



# Planting protection

**Evaluation of community-based mangrove reforestation and disaster preparedness programme, 2006 - 2010**



International Federation  
of Red Cross and Red Crescent Societies

# Planting protection

## Evaluation of community-based mangrove reforestation and disaster preparedness programme, 2006 – 2010

This evaluation analyzes the appropriateness, relevance, efficiency, effectiveness, coverage and sustainability of the most recent phase of the Viet Nam Red Cross programme in eight northern provinces. It finds that the programme has achieved mixed results: on the one hand, the planting of mangroves, bamboo and casuarina trees has brought added protection for dykes and coastal communities. On the other hand, the programme suffered from several in-built awareness raising; its weak oversight is a chief reason for its failure to reach many targets. The sustainability of key achievements is not enabled; in order to enhance the outlook for sustainability, adjustments and fixes need to be facilitated. The report concludes that an interim planning and rectification phase should be supported before further direct interventions are started.

### See also:

Evaluation Report A | **Breaking the waves.**

### Impact analysis of coastal afforestation for disaster risk reduction in Viet Nam

The evaluation was conducted between January 5th and 25th and involved a field trip to six out of the eight provinces covered by the programme. The team consisted of Patrick Bolte (Team leader, Germany), Floyd Barnaby (DRR analyst, Malaysia), M. Fitri Rahmadana (Cost-benefit analyst, Indonesia) and Nguyen Thi Kim Cuc (Mangrove analyst, Viet Nam) and was supported by several drivers and interpreters. Dang Thi Khanh Linh gave invaluable logistical and administrative support.

### Acknowledgements

The evaluators wish to express their gratitude to all interview partners for their openness, to the visited chapters, branches and communes for their hospitality, and to all chapters for their feedback on preliminary findings. We would also like to thank Mr Phi Ho Anh Tuan for finding the time to join us throughout the entire field trip and providing valuable insights, the IFRC team in Viet Nam for all administrative agreements, Frederic Zanetta of the IFRC Secretariat for the preparation of the map with programme locations.

### © International Federation of Red Cross and Red Crescent Societies, Geneva, 2011

Copies of all or part of this study may be made for noncommercial use, providing the source is acknowledged. The IFRC would appreciate receiving details of its use. Requests for commercial reproduction should be directed to the IFRC at [secretariat@ifrc.org](mailto:secretariat@ifrc.org).

The opinions and recommendations expressed in this study do not necessarily represent the official policy of the IFRC or of individual National Societies. The designations and maps used do not imply the expression of any opinion on the part of the International Federation or National Societies concerning the legal status of a territory or of its authorities. All photos used in this study are copyright of the IFRC unless otherwise indicated.

Cover photo: Viet Nam Red Cross

P.O. Box 372  
CH-1211 Geneva 19  
Switzerland  
Telephone: +41 22 730 4222  
Telefax: +41 22 733 0395  
E-mail: [secretariat@ifrc.org](mailto:secretariat@ifrc.org)  
Website: <http://www.ifrc.org>

# TABLE OF CONTENTS

<b>List of abbreviations</b>	<b>1</b>
<b>Executive summary</b>	<b>2</b>
<b>Introduction</b>	<b>4</b>
<b>Part one. Background</b>	
1. Project history and overview	6
1.1. The overall programme 1994-2010	6
1.2. Programme overview 2006-2010	9
2. Evaluation objectives	11
3. Evaluation methodology	13
<b>Part two. Analysis and findings</b>	
4. Relevance and appropriateness	17
5. Efficiency	21
6. Effectiveness	23
7. Coverage	26
8. Sustainability	28
<b>Part three. Case studies</b>	
9. An Hoa   Vinh Bao district, Hai Phong City	33
10. Nghia Dong   Nghia Hung district, Nam Dinh Province	35
11. Khanh Tien   Yen Khanh district, Ninh Binh Province	37
12. Hung Nhan   Hung Nguyen district, Nghe An Province	39
13. Xuan Giang   Nghi Xuan district, Ha Tinh Province	41
<b>Part four. Implications</b>	
14. Recommendations	43
15. Conclusion	48
<b>Appendix</b>	
A. Bibliography	50
B. Maps of planting activities by province 1994-2010	51
C. Key figures	55
D. Household survey	56
E. Overview of planting activities	60
F. Project expenditures	60
G. DP Planning training courses 2006-2010	63



# LIST OF ABBREVIATIONS

<b>ActMang</b>	Action for Mangroves
<b>CBDRR</b>	Community based disaster risk reduction
<b>CBDRM</b>	Community based disaster risk management
<b>CBMR/DPP</b>	Community based Mangrove Reforestation and Disaster Preparedness Programme
<b>CCA</b>	Climate Change Adaptation
<b>CCFSC</b>	Central Committee for Storm and Flood Control
<b>CCM</b>	Climate Change Mitigation
<b>DANIDA</b>	Danish International Development Agency
<b>DARD</b>	Department of Agriculture and Rural Development (provincial level)
<b>DET</b>	Department of Education and Training
<b>DIPECHO</b>	Disaster Preparedness Programme of the European Commission Humanitarian Aid & Civil Protection Office (ECHO)
<b>DP</b>	Disaster preparedness
<b>DRC</b>	Danish Red Cross
<b>DRM</b>	Disaster risk management
<b>DRR</b>	Disaster risk reduction
<b>GHG</b>	Greenhouse gases
<b>ha</b>	Hectare
<b>HQ</b>	Headquarters
<b>HVCA</b>	Hazard, Vulnerability and Capacity Assessment
<b>IFRC</b>	International Federation of Red Cross and Red Crescent Societies
<b>IUCN</b>	International Union for the Conservation of Nature
<b>JRC</b>	Japanese Red Cross
<b>MARD</b>	Ministry of Agriculture and Rural Development
<b>MERC/MERD</b>	Mangrove Ecosystem Research Centre/Division
<b>Mio</b>	Million
<b>MoNRE</b>	Ministry of National Resources and the Environment
<b>NGO</b>	Non governmental organization
<b>PC</b>	People's Committee
<b>PNS</b>	Participating National Society
<b>SPSS</b>	Statistical Package for Social Sciences
<b>ToR</b>	Terms of Reference
<b>VCA</b>	Vulnerability and Capacity Assessment
<b>VND</b>	Viet Nam Dong
<b>VNRC</b>	Viet Nam Red Cross
<b>VNU</b>	Viet Nam National University
<b>UNDP</b>	United Nations Development Program
<b>USD</b>	US Dollar

# EXECUTIVE SUMMARY

This report provides findings, analysis and recommendation related to Phase III (2006-2010) of a programme that started in 1994 at the initiative of the Thai Binh chapter. Throughout its lifetime, the “community-based mangrove reforestation and disaster preparedness programme” has been implemented by Viet Nam Red Cross with the support of Danish Red Cross (DRC), the International Federation of Red Cross and Red Crescent Societies (IFRC) and Japanese Red Cross (JRC). Overall, USD 8.88 Mio were spent on tree plantation, disaster preparedness and awareness-raising in 300 communes. Around 8,961 ha of mangroves exist today as a result - 23.8% of all mangrove forests in the programme provinces.

Between 2006 and 2010 (IFRC/JRC Phase Three), USD 1.78 Mio were spent on 222 communes. VNRC added mangrove trees in mangrove forests established in earlier phases and expanded its planting of bamboo along river dykes and casuarinas along coastal and river bank stretches. The aim of the planting component was to better protect dykes and communities from hazards such as typhoons, storms and floods, as well as to provide additional income to poor community members. Teachers and students as well as local leaders were also taught how to better prepare themselves for disasters. Furthermore, community awareness towards preparedness and the protective function of trees was raised.

Regarding the *relevance and appropriateness* of the programme, the report finds that the objectives were consistent with government priorities and that they were highly relevant to the needs of coastal communes. It also recognizes that inputs from other stakeholders were considered appropriately, however, it finds that needs were assessed in most cases not by asking beneficiaries directly, but rather the leaders of communes and various organizations. Concerning the appropriateness of the programme design, this is found to be appropriate to reach its immediate objectives, but hamstrung by three shortcomings: The narrow focus on plantation left out high-risk communes in which no trees could be planted and sometimes led to interventions that were not the most appropriate or effective. The level of capacity-building built into the concept is seen as insufficient. The lack of an exit strategy in the design is also identified, which has ramifications described further below.

Related to *efficiency*, the report identifies that most activities were implemented cost-efficiently: the cost for one hectare of existing mangroves for instance stands at only USD 777, which is significantly cheaper than in similar projects conducted by the government. Efficiency was built into the programme through its basis in community work, an emphasis on awareness and proper site selection.

Concerning *effectiveness*, the report notes that significantly less tree areas were planted than had been targeted. The protective effect of the planted trees is distinguished between mangroves, bamboo and casuarina. As mangrove planting throughout Phase III was limited to re-planting and gap-filling, no sensible separation between older and younger trees is feasible - mangroves are therefore analyzed only as part of long-term impact report (Report A). Bamboo is shown as having a positive effect on river dyke protection - where multiple lines of bamboo are planted, the need for dyke repairs is almost eliminated. Furthermore, bamboo has also slowed down the speed of soil erosion. Casuarina planted in Phase III was only visited in river communes, in which the demonstrable effect on protection is seen to be marginal at best.

**8,885,000**

Total programme expenditures (in US Dollar, at original value) 1994 – 2010

**8,961**

Number of hectares of mangroves that exist today as a result of the programme

**1,780,000**

Total expenditures 2006 – 2010 in US Dollar

**777**

Costs in US Dollar at original value to create one hectare of existing mangroves

**500%**

An increase in per hectare income from mangrove over an empty mudflat

A positive effect on income is also established - based on household survey results, per hectare income from mangroves is shown to increase by 500% over an empty mudflat. The programme target of VND 15 Mio per planter household and year was not only reached but exceeded. Meanwhile, the targeted income of VND 30 Mio per ha from bamboo was only reached in very few cases (the average is VND 16.47 Mio). The small acreage planters hold (0.2 ha) means income potential is marginal. Most bamboo planters however were not poor in the first place but rather selected for their land-use rights to plantable areas. The disaster preparedness components are seen as highly effective; most communes now develop annual disaster plans before each typhoon season.

A key challenge concerning effectiveness is identified in the weakness of the program management setup. Having too few management resources for this large-scale programme across eight provinces, the activities were insufficiently monitored, and little guidance was provided to chapters.

**125,000**

Number of direct beneficiaries of the programme 2006 – 2010

Between 2006 and 2010, the programme covered 200 communes through its disaster preparedness components; in 62 of them planting activities were also implemented. It included 8,000 planters and reached 125,000 beneficiaries. The selection of communes and sites is found to be improved compared to the selection process during earlier phases - however, the availability of plantable land remains a key factor as to whether a commune is chosen or not.

Major external challenges are identified in relation to *sustainability* - in sum, they pose a strong argument for the development of a sustainability or exit strategy.

Four strategic recommendations are made, all of them supported by technical suggestions. They concern the improvement of programme management set-up, the above mentioned development of an exit strategy, and two shifts in focus - on the one hand, away from planting to plant protection and care, on the other hand towards a more general view towards risk management in coastal communes. Future phases shall include additional tools for risk reduction to ensure that high-risk communes without plantable land can also be addressed.

# INTRODUCTION

---

Planting mangroves is everything but an archetypical Red Cross activity. Yet, the mangrove reforestation programme that started at the initiative of a chapter of the Viet Nam Red Cross (VNRC) in 1994 has evolved into a broad scheme to protect dykes and coastal communities from typhoons and floods, stretching across eight coastal provinces in Northern Viet Nam. Complementing the planting activities, the programme also incorporated several aspects geared to enhance the disaster preparedness of communities. In the set-up and implementation of the programme, VNRC was supported by Danish Red Cross (DRC), the International Federation of Red Cross and Red Crescent Societies (IFRC) and Japanese Red Cross (JRC).

The 2011 evaluation of this programme consists of two components: The *first* component focusses on the impact of the overall programme (see *Report A: Breaking the Waves*). It includes a cost-benefit analysis and highlights lessons learnt during implementation. As mangrove reforestation is becoming an attractive tool in the context of both climate change adaptation (CCA) and climate change mitigation (CCM), the findings are of significance to future programming in several country settings.

The *second* component of the evaluation gives particular attention to the most recent programme phase (2006-2010). It analyses achievements, identifies challenges, and provides recommendations for possible future extensions. This is the subject matter of this report.

This report consists of four parts: part one gives an overview of the project history (chapter 1), presents the evaluation's objectives (chapter 2) and explains the methodology applied (chapter 3). Readers of both reports should note that chapter 1 is identical with chapter 1 of its sister publication.

Part two includes the analysis and findings of the evaluation team, structured along the main items given in the terms of reference: relevance and appropriateness (chapter 4), effectiveness (chapter 5), efficiency (chapter 6), coverage (chapter 7) and lastly, the issue of sustainability (chapter 8).

Part three illustrates findings through five case studies: An Hoa | Vinh Bao District, Hai Phong City (chapter 9), Nghia Dong | Nghia Hung District, Nam Dinh Province (chapter 10), Khanh Tien | Yen Khanh District, Ninh Binh Province (chapter 11), Hung Nhan | Hung Nguyen District, Nghe An Province (chapter 12) and Xuan Giang | Nghi Xuan District, Ha Tinh Province (chapter 13). All findings are numbered and cross-referenced to respective recommendations.

The final part four presents the implications of the findings. It lists recommendations for future implementation (chapter 14) and closes with concluding remarks (chapter 15).



PART ONE.  
**BACKGROUND**





## 1. PROGRAMME HISTORY AND OVERVIEW

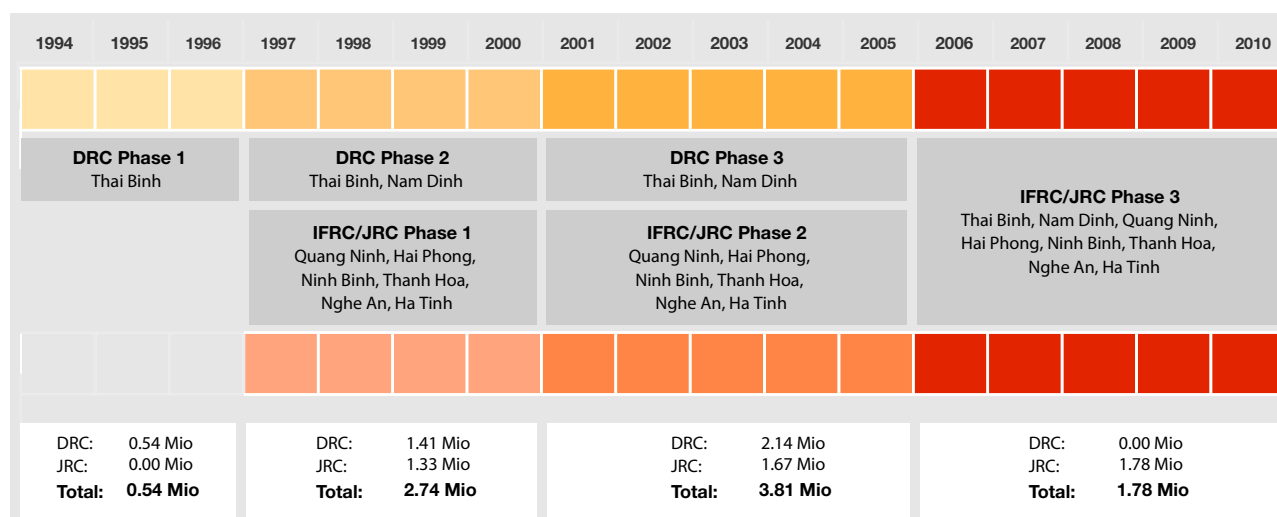


Figure 1: Programme timeline, showing the different phases, respective programme areas and budget volumes at original USD values. Source: Own calculation based on available financial data. For 1994-97, 1999 and 2002 approximations were used

### 1.1. The overall programme 1994-2010

Mangrove trees and shrubs are unique in that they have adapted to the salinity of seawater. Typically growing in the mudflats of deltas that contain organic matter and that are inundated with each high tide (intertidal zones), mangroves perform several ecological functions: amongst others, they provide nutrients for oysters, shrimps and fish that live in the surrounding brackish waters, serve as a habitat for bird life, and convert carbon dioxide into oxygen. In doing so, they store accumulated carbon and thus contribute to the mitigation of climate change. By decreasing the speed of water flows, they also accelerate the sedimentation process and limit the height of waves that meet dykes.

#### Mangroves in Viet Nam

Mangrove forests form an integral part of the native ecosystem of coastal Viet Nam. In the country's north, the Red River delta in particular had always been home to an extensive mangrove ecosystem. It was only since the 1960s that mangrove forests were cut down to give way for economic activities. This process of destruction was accelerated in the wake of Doi Moi, the economic liberalization paradigm announced by the government in 1986: more and more individual entrepreneurs and companies began to establish shrimp farms where mangroves had thus far existed. By the early 1990s, extensive mudflat areas were either vacant or filled with active or abandoned shrimp farms (usually, these farms return a high yield only in the first 3-4 years but then experience decreased output as pollution takes its toll).

#### 1994: Reforestation begins

Mangrove reforestation had been attempted by the government's Ministry for Agriculture and Rural Development (MARD) as early as the 1960s. However, without much research into effective planting and protection schemes, the success of this scheme was low as survival rates averaged only 25%. In 1993, the Thai Binh chapter proposed to give reforestation another try: realizing the importance of mangrove forests for both marine life and the protection of dykes, the chapter suggested to launch Red Cross programme to re-establish mangroves on deserted mudflats. Danish Red Cross (DRC) took up

#### Key figures 1994 - 2010

**Expenditures (Mio USD)** 8.88

**Beneficiaries** 350,000

**Involved chapters:** 8

**Involved communes:**  
- planting 167  
- overall 300

**Planting input**  
(in ha, incl. gap-filling, replanting)  
- Mangroves 23,410  
- Bamboo 134  
- Casuarina 600

**Planting output**  
(in ha, forests existing today)  
- Mangroves 8,961  
- Bamboo 104  
- Casuarina 398

the idea and launched an ecological protection programme in Thai Binh in 1994. First attempts of replanting suffered high losses due to low survival rates of the young plants. As the former DRC Delegate in charge, Jorgen Kristensen explains, "We didn't have a clue about mangroves". So the expertise of a research body affiliated with the Viet Nam National University (VNU) was brought in to provide technical advice. By the end of 1996, this co-operation began to show encouraging outcomes, as a higher share of young plants survived.

