ideal works in the area of capacity building in Nepal

There are numerous examples of Best Practices in the areas of capacity building in Nepal. Few glimpses of such projects are presented hereunder:

Community Based Disaster Preparedness: The Community Based Disaster Preparedness (CBDP) Program is under implementation through NRCS since 1997. The communities under the coverage of this program stand at 300. NRCS provides CBDP training to one community worker nominated by local Samitis. The subjects covered are basic level disaster preparedness, community based first aid, and general management. CBDP Program also includes hazard mapping, introduction of early warning system, creation of revolving fund, food grain collection, pre-stocking of rescue kits, small mitigation activities and support for establishing a Disaster Preparedness unit office. This Program has many successful stories to share.

Kathmandu Valley Earthquake Risk Management Project: The Kathmandu Valley Earthquake Risk Management Project (KVERMP) took an approach to integrate institutional strengthening, training and education. Raising public awareness, educating people on aspects of earthquake risk reduction, strengthening the Disaster Management Unit of Kathmandu Metropolitan Corporation, strengthening and optimally utilizing the local capabilities were also addressed by this project. The aspects of capacity building were dealt through generating knowledge and developing skills through training agenda set by the stakeholders rather than being grafted from outside. Trainee were chosen from among decision makers and real target groups who are directly concerned with disaster risk reduction. Concept of training was heavily marked for informal education, although a few formal trainings such as urban disaster mitigation, and earthquake vulnerability reduction of cities were also carried out. Nepal Society of Earthquake Technology (Nset) had implemented this project.

The Centre for Disaster Studies (CDS) of the Institute of Engineering (IOE), Tribhuvan University (TU) in collaboration with NCDM, has conceptualized and tested the following exemplary works:

Transforming historically important core city areas into an earthquake safe sites: In order to protect the historic city core, its original architecture, and the lives of people living in old houses, a proposal has been drawn with the full consent of all inhabitants to rebuild the area as their

present residential complexes, who are exposed to severe earthquake hazard. This proposal seeks to demolish the existing buildings by paying reasonable compensation at the prevailing market rate and a bonus motivation allowance to the inhabitants. One of the important aspects of the reconstruction is that it will also ensure the traditional architectural out look of the area. This can be carried out at a profit of almost 15 to 20 percent.

Retrofitting of stone masonry houses: A simple retrofitting technology for the stone masonry houses requiring no engineering skills has been developed to save them from earthquakes. In this low cost technique, several holes are punched through the walls of the house at 3-foot intervals, which are then laid with mesh made from matured bamboo in the exterior as well as the interior parts of the wall. The inner and the outer bamboo mesh are then tied with the gabion wire longitudinally, transversally and diagonally. Moreover, the joists, the rafters and the ridge are also tied by gabion wire. Thereafter, both sides of the wall are finished with the locally available materials such as mud plaster. It not only strengthens the double leafed stone masonry wall but also the junction of the walls and creates diaphragm effect between the walls, the floor, and the roof. The direct cost in this project is only that of the gabion wire, which normally ranges about NRs 2,500. This technology has already been dissipated in five districts of the country.

Early Warning System for Landslide and Debris Flow: To save people from landslides and debris flow, a simple early warning system has been designed. A siren is placed at the centre of the settlement, which is connected through an electric wire to the most vulnerable places such as gullies from where the landslide or debris flow may begin. The debris flow is normally preceded by the liquefaction of the slide, which takes place after a crack that develops in the ground. This crack will break the electric circuit following which the siren goes off. It will help people to run away to safe locations with their belongings by the time the debris flow reaches the settlement. The cost of this system is NRs 12,000 (less than US$ 2,00) if the conventional electric power is available and Rs 35,000 (Approx 500 US$) where solar cells have to be installed for power generation.

Human Resource Development

Disaster related courses in the academia in Nepal: Unlike disaster related courses introduced in grade VIII and higher levels (college) in Bangladesh and from grade VIII in the school level in India, it is practically not introduced in the school level education in Nepal with very few exceptions at the secondary level. Recently, Institute of Science and Technology, Tribhuvan University has started offering a few disaster related courses. Earlier only the Department of Geology was offering such courses. After the changeover of 2-years to 3-year B.Sc. Course, Tribhuvan University introduced a few subjects, which contain considerable amount of material on disaster related topics. Currently, Undergraduate and Graduate Courses in Geology, Meteorology and Environmental Science have included natural disasters as part of the curriculum. Besides, Earth Hazard is also an optional subject at B.Sc. level, which includes geologic and climatic hazards and their countermeasures.

The *Khowpa Engineering College*, in Bhaktapur has been conducting the Master level course in earthquake engineering since last year. *Nepal Engineering College* (NEC) has also started Masters Degree course in Disaster Risk Management from 2006 to cater to the needs of development

workers, planners, managers, and engineers dealing with disasters.

The *IOE*, TU does not yet have special courses to deal with disaster studies.

Trainings/ workshops, seminars and meeting: National and International Symposium are regularly organized by the donor communities, I/NGOs, government offices on several disaster related topics. Most frequently conducted seminars are in the areas of geotechnical and environmental challenges in mountainous terrains, Disaster Mitigation, Disaster Management Achievements and Challenges, landslide hazard in orogenic zone, Earthquake Disaster Mitigation, Rescue-Relief Operation, inter-sectoral health and disaster management workshops etc. The Public Awareness Raising Program, organized by Ministry of Home Affairs (MoHA), was highly applauded by the trainee of ten disaster prone districts. The beneficiary of this program included over 600 people from different parts of life including local leaders, schoolteachers, social workers and women leaders of the area.

DUDBC imparts training to local masons annually since 1994, on the building construction techniques.

Disaster Information System and its sharing

Department of Water Induced Disaster Prevention (DWIDP) has maintained the water induced disaster database of Nepal since 1993 and has applied Geographic Information System (GIS) tool for its management. The district-wise disaster database, including the casualties by disaster for each year, is also maintained.

As the natural disasters fall heavy on the local population with weak coping strengths, the non-structural approaches, especially for the flood disaster preparedness, are found essential to supplement the conventional structural approaches. Thus the entire process of End-to-End Flood forecast needs to be strengthened from data collection, acquisition, transmission, processing, modeling, and decision support down to dissemination to the end users. In this regard, International Centre for Integrated Mountain Development (ICIMOD) in collaboration with World Meteorological Organization and member countries has initiated a project to reduce the flood vulnerability in the Hindu Kush Himalayan region by establishing regional flood information system and promoting regional cooperation in flood disaster mitigation.

Nepali Organizations: contributing to the capacity enhancement

Government organization: *National Seismological Centre* under the Department of Mines and Geology (DMG) serves as the basic research unit in the field of earthquake hazard for understanding nature's forces and provides information about the location of epicenters and other related scientific information after an earthquake, and also carry out research in the related field. The seismic data are collected through 21 stations and the information of earthquake above 4 Richter scale are promptly disseminated to the general public. An optimum seismic monitoring

system is also established in the DMG..

In order to develop appropriate technology related to the management of water induced disasters, raising awareness of the common people, transferring technology to the Nepalese experts through trainings from international consultants and expertise, and enhancing the capability of the government to mitigate the impact of water induced disasters the DWIDP was established in Feb 2000. It has since instigated many model works and preventive measures to achieve its objectives. This Department has also prepared detailed hazard maps of 4 districts.

Department of Hydrology and Meteorology has been contributing through the forecasts of weather situations in the country. It releases special bulletins during the winter seasons, especially for the mountain climbers. Special bulletins are also published to make the people aware of the important weather events in major seasons.

Locally elected bodies: *Kathmandu Metropolitan City* has created a Disaster Management Section, under its Social Welfare Department for identifying the disaster prone areas, disseminating information to local people, conducting preparedness and mitigation programs, and also for arranging security, relief, rehabilitation and temporary settlement for the disaster victims. It has carried out safer city initiatives in collaboration with the Geohazard International.

Lalitpur Sub-Metropolitan City (LSMC) has created an Earthquake Safety Section to offer counseling services on safer home construction techniques and also helping resolve the problems through inspection at the respective construction sites. It is also engaged in arranging training to masons on earthquake resistant construction techniques. LSMC has published a manual in Nepali language for the construction of earthquake safe building in the municipality and has also set instructions for house owner, designer, supervisor, and masons engaged in this work. Earthquake Safety Committees, Disaster Management Committees at the city and ward levels are formed as the intermediaries between the local inhabitants and the LSMC. The municipality is also engaged in the vulnerability assessment and research activities with the support of interns of ITC Netherlands.

Academia: *Centre for Disaster Studies* has been established under the IOE, TU, to carry out research on disaster related topics. Among others, this newly established Center specializes in conducting participatory projects using the indigenous local technologies. It also widely dissipates its findings to the public through active participation of the students.

Nepal Engineering College has recently established the Centre for Disaster Risk Studies (CDRS) to initiate research activities in the field of disaster risk evaluation and risk minimization from various types of disasters.

Professional Societies: *Nepal Engineers' Association*, the professional association of all engineers of the country, had conducted a national seminar on Natural Disaster Management in Nepal in 2004. It has also been conducting talk shows on disaster related issues besides participating in the disaster awareness and mitigation activities.

Nepal Geological Society (NGS) is a professional society of over 500 geoscientists engaged or interested in the geological research of Himalaya-Tibet region. It has remained as an active society since its establishment in 1980 and is undertaking development and promotion of the research and application of geological sciences to the national development. NGS is involved in influencing in the

protection and conservation of environment as well as reduction of natural disasters. Among many other programs, the publication of its high standard Journal, and organization of national and international seminars, workshops and symposia on geosciences and related fields have been well received in the country. It has also been providing expert services and counseling to the government and other agencies in the fields of natural resources development, environmental issues, mitigation and management of natural hazards etc. Under the leadership of the society in Nepal the annual programmes of International Decade for Natural Disaster Reduction (IDNDR 1990-1999) were carried during the whole decade, and presently it also carries out various programmes on the ISDR day.

Nepal Landslide Society is a scientific society established in 2003. It is engaged in fostering the human quest for understanding landslides and related phenomena through research and studies. It catalyzes new scientific ways of thinking about natural disasters and act as a steward of the countermeasures against such disasters. It has remained active in organizing symposiums and interactions and disseminating the findings to the general public.

Society of Hydrologists and Meteorologists – Nepal publishes a journal to spread knowledge about the hydrology and meteorology concerning on the weather and water related issues in the Himalayan region. It also includes other relevant areas like climate change, atmospheric and water pollution, floods, droughts, desertification, glaciology, etc. The understanding of these phenomena will help a step forward in mitigating the disastrous effects of high impact weather and climate events.

Media: *ECO- Nepal* has been contributing substantially to enrich the knowledge of its readers through its monthly publication of the magazine, Paryawaran (Environment) covering the areas of natural resources, biodiversity, ecosystems, wetland, environmental pollution, disaster, ecotourism, community forestry, and energy sectors. In recent years print and electronic media and FM radios have also become quite active in reporting disaster related news as well as in awareness campaigns.

Network of organizations: *Disaster Preparedness Network* (DP Net) is an association of organizations related with disaster management. It is engaged in enhancing the capacity and improving performance of organizations working in disaster management to share information, design, implement and sustain disaster preparedness activities in Nepal. DP Net also aims to promote and spread sustainable disaster preparedness and management activities with a view to link disaster with development of Nepal. It undertakes methodological research, organizes seminars, workshops, and trainings and also publishes disaster related news. It is an effective common platform of organizations to deal with disaster, development and sustainable management activities.

Regional Initiatives: good example of belongingness

According to World Disaster Report 2005, the Indian Ocean Tsunami of Dec 2004 took away 224,495 human lives as of May 2005. Among those, the casualty in South Asian countries was 51,892 (Sri Lanka - 35,399, India, including Andaman and Nicobar islands - 16,389, Maldives – 102, and Bangladesh – 2).

In the wake of this disaster, a Tsunami Learning Project, 2006-2008 was initiated in partnership

with the Force of Nature Aid Foundation, Asian Disaster Reduction and Response Network (ADRRN); Kyoto University International Environment and Disaster Management Research Field/ Graduate School of Global Environment Studies– Japan; Sustainable Environment and Ecological Development Society (SEEDS) - India, Mercy Malaysia; Sarvodaya –Sri Lanka. It is committed to sharing of experiences and learning from the Tsunami affected nations to achieve a sustainable recovery. The project views disaster reconstruction and recovery as a development opportunity.

SWAYAM Micro credit Program of SEEDS, India implemented in the Islands of Andaman and Nicobar is not only a loan program for recovery but also intended to better equip people to reduce the risk of future disasters. The other partner, Mercy Malaysia is involved in skill training in livelihood, basic life support, education on disaster preparedness, information sharing through meetings, seminars, organizing events through Interactive Resource and Training Centers. Similarly, Sarvodaya, Sri Lanka is engaged to provide improved reconstruction services to the homeless communities via eco-village concept in coastal habitations that are washed away during the Tsunami.

Way ahead – for regional cooperation

- There is a need of an organization like NIDM, specialized in knowledge management, in Nepal. Similar may be the situation in other countries of south Asia. Hence, NIDM should venture into helping nations to establish such organization and backstop technically during the initial period as deemed necessary.
- Disaster related events, forecasts and other matters of common concerns should be exchangeable. Early warning and evacuation mechanisms have to be strengthened through the collaborative works among the neighboring countries and donors.
- Regional level, cross-country hazard maps would be mutually beneficial.
- Few informative booklets and audiovisuals could be prepared and publicized in member nations of SAARC. In addition, the best practices of regional countries should also be compiled, printed and shared.
- Joint simulation exercises have to be carried out occasionally. Few joint teams could also be formed to be mobilized at the time of big disasters in any countries.
- Communities have their own ways of coping strategies to successfully deal with disasters. Hence the cross-fertilization of such IKs and blending them with modern scientific knowledge would upgrade the community's capacity of disaster mitigation and preparedness in a sustainable and cost effective manner. Such IKs should be piloted in each other countries and results be shared.
- Mutual understanding should develop in formulating regional level plans to address the disaster risk reduction activities of common concern.
- The programs like Tsunami Learning Project should be designed, regionally funded and implemented to address the mitigation and preparedness activities.
- Under the Human Resource Development activities, courses in disaster management are introduced from school (Class V to XII) to University level in Bangladesh, and in class VIII in India. Similar courses are also being conducted in China, Indonesia and Philippines. Hence SAARC platform should be used to influence all member nations to introduce disaster risk

reduction courses at appropriate levels in the schools and higher educations.

- The Acts on disaster management are available in Bangladesh, China, Indonesia, Japan, Philippines and Nepal but are found inadequate to address the need. Hence, the attention is needed to bring necessary Policy reform, and formulation or updating of prevailing Act and Regulations with emphasis on preparedness activities.

Acronym

ADRRN	Asian Disaster Reduction and Response Network
CBDP	Community Based Disaster Preparedness
CDRC	Central Disaster Relief Committee
CDS	Centre for Disaster Studies
DDRC	District Disaster Relief Committee
DMG	Department of Mines and Geology
DP Net	Disaster Preparedness Network
DUDBC	Department of Urban Development and Building Construction
DWIDP	Department of Water Induced Disaster Prevention
ECO-Nepal	Environment and Child Concern Organization-Nepal
ICIMOD	International Centre for Integrated Mountain Development
IOE	Institute of Engineering
KMC	Kathmandu Metropolitan Corporation
MoH	Ministry of Health
MoHA	Ministry of Home Affairs
NCDM	Nepal Centre for Disaster Management
NCMC	National Crisis Management Committee
NEC	Nepal Engineering College
NGS	Nepal Geological Society
NIDM	National Institute of Disaster Management
NRCS	Nepal Red Cross Society
NSET	National Society for Earthquake Technology
TU	Tribhuvan University
UNISDR	United Nations International Strategy for Disaster Reduction
UNOCHA	United Nations Office for the Coordination of Humanitarian Affairs

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Possible Approaches Towards Disaster Management in Nepal

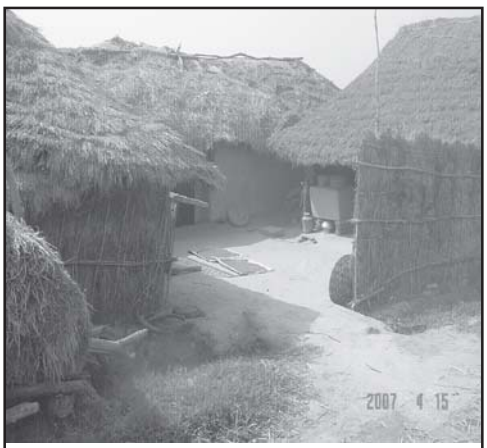
by Dr. Jiba Raj Pokharel

1. Introduction

Nepal suffers considerably due to different kinds of disasters every year not only in the form of the loss of life but also a huge amount of the property. A study has indicated that each Nepali struggles with two kinds of disasters in a year. It has also been established that Nepal ranks 11th in terms of earthquake and 30th in terms of flood among 196 countries around the globe. It also suffers greatly due to fire, epidemics, hailstorm and windstorm as well as cold waves every year. This paper highlights some of the new possible approaches that can be undertaken towards the reduction of disaster risk in Nepal.

2. Fire

The recurrent disasters in Nepal are the flood and landslide as well as fire. Fire has been taking lesser number of lives compared to flood and landslide but the total physical damage is more when compared with the flood and the landslide. In the last two decades or beetwin 1983-2003, 1,175 people are said to have lost their life to the fire. If we take the number of the missing persons, the loss is much more. In the year 2003 alone, 16 people were died due to fire, 23 were injured, 1,162 families were affected; there were 233 animal losses, 1,274 houses, 144 cattle shed were destroyed and the estimated loss was 734 million Rupees. The major factor contributing to this state of affairs is the fire that starts from a small kitchen in areas of high population density, close-in house structure with thatch roofing in Terai generally *(See Ministry of Health, 2003, Health Sector Emergency Preparedness & Disaster Response Plan, Nepal, p 19, Department of Health Services, Epidemiology & Disease Control Division)*. A study has shown that 71.9 per cent of the houses in Madhesh use thatch as a roofing material.



closeer houses with thatch roofing in Terai

2.1 Recent Fires in Nepal

The two major fire incidents occurred in the town of Maglung, the headquarters of Terhathum district and Fungling Bazar, the headquarters of Taplejung district. The one in Myanglung broke out on 7th December at about 5: 45 pm from the house of one Mrs. Yojana Shrestha and it continued till the following day. The nearest place where the fire brigade was available was in Dharan, a city 120 Kilometer away. Because of the narrow earthen road leading to Myanglung from Dharan, the service of the fire brigade was not available. As a result, Myanglung was up in flames for 12 hours. The fire proceeded towards the northeast from south and again towards northwest. It did not spread to Putali Bazar in the north due to the presence of a gigantic banyan tree covered area. Neither did it to the south due to the presence of a large open space. This explains the usefulness of the greenery and open space to check fire. Unfortunately, both these have been the features of the past in Nepal.

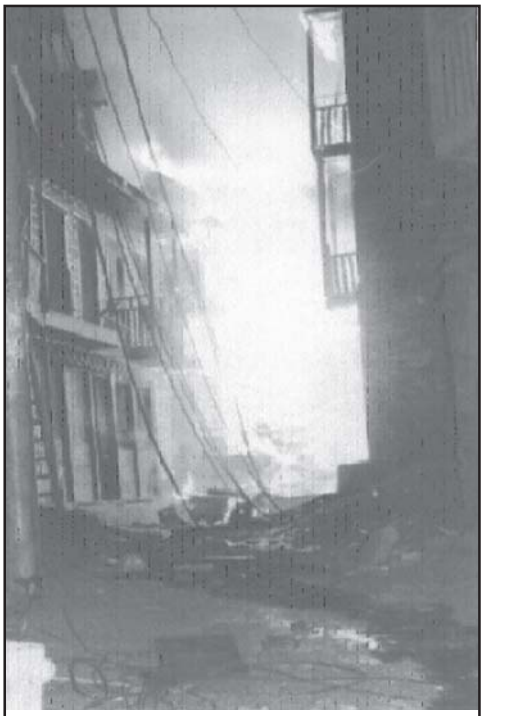


Photo 2 : Fire in Maglung, Terathum

Some 300 families were rendered homeless and the loss was estimated to be 2 billion Nepali Rupees. There was a curfew imposed in the district headquarter as the Maoist rebellion was in its peak. The fire had just begun before the Curfew time and people mistook it for the Maoist attack as the later had served warning to the local populace. The Police and the Military could not arrive in the spot in time as they began arranging for defense. It was only after four hours at 9 pm that the police and the military arrived at the site. (See Shrestha, Narayan Sundar, 2005, Assessment of Government intervention in a fire hit town, An unpublished Master of Science thesis in Urban Planning, supervised by the Author, Department of Architecture and Urban Planning, Institute of Engineering, Pulchowk, Lalitpur, Tribhuvan University, Nepal)

The other fire incident took place in the Fungling Bazar, the headquarters of Taplejung district on March 2003. Fifty-nine private houses along with two temples were among the casualties of the blitz. Property worth Rs. 18 million was turned into ashes in a matter of few hours.

2.2 Need of deterrent measures against fire

Fire consumes virtually every thing. Hence, it is difficult to have a fireproof means. However, fire resistant means can certainly be developed. In town and electricity available region, fire occurs due to faulty electrical wiring. Therefore, the electrical wiring should be laid properly in the houses using permanent materials like reinforced cement concrete. In addition, in the thatched roofed

buildings in the Madhesh fire breaks out due to the fire from the kitchen or due to the open fire that is made for the cooking of slurry for the cattle. The walls if plastered with mud can be safe from the fire but the roof is totally engulfed in the process as seen in the photograph.

It can thus be seen that the Terai buildings can be safe if a fire deterrent technology can be developed for the roof also. The technology is for all to see in the photograph above. If a mud layer can be created in the roof in such a way that it does not lead to the deterioration of the thatch nor will it be washed away by rain, it acts as a barrier for the escape of the fumes and it can be fire deterrent as it has been so in the case of the walls as can be seen in the photograph above. It is the upward movement of the flames and the smoke that contributes to the fire. If this movement can be stopped, the fire will not take place.

Photo 3. After fire in a thatched roofed building in Kapilbastu

2.3 Use of mud layer over the thatched roof covered by plastic sheet

The author used a 12 mm layer of mud, which was covered by a plastic sheet. The plastic sheet was tied to the rafters. The plastic sheet used is sylpauline, which is coated with ultra violet rays resistant materials. The objective of the plastic is to ensure the protection of mud layer from rain.

Photo 4: Showing the fire resistant technology

The roof was set to fire as shown in the down picture that was experimented in Nawalparsi and Kapilbaastu, but it died down after initial flare. The initial burning was due to the presence of whatever little oxygen, which was consumed in the initial embezzlement. Due to the stoppage of the smoke from going up, the fire extinguished.

