

BASELINE SURVEY REPORT ON

VULNERABILITY AND CAPACITY OF PEOPLE TO COPE WITH CLIMATE CHANGE IN HAI DUONG AND HUONG PHONG COMMUNES, HUONG TRA DISTRICT, THUA THIEN HUE PROVINCE

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Abbreviations

BARD	Bank for Agriculural and Rural Development
CC	climate change
CPC	Commune People Committee
CSFC	Committee for Storm and Flood Control
DRR	Disaster Risk Reduction
GDP	Gross Domestic Products
HHs	HHs
NTP	National Target Program
PRA	Participatory Rural Appraisal
PDRR	Plan of Disaster Risk Reduction
PSFC	Plan of Storm and Flood Control
SFC	Storm and Flood Control
SRD	Sustainable Rural Development
TV	Television
VBSP	Vietnam Bank for Social Policies
VCA	Vulnerability and Capacity Assessment

Report summary

The baseline survey on vulnerability and capacity to cope with natural disasters in the two project communes: Huong Phong and Hai Duong was conducted by SRD staff and a consultant from Hue University of Agriculture and Forestry during 13-18 June 2011. To access vulnerability status, capacity to cope with disasters of the two communes and to build up a list of project evaluation indicators, the survey was conducted by interviewing 202 HHs (HHs) in the two communes, interviewing 22 commune and village leaders (local staffs), and in-depth interviewing 5 key persons and HHs who are conducting project's models.

The report is constructed in 4 main parts. The first part presents background and survey methodologies. The second part presents the key social-economic features of the two communes and survey HHs. The third part presents main results of the baseline survey and part 4 is the list of indicators. The survey results showed that Huong Phong and Hai Duong were among the poor commune of Huong Tra district. Besides, these communes were also vulnerability to natural disasters. Storm and flood were two types of natural disasters that frequently occur and have been increasing impacts on livelihoods of the two communities, especially crop production and aquaculture activities.

Results of anlysing socio-economic factors affecting community's vulnerability status, such as the family labor rate, dependent rate; education level of household head and wife; housing conditions; household water sources, household latrine conditions; and HHs' properties related to natural disaster risk reduction ... showed that there was no difference in vulnerability among HHs in two communes, but between two groups of poor and non- poor differ considerably. Poor HHs were more vulnerability than non- poor HHs. However, when analyzing the status of loans (debts) of the HHs and the impacts of the disaster to the production, results indicated that non- poor HHs were more vulnerable than the poor. Non- poor HHs engaged in aquaculture more and had biger debts. Since, aquaculture activities need large investment, high risks and depend much on weather conditions.

In both communes, the commune committee of flood and storm control (CFSC) had been structured to the village level. However, the operation of this CFSC and its networks were little-known by local people, even several local officials did not know the operation of this CFSC. Besides, awareness and application of knowledge on climate change and natural disaster risk reduction of both local people and staffs in both communes were very limited. Less than 50% surveyed HHs and 70% of local staffs knew or have heard about "climate change" but only heard through the mass media such as radio or newspapers. Hence, they did not know clearly about the causes and impacts of climate change. Apart

from the poor conditions of the rescue means, such activities as planning and implementing disaster risk reduction plan (DRRP) were not effective due to lacking of local people participation. Nearly 100% of survey HHs in both communes revealed that they had no plans or only had plan in thought based on their own experiences and own social-economic capacity. Over 70% of respondents in the two communes did not know about the annual DRRP of the commune and over 90% of respondents did not involve in making this DRRP.

Regarding gender issues in disaster risk reduction (DRR), although women plaid important roles in DRR, since they mainly based at home and men went farway for earning, men were more aware of CC and DRR information more than women.

Base on the survey results, a list of 50 evaluation criteria were identified and classified into 3 aspects: (i) vulnerability; (ii) coping capacity; and (iii) income improvement. Besides, annexes I, II and III of the report is attached for additional evidences for the findings of the survey.

PART I. BACKGROUND AND SURVEY METHODOLOGIES

1.1 Background of the baseline survey

Sustainable Rural Development (SRD) is a non-governmental - nonprofit organization in Vietnam. The organization is operating in remote and poor communities across the country. In recent years SRD has been developed both in scope and areas of activities. Beside mountain communities, SRD has expanded its operations to coastal communes. Huong Phong and Hai Duong commune, Huong Tra district, Thua Thien Hue are the two new SRD's project communes. In the context of CC impacts, SRD has been implementing various projects for vulnerable communities to cope¹ with natural disasters and threats posed by CC. To help the local authorities and people adapt and reduce impacts of natural disasters and to ensure livelihoods in the context of climate change, SRD has developed projects on *community based disaster risk reduction and adaptation with climate change in Huong Phong and Hai Duong communes*. The project proposed to last for three years from 2011 to 2014. Project activities focus on two main areas:

- Improving awareness of local people and local staffs about DRR and vulnerability and improving capacity to cope with climate change;
- Improving livelihoods of the aquaculture communities in the two communes in the context of CC.

Specific objectives of the survey include:

- (*i*) Design methods included a survey questionnaire which presents evaluation criteria and consistent with the project activities. The questionnaire was tested in the field before conducting the main survey.
- (*ii*) Identify a list of criteria for monitoring and evaluating the output, efficiency and impact of projects after implementation. Criteria should reflect the true situation of the project area.
- (iii) Collect data in the two communes for the identified indicators.
- (iv) Analyse data and write report.

¹ According to the Ministry of Natural Resource and Environment (National Target Program-2008): Coping with climate change activities are human activities aim to adapt and mitigate climate change.

1.2 Process and survey methodologies

1.2.1 Data collection methods

Methods to collect data for this survey included HH survey, interview local staffs, in-depth interview key informants and observation. Besides, secondary data related to the project and the two communes were also collected for analyzing.

a) Household survey

Household survey by a semi-structure questionnaire was conducted through following steps:

- Define activities base on the TOR provided by SRD
- Identify survey indicators: indicators should cover the project activities and climate change aspects such as:
 - $\circ~$ Hazards/ natural disasters in the survey areas
 - Vulnerability status
 - Capacity of local people, community and authorities to cope with climate change
- Developed questionnaire/ checklist
- Discussed with SRD staff to finalise the questionnaire (see annex III.1)
- Pre-tested questionnaire by several samples in the two communes.
- Adjusted questionnaire base on pre-test results

- Sample selection: survey HHs was selected randomly from the list of poor and non poor HHs of the two communes. These HHs were selected randomly by household groups (poor and non-poor), by commune and villages. Base on this selection, 202 HHs in 12 villages of the two communes were selected for interviewing. Of which 115 HHs were from Huong Phong and 87 HHs were from Hai Duong. The percentage of poor and non-poor HHs was distributed randomly among villages and communes (table1).