#### **1997: Reforestation efforts expanded**

In 1997, the chairman of Thai Binh chapter became the Director of VNRC's social welfare department. Given the encouraging experiences made in his province, he suggested widening the programme. DRC agreed to extend and expand coverage to Thai Binh's southern neighbour Nam Dinh, while Japanese Red Cross (JRC) went ahead to fund the extension to Quang Ninh, Hai Phong, Ninh Binh, Thanh Hoa, Nghe An and Ha Tinh. JRC decided to take the role of a donor and left implementation support to IFRC. Between 1997 and 2000, the DRC and IFRC/JRC programmes were run independently from each other: each programme had its own programme management board, and management styles, objectives and mindsets differed significantly. DRC had begun to invest in capacity-building - both of the Red Cross and the research body mentioned above (Mangrove Ecosystems Research Centre, MERC). DRC staff spent considerable time in the field ("up to 15 days a month", *Interview Kristensen*), established a rigid reporting system, and had a transparent but "hands on" approach (*Interview Ky*). The considerable funds (USD 1.41 Mio) acquired from Danida (Danish International Development Agency) enabled DRC and VNRC to implement a holistic and well-resourced programme. Meanwhile, the IFRC/JRC programme had to spread similar resources (USD 1.33 Mio) across six provinces. The extent of capacity-building was limited to the minimum required to effectively implement the programme, and the approach was generally "hands off" - leaving most decision-making and implementation to VNRC (*Interview Ky*).

#### **2001: Focus broadened**

An external evaluation of the programmes in 2000 (*See Macintosh 2000*) suggested that both programmes be integrated into one - subsequently, the two Programme Management Boards at VNRC HQ were merged, and implementation plans were consolidated between the programmes. However, the essential approaches remained different in the level of support given to each province. To some extent, the IFRC/JRC programme now followed DRC in that it started to give more training to Red Cross staff and volunteers in disaster preparedness and vulnerability and capacity assessments (VCA). From 2002 onwards, the programmes also included communes not directly located at sea-dykes: Attempts were made to better protect river dykes from flood-induced erosion by planting bamboo trees on the usually thin stretch between river and dykes. Plantation of casuarina (and later eucalyptus) trees was also added, either as an additional wind-breaker in mangrove communes or as a way to protect those communes from wind and erosion in which mangrove plantation was not feasible.

Aside from this broadened plantation focus, the programmes now also took up more activities not directly linked to planting: First, a large-scale "disaster preparedness in schools" component was introduced that has remained part of the programme ever since. Second, Red Cross staff and PeopleCommittee leaders were trained

in disaster preparedness tools and planning. Danish Red Cross went even further and took a much more comprehensive approach to disaster risk reduction: following sound risk assessments conducted by the Thai Binh and Nam Dinh chapters, it based its programming on these assessment findings. Between 2001 and 2005, it therefore included a wide array of tools, including micro-finance, water and sanitation, and even re-settlement of a particularly vulnerable community (in Hai Ly, Nam Dinh).



Figure 2: Map of programme locations. Areas marked red indicate communes in which planting activities were implemented. See appendix B for detailed maps of each province.

	1994 - 1996	1997 - 2000	2001 - 2005	2006 - 2010
VNRC/ DRC	<ul style="list-style-type: none"> <li>• plantation of mangroves</li> <li>• limited capacity-building</li> </ul>	<ul style="list-style-type: none"> <li>• plantation of mangroves</li> <li>• strong capacity-building</li> </ul>	<ul style="list-style-type: none"> <li>• plantation of mangroves, bamboo, casuarina</li> <li>• broad risk assessment</li> <li>• holistic approach in selected communes</li> <li>• strong capacity-building</li> </ul>	n.a.
VNRC/ IFRC/ JRC	n.a.	<ul style="list-style-type: none"> <li>• plantation of mangroves</li> <li>• limited capacity-building</li> </ul>	<ul style="list-style-type: none"> <li>• plantation of mangroves, bamboo, casuarina</li> <li>• broad risk assessment</li> <li>• limited approach to risks</li> <li>• moderate capacitybuilding</li> </ul>	<ul style="list-style-type: none"> <li>• plantation of bamboo, mangroves, casuarina</li> <li>• broad risk assessment</li> <li>• limited approach to risks</li> <li>• moderate capacitybuilding</li> </ul>

Figure 3 : Overview of main focus of the programme during its phases. The information provided here are based on interviews with key persons involved in the programme (IFRC, DRC, VNRC HQ and chapters) and previous evaluation reports. They serve for comparison only to show trends and differences in approaches. For more information, refer to the main text body.

**2006-2010: Continuation with just one donor**

Given that the Viet Nam government was to formally protect mangroves (which it did in 2006) and pay for their maintenance (currently VND 150,000 or USD 7.50 per hectare and year), DRC ended its support to VNRC by the end of 2005. IFRC/JRC initially planned to continue only in its regular six provinces, but added the former DRC-supported provinces in 2007 in response to their respective requests.

**Program scale**

Throughout the 17 years of its existence, around USD 8.88 Mio were

<b>Key figures 2006 - 2010</b>	
<b>Expenditures</b> (Mio USD)	1.78
<b>Beneficiaries</b>	125,000
<b>Involved chapters:</b>	8
<b>Involved communes:</b>	
- planting	62
- overall	222
<b>Input</b> (in ha, incl. gap-filling, replanting)	
- Mangroves	971
- Bamboo	72
- Casuarina	234

spent on the programme (accumulated annual figures, un-annualised). Planters from 110 coastal communes planted and took care of mangroves along the sea-dykes, while planters from another 56 communes along river lines planted bamboo. Overall, around 300 communes were reached through the 'DP in schools' and 'DP for leaders' components. Around 30,000 households were involved in planting activities, and the programme reached 350,000 beneficiaries throughout its existence. The mangroves existing today as a result of the programme cover more than 8,961 ha, representing 4.27% of all existing mangroves in Viet Nam today and 23.80% of mangroves in the eight programme provinces (Hawkins 2010:4).

## 1.2. The programme in 2006-2010

Programme implementation in 2006-2010 continued roughly along the lines of the IFRC/JRC approach of the previous years (see figure 3). However, mangrove planting was now limited to gap-filling and diversification - bamboo and casuarina were the main focus. The programme outline was structured along five specific objectives (see figure 4), and with a budget volume of USD 1.78 Mio, around 125,000 beneficiaries in 222 communes were supported.

The programme essentially consisted of three components: tree plantation, disaster preparedness and awareness-raising. Tree plantation concerned mangrove gap-filling across all provinces, bamboo planting along river dykes (with a focus on Hai Phong and Thai Binh) and casuarina tree planting along coast lines and river communities (particularly in Nghe An and Ha Tinh). Overall, 62 communes were involved in this component. The disaster preparedness component included the training of teachers and students, communal leaders and local Red Cross staff. The awareness-raising component focussed both on the practicable tools that families could use to better prepare themselves for natural hazards and on the importance of mangrove protection to sustain their protective effect.

### 2010 and beyond

There is a strong willingness amongst VNRC and its chapters to continue with the programme, and all chapters have already prepared plans for the future, centered around further planting activities. Japanese Red Cross has indicated that limited funds are available for such an extension. One of the purposes of this evaluation is therefore to provide recommendations on whether and how the programme should be extended. The team's recommendations in this regard are listed in part four.

Figure 4: Programme objectives 2006-2010 as mentioned in the project proposal

#### Principal aim

The vulnerability and suffering of the coastal communities caused by typhoons and storms are reduced in accordance with the fundamental principles of the Red Cross movement

#### Objective 1

Completing the planting of mangroves and other plants like casuarinas and bamboo along the coastline of the six provinces of Quang Ninh, Hai Phong, Ninh Binh, Thanh Hoa, Nghe An and Ha Tinh.

#### Objective 2

"The income of the poor particularly women in the coast is increased, their life is stabilized, that contributes to the Red Cross humanitarian funds at grassroots levels through the planting and protection of mangroves and other protection trees, selling of bamboo shoots, shrimp farming, honeybee raising etc".



**Objective 3**

"The RC chapters are strengthened to enable them to prepare and implement DP planning at provincial, district and commune levels, in which mangrove forest protection is a central component. Awareness of the DP Programme of the VNRC is enhanced and the implementation of the community based mangrove reforestation programme is improved".

**Objective 4**

Strengthen the dissemination on mangrove and VNRC activities in public media.

**Objective 5**

VNRC actively participate in the national and international Disaster Preparedness activities.

**What was planted, and how**

***Kandelia candel*** is the mangrove type most commonly planted as part of the programme. These plants grow to a height of three metres, are mature after about five years and grow around 35 years old. They feature propagules - ready-to-go seedlings that can be picked from any mature tree and planted without a need for costly purchases from nurseries. ***K. candel*** were planted with distances of 50 - 70 cm between them and form the backbone of the mangrove forests planted by the Red Cross. 11,515 ha of ***K. candel*** were planted by the programme, 465 ha of which in 2006-2010. These figures include re-planting and gapfilling and thus do not represent the actual area planted with them. Young ***K. candel*** are particularly susceptible to be affected or destroyed by barnacles, strong waves and pollution. After initial difficulties, survival rates for ***K. candel*** averaged at around 60%.

***Sonneratia caseolaris*** are much higher and typically grow to 7-11m in height. In most cases, ***S. caseolaris*** were interplanted between ***K. candel*** at distances of 3 m. ***S. caseolaris*** need to be purchased from nurseries; planting them is therefore more costly than ***K. candel***. However, their greater height means that they can not only break particularly high waves but also wind. They are at particular threat from extended cold periods; 100 ha of ***S. caseolaris*** died in Ninh Binh in the winter of 2008. Similar damage is expected from the recent cold in January 2011. Overall, 5,300 ha of ***S. caseolaris*** were planted through the programme (506 ha of which were planted in 2006-2010).

***Rhizophora stylosa*** feature particularly strong roots; their propagules can be collected but usually need to be cared for in nurseries before they can be planted on mudflats. ***R. stylosa*** were planted to further diversify mangrove forests. 6,450 ha of ***R. stylosa*** were planted by the programme (none of which were planted in 2006-2010).

***Avicennia marina*** is the third species used to interplant between ***K. candel***. These plants were used sparsely and only in the JRC/IFRC-supported provinces between 2002 and 2005 (total of 152 ha).

***Casuarina*** trees are relatively fast-growing plants that can reach heights of up to 35 m. Their high and slender appearance and high resilience to strong winds make them an ideal wind-breaker. ***Casuarina*** trees were planted mostly in areas unsuitable for mangroves, especially along coastal stretches of Nghe An and Ha Tinh. Their strong roots make them also a useful tool to reduce soil erosion. In some places, eucalyptus trees were interplanted with ***Casuarina***. Overall, 600 ha of ***Casuarina*** and eucalyptus trees were planted (234 ha of which were planted in 2006-2010).

***Bamboo*** trees were planted from 2002 onwards along stretches between river banks and dykes. On the one hand, bamboo was planted to slow water flow during floods and thus protect dykes and agricultural fields and reduce soil erosion. The Red Cross followed and complemented bamboo planting by DARD, which has been planting bamboos in single lines directly in front of river dykes for more than a decade. On the other hand, bamboo trees can bring high yield from the sale of bamboo shoots and its wood - they have therefore a secondary function for income-generation. Planters however need to wait for at least three full years before they can begin harvesting. The Red Cross highlighted the agricultural function of bamboo by selecting a fast-growing, high-yield species which proved however less resilient than the type chosen by DARD. Overall, 134 ha of bamboo were planted (72 ha of which were planted between 2006 and 2010).



## 2. EVALUATION OBJECTIVES

The programme has been evaluated at least three times - in 2000, 2003 and most recently in 2005. A planned mid-term evaluation for the 2006-2010 period was cancelled. As described in the introduction, this evaluation covers the period 2006-2010 on the one hand and the overall programme period on the other (1994 - 2010). Three specific objectives of this evaluation are laid out below:

- (1) **To assess the performance and progress achieved (outputs) with respect to the objectives of the Community based Mangrove/Disaster Preparedness Programme Phase 3 (2006-2010).**
- (2) **To assess the long term impact (outcomes) of the programme in the communities. It will assess the extent to which the programme has contributed to building more sustainable safety and resilience among the targeted communities during the period 1994-2010.**
- (3) **To analyse the return on investments for both outputs and outcomes through a cost-benefit analysis, aiming to strengthen the cost efficiency of on-going and future programming by providing evidence-based lessons.**

Related to the period 2006-2010, which is covered by this report (*for the overall period, see report A Breaking the Waves*), the ToR further specify that the evaluation is to measure a) relevance and appropriateness, b) efficiency, c) effectiveness and d) coverage. Each issue is specified further:

### **Relevance & Appropriateness**

The evaluation will focus on the extent to which the CBMR/DPP objectives were suited to the priorities of the addressed target group (local population) and the needs of the donor. It will also consider if other approaches may have been better suited to address the identified needs.

### **Efficiency**

A cost benefits approach to efficiency will be used to measure the extent to which CBMR/DPP's results have been delivered in the least costly manner possible. Evaluation will measure whether the results justified the cost, and if alternative approaches to achieving the same results could have been adopted.

### **Effectiveness**

Effectiveness of the phase three will measure the extent to which it has achieved its intended results. This will take into account the CBMR/DPP's objectives and related indicators. Measure of effectiveness will also include identification of key lessons to inform future CBDRR programmes.

### **Coverage**

Given that the CBMR/DPP was targeted to reduce disaster risk at the community level, an evaluation of coverage will also be conducted to identify how the districts and communes were selected and if this meets the stated objectives of the programme.

Finally, a set of key questions were given for each issue to guide the evaluation process further. Aside from the four issues listed in the ToR, the evaluation team also decided to include the issue of sustainability in this report, as it is seen as pivotal to the measurement of the programme's long-term success.



Better protection of dykes and communities is a success of this programme.

---

#### Key informant interviews

**Phi Ho Anh Tuan**  
VNRC Programme officer, '97-'11

**Nguyen Thanh Ky**  
VNRC, Director Internat. Dep., '92-'02

**Dang Van Tao**  
IFRC, Programme manager '97-'11

**Bhupinder Tomar**  
IFRC, Head of Delegation, '09-'11

**Jorgen Kristensen**  
DRC, Delegate '94-'05

**Le Thi Van Anh**  
DRC, Programme officer '01-'05

**Phan Hong Anh**  
MERD

**Dang Quang Minh,  
Bui Quang Huy,  
Nguyen Thi Hoa**  
MARD

**Ian Wilderspin**  
UNDP

---

### 3. EVALUATION METHODOLOGY

---

The evaluation process essentially consists of three steps: preparation, data collection, and data analysis. Preparation for this evaluation began in mid-December as soon as key documents (such as previous evaluation reports, project proposals, logframes) were submitted to the evaluation team for review. Based on this information and the objectives listed in the ToR, a research design was developed to carry out the task in a realistic, efficient, timely, sound and valid manner. A combination of quantitative and qualitative methods was selected: On the qualitative side, key informant interviews, focus group discussions and site visits were chosen. On the quantitative side, a household survey would form the backbone of the research. Additional key documents were also reviewed that had not been initially available.

#### Preparation

Two key issues in the preparation phase concerned sampling and questionnaires. For sampling of provinces that would be visited, the evaluation team generally followed the IFRC recommendation (to visit Hai Phong, Nam Dinh, Ninh Binh, Nghe An and Ha Tinh) but added Thai Binh due to its crucial role as the programme initiator. Communes were selected in such a way that the sample would include both those that had been involved for at least ten years (for the impact evaluation) as well as those that joined the programme during the past five years (for the Phase 3 evaluation). A further consideration was that all types of plantation (mangrove, bamboo, casuarina) had to be reflected by the sample.

More than half of the visited communes were independently selected by the evaluation team, while the remainder was chosen by respective chapters. The sample of locations also included several non-programme communes as control groups. The sampling of respondents for the household survey followed a formula according to which 50% of respondents were to be planters in programme communes, 25% non-planters from programme communes, and 25% control group respondents. The original sample target size of 600 was reduced to 360, as 600 proved to be unfeasible within the given timeframe. Thus, on average the sample target size per province amounted to 60. The second key issue during the preparation phase concerned the questionnaire (*see appendix D*). This covered a set of 40 questions (most of them multiple-choice). The original questionnaire had been longer and was adapted after the first day of surveying. The questionnaire covered issues such as beneficiary selection, training, awareness and perceived outcomes. For focus group discussions, a set of core questions was selected. To obtain quantitative data efficiently, chapters, districts and communes were also requested to fill out a brief questionnaire prior to the actual field visit.

#### Data collection

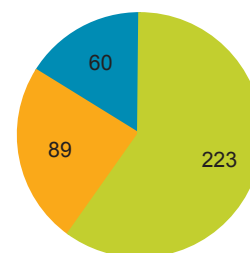
Gathering of primary data consisted of key informant interviews and the field trip to the six provinces outlined above. Key informant interviews were conducted with individuals who have been closely involved with the programme and/or who could supply additional information on government policy (*see list on the left*). Some of these interviews proved vital to capture the full history of the programme. The visits to each province started off with focus group discussion with chapter staff and government departments involved in the programme (DARD, DET and CCFSC). Whenever government staff were present, these were



interviewed first in order to allow them attend other business and to enable a more open discussion with chapter staff. Following province-level meetings, the team would then be accompanied by chapter staff to individual communes.