Photo 5. People setting the roof in fire in Kapilbastu

Whether the fire source be from inside or outside, the house will not suddenly burst into the flame. The plastic sheet will be affected if the fire approaches from outside. The thatch will not catch fire. If the source is from inside, the fire will extinguish after some time and will not spread to the whole of the village.

2.4 Appropriate nature of the technology

This technology consisting of putting the mud layer and covering it by plastic sheet can be carried out in the villages in small cost.

Photo 6.: Initial spreading of fire

This technology is very appropriate. Moreover, it is cost effective. One house will need a maximum of Rs 1000 for using this kind of technology. Recently, there was the news of setting the whole village of landless persons in Butwal. Had this technology been applied the houses would not just be gutted.

Photo 7: The fire dies down itself

3. Earthquake

Though earthquakes have been occurring in Nepal since time immemorial, its history goes back to the year 1255 when there was a major earthquake with the king Abhaya Mall among the casualties. One can imagine the plight of the commoners if the King perished in the disaster. After that, there have been series of earthquakes in Nepal in the years 1408, 1681, 1810, 1833, 1866, 1934, 1980 and 1988. Nepal has an ironic history of being rocked by major earthquake every 100 years and a moderate one every 50 years. The earthquakes of the year 1833 and 1934 were the major ones signaling their occurrences in hundred years and the one of 1988 was the moderate one. The 1934 earthquake measured 8.4 in the Richter scale and took the lives of 16,875 people destroying more than 318,139 homes. Earthquake experts have been predicting the occurrence of yet another earthquake of the like of the 1934 one. If it happens 40,000 people are expected to die, 95000 injured, between 600,000 to 900,000 people will be rendered homeless and all the infrastructure are going to be affected adversely. The effect is going to be more in the historic city core mostly due to poor infrastructure of houses that is made only for rental purposes. Similarly, the houses of the mountains and the hills are going to be affected seriously due to the use of stone masonry.

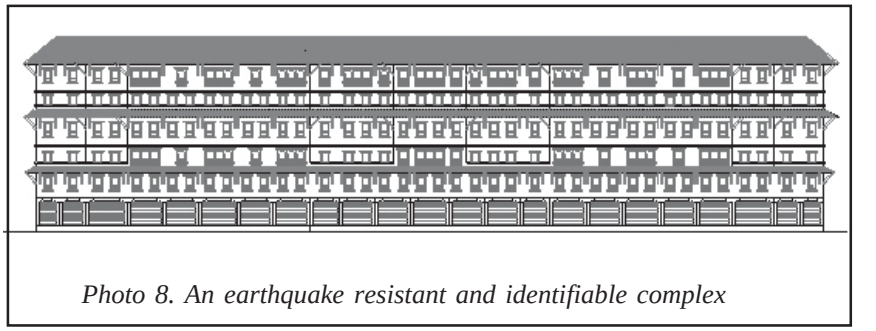


Photo 8. An earthquake resistant and identifiable complex

Three tasks should be performed effectively to get rid of the earthquake related problems in the country. They are firstly, the construction of earthquake resistant buildings through the implementation of the building code. Secondly, the existing buildings need to be retrofitted. Thirdly, a reliable earthquake prediction mechanism should be developed because it was seen that 5,000 people died,

Table 3: Some records of death and damage from historic Earthquakes in Nepal

Year (A.D.)	Deaths	Damages
1255	One third of the population of Kathmandu was affected. Many deaths	A lot of damages to residential buildings and temples
1260	Many people died, Famine after the earthquake	A lot of damages to residential buildings and temples
1408	Many people died	A lot of damages to temples, residential buildings, fissures developed in the ground
1681	Many people died	A lot of damages to residential buildings
1767	No record of deaths	No record of damage
1810	Some people died, many lives were lost particularly in Bhaktapur	A lot of damages to buildings and temples
1823	No record of deaths	Some damage to houses
1833	Estimated magnitude 7.7, 414 people died in the vicinity of the Kathmandu valley 18,000 buildings damaged	Nearly 4040 houses destroyed in Kathmandu, Bhaktapur, and Patan in the valley and adjoining Banepa and in the whole country.
1834	No good record available	Many buildings collapsed
1837	No good record available	No damage in Nepal recorded but greatly affected Patna and other parts of Bihar, India.
1869	No good record available	No good record available
1897	No good record available	No good record available
1917 (1918?)	No record deaths	No record on damage
1934	Estimated Magnitude 8.3 (epicentre, eastern Nepal). 8519 people died out of which 4296 died in Kathmandu valley alone Kathmandu (12,397 destroyed).	Over 200,000 buildings and temples etc damaged out of which nearly 81 thousand completely destroyed in the country. Max Intensity X. 55,000 building affected in
1936	No good record available	No good record available
1954	No good record available	No good record available
1966	24 people died	1,300 houses collapsed
1980	Magnitude 6.5 (epicentre far western Nepal). 103 people died	12, 817 buildings completely destroyed, 2,500 houses collapsed
1988	Magnitude 6.5 (epicentre in SE Nepal). 721 people died	66,382 buildings collapsed or seriously damaged.
1993	Epicenter near Jajarkot	40 % of the buildings were estimated to be affected.

source: UNDP/UNCHS 1993, Pandey and Molnar, 1988, Bilham et al. 1995

30,000 were injured and 300,000 people were displaced in Kobe a city of 1.4 million in the 1995 earthquake. Had there been a reliable earthquake prediction mechanism, several people could be saved as was the case in the 1975 earthquake of Haicheng in China (See Bolt Bruce A, 1999, Earthquakes, p 207, W H Freeman and Company, New York). Some 90,000 people were predicted to die but the death was about 2,00000 (incongruence of data) only.

3.1. Probable construction of an earthquake resistant and identifiable complex in historic core at a profit

There is a myth that the people of poor country like Nepal have no other alternate than succumbing to the earthquake especially those located in the city core. But a study made by the author with his students in the Baliphal area of Patan has revealed that the historic core can be rendered earthquake resistant and identifiable not at any cost but at a profit of 15 per cent instead. It consists of demolishing the existing buildings; they are going to be devastated completely if there is an earthquake of the like of 1934 anyway; widen the roads and construct a new earthquake resistant and identifiable Parking cum shop cum apartment complex. The proposal has provided for compensation to the residents through the evaluation of their land and the building. It also provides the option for the inhabitants of staying in a newly constructed earthquake resistant housing colony or staying in the newly constructed complex along with a motivating amount of Rs 200,000 per family. During the construction period, the residents will be placed in a rented accommodation and compensation to

Table 3.1. : The Damage caused by the Udayapur earthquake, eastern Nepal (1988 August, Bhadra 5, 2045 at 4.54.35 A.M. (Magnitude: 6.5 Richter scale)

S.N.	Description	Total Number
1.	Death of people	721
2.	Seriously injured people	1657
3.	Minor injured people	4896
4.	Collapse of private building	21976
5.	Seriously damaged private buildings (can not be used further	42198
6.	Collapse of public buildings	150
7.	Seriously damaged public buildings (can not be used further)	318
8.	Collapse of government building	223
9.	Seriously damaged government buildings (can not be used further)	567
10.	Collapse of government schools	346
11.	Damage of Government Schools (can not be used further)	604
12.	Death of cattle	1566

be paid due to the closure of shops during the construction time for those giving the shops on rent. This proposal is similar to the face lifting of the Dharavi Complex in Bombay where the slum dwellers were given an apartment. It was found that the cost of the newly proposed complex in Baliphal in Patan was 420 million while there would be 480 million earned through the selling of the shops and the apartments. For this, there is a need of seed money in the beginning but the investment is returned along with a profit of about 15 per cent.

3.2. Retrofitting of Stone Masonry Buildings

To address the problems arising from the collapse of the stone masonry buildings, the author through the Center for Disaster Studies has developed a technology and diffused in five districts of Kathmandu, Sindhupalchowk, Kaski, Ramechhap and Dolakha (See Pokharel, Jiba Raj, 2006, Role of Students in Disaster Risk Reduction in Nepal, Biddhyarthi Sandesh, Patan Campus, Tribhuvan University) by mobilizing the Engineering students during the vacation. It consists of punching holes of 12 mm dia at 3 feet centers. The bamboo mesh of 4" x 4" is made and put in the external and the internal face of the wall. The gabion wire is inserted through the holes longitudinally, transversely and diagonally and the mesh is tied against the wall. The wire is also tied to the joists, rafters and the ridge. It is also tied fast near the junction of the wall. At a direct cost of Rs 2000 (One house consumes about 40 Kg of gabion wire, which costs Rs 50/kg) one house can be retrofitted. The Gabon wire has been used because it is in practice in flood preparedness. (See World Disaster Report, 2005, Community Based Disaster Preparedness in Nepal, p 26, International Federation of Red Cross and Red Crescent Societies.). The indirect costs are those of labor and bamboo, which can be available locally and can be borne by the house owner. In the photograph 3.2., one can see the bamboo mesh being tied by the gabion wire. It should be covered by mud plaster later. The gabion wire bamboo mesh structure strengthens the three weakest areas of the stone masonry, which are the tendency of the outer and the inner leaf to tear apart , the junctions of the walls and the lack of diaphragm effect between the joisted floor and the wall as well as raftered roof and the wall again.

Photo 9. Stone Masonry building being retrofitted

3.3. Prediction of Earthquake

For the successful prediction of earthquake, the author has proposed the use of a snake yards in the agricultural farms of Nepal located in Nepalgunj, Bhairahawa in the western Nepal, Birgunj,

Kathmandu in the central Nepal and Jankapur as well as Tarahara in the eastern Nepal.

Photo 10.: Snake charmer in Kathmandu

It consists of an office building flanked by a diurnal yard which, will be occupied by diurnal snakes (snakes that come out in the open in the daytime) and nocturnal yard, which will be occupied by nocturnal snakes). In the hibernation period spanning from September to March which however differs slightly, if the snakes come out and die, the earthquake has the highest probability of occurring with epicenter in the western, central, eastern Nepal or the whole of the country depending upon heightened snake activities in the respective or all agricultural farms. But if they go back to the holes then the earthquake will not occur according to Jian and Diu. In the period between February and September, if the snakes come out in the daytime in the nocturnal yard then it is a harbinger of the earthquake. If they come out in the nighttime in the diurnal yard, it is an indication of the occurrence of the earthquake. The snake charmers from Bara and Sunsari district of Nepal can be used to put the snakes in the yard from within the farms. A natural environment will be created in the yards with the scattered paddy bunches and the release of the mice. Paddy is a delicious food for the rats and the rats for the snakes. The service of the snake charmers will be used for the daily observation also (See Pokharel, Jiba Raj, 2007, Prediction of earthquake using snake yard, Earthquake special, Paryawaran, a publication of ECO-Nepal). The snake yard

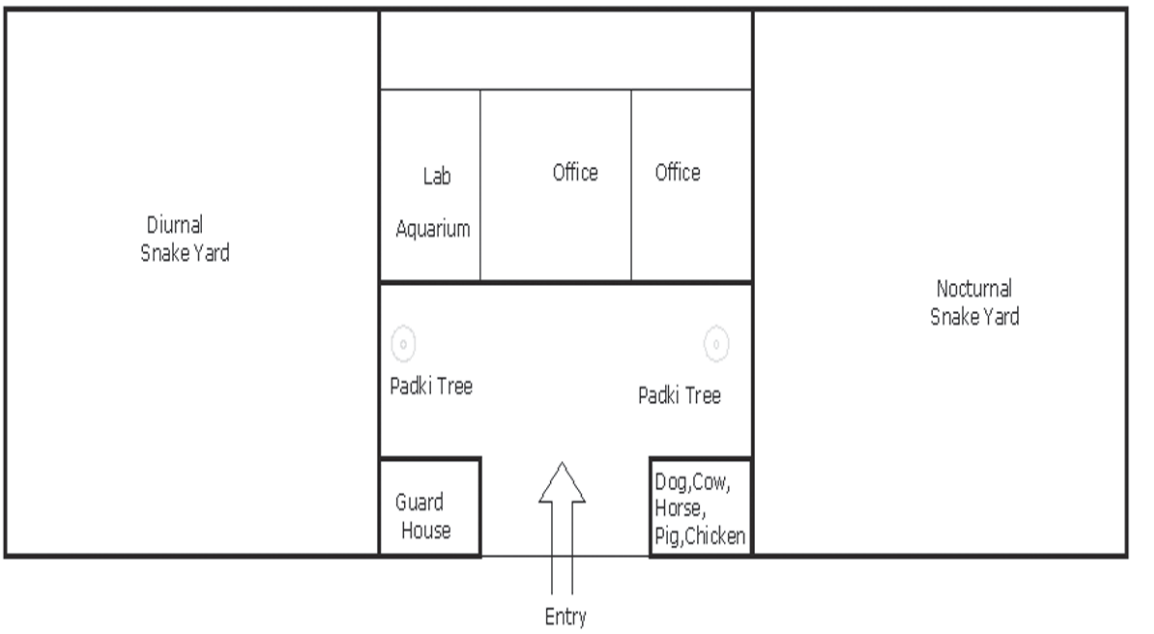


Figure 11.: Plan of the Snake Yard

has been proposed as it can function with the revenue obtained from the venom abstraction. Moreover, snakes are the most sensitive of animals for earthquake. The social aspect is that the snake charmers get employment and lead better life than the present one of displaying in the streets all the time.

The prediction of the earthquake was made successfully in China by observing the behavior of the different animals. It can be seen from the table below how animals in general and snakes in particular can show erratic activities two months in advance. The observation of the snakes' behavior is rather low when compared to the other animals.

Temporal Distribution of Animal Behavior (as Percentage) Prior to Earthquakes: Haicheng, China, Earthquake (M = 7.3), February 4, 1975, 19:36 Local Time

Description	Dec.	Jan.	Feb. 1-2	Feb. 3	Feb. 4	Total n
Chicken	0	6	12	19	63	121
Cow and horse	10	0	0	28	61	174
Dog	0	13	0	33	54	74
Fish	24	17	8	18	33	61
Mouse and rat	6	27	4	21	42	243
Pig	0	5	28	14	53	359
Snake	16	71	8	2	3	23

Source:Data are from Academia Sinica [1977a]. Total n is the total number of observations.

Why is it that the snakes do come out before an earthquake? There are various theories. According to Mr. Zhou, it is an unusually high temperature. The temperature is said to have gone up by 7 degrees centigrade just before the occurrence of the 2005 Pakistani earthquake. Jiang and Du reviewed the cases of hibernating snakes leaving their holes during the winter, and found that every case in which the snakes died was followed by an earthquake within a few months, while the only case in which they returned to the holes alive was not followed by an earthquake. The authors propose that gas erupting through cracks in the ground stimulated this suicidal behavior. There is also a view that it may be due to the minute vibrations taking place before an earthquake that the snakes have the ability to detect.

4. Landslide and Flood

Flood and landslide have taken the lives of countless number of persons so far. In the last two decades (1983-2003), 6712 people are said to have lost life to these twin disasters in Nepal. If we take the number of the missing persons, the loss is much more. In the year 2003 alone, the number of people dead due to these twin disasters were 232, and 58 people were missing, 76 injured, 7,167

families were affected; there were 865 animal losses, 3017 houses and 174 cattle shed were destroyed and the estimated loss was 234 million. Among the animal losses were 12 elephants and two one horned Rhino in the Wild Life Conservation park of Chitwan which is one of the World Heritage Sites (See Dulal, Gopal Prasad, 2003, Devastation caused by flood and landslide, p 27, Paryawaran, A publication of ECO Nepal). Flood is more frequent in the Terai districts where the riverbed of the rivers has gone up due to the deposit of the gravel, sand and clay over the years. Example can be taken of Ratu river in Mahottari. The Local Government with the support of the I/NGOs makes a halfhearted attempt such as the erection of an under designed embankment, but it is washed away at times even in the following flood immediately after its construction or after a few years.

The flood in the Terai districts has been worsened by the construction of the afflux bund by India in the Indian Territory. One of such afflux bunds is the one constructed in Bnake district connected with Laxmanpur barrage. There are news that India is initiating such efforts in the eastern Terai, which is likely to drown ten villages.

4.1. Landpooling for financing River Flood Management

The solution to this problem can be the construction of continuous dykes. This can be done at no cost by using Land Pooling. Land Pooling is the transformation of an area having irregular plots with no infrastructure to an area with regular sized land plots, either square or rectangular about 35

Table 4: The top ten districts having high estimated loss (NRs.) in 2005 (DWIDP 2006)

Rank	District	VDC/Municipality & Ward No.	Estimated Losses (in million NRs.)
1	Udayapur	Trijuga	34.50
2	Udayapur	Sunkoshi	30.00
3	Dadeldhura	Jogabudha-1	11.98
4	Arghakhanchi	Achham-5	5.02
5	Kanchanpur	Chandani	5.00
6	Bajura	Martadi-1	4.07
7	Kanchanpur	Mahendranagar	3.25
8	Parbat	Khaniyaghat	2.77
9	Kailali	Khulbari-3	2.45
10	Morang	Urlabari-4	2.35
Total			**101.39**

per cent diminished in area, furnished with infrastructures such as road, drainage, power and communication. 35 per cent of the land has been found to be used towards the financing of the infrastructures in housing projects.

Table 4a. : Large events of flash floods in Nepal (Thapa and Khanal 2001)

Type	Event location and year
Extreme weather events	Lele l981, Kulekhani 1993, Larcha 1996, Syangja-Butwal 1998,
Landslide damming	Budhigandaki 1967/68, Tinau 1970, Phalahgku 1971, Baglung 1976, Dalephi 1982, Trisuli 1985, Tadi 1986, Sunkosi 1987, Myagdi 1988, Tarukhola 1989.
GLOF	Taraco 1953, Gelhaipoci 1964, Longda 1964, Zhangzangbo 1964, Ayico 1968, Nare Drangka 1977, Phucan 1980, Zhangzangbo 1981, Jinco 1985, Dig Tsho 1985, Kaligandaki 1987, Chubung 1991, Tamapokhari 1998.
Infrastructure failure	Kosi Barrage-nearly every year, River embankment/dam construction near Dhanusa, Rautahat, Nepalgunj, Bardiya, and Kailali every year, irrigation dam Bagmati 1993, check dam in Rapti, Chitwan 1990/93, check dam in Tinau 1970/81

Land Pooling has been very popular in Nepal as a financing tool and there are several housing projects underway following land pooling. One of them is the Lubhu Land Pooling Project. In Nepal, land pooling is being used even to finance the road construction. The proposed outer ring road will have the necessary land following this system. Similarly, it has been used in Nepal for reconstruction and rehabilitation following fire in Myanglung as well as Fungling, the district headquarters of Terhathum and Taplejung respectively. Land Pooling can be used for financing river flood management in the Terai in Nepal. The financial resource necessary for the construction of the dykes can be obtained by the creation of a new urban ribbon development selling the housing plots on either side of the dykes. This is a system where there is no necessity of outside investment apart from the seed money, which is returned after the completion of the Project.

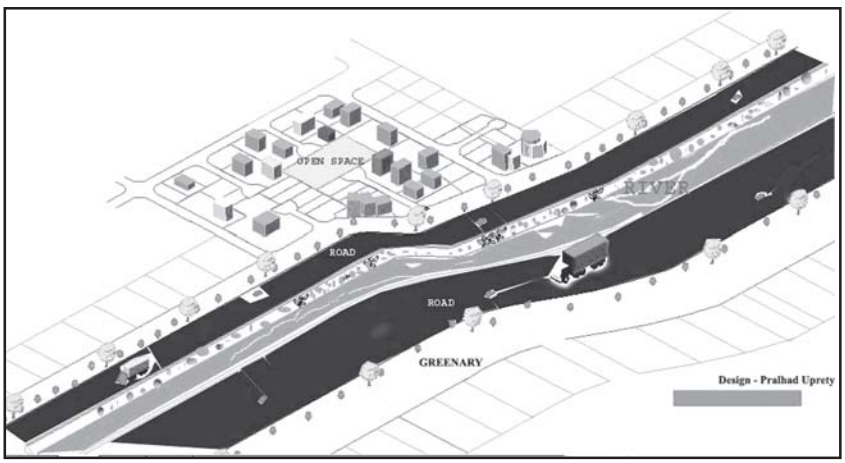


Figure 4.1. : Land pooling for financing River Flood Management

4.2 Early Warning system for Landslide

Landslide in the form of debris flow occurs in Nepal every year and takes the valuable life of quite a few individuals. Geo synthetics have also been used for its prevention even though it is in a formative stage (See Joshi, Surendra Prasad, 2004, Application of Geosynthetics in Landslide Control, International Seminar on Water Induced Disaster Prevention organized by DWIDP and JICA). For the investigation of river, computer software also is being used. This was done with respect to few rivers such as Kamala, and Bakra. (See Shrestha, Dhruva Kumar, 2004, Application of Computer Software in River Investigation, International Seminar on Water Induced Disaster Prevention organized by DWIDP and JICA)

The author has developed an Early Warning System using a siren system through the Centre for Disaster Studies, Institute of Engineering (See Science Reporter, 2007). This system costs Rs 12,000 where the power is available locally and Rs 35,000 where solar cells have to be used in places of the unavailability of conventional power. The technology consists of running an electric circuit along vulnerable areas invariably gullies connected to a siren along the lines of a burglar alarm. Before there is a landslide, there is a crack in the ground and the circuit breaks following, which the siren goes off the air before considerable period of time. People can take shelter in an earlier identified spot before it is engulfed by the debris flow. In 2002, 18 people lost their life due to debris flow in Matatirtha, a place about 15 Kilometer away from Kathmandu. Had this system been installed in this place, people would have known before 9 hours and no casualty would probably take place. According to the local people, a noise had been heard around 6 pm and the debris flow engulfed the site at the following 3 am.

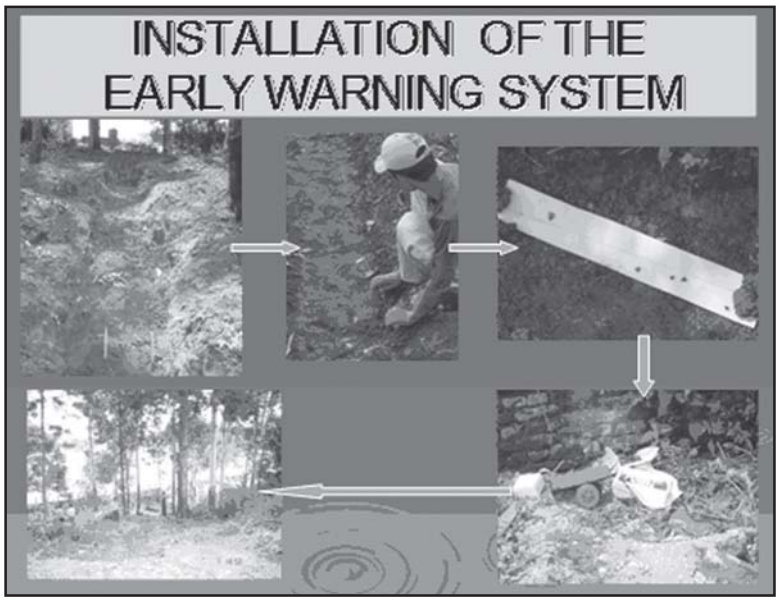


Photo 4.2. Demonstration Project for early warning system

4.3. Inundation in the Madhesh

For solving the problem of inundation in the Terai villages due to the construction of afflux bund by India, the author has proposed the encircling of the vulnerable villages by a similar bund 3 one foot higher than the Indian afflux bund.