Table 1: Survey sample size by commune and household group (poor and non-poor)

Commune	HH group	Ν	
Hai Duong	Poor	28	
	Non-poor	59	
	Total	87	
Huong Phong	Poor 46		
	Non-poor	69	
	Total	115	
Sub-total	Poor	74	
	Non-poor	128	
Total		202	

b) Local staffs interview: 22 village leaders, mass organization and commune officers were interviewed. Questionnaire for interviewing local staffs was developed with similar steps as questionnaire for HH survey. The content of questionnaire for local staffs focused more on awareness about CC, DRR and local community capacity to cope with CC (see annex III.2).

c) Key informant in-depth interview: 3 HHs who conduct the project' aquaculture models were interviewed. Besides, 2 commune leaders (vice chairman) were interviewed.

The content of interviewing were mainly about general social-economic features of the commune, strengthen, weakness, opportunities as well as threats to the development of the commune, capacity to cope with climate change, difficulties in implementing Plan of disaster risk reduction (PDRR) and Plan of storm and flood control (PSFC).

d) Collecting of secondary data: social-economic reports, researches, PRA reports and commune annual reports on losses due to flood and storm were collected for this report.

1.2.2 Data entry and process

During the survey, data were collected and written on prepared questionnaire sheets. Each HH or interviewee had one set of questionnaire sheet. Data on these sheets after that were coded, entered on Excel 2007 and processed on SPSS version 17 (2005). Descriptive analysis was used to analyze data. Average, standard deviation, frequencies and percentage were main statistical parameters used in the report.

1.2.3 The survey team

The survey team had 10 members, including four SRD staffs, the fourth-year students from Hue University of Science, University of Agriculture and Forestry, 01 consultant working as the team leader. The team leader was responsible for designing and coordination of all activities of the surveyed group. The survey was conducted from 13 to 18 June 2011.

PART II. BASIC CHARACTERISTICS OF THE SURVEYED COMMUNES

2.1. Natural features

Huong Phong and Hai Duong were the two coastal communes located in the northwest of Huong Tra district, Thua Thien Hue province. Huong Phong was located about 12 km away from Hue city center (Picture 1). It was bordered by Hai Duong to the North, Thuan An to the East, Quang Thanh Quang Dien to the West and Huong Vinh commune to the South. Hai Duong was away from Hue City center 18 km, was bordered by the China Sea to the East, the Thuan An mouth and Huong Phong to the South, Tam Giang Lagoon to the West, the Northern bordered by Quang Cong commune. Both communes located in a quite special areas where many parts were bordered by river sides or adjacent the Tam Giang lagoon that had numerous advantages in agriculture production, aquaculturing and capturing fisheries, but also had potential risks to production and human life in the context of climate change (Le Tien Thuong, 2010).

According to results of survey conducted by SRD consultants in 2011, natural land areas of Hai Duong commune was about 1,029.7 ha. Of which 78.2 ha was agricultural land, 71.2 ha was the lagoon area for aquaculturing and natural fishing activities. Forest land accounted for 193.2 ha. In Huong Phong, the total natural area was 1536 ha. Of which, agricultural land accounted for 566.2 hectares, land for aquaculture occupied 215 ha, 5 hectares was forest land and water area for natural fishing was about 453.9 ha (Le Tien Thuong, 2010).



Picture 1: Map of Huong Tra district and location of the two survey communes (Source: Huong Tra CPC, 2011)

2.2 Social-economic characteristics of the two communes

Both Huong Phong and Hai Duong communes had each six villages. Six villages in Huong Phong were Thanh Phuoc, Tien Thanh, Van Quat Thuong, Van Quat Dong, An Lai and Thuan Hoa. The whole commune has 2,014 HHs with 11,275 inhabitants, where the poverty rate accounted for 11.45% (Table 2). Six villages of Hai Duong commune included Vinh Tri, Thai Duong Thuong Dong, Thai Duong Thuong Tay, Thai Duong Ha Bac, Thai Duong Ha Trung and Thai Duong Ha Nam. The whole commune of Hai Duong had 1,497 HHs with 7,794 inhabitants and the poverty rate accounted for 11.01%. Although, the two communes were adjacent and the poverty rate was almost the same, per capita income was considerably different. Income per capita in 2010 in Huong Phong was 12.500.000 VN (per capita/year) and it was only 6.500.000 VND in Hai Duong commune.

GDP of the two communes were compired by three main sources: fishing and aquaculture; handicrafts and services; and agriculture (including crop production and livestock). In Huong Phong, agricultural production contributed the largest proportion in the commune GDP, with nearly 49%. Aquaculture and captured fisheries accounted for the least rate of about 19%. In

Hai Duong, fishing and aquaculture were the main income generating activities. Agricultural production was negligible proportion of the commune GDP's structure. Handicrafts and services rather developed in the two communes. Major handicrafts and service activities of the two communes were small business, making hats, fermented fish and fish sauce processing.

Criteria	Huong Phong	Hai Duong
No of villages	6	6
No of HHs and inhabitants	11.275 (2.014)	7.794 (1.497)
Percentage of poor and adjacent poor (%)	11.45 (6.2)	11.01 (6.11)
Income per capita (VND/person/year)	12.500.000	6.500.000
Commune GDP structure in 2010		
- Aquaculture and natural capture	18.92	51.1
- Handicrafts and services	32.43	40.0
- Agriculture	48.65	8.9

Table 2: Major social-economic features of the survey communes in 2010

(Source: Le Tien Thuong, 2010; Hai Duong CPC 2011 and SRD, 2011)

2.3 Infrastructure

According to the communes' annual reports and statistical data 2010, nearly 85% of the intervillage roads of the two communes were concreted. However, due to weather conditions and other factors the system of inter-villages and inter-commune roads of the two communes have been seriously degraded. Travelling within the communes was difficult, especially in rainy season. Dikes and embankment systems had been invested but not yet completed (especially about 4 km of Hai Duong commune). Hence erosion and salinitization often occurred.

In both communes, electricity system had been covering all the villages and HHs. Huong Phong commune had been provided water from the water supply system of Hue city. But in Hai Duong, primarily water resource for daily use was from wells and ponds. Loudspeaker system was one of the critical infrastructures in rural areas to disseminate information related to livelihood activities and DRR. However, in the two communes loudspeaker systems have seriously deteriorated and have been no longer used. Therefore, information dissemination activities in the two communes have faced many difficulties.

PART III. SURVEY RESULTS ON VULNERABILITY AND CAPACITY TO COPE WITH CLIMATE CHANGE OF THE COMMUNITIES IN THE SURVEY COMMUNES

3.1 Factors affecting vulnerability of the community in the two communes *3.1.1 HHs' basic social factors*

Population and labor force of a commune presents the productivity of the locality. Population and labour forces have significant impacts on the development process of the whole community. High rate of population in the working age often indicates high development potential and ability to cope with the negative climate changes impact. High dependent rate (including the elderly and children) often presents the difficulty and vulnerable in the social-economic development as well as in coping with the negative of climate change. In both survey communes, average family size did not differ much between the poor and the non-poor HHs and between the two communes. On average each household had 5-6 members. Although there were no significant differences between the two HH groups but generally poor HHs had smaller family size than the non-poor HHs. The ratio of men and women labor fource was not much different between communes and household groups. However, in both communes, on average, non-poor HHs had 1-2 labour more than poor HHs. Table 3 also shows that the family dependent rate (elderly and children) accounted for lower proportion than people in working age in both communes.