A typical commune visit started off with a focus group discussion amongst Red Cross staff and People's Commune representatives, followed by site visits of planted areas and concluded with household survey interviews. Whenever feasible, the team split in two groups to capture data more efficiently. Household survey interviews were conducted by all Vietnamese-speaking team members, in most cases in the absence of Red Cross staff. It should be noted however that planters were gathered by the communal Red Cross branches. Non-planters were visited individually in their house or place of work. Care was taken to ensure that non-planters came from areas within the communes that were in close proximity to the coastline or river bank and were thus exposed to hazards to a similar extent as planters (who are always based close to planted areas). Furthermore, a deliberate attempt was made to facilitate a gender balance amongst respondents. Overall, the household survey exceeded its target of 360 and included 372 respondents (see chart). However, the 25% target of control group respondents could not be reached. This is because plantation in suitable areas (where conditions are sufficiently similar to planted areas) is close to complete: for mangroves, there are hardly any deserted mudflats left. While this fact indicates a successful coverage of the programme, it posed a methodological challenge for horizontal comparisons planned for the impact evaluation.

- Project commune, planters
- Project commune, non-planters
- Control commune



Distribution of household survey respondents (N=372)

Chapter Commune (district)	Function for evaluation	Timeframe of main intervention	Number of survey respondents		
			Male	Female	Total
Hai Phong			27	19	46
An Hoa (Vinh Bao)	Bamboo/river bank	2007	1	3	4
Quyet Tien (Tien Lang)	Bamboo/river bank	2007	1	1	2
Dai Hop (Kien Thuy)	Mangrove/sea coast	1999-2005	8	9	17
Quang Hung (An Lao)	Bamboo/river bank	2004-2010	4	2	6
Tan Thanh (Kien Thuy)	Mangrove/sea coast	1997-2005	11	3	14
Thai Binh			49	12	61
Thai Do (Thai Thuy)	Mangrove/sea coast	1994-2005	10	4	14
Nam Thinh (Tien Hai)	Mangrove/sea coast	1997-2005	17	2	19
Viet Hung (Vu Thu)	Bamboo/river bank	2007	22	6	28
Nam Dinh			26	26	52
Giao An (Giao Thuy)	Mangrove/sea coast	1997-2005	10	8	18
Giao Hai (Giao Thuy)	Control/sea coast	n.a.	6	10	16
Hai Ly (Hai Hau)	Resettlement, etc	2002-2005	n.a. (qualitative interviews only)		
Nghia Dong (Nghia Hung)	Bamboo/river bank	2006-2010	10	8	18
Ninh Binh			32	39	71
Khanh Tien (Yen Khanh)	Bamboo/river bank	2007	Focus group discussion only		
Kim Trung (Kim Son)	Mangrove/sea coast	1997-2010	8	11	19
Kim My (Kim Son)	Mangrove/sea coast	1997-2010	8	10	18
Kim Hai (Kim Son)	Mangrove/sea coast	1997-2010	10	9	19
Binh Minh (Kim Son)	Mangrove/sea coast	1997-2005	Focus group discussion only		
Kim Dong (Kim Son)	Mangrove/sea coast	1997-2010	6	9	15

Chapter Commune (district)	Function for evaluation	Timeframe of main intervention	Number of survey respondents		
			Male	Female	Total
Nghe An			80	19	99
Dien Kim (Dien Chau)	Mangrove/sea coast	1999-2005	15	0	15
Dien Bich (Dien Chau)	Mangrove/sea coast	1999-2005	12	6	18
Dien Ngoc (Dien Chau)	Control/sea coast	n.a.	18	9	27
Hung Nhan (Hung Nguyen)	Bamboo/river bank	2006-2010	19	2	21
Hung Loi (Hung Nguyen)	Control/river bank	n.a.	16	2	18
Ha Tinh			32	11	43
Xuan Giang (Nghi Xuan)	Casuarina/river bank	2007	7	2	9
Thach Tri (Thach Ha)	Casuarina/sea coast	2006-2010	9	7	16
Thach Van (Thach Ha)	Control/sea coast	n.a.	16	2	18
<b>Total</b>			<b>246 (66%)</b>	<b>126 (34%)</b>	<b>372</b>

Figure 5 . Overview of communes visited by the evaluation team

### Data analysis

Quantitative data collected from the household survey were analyzed by the cost-benefit analyst during the trip, using SPSS (Statistical Package for the Social Sciences). Financial data were gathered from DRC and IFRC and compiled into a single format. Qualitative data gathered from focus group discussions and key informant interviews as well as additional remarks made by household survey respondents were recorded in a single entry form with categories for the main issues of this evaluation. In most cases, data from multiple sources were triangulated to add validity. Preliminary findings and recommendations were presented to IFRC, VNRC and the eight chapters during a lessons learnt workshop in Hanoi on January 24th - comments and feedback have been incorporated in this report. The report was produced by the team leader with input and feedback of all team members.

Having provided an overview of the programme history in this part, the evaluation objectives and its methodology applied, it is now time to turn to the findings of this evaluation: What are the achievements of the programme over the past five years, what challenges has it faced?

PART TWO.  
**ANALYSIS AND  
FINDINGS**







## 4. RELEVANCE AND APPROPRIATENESS

The analysis of the programme begins with a focus on the relevance and appropriateness. Was the programme consistent with national strategies? Were the objectives relevant and the programme design appropriate? And to what extent were inputs and needs of stakeholders considered?

### Consistency with national strategy

**[4.1]** The programme was devised consistent with and supportive of government strategies towards mangrove reforestation and disaster risk reduction. Government Decision 661 (1998) on the establishment of the 5 Million hectare programme, the MARD Proposal on the Reforestation and Development of Mangrove Forest (2008) as well as several other government decisions directly relate to the programme (*For a comprehensive overview of laws, regulations and plans relevant to mangrove planting and conservation, see Hawkins 2010:3537*). Several provincial plans, such as the 2020 Agricultural Plan of the Hai Phong provincial government, are also supported.

Regarding disaster risk reduction, the programme contributed to an enhanced government focus on community-based disaster risk management (DRM) - the development of the planned 6,000 communes DRM programme as part of the “national strategy on disaster prevention, response and mitigation up to 2020” is a case in point. The programme also contributes to the implementation of the national strategy, in particular its points D-F concerning capacity-building, training and mitigation (See CCFSC 2008:5): DP planning and DP in schools support the strategy’s components of capacity-building and training (points D and E), while the plantation of mangroves, bamboo and casuarina is seen in support of disaster risk mitigation (point F). Despite these direct links and the positive recognition of the programme by the government, the VNRC programme does not yet enjoy formal or direct financial support by the government.

### Relevance of objectives

**[4.2]** All programme objectives are seen as highly relevant given the high risk that the targeted communes are exposed to from typhoons, floods and storms, and the initially low levels of awareness and knowledge as to how communes could prepare for them and reduce their impact. The livelihood objective remained principally relevant throughout 2006-2010 despite the rapid reduction of poverty that Viet Nam has experienced in the course of its development, as some people do not benefit from this process and are even adversely affected by rising prices. In practice, however, many planters for whom programme activities were designed were not poor to begin with, but rather selected for their land use rights to plantable areas (*see chapters 7 and chapters 9-13 for details*).

### Appropriateness of programme design

**[4.3]** The programme design is based on a collation of proposals made by chapters - VNRC HQ and IFRC compiled individual proposals and added them into an overall framework. The way the design was made is laudable in that it facilitated a high level of local ownership; besides, it is also seen as having been mostly appropriate to reach most of its *immediate* goals. At the same time, some design shortcomings are identified: **[4.4]** *First*, it has been excessively concerned with planting activities rather *than* other forms of direct intervention. The focus on plantation as the chief - if not the only - form of direct intervention led to



the ignorance of other, sometimes arguably more urgent needs such as access to clean water, sanitation and health and improved sustainable livelihood; to the failure to consider more appropriate and effective interventions, to the by-passing of those high-risk communes in which plantable area were unavailable, and to a limited focus in government relations towards planting (see *case studies*).

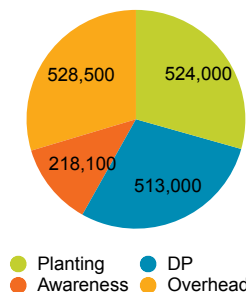
[4.5] The *second* shortcoming concerns capacity-building: while some training and general capacity-building for Red Cross chapters, branches and communes was incorporated into the programme design, it is highly questionable whether these one-off training courses were sufficiently thorough to enable lower-level Red Cross units to conduct assessments, planning, implementation, monitoring and reporting effectively. [4.6] Given that there was a very lean management overhead, continuous support, follow-up and ad-hoc advice was not available to the extent it may have been necessary. [4.7] *Third*, and most crucially, the programme design failed to include any sustainability planning (or from the donor viewpoint, an exit strategy). Not only was this not included in the original design, it was also not built in over time as the phase-out approached (see *also chapter 8*).

Shortcomings concerning the design for actual implementation include [4.8] the lack of technical expertise for bamboo planting, the insufficient monitoring and technical advice for mangroves and [4.9] the insufficiency of protective or maintenance mechanisms for mangroves (see *chapter 6*).

#### **Relation with inputs and needs of key stakeholders**

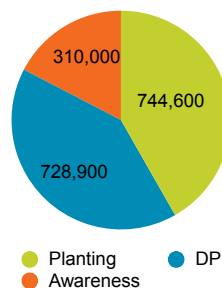
[4.10] Inputs from other stakeholders such as DARD and other organizations such as IUCN, Oxfam, Save the Children and ActMang were generally considered, and there was little overlap except for some double-planting of bamboo along river dykes (although trees planted by the Red Cross beneath DARD trees must be seen as giving additional dyke protection). In 2007, for instance, VNRC ceased operations in one commune of Thanh Hoa to avoid double-handling with Care's efforts. Inputs and needs from beneficiaries were considered to some extent - however, [4.11] more than half of survey respondents reported that they were not contacted before the programme start - assessments were often conducted with representatives of community-based organizations only.

Cost efficiency of the programme is rated high, costs of one hectare of existing mangroves stand at USD 777



Expenditures in USD by component.

Source: financial reports 2006 - 2010



Adjusted expenditures in USD by component. In this chart, the overhead has been attributed proportionally to the three outputs.

Source: financial reports 2006-2010, own calculation

## 5. EFFICIENCY

### Cost efficiency by output

There are three main outputs of the programme: (a) the plantation of mangroves, bamboo and casuarina, (b) disaster preparedness training for Red Cross staff, commune leaders and schools, and (c) raised awareness regarding mangrove protection and disaster preparedness. Cost efficiency for each of these outputs was calculated in three steps: First, the actual expenditures for each of these outputs were summed up. Second, the proportional share of overhead administrative costs was added. Third, the resulting sub-totals were divided by the quantified output (e.g. number of hectares planted).

The *first output* is a result of activities conducted in support of objective 1; it includes HVCA training, land surveys, plantation training and plantation costs as well as protection training and fees where applicable. The direct expenditures for these activities amount to USD 524,000. [5.1] Added the proportional share of the administrative costs, the overall expenditures related directly and indirectly to planting activities amount to USD 744,600 or 41.75% of total expenditures. [5.2] With these funds, a total of 1,277.4 hectares of trees (971 ha mangroves, 72.4 ha bamboo, 234 ha casuarinas) were planted between 2006 and 2010. Thus, the costs per hectare of planted trees (input) stands at USD 582. Two specifications have to be made in this context: On the one hand, financial report figures do not distinguish between different kinds of trees planted; the costs per hectare thus can only represent an average. It is recognized however that there is a significant difference in cost between each of the species planted. *K. candel* trees for instance are markedly cheaper to plant than all other trees because seedlings (propagules) can be collected for free from mature trees and do not need to be procured from nurseries. On the other hand, the per hectare cost is related to input (hectares of trees planted) - we know though that many young trees do not survive the first years. In some cases, such as the bamboo planting in Khanh Tien (Ninh Binh, see *Case studies, chapter 11*), all of the trees planted were washed away by floods. As no comprehensive overall figures exist as to how many hectares of trees exist today as a result of the 2006-2010 planting, an average survival rate of 75% is assumed. This brings down the number of hectares that exist today to 958. [5.3] The average costs per *existing* hectare are therefore USD 777.

The *second output* is a result of activities conducted in support of objective 3; it includes disaster management training for Red Cross staff and disaster preparedness training for local leaders, teachers and school children. The direct expenditures for these activities amount to USD 513,000. [14] Added the proportional share of administrative costs, the overall expenditures related directly and indirectly to DRM training amount to USD 728,900. With these funds, 117,906 persons were trained. This includes teachers (3,889) and school children (108,317) as well as local leaders and Red Cross staff, some of whom took part in multiple training courses. [5.4] The amount spent on each person trained thus comes to USD 6.18.

The *third output* is a result of activities conducted in support of objective 4; it includes the production of leaflets, calendars and some capacity-building for Red Cross units to enhance their monitoring, reporting and networking with public media. The direct expenditures for these activities amount to USD 218,100. [5.5] Added the proportional share of administrative costs, the overall expenditures related directly

and indirectly to awareness-raising amount to USD 310,000. This figure cannot be sensibly broken down to any number of recipients, as no data exist as to how many individuals were exposed to awareness-raising activities.

### Administrative costs

The administrative costs for this programme include VNRC HQ and IFRC costs. [5.6] These costs amounted to USD 528,500 and represent 29.63% of the budget volume for the years 2006-2010. This percentage is at the upper end of acceptable administrative shares - [5.7] however, given that the programme included 125,000 beneficiaries, administrative costs per beneficiary are at a low USD 4.22.

### Programme efficiency in perspective

[5.8] The costs per hectare of existing mangroves of USD 777 compares very favourably with similar mangrove reforestation programmes (Lewis 2001, Interview DARD Hai Phong). Government projects cost at least USD 1,500 per ha, in some cases much more (up to USD 15,000). Three factors explain the relatively low cost for planting: [5.9] *First*, almost half (47.8%) of the mangroves planted between 2006 and 2010 were *K. candell*, for which no nursery costs are incurred. *Second*, planting was community based - fees for planting were therefore arguably lower than if outsiders had to be recruited. [5.10] *Third*, the emphasis on awareness appears to have paid off - most of the community members now understand the importance of mangroves and are dedicated to their protection. In some cases, they even re-planted with their own resources. [5.11] The initial suitability assessments conducted by MERC also appears to have kept wastage at low levels. [5.12] A more general aspect behind cost efficiency is that conditions for mangroves in the planted areas were more or less ideal - seaward expansion of forests in mudflats that are at lower levels in relation to the sea-level requires much higher investments as high as USD 9,000 per hectare (*Interview Anh*). As opposed to several projects run by the government with World Bank support, the programme also did not have to pay out compensation for the acquisition of shrimp farms.

[5.13] Training activities also proved highly cost-efficient - this is attributed to the fact that local trainers and teachers were trained first who then passed on the message to students and leaders in districts and communes. The expenses for trainers were thereby kept at a minimum.

**582**

Cost per hectare of planted trees in US Dollar

**6.18**

USD spent on each person trained

**4.22**

USD spent on administrative costs per beneficiary

---

Management weaknesses are seen as the key reason behind the failure to reach some of the programme targets

---

## 6. EFFECTIVENESS

---

Effectiveness is analyzed along the lines of the programme objectives: did the programme reach its targets and what were the overall effects - positive and negative? Aside from the analysis of objectives and targets, this chapter also looks into the effectiveness of the programme management set-up.

### Planting activities

Throughout the years 2006-2010, the programme failed to reach all of its targets for plantation: [6.1] Against its target of 2,300 ha of mangroves, only 971 ha were planted (42.2%). [6.2] Against its target of 300 ha of bamboo, only 72.4 ha were planted (24.1%). [6.3] And against its target of 400 ha of casuarina trees, only 234 ha were planted (58.5%). The planting activities were not a goal in themselves, but rather a tool to better protect communities. So how did it fare?

Regarding mangroves, 2006-2010 planting activities concerned only gap-filling, replanting, diversification and expansion of mangrove forests planted in earlier stages of the programme. [6.4] While an overall positive impact towards a reduction of disaster-incurred losses was not only found but could also be monetized (*see Report A*), this impact cannot be sensibly attributed only to the 2006-2010 phase. Concerning bamboo and casuarinas, the core of planting activities in the visited communes fell into the 2006-2010 phase, so that a clear attribution can be made.

[6.5] In the case of bamboo planting, most visited communes reported that the bamboo had reduced or even eliminated the need for dyke repairs. [6.6] Dyke protection was found to be particularly effective in communes where two or more lines of bamboo were planted in front of the dyke. [6.7] Bamboo also helped to slow down land erosion by about 50% and limited the flood-induced damage to agricultural fields located between river and dyke. [6.8] The survival rate of bamboo is generally high and stands at around 75%. While plants are particularly vulnerable at a young age, they appear to be safe from flood-induced damage once they reach an age of three years. [6.9] In this context, several communes mentioned that bamboo should have been planted in February rather than April or later (as was done throughout the programme) to maximize their growth before the beginning of the flood season. [6.10] Other challenges include theft of trees and parasite-induced damage, to which young trees are susceptible.

[6.11] It was found that little technical advice towards planting patterns and tree care was provided, and no research expertise was tapped in a manner that such expertise had been given by MERC towards mangrove planting. Concerning the protective function for dykes alone, a slower-growing but less economically attractive species could have been chosen - a species that DARD uses as a standard for its own dyke-protection planting. The planting patterns may have also been more effective if diagonal lines had been planted rather than lines parallel to the direction of the river current - this hypothesis would need to be verified by research bodies. [6.12] The protective benefit generated by bamboo plants includes the reduced necessity for dyke repairs, the reduced soil erosion, and the reduced damage to crops. This is between VND 90 Mio (USD 4,500) per year in An Hoa (*see Case studies, chapter 9*) and 0 in Khanh Tien (*see Case studies, chapter 11*), where all bamboo plants were washed away by river floods a few months after planting in 2007.