This will provide safety to the villagers as it has done to the Indian villages south of the afflux bund. In order to manage the threat arising out of the storm water during the rain, a pond has been

proposed to be constructed in the lower level of the village, which will also ensure steady supply of water round the year as it will create water harvesting.

The water from this pond can be pumped by a simple diesel operated pump across the bond enclosing the village (See Pokharel, Jiba Raj, 2007, Solution for the Problem of Inundation, The Resound, Kathmandu Engineering College, Nepal). For the construction of the bund around the settlement, Indian Government or other donors can be approached.

Photo 4.3a.: Laxmanpur Bund in Bnake constructed by India

5. Conclusion

We have to find technological solution to any problem and this is true in the case of the disasters. The aforementioned technologies are not costly. In fact, some of them generate income. These technologies should be assessed and used if found to be feasible in all the respects.

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Disaster Mitigation and Preparedness:

A need to community Sensitization in Nepal

by Murari Binod Pokhrel

Introduction

Generalities

The people of Nepal in general take disasters as spell of god and blame their fate whenever some thing happens. Even the educated mass feels that they have no role in managing disasters and shift the responsibility to the state alone. This is because no academic curricula include action oriented practical aspects of environment and disaster management. Low level of awareness on total disaster risk reduction issues and no availability of effective disaster preparedness / mitigation measures at the community level are other reasons behind this. Individual and institutions working in the field of disaster management are challenged by the apathetic tendency of vulnerable community. That is why the effort in making vulnerable communities aware about their role in community disaster management at the local level is very much needed.

Background

- The evolution of Nepal is itself from the cause of disasters, i.e. seismic reason.
- Earthquake, Epidemic, Fire, Flood and Landslides are the frequent / common disasters in Nepal ; Whereas Glacier Lake Outburst Flood (GLOF), Avalanche, Famine, Storm, Lightening, accidents, et.al are also occurred in Nepal from time to time.
- Kathmandu is listed among the top five cities with highest seismic risk in the world.
- Without community participation, disasters cannot be managed at the grassroots level.
- There is no institution in Nepal to teach disaster management holistically.
- Women, children and disables are the most vulnerable in any disaster, but mostly these people are unaware of disaster management.
- Urbanization is growing like any other thing. Without land use plan, people from all districts are interring into capital valley because of security and job opportunities. No master / long term plan of the city exists, no ground rules for any construction, … These all are making cities high vulnerable to disasters day by day. So most of the infrastructures of cities are vulnerable to disasters.
- Disaster is being dealt in isolation. It is not integrated with other development activities.

- Communities in general are not aware of disasters, and majority of the people believe that all disasters are the creation of god. Change agents, in this respect, have to play vital roles.
- Since a couple of years, some organizations / NGOs like National Society for Earthquake Technology (NSET), and School of Shelter and Environment (SSE) are creating disaster mitigation and preparedness awareness among the people of Nepal. It is a time to intervene community people with organizing disaster mitigation and preparedness activities widely from all stakeholders in the country.
- Nepal does not have catastrophic disaster management plan for the Kathmandu valley even to handle big tragedy.

What is a disaster?

Any catastrophic situation that suddenly disrupts normal pattern of life, plunging people into confusion, suffering and results in urgent need for food, shelter, clothing, medical attention and psychological support that are normally not available in the community is called a disaster.

Situational analysis

Why do disasters occur in Nepal?

- Geological reason
- Geographical / topographical setting
- Climate

Unawareness, lacking mitigation and preparedness activities also increase the vulnerability of disaster effects in Nepal. It is because:

What percentage of Nepali knows about the fundamentals of disaster mitigation and preparedness?

- Government people … %
- Politicians … %
- I/NGO people … %
- CBO / club people … %
- Local authority people … %
- Students / non official mass / general public … %
- Total 5 – 8 % aware?

With the result of this unavailable data, we are living in most vulnerability.

The government mechanisms to deal disasters in Nepal and the need

The Ministry of Home is the apex body to address all disasters in the country. So far, under this Ministry, there is one act and action plan procedures for disaster management. Even the act by name itself is Disaster Relief Act (not the disaster management act). The Department of Water

Induced Disaster Preparedness (DWIDP) has been institutionalized to look after water induced disasters. There are 3 sectoral working groups: health group focal point at the Ministry of Health, food group focal point at the Ministry of Agriculture and logistic management group focal point at the Ministry of Home. Yes, some thing is in progress for disaster concerns in Nepal, but still dilemma as well: The country has Department level at the Ministry of Water Resources i.e. DWIDP to look after water induced sectoral disasters only. Where as the apex body dealing with all disasters has only section at the Ministry of Home.

Till now the focus of the government is only towards rescue and relief operations after disaster. The holistic approach of disaster risk management is a need of the country with appropriate disaster management organ gram, policy plans, regulations and strategy from national level to the grassroots level to address over all approach of disaster management cycle.

Role of the Government in disaster management

- Government should formulate necessary act, rules and regulations to guide and monitor holistic Disaster Mitigation and Preparedness activities in the country accommodating all stockholders with their role and responsibilities.
- Government should develop necessary human resources in various layers to facilitate community empowerment for lunching disaster sensitization activities for disaster mitigation programs throughout the country.
- Government should demonstrate some appropriate and economical mitigation modules for common occurring disasters in Nepal and disseminate widely for the learning of the community.
- Government should set programs and budget up to the grassroots level i.e. small unit of Municipality (or ward of the VDC) with national priority and commitment

Where to start Disaster Mitigation and Preparedness activities?

From community sensitization

Urban community people, from all walks of life slowly are being touched with disaster information and willing/anxious to learn more on disasters, their effects, mitigation and preparedness activities. Rural communities still are unknown of DMP activities. Naturally institutions/individuals who are working in the field of disaster management has the greater role upon them to under take the responsibility of making aware or sensitize people of every corners through DMP activities in Nepal.

Start from simple sensitization sessions with following contents

- 3 hours long awareness sessions is in practice and tested in various schools, I/NGOs, clubs and institutions. It contains disaster introduction, disaster management cycle, why Nepal is prone to disasters? video scenario: some examples of mitigation and preparedness activities, seismic vulnerability and its resistant construction / retrofitting with video clippings.
- During the sessions, some disaster scenario is presented. Example: one can learn the lesson from last Gujrat earthquake. It was heard that Gujrat had has a very good cyclone emergency

management plan, but was hit by an earthquake and the great losses occurred. The only sectoral cyclone plan could not help the people because it was not in holistic disaster management approach. Same thing could happen in Kathmandu or in Nepal. Then ask participants: Do we have **Kathmandu Valley Catastrophic / Emergency Management Plan**?. Have we thought about it? Has it not been late already? …

- Discussion on national disaster management system from Daibi Prapok Uddhar to total disaster risk management follows and finally floor should lead for organgram, composition, role and responsibilities of the stakeholders for the following system layers:
    1. National Disaster Management Council
    2. District DM Committees
    3. Municipal / VDC DM Committees
    7. Ward DM Committees or Units

Objective of DMP sensitization sessions

Participant is to:

- Know that disasters are not the spell of god.
- Understand disaster and its management together with cycle, its consequences and effects.
- Learn some of the mitigation and preparedness activities (through lecture, documentary film, session, observing go bag / first aid kit as well).
- Disseminate their learning to their family members / colleagues / neighboring people and others.
- Start thinking, sharing, brainstorming, lobbing … for Catastrophic / emergency management plan.
- Do simple mitigation and preparedness activities within home, in neighborhood and community.

Session Modality

- 25- 30 participants per session.
- Sessions will be organized in collaboration with concern officials / forum people.
- Organizer along with partner / s will be responsible for the content materials, resource persons and handouts.
- Transparency / video presentation / power point presentation and short drill will be the modality of the session not to make monotonous to participants and make sessions lively.
- Keen observation of the participants for selection of future volunteers / participants for the Community DMP workshops, hazard and vulnerability mapping exercises and other disaster management related activities.

No deny that community have power

- Once the community is aware, they themselves seek more learning on disaster effects, consequences and remedial measures. They have their own traditional local coping

mechanisms and they can improve those and apply in a appropriate manner.

- It is found in 3 – 5 days DM workshops in various districts that participants prepared good mitigation and preparedness plan of actions.
- Sensitized people have started to apply disaster resistant construction.
- Communities have the power, strength and ability to cope with the situation but only needs to be aware.
- Community can lobby at various levels for the safety / security of the community people and their properties, because the people are now different than some decades earlier.

Community managed disaster

Community managed disasters only could be effective in this part of the world. Western people say **we can manage disasters**. People from South Asian region example Bangladesh say **we should live in / with disasters**. Nepali should have third line of motto as: **we should be prepared for disasters**. Nepal can manage neither all disasters nor needs Nepal to live in or with disasters always. Without community preparedness to cope with disasters in Nepal is not possible. Nepal must lunch mass sensitization to start community disaster management in Nepal by the community people.

Sustainability

Once national organ gram is settled, stakeholders' roles and responsibility is cleared, government stops watering in the sand: uddrar (rescue) and rahat (relief), and go for total disaster risk reduction including mitigation and preparedness with national commitment. Local government also have plan and budget, community together with all stakeholders take over most of roles of DMP then sustainability automatically comes under system and regular programs and budget of the country.

Conclusion

There is a clear need of mass sensitization / awareness campaign to the community people in Nepal in order to address disaster occurrences. Separate plans of cities for mass emergency management be prepared and drills done for the community preparedness as well to keep them always warned. Disaster management is a humanitarian concern and work in this field is noble ones. No person or agency says who rings the bell? Let us start disaster mitigation and preparedness activities widely from me and you from individual house and community together with government and other stakeholders as institutional collaborations.

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Disaster Risk Assessment:

A CASE STUDY OF TWANGRA VILLAGE OF MAKAWANPUR DISTRICT

By *Amrita Sharma Suvedi*
&
Meen B. Poudyal Chhetri, PhD

1. Background

Societies differ widely in the spectrum of risks that they encounter and in their views of the priorities favoured in dealing with those risks. HIV/ AIDS, cancer, birth defects, mutations, and their possible causes in man-made and man-modified environments are some major concern in some countries. Elsewhere the societal priorities are more centred on those risks associated with the lack of basic needs - safe drinking water, housing and nutrition for healthy growth of individuals, families, and the communities, and the development of natural resources that does not result in the irreversible destruction of soil, forests and wildlife with the consequence of NATURAL DISASTER, leading to poverty.

Nepal is a predominantly mountainous and hilly country, sandwiched between China in the north and India in the south, east and west. With its geographic diversity and varied climatic conditions, Nepal is prone to various types of natural and manmade disasters. The country is in particular prone to hydrological hazards and seismic activity owing to the topography and young geology. Water induced disasters like landslides, floods, debris flow, sedimentation flows and GLOFs are frequent occurrences that cause heavy loss of human lives and physical properties.

Makwanpur District one of the most hazard prone and vulnerable areas in central Nepal is at high risk from multiple hazards. The geological and climatic conditions of the district have resulted in extremes of disasters like landslides, floods and feral fires, among others. Each year floods of varying magnitude occur during the monsoon season, which results in landslides, debris flows, riverbank cutting and inundation. These disasters cause loss of enormous amounts of property, infrastructure and human lives. Lack of effective land use and settlement regulations have contributed towards increasing vulnerability to floods and other hazards caused by both natural and anthropogenic factors. The poor, uneducated and unemployed people are compelled to make their living by settling in flood and landslide prone areas, as a result of which, most of them are affected with hazards.

1.Executive member of Disaster Preparedness Network-Nepal (DPNet-Nepal), 2. General Secretary of Disaster Preparedness Network-Nepal (DPNet-Nepal), and Nepal Centre for Disaster Management (NCDM) Nepal

2. The study area

Makwanpur District consists of 43 villages/VDCs and one town - Hetauda Municipality. It is situated between 27 degree 10' to 27 degree 40' N latitude and 84 degree 41" to 85 degree 31" longitude. The district covers an area of 2,426 square km and has wide variations in elevation ranging from 166 metres to 2,260 meters above mean sea level. The study area – Twangra village - is one of the populated villages of Makwanpur District. The population of Twangra is estimated to be 825 comprising of 113 households in 5 clusters.

The dominant ethnic groups/castes of the study area are Tamang, Brahmins and Chhetris. About 12 households of the rare indigenous ethnic group "Bankariya", who are in danger of extinction, are also present in the study area. (Thapa, B 2003).

Twangra and Masine are two major rivers in the study area which flows down to Rapti River. Similarly small seasonal stream exist in the study area, which contributes to flash floods on the Bankariya and Dhobi rivers. The terrain of the study area is hilly and mountainous with steep slopes and also consists of fans, aprons and ancient rivers terraces. The land cover of the area is mostly forests and grassland with some cultivable.

The major livelihood of the study area is farming. Vegetable farming is more commonly practiced. Community forestry has also been very successful attempt. The major issues affecting the area today are vulnerability to disasters affecting both livelihoods and education, which is becoming the leading cause for migration of youth to Gulf countries. It has only 2 schools - one secondary and the other lower secondary (DEO 2005).

Flooding is the most frequent hazards with various consequences in terms of deaths, injuries and long term social and economic impacts. The rainfall events producing floods result in two main types of flooding - regional floods and flash floods. Regional floods is a high magnitude but low frequency event, whereas flash floods is a high energy and high magnitude event, but covering a relatively small area.

3. Findings of the study

This research study was carried out to identify the risks of the disaster affected people of the study area, identify direct and indirect causes of vulnerability of major hazards, assess the socio-economic condition of the disaster affected people, evaluate the environmental degradation of the study area and assess the disaster resilience of the local people.

● *Disaster Risk at Twangra Villag*

The settlements are from 10 meters to 500 meters from the Twangra and Masine rivers. This shows that the settlements are vulnerable to floods during the monsoon period. Schools in the study area are also at risk. They are situated on the banks of the Masine River. Similarly Rapti River, which occupies 54.66% of the total catchments area of the district, also flows near Twangra village at a distance of 500 - 700meters.

Floods, landslides, fire, windstorm, soil degradation, hail storm, animal attack and soil erosion are the major hazards identified by the community. The questionnaire survey results showed flood and landslides as the major disasters while Participatory Vulnerability Analysis (PVA) shows that soil degradation due to over use of pesticides is also leading to desertification of productive land. Water induced disasters like floods and landslides are the recurring phenomenon which occurs mostly during the monsoon period affecting the entire community.

People perceive livelihood as more at risk by floods and landslides, but those are causing defencelessness problems to human life, cattle, agricultural land, infrastructure and the environment, disrupting the socio economic activities. Similarly, the elderly, children, women and sick are highly at risk.

The annual average precipitation of the district is 2,500 mm, a lot more than the average annual precipitation of the country which is about 1,600 mm. This can be considered as one of the major indicators of the likelihood of the occurrence of disaster. The average recurrence period of hazards in Makwanpur district also confirms the possibility of occurrence of disasters in the study area.

● *Causes of Risks and Vulnerability*

More than 50% of the people in the study area fall below the poverty line and their income or consumption falls below US $ 1 per day (UNDP Poverty Report 1998, and the present study), which is a major cause of vulnerability and risks.

The population of the study area is also large with an average household size of 7.32 which is more than that of the district as well as the country. The people of the study area are mostly illiterate. There are many initiatives but are inefficient. The existing initiatives training modules and methodologies should also be improved to better focus on an illiterate target population.

The people of the study area have limited access to resources. One of the main causes of this is the lack of awareness on their basic rights. Most of the people rely on traditional agriculture and vegetable farming. There is a lack of other skills besides that traditional farming. In addition, no political parties were found to have any political commitment to disaster management activities; instead people were even avoiding taking part in disaster awareness programs in the area.

Another major cause of vulnerability in the area is lack of physical facilities like a bridge over the Rapti River and mitigation works on Rapti, Masine and Twangra Rivers. Similarly, due to the destruction of natural resources like forests, the soil quality is deteriorating.

Research shows that although more than 42% of people of the study area believe that disaster is a natural phenomenon, 20% still believe it to be an act of God. The myth or such kind of concept are hampering the activities aimed at reducing disaster risks.

Floods, landslides, and other hazards do not cause any harm to humans and their property if preventive measures are taken or if we live well away from them. Although it is impossible to prevent a natural phenomenon from happening, various preventive measures can be taken to prevent the loss of lives and properties by the disasters. Hence, it is pertinent to address the root causes of the

vulnerability and risks. Local people are more concerned about earning money, employment and other things in comparison to disaster management.

● *Socio-economic Status of People*

The average household size is 7.37 and this size has a significant effect on the socio-economic status of the people in a village and the surrounding resources. Large sized households will require more resources to meet their daily requirements. As a result, greater pressure on the surrounding natural resources is abundance.

Literacy rate is very poor; it is alleged that education influences the social and economic activities in the community as well as their own awareness and attitude. Since education is considered to be one of the determining factors of increased awareness, the 53.11% literacy rate need to be increased in order to achieve the desired goal of disaster risk reduction.

The major occupation of the people in the village is traditional farming with low productivity. Labour work and foreign employment particularly in Gulf countries, are on the rise, with few people in government services. More than 50% of the population are below the poverty line. The access of the community to trainings and gaining additional skills, which can contribute to income generating activities in the study area, should be enhanced in order to reduce the disaster risks and vulnerability of the community.

Disparity in land ownership also exists to some extent. Male owned land makes up to 71.42% of the total land, even though more than 50% of the population are females. This shows that strong patriarchal values still prevail and women's role is still limited to traditional ideologies.

Poverty has been the major factor behind the migration of people and the availability of economic opportunities, or the lack of it, has played a dominant role in migration decisions, 43% of people have migrated to Twangra from other places due to poverty. On the other hand, 53.33% came to Twangra due to disasters in their place of origin. This migration pattern not only influences demographic change but also acts as one of the determining factors in building attitudes towards conservation of natural resources. Growing migration increases pressure on the resources and increases the risk.

Lack of clean drinking water and proper sanitation is also one of the major problems identified by the research analysis, which can result in occurrence of epidemics. 85.72% of people use open spaces, the forest or the riverbank for defecation. Although few (less than 15%) stated that they use toilet, during observation for household survey not a single toilet was found to be in proper useable condition. Similarly, 68.57% of the population relied on unsafe pond water. If the water and sanitation condition is poor, even in times of normalcy, the real risk of epidemics can turn out to be in times of other disasters like floods and landslides.

● *Environmental Degradation of Study Area*

Environmental degradation has long term impacts. There are a numbers of factors, which may positively or negatively influence the severity of environmental impacts during and following a

disaster. These factors are related to the spatial, social and economic conditions under which the disaster survivors live and indicate environmental impact issues, which may need to be addressed as a part of disaster management.

The rapid rate of fuel consumption and the lack of other alternative energy sources envisage the depletion of natural resources as forest. It has been found that the use of bio-gas as a cooking fuel and the use of improved cooking stoves will result in consumption of less wood for fuel than other means. To reduce the risk and vulnerability of disasters in the long term, over exploitation of natural resources should be discouraged. Most of the respondents are directly and indirectly involved in their local Community Forestry User Group which shows that initiatives for energy conservation can work in the study area.

Overuse of inorganic fertilizers and pesticides is leading towards desertification and decreasing productivity. Uses of fertilizers and pesticides are massive in the study area, which signifies food scarcity in the near future. Similarly, this may lead to serious health hazards as well. Most of the people rely on agriculture with no other alternatives and the consequences of environmental hazards that enhance the poverty.

● *Disaster Resilience of the Community*

A community - even the poorest - by virtue of their roles as managers of households, often in stark conditions, are equipped with knowledge, skill, coping strategies, access to social networks and above all a certain resilience that serve as reservoirs of capital that should be tapped into for disaster preparedness (ibid,10).

The Twangra Village community has already initiated the organized disaster management practices. Community contributions for various types of mitigation work show that they are committed to disaster preparedness. The community of Twangra is more inclined towards a humanitarian mindset and thus are more cooperative.

It shows that 45.71% of the Twangra village community are aware about disaster preparedness activities and 34.28% have benefited directly or indirectly from disaster preparedness training and 51.42% believe that they are important actors in disaster risk reduction. Most of the people have access to FM radio for information. Twangra village community have their own action plan for disaster preparedness. There is a need of integration of indigenous technology with the new technology for improving disaster risk reduction.

4. Conclusion and Recomendations

The risk assessment study of Twangra shows that, the risks of various hazards as floods, landslides, fire, windstorm, soil degradation, hail storm, animal attack and soil erosion. Settlements too near to the rivers, lack of awareness on disaster preparedness, lack of access to necessary resources, inadequate facilities and limited income generation activities are the contributing factors for severe risks. Traditional mindsets of the people who believe that God is the cause of all disasters still

prevail. The people have high dependency on agriculture, mainly vegetable farming. Large household sizes and low literacy rate have been identified as one of the factors hindering disaster risk reduction. Safe drinking water and sanitation, over exploitation of natural resources and overuse of inorganic fertilizers and pesticides are deteriorating the productivity of agricultural land. The Twangra village community has initiated some disaster preparedness activities although they are not adequate to address the needs.

Based on the above conclusion the following recommendations have been made:

- Further research on risk assessment is highly recommended for disaster management.
- Perception of the people of the study area should be changed through education, training and awareness.
- Literacy rate of the study area needs to be raised through formal and informal education.
- Adequate funds and resources should be made available to cope with the disasters in the study area.
- Available resource mobilization and proper management of existing funds is highly necessary.
- Political commitment is most wanted for disaster management.
- Local authorities must pay due attention to reduce disaster risks in Twangra.
- Effective coordination among various disaster management related agencies should be improved for risk reduction.
- Empowerment of the community of the Twangra village is also required to reduce disaster risks over there.
- Use of indigenous knowledge and adoption of best practices is needed.
- Technology advancement is crucial for mitigation. Hence, research and development is one of the essentials.
- Income generating activities should be incorporated with disaster management activities.
- Disaster preparedness activities should be enhanced in the area.
- Networking and coordination among the stake holders should be improved.
- Disaster awareness among school children could be instrumental to reduce the disaster risks.