Criteria	Commune	HH group	Mean	Standard deviation	Ν
Family	Huong Phong	Poor	5.15	2.24	46
size(#)		Non-poor	5.96	2.29	69
		Sub-total	5.63	2.29	115
	Hai Duong	Poor	4.29	1.74	28
		Non-poor	5.95	2.08	59
		Sub-total	5.41	2.12	87
Male	Huong Phong	Poor	1.13	1.00	46
labour (#)		Non-poor	1.9	1.37	69
		Sub-total	1.59	1.29	115
	Hai Duong	Poor	0.93	0.86	28
		Non-poor	1.9	1.16	59
		Sub-total	1.59	1.16	87
Female	Huong Phong	Poor	0.98	0.65	46
labour (#)		Non-poor	1.48	1.09	69
		Sub-total	1.28	0.97	115
	Hai Duong	Poor	1	0.82	28
		Non-poor	1.81	1.59	59
		Sub-total	1.55	1.44	87
Children	Huong Phong	Poor	1.93	1.64	46
(#)		Non-poor	1.64	1.51	69
		Sub-total	1.76	1.57	115
	Hai Duong	Poor	1.25	1.11	28
		Non-poor	1.02	1.19	59
		Sub-total	1.09	1.17	87
Elder (#)	Huong Phong	Poor	0.59	0.81	46

Table 3: Family size and labour of the surveyed HHs by commune and HH group

	Non-poor	0.43	0.85	69
	Sub-total	0.5	0.83	115
Hai Duong	Poor	0.68	0.86	28
	Non-poor	0.47	0.82	59
	Sub-total	0.54	0.83	87

Education level of family members expresses ability to access and use of information in daily life in general and in coping with CC particular. Often members of the family, especially the household head with higher levels of education would be able to access information and manipulate the information into practice better than ones with lower education level.



Figure 1: Education level of survey HHs' husband and wife (%)

From figure 1 we can see that the education level of both husband and wife in most of the surveyed HHs were quite high. In both communes, educational level of both husband and wife were secondary school or high school. Ratio of husband with high school education level was much higher than wives. However, there was a significant proportion of husbands and wives have education level at primary school or are illiterate, which occupied over 20% in both communes.

Housing is one of the critical assets and infrastructure expresses the ability of HHs to respond when disasters occur. Housing conditions of the surveyed HHs were classified to three categories: temporary and semi-permanent and permanent² (Table 4). In Huong Phong and Hai Duong communes, the percentage of surveyed HHs having permanent house was relatively limited. In Huong Phong only 21.7% of HHs had permanent house and they were all non-poor HHs. Temporary houses occupied a relatively high rate in both communes with 44.2% of HHs in Huong Phong and 35.4% of HHs in Hai Duong.

Commune	Housing status	Poor	Non-poor	Total
Huong Phong	Temporary (%)	32.60	11.60	20.00
	Semi-permanent (%)	67.40	66.70	67.00
	Permanent (%)	0.00	21.70	13.00
Hai Duong	Temporary (%)	28.60	6.8	13.80
	Semi-permanent (%)	71.40	49.2	56.30
	Permanent (%)	0.00	44.1	29.90

Table 4: House status of the surveyed HHs by commune and HH group (%)

Status of house ownership commonly related to the decision to upgrade to cope with natural disasters. In the two survey communes, most HHs owned their houses. A small percentage of the surveyed HHs had to rent or temporary use (borrow) the houses (less than 10%).

Table 5: House	owning	status	of the su	rveyed	HHs ((%)
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Commune	House owning status	Poor	Non-poor	Total
Huong Phong	Own (%)	100.00	98.60	99.10
	Rent, temporary use (%)	0.00	1.40	0.90
Hai Duong	Own (%)	89.30	96.60	94.30
	Rent, temporary use (%)	10.70	3.40	5.70

3.1.2 Major household's economic factors

Main income sources of survey HHs included: crop production, livestock production, aquaculture, fishing and seasonal migration. In Huong Phong, crop production was the main income source of nearly 70% of poor HHs and 81% of non-poor HHs. Besides, seasonal migration also an important income source of a large proportion of HHs in both communes, especially poor HHs in Huong Phong. In Hai Duong, crop production was not as important livelihood activity as in Huong Phong but aquaculture was the important one. High proportion of HHs in Hai Duong involved in aquaculturing, but due to high investment and risky, very few poor HHs did aquaculturing.

² Temporary housing: old houses and without cemented walls; Semi-permanent housing: concreted house with cemented walls but without cemented roof; permanent house: concreted house with cemented roof. The classification of housing types dependeds largely on interviewer's observation.

Income source	Huong Phong		Hai D	uong
	Poor Non-poor		Poor	Non-poor
Crop production	69.60	81.20	21.40	22.00
Livestock production	28.30	26.10	14.30	16.90
Aquaculturing	4.30	26.10	14.30	40.70
Natural fishing	2.20	10.10	46.40	52.50
Sate wage	2.20	5.80	10.70	8.50
Migration	65.20	49.30	42.90	50.80
Remittent	6.50	0.00	3.60	13.60

Table 6: The main income source of the survey HHs in the surveyed communes (% HHs)

Household's borrowing status reflects both the ability to invest and raise production efficiency, and increase income for HHs but could also result in potential risks, and vulnerability in the vulnerable conditions of the survey communes. In fact, almost of aquaculture HHs in many parts of the Tam Giang lagoon (including Huong Phong and Hai Duong) were in serious debts since 2004 because of investment on aquaculturing. At the time of conducting this survey, over 50% of surveyed HHs in Huong Phong and non- poor HHs in Hai Duong had loan. In Hai Duong, only 39. 3% poor HHs had loans. Majority of loans were invested in production activities and children's schooling. The average loan size was large variation between HHs and between communes (Table 7 and 8). In Huong Phong, largest loan was 150 million VND/HH and smallest loan was 1 million VND /HH. In Hai Duong, there were less borrowers and smaller loan size than in Huong Phong. Maximum loan was 30 million VND /HH and the lowest borrowing rate was with 1 million VND /HH.

Table	7:	Status	of	HHs'	borrow	ring i	n the	e two communes	(%)	
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Commune	Borrowing	HI	Total	
	2011000119	Poor	Non-poor	
Huong Phong	Yes (%)	54.30	65.20	60.90
	No (%)	45.70	34.80	39.10
Hai Duong	Yes (%)	39.30	50.8	47.10
	No (%)	60.70	49.2	52.90

Commune	N	Minimum	Maximum	Mean	Standard deviation
Huong Phong (N=70)	115	1	150	19.26	20.12
Hai Duong (N=41)	87	1	30	12.61	8.65
Total (N=111)	202	1	150	16.80	17.08

Table 8: Level of borrowing of survey HHs in 2011 (Million VND)

Access to credit when disasters occurred related to the ability of HHs to cope with disasters. Commonly, the more the chances to access to credits, the HHs'coping capability higher. Analyzed results in Table 9 show that access to credit sources of the survey HHs when a disaster occurs was difficult in both communes. Poor HHs had less access to credit than the non-poor HHs. The reasons behind, according to leaders of Hai Duong commune, were (i) there was no credit channel in the commune for whom affected by natural disasters, (ii) Poor HHs were not eligible (no collaterals) (iii) people were lack of information about the credit channels and loan procedures, and (iv) many HHs had no demand on credits.