[6.13] Concerning casuarina trees, a significant protective effect was only found in a sea coast commune (Thach Tri/Ha Tinh) - however, these trees were planted in a previous programme phase (see *under case studies in Report A*). [6.14] The two visited communes in which casuarina trees were planted between 2006 and 2010 are both located on river banks and have thus far witnessed no protective effect (Hung Nhan/Nghe An, see *case studies, chapter 12*) or only a marginal reduction of soil erosion (Xuan Giang/ Ha Tinh, see *case studies, chapter 13*).

### Livelihood

The objective and targets related to livelihood are chiefly a spin-off or secondary effect of planting activities, and little non-planting input was given except for advice to planters on how to market and sell their products effectively. The target concerning mangroves states that planter households should be able to generate VND 1.5 Mio in the first year and at least VND 15 Mio three years after planting. [6.15] The household survey showed that the average income from one hectare of mature mangroves was VND 7.58 Mio - more than five times higher than income from an empty mudflat (VND 1.5 Mio) but only about half the amount estimated by researchers in Nam Dinh (Hawkins 2010: 41). [6.16] Given that the average size held by each interviewed planter household is 2.73 ha, the target income of VND 15 Mio was not only reached but even exceeded (VND 20.68 Mio or USD 1,035).

[6.17] Regarding income generated from young mangroves, it was noted that in many communes, district regulations prohibit the collection of aqua culture products during the first three years - in one Kim Son district of Ninh Binh province, current regulations even prohibit such activity in mature mangrove forests. In such cases, planters lose out on their traditional income from aqua culture collection. [6.18] Overall though, planters and even non-planters attribute a positive economic effect of mangrove plantation on their income. In several cases, it seemed to be unclear as to who was entitled to exploit the forests - was it only the planters or all communes? [6.19] More than 90% of respondents said there were no negative effects of the programme on their income.

[6.20] Regarding bamboo, the programme target was to reach an income of VND 30 Mio per ha and year. In effect, where plants survived infancy, this target was reached only in very few communes - the average income per ha from bamboo alone was VND 16.7 Mio. In some cases, a yield worth VND 35 Mio from bamboo alone was reached. While bamboo is thus seen as a lucrative planting option, two caveats need to be raised: [6.21] *First*, the first three years after planting bamboo generate no income at all and thus represent a 'disbenefit' when compared to land use by other crops. [6.22] *Second*, the average area (in visited bamboo communes) a household planted and took care for is only 0.2 ha. The effect of the planted bamboo on house hold incomes is thus relatively minor. In order to lift people out of poverty, a considerably larger investment and acreage are required. [6.23] It needs to be noted in this context that most bamboo farmers were not poor in the first place; 90% were not on the official poverty list. Selection of planters was rather made based on the question as to who had land use rights in the plantable areas. In the case of bamboo, the effect towards the reduction of economic vulnerability aspects is thus marginal.

[6.24] Concerning casuarina trees, the logframe lists no livelihood-related target; in Hung Nhan commune it was found however

that corn grown between trees can bring a higher yield as litterfall provides nutrients to corn planted between trees (see case studies, chapter 12).

### **Disaster preparedness in schools**

[6.25] The DP in schools component was unanimously judged by teachers and DET officials as an effective tool to raise awareness, preparedness and coping strategies amongst a large audience. In limited cases, teachers ran tests to compare DP awareness and knowledge before and after training sessions - these showed that the component proved effective. [6.26] However, training material and guidelines for teachers were criticized for not being adequately adapted to local risks. Teachers also requested additional material to better integrate DP into regular subjects. DET officials furthermore suggested to also have high school teachers and students included in DP in schools. [6.27] The targeted training of 3,000 teachers was exceeded (3,889 teachers trained, 129.6%), [6.28] while only 108,300 schoolchildren out of the targeted 210,000 (51.5%) were reportedly trained.

### **Disaster preparedness planning**

[6.29] Community-based disaster risk management (CBDRM) training courses formed the backbone of the training component - through more than 200 courses, a total of 4,618 community leaders were trained. This exceeded the targeted 1,500 by more than 300%. Around 10.5% of all communes in the eight provinces were thereby covered through disaster preparedness planning courses.

Each course lasted for six days and included a general DRM background, tools to identify and assess risks such as VCA, various response and preparedness elements and the development of strategies to prepare for and respond to disasters. [6.30] Commune representatives perceived CBDRM courses as highly effective - as a result of the courses, many communes now devise disaster risk management plans before annual typhoon and flood seasons. [6.31] Several chapters expressed a desire to learn more about and be better integrated into early-warning systems. While an overwhelming majority (96%) of household respondents say they feel better protected from floods and typhoons now than before the launch of the programme, respondents unanimously said that more needs to be done to protect them even better.

### **Capacity-building**

As described in chapter four, the direct capacity-building component was designed at the minimum required to enable chapters to sensibly implement the programme. A crucial issue was the training of chapter trainers, who subsequently conducted DP training courses in districts and communes. [6.32] All chapters and VNRC HQ report a very positive effect on the skills and ability of staff, improved relations to government agencies as well as an enhanced public image. [6.33] In some cases, better government relations translated into increased funding, an increased number of supported staff and provision of material resources (Nghe An chapter even received a new office building). [6.34] In most programme communes, a general increase of members and volunteers was also found.

[6.35] While chapters have been brought up to a level at which they have basic skills to assess conditions, plan, implement and monitor programme activities, these skills need to be maintained - staff turnover

in particular needs to be compensated for. [6.36] The Red Cross chapters also remain dependent on external support, and sustainability of achievements remains a big challenge (see chapter 8).

### Programme management set-up

One man at VNRC headquarters, eight chapters, 222 communes, travel times of up to ten hours from Hanoi to programme locations, five objectives, and a programme volume of USD 1.78 Mio - these are some key figures of a programme management set-up that aimed to do very much with very little.

[6.37] Whereas VNRC had two officers working full time on the programme up until 2008, as well as a Programme Management Board and a Technical Working Group that was supported by a DRC Delegate (until 2005) and one officer each from DRC (until 2005) and IFRC, and which enjoyed further technical support from MERC, these resources have been downsized over recent years: *First*, DRC left - and with it, most of the technical support from MERC (which had been mainly covered by DRC). *Second*, the Technical Working Group was scrapped. *Third*, one of the VNRC officers was re-assigned to other tasks in 2008. Effectively, this left all monitoring of activities in 222 communes in eight provinces in the hands of a single officer. No statistical analysis is required to assess that such a ratio can only mean superficial monitoring and little to no effective guidance and advice to chapters.

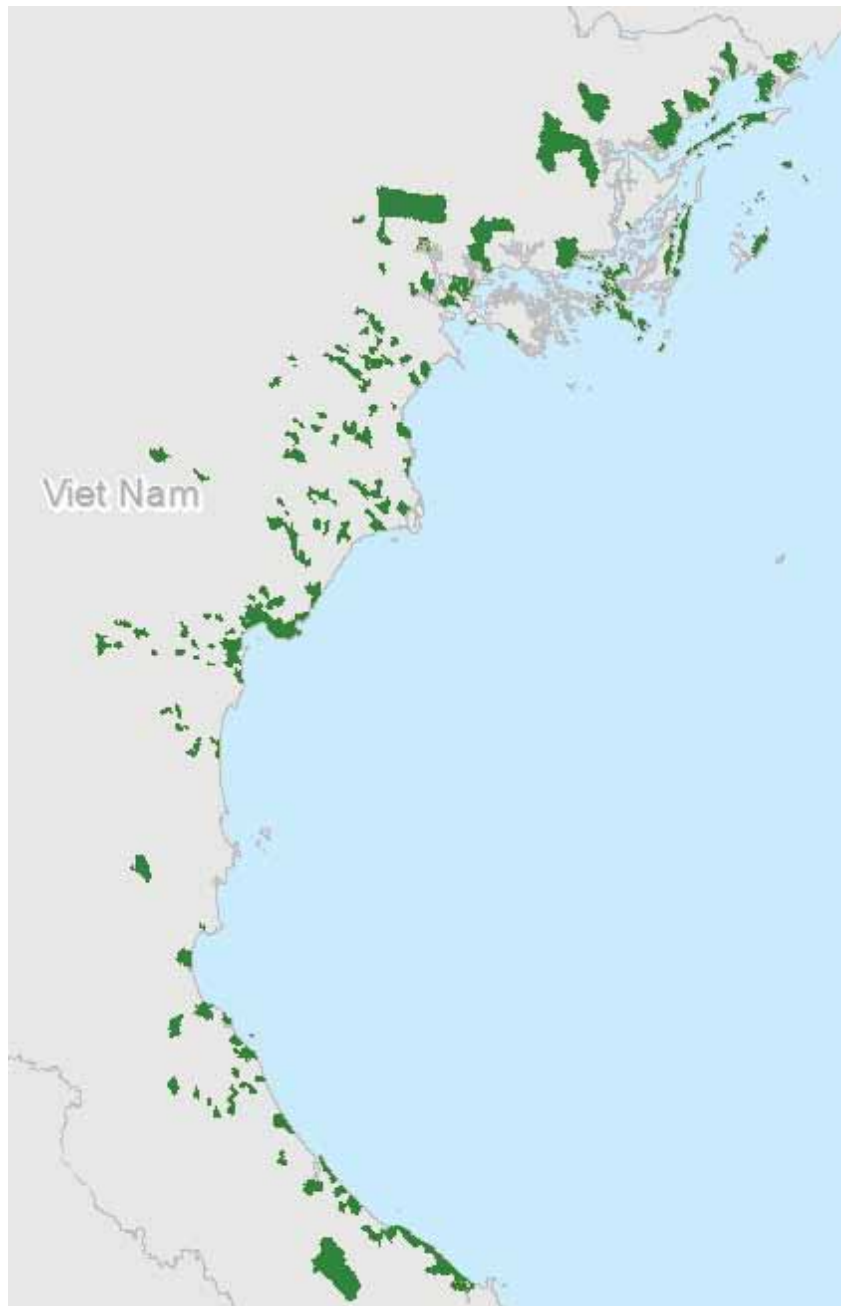


Generated income from collection of aqua culture products is a benefit of mangrove plantation

[6.38] According to the programme officer Mr Tuan, the quality and timeliness of chapter reports deteriorated over the past years, but he did not have the time to follow up issues effectively or to give specific feedback to chapters. He reports that he has usually visited one to two chapters every two months; his limited time however did not allow him to visit chapters further away from Hanoi in the past two years. So Tuan was glad to be able to join the evaluation - he said he had never been able to conduct such a comprehensive review in the past five years and now got a much better picture of the conditions on the ground. [6.39] Meanwhile, the IFRC with its “hands off” approach did not provide the substantial implementation support needed. The thin project oversight translates into several challenges: [6.40] *First*, the quality, appropriateness

and adequacy of proposed and implemented activities in individual communes was not checked at all or only superficially. [6.41] *Second*, guidance, technical support and follow-up mentoring after training courses was insufficient. [6.42] *Third*, the consistency of reports was not checked or systematized - aggregated quantitative reports have a different format for each year - this made checks of progress against targets difficult or even impossible.

In sum, the weaknesses in the programme management set-up and especially programme monitoring had ramifications for the entire programme and must be seen as one reason behind the failure to reach several targets. [6.43] A second reason for why targets were not met was raised by Nam Dinh chapter: inflation. As prices increased by up to 40% between 2006 and 2010, the quantity could often not be reached because the budget had been calculated at 2005/6 prices. The contingency was insufficient to cover the gaps, and chapter requests for adjusted budget allocations were often rejected.



Map of the 222 communes in which CBDRM training courses were conducted.



## 7. COVERAGE

Between 2006 and 2010, the programme covered 222 communes as part of the DP in schools and DP for leaders components and implemented plantation activities in 62 communes. In the case of mangrove planting, no new communes were selected - all 971 ha of mangroves that were planted over the past five years concerned gap-filling, re-planting, diversification and expansion of mangrove forests that had been established in previous phases. [7.1] Hai Phong and Thai Binh were the strongholds of bamboo planting - 77% of all bamboo was planted in those two provinces across 23 communes. [7.2] The two southernmost programme provinces, Nghe An and Ha Tinh, which have not the similarly sizable mudflats that enable mangrove-planting in the Red River delta, focussed on casuarina: 74% of all casuarina trees were planted here across 12 communes.

[7.3] Primary beneficiaries reached throughout 2006-2010 total 125,000 people. This figure includes students, teachers, local leaders and Red Cross staff trained as well as 8,000 planters and guardians. [7.4] The number of secondary beneficiaries however is much larger and includes the population of programme communes that is better protected from and prepared for the impact of natural hazards - this figure is estimated to be around 1.5 Mio people.

[7.5] Compared to the early years of the IFRC/JRC programme, the selection of communes has somewhat improved. Initially, needs analyses had been conducted only haphazardly or not at all - in fact, hardly any of the Red Cross staff had even been trained to run assessments. Since the early 2000s however, DP training courses were given to Red Cross staff; as part of these courses, the concept of VCA was introduced. Selected staff were further trained in VCA through a DIPECHO-funded project (in Thai Binh and Nam Dinh, chapter staff was trained more thoroughly and, crucially, received more follow-up support during the DRC-supported phase). [7.6] With this expertise, chapters supported district and commune staff in the implementation of risk assessments. These were mainly conducted as 'snapshot' assessments with leaders of various organizations (Fatherland Front, Women's Union, Farmer's Union) rather than as a participatory process with immediate community members.

[7.7] Having identified communes that were at high risk from cyclones, storms and floods, the eventual selection was based on the availability of plantable land. Given that all coastal and river line communes are at medium to high risk from hazards in this particularly typhoon and flood-prone part of the country (all communes visited are at high risk), it can be reasonably argued that land availability was effectively left as the main decisive factor. [7.8] If no plantable land existed in a high-risk commune, it was simply not selected, even though it may have been at greater risk than selected communes (see case studies, chapter 12). The narrow and restricting focus on mangrove plantation that was criticized by earlier evaluations (See Macintosh 2000, Luna 2003, Jegillos 2005) has now been replaced by a narrow (but slightly widened) focus on mangrove, bamboo or casuarina plantation, but the pattern remains the same: planting still appears to be regarded as the cornerstone of risk reduction. [7.9] This pattern was interrupted only in the DRC provinces between 2001 and 2005 - where a more holistic risk management approach also successfully addressed risks that could not be mitigated through the planting of trees. Hai Ly in Nam Dinh province

Communes were selected based on hazard exposure assessments - and, crucially, on the availability of plantable land

**1,500,000**

Number of secondary beneficiaries

**62**

Number of planting communes

**222**

Number of communes involved in disaster preparedness component

is such a case in point, where the intervention included resettlement of households, micro-finance and water and sanitation (see *the case studies section in Report A*). Such activities however did not fit into the plantation-centered framework of the IFRC/JRC programme and were thus disbanded.

The limitation on plantation has had three effects: [7.10] *First*, high-risk communes that had no plantable land were left out (For instance, only eight of 46 sea coast communes in Thanh Hoa were selected). [7.11] *Second*, the type of intervention in the selected communes was not always the most appropriate and often failed to address the most urgent needs. As the cases of Khanh Tien and Xuan Giang (see *Case studies, chapters 11 and 13*) show, other tools or activities would have covered the needs and addressed the risks better than the planting of bamboo and casuarina trees. [7.12] *Third*, in the case of bamboo communes, planters were not selected mainly for their vulnerability and poverty, but because they had the land rights to plantable land (see also *chapter 6*).

As the programme outline shows, there were of course objectives and activities not directly related to planting - the disaster preparedness training for local leaders and schools are cases in point. But while these training and awareness components did help to make communities better prepared, they are more indirect in nature and cannot be seen as perfect substitutes for direct non-planting interventions in high-risk communes without plantable land. [7.13] Regarding the DP in schools component, schools in high-risk communes were covered - the DET Thai Binh however mentioned that the need for training was far greater - and budget limitations prevented the implementation of courses in other schools.

## 8. SUSTAINABILITY

There are financial, structural, legal, managerial and behavioural aspects to sustainability - this chapter highlights these aspects for each of the plantation and non-plantation components of the programme.

### Mangroves

[8.1] The bare fact that the advocacy by VNRC, MERC and others led the government to formally protect mangrove forests, disallowing the cutting of mangroves for other purposes, is a commendable achievement and a lynchpin for the sustainability of the mangroves planted by the Red Cross. It has put to an end the conflict between mangroves and shrimp farms, in the path of which thousands of mangrove hectares had been destroyed in the past. [8.2] The government even went further: since 2006 it has been paying guardians to care for and maintain the forests (currently, VND 150,000 or USD 7.50 per ha and year). It also has made planting of mangroves at a width of at least 300 m in front of all national dykes mandatory wherever suitable mudflats exist.

In spite of this tremendous achievement, six challenges to the sustainability of mangroves remain:

[8.3] *First*, several national projects override the protection. A planned international airport and a new seaport in Hai Phong, for instance, will bring the destruction of mangroves (although not planted by the Red Cross) with them. The imperfect coordination between the Ministry of Natural Resources and the Environment (MoNRE) on the one hand, which is in charge of land-use planning, and MARD on the other, which is in charge of forest resources, is a general concern in this regard (Hawkins 2010:6).

[8.4] *Second*, despite the formal protection, there is a clear economic incentive for the use of mudflats as shrimp farms rather than mangroves since direct economic benefits from shrimp farms is more than twice as high as from mangroves. While awareness on the importance of mangrove protection is high in programme communes (see charts on pages 59 and 60, Appendix D), such awareness needs to be sustained into the future.

[8.5] *Third*, several mature mangrove forests have now grown too dense to allow for natural regeneration. As *K. candell* in a specific location were planted simultaneously, they are all at the same height; their high density does not allow for falling propagules to grow into mature plants. This, in turn, will limit the life-cycle to the age of the initially planted *K. candell* and also prevents access for communities to collect aquaculture products.

