3. Good Practices

3.1 Good Practices in Disaster Management Phases

3.1.1 Prevention/Mitigation

Effectiveness of the Disaster Preparedness Programme in Vietnam: Planting Mangroves to Mitigate Sea Dyke Erosion

The Vietnam Red Cross (VNRC) is a large organization that is considered the core body for all humanitarian work in Vietnam. The Red Cross (RC) structure has four levels: national, provincial, district and commune. Altogether there are 4.7 million members and 2.5 million RC youth and volunteers.

The VNRC has its own statute in line with Vietnamese law and with the Seven Fundamental Principals of the Red Cross and Red Crescent Movement. Since 1990 the VNRC considers disaster preparedness as one of its core tasks with a focus on community-based disaster preparedness (CBDP) (or four spot activities) in order to enhance communities' capacity to be prepared for and respond to disasters. A worldwide approach to disaster management by Red Cross Societies has opened new avenues, from relief and rehabilitation to development work for disaster reduction.

Since 1994 until the present, the Danish Red Cross (DRC) has been supporting the Vietnam National Red Cross in implementing a Disaster Preparedness Programme. Having begun as 'The Coastal Environmental Preservation Programme' in Thai Binh in 1994, the program was extended in 1997 to include the province of Nam Dinh. Phase III, now renamed the Disaster Preparedness Programme and covering 2001–2005, pursued the development objective *'That the vulnerability and suffering of selected communities is reduced, in accordance with the fundamental principles of the Red Cross and Red Crescent Movement'.*

Similarly, the Japanese Red Cross supported a pilot project through the Federation in 1997 covering the five provinces of Quang Ninh, Hai Phong, Ninh Binh, Thanh Hoa and Nghe An. Following the pilot project, the program was continued in 1998–2000 and expanded to Ha Tinh province. Phase III covers 2001–2005 and continues to pursue the development objective given above.

Experiences from Thai Binh and Nam Dinh provinces in 1996 and 1997 proved that mangroves planted by the Red Cross initially for environmental reasons constituted a good green wall to protect sea dykes against typhoon waves. This means no flooding of agriculture fields or settlements. Fishing boats can use mangroves as shelter during typhoons. The number of deaths fell. In 2003, two typhoons struck Northern Vietnam in July and August but only four people died, no rice fields were flooded and the impact of the typhoon rapidly weakened. Research published in 1997 by Japanese scientists demonstrated that a sea wave 1.5 m high is reduced to nearly zero after passing through a 1,500-m wide mangrove plantation. Mangroves are considered to offer effective protection for sea dykes during both typhoons and normal circumstances.

To replant mangroves, the Red Cross has used a community-based disaster management approach. It is an integrated approach whereby the three main components of resources, organizational development and dissemination of new ideas through training and education are integrated in a single program, resulting in a more holistic delivery of services.

The community therefore plays an important role and is actively involved in the implementation. Many training courses and public awareness exercises have been carried out to assist the local community in fulfilling its role, such as planting training courses and DP training courses for teachers, children and local staff.

Sea dykes are protected by mangroves

People collecting sea products for their livelihood

Local communities held competitions to raise public awareness through drawing, drama, folksongs, and so on. The communities protect the mangroves directly by establishing teams of guardians, who take care of the mangroves immediately after planting.

The impact of the program impacts on both the coastal and socio-economic environment is obvious. Confirmation of its effects is mostly based on information and observations from local people and authorities, including the following.

- Increased mud flats and land reclamation.
- Mitigation of dyke erosion (the average reduction in annual expenditure for dyke maintenance is around VND600–700 million VND per kilometer of dyke).
- Socio-economic impact.
- Increased sea product collection (after one morning working in the mangroves, collectors could earn from VND30,000 to VND50,000 from selling baby crab).
- Income generation for planters, guards, and RC and PC officers.
- Better housing environment.
- Emergence of possible livelihood projects.

Mangroves give you a better and safer life

- **Background**:

Vietnam is located in Southeast Asia. It is a very long and narrow country with a long eastern sea board. Mountains and hills cover four-fifths of the country. The most populated areas in Vietnam are the lowland alluvial plains including the Red River and Mekong River deltas.

Economic activities are mainly agricultural and forestry products, followed by industrial products and services, tourism, etc.