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Importance of Early Warning Systems in Disaster Risk Management

*by Niranjan Tamrakar**

Impact of Disaster

Everyday, people around the globe are threatened by storms, floods, droughts, landslides, earthquakes and other natural hazards, and suffer because of their social, economic, geographic and environmental circumstances. Every year, new highs are being recorded for economic losses from natural disasters and the human costs are even greater. 2005 was the most expensive disaster year ever, with economic losses exceeding 200 billion US dollars (USD) and insured losses totaling 75 billion USD. The earthquake in the Kashmir region (India and Pakistan) in October 2005 claimed more than 80,000 lives. 2004 will be remembered as a sad year as well with the death toll in the massive tsunami topped 200,000. Nearly a million people have been killed over the last decade by disasters caused by storms, droughts, floods, and earthquake. While some material losses seem to be unavoidable, especially in the case of very large and infrequent events, in some cases the loss of human lives could have been avoided if the proper precautions and measures had been in place. This would have been the case for the December 26, 2004 Indian Ocean tsunami, which provoked fatalities surpassing a quarter of a million people.

Generally it is the poorest people living in the poorer parts of the world who are most affected by natural hazards. In Nepal, many poor groups were hit very hard by the annual flood and landslides, firstly by the loss of family and homes, and then by the loss of livelihoods. Reducing people's vulnerability to natural hazards is an essential condition for reducing poverty and achieving the Millennium Development Goals. Policymakers are beginning to recognise that preparedness for natural hazards needs to be an integral part of national and international development policies and practices.

Disaster risks can be countered through approaches such as public awareness campaigns, knowledge of hazards and vulnerabilities, community preparedness programmes, early warning systems, evacuation plans, long-term land use planning and environmental protection, and the application of sound building codes. Through these means, governments and communities can help people to become more resilient to hazards and their impacts, and thereby reduce the chance that hazard events turn into disasters.

Early Warning System

Early warning is a major element of disaster risk reduction. It prevents loss of life and reduces the economic and material impact of disasters. To be effective, early warning systems need to actively involve the communities at risk, facilitate public education and awareness of risks, effectively disseminate messages and warnings and ensure there is constant state of preparedness.

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In January 2005, the World Conference on Disaster Reduction adopted the "Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters". This included clear references to the importance of early warning, and encouraged the development of "early warning systems that are people centred, in particular systems whose warnings are timely and understandable to those at risk. From a public safety, early warning, disaster preparedness and prevention must be part of a single, well integrated process. Early Warning for disaster reduction is an important matter of public safety for two main reasons:

- Firstly, it is **public safety, and the protection of human lives**. In the 1970s, natural disasters alone claimed nearly 2 million lives. By the 1990s, even though the occurrence of disasters was greater, fatalities had fallen to under 800,000. This shows that it is possible to reduce the loss of life, although the total number of people affected by disasters did increase markedly.
- Secondly, it is the **protection of the nation's resource base and productive assets** (infrastructure and private property or investments) to ensure long-term development and economic growth. Conversely, by reducing the impact of disasters, a government avoids the financial –and political- burden of massive rehabilitation costs.

Investing in early warning and other measures of disaster reduction is neither simple nor inexpensive, but the benefits of doing so, and the costs of failing to, are considerable. For instance:

- In terms of reducing economic losses, early warning and disaster preparedness 'pay for themselves' many times over the life of the warning system.
- The reduction of environmental losses can, if properly managed and publicized, have both long-term benefits to the economy, and short-term benefits for the administration in-charge.
- A country can strengthen its stature and influence in international relations by a good handling of 'externalities', or indirect effects, on neighboring nations, and by taking a leading role in the management of common waterways. Coordinated management, including disaster reduction by thirteen nations sharing the Danube River, or by countries along the Mekong, are good examples.

In many parts of the world, communities do not have effective early warning systems for the hazards they experience. Early warning systems need to be '***people centred***' i.e. based on the risks that people face and designed to provide understandable information to all of those at risk. This can enable people to act promptly and in a manner that reduces injuries, loss of life and damage to property. Early warning systems need a strong scientific and technical basis. They can be linked to bring efficiencies and economies of scale and to help secure the sustainability of systems for rare hazards.

The People- Centred Early Warning Systems

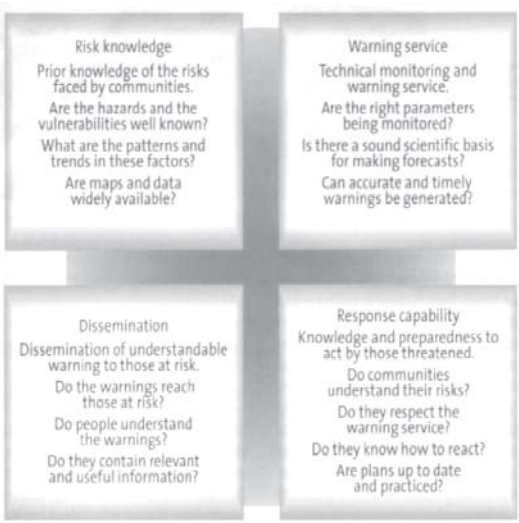
People centred early warning is a system, not a technology. The identification, detection and risk assessment of a hazard, the accurate identification of the vulnerability of a population at risk and finally the communication of information to the vulnerable population about the threat in sufficient time and clarity so that they take action to avert negative consequences constitute the system of public warning. Warning allows people to act in order to prevent hazards from becoming disasters. Effective early warning saves lives, reduces economic loss, reduces trauma and disruption in society

and instills confidence and a sense of security in the public. It is an important component of the foundation of a sound economy.

Effective early warning systems (EWS) require strong technical foundations and good knowledge of the risks. They must be strongly "people centred" with clear messages, dissemination systems that reach those at risk, and practiced and knowledgeable responses by risk managers and the public. Public awareness and education are critical; in addition, many sectors must be involved. Effective early warning systems must be embedded in an understandable manner and relevant to the communities which they serve.

A complete and effective, people centred early warning system comprises four inter related elements, spanning knowledge of hazards and vulnerabilities through to preparedness and capacity to respond. Best practice EWS also have strong inter linkages between all elements in the chain.

Risk knowledge: Risks arise from both the hazards and the vulnerabilities that are present. What are the patterns and trends in these factors? Risk assessment and mapping will help to set priorities among early warning system needs and to guide preparations for response and disaster prevention activities. Risk assessment could be based on historic experience and human, social, economic and environmental vulnerabilities.



Warning service: A sound scientific basis for predicting potentially catastrophic events is required. Constant monitoring of possible disaster precursors is necessary to generate accurate warnings on time. Approaches that address many hazards and involve various monitoring agencies are most effective.

Communication and dissemination: Clear understandable warnings must reach those at risk. For people to understand the warnings they must contain clear, useful information that enables proper responses. Regional, national and community level communication channels must be identified in advance with single authoritative voice established.

Response capability: It is essential that communities understand their risks; they must respect the warning service and should know how to react. Building up a prepared community requires the participation of formal and informal education sectors, addressing the broader concept of risk and vulnerability.

Key elements for successful implementation

Understand the most likely threats, likelihood of disasters and their potential consequences: Although natural disasters are not precisely predictable, they are most often generally foreseeable. In other words, there are many areas where the occurrence of floods is likely; one does not necessarily know exactly when, but one knows they will occur sooner or later. Many natural hazards can be foreseen, or anticipated, from past experience, the analysis of current

patterns of land use, or population distribution.

The probability of occurrence for a given threat-**hazard;** and the degree of susceptibility of the element exposed to that source-**vulnerability.** The negative impact, or the disaster, will depend on the characteristics, probability and intensity of the hazard, as well as the susceptibility of the exposed elements (both people and assets based on physical, social, economic and environmental conditions).

Establish proper priorities: The common approach is to use the expected value criteria; that is, the likelihood of an event multiplied by the potential cost of this event if it occurred. Simply stated, it is a matter of giving priority to the 'worst-most likely' over the 'most benign-least likely' events. More sophisticated priority criteria can also reflect the extent to which early warning and preparedness can reduce the impact of likely events.

Developing institutional networks with clear responsibilities: Under-standing the nature of natural hazards and related vulnerabilities, requires a combination of actors from several areas, such as science and research (including social sciences and cultural aspects), land use planning, environment, finance, development, education, health, energy, communications, transportation, labor and social security as well as national defense. On the other hand, a prompt and effective response to a disaster, based on early warning, implies that concerted action be taken by specific types of institutions: civil defense or public safety personnel, power and other utility agencies or companies, public health authorities, etc. at levels.

Multi-disciplinary research, multi-sector policy and planning, multi-stakeholder participation and networking relevant organizations are fundamental; to address the many dimensions in which early warning and disaster risk reduction efforts are actualized. Benefits that accrue from such connections include improved efficiency and cost-effectiveness, a unified strategic framework for decision making on issues of common concern, lessening duplication of efforts, as well as mandating an appropriate division of responsibilities. The spectrum of collaboration, processes and activities goes from various ways of sharing information to joint research and integrated databases through to participatory strategic planning and programming.

Establish or strengthen the legislative/legal framework and mechanisms:. Early warning systems, as well as other disaster reduction applications need to be motivated and based within governmental responsibilities, especially since response to disasters may require exceptional executive powers for a specific period of time but its success cannot be accomplished without the benefits of widespread decision-making and the participation of many others.

While disaster management and response co-ordination can benefit from centralized command there is an increasing recognition of the need to decentralize disaster risk reduction, including early warning system responsibilities. Along with the decentralization of power and devolution of governing authority, disaster risk reduction, at the local community level needs to be encouraged, and supported. The decentralization of responsibility for disaster risk reduction, identification of risk and early warning communication has to be coordinated by municipalities, townships, wards or local communities.

Developing effective communication strategies*:* The context of early warning system communications has two aspects; the hardware aspect relates to the maintenance of lifelines, i.e.

the necessity to build or strengthen robust hazard-resistant communication systems; the software aspect relates to the maintenance of relationships, i.e. the need to establish and maintain effective links and working relationships among the actors involved in the early warning communication chain.

Wishing not to appear 'alarmist', or to avoid criticism, local and national governments have sometimes kept the public in the dark. The lack of clear and straightforward information, when contrasted with the reality of a disaster, and a profusion of conflicting news or rumors, can only confuse people and undermine their confidence in public officials. Conversely, there are quite a few cases where the public refused to heed early warnings from authorities, and exposed themselves to danger or forced governments to impose removal measures. In any case, clear and balanced information is critical, even when some level of uncertainty remains.

Securing resources: A substantial amount of resources is needed to ensure monitoring, adequate early warning, concerted disaster reduction, and a return to normal life. To a great extent, the capacity to secure resources to do this-versus undertaking a competing public program-depends on the quality and credibility of the overall system: understanding threats, clear priority setting and institutional networks, and appropriate legislative dialogue.

Challenges in Early Warning Systems

- Different hazards require different early warning systems: the needs for the warning of , floods or drought, earth quakes or tsunami, are very different. Experiences gathered around the world show that some hazards are difficult to predict and some are predictable. For example, the forecast of catastrophic earthquake, eruptions or tsunamis in any part of the world is still facing major difficulties due to the lack of adequate measuring techniques to capture the true magnitude and timing regarding these potentially catastrophic events. Nevertheless, efforts are underway to advance such knowledge and improve the precision of such forecasts.
- At present, many systems that are able to issue warnings for a number of natural hazards are in place. A frequent problem, however, is the weak linkage between the technical capacity to issue the warning and the public's capacity to respond effectively to the warning, i.e., the capacity of the warning to trigger the appropriate response by emergency management agencies, community based organizations and the public at large. Moreover, the understanding by the public and community organizations of their risk and vulnerabilities is often lacking. Therefore, preparedness programs as well as public education and awareness programs are needed.
- Many developing countries, in particular the least developed among them, have limited capacities for effective early warning systems, and in some cases they are virtually non existent. Key requirements appear to be the development of national integrated risk reduction and risk management capabilities, and improved technical equipment and training.
- By considering hazards and vulnerabilities together with a view to reducing risk, it should be possible to increase the effectiveness within institutions, the efficiency of outgoing actions, and public preparedness for early warning systems to be effective.

Conclusion

One of the most effective ways of mitigating the impact of natural disasters is through the provision of state-of-the-art warning services which enable communities to prepare for the approaching storm, flood or other natural hazard and to take those measures necessary to avert the loss of life and minimize the damage caused to property and the environment.

Recognizing the effective early warning as one of the critical parts of a comprehensive risk management system that includes mitigation, preparedness, response and recovery, warning is a crucial component of the overall risk management system. It needs urgent strengthening for the country to benefit from the proposed improvements in the regional hazard detection systems and to minimize losses from local hazards.

Linkages to local, regional and international hazard detection systems are extremely important for an effective early warning system. For localized hazards such as floods and landslides, seamless connections must exist between the hazard detection systems and the Early Warning System. People are not only the recipients of warning messages from experts, they are also valuable sources of hazard detection and monitoring information. An early warning system without education, planning and rapid action is sub-optimal.

Although government is responsible to protect its citizens to the best of its ability, they cannot do it alone; all sectors of society must contribute. Generally in case of emergency, the private sector offers complementary resources and necessary infrastructure (e.g., telecommunications and broadcasting networks) that are needed for disseminating warnings; civil society provides social infrastructure at the grassroots. The use of already existing capacities is not only cost-effective, but ensures the continuity and maintenance of the system. The cost to the government of implementing a nation-wide warning system is significantly less when other stakeholders contribute to the costs for maintenance, management and service. It is also important that there be adequate oversight of the performance of the vital functions associated with an early warning system; this can only be provided when multiple players are involved.

Despite the improvement in early warning technology and communication system, natural disasters still cause death on a massive scale year after year. There are already many indications that the scale of disasters around the world is likely to increase further in future. Relevant causal factors include global population growth, the concentration of people and valuables in large conurbations, settlement in and industrialization of extremely exposed regions such as flood plains, the increased susceptibility of modern societies and technologies to natural hazards, and above all, global environmental and climate change.

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Integrating Community-Based Disaster Risk Management into Government Policy and Programming

By Shesh Kanta Kafle*

Abstract

Community-based disaster risk management (CBDRM) is a process in which at-risk communities are actively engaged in the identification, analysis, treatment, 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 and implementation of disaster risk management activities. The involvement of most vulnerable social groups is considered as paramount in this process, while the support of the least vulnerable groups to them is necessary for successful implementation.

Due to the severity and widespread nature of natural disasters in Nepal, the need for the institutionalization of CBDRM in government policy-making and porgrammes has been considered significant. The institutionalization of CBDRM is meant to internalize and mainstream the concept in the government policy and planning; and all tiers of the government such as national, district and village should recognize the need for involving communities and community groups in disaster risk management work in their policies and plans, allocate funds for CBDRM activities, assign responsibilities to operational level staff members to provide support to community groups, develop appropriate strategies and program to support community action and establish technical resource centers in the country.

In this paper, a conceptual framework for the institutionalization of CBDRM into government policy making and programming is also briefly described.

Introduction

Nepal is prone to many kinds of disasters. The population in this country faces multiple disaster risks which have caused widespread damage to the life and properties in the country. Floods and landslides damage crops or property in one part or the other almost every year. Although small in size, the country is exposed to most disaster types: floods, landslides, storms, forest fires, avalanches, epidemics and ecological hazards, among many others. A number of physiological, geological, ecological, meteorological and demographic factors have contributed to disaster-proneness of the country. Major factors contributing to disasters are rapid population growth, slow economic growth, a high degree of environmental deterioration, fragility of the land mass and high elevation of the mountain slopes.

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Disaster risk management at the community level helps people form an understanding of the risk that may occur in their community by creating an environment to initiate discussions on their vulnerability. It enhances the capacity and self resilience of the communities by providing them with a step by step process to identify community risks, assess and acknowledge their inherent capacities, select appropriate preparedness and mitigation actions and establish mechanisms to put risk reductions into practice. The government and non-government organizations play a supportive role through providing information, organizing and strengthening community groups, giving financial and technical assistance and physical inputs and through linkages.

Community-based disaster risk management (CBDRM) aims at achieving disaster risk reduction, sustainable development and poverty reduction, people empowerment and equity. CBDRM is envisioned as an integral component of sustainable development, since it helps in avoiding the negative impacts of disasters on development.

The paradigm shift

The traditional 'rescue and relief' approach of disaster management has been proved inadequate and ineffective in reducing disaster losses. In recent years, community-based disaster risk management (CBDRM) has been put forward as an effective approach to disaster risk management. CBDRM is a process in which at-risk communities are actively engaged in the identification, analysis, treatment, 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 and implementation of disaster risk management activities. The involvement of most vulnerable social groups is considered as paramount in this process, while the support of the least vulnerable groups to them is necessary for successful implementation.

CBDRM emerged as an alternative during the 1980s and 1990s. Over the past two decades it has become apparent that top-down approaches fail to address the needs of vulnerable communities, often ignoring local capacities and resources. The top-down approach can increase vulnerabilities and undermine the quality of life, security and resiliency. The CBDRM approach emphasizes the active involvement of communities in all phases of disaster risk management. CBDRM is built upon the following principles:

- It contributes to addressing the root causes of vulnerabilities and transforming the structures that generate inequality and underdevelopment.
- It is a development approach. Recognizing the need for community action for disaster risk reduction in all development practice.
- Any efforts to reduce disaster risks should build upon a community's knowledge and experience about hazards, vulnerabilities and disaster risk reduction. It will also be essential to recognize the importance of local customs, culture and materials while developing and implementing risk reduction programs.
- CBDRM requires a high level of coordination and cooperation amongst stakeholders e.g. among Government departments, NGOs, donors, vulnerable groups
- CBDRM advocates and workers believe that they are accountable to the people first and

foremost.

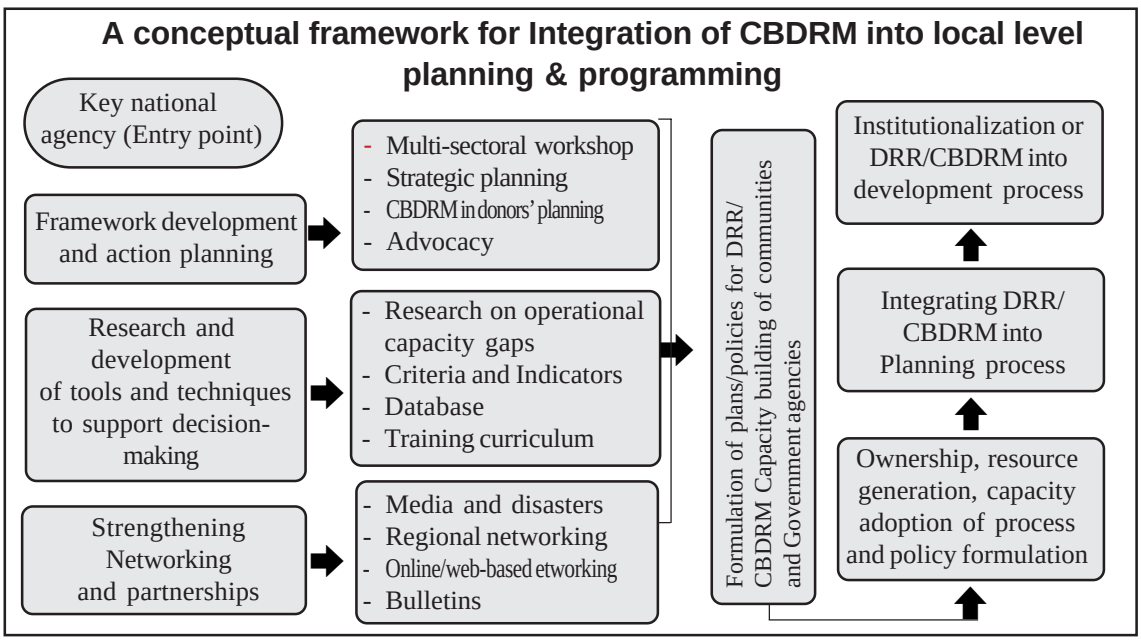
- There is a need to maintain efforts to enhance inclusiveness, decentralization and empowerment.

Integration of CBDRM into socio-economic development process

Due to the severity and widespread nature of natural disasters in Nepal, the need for the institutionalization of CBDRM in government policy-making and porgrammes has been considered significant. The institutionalization of CBDRM is meant to internalize and mainstream the concept in the government policy-making and planning; and all tiers of the government such as national, district and village should recognize the need for involving communities and community groups in disaster risk management work in their policies and plans, allocate funds for CBDRM activities, assign responsibilities to operational level staff members to provide support to community groups, develop appropriate strategies and programme to support community action and establish technical resource centers in the country.

Therefore, institutionalization of CBDRM requires the following as its preconditions:

1. Strong policy support
2. Existence of formal organizations/institutional support
3. A framework of disaster risk management
4. Institutionalized budget
5. Presence of dedicated, trained and competent personnel
6. Political will



In the CBDRM processes the vulnerable groups and persons, multiple stakeholders in a community, outside agencies such as media, donors and UN are considered as a key to make it effective and sustainable.

What Government Ministries/ Departments can do for CBDRM?

- Formulae laws/policies/plans/action plans on CBDRM and implement them.
- Support to form and strengthen community groups for risk reduction
- Share information about risks and vulnerability with communities
- Develop technical skills of local communities
- Provide funds to most vulnerable groups
- Provide physical inputs
- Provide technical advice
- Linking scientific and technical organizations with community groups (e.g. meteorological stations, Seismological station, early warning system)
- Mobilize resources from all sectors of government and create conducive environment for outside agencies to invest resources in the community initiatives
- Linkage development with other agencies
- Reduction of food insecurity
- Participate in the M&E activities along with the local communities.
- Awareness raising, capacity building and skill development of local communities.

Like other countries in the South Asia, Nepal has given priority on the relief and rescue rather than disaster risk management. This is the reason why the key unit responsible for coordinating disaster management activities in the country falls within the Ministry of Home Affairs. Law and order is the key goal of this Ministry and disaster management has been a low priority. Therefore, either the scope of this ministry should be broadened or the responsibility should be handed over to other relevant ministries. Besides, the following recommendations are made to promote the CBDRM in Nepal:

- CBDRM should be integrated into the socio-economic development process by the government.
- Both policy and grassroots level interventions are necessary to come up with long lasting results in CBDRM.
- Policy amendments, resource mobilization, capacity enhancement of the community and governmental departments are prerequisites for an effective CBDRM practice.
- Rural and urban youth should be mobilized in the awareness raising campaigns through social mobilization processes.
- Research on capacity gaps and indigenous knowledge, technology innovation, interventions in the policy as well as community levels are necessary to integrate the CBDRM into the socio-economic development process

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Property and Prosperity: Lack of Secure Land Rights and its Impact on Individual Incentives in Rural Nepal

Land is the most important form of property in rural Nepal. However, it has always been insecurely held. This paper investigates how individuals behave when they are denied secure land rights. A literature research on the land use history in the agriculture sector of Nepal was carried out. It indicates that individuals use land resources available to them in an unproductive and unsustainable fashion when they are denied secure land rights. This analysis shows secure property rights are necessary for the success of poverty relief programs in Nepal.