[8.6] *Fourth*, the sedimentation process in deltas (the speed of which is increased by mangroves due to the slowing of water flows) means that mudflats grow seawards; this will eventually lead to new dyke-building and land reclamation. Land grows particularly fast in Ninh Binh at 80-100m per year; on average, a new dyke is built every 15 years. Whether land grows at such speed or not, careful long-term planning is needed to ensure that new mangroves are planted before the a new dyke to provide similar protection. Casuarina forests thus far planted by the Red Cross will inevitably cease to exist once they stop being tidally inundated. The forests can therefore not be seen as being there for good.

---

External challenges and the lack of an exit strategy require follow-up adjustments to facilitate sustainability

---

[8.7] A *fifth* challenge to sustainability concerns the survival of individual plants: while mature plants are generally more resilient than young ones, there have been several cases in which mature plants have died. The most severe case encountered by the team is a stretch of 100 ha of ***S. caseolaris*** and several ha of ***R. stylosa*** which died after an extended and unusually cold winter in 2008. Furthermore, mangroves that were planted over the past five years on the seaward fringe of mangrove forests are especially threatened, in particular by the typhoons and storms they mean to give protection from.

[8.8] *Finally*, there is a scientific debate over the impact of climate change on mangroves, especially the forecasted sea-level rise. While it is thus not yet clear whether and to what extent this will cause damage to mangroves, alertness and further research are required in this regard. All of these challenges pose a strong argument for a continuous and proactive approach to awareness raising, enhanced protection mechanisms and research as well as long-term collaborative planning with government agencies. [8.9] Several guardians and planters feel currently unsupported when facing technical challenges. [8.10] On the positive side, it should be noted that in some cases, natural regeneration has led to the expansion of mangrove forests - i.e., propagules have turned into mature plants on the fringes of existing forests. A well-managed mangrove forest can thus grow bigger without any active planting input. The most significant case of such natural expansion was found in Dai Hop (Hai Phong province), where the mangrove forest grew from 80 ha to 120 ha through natural regeneration.

### Bamboo and casuarina

[8.11] Bamboo trees that have survived floods during their infancy have generally shown a high ability to sustain themselves, as the trees planted by DARD in the early 2000s show. Three key threats to them were identified: [8.12] *First*, trees planted directly next to the river bank will be washed away together with the eroding soil they are planted in - although they appear to slow down the erosion process, they are unlikely to bring it to a complete halt. [8.13] The *second* threat concerns theft and logging: as the trees reach maturity, they become valuable not



A small channel amongst a dense mangrove forest provides sea access for fishing boats.



only for their bamboo shoots, but also for their wood. In several cases, theft of both shoots and wood were reported by planters as challenges.

[8.14] The *third* issue concerns parasites that can damage or kill trees - this appears to be of particular concern for young trees.

In the case of casuarina trees, the main threat identified by the team is soil erosion that they mean to prevent: as the soil is swept away, so is the tree. [8.15] Trees planted in river communes are also at risk of being damaged by flash floods, as the case of trees planted by DARD in Hung Nhan displays (see *Case studies, chapter 14*).

### Disaster preparedness in schools

The DP in schools component consisted of the training of primary school teachers who then trained their year 4-5 students as part of the normal classroom teaching; of youth camps with selected students; and of student competitions on disaster preparedness planning and tools.

[8.16] Using teachers as multipliers is both cost-effective (to reach a large audience) and sustainable, as long as no additional costs are incurred.

[8.17] However, this part of the programme was conceptualized as a one-off activity; the fact that neither refresher courses for teachers and additional courses for new teachers nor replacement teaching material were planned for the long term diminishes the sustainability outlook of this component. Youth camps and competitions, which are said to have been highly effective, are likely to suffer in particular from this shortcoming due to their relative costliness.

[8.18] The programme has not achieved a full integration of disaster preparedness into formal curricula and budget allocations. Although various DET representatives affirmed that they would continue DP in schools in one way or another if no further Red Cross support was granted, the quality and quantity of such a continuation is uncertain.

[8.19] A positive spin-off of the DP in schools is however recognized, as it is seen as having contributed to a change in the way government sees and approaches risk management. Given the positive experiences made through this component, the government now endeavours to approach risk management in a community-based manner - the planned national risk assessment and a community-based DRM programme across 6,000 communes (*Decision No. 1002/QD-TTg dated 13/07/2009*) is a key embodiment of this new approach (*Interviews Tao, Tomar*).

### Capacity-building and the lack of an exit/sustainability strategy

[8.20] While all chapters now have several trainers to train branches and communes in disaster preparedness, a pattern of missed long-term vision was also found in the fields of capacity-building and the training of local leaders. It is sensible to conduct a DP training for leaders or project planning for Red Cross staff, but what about refresher courses and added courses to compensate for staff turnover? Crucially, who will pay for these courses?

[8.21] Chapters were found to be highly dependent on governments for core funding and strongly reliant on IFRC/PNS support for most of activities they conduct. This is understandable given that after more than ten years of IFRC/JRC support most staff members would not know anything else than this pattern of support. [8.22] What is regrettable however is that not even at VNRC, IFRC and JRC has there

been a timely realization that there is a complete lack of an exit strategy (from an IFRC/JRC perspective) or a sustainability plan (from a VNRC perspective).

Such a strategy or plan should have aimed to ensure that all major programme components could have been continued and achievements sustained beyond 2010 without additional JRC funding. Tools to such an end should have been early lobbying to DET for the budget allocations for DP in schools, to DARD for allocations for DP for leaders, and more fundraising and resource development to self-sustain activities not covered by the government. In the case of mangrove protection, lobbying efforts to the government have brought positive results, as described above. [8.23] The high sense of programme ownership amongst RC staff, even enthusiasm, is another positive aspect that can be built on further.

If the long-term sustainability of chapters' capacities and activities was the goal - rather than having an eternal umbilical cord - more should have been done earlier to steer towards that goal. With the present situation, several adjustments and bug fixes will need to be made before all of the programme achievements can be judged as sustainable.

# PART THREE

## **CASE STUDIES**





After having described the general findings in Part two, this part focuses on five particular communes, all of which became part of the programme over the past five years (chapters 9-13). In An Hoa, Nghia Dong and Khanh Tien, bamboo trees were planted to add protection to river dykes and support livelihoods. Meanwhile, the programme supported the plantation of Casuarina and Eucalyptus trees in Hung Nhan and Xuan Giang.

This report does not include any case studies of communes in which mangroves were planted. This is because mangrove-planting between 2006 and 2010 was exclusively concerned with gap-filling, replanting and diversification in communes in which planting had been taken up in earlier years - an attribution of effects to older and younger trees is not feasible. For case studies of mangrove communes as well as other additional cases, please refer to evaluation report A.



The dense bamboo forest in An Hoa has shown to give effective protection to the river dyke.

## 9. AN HOA | VINH BAO DISTRICT, HAI PHONG CITY

With a high sense of ownership, even pride, the bamboo planting in An Hoa became a success

An Hoa is a commune of 7,700 people (2,300 households) located on the river Hoa. Out of the 3.4 km long river dyke line, the Red Cross lined 2.4 km with bamboo trees in 2007. The remaining kilometer was either unsuitable for planting or filled with fish ponds and sand digging sites for brick-making. The Red Cross selected 40 out of the 60 families who live in direct proximity to the dyke and who had been previously allotted the planted land by the government - most of them had grown sugarcane, peanuts and potatoes here. Poverty was not a selection criteria, it was instead the land use rights and willingness to participate. Most of the planters were trained in a one-day course.

Today the entire 3.5 ha of bamboo forest still exists, and most of the planters continue to guard their bamboo closely. Now that the bamboo



is three years of age, it brings in high yield of up to VND 35 Mio (USD 1,750) per hectare. One woman reported that her husband sometimes sleeps in the forest to prevent others from stealing the valuable bamboo shoots. Many families take a sense of pride that they can help protect the dyke and the commune, and re-plant as soon as possible with their own resources if plants die. For this reason, the bamboo forests prevail despite challenges such as theft (sometimes not only the shoots but entire trees are stolen) and tree-damaging parasites. While the planters' income was reduced initially compared to the income they had gained from previously grown crops, it began to surpass that income in 2010 in most cases.

As bamboo was planted in multiple lines (four or more), its protective effect for the dyke as well as its preventive effect towards land erosion have been significant: land erosion has reportedly decreased by 50% (from an average of 7 m per year). Before the planting, the dyke required repairs after each flood; on average, each of the 60 families along the dyke had to contribute five man-days for dyke repair. Since the bamboo was planted, no such contributions have been required. The district also reports that the tax money it used to spend on dyke repair has been freed up for other infrastructure projects.

The case of An Hoa shows that bamboo planting can be highly successful, in particular if a strong sense of ownership is at hand. An Hoa's planters however point out that they would like to receive more technical advice (why do plants die and what can be done to prevent that?) and a re-launch of a campaign to make the entire commune aware of the protective function of their bamboo.

## 10. NGHIA DONG | NGHIA HUNG DISTRICT, NAM DINH PROVINCE

The case of one farmer shows the great potential of bamboo as well as the limits of the current Red Cross approach

Nghia Dong is a commune of 5,600 people (1,950 households) with a 3 km-stretch of river line entirely covered by a river dyke. The commune is exposed to river floods every year. In 1986 and 2005, storms and floods coincided - while the dyke withheld the floods each time, it was heavily damaged, and the 35 ha of farmland between river and dyke were heavily affected. In 2005, overall losses of VND 7 billion (USD 450,000) were incurred. The entire dyke line had been planted by DARD with a single line of bamboo trees in 2003 - only trees along a 500 m stretch were destroyed by the 2005 flood.

The Red Cross planted three hectares of bamboo trees in 2009 along a 2 km stretch - partly to cover the stretch damaged in 2005, partly to create an alternative, flood-resilient livelihood option in a land that was otherwise difficult to use. 75% of those bamboo trees survived - the local Red Cross chairman attributes some of the damage to the fact that planting was conducted too late in the year (in April instead of February), and that plants were thus too young when the flood season arrived.



Farmer Pham Van Duy made an income of VND 70 Mio from his 1.2 ha synergetic cycle land in 2010.

While no income has been obtained yet from the trees, planters are eager to maintain the trees given the prospect of significant future income. They would like to follow the example of Pham Van Duy, who invested VND 20 Mio into the plantation of bamboo trees on his 1.2 ha of land in 2004, inspired by a bamboo farming scheme he had seen on television. Mr Pham had to wait for four years before he could harvest for the first time; in 2009 he earned VND 15 Mio and in 2010 VND 20 Mio from bamboo products alone. However, Pham combined bamboo farming with other elements in a synergetic cycle: he also cultivates worms which he uses as chicken food. The chicken manure is used as fertilizer for the bamboo trees. And the bamboo leaves are fed to the fish in his pond and to the worms. With this cycle, he made an overall income of VND 70 Mio (USD

3,500) from his 1.2 ha in 2010.

Mr Pham is a volunteer of the Red Cross, so he proposed bamboo farming to his fellow volunteers. The Red Cross took up the idea, and 18 households were selected and trained in planting. While each household's share averages only 0.15 ha, it is aimed to also protect other crops that are grown in front of the dyke. Several poor farmers simply lack the resources to invest an amount in bamboo similar to Mr Pham, especially given that no income is earned over the first three to four years.

The case of Nghia Dong illustrates the high potential of bamboo, which has not been fully materialized in any of the other bamboo communes visited. It also indicates that in order to lift poor farmers out of their poverty, additional resources are required. A protective function for the dyke could not be established in Nghia Dong, given that the Red Cross trees are still fairly young.

## 11. KHANH TIEN | YEN KHANH DISTRICT, NINH BINH PROVINCE

A failure to learn from: more advice needed for planting, broader approach to risk favourable

From the beginning of the programme, Ninh Binh chapter had focussed its efforts on mangrove plantation in the province's only coastal district, Kim Son. Encouraged by experiences in other provinces, it made an attempt in bamboo planting along an inland riverland commune. Khanh Tien has a 6.8 km riverline. In 2004, DARD had planted a single line of bamboo directly next to the dyke to help protect the dyke. In early 2008, the Red Cross decided to plant two additional hectares of bamboo on the 20 m-wide stretch between existing bamboo and the river bank.



A faded sign and bamboo stump hills are the only reminders of the VNRC bamboo planting in Khanh Tien in 2007. The bamboo trees directly behind the sign had been planted by DARD in 2004.

They chose the location to provide added dyke protection and to increase farmers' income. As the land was unsuitable for most crops due to regular flooding, bamboo with its high-income potential seemed a good option on land that would have otherwise been non-productive. 22 poor households were selected and trained, and planted bamboo in April 2008 in double lines. The plan did not work out: a flood in August swept away 40% of the trees, the remaining 60% were destroyed by another flood two months later.

While the planting itself has been a failure, several lessons can be learned from the Khanh Tien experience:

*First*, the claimed protective function of the new bamboo is questionable at best in Khanh Tien. On the one hand, bamboo trees had already existed that had thus far protected the dyke effectively. On the other hand, a different species was chosen than for the DARD trees: the Red Cross trees have larger leaves and are less resilient to floods but grow more quickly and bring a higher yield more quickly.

*Second*, no advice from experts was sought (in a manner that MERC had



given advice on mangrove planting). They may have advised an earlier planting date (February is said to be ideal) to allow the plants to grow stronger before the flood season starts in August. To increase the protective function, it may also be advisable to plant trees not in straight lines parallel to the water flow but diagonally to slow down the water flow more effectively.

*Third*, the fact that communal and district leaders and Red Cross staff were trained in disaster preparedness and VCA in 2003, and that they chose bamboo planting although arguably more urgent issues prevailed (malnutrition, water-borne diseases, access to clean water are such challenges, as a visit to the local health station showed) is testimony to the programme's limitation on planting activities.

The benefit-cost ratio for the intervention is 0. The Ninh Binh chapter appears reluctant to try to start another bamboo endeavour.

## 12. HUNG NHAN | HUNG NGUYEN DISTRICT, NGHE AN PROVINCE

Missed the objective, part one: casuarina trees planted in the wrong location, manmade erosion not addressed

This commune of 3,860 (904 households) is located around 20 km upstream from the mouth of the river Lam. The commune is exposed to annual floods when the Lam swells up; in 2010, these floods were particularly severe, injured seven people and inundated the entire settlement. Wisely, one family about two km away from the river had a boat stored in their front yard. The commune's river bank stretches over four km; walking away from the river bank, one passes through a 600 m-wide stretch of sandy ground and a 200 meter wide stretch of paddy field before reaching the residential settlement. There is no dyke that would protect the commune from floods, however, the settlement is about 1.5 m higher than the coastal stretches of sand and paddy fields. Residents in the commune uphold a tradition of protective tree planting: all alleys and many borders between yards are lined with bamboo trees to reduce the damaging speed of water flow during floods.

Back in 1994, the commune made a further attempt in protective tree planting: in order to reduce erosion of the river bank, it planted 20 ha of casuarina and eucalyptus trees with the support of DARD. However, the success was limited, and by the mid-2000s the entire 20 ha had been washed away by the river. The commune reports that on average, 50 m are eroded each year.

In 2006, the Red Cross launched another attempt, and another 35 ha of casuarina and eucalyptus trees were planted a bit further away from the river bank. The Red Cross made an announcement in the commune, inviting families who were on the official poverty list and who had sufficient labour force to become planters. Some of the villagers interviewed said that they had been unaware of this process and would



1. Casuarina/eucalyptus forest in Hung Nhan.
2. Interview with one of the planters.
3. Sand dug out from the river bank is transported to build mini-dykes around private properties.
4. Dirt on this house marks recent flood levels.

have registered interest if they had known about it. 41 families were selected and were henceforth to look after the trees. They were also allowed to utilize the soil beneath the trees - most of them now grow corn and report that the litterfall of the trees has led to an increase in corn yield from VND 2.2 Mio to VND 3.7 Mio per hectare. In return for their land use, each family has to contribute 12kg of rice per year to the Humanitarian Fund.

Aside from these marginal direct benefits to 41 families, the tree plantation has had no demonstrable protective effect for either the commune or land erosion. As the team observed, the main reason for erosion is sand-digging: Several villagers take the sand from the river bank in order to build small dykes around their lot to protect their houses. In the two hours the team was present, three trucks transported about 1.5 tons of sand each away from the river bank. As of now, there are still about 50 m of sand left between the bank and the casuarina forest, so the trees have not yet had an effect towards the reduction of natural erosion. And it will not have an effect in the future: the government plans to build a dyke between river bank and forest in May 2011. There may have been a marginal reduction in damage of houses and infrastructure as the forest acts as a wind breaker - however, this has not been identified by respondents from Hung Nhan. Their main concern is flood damage, and the casuarina forest has had no effect on alleviation.

The case study shows that the investment of around USD 27,000 (777 x 35 ha) was poorly chosen: put against the direct economic benefits of around USD 7,800 over the past three years, a benefit-cost ratio of 0.28 is calculated. Only under an assumed 20-year life cycle (provided that the future dyke can withstand the floods and prevent further erosion) does the intervention reach a positive benefit-cost ratio of 1.30. It has however failed to address the commune's most urgent concern: flood prevention.

A better approach for this commune may have been to lobby the government for the construction of the dyke and then plant casuarina trees in front of it, and to include activities towards the reduction of sand-digging. Furthermore, the case study shows that the deciding factor for selection was the availability of plantable land: The neighbouring commune of Hung Loi is significantly more exposed to floods as its settled area is in direct proximity to the river. But as no plantable land was available in that commune, no intervention was implemented here.