Between four and six typhoons strike Vietnam annually, but this is a variable cycle with fewer typhoons in some years. In 2001 there were three typhoons. This makes forecasting more difficult. The Vietnamese people would not pay sufficient attention to typhoons and the damage caused by a sudden typhoon would be more severe in the absence of continued disaster preparedness activities, especially along the northern coast.

According to recent statistics, more than 6,000 people died and economic losses amounted to approximately US$2.3 billion in the period 1996–2002, with losses of US$33.5 million during one nine-month period of 2003.

-Objectives

The main objectives of the Mangrove and Disaster Preparedness Programme are to protect sea dykes and people's lives and property; to build the capacity of the Vietnam Red Cross for disaster preparedness; to improve the coastal environment; and to create jobs and income for vulnerable people.

Main activities are as follows.

1. Planting and protection of mangroves and up-land trees (also for protection purpose).
2. Disaster preparedness training for RC staff, local authority officials at the grassroots level and teachers and children in schools.
3. Capacity-building activities in term of planning and management skills for RC staff.
4. Awareness raising about mangroves and disaster preparedness through events such as planting ceremonies, technical training courses, talks about mangroves painting competitions, drama theatres, workshops, etc, and the mass media such as newspaper, television, leaflets, and speaker systems.
5. Advocacy, including workshops and studies of mangroves by the Mangrove Research Center
6. Providing necessary equipment to the VNRC at various levels.
7. Building and repairing typhoon -resistant houses for vulnerable families since 2002 (in Nam Dinh province only).

-Major Achievements

Program achievements to date are as follows.

1. Over 20,000 ha of mangroves have been planted in eight provinces, which can protect about 200 km of sea dykes (The length of the sea-dyke system is about 3,200 km in Vietnam) mainly using three mangroves species: *Kandelia, Rhizophora* and *Sonneratia* spp.
2. Over 10,000 poor households in 95 communes of 28 districts in eight provinces were directly involved in planting mangroves. They earned above US$20/ha
3. Over 250 RC staff at district and provincial level were trained in disaster management.
4. 5,122 teachers at primary schools in eight provinces were trained in disaster preparedness, and they in turn trained approximately 200,000 children.
5. The impact and results of the program have been regularly broadcast on television, radio and newspapers, especially through the loudspeaker system at community level
6. 777 strong houses have been constructed and given to vulnerable families

- Total Budget

1994-2004: US$4.4 million

- Contact Details

Nguyen Hung Ha, DP Program Officer
Vietnam Red Cross Society, No 68 Batrieu, Hanoi
Tel: +844 9432931 Fax: +844 9434065
Email: vnrcdp@fpt.vn or hungha5405@yahoo.com

Vietnam

Flood Control for the Red River

The Red River, the Delta and Floods

The history of the development of Vietnamese civilizations is closely linked to the Red River (Hong River) Delta. As the second largest granary of Vietnam, the Delta holds a significant meaning in the life of the Vietnamese people. This is where approximately 15–20 % of Vietnam's rice is produced. A population of 17 million now inhabits the 16,500-km^2 area of the Red River Delta.

The catchment area of the Red River is estimated at 169,000 km^2, half of which lies in China. The Red River at Hanoi comprises three major tributary systems, the Da, Thao and Lo Rivers. The river is the source of various positive aspects for human life, such as water resources and rich alluvium (it is called the Red River as the large amount of alluvium it carries colors it red all year round). However, these go hand in hand with a much less expected occurrence: floods. Increased flash floods as a result of deforestation in the upstream parts of the Red River basin, and raised bed levels of the rivers due to the deposition of sediment, are causing higher flood levels, endangering the ever increasing socio-economic value of the capital.

The land in low-lying areas of the river delta is protected against flooding by river dyke systems. According to official historical records, in 1108, King Ly Nhan Tong ordered the construction of the first dyke with solid foundations on a large scale aimed at protecting the capital of Thang Long (now Hanoi). For years, the dyke has been upgraded and considered a symbol of the Vietnamese people's strong will and vitality.