Bikul M. Tulachan*

I. Introduction

Secure Property Rights and Poverty Relief

Many advocates of property believe that secure property rights are vital for economic development (Say, 1803; Ricardo, 1817; Smith, 1760; Malthus, 1820; Bentham, 1843; Bethell, 1998). In his *Lectures on Jurisprudence,* Adam Smith (1760) expressed that,

'The first and chief design of every system of government is to maintain justice: to prevent the members of society from encroaching on one another's property, or seizing what is not their own. The design here is to give each one the secure and peaceable possession of his own property' (pp.5).

Similarly, in his *Treatise on Political Economy,* French economist Jean-Baptist Say (1803 reprint: 1971) stated that the sources of production, namely land, capital, and labor, could not attain 'the utmost degree of fecundity' until and unless property was secure. In *The Noblest Triumph,* Bethell (1998) argues that a poor country can never make proper use of foreign aid until and unless it's legal and political infrastructure assures security to private property. He uses a very interesting analogy to make his point. Similar to how an arid land that lacks the appropriate receptacles can

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never be made fertile by simply hosing water onto it, he argues, a poor country lacking secure property rights can never be made prosperous simply by pouring foreign aid in it (pp. 192). The main purpose of this study, thus, is to determine if secure property rights are necessary for the success of poverty relief programs in rural Nepal.

Secure Property Rights: What are they?

Property rights refer to the *bundle of rights* a property owner commands over a physical or abstract thing that is legally understood to be owned by him or her. Examples of physical property would include a house, an animal, or a piece of land. Inventions, discoveries, and musical compositions are abstract forms of property. An entity's rights to use one's property, exclude others from using it, lend it, sell it, or leave it by will, are the different elements of the *bundle* of property rights. Other important rights included in it are the right to enjoy the fruits of one's property, and the right to use one's property in any manner seen fit by the owner. An individual enjoys secure property rights when he or she is totally free to practice the aforementioned rights. Such an individual will not be influenced by the government, community or someone else on decisions regarding how to use one's property, whom to transfer, lend, or sell it and under what conditions. Under no circumstance, however, can the property owner use his property in a way that violates the property rights of someone else (Bethell 1998, pp.19-30).

II. Conceptual Fremwork and Method of Analysis

Conceptual Framework

Advocates of property hold that *individuals use natural resources in an unsustainable and unproductive way, when they are denied secure property right*. Hernando de Soto, the Peruvian economist, finds this to be perfectly logical. He explains that, 'the legal protection of the fruits of a man's labor and creativity, what we call property rights is a crucial liberator of enterprise' (Methvin 1989, cited by Bethell 1998, pp. 197). The French economist Quesney further emphasizes this point stating that, 'without that sense of security which property gives, the land would still be uncultivated' (pp.328). It is in this argument that the heart of the belief that secure property rights are necessary for the success of poverty relief programs lies. Economies cannot prosper until and unless their resources are used efficiently. Poverty relief programs will fail when natural resources are not used in a productive and sustainable fashion.

The following hypothesis was initially proposed during the study in order to see if secure property rights are necessary for the success of poverty relief programs in rural Nepal,

Hypothesis: *'Individuals use natural resources available to them in an unproductive and unsustainable way when they are denied secure property rights.'*

Land Rights in Agriculture

Agriculture is the most important sector in Nepal. It has always been the key source of rural livelihoods. In 2001, 79, 82.5, and 40 per cent of Nepal's employment, export, and national income respectively were generated by the agriculture sector (National Census, 2001, cited by CSRC 2003, pp.7). Approximately twenty years ago, these proportions were 94.4, 82.5, 71.6 per cent

respectively in employment, export, and the GDP (ICIMOD 2000, pp.11).

Since, land is the main resource in agriculture; it is estimated to be the most important factor of production for 76 per cent of the total population in Nepal. It is and has always been the main source of wealth, status and power here (CSRC 2003, pp.2).

'Land was the central value in these communities. The whole of society was organized around land, not money. Land was productive. Money was not. To own or control land gave far greater status within the community than money-wealth. This explains the Nepalese hunger for land (Stiller 1993, pp.7).'

In view of this fact, this study focuses only on land and its relationship to individual behavior. All other forms of property are ignored. The previously proposed hypothesis is thus modified as follows,

Modified Hypothesis: *'Individuals use land resources available to them in an unproductive and unsustainable way when they are denied secure land rights.'*

Methodology

In order to test the modified hypothesis, a literature research on the history of land rights in the agricultural sector of Nepal was conducted. The research explored the 238 year old history of *modern* Nepal spanning from 1768 to 2006. The key focus was on the way individuals behaved, in the past, when they were denied secure land rights.

The paper is organized as follows: The next section starts with a brief political history of Nepal. It further discusses the history of land rights from 1768-2006. An analysis of how individual behavior was impacted, when secure land rights were denied in Nepal, is carried out. Finally, findings are discussed and implications and conclusions are drawn.

III. Findings

Land Rights and Individual Behavior (1768-1951)

From 1768-1951, agricultural land was state owned. During this period, land was treated as the private property of the then ruling and aristocratic classes. The peasantry, which formed the majority of Nepal's population, was denied the fundamental right to own land. They were only allowed to own allotted plots of *raikar* land. According to Regmi (1999),

'Individual rights in raikar land were limited to the right to cultivate the land and appropriate a share of the produce. Even this limited right was not permanently available on the same holding, for lands were re allotted periodically' (pp.171).

Before 1951, the peasants were forced to submit a large part of their produce to the government. The submitted produce was used by the government for its own benefits and not that of the peasantry. This unfair and exploitative environment provided those that tilled the land with reduced incentives to work hard and use the land in a productive way.

Secondly, the government would re-allot *raikar* land to individuals frequently. Hence, the peasants never felt secure on the piece of land he held at a given time. Furthermore, the state had every right to confiscate land and grant it as *jagir, birta, or, guthi* to any individual or institution anytime.

This practice discouraged peasants from making any investment that would improve the future productivity or quality of the land he held. The insecure land tenure-system also provided *birta, jagir* and *guthi* land holders with disincentives to use land in a most productive and sustainable fashion.

As *jagir* lands were awarded as emoluments to government workers, the government would take them back once the *jagirdar* stopped working. Since the future of a *jagirdar* similar to a peasant in context of his landholdings was insecure, he possessed no 'inclination to develop the lands assigned to him' (*Regmi 1999, pp.170*). This motivated him to extract as much as possible from the lands while he remained in its possession. The denial of full land rights by the state to *jagirdars* thus provided them with perverse incentives to exploit available resources to the maximum without any considerations for the negative impacts on land for sustainable agriculture on a long term basis. The *jagir* system created a form of land tenure that had adverse repercussions on agricultural development' (*Regmi 1999, pp.38*).

During the period between 1768 and 1951, the Shahs and Ranas were able to grant *raikar* land to individuals and institutions in the form of *birta* and *guthi* mainly because they had succeeded in denying land rights to the peasantry. The preservation of the status quo of *birta* and *guthi* holders laid solely in keeping the Shahs and Ranas secure in their positions and power. Consequently, the Shahs and Ranas were more interested in cajoling and catering to the ruling class than in using the *birta* or *guthi* land most productively. This led to much wastage and degradation of land resources between 1768 and 1951.

The *birta* system eventually 'led to the concentration of landownership rights in the hands of a privileged minority' (Regmi 1999, pp.39). Consequently, it was found that the *birta* holders did nothing really to put such land to its best use. *Birta* lands were very much a case of absentee landlordism since it was virtually impossible for the *birta* holders to efficiently manage them.

The *guthi* system too is criticized as having the worst features of absentee landlordism. It is said that this system prevented land from being used to its most efficient ecological use. The *Guthi* Corporation that looked after such land was the least 'interested in maintaining the fertility of the soil or in increasing agricultural production, than in holding wealth in a secure form' (*Regmi 1999, pp.16*).

Land Rights and Individual Behavior (1951-2006)

The 1964 Lands Act has been largely ineffective in protecting tenants from arbitrary evictions and so forth.

The overtly centralized, corrupt, and bureaucratic governance of Nepal in the past was the key reason behind the aforementioned ineffectiveness of the 1964 Lands Act. According to CSRC (2003), the government offices such as land reform, survey and maintenance and land revenue offices are easily bribed by rich landowners. Furthermore, landowners threaten tenants with eviction when tenants ask for receipts (*pp13*). Receipts are crucial if one is to claim for tenancy rights.

Zaman (1972) found the huge disparity between the percentage of production on owner-cultivated and tenant-cultivated farms. This illustrates how insecure tenancy rights provided individuals with disincentives. The 1964 Lands Act left the tenants high and dry, vulnerable to arbitrary eviction

and high rent. This discouraged them from making the most productive use of the land. Consequently, tenant-cultivated lands in Nepal have been less productive (CSRC 2003, pp.12).

The government implemented the 1964 Lands Act in order to liberate the peasantry and to create a more equitable distribution of land. This act introduced the dual ownership system and ceilings on land ownership. The *panchayat* government believed that the problems inherent in the previous agrarian system could be solved by redistributing land.

However, the dual ownership policy introduced by the 1964 Lands Act that was aimed at protecting tenancy rights actually had the effect of increasing the area under informal tenancy. Actual cultivators continued to be tenants, but without any right to be enrolled in the records of rights compiled under the land-reform program (*Regmi 1999, pp.210*). This was caused largely by the reluctance on the part of landowners to involve tenants due to a fear among them that the tenants might claim for the ownership of a part of their land (*Yadav 1999, pp.7*). Consequently, landowners preferred to hire only those tenants who would not claim tenancy rights on the land. Hence, the percentage of tenant households and the area under tenancy decreased between 1961 and 1971. This was largely an effect of the dual ownership system that was introduced in 1964. This decline in the number of formal tenants is believed to have been equally reciprocated by the increase in the number of informal tenants (*Chapagain, 1999; Regmi, 1999; Yadav, 1999; ICIMOD, 2000; CSRC 2003)*.

According to the *Badal High Commission Report* (1995), about five hundred sixty thousand families are estimated to practice tenancy and half-share cropping. However, in practice, only 30 per cent of them have legal status as tenant-cultivators (*CSRC, 2003, pp.2*). The dual ownership system 'not only failed to increase agricultural production, but also by pushing tenancy underground made matters worse for the intended beneficiaries reducing tenant welfare' (*CMLT, pp.2*).

Encouraging individuals to engage in informal tenancy, was not the only downfall of the dual ownership policy, as Yadav (1999) explains,

Nepal's real problem is that a lot of cultivable land is kept fallow or is not being intensively used due to a fear among the landlords that if he rents his land on the basis of sharecropping, he may lose full ownership of the land as it is likely to be claimed by the sharecropper as the legal tenant (*pp.9*).

The dual ownership system, thus, instead of liberating the peasants reduced their access to land. The confusion concerning land ownership created by this legislation discouraged both the landowner and the tenant cultivators from making long term investments for land improvement and from adopting productivity enhancing technologies (*Chapagain, 1999; Yadav, 1999; ICIMOD, 2000; CSRC 2003*).

The 1964 Lands Act also imposed ceilings on Land ownership (*See Appendix: X I*). The process of land acquisition above the ceiling was implemented in three successive installments of districts (16 districts in 1964, 25 districts in 1965 and the remaining 34 districts in 1966). This provided the large landowners with ample time to sell their surplus land. As a result, the government was able to acquire only 31,841 hectares (ha) and redistribute only 29,123 ha of land (1.5 per cent of the total land) among the landless and the small landholders (*Yadav 1999, pp.1*).

While the 1964 Lands Act largely failed in effective land redistribution, it encouraged land

fragmentation in Nepal. Soon after 1964, individuals did not find an economic future in holding land, and so began selling their property (*Yadav 1999, pp.1*). This trend was further aggravated by Nepal's traditional law of inheritance which prescribes that all the property of an individual, including land, is to be equally divided among one's sons.

Average number of parcels per farm and number of parcels per hectare in 2001 are 3.3 and 4.2 respectively. It is practically impossible for the modernization of agriculture through mechanization when land is fragmented to such a degree.

It is widely held by many that when land is fragmented into so many plots of economically nonviable sizes, farmers are prevented from adopting and benefiting from productivity enhancing technologies that are otherwise available (*Yadav, 1999; Chapagain 2000; ICIMOD 2000*). The case of shallow tubes is one example. A farmer will be attracted to install a tube well if he has a piece of land just enough for irrigation. However, he will not be willing to invest in such a tube well if his land is fragmented into four parcels and situated in four different places (*Chapagain 1999, pp.7*). This seems to be the case in Nepal today. This situation has led to numerous uneconomical small farms scattered over different places, which have adversely affected agricultural production and productivity (*Yadav 199, pp.1*)

IV. Discussion

Land was state-owned from 1768-1951. Individuals did not own any land. The peasantry was denied fully enjoying the fruits of one's own labor. As a result, the peasantry did not have the incentive to produce anything more than what was required for subsistence. In addition, the position of a peasant on the land he held at any given time was very insecure. Thus, it is very easy to understand why peasants were never concerned with the maintenance or enhancement of the productivity and sustainability of land in the long run.

Almost eight per cent of the total land area in Nepal in 1952 was assigned under the *jagir* tenure system. During 1758-1951, *Jagirdaars* too were denied secure land rights as the state prohibited them from holding land permanently. This led the *jagirdaars* to be concerned only with the short term use of the land that was assigned to them. It comes as no surprise that their only intention was to extract as much as possible from the land without any concern whatsoever of its productivity in the long term.

Finally, the then feudalist Shah and Rana governments were able to grant *raikar* land to individuals and institutions in the form of *birta* and *guthi* because they had succeeded in denying land rights to the peasantry. As a result, the *birta* and *guthi* land holders were more interested in cajoling and catering to the ruling class than in using the *birta* or *guthi* land most productively.

Despite the privatization of land in the post 1951 period, the state failed to provide secure land rights to its citizens. The 1964 Lands Act clearly failed in securing tenancy rights to tenant-cultivators. The negative impact is that the tenant-cultivator was found to be less productive than the owner cultivator.

In addition, the government itself was caught infringing on the land rights of individuals with legislation like the dual ownership system and ceiling on land ownership.

Apart from pushing tenancy underground, the dual ownership system was found to motivate

landowners to under-cultivate their land. This system was found to have the effect of making both the landowners and tenants unwilling to make long term investments for land improvement and from adopting productivity enhancing technologies.

Finally, the imposition of ceilings on land ownership contributed to land fragmentation. This, combined with Nepal's traditional law of inheritance, another form of government encroachment on the land rights of individuals, further increased land fragmentation.

The percentage of non-fragmented holdings has declined from 37.4 per cent to 18 per cent. In the meanwhile, the percentage of fragmented holdings, such as four to five parcels, has increased from 14.6 per cent to 21 per cent. Such a situation of increasing land fragmentation is one of the key reasons behind the unwillingness of farmers today to invest their time and money in productivity enhancing technologies, such as tube wells.

To summarize, this study suggested that that individuals in Nepal did use the natural resources available to them in an unproductive and unsustainable manner when they were denied secure land rights.

V. Implications

Secure land rights is crucial to the agriculture sector

Poverty relief programs in Nepal have historically focused mainly on the promotion of so-called improved farming practices, dominated by promotion of high-yielding varieties of crops, cross-bred livestock, chemical fertilizers, and irrigation *(ICIMOD 2000, pp.18*). Not much has been done in the past to deal with the issue of insecure land rights.

Out of the 75 districts in Nepal, 57 experience a food deficit. Around 60 per cent of the rural farmers are estimated to produce food that is not enough to feed their households. In addition, Nepal in the last two decades has shifted from being a regular net exporter of food grain to a net importer (*Aryal, G.R and Awasthi, G.S 2003*).

According to Aryal and Awasthi (2003), one of the main determinants of poverty and food insecurity in rural Nepal is the limited access of the poor to productive resources and input/improved technology (*pp.2*). The access of the poor to productive resources and input/improved technology is largely limited or undesirable to rural farmers when the government does not provide its people (both farmers and landowners) with secure land rights. It is very critical to address this issue, since, 'all the main features related to land ownership, tenancy patterns, and holding sizes, at the moment, are against investment in land improvement, productivity enhancement, commercialization of farming, and sustainable resource management' (*ICIMOD 2000 pp.30*).

The Nepal Government has a long way to go in context of recognizing the importance of secure land rights for poverty alleviation. It is yet to realize the damages that were caused by the land redistribution policies (dual ownership and ceilings) legislated during the 1964 Land Reforms Program. The Fifth Amendment to the 1964 Lands Act further reduced the ceilings on landownership in 2001. This act is yet to be practiced as the land acquisition process has not yet begun. Surprisingly, the idea of land redistribution has been gaining momentum amongst many of those working for the poor in Nepal (*Aryal 2003; Awasthi, 2003; Chapagain, 1999; Badal 1995*). One of the key

agendas of the Maoists, at the moment, is land redistribution. During the author's field trip to Ramechap, he met the topmost Maoist leader of the district. When the author asked this man on how the Maoists intended to solve the problem of poverty in Nepal, he replied, 'It is easy, we will simply redistribute the land of the big landlords amongst the poor'

The intention behind a land reform or redistribution is a noble one. However, its consequences could be detrimental to the agricultural sector of Nepal. It needs further investigation/research as to better understand the long term implications of land redistribution.

To begin with, land reform is a revolutionary step. It is not as simple and straightforward as its advocates in Nepal make it out to be. A land reform in a sense is a reform in the whole power dynamics of a country. Galbraith (*1951*) explains that a land reform is not 'something that a government proclaims on any fine morning – that it gives land to the tenants as it might give pensions to old soldiers or it might reform the administration of justice.' He further re-emphasizes this point,

'the world is composed of many different kinds of people, but those who own land are not so different – whether they live in China, Persia, Mississippi or Quebec – that they will meet and happily vote themselves out of its possession' (*Galbraith 1951, cited by Bethell 1998, pp.204*).

Force and pressure are the key ingredients required by any government that intends to bring about a land reform. As Bethell (*1998*) explains, 'land reforms that have taken place without such pressure has usually been empty decrees, or adjuncts to military coups in which the existing regime was overthrown' (*pp.204*). One of the key drawbacks of land reform, among many hassles associated with it, is that it breeds hostility and terror almost every time it is enacted.

The advocates of land reform in Nepal insist that land redistribution is required in light of the current unequal distribution of land. They argue that land redistribution is favored both on equity and efficiency grounds (*ICIMOD 2000, pp.30*).

Definitely, equity would be great to have. However, it is not in the best interest of anyone for it to be created through the *barrel of a gun*.

As far as the argument for increased efficiency goes, it is highly unlikely for land redistribution to achieve such a feat, keeping in mind that such a redistribution of land would only increase land fragmentation in Nepal. Land fragmentation is one of the key barriers that the agricultural sector has to overcome if it is to increase efficiency and productivity of agricultural production through mechanization. Cropping intensity, a proxy for agricultural productivity, has been found to be decreasing with increase in the size of holding per household (*CBS 1994*). However, one should not overlook the fact that landowners in both past and present, have chosen to keep their land under-cultivated, thanks to the disincentives provided by the dual ownership system. Had the 1964 Lands Act not imposed this system, the disparity in cropping intensity between large and small landholdings may have been far less. In addition, although smaller farms are more productive in terms of cropping intensity, they are not so in terms of yields (*Chapagain 1999, pp.11*). This is a result of the limited scope for the use of productivity raising inputs and technology in smaller farms.

In order to improve the agricultural sector of Nepal, it is vital that the poor have access to land, not necessarily ownership of land. This can be achieved mainly by *totally* abolishing the dual ownership

system, and imposing progressive taxation on large landholdings. Access to land alone, however, is not sufficient. Informal tenancy should be discouraged, and tenants should be protected from arbitrary evictions and high rents. In addition, the government should help them in gaining proper credit facilities, fertilizers, irrigation, and other productivity enhancing technologies. In the meanwhile, the government should protect the land rights of the people; not violate it.

Lack of Secure Property Rights in other Sectors of Nepal

Various sectors in Nepal, apart from agriculture, have been unproductive in the past because the government failed to provide secure property rights.

The forests of Nepal covering almost 40 per cent of its total land area were state-owned until 1987. During this period, the government was 'neither able to protect the existing forests nor was it able to place the forest into active management' (*ICIMOD 2000, pp.33)*. This led to immense deterioration and degradation of forest resources. In 1980, the World Bank predicted that, if the present rate of deforestation continued, all accessible forests in the hills of Nepal would disappear by 1995 and in the *Terai* by 2005 (*World Bank 1980, cited by ICIMOD 2000, pp.38*). One of the key reasons behind this, apart from government inefficiency, is that under state-ownership, 'local people continued to exploit forest resources, but felt no obligation to protect or control their use of forests' (Arnold and Campbell 1986; Messerschmidt 1995).

Nepal currently has sixteen Protected Areas (PAs) of different categories (Nine National Parks, four Wildlife Reserves, three Conservation Areas, and one Hunting Reserve) (*Buhathoki 2003, pp.72*). These PAs cover about 18 per cent of the total area of the country (DNPWC 2001). An extremely exclusionist policy is imposed by the government to protect these areas; deploying military in order to deny the access of local people to these areas. Due to the ongoing Maoist insurgency, however, the government has been unable to deploy much security in these areas lately. This absence of security has led to much destruction in such areas with the increase in timber smuggling, and animal poaching. The biodiversity of Nepal is believed to be eroding with, 26 mammals, nine birds and three reptiles being legally classified as endangered (*FAO 1997, cited by ICIMOD 2000 pp.52*). Consequently, Budhathoki (*2003*) asks,

'The importance of effective conservation does not change with the rise and fall of crisis. So, why is the government machinery failing to protect essential resources at a time of national crisis and why are so many parks suffering the "paper park" syndrome?' (pp.72).

Conservation practice in Nepal protects key species by neglecting the needs of local people. In many places, the park's creation has resulted in households losing access to certain areas of land they previously used for obtaining forest products (Ghimire 1994, cited by ICIMOD 2000, pp.59). Consequently, protected areas are damaged when the military or police is removed because local people do not feel 'ownership' of the park systems and remain indifferent to its exploitation during times of crisis, such as the ongoing Maoist insurgency (Budhathoki 2003, pp.75).

VI. Conclusion

Land is the most important form of property in rural Nepal. However, it has always been insecurely held.

This study concludes that individuals use resources available to them in an unproductive and unsustainable fashion when they are denied secure property rights on land.

No country can prosper economically when it's political and institutional arrangements prohibit individuals from making the best use of available resources. Consequently, secure property rights are necessary for the success of poverty relief programs in Nepal.