## 13. XUAN GIANG | NGHI XUAN DISTRICT, HA TINH PROVINCE

Missed the objective, part two: casuarina trees planted do not protect villagers - other approaches would have been more appropriate

Xuan Giang commune is located on the northernmost district of Ha Tinh province along the Nghi Xuan river, about 15 km from the river mouth. The commune includes the Hong Lam river island, which is home to one village of 1,110 people (285 households). The villagers are predominantly farmers who grow peanuts and rice and mind cattle. This island village is at high risk from flash floods; its villagers get evacuated at least once per year. The village has been the centre of several interventions: In 1998, Oxfam funded a community-based dyke construction project through which a 1.5 km-long dyke was built along the stretch of the 3 km-long coastline that faces the river current. In the same year, the Red Cross planted 10 ha of *Kandelia* mangroves in front of that dyke. However, all mangroves were destroyed by subsequent floods. The Red Cross replanted the 10 ha with *Sonneratia*, of which 2 ha still exist today.

In 2006, the Red Cross planted 12 ha of casuarina trees in the uninhabited part of the island that is most directly exposed to the river current and thus highly affected by land erosion. Farmers from 54 households were involved in the planting process; the protection and care was assigned to 10 guardians who collect a small annual protection fee from the village households. 10.5 ha of the forest still exists today; around 1.5 ha fell victim to flood-induced erosion. The casuarina forest is not interplanted with corn or other crops and has no direct economic benefits yet.

The casuarina forest does not protect the villagers from floods (six people died in floods between 2006 and 2010) but is said to have a marginal effect to slow down land erosion. When flood warnings are issued, around 60% of the population are evacuated to the people's commune building on the mainland, the remainder stays in a small shelter on the island. The government distributed life vests to all villagers and has boats for evacuation and rescue operations. In spite of these preparations, the government decided in 2010 that the entire village be re-settled to safer grounds, a plan that meets the villagers anxiety over future arable land.

The casuarina planting in Xuan Giang can only be seen as irrelevant in its support of the programme's aim of vulnerability reduction and is judged as a poor investment. While the casuarinas may have slowed down land erosion, they have not reduced vulnerability at all. Alternative interventions such as upgrading of evacuation facilities (boats, shelter), new life vests, improvements to the early warning system and evacuation drills may have been more appropriate and effective. Finally, the government's decision to resettle the villagers has rendered the intervention totally useless - only long-term collaborative planning between Red Cross and governmental agencies at different levels could have prevented such waste. The benefit-cost ratio is 0.



# PART FOUR IMPLICATIONS



## 14. RECOMMENDATIONS

As described in the previous part, the overall programme has made remarkable achievements such as the existing 8,961 hectares of mangrove forest and enhanced disaster preparedness amongst coastal communes. Given these achievements, the programme is deemed highly eligible for further support, in particular to (a) make these achievements more sustainable, to (b) overcome the identified deficiencies, and to (c) address external challenges. To this end, the report makes four strategic recommendations for future support. Each of the four are supported by a set of more detailed recommendations concerning technical and managerial issues. Note that each recommendation includes references to the related findings.

### 1. Significantly enhance the programme management set-up

Given that the current management set-up was found to provide insufficient monitoring and guidance to chapters, branches and communes, a mere continuation of the programme along the same lines is likely to be similarly insufficient, especially in its capacity to identify and rectify challenges.

[findings 4.5, 4.6, 4.9-11, 6.1-3, 6.32-35, 6.38-43]

Several steps can be taken towards improvement:

#### 1.1 Identify and address training needs amongst chapters.

Although all chapters reported an improvement in their capacity and skills, the findings on the appropriateness and effectiveness as well as the reporting quality give strong reason to believe that there are several training gaps. These should be more thoroughly identified than could be done through this evaluation. A particular concern relates to a more thorough training of the VCA approach - the professional toolkit developed with the support of Netherlands Red Cross should be utilized for this purpose.

#### 1.2 Conduct a more thorough planning process.

Collating proposals generated by chapters is a sensible approach to maximize local ownership. However, such proposals should be based on comprehensive assessments of risks and conditions, and be properly reviewed and discussed by VNRC and IFRC. Simply receiving and collating chapter-generated proposals into one document and then reducing targets to volumes that suit the available funds runs the risk of bypassing several high risk communes (See "recommendation five" below for an alternative way of selecting chapters and communes). The preparation of a new budget should include a sufficiently high contingency to accommodate for high inflation rates.

#### 1.3 Increase the reporting frequency.

Chapters should report progress against objectives more frequently at a minimum on a quarterly basis to allow for a more timely identification and rectification of challenges.

#### 1.4 Standardize and improve reporting formats.

One comprehensive standard for reporting should be devised and maintained throughout a future programme phase. Indicators should not be altered, so that annual reports can be aggregated easily. Quantitative formats should include targets and milestones so that progress against targets can be easily measured and delays



identified. Narrative supplements should not repeat quantitative data, but rather add qualitative information: what went well, what didn't? What problems were identified, what are the underlying reasons? What is suggested to ameliorate or overcome problems? What specific support is requested from VNRC HQ or IFRC? Narrative reports should be kept brief, and VNRC HQ should provide feedback and provide support to chapters.

### **1.5 Review the programme management guideline and ensure adequate familiarity.**

Even though a programme management guideline exists, it appears that many officers involved in the programme are not familiar with it. The guideline should be reviewed by IFRC and VNRC in the early stage of a future programme phase, and disseminated and explained to all officers involved in the programme.

### **1.6 Increase the human resources at VNRC HQ devoted to the programme.**

Just having one officer at VNRC HQ overseeing a large-scale programme in eight provinces results in an inappropriate and superficial monitoring. VNRC should allocate at least one more officer and also utilize officers from other divisions more regularly. VNRC should also have no hesitations to request more support from IFRC counterparts. Furthermore, professional development of key managers is seen as crucial, as well as their openness to new ideas and perspectives.

### **1.7 Ensure that all chapters and selected districts/communes are visited at least once per year.**

With additional human resources, it should be possible to visit programme locations more frequently - these visits cannot be substituted by the best reporting system, as they provide the only opportunity for a desk officer to meet beneficiaries and local stakeholders and thus get a first-hand picture of conditions on the ground.

### **1.8 Conduct more comprehensive annual review workshops to identify and address challenges and threats.**

Although annual review meetings have been held throughout the programme, many challenges appear to have gone unnoticed. In the future, workshops should be held in a more comprehensive manner. They provide an opportunity to openly discuss and search for solutions to internal and external challenges.

### **1.9 Enable a stronger monitoring and assessment role for IFRC.**

The approach of IFRC to leave most decision-making to VNRC and its chapters should not translate into a curbing of its monitoring role. IFRC and VNRC should consider working together even more closely in day-to-day operations.

## **2. Develop an exit/sustainability strategy**

While the government's formal protection of mangroves and its financial commitment to their care is a cornerstone of sustainability, several remaining challenges to sustainability have been identified.

Making programme achievements more sustainable must be the utmost priority of a future phase. From a donor perspective this process may be viewed as an exit strategy, from the local viewpoint as a sustainability plan.

[findings 4.7, 6.33-36, 8.17-19, 8.21]

### **2.1 Strengthen efforts in lobbying government units towards long-term budget allocations.**

Activities under the DP in schools and DP for leaders components have been recognized by local governments for their effectiveness, yet, no funds have been allocated for the continuation of these activities. The Red Cross should therefore aim to convince DET to allocate funds for such a continuation, including youth camps and competitions if possible. VNRC should also offer refreshers and additional courses to DET to ensure that teachers remain familiar with the material. Lobbying efforts towards an inclusion of DP in national curricula should be upscaled. Where a local DET is unable to allocate funds, districts governments should be approached with funding requests.

### **2.2 Strengthen efforts in resource development.**

Nationally, VNRC has achieved laudable progress in resource development. Resource development efforts in most programme chapters however largely remain limited to funding requests to the government and the collection of membership fees. VNRC HQ should guide and advise chapters on tools and approaches to develop more income from other sources, which could be used to fund continued and expanded activities and would make chapters less reliant on foreign support and government funds. In view of the rapid development Viet Nam is experiencing, there is ample opportunity to tap more resources from the private sector and individuals.

### **2.3 Establish a tradition of regular refresher courses.**

Training courses cannot be seen as one-off activities only - people tend to forget. Refresher courses should therefore be offered more systematically at all levels within VNRC. Given that senior staff are often exchanged, training also needs to take this staff turnover into account.

## **3. Focus on sustaining and enhancing protection and care mechanisms rather than additional planting (focus shift 1)**

Many chapters are eager to expand their plantation activities and commonly pointed out to the evaluation team how many hectares were still available for planting. While mangroves and protection trees have been shown to be effective tools and additional planting is an option worth investigating, the core focus of a future phase should rather be put on the enhancement of care and protection mechanisms.

[findings 4.4, 4.8-9, 6.23, 8.4-15]

### **3.1 Re-integrate research institutions into the monitoring of mangrove forests.**

While there is an expressed belief amongst VNRC that Red Cross staff have been trained to the level of "our own experts" in mangroves, various challenges have been identified that cannot be addressed by the Red Cross alone. Research organizations with expertise should be brought back into the programme to provide advice and solutions to biological and technical problems. Of particular concern is research into more resilient mangrove species. Technical advice should also be sought after for the planting and care of bamboo and casuarina trees.

### **3.2 Provide back-up support to planters and guardians.**

Many planters and guardians felt unsupported when they faced technical challenges such as the death of *R. stylosa* or low survival rates. VNRC would be well advised to maintain a pool of well-trained volunteers to monitor plant development, be a contact for guardians



and a link to research organizations.

### **3.3 Lobby and advise MARD/DARD towards the establishment of a mangrove management guideline that covers a) protection, b) thinning and c) the economic utilization of mangrove forests.**

There is a clear need for a guideline that would enable more effective and comprehensive protection (e.g. who does what where?); facilitate a supervised and well-managed thinning process of mature and dense mangrove forests (to allow for natural generation and better access); and bring clarity as to who is entitled to collect aqua-culture products from mangrove forests. The thinning process needs to be well-supervised because an uncontrolled thinning may well run the risk of high accidental damage to the plants. Mangrove wood generated through the thinning may be utilized for charcoal-making and thus represents additional income-generation potential. The economic utilization component should address the existing confusion/ latent conflict as to who has the right to collect shrimps and other aqua-culture products from mangroves. VNRC should therefore engage with MARD/DARD, aiming to develop an equitable and just utilization of mangrove forests.

### **3.4 Re-launch or continue awareness campaigns related to the protective function of mangroves and bamboo.**

Awareness campaigns are usually seen as a singular activity - however, awareness needs to be maintained at high levels to ensure that communities remember the importance of the trees for their protection and keep caring for them. Many bamboo planters in particular were concerned with awareness levels and theft of trees.

### **3.5 Improve co-operation with government agencies on the long-term land use.**

Several cases were recorded in which better coordination between the Red Cross, DARD and MONRE (the ministry overseeing land-use planning) would have reduced wastage. If further planting should be implemented, enquiries should be made to both DARD and MONRE as to what the long-term land use plans are for a selected area.

### **3.6 If further planting should be implemented, consider a balanced planter selection process.**

Many planters, especially in bamboo communes, were not selected based on poverty, but by their land use rights to plantable areas. Future programming should still include such planters, since their inclusion in the planting process would help protect river dykes. However, a distinction should be made between poor and non-poor planters, where the latter receive training and a small incentive but must contribute their own funds.

## **4. Broaden the focus to facilitate a more comprehensive approach to disaster risk reduction (focus shift 2)**

There are many tools to approach disaster risk reduction-planting of trees and mangroves is just one of them. As the programme had thus far a narrow focus towards plantation, several identified risks were not addressed, or not addressed appropriately. The focus of a future phase should be overall disaster risk reduction and preparedness instead of one specific tool to that end.

[findings 7.5-12]

#### **4.1 Conduct a thorough and open-ended vulnerability assessment in coastal communes.**

Once it is ensured that Red Cross staff are comprehensively trained in VCA, a thorough community based risk assessment should be conducted that openly looks at all needs and risks. It is advisable to link or even incorporate this assessment with the national risk assessment planned by the government for its 6,000 communes programme. It is crucial that VCAs are conducted with actual community members rather than only with leaders, to obtain a more accurate and detailed picture. A major issue identified by the evaluation team is the access to clean water in coastal communes.

#### **4.2 Identify adequate tools and strategies to address these risks.**

Once needs and risks are identified, adequate tools and strategies shall be proposed to tackle them. In a related secondary step, the required resources to implement these strategies need to be listed.

#### **4.3 Develop a workable plan.**

The obtained information and ideas for strategies need to then be turned into a realistic and achievable plan for disaster preparedness and risk reduction. It is suggested that draft plans are devised by chapters, which are then reviewed and elaborated in a joint workshop series between VNRC HQ and all chapters.

#### **4.4 Plan with the government.**

Finally, once plans have been developed, they should be shared and discussed with all relevant government agencies. Wherever possible, government co-funding for future programme implementation should be aimed for. One concrete entry way may be the national risk assessment planned by the government (supported by the World Bank and ADB). VNRC should aim to be involved in this exercise, tap funding and consider joint future plans.

### **5. Suggestions to Japanese Red Cross**

Given the effectiveness and the fragility of many programme achievements, the weaknesses in the programme management set-up and the lack of an exit strategy, two suggestions are made to JRC:

*First*, it is suggested to support a one-year interim planning phase over the next twelve months. In this phase, many of the recommendations should be implemented such as changes to the management set-up, VCA training and implementation, and the development of workable plans for each chapter. For the preparation of an overall plan for a subsequent phase, it is worthwhile to consider the inclusion of some competition. Based on criteria that have to be shared early on (such as sustainability plans, cofunding commitments, level of specific risks, adequacy of suggested interventions and overall consistency of a proposal) and a fair and transparent review process, not all but only the best 4 - 5 chapter submissions are granted funding. Competition is likely to increase chapter motivation and ownership and enhance the quality of plans as well as their implementation. It is placed to have a significant effect on capacity-building. Whether such a competitive approach is deployed or not, the single goal for the interim phase should lie in the development of a sound and sustainable strategy.

*Second*, it is suggested that JRC should then fund the implementation of a phase over four years, at the end of which existing and future achievements could stand alone sustainably without further JRC support.

## 15. CONCLUSION

---

The community-based mangrove reforestation and disaster preparedness programme has led to remarkable achievements that improved the protection of dykes and left coastal communities better prepared. The bare fact that more than one quarter of all existing mangroves in the eight northern provinces is due to the VNRC programme speaks for itself. The formal protection of mangroves by the government is an important factor for sustainability that has constrained the conflict between mangrove protection and shrimp-farming which had been a key threat to mangroves up until 2006.

Throughout the last phase (2006-2010) that has been described and analyzed by this report, many internal and external challenges have come to the fore that will need to be addressed and rectified to facilitate a more effective programme management in the short term and to safeguard the longevity of achievements in the long term.

The three most important challenges that were identified concern (a) weaknesses in the programme management set-up, (b) the plantation - focussed approach to risk reduction and (c) lack of an exit or sustainability strategy.

The weakness of the management set-up chiefly translated into insufficient monitoring and guidance - this in turn contributed to the failure to reach many of its targets. The focus of plantation resulted in some interventions that were either not relevant to the programme objectives, not effective, or both. And the lack of an exit or sustainability strategy means that one needs to be added now - an abrupt termination of support now would seriously endanger the longevity of training results, awareness and even of the planted trees.

The critical results of this evaluation should not at all be seen as a discouraging message - quite to the contrary, they shall be seen as a constructive step towards making the programme even better. Now that challenges have been identified, they can be tackled.

VNRC has gained a better reputation amongst government and society through the programme. It should see this reputation as a crucial asset. It should use it more. A positive image is an enabling factor to market itself - if government and society see VNRC as a capable actor, the government may wish to involve VNRC in its own plans such as the national risk assessment and be open for support requests. Similarly, community members and companies may be tapped for future financial support.

# APPENDIX





## A | BIBLIOGRAPHY

**Bann, C** (1998): The Economic Valuation of Mangroves: A Manual for Researchers.

<http://www.idrc.ca/uploads/userS/10305674900acf30c.html>

**CCFSC** (2008): Implementation Plan of the National Strategy for Natural Disaster Prevention, Response and Mitigation to 2020.

<http://www.ccfsc.gov.vn/KW34707D/LegalDocuments.aspx>

**DARA** (2010): Climate Vulnerability Monitor. The State of the Climate Crisis.

<http://daraint.org/climatevulnerabilitymonitor/climatevulnerabilitymonitor2010/>

**Hawkins, S. et al.** (2010): Roots in the water. Legal frameworks for mangrove PES in Vietnam. Katoomba Group's Legal Initiative Country Study Series. Forest Trends: Washington, DC.

<http://www.foresttrends.org/dir/vnmangrovepes/>

**Janssen, R, J.E. Padilla** (1997): Mangroves or Fishponds? Valuation and Evaluation of Alternative Uses of a Mangrove Forest in the Philippines, Amsterdam: Institute of Environmental Studies.

<http://pubs.iied.org/8095IIED.html>

**Jegillos, S.R. et al** (2005): Final Evaluation. Vietnam Red Cross Mangrove and Disaster Preparedness in the Red River Delta and Northern Coastal Vietnam (1994 - 2005).

**Lewis, R.R.** (2001): Mangrove Restoration - Costs and Benefits of Successful Ecological Restoration.

<http://www.fao.org/forestry/105600fe87b898806287615fceb95a76f613cf.pdf>

**Luna, E.M. et al** (2003) Mid-Term External Review: VNRC Mangrove Plantation/Disaster Preparedness Programme in Red River Delta, Vietnam, Phase III 2001 - 2005.

**Macintosh, D. J.** (2000): External Evaluation of the 1997 - 2000 Mangrove Reforestation Project funded by the Japanese Red Cross Society.

**Mechler, R. and The Risk to Resilience Study Team,** (2008): The Cost-Benefit Analysis Methodology, From Risk to Resilience Working Paper No. 1, eds. Moench, M., Caspari, E. & A. Pokhrel, ISET, ISETNepal and ProVention, Kathmandu, Nepal.