Table 9: HH's ability to access to credit in case affected by hazards (% HHs)

	HH groups					
Commune	Poor	Non-poor	Total			
Huong Phong	23.90	58.00	44.30			
Hai Duong	28.60	49.2	42.50			

Because of more favorable interest rates than the others, approximately 83% of poor HHs and 61% of non-poor HHs who had access to credit when disasters occur revealed that VBSP was the one that they could get loan. While 20% of non-poor HHs and 14% of poor HHs selected agriculture and rural development bank (BARD) to borrow. These HHs often had collateral and were not eligible to access VBSP. Table 10 also shows that the non- poor HHs had more opportunities to borrow from relatives and private lenders than poor HHs.

Table 10: Credit channels that HHs could access when disasters occur (% HHs)

Credit abannals	HH	groups	Total	
Credit channels	Poor	Non-poor	Totai	
BARD	14.29	20.00	16.36	
Vietnam Bank for social policies (VBSP)	82.86	60.87	74.14	
Neighbour, relatives	0.00	15.00	5.45	
Private lenders	2.86	5.00	3.64	

Household properties such as TV, flashlight, radio, boats, life vests, first aid cabinets, pumps and lifebuoys are the properties related to HHs' DRR and DRM capacity. Survey results

(Table 11) showed that the TV and boats were the two most common properties of the survey HHs. However, still 10% of poor HHs in Huong Phong and 11% of poor HHs in Hai Duong and less than 10% of non-poor HHs of the two communes had no TV. Since, the two survey communes located in low land areas and the majority of HHs engaged in fishing and aquaculture, a large number of HHS equipped boats and flashlight.

Commune		Properties	Poor	Non-poor	Total
		Radio	19.6	36.2	29.6
		TV	80.4	94.2	88.7
		Boats	43.5	53.6	49.6
Huong	Phong	Life vest	2.2	17.4	11.3
(N=115)		Flashlight	41.3	52.2	47.8
		First aid cabinets	2.2	1.4	1.7
		Pumps	8.7	11.6	10.4
		Lifebuoys	0	4.3	2.6
		Radio	7.1	40.7	29.9
		TV	89.3	93.2	92.0
		Boats	25.0	40.7	35.6
Hai	Duong	Life vest	14.3	32.2	26.4
(N=87)		Flashlight	42.9	62.7	56.3
		First aid cabinets	0	11.9	8.0
		Pumps	14.3	33.9	27.6
		Lifebuoys	0	13.6	9.2

Table 11: HH properties related to disaster risk reduction (% HHs)

Radio is an important asset in obtaining information about disasters during disaster season. Especially, when the power is interrupted due to disasters, it would become the unique means to obtain information. However, under 40% of the non-poor and fewer than 20% of poor HHs in the two communes had radio. The other properties such as first aid cabinets, lifebuoy and pumps were not common in surveyed HHs.

Latrines and latrine ownership status affect people's vulnerability to natural disasters. Figures 2, 3, 4, 5 and annex I. 6 show that the proportion of HHs had septic latrine was high in two communes, particularly with the non- poor HHs. However, Huong Phong had considerable proportion of poor HHs (20%) and non-poor HHs (15%) without latrines. In Hai Duong although the rate of non- poor HHs had no latrine less than Huong Phong, there were many poor HHs (25%) living without latrine. Most HHs had no latrine had to go out to rivers, sand dunes or fields when in need. This was a serious factor affecting the environment and human health, especially when disasters occur. The remaining HHs used temporary latrines, which were unsafe and unhygienic in the rainy season.





Beside latrine, water source for daily used is also an important factor affecting human lives when disasters occur. Water source dependent more on nature conditions, likely impact negatively on people lives more. In the two survey communes, the main sources of daily used water were from tap, well, river, lakes, and canals (Table 12). Water from ponds, lakes, canals depended largely on natural conditions. These sources of water would be susceptible to contamination when a disaster occurs.

Wells in the 2 surveyed communes were mainly pumped wells and they depended heavily on ground water. Thus, this water source would also be vulnerable when disasters occur. In Huong Phong, nearly 100% of the surveyed HHs had tap water. But in Hai Duong, without water tap system from the city, people mainly used water from wells and ponds and canals. Approximately 17.9% of poor HHs and 27% of non- poor HHs in Hai Duong to used tap water. But this water source was gravity water system had been self constructed by cooperation of several HH groups within the village. The water was originated from places on high sand dunes where ground water was available. This water resource also depended much on natural conditions, there was no treatment mechanism.

Communo	UU group	Water resources				
Commune	iiii group	Тар	Wells	Lakes, rivers, canals		
Huong Phong	Poor (%)	100.0	.0	.0		
	Non-poor (%)	95.7	.0	4.3		

Table 12: Water resources for HH daily consumption (%)

	Total	97.4	0	2.6
	Poor (%)	17.9	82.1	.0
Hai Duong	Non-poor (%)	27.1	71.2	1.7
-	Total	24.1	74.7	1.2

3.2 Hazards, hazard impacts and coping capacity of the two surveyed communities

3.2.1 Major hazards in the surveyed areas

The survey results show that storm, floods, drought and tornadoes were major types of disasters in surveyed areas (Table 13). However, depending on locations (different villages and different places) HHs had different opinions about the frequency and impact levels of each type of disasters. In Huong Phong, over 51% of respondents indicated that storms and floods were two main types of natural disasters and nearly 28% of respondents said that the storm and tornadoes were main natural disasters. Some HHs in other villages said that besides storm and flood, drought was also a regular disaster of the locality. Similarly, more than 62% of surveyed HHs in Hai Duong said that floods and storms were two major natural disasters in their areas.

	% HHs gave ideas							
Commune			Storm	Storm,	Storm, flood,			
Commune			and	Flood and	drought and	Storm and		
	Storm	Flood	Flood	drought	tornadoes	tornadoes		
Huong Phong	-	-	51.3	8.7	12.2	27.8		
Hai Duong	9.2	2.3	62.1	2.3	9.2	14.9		

Table 13: Major hazards in the surveyed communes by local people perception (%)

The most concern of people in the two communes when disaster occurs was human (Table 14). Many respondents were aware that "... human life is the most important, when alive and healthy people can do anything. If loss of human life, nothing is valuable.... ". Over 40% of respondents in Hai Duong and 44% of poor respondents in Huong Phong did agree with that. However, there were many non-poor respondents in Huong Phong concerning about their assets and livelihood activities more than their life when natural disasters occur. Besides, there was a significant proportion of respondents in both communes repressed that they care and concern for all aspects: human life, facilities and also livelihood activities if disasters occur. This was one of the obstacles for local authority in mobilizing local residents to evacuate when disasters occur.