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Land Degradation in Nepal: A Menace to Economy and Ecosystems

by Krishna Karkee*

Introduction

"Land degradation means the loss in the capacity of a given land to support growth of useful plants on a sustained basis. It is a complex phenomenon, driven strongly by interactions among socio-economic and biophysical factors" (Singh 1994) that are quite unique in Nepal. Natural calamities like landslides in the hills, drought in the most of the areas of the country and flooding in the foothills and the Tarai have frequently occurred. Most of all, flooding has become a major cause of land degradation leading to the poor socio-economic conditions and the deterioration of the natural ecosystems.

Removal of top fertile layer of soil by water is a critical problem in the midhills. In the past, the perennial streams of clean water trickling from hills supported good agriculture in the plains. In less than 30 years, unrestricted tree felling/cutting, overgrazing, random cultivation on steep slopes without proper terracing has aggravated the soil loss. Apart from the loss of productive top soil, it has further damaged the land and water resources due to siltation of dams and deposition of thick and sandy plains of the Terai river.

Rivers in Nepal have damaged more than 400,000 hectares of productive agricultural lands (LRMP, 1986). The Shiwalik hills and middle mountainous regions are highly vulnerable to soil erosion. The extent and severity of damage have increased year after year due to frequent changing nature of mountain-rivers. Farmlands near river banks are washed away by flooding, crops are ruined and widths of rivers widen every year during monsoon. Nepal's rivers carry around 336 millions tons of soil per year to the main river systems entering India (Brown 1981). The bed level of Tarai Rivers is rising by 35-45 cm annually (Dent 1984). The productivity of riverside lands has been seriously affected by silting, flooding and deposition of pebbles. Furthermore, the river-damaged areas of middle mountains of Nepal suffer from excessive grazing pressures of domestic animals. Pioneer plants which are indicator species for degraded lands such as *Imperata cylinderica*, *Saccharaum munja* and *Cassia occidentalis* have colonized such areas (Kafle 1995). The natural succession has been inhibited by excessive grazing pressure as well as flash floods during the monsoon.

Physiographic zones and land degradation

Land is a principal natural resource of Nepal that constitutes about 97% of its total area (147181km^2) ranging from 70 meters in Terai to 8848 meters high mountain (Mt. Everest) within less than 200

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km distance. The country's topography is rugged with over three quarters (76.9%) of the total area made of mountains and hills. The southern narrow plains strip is known as the Tarai, it covers only 23.1% but it has the largest proportion of the population (46.7%). The hilly areas are geologically fragile and inherently prone to landslide and soil erosion.

In Nepal, land degradation has been occurred in all the physiographic regions of the country. Indiscriminate felling of trees and clearing forest areas for agriculture has given rise to the scarcity of the essential needs of rural people such as fuel wood, fodder and small timber. These activities, along with population pressure and improper land-use patterns have led to serious environmental degradation (Table 1).

Table 1: Types of Land Degradation in Physiographic Zones (Joshi et al., 2003)

Physiographic Zones	Types of Land Degradation
High Himal (above 5000 meter)	Rock slides, avalanches, glacial lake outburst
High and Middle Mountains (2100 – 5000 meter)	Mass wasting (slumping, gulling, landslides, rock fall), gully erosion, surface erosion (rill and inter-rill), riverbank cutting
Siwaliks (1200 – 2100 meter)	Soil Erosion
Tarai (70 – 1200 meter)	Flooding, river shifting, river bank cutting, water logging, formation of river-damaged areas

The processes of land degradation

All three types of land degradation exist in Nepal. They include physical, biological and chemical degradation.

Physical degradation

It refers to deterioration in physical properties of soil. It includes compaction and hard setting of soil caused by elimination or reduction of structural pores. Hard setting is a problem of soils of low activity clays and soils that contain low organic matter. Soils prone to compaction and hard setting are susceptible to accelerated run-off and erosion. Erosion of top soil by wind and water exceed soil formation at an alarming rate.

The method of rearing livestock is unscientific even these days - free grazing in open public land. The 'tragedy of commons' (Hardin 1968, cited from Carter 2001) principle applies here. The heavy grazing pressure on the grazing lands in the mountainous areas caused two effects i.e. compaction of soil and pulverization of top fertile soil. This has helped increase soil erosion and run-off due to the compaction of soil.

Biological degradation

Reduction in soil organic matter, decline in biomass carbon and decrease in activity and diversity of soil fauna are some indicators of biological degradation. It can also be caused by indiscriminate and excessive use of chemicals. Unscientific and environmentally unfriendly farming is still prevalent. Use of excessive chemical fertilizers and heavy and intensive farming without rotational tillage

and farming in steep slope have been common. It has accelerated the degradation of soil quality, which ultimately has resulted in decrease in soil productivity. The biological degradation is generally associated with the decline in micro-biological biomass, decline in quantity and quality of soil organic matter and soil-borne diseases. It increases the rate of mineralization of humus without replenishment of organic matter.

Chemical degradation

Nutrient depletion is the major cause of chemical degradation. Chemical degradation is also caused by the build up of some toxic chemicals and an elemental imbalance that is injurious to plant growth. One of the causes of land degradation in Nepal is the result of use of maximum fertilizer, chemicals, pesticides and insecticides in the land use practices. Due to the application of these chemicals and pesticides, land losses its fertility and capability and destroys the various types of micro-organism like bacteria and fungi in the soil (Singh 1994). In addition to the chemical fertilizers, the soil types have also contributed to the soil erosion and land degradation.

Causes and consequences of land degradation

Both the natural conditions and human activities have contributed to the degradation of land. Fragile geological structure, forest fire, avalanches and dry landslides are some of the major causes of land degradation whereas deforestation, overgrazing, farming on the steep slope, construction works and excessive use of chemical fertilizers are some major examples of the human induce cause. Increasing population, fragile economy and sometimes farm policies add fuel to it.

In its natural condition, land is covered by forest trees and other natural vegetation. The leaf litters enrich the soil fertility by providing organic matters. Trees leaves control the speed of the raindrops and allow them to go down to the land surface slowly. It helps water to infiltrate into lower part of the soil surface. After the soil is saturated, plants growing on it can utilize the excess water. The excess water is leached to the inner part of soil and supports to originate natural well and streams in the lower areas. It also helps make the water table high. Such natural conditions will be favorable for the growth of plants and micro-organisms in the soil.

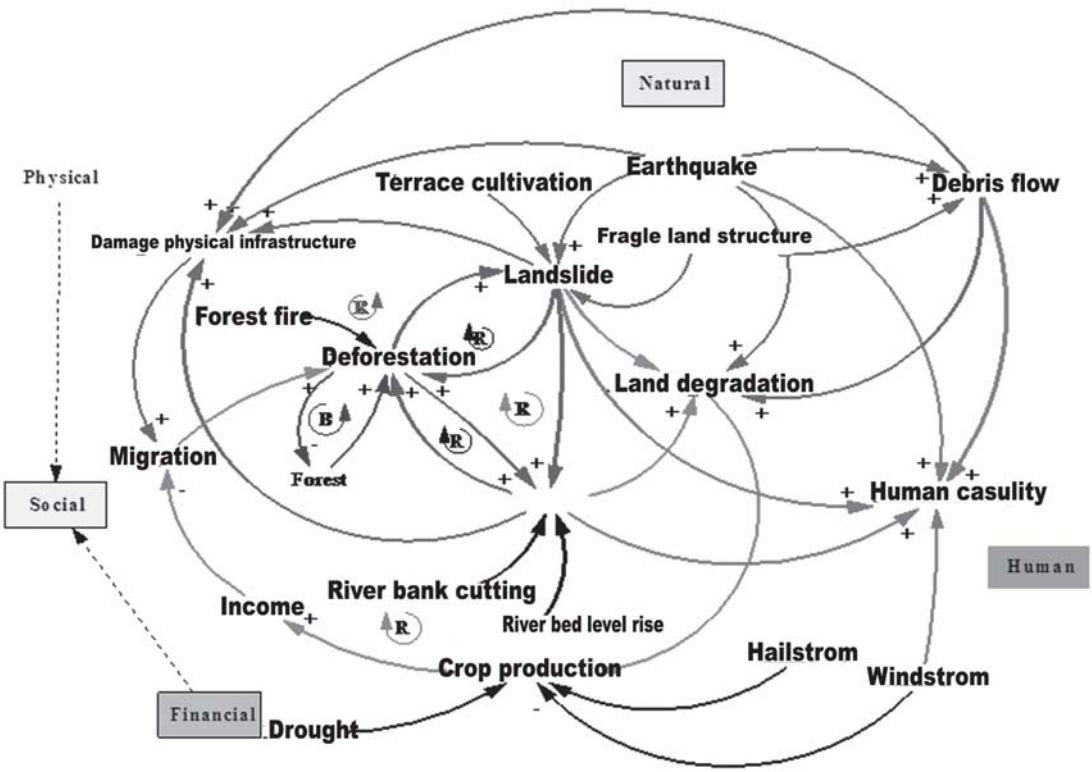
On the contrary, when trees are felled and the root mats are destroyed, the soil is subject to soil erosion by the full force of the rains. Heavy rain removes nutrients by washing away the thin top layer of soil and by leaching nutrients deep into the sub-soil thus making it unavailable to plant roots. In the process, it compact the soil and squeezes out the air pockets. Air is as much important to soil quality as mineral nutrients and compacted soil poses serious threat to environment in the form of land degradation (Karpagam, 1991).

As around 77% of the total land area is occupied by mountains and high Himalayas in the country, the vegetation cover plays a crucial role for the supply of water source i.e. natural wells and streams. However, the rate of deforestation in Nepal is quite severe i.e. around 1.6% per annum (Joshi et al. 2003). If the ecosystem of the mountain areas is disturbed, people living in both the mountains and the plain areas will be suffered from various natural calamities such as soil erosion, land slides and flooding. "The two major harmful effects of soil erosion are (1) loss of soil fertility and its ability to hold water and (2) runoff of sediment that pollutes water, kills fish and shellfish, and clogs irrigation ditches, boat channels, reservoirs, and lakes" (Miller, 2004).

Forests help to maintain the temperature at a lower level and prevent them from rising. In the absence of forest, the entire heat that is not absorbed by the atmosphere but strike the earth's surface are reflected by the earth's surface, leading to a rise in atmospheric temperature. Besides, the repeated pressure of grazing on grasslands beyond its carrying capacity has damaged the ground vegetation and grassland ecosystems. The heavy grazing pressure on grazing lands in the mountain areas has speeded up the soil erosion, which has led to increased run-off and compaction of soil.

Cultivation on steep slope without taking considerations of improved farming such as terracing in steep slope, use of organic manures and so has contributed to the increase in soil erosion which has resulted in high water turbidity, which further leads to the harmful effects to the aquatic flora and fauna including fish species. Development activities such as construction of roads, buildings, dams and so have further added fuel to it.

Figure 1. A Casual Loop Diagram showing causes and consequences of land degradation



All these activities have resulted in the poor socio-economic status and imbalance in the natural ecosystems. Decreased land productivity and wash away of agricultural land due to flooding have given rise to the poor socio-economic status of rural/riparian people in Nepal. As a result, Nepal has the lowest per capita income (US$ 220 per year per person) in south Asia. The productivity of riverine ecosystems has decreased. Natural succession has been inhibited. Pioneers plant species, which are indicator species of degraded lands have colonized in most of the river-damaged areas.

Restoration measures

Land restoration is the process by which an area is returned to its original state prior to degradation of any sort. However, some have argued that it is impossible to restore degraded natural habitats. Gunn (1991) has clearly argued that provided that species have not been made extinct as a result of the degradation, then restoration is possible. Miller (2004) has recommended following measures to maintain the soil fertility of degraded areas:

1. Use of organic fertilizer (animal manure; green manure; compost; spores mushrooms, puffballs, and truffles)
2. Rotational cropping.
3. Use of commercial inorganic fertilizer, but, he has also warned that commercial inorganic fertilizers have some disadvantages:
    - not adding humus to the soil
    - reducing the soil's content of organic matter
    - lowering the oxygen content of soil
    - Releasing nitrous oxide, a greenhouse gas that can enhance global warming from the soil

A number of activities have been launched to restore the degraded farmlands in Nepal. Some of them are:

- Handing over of government forest to community (community forest)
- Agro-forestry practices
- Farm forestry, leasehold forestry
- Use of organic fertilizer, animal manure, compost manure emphasized
- EIA emphasized in development construction
- Training/Non formal education initiation
- Landslide/flooding control programs launched
- Poverty alleviation programs

In addition, various alternative methods have also been adopted such as terracing, contour farming, strip and alley cropping, and gully improvement activities.

However, due to ineffective implementation of the methods and government rules, the pace of land restoration has not been satisfactorily improved. Government rules and policies have not been effectively implemented and followed. The following activities are recommended to effectively implement the above-mentioned measures to counter the land degradation in the country:

1. Expansion of successful agro-forestry model to reclaim degraded lands of the river-affected areas through out the country,
2. Empower and enhance management capacities of community forestry user groups,
3. Provide subsidies and technical support for private plantation and forest leasehold schemes.
4. More emphasis on the environmental education-both formal and non-formal.

Although several innovative measures to counter the land degradation have been adopted, the

balance between the rate of degradation and restoration is not equal. In order to restore the degraded lands more efforts are urgently required yet. The political commitment and sincerity in the beaurocracy are necessary for the successful implementation of all land restoration measures.

Conclusion

It is clear that due to the lack of effective implementation of counter measures, the land degradation problem is increasingly becoming a challenge for the economy and natural ecosystems in Nepal. It is realized that the balance between the land degradation and restoration rates should be maintained so as not to further degrade the land. The effective implementation of land restoration measures with full fledged political and beaurocratic commitments and sound technology are urgently required.

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Cyclone Shelter in Coastal Belt of Bangladesh: Compliance with Right to Life

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Executive Summary

Bangladesh is a country of natural calamity. Among those Cyclone is most common one. People living in the costal belt of Bangladesh are highly exposed to the danger of Cyclone and high tidal surge. In 70s Government and other development agencies have started to build Cyclone Shelter to save the valuable lives of this vulnerable group of people. The development of Cyclone Shelter has taken years and has passed several phases. During this time all shelters are not equally designed, built as well as the management has rested to different institutes. This has given several inconsistencies in using, maintaining and accessing the Cyclone Shelter. Though Government had tried to uniform this process by passing a standing order in 1996, there are certain concerns those need to be dealt with for the meaningful use. Despite the urgency in building these Cyclone shelter there are very little attention has been given to its' compliance with the right to life of the shelter takers. In this context, the current study based on the result of previous study has reviewed the relevant facts and analyze the compliancy with right to life using five indicators. It has come to the conclusion that the meaningful compliance to right to life needs specific attention and adjustment to the current Cyclone Shelter. It has found that the policy of Cyclone Shelter needs to be address comprehensively and practically. For realizing this development organizations shall come out with specific activities.

Introduction

Background

Disaster is a regular phenomenon in Bangladesh. Except volcanic irruption this nation faces all most every kind of disaster. Among those cyclone is most common. It hits nearly 800 KM costal belt of Bangladesh with its terminating force. Cyclone always comes with high tidal surge. It causes enormous damage of lives and property. As most of the cyclone prone areas are plain land and island; are mostly vulnerable to high tidal surge and of its' enormous force. On the other hand, the structures of these areas are very poor. This has

[1] Zaman, R and Newaz, S. (2002); People's Report on Cyclone Shelter in Coastal Belt of Bangladesh; Action Aid, Bangladesh.

made the inhabitants more vulnerable. Cyclone Shelter is a kind of solution for this situation. According to the Human Rights Convention, each citizen has the rights to live in a safe place during normal and emergency period and as a signatory of the convention, state is accountable to provide safe place to people at the time of emergency and disaster. Accordingly Cyclone Shelters are the basic rights of people in cyclone prone areas.

It is really a concern that whether the concept of Cyclone Shelter is meeting the criterion of disaster preparedness. Depending on the previous study report of Action Aid, Bangladesh, we can say that neither it meets the requirement of international standards nor it satisfies the user's requirements. On the other hand, as it is designed preliminary for the protection of lives and safety of the affected people during the cyclone time; is concern the standards of right to life.

Before going to the details let's see the development of Cyclone Shelter in Bangladesh. After the colossal damages and death of thousands people by the cyclone in 1970, government first pay attention for the protection of lives of this area. On that program few cyclone shelters were build in some costal areas of Bangladesh. After 1972, the newly independent Bangladesh started to build number of cyclone shelter in 15 costal districts with the help of Planning Commission, Department of Public Work, Red Crescent, CARITAS, Education Ministry, LGED, as well as other non-government Organizations. Now total 1841 cyclone shelters are in these districts. These Cyclone Shelters are managed by both Government of Bangladesh and NGOs.

Bangladesh government had no guideline for the maintenance of cyclone shelter till in 1996. In 1996[2], a Steering Committee was formed for developing a guideline for maintenance of these cyclone shelters. Government circulated it as a Standing Order for maintaining shelters, where District Commission to Union Parisad chairman are included for shelter management authority. Irony is there is a huge gap between Order and its applications. In practice the rules are not followed properly even in constructing of new shelters. Shelter Management Committee of Union Parisad is not active well and very often failed to play an effective role in the time of disaster.

On the other hand, these inconsistencies in management and maintenance is causing serious breach to the right of the people to have a safe shelter, which had been recognized by several international covenants as well as by the spirit of the constitution of the land.

This study has shown that the existing Cyclone Shelter is needed to be maintained and managed accordance to the right of the people. For doing so the research team has analyzed the existing situation of Cyclone Shelter and related that to the perspectives of rights declared by the constitution, standing order. The study has also unveiled the needs to comply with the obligations arises out of the national and international instruments.

Objectives:

The major focus of the study is to assess the compliance of Cyclone Shelter with right to life.

There will be other objectives. Those are given bellow:

1. To analyze the safeness of the Cyclone Shelter for the affected people.
2. To analyze its accessibility for the disable or elderly.
3. To assess its position and location considering it's availability for the cyclone affected people.

Methodology

This is a follow-up study. The study will consider the outcome of the previous study as well as the field experiences of the same. Current field work has given the additional support to analyze the data from the point of the objectives.

[2] *'Multipurpose shelter of Costal belt of Bangladesh construction, management, maintenance and its utilities '*- Ministry of Planning, Peoples Republic of Bangladesh.

Kind and Source of Data:

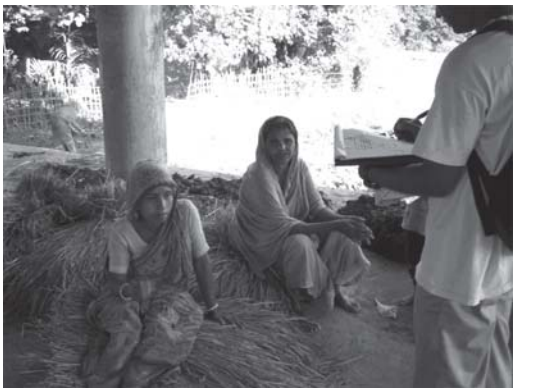
Two kinds of data have been used in this study, namely primary data and secondary data. The research team has collected these data from three different sources. First: report of the previous study; second: field work findings; and third: secondary literature. There are several aspects of secondary literature. The constitution of Bangladesh and the standing order on Cyclone Shelter are key document which have given the basis of considering the compliances. On the other hand, different national and international documents have been consoled for analyzing the nature of the legal obligation.

Sample Selection:

As this research is a follow-up one, it has depended much on the report of the previous study. That research was conducted through participatory method where samples were collected on random basis after selecting three shelter-based areas from the list of Cyclone Shelter. Attention was given to cover different types of geographical region as well as qualities of Cyclone Shelter. At the current study the simples were used from Cox's Bazar and Bhola districts. There the data has divided on the basis of the geographical and user quality.

Tools of Research:

Observation was used as a tool to collect data from the field work. Semi-structured interview was the other tool that has used. A check list has been developed by the research team. The information from the previous focus group discussion has also used.



Holding Semi-structured Interview in Mohishkhali; Picture: 12th November 2005

Limitations:

The research team has faced several limitations in conducting the study. Those are as follows:

i. Limitation of time: This research was conducted with in twenty days which is not a sufficient time for having good result.

ii. Gap between the current and previous study: This research is a follow-up one and the previous research was conducted three years back. This gap was bit longer, where the chance of distorted data is higher.

iii. Little new information: As there were no new disasters within this gap time, this study is hardly got new information.

Existing Situation

The Cyclone Shelter of Bangladesh is a missing concern from the policy makers and it is suffering degradation since it is not getting enough attention. To consider the compliance of cyclone shelter with right to life we have to revisit the existing situation of the Cyclone Shelters.

Physical structure and condition:

The over all physical structure of the Cyclone Shelter is not satisfactory. To analyze this we are discussing this dimension accordance to the geo location of the Cyclone Shelters. We know that after the massive cyclone of 1970 that attacked in Bhola, government and donor agency gave attention to the protection of the people. Cyclone shelters of this district were made after that cyclone.

In this phase of construction most of the cyclone shelters were built in 1974 to 1979. Now according to the government policy, Bangladesh Government got the ownership of all these shelters including its repair at

Bhola district, and other necessary maintenance works.

Cyclone Shelters in Charfassion and Lalmohon upazila are mainly three-storied building. Ground floor of shelter is empty, have only base pillars for easy passing the high storm surge during cyclone. Building has three rooms in its each floor. Stairs of these shelters are constructed out side of the building. Latrine and tube well are also built outside of shelter. At the time of emergency these would be worthless for shelter taking people. In this two upazila government owned building has no attached latrine and water supply facilities. Very few shelters made by NGOs that has latrine and water supply facilities besides, these shelters physical conditions are better than the government owned cyclone shelters.

There are no proper windows at the Cyclone Shelter of Moheshkhali; Picture: 12th November 2005.

The physical conditions of Cyclone Shelters of these two upazila are very poor. Shelters which were built immediate after the '70 cyclone are mostly in out of utilization condition. Huge cracks are appear in shelter's roof, wall and in stair. Some buildings base columns are not so strong, even in some Cyclone Shelter the clear mark of check in columns and roof are visible. Plaster and part of the construction very often fall from roof and wall, this make panic to students and teachers for conducting regular school works.

The physical condition of the Cyclone Shelter of Shekdar Bazar in Char fassion is so poor that it begins to swing in tiny blow of wind. People become afraid while taking shelter in such Cyclone Shelter. Door and Window of Cyclone Shelters are not well. Peoples say in the time of cyclone these failed to protect the huge blow of wind. Few people also got injured while they were taking shelter by the hit of the part of windows.

The roofs of all cyclone shelters are in great danger. Very often small piece of concrete fall down from roof. Significantly there are complete destructions of wall and roof could be found. In some shelters in Bhola the stairways lost their protecting wall. Any time such buildings could cause a severe accident, which would be liable for lost of a number of life instead of protecting life. In monsoon time rain water always trickles from roof.