<http://www.preventionweb.net/english/professional/publications/v.php?id=8088>

**Meinardi, D.** (2010): Development of a Comprehensive Mangrove Monitoring System in the Mekong Delta, Viet Nam. Lüneburg: Leuphana Universitat.

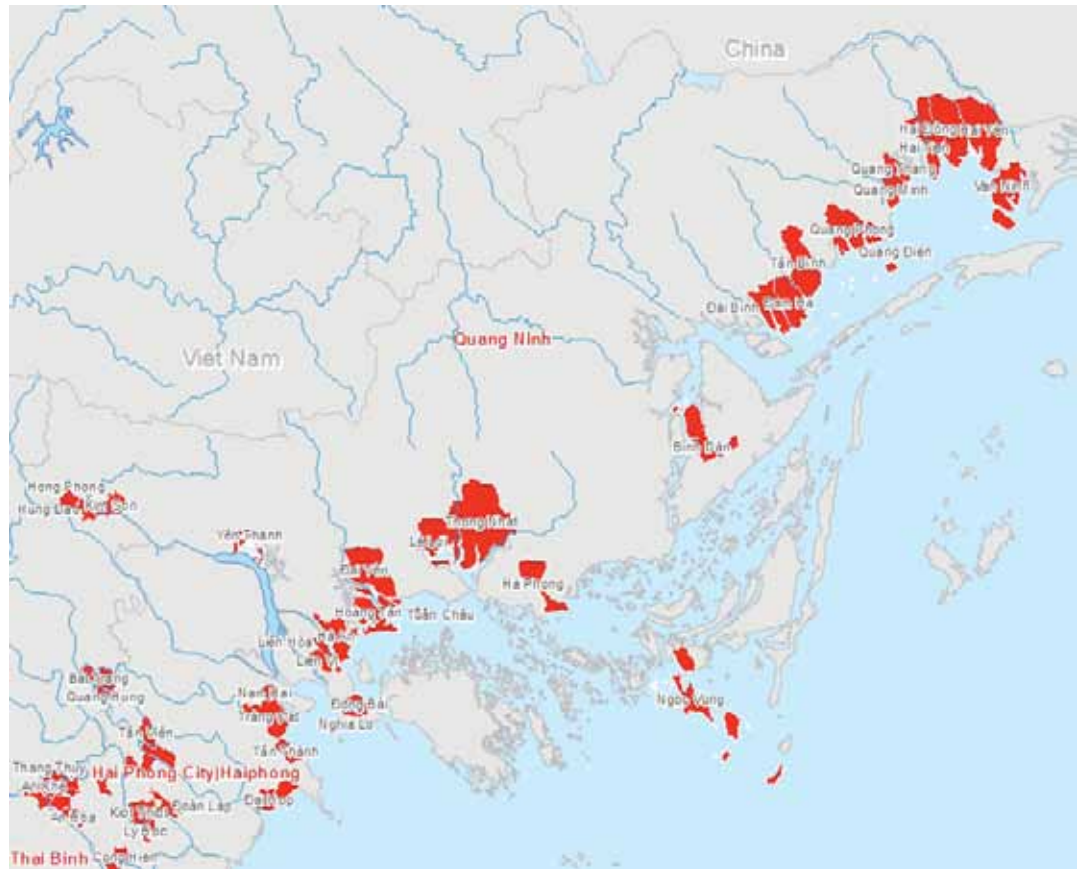
<http://czmsoctrang.org.vn/Publications/EN/Docs/Mangrove%20monitoring%20in%20the%20Mekong%20Delta%20Thesis%202010.pdf>

**Sathirathai, S.** (1997): Economic Valuation of Mangroves and the Roles of Local Communities in the Conservation of Natural Resources: Case Study of Surat Thani, South of Thailand, Ottawa: International Development Research Center.

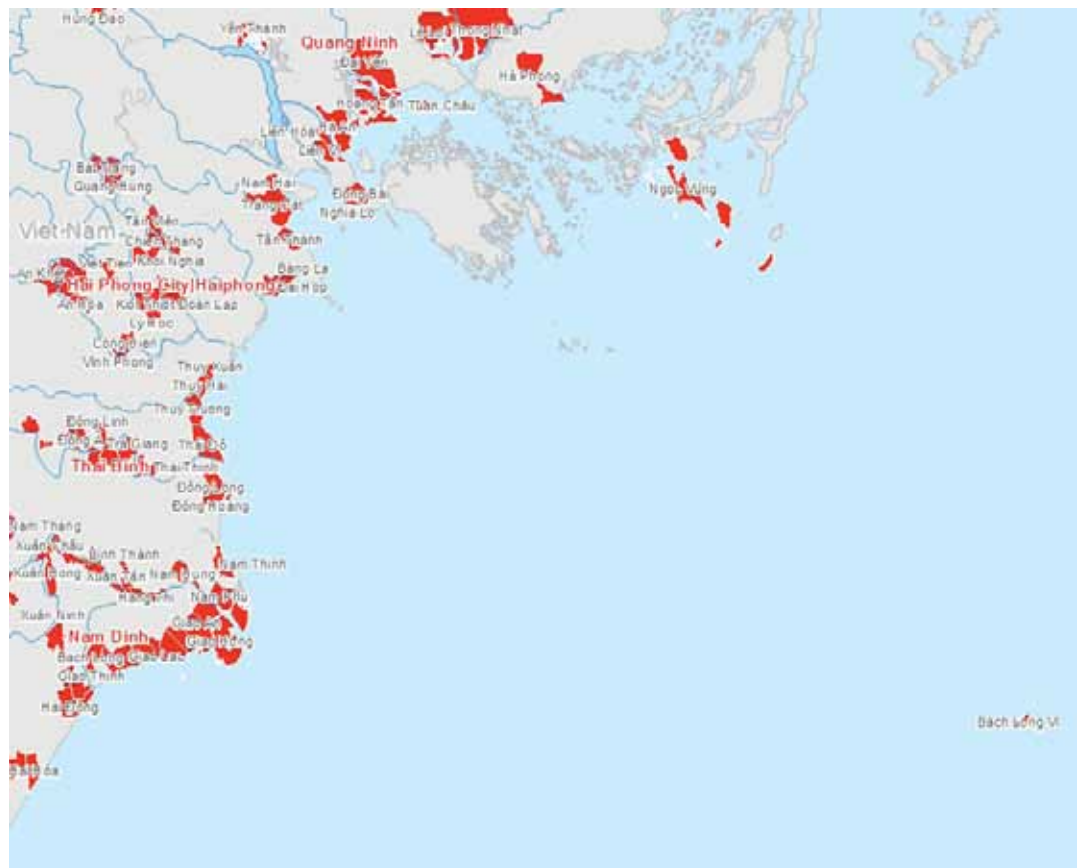
<http://www.idrc.ca/uploads/userS/10536137110ACF9E.pdf>

## B | MAPS OF PLANTING ACTIVITIES BY PROVINCE

### 1. Quang Ninh

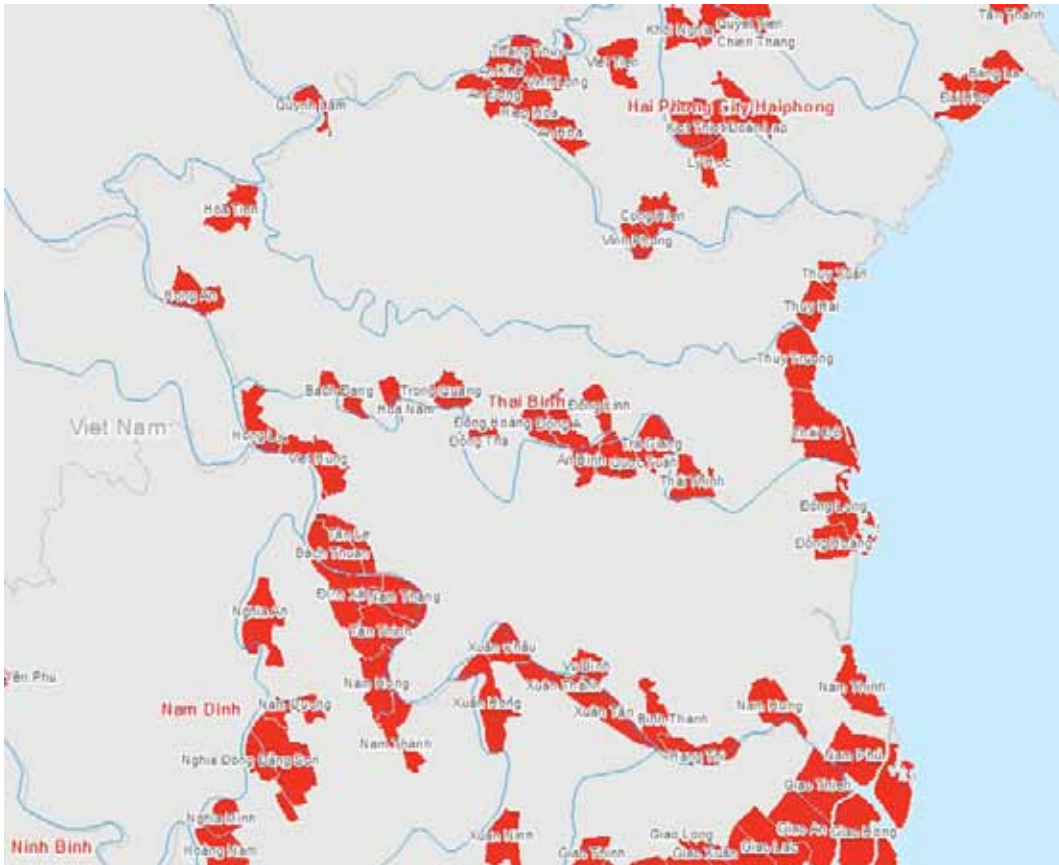


### 2. Hai Phong

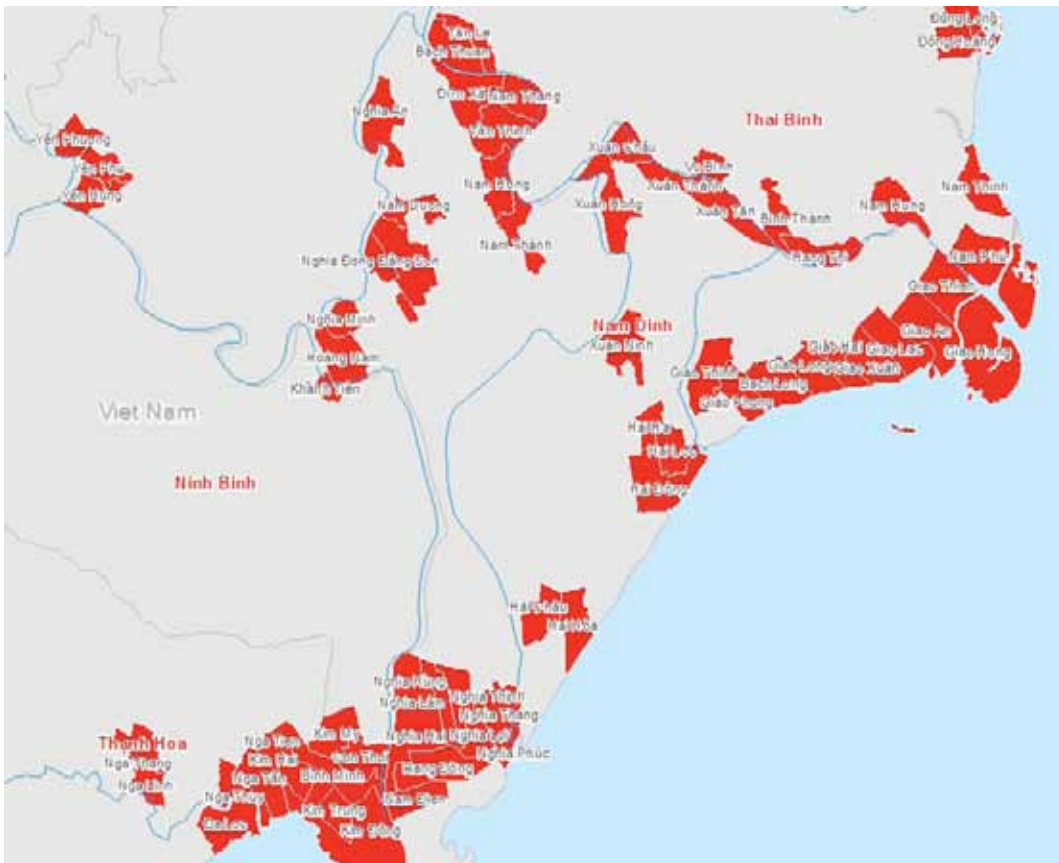


\* Thanks to Frederic Zanetta of the IFRC Secretariat for the preparation of the maps in appendix B.

### 3. Thai Binh



### 4. Nam Dinh











## C | KEY FIGURES

Province	Quang Ninh	Hai Phong	Thai Binh	Nam Dinh	Ninh Binh	Thanh Hoa	Ngh An	Ha Tinh	Total (where applicable)
<b>Basic data</b>									
Population (2009)	1,146,600	1,841,700	1,784,000	1,826,300	900,100	3,405,000	2,919,200	1,230,300	15,053,200
Area (km <sup>2</sup> )	6,099	1,522	1,567	1,652	1,389	11,133	16,490	6,025	45,877
Pop. density	188	1,210	1,138	1,105	648	306	177	204	Average 328
Number of communes	130	143	267	194	123	585	437	235	2,114
<b>Disaster preparedness: coverage</b>									
Communes with DP planning 2006 - 2010 (participants)	34 (740)	32 (640)	28 (560)	25 (500)	15 (280)	40 (870)	22 (428)	26 (600)	222 (4,618)
Communes with DP in schools 2006 - 2010	n.a.	n.a.	71	56	45	98	157	118	
<b>Sea coasts: coverage</b>									
Sea coast communes	21 +x (n.a.)	7+x (n.a.)	12	20	6	46	39	36	187+x
Sea coast communes in which RC planted	21	7	10	18	6	8	16	24	110
Population of those communes	185,200	90,150	50,000	184,000	38,250	24,000	181,000	131,300	889,300
Sea coast line, km	250	125			25	102	82	135	
Sea dyke line, km	120	106			20	92	40	50	
Sea coast line protected by VNRC mangroves, km						8			
<b>Mangroves</b>									
Mangrove input, ha 1994 - 2005	1,812	2,227	7,208	6,569	1,093	1,685	1,106	739	22,439
Mangrove input, ha 2006 - 2010	20	56	0	80	204	611	0	0	971
Mangrove input, ha Total	1,832	2,283	7,208	6,649	1,297	2,296	1,106	739	23,410
Existing mangrove forests as a result of VNRC planting	676	1,050	3,919	1,720	218	670	480	228	8,961
<b>Bamboo</b>									
Bamboo input, ha 2002 - 2005	2.0	5.0	21.3	33.1	0.0	0.0	0.0	0.0	61.4
Bamboo input, ha 2006 - 2010	7.0	22.5	23.5	8.8	2.0	3.6	5.0	0.0	72.4
Bamboo input, ha Total	9.0	27.5	44.8	41.9	2.0	3.6	5.0	0.0	133.8
Existing bamboo as result VNRC plant.	9.0	27.5	21.0	37.5	0.0	3.6	5.0	0.0	103.6
<b>Casuarina</b>									
Casuarina input, ha 1997 - 2005	15.0	40.0	0.0	37.0	0.0	23.0	103.0	128.0	366.0
Casuarina input, ha 1006 - 2010	0.0	0.0	0.0	30.0	0.0	30.0	115.0	59.0	234.0
Casuarina input, ha Total	35.0	40.0	0.0	67.0	0.0	53.0	218.0	187.0	600.0
Existing casuarina forests as a result of VNRC planting	35.0	40.0	0.0	50.0	0.0	6.0	170.0	97.0	398.0

### Sources:

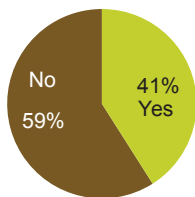
*Basic data: Government Statistics Office of Viet Nam*

[\[http://www.gso.gov.vn/default\\_en.aspx?tabid=491\]](http://www.gso.gov.vn/default_en.aspx?tabid=491)

All other data are based on reported figures. Data concerning existing tree coverage were provided by individual chapters.

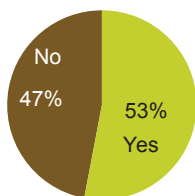
## D | HOUSEHOLD SURVEY RESULTS

### 1. Beneficiary selection process



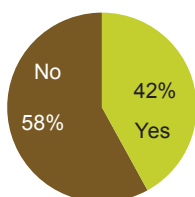
**1. Were you consulted before the launch of the programme?**

[All respondents in programme communes, N=312]



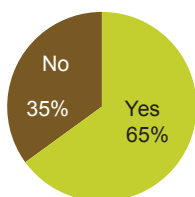
**2. Did you know and understand the reason for why certain households were selected and other not?**

[All respondents in programme communes, N=312]



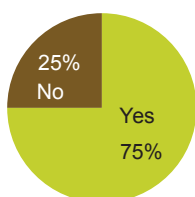
**3. Do you know anyone who wanted to be a planter but was not selected?**

[All respondents in programme communes, N=312]



**4. Do you know why he/she was not selected?**

[All respondents in programme communes responding 'yes' to question 3, N=131]



**5. Do you think this was fair?**

[All respondents in programme communes responding 'yes' to question 3, N=131]

## 2. Impact on Red Cross volunteer base

This chart combines two questions:

**6. Were you a Red Cross volunteer before the programme launch?**

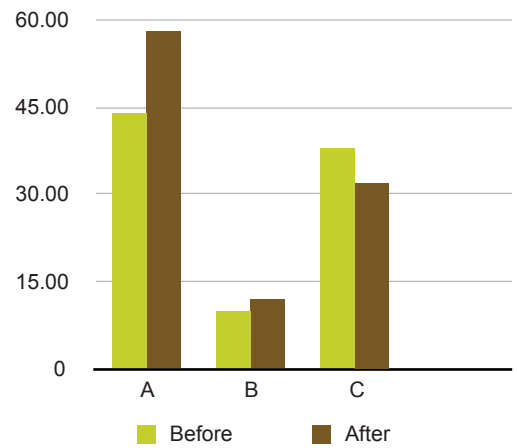
**7. Are you a Red Cross volunteer now?**

Responses are grouped by:

- A: planters in programme communes (N=223),
- B: non-planters in programme communes (N=89), and
- C: control groups (N=60).