Table 14	: HH's most	concern when	disasters	occur	(%))
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Concern	Huong Phong			Hai Duong		
	Poor	Non-poor	Total	Poor	Non-poor	Total
Human	43.50	27.50	33.90	42.90	44.10	43.70
Properties	28.30	21.70	24.30	21.40	11.90	14.90
Livelihood activities	2.20	14.50	9.60	10.70	15.30	13.80
Human life and						
properties	8.70	5.80	7.00	14.30	10.20	11.50

Human life and						
livelihood activities	4.30	2.90	3.50	7.10	1.70	3.40
All aspects	13.00	21.70	18.30	3.60	10.20	8.00

In the context of many families were worried and concerned about their lives as well as their properties be affected or lost due to natural disasters, most of them reflected that the location and conditions of their houses were vulnerable to floods and storms, especially the poor. Over 82% of poor survey HHs in Huong Phong and 75% of poor survey HHs in Hai Duong expressed that their homes are vulnerable to these two types of natural disasters (table 15).

Commune	Coping capacity	Poor	Non-poor	Total
Huong	Safe (%)	2.17	8.70	6.09
Phong	Can be affected (%)	15.22	23.19	20.00
	Easily affected (%)	82.61	68.12	73.91
	Safe (%)	3.57	23.73	17.24
Hai Duong	Can be affected (%)	21.43	30.51	27.59
	Easily affected (%)	75.00	45.76	55.17

Status of HHs evacuation due to natural disasters partly reflects housing conditions as well as concerns of HHs when disasters occur. In the two survey communes, very high rate of poor HHs had to evacuate when disasters occur (Table 16). Particularly for the non-poor HHs, relatively high number of HHs had to evacuate, but only for serious natural disasters such as floods and storm occurred in 1986 and 1999.

Commune	Evacuation	Poor	Non-poor	Total
Huong Phong	Yes (%)	60.90	42.00	49.60
	No (%)	39.10	58.00	50.40
Hai Duong	Yes (%)	75.00	44.10	54.00
	No (%)	25.00	55.90	46.00

Table 16: Evacuation status of HHs in the two surveyed communes when disasters occur

3.2.2 Status of coping with disasters in the two communes

Results of interviewing local authorities and local people showed that local people were experienced with disasters in their areas, hence, majority of survey HHs could reduce impacts of disasters on livelihood activities. In aquaculturing, HHs commonly harvested fishes, crabs and shrimps before the rainy season. In crop production, HHs usually avoided floods and storm impacts by adjusting cultivation calendar, using short-day varieties or resistant/tolerate crop varieties... In livestock production, HHs commonly raised less number of animals during the flood and storm season. In many cases, HHs adapted to flood and storm by constructing taller or more concreted animal houses or used HHs furniture, such as sleeping beds, chairs,

tables for making temporary places for their animals when disasters occur. However, as noted by local people and authorities, the unusual weather conditions in recent years had increased negative impacts on livelihood activities in the areas.

Commune	Level of impacts	Poor	Non-poor	Total
	Extremely high	10,90	13,00	12,20
Huong Phong	High	45,70	34,80	39,10
Throng Thong	Relative high	21,70	29,00	26,10
	Not high	8,70	18,80	14,80
	No impact	13,00	4,30	7,80
	Extremely high	10,70	11,90	11,50
Hai Duong	High	42,90	28,80	33,30
	Relative high	10,70	20,30	17,20
	Not high	7,10	13,60	11,50
	No impact	28,60	25,40	26,40

 Table 17: Impacts of disasters on HHs' production activities (% HHs answer yes)

Over 50% of poor HHs and 47% of non-poor HHs in Huong Phong expressed that natural disasters have impacted "high" or "extremely high" to their livelihood activities (Table 17). In Hai Duong, poor HHs was impacted by disasters more than the non-poor HHs. However, there was relatively large proportion (29%) of the poor in both communes revealed that natural disasters have not affected on their livelihood activities. For these HHs their main source of income was non-farm activities.

The impacts of natural disasters to different production activities differed between the two communes (Table 18). In Huong Phong, more than 53% of respondents indicated that crop production was most affected by natural disasters. But in Hai Duong, natural fishing and aquaculturing were affected most. The reasons would be that crop production was the main source of income for many HHs in Huong Phong and natural fishing and aquaculturing were the main income source of a large proportion of HHs in Hai Duong.

Table 18: The production activity affected most by disasters in the surveyed communes

Livelihood activities	Huong Phong	Hai Duong
Crop production (%)	53.90	6.90
Livestock production (%)	4.30	2.30
Aquaculturing (%)	15.70	26.40
Natural fishing (%)	5.20	23.00
Crop and livestock production (%)	12.20	6.90
Crop and agriculture production (%)	0.00	2.30
Other activities	0.90	3.40

No affected	7.80	28.70

Mr.P.V.T 53 years old, Thai Duong Thuong Dong village, Hai Duong commune

...My family has seven people with five main labors ... in the past, off-source fishing was the main income of the family. Due to increasing difficulties in fishing, the catch has getting decline, costs of petroleum has been increasing together with increasing risks and dangerous to human life due to natural disasters, we had to switch to other activities. Fishing is just a subsistent income source and we only do when weather favorable and having free time. After the 1999 flood, our family engaged in aquaculturing and had big investment on this activity. Due to the high initial cost (for fingerlings, buy land to make fishpond, and feeds), we had to get loan from BARD. In the first 4 years, we gained quite allot profits. Beside paying bank debt, we had saved at least 17 "chi" of gold. But in the following years shrimp diseases were blooming and we were in prolonged losses. As a result, our entire fund including 17 "chi" of gold had to be sold to compensate for losses. In 2006 we adopted new model of aquaculturing (integrated aquaculture). With this model, production risks have been reduced significantly, however, the return was low and still depends largely on the weather conditions...

Since aquaculture was the main income generating activity for many HHs in the two survey communes, and this activity was also highly affected by natural disasters, therefore, in depth analysis of the economic efficiency of aquaculture (in pond) is of important. Moreover, this was suggested by local people and local authorities for SRD supporting. The results of analyzing economic efficiency in pond-aquaculturing in the two communes are shown in Table 19. Table 19 shows that all economic parameters such as aquaculture area, total revenues and total expenditures were large variations between HHs and between the two communes. But the average profit on a unit area was almost no difference between the two communes (1.02 and 1.03 million/sao³). Large standard deviation of cost and net-benefits indicated that levels of investment fluctuated greatly between HHs. HHs who had ability to invest more, likely brought revenues and net-benefits higher, and vice versa.