Solutions implemented

Comprising 500 tributary rivers and springs, the distribution of the Red River is very complicated. With a length of 3,000 km, the dyke system is considered the most important measure for protecting human lives and property. The flood season in the Red River lasts from June to October, with particularly serious flooding in August when the water level is generally up to 4–8 m higher than the natural ground level. During the flood season, a large number of disaster experts and volunteers are mobilized to ensure the protection capacity of the dyke system. They play a very important role in keeping human lives and property safe and sound.

The so-called multi-purpose reservoirs in the upstream area of the river are the second most significant measure to protect the region against severe damage from floods. Normally, these reservoirs act as water reservation bodies for hydroelectric plant, but in the flood season their flood-control function takes priority. The two big reservoirs, Hoa Binh by Da River and Thac Ba by Lo River, with a total flood-retention capacity of 5.4 billion cubic meters, are used to reduce floods in downstream areas. In addition, several new reservoirs, such as Son La and Tuyen Quang, are now under construction in the upstream Red River. These structural works will be become operational in 2006 and 2012 respectively, strongly enhancing the flood prevention capacity of the Red River Delta.

Furthermore, when neither the dyke system nor the upstream reservoirs can reduce flooding, another protection measure will be implemented: flood diversion into the Day River. This river can take over part of the flood water from the Red River with an average discharge of 5,000 m^3/s. In addition to the Day River, other flood-retention works that can be utilized when the Day River works are overwhelmed are Tam Thanh, Lap Thach, Luong Phu and another in the middle-stream area of the Red River. However,

these will only be mobilized in the case of extreme floods.

In order to improve the capacity of the Red River flood plain, it is very important to clear obstacles such as irrelevant construction works and sediment in the river bed. River bed dredging is one method. However, owing to economic limitations, this cannot be implemented as frequently as needed.

In the present economic conditions of Vietnam, it is impossible to build dykes with a wide cross section to protect against extreme flooding as the land occupied is large and costly. For this reason, the idea is to build emergency spillway works allowing the flood water to come over and flood particular regions, avoiding damage to significant points in the dyke system. The principle underlying this method is to accept partial damages to avoid broken dykes.
Widening the covering of upstream forests is a fundamental method of reducing the severity of floods. However, this requires a long period of time for its implementation. The forest system in upstream areas not only functions as a flood harmonizer but also has a beneficial effect on the environment and the ecological system. At present, forest cover is increasing thanks to forest planting and protection campaigns steered by the Vietnamese Government.

In addition to structural methods, the following non-structural ones also play an important role, being used for early preventive purposes.

- Land use management: Plan safety zones for human and production activities, reducing damages caused by floods.
- Apply special treatment policies to regions subject to flooding and their local populations. In such regions, solid construction works are built to ensure survival in floods.
- Enhance timely flood forecasting and warning abilities through improved investment in meteoric and hydraulic equipment.
- Be prepared for flood events by readying rescue devices, equipment and necessities.
- Conduct information dissemination campaigns to improve people's awareness of flood prevention by all available means, including television, radio, the Internet, books and training courses. These are implemented at the same time to ensure that the information reaches the maximum number of people.

In conclusion

The inhabitants of the area adjoining the Red River have a long history of struggling against floods. Various methods have been implemented in the struggle to protect human lives and property. Actions nowadays focus on flood control measures covering severely flood-prone areas, especially priority regions like Hanoi, the development of a legal framework for disaster mitigation and prevention, and a combination of structural and non-structural methods to achieve maximum efficiency.

In the process of struggling against floods, co-operation with international partners has a special meaning. A large number of project have been implemented, mainly focused on upgrading the river dyke and sea dyke systems, improving people's awareness of and preparedness for disaster mitigation and developing a legal framework for disaster prevention. Through such projects, we have learned many valuable lessons on disaster (especially flood) reduction that are applicable in the case of Vietnam.

-Contact Details
Dang Quang Tinh,
Director of Department of Dike Management and Flood Control
Email: pclbtw@fpt.vn Tel: (84-4-733 5698) Fax: (84-4-733 5701)

Nguyen Sy Nuoi,
Deputy Director of Department of Dike Management and Flood Control
Email: pclbtw@fpt.vn Tel: (84-4-733 5687) Fax: (84-4-733 5701)

Nguyen Thanh Phuong,
Specialist of Department of Dike Management and Flood Control
Email: phuongng@fpt.vn Tel: (84-4-733 5695) Fax: (84-4-733 5701)