For group C 'before the programme launch' was replaced by '2005'.

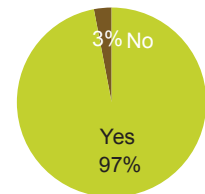
Two results can be deduced: First, the programme intervention correlates with an increase amongst both planters and nonplanters. Second, the share of RC volunteers amongst planters is proportionally high - this may indicate preferential selection of RC volunteers as planters.



## 3. Commitment and sustainability

**8. Do you feel committed to the protection and care of your mangrove area after the end of the programme?**

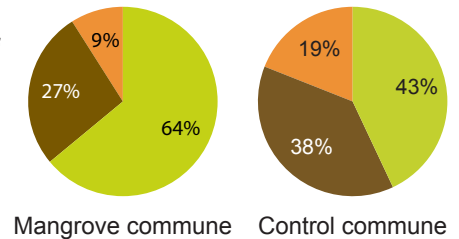
[All planters in mangrove communes, N=155]



**9. If you were given the chance to convert a coastal area of mangrove forest into an economically more productive area, would you?**

[All respondents in mangrove communes, N=204 All respondents in mangrove control commune, N=43]

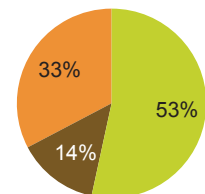
- No
- Yes
- Don't know



**10. Where plants did not survive, were you able to replant?**

[All planters in programme communes, N=223]

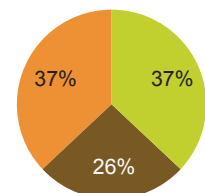
- Yes, with my own resources
- No
- Yes, with the support of others



**11. Do you attend meetings relating to the programme?**

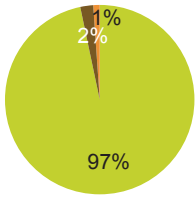
[All respondents in programme communes, N=312]

- Yes, regularly
- No
- Yes, sometimes



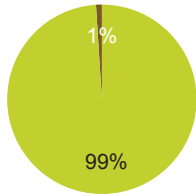


#### 4. Perceived effectiveness



**10. Do you feel that mangroves have affected marine life?**  
[All respondents in programme communes, N=204]

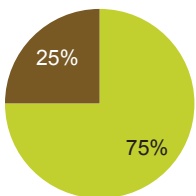
● Yes, positively ● Yes, negatively ● No



**11. Do you think that mangroves, casuarina and bamboo contribute to the protection of dykes?**

[All respondents in programme communes, N=312]

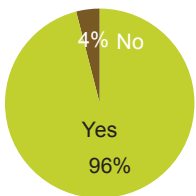
● Yes ● No



**12. Did you feel this way before the programme?**

[All respondents in programme communes, N=312]

● Yes ● No



**13. Do you feel better protected and prepared for typhoons and floods compared to the time before the programme began?**

[All respondents in programme communes, N=312]

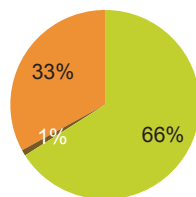


**14. Do you think that more could be done to protect your commune from hazards such as typhoons and floods?**

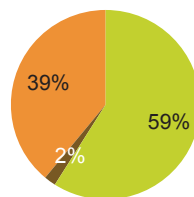
[All respondents in programme communes, N=312]

**15. Do you think the programme was beneficial to the community?**

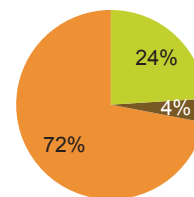
● Very beneficial  
● Not beneficial  
● Beneficial



Mangrove comm. [N=204]



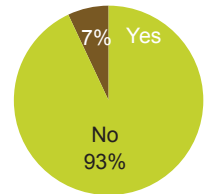
Bamboo comm. [N=100]



Casuarina comm. [N=29]

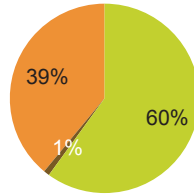
## 16. Were there any harmful effects of the programme?

[All respondents in programme communes, N=312]

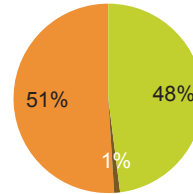


## 17. What influence has the programme had on your income?

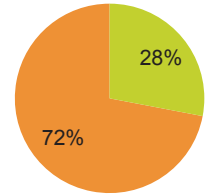
- Positive influence
- Negative influence
- No influence



Mangrove comm. [N=204]



Bamboo comm. [N=100]



Casuarina comm. [N=29]









## APPENDIX G | DP PLANNING TRAINING COURSES 2006-2010

Province	District	Communes	#	Number of participants					Subtotal
				2006	2007	2008	2009	2010	
Quang Ninh	Yen Hung	Lien Hoa	1	25					25
		Ha An	2			20			20
		Phong Hai	3				20		20
		Tien Phong	4				20		20
		Phong Coc	5					25	25
	Dong Trieu	Trang Luong	6	25					25
		Xuan Son	7				20		20
		Yen Tho	8				20		20
		Yen Duc	9					25	25
	Mong Cai	Hai Tien	10		20				20
		Hai Hoa	11				20		20
		Van Ninh	12				20		20
		Vinh Trung	13			20			20
	Van Don	Minh Chau	14		20				20
		Thang Loi	15				20		20
		Cai Rong	16				20		20
		Ngoc Vung	17			20			20
	Co To	Thanh Lan	18		20				20
	Ba Che	Thanh Son	19			20			20
		Nam Son	20					25	25
	Uong Bi	Vang Danh	21				20		20
		Thuong Yen Cong	22				20		20
		Yen Thanh	23					25	25
	Hai Ha	Phu Hai	24				20		20
		Quang Phong	25				20		20
		Cai Chien	26			20			20
		Quang Minh	27					25	25
	Dam Ha	Dai Binh	28					25	25
		Tan Binh	29				20		20
		Dam Ha	30				20		20
	Tien Yen	Phong Du	31					25	25
	Cam Pha	Quang Hanh	32					25	25
	Hoanh Bo	Son Duong	33					25	25
	Ha Long	Dai Yen	34					25	25
<i>Sub- total</i>				50	60	100	280	250	740
	Do Son	Bang La	35	20					20
		Ngoc Xuyen	36	20					20
	An Lao	Quang Hung	37	20					20
		Tan Vien	38			20		20	40
		An Tho	39				20		20
		Bat Trang	40				20		20
		Quoc Tuan	41					20	20
		Thang Thuy	43	20					20
		An Hoa	44	20					
		Cong Hien	45		20				20
	Hiep Hoa	46		20				20	

Province	District	Communes	#	Number of participants					Subtotal	
				2006	2007	2008	2009	2010		
Hai Phong	Vinh Bao	Tan Lien	47			20			20	
		Dong Minh	48				20		20	
		Vinh Phong	49				20		20	
		Tam Da	50					20	20	
		Hung Nhan	51					20	20	
	Tien Lang	Quyét Tien	52	20						20
		Doan Lap	53		20					20
		Kien Thiet	54				20			20
		Vinh Quang	55				20			20
		Khoi Nghia	56			20				20
		Tien Thang	57					20		20
		Dong Hung	58					20		20
		Tien Cuong	59					20		20
	Thuy Nguyen	Phuc Le	60				20			20
		Lap Le	61				20			20
		Pha Le	62			20				20
		Duong Quan	63					20		20
		Hop Thanh	64					20		20
	Cat Hai	Xuan Dam	65					20		20
		Van Phong	66				20			20
Duong Kinh	Tan Thanh	67					20		20	
<b>Sub- total</b>				<b>120</b>	<b>60</b>	<b>60</b>	<b>180</b>	<b>220</b>	<b>640</b>	
Thai Binh	Dong Hung	Dong A	67		20				20	
		Dong Linh	68		20				20	
		Bach Dang	69		20				20	
		Dong Huy	70				20		20	
		Phu Chau	71					20	20	
	Thai Thuy	Thai Do	72			20			20	
		Diem Dien	73				20		20	
		Thuy Son	74					20	20	
	Kien Xuong	Vu Binh	75			20			20	
		Quoc Tuan	76			20			20	
		Tra Giang	77			20			20	
		Hong Thai	78				20		20	
		Binh Thanh	79				20		20	
		Minh Tan	80					20	20	
		Binh Dinh	81					20	20	
	Vu thu	Tan Lap	82				20		20	
		Bach Thuan	83				20		20	
		Viet Hung	84		20				20	
		Phuc Thanh	85					20	20	
	Thai Binh city	Dong Tho	86				20		20	
		Hoang Dieu	87				20		20	
		Tran Hung Dao	88					20	20	
	Quynh Phu	An Dong	89				20		20	
		Quynh Lam	90					20	20	
Tien Hai	Dong Minh	91				20		20		
	Bac Hai	92					20	20		
Hung Ha	Hoa Tien	93					20	20		
	An Le	94				20		20		
<b>Sub- total</b>				<b>-</b>	<b>80</b>	<b>80</b>	<b>220</b>	<b>180</b>	<b>560</b>	

Province	District	Communes	#	Number of participants					
				2006	2007	2008	2009	2010	Subtotal
Nam Dinh	Truc Ninh	Co Le	96					20	20
		Phuong Dinh	97		20			20	40
	Nghia Hung	Nghia Dong	98			20			20
		Nghia Chau	99				20		20
		Hoang Nam	100				20		20
		Nghia Son	101				20		20
		Nghia Binh	102					20	20
		Nghia Trung	103					20	20
		Quy Nhat	104					20	20
	Hai Hau	Hai Ha	105			20			20
		Thinh Long	106			20			20
		Hai Minh	107				20		20
		Hai Nam	108				20		20
		Hai Ninh	109				20		20
		Hai Giang	110					20	20
		Hai Phuc	111					20	20
		Hai Trung	112					20	20
	Giao Thuy	Giao Hai	113			20			20
		Giao Thien	114				20		20
		Giao Long	115				20		20
Giao Nhan		116				20		20	
Hong Thuan		117					20	20	
Nam Dinh city	Nam Phong	118					20	20	
Nam Truc	Nam Thanh	119		20				20	
<b>Sub-total</b>				-	40	80	180	200	500
Ninh Binh	Kim Son	Kim Dong	121	5	10		20		35
		Kim Hai	122	5	10		20	20	55
		Kim My	123				20		20
		Kim Trung	124	5	10		20		35
		Kim Tan	125	5	10				15
	Nho Quan	Thuong Hoa	127				20	20	40
		Gia Son	128				20		20
		Gia Thuy	129				20		20
	Gia Vien	Gia Thinh	130				20		20
		Gia Lac	132					20	20
Gia Minh		133				20		20	
<b>Sub-total</b>			20	40	-	160	60	280	
Thanh Hoa	Nga Son	Nga Tan	135	20					20
		Nga Thuy	136	20					20
		Nga Bach	137			20			20
		Nga Thanh	138			20			20
		Nga Tien	139				25		25
		Nga Thanh	140				25		25
		Nga Phu	141					20	20
	Hau Loc	Da Loc	142	20					20
		Ngu Loc	143	20					20
Hai Loc		144		20				20	



Province	District	Communes	#	Number of participants					Subtotal	
				2006	2007	2008	2009	2010		
Thanh Hoa	Hau Loc	Hoa Loc	145			20			20	
		Phong Loc	146				25		25	
		Dong Loc	147				25		25	
		Thuan Loc	148					20	20	
		Xuan Loc	149					20	20	
	Hoang Hoa	Hoang Phu	150	20					20	
		Hoang Khanh	151			20			20	
		Hoang Ly	152			20			20	
		Hoang Tien	153				25		25	
		Hoang Dong	154				25		25	
		Hoang Ngoc	155				25		25	
		Hoang Yen	156					20	20	
		Hoang Hai	157					20	20	
	Quang Xuong	Quang Nham	158	20					20	
		Quang Thach	159	20					20	
	Tho Xuan	Tho Loc	160			20			20	
		Xuan Vinh	161				25		25	
		Xuan Tan	162				25		25	
		Xuan Gian	163					20	20	
		Xuan Son	164					20	20	
	Thieu Hoa	Thieu Vu	165			20			20	
		Thieu Khanh	166			20			20	
		Thieu Van	167				25		25	
		Thieu Son	168				25		25	
		Thieu Thanh	169					20	20	
	Nong Cong	Truong Giang	170				25		25	
		Trung Chinh	171				25		25	
		Tuong Van	172				25		25	
		Hoang Giang	173					20	20	
		Te Nong	174					20	20	
	<b>Sub total</b>				<b>140</b>	<b>20</b>	<b>160</b>	<b>350</b>	<b>200</b>	<b>870</b>
	Nghe An	Dien Chau	Dien Kim	175	20					20
Dien Bich			176	20					20	
Dien Ngoc			177			20			20	
Dien Ky			178				20		20	
Dien Van			179				20		20	
Hung Nguyen		Hung Nhan	180	20					20	
		Hung Lam	181	14					14	
		Hung Loi	182	14					14	
		Hung Xa	183		20				20	
		Hung Linh	184		20				20	
Nghie Loc		Nghie xuan	185	20					20	
		Nghie Yen	186					20	20	
		Nghie Lam	187					20	20	
		Nghie Thiet	188					20	20	
Thai Hoa		Nghia Thuan	190				20		20	
	Quang Tien	191				20		20		
Quynh Luu	Son Hai	192				20		20		

Province	District	Communes	#	Number of participants					Subtotal
				2006	2007	2008	2009	2010	
	Vinh city	Trung Do	193					20	20
		Hung Loc	194					20	20
	Cua Lo	Nghi Huong	195					20	20
		Nghi Hai	196					20	20
<b>Sub-total</b>				<b>108</b>	<b>40</b>	<b>40</b>	<b>100</b>	<b>140</b>	<b>428</b>
Ha Tinh	Ky Anh	Ky Ninh	197	20					20
		Ky Xuan	198	20					20
		Ky Phu	199				25		25
		Ky Ha	200				25		25
		Ky Khang	201					25	25
		Ky Hai	202					25	25
	Cam Xuyen	Cam Lac	203	20					20
		Cam Ha	204	20					20
		Cam Hoa	205				20		20
		Cam My	206				20		20
		Cam Phuc	207				20		20
		Cam Nhuong	208					25	25
		Cam Ha	209					25	25
		Cam Linh	210						25
	Nghi Xuan	Xuan Giang	211	20					20
		Xuan Hai	212			20			20
		Xuan Giang	213			20			20
		Cuong Giam	214					25	25
		Xuan Hoi	215						25
	Thach Ha	Thach Hai	216					25	25
		Thach Tri	217					25	25
	Ha tinh city	Thach Dong	218					25	25
Thach Mon		219					25	25	
Thach Trung		220						25	25
Thach Ha		221						25	25
Can Loc	Tung Loc	222					25	25	
<b>Sub-total</b>				<b>100</b>	<b>40</b>	<b>60</b>	<b>225</b>	<b>175</b>	<b>600</b>
<b>Grand Total</b>				<b>578</b>	<b>340</b>	<b>580</b>	<b>1,695</b>	<b>1,425</b>	<b>4,618</b>

# The Fundamental Principles of the International Red Cross and Red Crescent Movement

**Humanity** / The International Red Cross and Red Crescent Movement, born of a desire to bring assistance without discrimination to the wounded on the battlefield, endeavours, in its international and national capacity, to prevent and alleviate human suffering wherever it may be found. Its purpose is to protect life and health and to ensure respect for the human being. It promotes mutual understanding, friendship, co-operation and lasting peace amongst all peoples.

**Impartiality** / It makes no discrimination as to nationality, race, religious beliefs, class or political opinions. It endeavours to relieve the suffering of individuals, being guided solely by their needs, and to give priority to the most urgent cases of distress.

**Neutrality** / In order to enjoy the confidence of all, the Movement may not take sides in hostilities or engage at any time in controversies of a political, racial, religious or ideological nature.

**Independence** / The Movement is independent. The National Societies, while auxiliaries in the humanitarian services of their governments and subject to the laws of their respective countries, must always maintain their autonomy so that they may be able at all times to act in accordance with the principles of the Movement.

**Voluntary service** / It is a voluntary relief movement not prompted in any manner by desire for gain.

**Unity** / There can be only one Red Cross or Red Crescent Society in any one country. It must be open to all. It must carry on its humanitarian work throughout its territory.

**Universality** / The International Red Cross and Red Crescent Movement, in which all societies have equal status and share equal responsibilities and duties in helping each other, is worldwide.



For more information on the community based mangrove reforestation and disaster preparedness programme in Vietnam, please contact:

**Viet Nam Red Cross**

Mr. Doan Van Thai  
Secretary-General  
Tel.: +84 913 216 549  
E-mail: doanvanthai62@yahoo.com.vn

**Japanese Red Cross**

Ms. Chieko Matsubara  
International Department  
Tel.: +81 334 377 089  
E-mail: c-matsubara@jrc.or.jp

**International Federation of Red Cross and Red Crescent Societies**

Hanoi Office  
Mr. Bhupinder Tomar  
Country Representative  
Tel.: +844 39 422 980  
E-mail: bhupinder.tomar@ifrc.org

The International Federation of Red Cross and Red Crescent Societies promotes the humanitarian activities of National Societies among vulnerable people.

By coordinating international disaster relief and encouraging development support it seeks to prevent and alleviate human suffering.

The International Federation, the National Societies and the International Committee of the Red Cross together constitute the International Red Cross and Red Crescent Movement.