Commune	Criteria	Mean	Max.	Min.	Standard deviation
Huong Phong	Aquaculture area (m ²)	9673.08	25000	1500	7079.46
(N=26)	Total Cost/ Sao (Mil/sao)	1.70	9.00	0.47	1.64
	Total revenues/ Sao (Mil./ Sao)	2.73	12.00	0.70	2.15
	Net- benefit/ sao (Mil./sao)	1.02	3.00	0.15	0.69
Hai Duong	Aquaculture area (m ²)	7482.35	40000	1000	1.02
(N=17)	Total Cost/ Sao (Mil/sao)	3.46	20.83	0.50	4.58

Table 19: Economic	c analysis of pond -	aquaculture activity	of surveyed HHs in 2010
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³ 1 sao= 500m²

Total revenues/ Sao	4.50	20.80	0.90	4.47
(M1l./ Sao) Net- benefit/ sao (Mil./sao)	1.03	2.33	0.00	0.65

In Hai Duong, according to Mr. L.T (chairman of commune farmer union), prior to 2004 aquaculture activity gained considerable benefits. But from 2004 to the present aquaculturalists were with continues losses due to climatic changes and environmental pollution. Most farmers left their pond without cultivation. Because of many years leaving the pond without cultivation, fish pond system in Hai Duong commune degraded seriously. To maintain and develop aquaculture activity and to ensure stable income for farmers, in 2010 the CPC of Hai Duong supported 470 million for aquaculture community for up grading ponds, purchasing of pumps and repairing pond dikes. Although, the pond system has been upgraded together with adapting of new techniques of integrated aquaculturing losses probability still remained 50%. If lost, HHs would lose on average 70% of the total revenues.... This result coincides with the review of an aquaculture engineer (Mr. N.L), who has engaged in aquaculture activity with more than 3 ha for many years in Huong Phong commune. He also revealed that aquaculture activity depends heavy on natural conditions. The weather is getting increase impacts negatively on this livelihood activity. In addition, both Mr N.L and Mr.L.T estimated that average net benefit of aquaculturing was about 1-1.5 million/Sao in 2010. This figure was consistent with results of HHs analysis shown in table 19

Main causes of losses in aquaculture in the two communes (according to Mr.L.T and Mr.N.L) included: (i) environmental pollution; (ii) blooming of diseases, especially shrimp. One of the challenges for shrimp was that source of shrimp larvae was not guaranteed. Shrimp larvae were often bought from other province and were much depended on the middleman for price as well as quality. The quarantine work has not done thoroughly, then diseases often occurred; (iii) Climate changes, especially temperature fluctuation. In 2010, aquaculturalist had to delay for releasing shrimp larvae to pond about 1 month due to prolonged cold weather. In addition, temperature was too much fluctuated (some days were too hot, some other days were too cold) and affected seriously on the development of the cultured species. Besides, shrimp larvae were usually bought on release day at the age of 2, 3, therefore, their ability to adapt to the environment was less than at the "Boots" age; and (iv) frequent changes in salinity and most salinity measurements of currently used was manually and not accurate. Therefore, a more accurate method of determining the salinity and good breeding environment for nursing "Boots" to the age 3 to improve the ability to adapt to the environment is necessary.

3.3 Awareness of local authorities and community about climate change and disaster risk reduction

3.3.1 Awareness of local people and local authorities about CC and DRR

People awareness about CC and DRR closely correlated with the ability to adapt to CC as well as DRR (Phan Cong Tam, 2011; Le Thi Hoa Sen et al, 200). Almost 50% respondents in Huong Phong and 57% respondents in Hai Duong have never heard of "climate change" (Table 20). Most people have heard the concept "climate change" just through TV and did not fully understand the concept, as well as the causes and impacts of CC.

"4 on spot" is one of the fundamental principles of DRR which has been implemented in recent years in many localities across the country. Aware of and understanding these principles would help people self-reliance, more active and improved ability to cope with disasters. Over 80% of surveyed HHs in Huong Phong and nearly 90% of surveyed HHs in Hai Duong did not know or have never heard this term (Table 21). For local authorities, more than 54% of village and commune leaders did not know about the principles. Besides, 95% of them expressed that the principles was not used in practice. Referring to this issue the village leader of An Lai village said that "... The 4 –on- spot concept was well known by many village and commune leaders. Annually, prior to the rainy season, the CPC together with the district CSFC or Red Cross organisation organise training for village leaders and village commune's CSFC. However, only leaders participated in the trainings. Even members of village SFC groups were not trained, thus, many of them did not apply the principles in practice, even they did not know very well the concept... such people did not know the 4-on spot principles, how could farmers know about it ?!..."

Commune	Level of awareness	Percentage (%)
Huong Phong	Have heard	50.43
	Not have heard	49.56
Hai Duong	Have heard	42.52
	Not have heard	57.47
Total	Have heard	47.02
	Not have heard	52.97
	Not known	4.05
Local authorities	Known	68.18
(commune, village	Well understand	27.27
icaders)	Not much applied in practices	54.54
	Fully applied in practices	45.45

Table 20: Awareness of local authorities and people about climate change (% HHs)

People as well as leaders in the two communes accessed to information on CC and DRR through various channels. In which TV is the most popular channel (see Annex I.1). Approximately 90% of HHs who were aware of CC in the 2 survey communes expressed that they knew about CC or DRR by watching television. They just have heard about it but not well understanding. For the staff, beside television, news papers, colleagues and trainings were also their sources of information about CC and DRR.

Commune	Level of awareness	Percentage (%)
Huong Phong	Not know	80.9
	Know	11.1
Hai Duong	Not know	88.5
Hai Duolig	Know	11.5
	Not know	54.5
	Know	27.3
L coal staffs	Know very well	18.2
	Not much applied	68.2
	Fully applied	4.5
	Do not applied	27.3

Table 21: Awareness of local authorities and people about "4 on spot"

Regarding information propagation and DRR activities, survey results showed that over 85% of surveyed HHs in the two communes had received information about DRR in recent years (table 22). Sources of information about DRR of local staffs and people in two communes were very diverse, which consisted of eight different sources (see annex I.2). Among these, television was the main information channel. For the local staffs the commune CFSC was the major channel.

Table 22: Status of accessing to information about DRR in the two survey communes in recent years (% respondents)

	People of Huong Phong commune	People of Hai Duong commune	Local staffs
Had received information	85.20	85.10	90.9
Had not received information	14.80	14.90	9.1

Communication means play important roles both before, during and after natural disasters occur. In the surveyed areas, television was the main communication channel. Yet, most of survey HHs did not satisfied with the information system in their locality in flood and storm season.

Ms. N.T. H 44 years old in Thai Duong Thuong Dong, Hai Duong commune

....my village is located in a more favourable area in compare to other villages of Hai Duong commune. Therefore, we have been less affected by floods than the others. However, my family have never been careful less with disasters, especially in recent years. In recent years, weather conditions have considerably changed. People could not make use of the indigenous weather condition as precisely as in the past. Therefore, be careful with disasters would always better for us.

... Information plays important role for effective DRR and DRM. Recently, people here spent more time for news and weather forecast on TV, especially in rainy season. This is the main

communication channel and the most reliable information source for us ... But in big floods or storms, power often lost, then TV had no meaning at the time... Radio is more important for us in rainy season but not many HHs here had it. .. Radio usually refers to general information. It normally provides information for a region rather than a specific community. Information from radio was helpful for DRR but we prefer to hear about our community and especially by the local voices. However, it is hard to access to information in our commune during the rainy season, since the commune loudspeaker systems had been damaged many years and no longer in use.... Whenever needed, the village leader had to use the portable speakers to disseminate the information. However, the portable speakers were too old, we could never hear clearly the information ...