Crack at the basement of Talipare Cyclone Shelter in Moheshkhali; Picture: 12th November 2005.

The physical condition varies place to place. In Cox's Bazar sadar and Kutubdia upazila Cyclone Shelters are good in condition. As these shelter built after the destructive cyclone of 1991. Most of the Cyclone Shelters were built by the finance of donor countries, especially the grant of Saudi Arabia government. Besides this, European Commission, IFAD, Grand, World Vision, Red Crescent, BRAC, CARITAS also built Cyclone Shelters within 1991 to 1999. Government of Bangladesh got the ownership of these Cyclone Shelters except those which are owned by NGOs.

Constructed Cyclone Shelters in Cox's Bazar are three storied like that we saw in Char fassion and Lalmohon thana of Bhola district. Similarly ground floor is empty for easy passing tidal surge during the time of cyclone. Important thing is stairs of these shelters are attached within the building. Saudi granted Cyclone Shelter has two stairways, this make easy entrance to people at the time of emergency. Toilet also attached within the building but there is no water supply facility in shelters.

Cyclone Shelters in Cox's Bazar are good as these are constructed within 10 to 12 years ago. Very few of these shelters have broken window or door. In Moheshkhali some Cyclone Shelters are severely affected by earthquake in last year, among those Telepara Cyclone Shelter is remarkable one. The base pillars of these shelters got few big cracks and some areas of base floor got down by the shake of earthquake. Without getting any immediate repair work day by day it caused huge damage of the shelter. This also makes people de-motivate to take shelter in cyclone period. As earthquake become serious threatening phenomenon in last few years in Bangladesh, we should give prior attention while building new shelter and renovate old shelters.

It can be summarized that the physical condition of most of the Cyclone Shelter is not satisfactory. Often those are seen as poor and risky for the people who would take shelter at that Cyclone Shelter.

Distance in location and disproportionate number:

Cyclone Shelters were built for protecting local people from the devastative cyclone. In our study we found that accommodation capacities of these Cyclone Shelters are not same. Saudi grant shelters are three storied building and have more shelter taking place compared with other Cyclone Shelter. Cyclone Shelter made by the grant of Prisom and IFAD also has such capacity but they are few in number. CARITAS built shelter has only one floor for shelter taking place.

The distance between Cyclone Shelter and locality is important for protecting life. The average distance of cyclone shelter from one to another is 2 to 3 km. In Main land especially in Town area has higher distance compare to the island because of availability other building. In Kutubdia Cyclone Shelters are constructed closely as there is no high building and most of the people live in mud build houses. While selecting the place of Cyclone shelter the authority gave priority to the density of the population of the locality. But now, after passing one decade population number increased dramatically. Now the capacity of the Cyclone Shelter is inadequate compare to the density of the population.

Abundant Cyclone Shelter in Himchori Cox's Bazar: Picture: 14th November 2005.

Sometimes the distance of Cyclone Shelter caused danger to local people's life. During cyclone it become impossible for people to cover 2 or 3 km; which is average distance; within that limited time facing the constrains of advance tidal surge and wind of cyclone that immediately cover low land of offshore islands. For an example, in Sonadia; one union of Moheshkhali; the distance between two cyclone shelters is more than 2 km. At emergency time people got frightened to reach Cyclone Shelter with their wife and kids. Besides, in Moheshkhali, the inadequate accommodation facility of shelters also forced people to take shelter on the hill. Inadequate accommodation at cyclone time is very common problem in all areas. There are also examples of unnecessary establishment of Cyclone Shelter. In some areas shelter had been built in an area where those are of no use. In Himchori some Cyclone Shelter are abundant.

Cyclone shelters in Char area represent the same scenario, even there is no Cyclone Shelter in some chars like Char Luelin of Bhola district, people of this char have to cover at least 3.5 km distance for their safety to reach nearest Cyclone Shelter in Char Motahar or Char Montaz. For this reason they totally depend on their fate during cyclone.

Connecting or approach road:

High connecting road to cyclone shelter is another important element for protecting people's life during cyclone. High connecting road guide people to shelter place as during cyclone very often advanced tidal surge inundated all the communication ways to cyclone shelter. In main land shelters have well connecting ways; this helps people to reach easily to their nearest shelter. On the other hand, place like offshore islands or char; people are suffering due to lack of high connecting road to shelter, which is inevitable for their access to the Cyclone Shelter. Cyclone Shelter in Char Johiruddin has very poor connecting way; the way easily got inundated by tidal water. So it becomes impossible to take shelter for local people during cyclone. People of Thakur para and Telepara of Moheshkhali several times demand for the high connecting road to their Cyclone Shelter. They are suffering for the absence of good connecting way to Cyclone Shelter. This caused high risk for shelter taking people especially during the high tidal surge. As the surrounding place got inundated during cyclone by tidal surge some of their neighbors got injured while coming to shelter.

In many places it has been found that the approach road or the connecting ways were not made as the planner does not consider it as important at that moment. So this needs to be covered by the express provision of policy or guideline regarding Cyclone Shelter.

Shelters of Kutubdia have the similar problem of good connecting way. Most of the shelters built in high land without any connecting road. This makes difficulties for the residences living in relatively lower areas to find way to reach shelters, when the entire area got inundated by tidal surge.

On 27th October 2000 in a Red Crescent shelter in Char Ganga, two women named Rawshan Ara (45) and Hazera Khatun (70) were killed by high tidal surge while they were on their way to taking Cyclone Shelter. It has claimed by the local people that they died due to absence of connecting way to Cyclone Shelter. They could not find way to shelter as all the surrounding areas were inundated by water. Source: Focus Group Discussion at Char Ganga, Taken in 2002

Besides, both in main land and offshore island, Cyclone Shelters constructed adjacent to sea has few connecting road, that makes impossible for the people to take shelter during cyclone at these Cyclone Shelter.

Another phenomenon condition of the connecting road to the Cyclone Shelter is that generally shelters constructed adjacent to main road, has proper connecting way, but shelter which built distance to main road has very poor connecting way.

Existing using Cyclone Shelter

Cyclone shelters are mostly built by the help of foreign grants. The common feature of cyclone shelter is, after completing the construction work of the building authority handed over its ownership to Government of Bangladesh. From that point of time government got the responsible for all its necessary protection and maintenance. Unfortunately it is very apparent to comment that the existing use and maintenance of most of the Cyclone Shelter is not satisfactory. Though there are good satisfactory use of the Cyclone Shelter can be seen. For example we can mention the shelters of Charfassion and Lalmohon of Bhola district, where all the old shelters and new shelters are using as primary school or dakil madrasa.

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Source: Focus Group Discussion at Char Ganga, Taken in 2002

Thana Education Officer holds the authority to give the permission for using those building for educational institution. From this point of view, new cyclone shelters are constructing as school cum cyclone shelter. This can ensure multipurpose utility of the shelter. This new kind of school cum cyclone shelter only present in main land. Beside government shelters, some other Cyclone Shelters were also built by different NGOs, and they have the ownership over the shelters.

Cyclone Shelter is Used as a Office of Pouroshova at Moheshkhali; Picture 12th November 2005

Non government organization owned cyclone shelters are using those for their multipurpose organization activities. They are clearly using it as their office, which is not violating the rules and policy regarding the Cyclone Shelter. World Vision, CARITAS, BRAC, Gonoshastha, are the organizations which have their own shelter in Cox's Bazar, Charfassion, Lalmohon, Kutubdia, and Moheskhali are operating their official work from these shelters. In normal time they operate these building for their operational task. Even though they have occupied total space of the Cyclone shelter for their office purpose. According to office authority, during the time of emergency they urgently empty their building premises to ensure easy access and shelter for local people. Organizational office work did not hamper anyone to protect local people's life.

Unfortunately this is not the usual picture now. In many places Cyclone Shelter are being used by businessmen or for private use. Some argues that they have got using right for the local authorities. Mostly these are events of forceful occupation. In Moheskhali port CARITAS built a cyclone shelter after operating their organizational work for couple of years now they handed over the ownership of their shelter to Moheskhali local government. Now this cyclone shelter is using as an office of a local business man.

Cyclone Shelter occupied by local people at Moheshkhali; Picture 11th November 2005.

In other places those are changed in structured and used permanently for their work. There are examples where Cyclone Shelter are being use as local government office. This is also a clear deviation of their mendate and hence it is creating barriers for the use of local people at the time of disaster.

In some distance offshore islands, few cyclone shelters are occupied by local power holder. They use these building as their business place. They also use shelter's room as for their storage place for boat, net and dry fish. Like the cyclone shelter of char Patila, where some shelters are being used as the store place of a local powerful fisherman or even people are using those as living place. According to local people they also operate some unknown business using these establishments. People claim that various time assaulting women and some other antisocial activities also being operated by the permanent residences of those shelters.

Management and Maintenance of the Cyclone Shelter:

Government owned cyclone shelter follows the government rule regarding to shelter management. According to the standing order on Cyclone Shelter, the smallest unit responsible for the maintenance of Cyclone Shelters in every thana is union disaster management committee. This management committee will be formed by local government representative and other members of the locality. It gives scope to local people to

participate in disaster management activities. Similarly, every cyclone shelter has a management committee, but unfortunately no one aware about its management committee or its functions. Very often people said they heard about the committee but do not know who are the member or what is the functions of this committee. Sometimes they think that the school or madrasa management committee is responsible for the management of the cyclone shelter. The reason behind this is these buildings are using for primary school or dakil madrasa for all the years.

In Charfassion and Lalmohon by the permission of Thana Education Officer these shelters are used as primary education institute. The poor condition of the building creates problem and barrier for continuing education program. The head master of Madda Shashivushon primary school said that several times they have sent application to the T.E.O for some repair works to protect their children as well as continuing the education activities, but still the authority did not response to their prayer. Repeated denial to their request increases drop out rate of their student, as parents do not feel comfort to send their children in such school building.

Very often school management committee take the necessary steps for repair work with their small support. It is important to notice that shelter which are using as government school has good quality in physical structure. On the other hand non government school has comparatively poor physical structure. Though according to section 4.2 of the government standing order, it is the responsibility of the government to give preference for such maintenance activity. The existing practice undermines this policy.

Thana Executive Engineer of CharFassion of Bhola] district, said that from its very beginning all the shelters were made by very low quality of raw materials, which is the main reason for the worst condition of these shelters. Moreover, mismanagement and lack of proper repair work and the seaside weather also damaging the building's infrastructure.

It is important to notice that all these shelters in Charfassion and Lalmohon were repaired within 8 to 10 years ago, but local people argue that there was a huge corruption behind all the repair works. Local people also claim with their anger and said, "workers did not show proper attention to their works, they used low quality materials to repair these buildings; they only white washed all the building to make eyewash to the authority". Not only that, the authority also gave opportunity to corrupt the entire work. Due to this bad maintenance all the Cyclone Shelters are in a condition those need a huge repair works.

The management dimension varies from place to place. In Char areas this is most particular. At the time of construction the authority did not give attention to the position of the locality and the communication facilities to shelters. This gap in planning is the beginning of all problems. Sometimes shelters were built near to the place of landlords or in a place convenient for a powerful political leader. For an example we can mention the BRAC-1 Cyclone Shelter in Kutubdia. For this reason the land owner or the adjacent resident has high influence over the cyclone shelter. They keep the key of the shelter and use this building as for their personal activities like store room for agriculture production, or dry food for their animal. this denies the policy of management of Cyclone Shelter of the Government. Due to this bad situation in repair work some time major accident happens.

According to a local people of Kolatoli of Cox's Bazar "the Cyclone Shelter is now a office of C.C.D.B.. There we go for having loan and some people use it as their tennis ground."-

–Mr. Mohammad of Kolatoli; Interviewed on 12th November 2005

Sometimes local influential people used cyclone shelter as their personal purpose. Nevertheless, in some places care taker of the shelters also use these establishments as their personal interest.

NGOs operate their own rules and regulations for maintaining their own shelter. They also ensure participation of local people in various activities of shelter management. Time to time they check the physical condition of their shelter and operate all necessary repair works for maintaining its strength. It is people's perception

that the Cyclone Shelters are basically the NGO's office so they maintain those and the participation of local people limited within the NOG's members.

> In some cases local people think after watching the poor condition of cyclone shelter, if they die in their own resident at the time of cyclone that is better that to die under the huge structure of shelter where their relatives might not find even the dead bodies. -
> ***–Abdur Rasid of Bhola; Interviewed at 2002***

Sometimes local government failed to take proper care of shelter. As the field work reviled that in Cyclone Shelter near the Moheshkhali port was built by C. C. D. B. After few years C.C.D.B. handed over this shelter to the local government of Moheshkhali. The local government makes a new policy to use this building. Mr. Shikdar got the chance to use this building as for rent. He said that after this shelter was handed over to local government by C.C.D.B., local government failed to take proper care of this shelter. Shelter premises remarked as a place of illegal activities. Sometimes thieves and other people took this chance and they took all the windows and doors of this shelter. Then he took rent of this shelter as for his business office, he also made some reconstruction works for repairing this shelter. He also agreed that at the time of emergency he will empty all room and floor for ensuring safety of his community people.

This above dimension is an important phenomenon of the use and maintenance of Cyclone Shelter. As these are the buildings those are made for multi-purposes use but having little direction for such use causing ambiguity among the local administration for giving proper allotment.

On the other hand, there is a minimum concern on ether side that the use or allotment is actually helping the people to maintain their right to life at the time of cyclone. The well maintained Cyclone Shelter could be a better chose for the local residence for getting shelter at the disaster time and in this way people could save their valuable life. But some time if they get a sense of disowning those Cyclone Shelters due the possession by some organizations, could easily be dismayed their shelter and resulted in losing life.

Shelters in costal area are mostly using as the primary school. For this reason teachers and students cooperatively take care of their school building. School management committee also did some small repairing works of these building. This is a good example for having some sort of maintenance, unfortunately these committee are not getting any help to maintenance as of Cyclone Shelter would get.

Compliance with Right to Life

Constitutional Compliance:

It is important to note that there is no express provision for in the constitution of Bangladesh under which government could be liable for ensuring shelter; rather it could be rest as a part of government initiatives. It is mentioned in Article 15 under the part of 'fundamental principle of state policy' that:

It shall be a fundamental responsibility of the sate to attain, through planned economic growth, a constant increase of productive forces and a steady improvement in the material and cultural standard of living of the people, with a view to securing to its citizens-

a. The provision of the basic necessities of life, including food, clothing, shelter, education and medical care,
b. The right to work, that is the right to guaranteed employment at a reasonable wage having regard to the quantity and quality of work,[3]

This is clearly shows that government is only liable for ensuring the shelter of other basic necessities only if there is no planned process. This is even not a strict responsibility rather a kind of responsibility that roses progressively. Moreover the provision has been incorporated in the part of state policy which is directly a pose to recognize this right to shelter as a fundamental right.

[3] *Article 15 of Bangladesh Constitution of 1972.*

But the right to shelter of the people living in the cyclone prone can be interpreted differently. This right to shelter is much wider for those people as their lives are under constant threat of cyclone, which could not be saved without a meaning full shelter. Here the right to shelter is not as same as the shelter right for rest of the people. In this sense shelter for saving the life of the people of cyclone prone areas is a must for realizing the right to life. Bangladesh government is liable according to the provision of the constitution to ensure right to life for its people.

Article 32 of Bangladesh Constitution has declared protection of right to life and provided that "no person shall be deprived of life or personal liberty save in accordance with law."[4]

It is recognized as fundamental right. That means state is bound by the constitution to protect this no matter the economic or political condition is. This right is inviolable even at the time of emergency. This denotes that right to life has to be protected by the state even at the time of Cyclone. Though the natural cause for lost of life or threat to life could be happen but any omission of duty from the part of government is enough to make it liable for such loss.

The existing situation shows that the practice of the local government and other section responsible for the maintenance and use of those structures are in many cases deviating from their guided responsibilities. This is resulting the government liable for such deviation.

Compliance with International Instruments:

There several international instruments declaring the right to housing, means adequate housing and which is corroborating with right to shelter, in other word which is a part of wider human rights.

At first glance, it might seem unusual that a subject such as housing would constitute an issue of human rights. However, a closer look at international and national laws, as well as at the significance of a secure place to live for human dignity, physical and mental health and overall quality of life, begins to reveal some of the human rights implications of housing. Adequate housing is universally viewed as one of the most basic human needs.[5]

The right to adequate housing is universally recognized by the community of nations. All nations without exception, have some form of obligation in the shelter sector, as exemplified by their creation of housing ministries or housing agencies, by their allocation of funds to the housing sector, and by their policies, programmes and projects. All citizens of all States, poor as they may be, have a right to expect their Governments to be concerned about their shelter needs, and to accept a fundamental obligation to protect and improve houses and neighborhoods, rather than damage or destroy them. Adequate housing is defined within the Global Strategy as meaning: adequate privacy, adequate space, adequate security, adequate lighting and ventilation, adequate basic infrastructure and adequate location with regard to work and basic facilities-all at a reasonable cost.

No doubt that our Cyclone Shelter are not matching to help them within a meaning of adequate housing. As the above discussion shows that there is even not enough space at the Cyclone Shelters for the populace living adjacent areas to it to be remaining standing at the time of disaster.

Though Article 25.1 of the Universal Declaration of Human Rights thus proclaims that:

Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control.[6]

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[4] *Article 32 of Bangladesh Constitution of 1972,*
[5] *Facts Sheet 21.; Office of the High Commissioner of Human Rights.*
[6] *Article 25.1 of Universal Declaration of Human Rights of 1948.*

Beside this document the United Nations Declaration on Social Progress and Development (1969) and the United Nations Vancouver Declaration on Human Settlements (1976) recognize the rights of everyone to adequate housing. This shows that the government is liable for maintaining the Cyclone Shelters usable for the people living at the cyclone prone areas. This is the responsibilities under its constitution and international instruments.

Right to life with Dignity:

There are other dimensions of such responsibilities which could be conceptualized under the international instruments. One of that is SPERE, under which government and operational organizations are responsible for maintaining the right to life with dignity. This instrument is based on two core beliefs: first, that all possible steps should be taken to alleviate human suffering arising out of calamity and conflict, and second, that those affected by disaster have a right to life with dignity and therefore a right to assistance.[7]

The principle of the right to life with dignity in the Humanitarian Charter is drawn from the United Nations Charter and the Universal Declaration of Human Rights. Every person has a different perception of what dignity means. Life with dignity implies a certain level beyond provision of life-saving assistance, and is a powerful and important principle for the humanitarian system. Consequently, participation is essential for people to define a programme that helps them achieve their right to life with dignity.

Unfortunately there are not many examples in using and maintenance of Cyclone Shelter, which gives that sense of dignity to the local people. They are often think these establishments as a kind to them and they do not have any ownership in these shelter. This may be causing because of lack of participation of the people in the management of disaster related committee at the union level. Rather in many places where these shelters are being used by the local powerful people as their office or other institutions are remaining far from people's ownership.

In many places these Cyclone Shelter are now being abundant. The causes behind this are as follows:

1. Non existence of disaster management committee at the union level
2. Unnecessary established Cyclone Shelters, where those are not needed.
3. Lack of people's participation
4. Lack guidance of use
5. Lack of maintenance
6. Stealing

Conditionality of Compliance:

a. People's Access: The overall access to the people at the management is very poor. There are very rare example of people's participation at the union disaster management committee, which according to standing order on Cyclone Shelter, is ultimately responsible for the management or maintenance of Cyclone Shelter.[8]

This is in a wider perspective causing some sort of alienation of general people. Simply they are not oriented with the concept well and even after they think it is a

> The bad conditions of these shelters are an example of corruption. According to local people, the buildings and brides of British period still in good shape even after 100 years. But, these Cyclone Shelters are getting damaged just within 12 years and turned in a unusable shape. Some of these building were made at best within last 30 years.
>
> ***- Focus Group Discussion in CharFassion, Taken in 2002***

[7] SPHERE Project,; 1997; A document that deals with the international standards of humanitarian response in disaster. This document has launched by a group of NGOs and Red Cross and Red Crescent.
[8] Section 3.2 of the Standing Order of People's Republic of Bangladesh on the Muli-purposed Cyclone Shelter.

property of some NGOs. Where those are being used as school there they accept those establishments as school.

This might be causing problems in management. As a result many Cyclone Shelters are being left as not maintained well. As a result these are causing harm at the time of disaster or even at normal use of those. There are many examples of the severe consequences of bad structure of Cyclone Shelter. One of that happened in Bhola. There one Cyclone Shelter, named Mukar Banda Cyclone Shelter, was of it's worst condition and it was being used as a local primary school. One boy of the school was died and other four boys severely injured when the wall of first floor fall back on them.[9] It is not safe even at the normal time and obviously much more dangerous at the cyclone time.

Unused and left abandent; Picture: 13th November 2005 in Moheshkhali

b. Safety: The above examples show that people are not safe at the Cyclone Shelter. As these shelters are the installations mainly for the safety of cyclone affected people, is not complying with the right to shelter.

Some time there are initiatives from the government officials to identify the condition of this Cyclone Shelter. But the follow-up activities are not satisfactory. One example is as follows: Thana Nerbahi Officer (TNO) of Char Fassion has already identified 7 cyclone shelters as 'beyond repair' condition, he also sent official letter to their higher authority for declaring these shelters as an abandon property. Not only these 7 buildings, most of the shelters are in worst condition and these are also engendering threaten to the locality. This initiative has suffered due to lack of follow-up steps. This program did not cover the participation of local people.

> At Anjur Hat Cyclone Shelter, in Bhola, 7 boys were critically injured by break down its wall on them, at that they were watching football match in their school premises, this Cyclone Shelter situated adjacent to playground of the local high school.
>
> ***-Source: Focus Group Discussion***

Considering the physical structure of the Cyclone Shelters, people refuse to take shelter in Kukri Bazar Cyclone Shelter during the time of cyclone. If the wind blows heavily concrete part begins to fall from the building. This building has no resistance to protect itself during cyclone, how could it bring safety to the locality. People of this Kukri Bazar like to go forest during the time of emergency. Their perception about the Cyclone Shelter as it is not a safe place.

People also have the similar perception for the Cyclone Shelter of Char Monpura. People like to stay in their home instead of taking shelter during cyclone. As they feel that it's better to die in their own home, instead of die under the concrete of these Cyclone Shelters. On the other hand NGO built shelters physical condition are good and people think these as their safety place. It is important that most of the NGO built shelter constructed very recently. As peoples perception CARITAS Cyclone Shelter is a safe place during the time of emergency.