3.3.2 Status of coping with climate change of the people and authorities in the survey communes

Implementing the Ordinance on Flood and Storm control of the National Assembly Standing Committee No. 27/2000/PL-UBTVQH10 supplemented and adjusted on August 24, 2000 from the Article 91 of the Constitution of the Socialist Republic of Vietnam Nam in 1992, as many parts of the country, the two survey communes have had established the committee for flood and storm control (CFSC), in which the commune chairman was the head (Figure 2). Members of the commune's CFSC included chairman, vice chairman of the commune, representatives of mass organizations and other departments. In both survey communes, members of the CFSC were 11 people. At village level, each village had formed a FSC group and village leader plaid as the head. Members of the village FSC were about 6 people including village leaders and representative of village's mass organisations. In addition, in each village the FSC formed 2 rescue teams. The team members would be volunteers, skilled swimmers and good health to help peoples in the village before, during and after disaster occurs. Operation of the rescue team based totally on their experiences and skills as well as their strength, since they have not yet been attained any trainings related to the rescue tasks.



Picture 2: The CFSC network of the two survey communes

(Source: Huong Phong CPC, 2011, Hai Duong CPC, 2011 and THH CPC, 2011) Note: _____ coordinate with the vertical-hierarchy departments

As a result of in-depth interviews of the commune CFSC's members, main activities of the CFSC included (i) together with leaders of village FSCs make annual DRR plan; (ii) annually organise training on DRR for CFSC's members before the rainy season and implementing the DRR plan (iii) supervise and monitor the implementation of DRR plan at village level and report to related departments; (iv) coordinate with other organisations to implement programs related to DRR in the communes.

Although the commune's CFSC has been formed and operated for a long time, over 65% of surveyed HHs in Huong Phong and over 68% of surveyed HHs in Hai Duong were unaware of the existence of the village rescue team as the CFSC (Figure 6). Even many local staffs in the two communes (27.3%) did not know the existence of this team.





Not only the operation of rescue teams, other activities of the commune's CFSC were not recognised by the local people. Very few respondents in the two communes knew the commune's annual DRR plan (Table 24). In addition, the ratio of HHs and local staffs have not involved in the DRR planning process accounted for a very high proportion. Then, it may conclude that the CFSC of the two survey communes operated not effectively.

Refer to this problem many respondents in both communes, especially Mr. N.P in Thai Duong Thuong Tay, Hai Duong commune and Ms. N.T.S inThuan Hoa village, Huong Phong

commune expressed that "... I have been an active member of mass associations of the commune so I knew about the establishment of the CFSC of the commune as well as the rescue team. However, I have never seen any of their activities. Planning and implementation activities have been done only by key people and leaders and what they have done, nobody knew. When disasters occur, everyone have had to manage by themselves depending on their own capacity. The HHs with temporary housing had to evacuate to more permanent houses ... local staffs also worried about themselves and their families and no one gone out for rescuing or supporting the others ..."

If just relying on the HHs survey results, it seems that the two commune's CFSC was weak in operation and ineffective and their responsibilities were the main causes. However, results of in-depth interviews and local staffs interview showed that, awareness as well as cooperation of local people was a part of the problem. Because of lacking awareness on CC, most local people have not paid much attention to the information about DRR. Before, during and after disasters, one of the most difficulties of the FSC was to mobilise people to evacuate...In addition to that, not many HHs have participated in the village meetings about DRR. They have participated only when DRR information were combined with other acitivities. Almost 100% of local staffs of the two communes revealed that very few people have had attended the village meetings on DRR. Most of meetings on DRR, less than 20% of HHs in the village had attended.

Criteria	Status	Local people in Huong Phong	Local people in Hai Duong	Local staffs
Aware of the	Yes (%)	21.70	37.90	81.8
CFSC' s plan	No (%)	78.30	62.10	18.2
Participating in making CFSC's	Yes (%)	2.60	10.70	68.2
plan	No (%)	97.40	89.30	31.8

Table **23**: Awareness of local staffs and people about the commune's FSCP and their participation (%)

Besides, opinions of some local staffs in both communes showed that "... The facilities and rescue means of the CFSC were very poor, almost nothing. In both communes the district has had supported a boat for rescuing in disasters but hardly been used due to lack of funds to buy fuel. Moreover, the operation of CFSC just responsibility without any support. Even a package of instant noodles for the rescue team for motivation was not thought of...

3.3.3 Capacity of local people and authorities to cope with CC

Beside the commune and village FSC network, knowledge and skills of local people and staff about DRR was a criterion reflecting their coping capacity. Table 24 shows that almost 100% of people in two communes have not been trained on DRR. But for local staffs, over 80% of

interviewed staff has attended trainings on this subject. In Huong Phong 4.3% of respondents were trained and almost were non- poor HHs.

Commune	Trained	Poor HHs	Non-poor HHs
	Have trained (%)	0.00	4.26
Huong Phong	Have not been trained (%)	100.00	95.74
	Have trained (%)	0.00	0.00
Hai Duong	Have not been trained (%)	96.43	100.00
Have trained (%)		8	1.81
Local staffs	Have not been trained (%)	1	9.19

Table 24: Rate of local people and local staffs has been train on DRR (%)

Aware about the places to evacuate was one important factor reducing vulnerability of HHs when a disaster occurs. Over 70% non-poor and poor HHs in both communes was aware of where to evacuate when disasters occur. Poor HHs in two communes was more aware of evacuation than the non-poor HHs. Evacuation destination of most HHs in Hai Duong was sand dunes, and in Huong Phong were their house's porch or permanent houses in their locality.

Table 25: Rate of HHs aware of the nearest places to evacuate to in the two survey	Y
ommunes (%)	

Commune	Awareness	Poor	Non-poor	Total
Huong Phong	Aware (%)	71,70	69,60	70,40
	Not aware (%)	28,30	30,40	29,60
Hai Duong	Aware (%)	85,70	78,00	80,50
	Not aware (%)	14,30	22,00	19,50

Rescue means and facilities of the community shown the capacity to cope with CC. In the two survey communes, 37% of interviewed staff and people said their community has rescue means (Figure 7). However, most of the rescue means belonged to individual HHs.

According to some local staffs in Hai Duong, about 5 years ago every village was equipped with two lifebuoys and a flashlight for the village leaders (who were also head of the village CFSC). Those were all means of relief and rescue of the community. However, when disasters occur the CFSC could also mobilized individual boats in the village for rescue activity.



Figure 7: Rescue means of the two surveyed communes (%)

Regarding gender aspects, 53% of respondents in both communes expressed that men who decide all the production activities of the family. However, there was a relative large proportion (31.7%) of respondents said that they equally have rights to decide production activities. This was reasonable in the context of the surveyed communes, since a high percentage of HHs' head (men) had to migrate seasonally to other regions for earning. Therefore, women had increasing role in making decision for majority of activities in HHs.