> 'Why do we take shelter in those deteriorating buildings, those building are not a safe place to protect us. If we take shelter in cyclone period, the building may ruined by the cyclone then all of us will die under the damage concrete building. If we will die by the cyclone, our own residence is the best place to die. We don't want to die under the shelter'
>
> ***-Source: Focus Group Discussion***

In our study we have found that, these old Cyclone Shelters are no longer capable to protect people's life during cyclone and

[9] *News report of the local news paper, "Sonar Bangla", August 2000.*

tidal surge. Moreover, these are not a safe place according to the people's point of view. People even do not like to take shelter in these building during the time of emergency.

Another concern for the shelter taker is the safety from the broken structure of the Cyclone Shelter from the earth quake. There are several shelters where the earth quake resistance were not rested and are not checked, which is a important dimension for the safety of the shelter takers.

Crack has appeared on the pillar of Cyclone Shelter from earth quake in Moheshkhali; Picture: 13th November 2005.

c. Basic Support in Cyclone Shelters: In Char Motahar Cyclone Shelter have no attached latrine or water supply facilities, during the shelter taking time people face a great trouble for this kind of construction. In our study we have found that there is no provision of air circulation facilities in any Cyclone Shelter. Air suffocation creates health hazard during the time of emergency especially for the child and women. Absent of attached latrine and water facilities make this problem more complicated.

On expressing her bad experience in cyclone shelter one young woman of Shil Para in Kutubdia said 'You can't imagine how many people take shelter in one cyclone shelter during cyclone, people gather there very closely and there is no provision of air ventilation and light. We cannot breathe at all, after hardly passing few minutes I was faint at that night cause of sweat and dirty odor and smell of urine. Even they don't have any water to pour on my head for returning my sense. Source: -Focus Group Discussion

d. Disproportionate with the Number of People: As the accommodation area of Cyclone Shelter in not enough for the whole community, often time female and children get priority over male member of the community. Other who do not get space in these Cyclone Shelter stay at open place just holding building pillars during the cyclone. Very often without having connecting road people fail to reach the Cyclone Shelter and as a result they lost their precious life.

Chars are surrounded by embankment but their condition is very poor mostly destroyed or partially destroyed. In the time of emergency it has no resistance to protect surrounding residence. Adjacent shelters have no connecting way to locality and very often the connecting way is very low that flooded easily by high tide. In the time of cyclone, storm surge smashed the embankment easily then flooded all the land of the char, particularly this condition easily happened early of the cyclone. As a result people loose their communication to the cyclone shelter. This is worst at the time of night as people usually got lost due to absence of any mark of connecting way. It denotes that during an emergency period, like the high tidal surge, the precious life of the people of char areas could be saved if there would sufficient steps from the government by making the connecting road properly.

e. Signaling: Usually people got prepare to leave for the Cyclone Shelter just before two or three hours before the cyclone hits their area. Some time this time could be 10 minutes or so. This minimum time is the main turning point to let them live or death. Often time, they tend to use their valuable time to save their live-stoke or crops, which could virtually kill the chance to go for the Cyclone Shelter. If they could informed earlier they could have prepared and planned to go to the Cyclone Shelter. Any lack of information regarding the signaling or the cyclone time is a major threat for their survival. This is the reason they need a complete knowledge on the signaling and have the right to be informed early about any warning regarding cyclone. Without that their right to life could not be realized.

This early warning through the Cyclone Shelter is not really delivering rather in practical sense many Cyclone Shelters never show the signaling flags, which could ultimately save a huge number of people.

There is exception to this also and people have good perception about Red Crescent as they are the one who operates the worming and signaling before the cyclone. Their volunteers also use to help the local

people to reach the Cyclone Shelter. To do all this Red Crescent Society organized a disaster response voluntary committee in all cyclone-prone area. They also operate early warning and signaling activities in normal time as for their disaster awareness activities. Besides, during cyclone time they also aware people for cyclone by using mega phone and siren. All Red Crescent shelter has the provision of using flags according to the destructive nature of cyclone. This is a model activity that is saving thousands of life every year. Moreover, Cyclone Shelter in char has no provision of wireless or signaling system. Few people have radio. Besides this, government disaster management committee also there but they are inactive. That's why people have no access to know the signal of cyclone. These are some sad storied of people who died while taking shelter during cyclone

Management:

Latrine of shelter has no septic tank connection, in Red Crescent shelter. They placed their latrine freely on the roof of the shelter

Good Cyclone Shelter come School in Cox's Bazra; Picture: 14th November 2005.

Recommendation

A. Lobbying for Donor Involvement:

It has been found that an effective policy commitment of donors needs to be in place for having suitable Cyclone Shelters that meet the criterion of safety for the shelter taker. At the same there needs a constant support for the maintenance of the shelters. There is a huge scarcity of funds for such maintenance though the standing order provides for a priority fund but it is not working due to lack of funding.

The conditions of the Cyclone Shelters are better those have a constant and better funding, like the Saudi government funded shelters.

B. A Specific Policy is Needed:

There should be a specific policy on the establishment, use, and maintenance of the existing cyclone Shelters. There is a genuine gap has been discovered on the use guideline of this shelter in normal time. There should be specific policy on that. For an example we can say that the shelters could be used as the community center of the locality and the rented money will be funded at the union parishod fund.

Even for the school the responsible authority should come-up with their policy.

C. Development Organizations Intervention:

As it is a forgotten issue. It become important only at the time of disaster and people's organization as well as NGOs should come up with their campaign and other awareness building program to save the life of general people living at the coastal belt of Bangladesh. The main areas of the NGOs intervention will be as follows:

1. Monitor the activities of Union level disaster management committee,
2. Reporting on the illegal occupation,
3. Lobbying for peoples participations in the committee.

The most important task would be initiate awareness program, especially on signaling and first aid.

Advocacy work for formulating rule of School Education Board related with the school management committee to be involved in managing the cyclone shelter.

Advocacy for relishing the Government Fund for the maintenance and making them earth quake resistant.

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Note : The article is based on a study on cyclone shelters supported by ActionAid Bangladesh during 2005-2006 periods. The comments and recommendations do not necessarily reflect ActionAid's view and strategy.

Disaster Preparedness in Kamala's Saghara

by Raj Kishor Rajak, *Samaj Utthan Yuva Kendra*

Among the 101 VDCs of Dhanusa district, Balhasaghara is a village of some 5,000-6,000 people to the extreme east on the banks of the Kamala River. From a development point of view, this village is extremely poor and marginalized. People depend on labor, farming and overseas employment for their livelihoods. Balhasaghara lacks access to roads, electricity and communication infrastructure. Because of its location on the banks of Kamala, the district's main river, Balhasaghara is severely affected by the flooding every year. Because of massive flooding of from the Kamala River, fertile lands are being lost and communities displaced. During the monsoon season, all connecting roads are blocked. It is difficult to reach the nearest health post or safe place. At times of emergency, people go by boat to Siraha Bazar, the headquarters of neighbouring Siraha District. Lack of transportation has made life extremely difficult for people. One member of the Balhasaghara DRR committee, Sanak Mukhiya, had been directly affected by the floods. His opinion on the programme was ambivalent at the beginning. After participating as a DRR committee member, however, his opinion of the project has grown increasingly positive. He has become a leader and inspiration for his community. Since February 2006, CARE and its local partners have been implementing a community-based DRR project, DIPECHO SAMADHAN, with support from the European Commission's Humanitarian Aid department. DIPECHO SAMADHAN works with 48 communities in the districts of Dhanusa, Mahottari and Sarlahi, including Balhasaghara. CARE's local partner in Dhanusa, Samaj Utthan Yuva Kendra (SUYUK), has sought to raise awareness and build the capacity of Balhasaghara residents to be prepared for, respond to, and mitigate the impact of the two major hazards they face.

The project began with the formation of a VDC level disaster risk reduction committee. Initially, people from Balhasaghara did not have a clear concept of the project. Disaster preparedness was something new. People tended to think of large-scale mitigation measures, like river embankments and check dams rather than awareness raising, education and capacity building. With leadership from the disaster risk reduction committee, however, people began to understand what disaster preparedness is about. With support from SUYUK, the DRR committee conducted various activities, including street plays, trainings, contingency planning, evacuation drills, emergency equipment, and small-scale mitigation measures. The committee chairperson, Mr. Ram Udgar Yadav, and vice chairperson, Mrs. Man Devi, feel that they have succeeded in developing in everyone a sense of

ownership of the project. Whenever an operational activity needs in the community, the disaster risk reduction committee takes the lead role. The committee has been very successful in leaving a positive and effective impression in the community. They have even created an emergency fund for the sustainable development and service of the proposed minimization project. They are also giving special priority to the women, dalits and disaster victims, encouraging them to participate in every activity organized in the community. The vice chairperson's role in effectively implementing women's issues and taking them to decision-making level has been instrumental. Before this programme was launched, the participation of women in-group activities was very low. All that changed after the programme was implemented, as they became actively involved, participating at the leadership level and having their voices heard.

The street play on disaster preparedness is undoubtedly the most effective awareness raising activity conducted so far. Through the street play, the DRR committee has raised awareness in Balhasaghara, promoting service-oriented feeling and reflecting the true spirit of the committee is working approach. Through community training, the committee and the community understand that a family's emergency plan and the community's emergency plan should go together, hand in hand, to move the community forward in a well-managed and well-planned manner. People of Balhasaghara are committed to an inclusive approach to disaster preparedness and to sustaining their efforts long after the project ends.

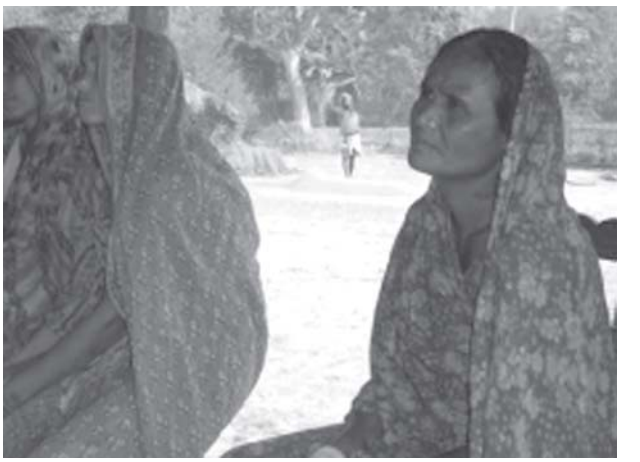
Building Women's Capacities for Disaster Preparedness: A Case Study of Andupatti VDC Dhanusa District, Nepal

Women in Andupatti VDC are proving that they have a great deal to contribute to their community's disaster preparedness. "We have two hands just like men," explained Gangia Devi Mahara, a member of her community's disaster risk reduction committee. "I bet we can plant even more tree seedlings [to prevent soil erosion] if we had the chance." Women in Andupatti VDC believe that they are more vulnerable than men are to natural disasters. "We wear saris, which makes it harder for us to run. Moreover, we have to make sure our children are safe. This slows us down." Yet, until recently, they have not had the chance to address their gender specific vulnerabilities. They have not had the chance to participate in planning or training for disaster response. Like many women around the world, prevailing gender rules and norms have been denied them both the right to access of information and resources and the right to make strategic decisions that impact their lives and the lives of their families. Women in Andupatti VDC live in an extremely conservative society, where they are often not allowed to speak to people outside their own family, let alone get involved in community decision making about disaster preparedness. Moreover, their capacity to contribute to their families' and their communities'

disaster preparedness is ignored and left untapped. With funding from the European Commission's Humanitarian Aid department, CARE Nepal and its local partners, SUYUK, JAN, and LDTC, are raising awareness of 48 communities in the districts of Dhanusa, Mahottari and Sarlahi to identify, prepare for, respond to, and mitigate the impact of natural hazards. The project began in February 2006, and over the past year, more and more women have become engaged in disaster preparedness and mitigation. In some VDCs, CARE and its local partners still struggle with gender parity. The case of Andupatti VDC, however, offers a powerful lesson on how to raise awareness about the importance of including women in disaster preparedness planning and training. It is also a lesson on how women, when given the chance, can contribute a great deal to disaster preparedness at both the household and community levels.

Andupatti VDC is extremely prone to flooding. The VDC is situated along the bank of the Jaladh River. Every year, the river floods communities along its riverbanks and affects about 90 percent of the population. And, every year, the water level rises. CARE Nepal and its local partner in Dhanusa District, SUYUK, formed a DRR committee and began various awareness raising activities in May 2006. When the project first started, women initially refused to come out of their homes and peered behind their windows and doors from under their saris when DIPECHO SAMADHAN staff came around. When DIPECHO SAMADHAN held its first community training on disaster preparedness, women sat in the back or on the sidelines.

At that time, only two women had been willing to participate as members of the DRR committee. They sat quietly during meetings. Realizing this was a concern, DIPECHO SAMADHAN staff approached an elder woman in Andupatti, Ramsunair Yadav (pictured above at far right), and asked for her help. As a former health extension volunteer, Ramsunair has influence in the community, particularly with other women. They listen to her and respect what she has to say. With Ramsunair's help, more women gradually became actively engaged in the project. Eventually, a tipping point was reached. Women have gained momentum. The number of women on the Andupatti disaster risk reduction committee increased from two to five (out of 11 members). These five women have influence on the committee and are proud of the fact that they are increasing women's participation in disaster preparedness trainings and events. "Every single woman in our village should benefit from this project," they say. They believe that it is their participation on the disaster risk reduction committees that is now leading



to more gender equity in disaster preparedness.

Fewer and fewer women are remaining silent, peering from behind their saris or sitting on the sidelines. They are taking pride in their disaster preparedness measures – storing grains for the monsoon season, building raised storage shelves, and keeping important documents, such as citizenship certificates, in safe places. They are participating actively in community trainings on disaster preparedness. Because there is equal representation of women on the DRR committee, women will now also have a say in what small-scale mitigation measures communities will design, implement and maintain. They will also play an active role in finalizing community contingency plans and simulating community evacuation drills.

Disaster Preparedness in a Flood Displaced Community: The Story of Bazar Tole in Mahottari istrict, Nepal

In July 1993, the Ratu River flooded the village of Bhote Paini in Kisan Nagar VDC-7, Mahottari District, destroying 10 houses and killing one buffalo and 10 goats. As a result, the people from Bhote Paini moved to an unoccupied area nearby. That place is now called Bazar Tole. Today, Bazar Tole is a community of 20 houses and 115 people, many of whom are dalit – a marginalized people who belong to what is traditionally in Nepal considered the "untouchable caste." The village is extremely flood prone. It lies on the east coast of the Ratu River, which flows through the middle of the district, starting from the Churia range and continuing on into India. Over the past few years, the Ratu has begun cutting the edges of the land near Bazar Tole. Since 2003, flooding from the Bhote Khahare has also affected Bazar Tole.

Fire is also a major hazard. Population density has increased as more and more poor people move into Bazar Tole. Every single family in Bazar Tole is landless and deprived of access to basic services, such as drinking water, electricity and roads. They rely mostly on manual labor to earn a living. People cannot afford to purchase their own land. They build their straw and sugarcane leaf houses close to one another on narrow plots. A fire in one home can destroy the whole village. People from Bazar Tole recall a fire that broke out in 2003. It started in the house of Kishori Sah, but ultimately spread and damaged food grains and resulted in a loss of Rs. 40,000. Since February 2006, CARE and its local partners have been implementing a community-based DRR project, DIPECHO SAMADHAN, with support from the European Commission's Humanitarian Aid department. DIPECHO SAMADHAN works with 48 communities in the districts of Dhanusa, Mahottari

and Sarlahi, including Bazar Tole. CARE's local partner in Mahottari, the Local Development Training Center (LDTC), has sought to raise awareness and build the capacity of Bazar Tole residents to be prepared for, respond to, and mitigate the impact of the two major hazards they face. To achieve this goal, LDTC organized a street play on disaster preparedness in Bazar Tole in June 2006. This was followed by a two-day training in July, which provided community members with a basic orientation to disaster risk management. Seven people from Bazar Tole participated in this training. Additionally, teachers from Kisan Nagar VDC were also given training on disaster preparedness so that they can begin incorporating the topic into classroom discussions. LDTC and local resource persons from the project also launched a door-to-door awareness campaign to reach every single household in Bazar Tole with education and information. Villagers prepared a community hazard and evacuation map that identifies Shahid Chowk (Brahmasthan) as a safe evacuation place in the event of an extreme flood or fire in Bazar Tole. They then developed a contingency plan in December and simulated an evacuation drill in January.

In December, Bazar Tole was visited by Nawaraj Lamsal of the government of Nepal's Social Welfare Council. He asked villagers what difference, if any, the project has brought to them. Shiva Devi Sah, 35, responded to his question. She said, "SAMADHAN has raised our awareness about disaster preparedness. To take precautions before a disaster occurs – this is disaster preparedness. This is what I learned from the street play. When it is windy, for example, objects like match sticks and lighters should be kept away from the reach of the children." She went on to explain how a fire broke out in the home of Bujhawan Pasman just that month. It happened one day after the community contingency planning workshop. Equipped with knowledge and a new sense of organization and coordination, members of the disaster risk reduction committee took control of the fire and stopped it from causing further damage to the rest of the community. They were able to prevent what happened in 2003 from happening again.

According to Bahadur Mandal, a member of the disaster risk reduction committee, people in Bazar Tole lacked awareness about disaster management before DIPECHO Samadhan was introduced. As a result, he said, the community bore heavy disaster-related losses. However, this project has united the community and given them practical knowledge about disaster preparedness so that they are better prepared and able to mitigate the damage caused by hazards. The residents of Bazar Tole have not only realized the importance of disaster preparedness, they are sharing what they have learned with others. They are committed to conducting regular imulation drills and reviewing their contingency plan. They believe that this will help them save themselves and their communities from suffering heavy losses in the event of future disasters.

When the project first started, residents of Bazar Tole held the general belief that disaster risk reduction was about building physical infrastructure to control floods. They also

believed that disaster preparedness was something that external agencies did. Today, they know that they themselves can and should take a proactive role in preparing for, responding to, and mitigation the impact of hazards. This reflects a substantial change in the attitudes and practices of the people living in Bazar Tole.

Reducing Disaster Risk through Social Inclusion and Collaboration: The Story of Netragunj in Sarhali District, Nepal

by Dinesh Bharal, Jagaran Abhiyan Nepal

Over the past year, people in Netragunj VDC have come together across ethnic and caste lines to strengthen their disaster preparedness. Netragunj is one of the 99 VDCs in Sarlahi District, Nepal. The East West Highway dissects Netragunj in half. The most vulnerable and poverty-stricken settlements in Netragunj are Gairi, Magar and Jalil Toles. Janajatis, or marginalized ethnic groups live in Magar Tole, whereas dalits, the so-called untouchable caste in Hindu religion, live in Jalil tole. The three toles are comprised of 113 households, or a total of 668 people. They are located on the banks of the Lakhandehi River in the southern corner of the Mahendra Highway. People of these three toles are flood prone. Moreover, with poor sanitation and hygiene, they are also vulnerable to epidemics. The two hazards compound one another every monsoon season. In July 2004, flooding destroyed three houses, killed two people, cut 50 bighas of land, and filled the remaining land with sand, leaving it as uncultivable. At the same time, much damage was caused as property worth hundreds of thousands of rupees was destroyed. The three toles lack a proper road to use in the event of a flood to reach safer ground. When the floods come, destroying houses and sweeping away property, people have no safe escape. Moreover, in addition to the threat of floods and epidemics, people in Gairi, Magar and Jalil toles also live in dense settlements, making them vulnerable to fire.

In this context, CARE and its local partners have been implementing a community-based disaster risk management project, DIPECHO SAMADHAN, with support from the European Commission's Humanitarian Aid department. DIPECHO SAMADHAN works with 48 communities in the districts of Dhanusa, Mahottari and Sarlahi, including Netragunj. CARE's local partner in Sarlahi, Jagaran Abhiyan Nepal (JAN), has sought to raise awareness and build the capacity of Netragunj

residents to be prepared for, respond to, and mitigate the impact of the hazards they face. Though hazards affect all three vulnerable toles in Netragunj, it is Jalil Tole that is the most vulnerable. Thirty-eight families live in Jalil Tole, all of whom are dalit. Houses in Jalil Tole are built right along the bank of the Lakhandehi River. They are the first to be affected by any flood – and with very little early warning. The families there are landless and have minimal assets. And before the project came along, they had no way to quickly reach higher ground. Initially, people from Jalil Tole were unreceptive to the project. They recalled how they had gone to many NGOs, INGOs and government line agencies, asking for support to recover after a flood disaster (see photo above of house in Jalil Tole that was destroyed and never rebuilt). No one ever had responded to their requests for help. Therefore, when DIPECHO SAMADHAN first started in February 2006, people from Jalil Tole had low expectations. They did not think any of the project's activities would benefit them. They did not think anything would change. But things *have* changed. "JAN never promised to give this and that to us but gradually provided us with precious knowledge, which is very important "says Sahadev Paswan, a resident of Jalil Tole. Part of this change in attitude is the result of people from the other two toles coming together to help reduce risks in Jalil Tole. Raghunath Kadel, resident of Gairi Tole and secretary of the DRR of Netragunj, which was established with the support of DIPECHO SAMADHAN, championed the idea of constructing an evacuation route, particularly to provide access for the dalit community to safer ground. With his enthusiasm and persuasive skills, he was able to convince people in Gairi and Magar Toles to do something to strengthen disaster preparedness in Netragunj as a whole, but also in Jalil Tole specifically. In November 2006, JAN organized a small-scale mitigation measure preparation workshop in Netragunj. VDC representatives, DRR committee members, and women, men and teachers attended the one-day workshop from the broader community. At this workshop, all participants supported the idea of constructing an evacuation route. In line with that decision, members from the DRR committee prepared a proposal, which was submitted to JAN the next day.

Following receipt of the proposal, JAN organized an on-location visit to the site and in the presence of community members and key community leaders, it obtained permission from the landowners to construct a dirt road two kilometers long, 10 feet wide, and two and a half feet high. Every household in the three toles of Netragunj contributed labor to the construction of the evacuation route. With financial support from DIPECHO SAMADHAN, the communities also constructed six culverts to facilitate proper drainage. Communities contributed labor worth Euro 1,536. DIPECHO SAMADHAN provided Euro 1,621 in financial support to complete the work. The construction of this 'safe way' was completed in April. One hundred and thirteen households, or some 669 people, from Gairi, Magar and Jalil toles now have access to safer ground during the monsoon season. This road is the result of active participation and contribution of community people as well as the financial support of DIPECHO SAMADHAN. In the days to come, this road should lead to a safe destination when disasters occur. Therefore, a basis for assurance has been formed that future disasters will not cause as much damage to life and property as in previous years.

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नेपालमा सन् १९८३ देखि २००६ सम्म विभिन्न प्रकोपबाट मारिएका मानिसको सङ्ख्या

प्रकोप वर्ष	भुइँचालो	बाढी पहिरो	आगलागी	महामारी	हुरीबतास चट्याङ	हिम पहिरो	भागदौड	जम्मा
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