Criteria	Gender	Huong Phong	Hai Duong	Total
Who has major rights to	Male (%)	49.6	58.6	53.0
make decision on HHs	Female (%)	13.9	16.1	14.9
livelihood activities	Both (%)	36.5	25.3	31.7
Who has major rights to	Male (%)	58.3	71.3	63.4
make decision on DRR	Female (%)	13.0	10.3	11.9
activities of HHs	Both (%)	28.7	18.4	24.3
Who can capture or	Male (%)	68.7	72.4	69.8
update more CC or DRR	Female (%)	13.0	11.5	12.4
information in HHs	Same (%)	18.3	16.1	17.3
The main person to attend	Male (%)	39.1	56.3	46.5
trainings	Female (%)	8.7	5.7	7.4
	Both (%)	5.2	1.1	3.5
	None of them	47.0	35.6	42.1
	(%)			

Table 26: Gender issues in DRR and production activity in the survey communes

For gender in DRR activities, survey results showed that men who had more updated information about disasters and CC than women. This was explained by many women that men often go out and interact more with people. Thus, they captured more information than women. Furthermore, men were the main or the only person of HHs participating in all training courses in the communes. These were two of the reasons why men had more rights to make decision related to DRR and the production activities than women in both communes.

Commune	Planning	Poor	Non-poor	Total
Huong Phong	Yes (%)	71.70	73.90	73.00
	No (%)	28.30	26.10	27.00
Hai Duana	Yes (%)	67.90	84.70	79.30
nai Duolig	No (%)	32.10	15.30	20.70

Table **27**: HHs' plan in DRR in the two survey communes (%)

Having plans to cope with disasters helps people limiting disasters' damages. Above 73% of survey HHs in Huong Phong and nearly 80% of survey HHs in Hai Duong had their own plan to cope with disasters. However, most of them clarified that their plan was usually just their thoughts and experiences (see Appendix I.4). Therefore, the plans were often incomplete would affect their potential coping capacity.

PART IV. LIST OF EVALUATION INDICATORS

Based on the baseline survey results, a set of indicators were listed for each commune and for 3 different components:

Indicators	Huong Phong	Hai Duong commune
	commune 2010-2011	2010-2011
Rate of temporary housing	20%	13.8%
Rate of permanent housing	67%	56.3%
Rate of house rent	0.9%	5.7%
Rate of HHs could access to credit when	44.3%	42.5%
disasters occur		
Rate of HHs having TV	88.7%	92.0%
Rate of HHs having radio	29.6%	29.9%
Rate of HHs having flashlight	47.8%	56.3%
Rate of HHs having life vest	11.3%	26.4%
Rate of HHs having lifebuoy	2.6%	9.2%
Rate of HHs having septic latrine (own)	65. <i>2</i> %	65.5%
Rate of HHs having temporary latrine	18.3%	13.8%
(own)		
Rate of HHs having water tap or safe	97.4%	0%
(treated) water resources		

4.1 Vulnerability indicators

4.2 Coping capacity indicators

Indicators	Huong Phong	Hai Duong commune

	commune 2010-2011	2010-2011
Rate of HHs concerned more about	24.3%	14.9%
properties than human life when disasters		
occur.		
Rate of HHs concerned more about	9.6%	13.8%
production lost than human life when		
disasters occur.		
Rate of HHs aware of CC	50.43%	42.52%
Rate of HHs highly aware of CC	0%	0%
Rate of local staffs aware of CC	68.1	8%
Rate of local staffs highly aware of CC	27.2	27%
Rate of local staffs apply their knowledge	54.5	54%
of CC in practice		
Rate of HHs aware of "4 on spot"	80.9%	88.5%
principles		
Rate of local staffs aware of "4 on spot"	27.	3%
principles		
Rate of local staffs highly aware of "4	18.	2%
on spot" principles		
Rate of local staffs apply "4 on spot"	72.	7%
principles in practice		
Rate of HHs access to DRR information	85.2%	85.1%
annually		
Rate of local staffs access to DRR	90.	9%
information annually		
Rate of HHs aware of the village rescue	34.8%	31.9%
team		
Rate of local staffs aware of the village	72.	7%
rescue team		
Rate of rescue team members be trained	0%	0%
on communication, mobilization and		
rescue skills.		
Rate of HHs aware of the DRR plan of	21.7%	37.9%
the commune		
Rate of HHs participate in village DRR	2.6%	10.7%
planning		
Rate of local staffs aware of DRR plan of	81.	8%
the commune		
Rate of local staffs participate in	68.	2%
commune DRR planning		
Rate of HHs be trained on DRR planning	4.26%	0%
Rate of local staffs be trained on DRR	2R 81.8%	
planning		
Rate of HHs aware of where to evacuate	70.4%	80.5%
when disasters occur		
Village rescue means and facilities	2 life vest and 1	1-2 life vest and 1
	flashlight	flashlight
Rate of HHs attending village meeting	<20 % (very few)	<20 % (very few)
about CC or DRR		

Rate of HHs having written plan of DRR	0%	0%
Rate of women decide production	16.1%	14.9%
activities of HHs		
Rate of HHs with men and women	36.5%	25.3%
equally decide livelihood activities		
Rate of women decide HH's DRR	13.0%	10.3%
activities		
Rate of HHs with men and women	28.7%	18.4%
equally decide DRR activities		
Rate of women more update of DRR	13.0%	11.5%
information than men		
Rate of men and women of HHs equally	18.3%	16.1%
capture information about DRR		
Rate of women participate in trainings	8.7%	5.7%

4.3 Livelihood improvement indicators

indicators	Huong Phong	Hai Duong commune
	commune 2010-2011	2010-2011
Probability of losses in pond aquaculture	50%	50%
Average of losses of a failure aquaculture	70%	>70%
season		
Average benefit in pond aquaculture	1,02	1,03
(Mil/ Sao/main season)		

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ANNEX

ANNEX I: SOME INFORMATION ABOUT THE COMMUNITY COPING CAPACITY

Commune	Ownership status	Poor (%)	Non-poor (%)
Huong Phong	Owner	69.6	87.0
	Neighbor	15.2	4.3
	Community	15.2	8.7
Hai Duong	Owner	46.4	86.4
	Neighbor	10.7	.0
	Community	42.9	13.6

Annex I.1 Ownership status of latrine of survey HHs

Annex I.2 The community's source of information about CC (%)

Source	Local people in Huong Phong	Local people in Hai Duong	Local staffs
TV	89,50	92,00	86,4
Radio	7,00	10,30	27,3
Newspaper	4,30	2,30	40,9
Social organisations	73,00	60,90	36,4
Local staffs	1,70	0,00	40,9
Neighbours	4,30	1,10	27,3
Mass organisations	1,70	0,00	31,8
Trainings	5,20	3,40	59,1

Annex I.3 The community's sources of information about DRR

Sources	People in	Huong	People	in	Hai	Local staffs
	Phong		Duong			
СРС	38.3	0	3	37.20		77.3
Village rescue team	15.0	0	3	34.60		-

Radio	29.60	29.90	27.3
TV	89.50	92.00	40.9
Loadspeaker	31.80	23.10	27.3
Local staffs	43.00	37.20	40.9
Neighbours	4.30	1.10	-
Trainings	5.20	3.40	59.1

Annex I.4 HHs'plans to cope with disasters (%)

Commune	Written plan	Verbal plan	Plan in thought	No plan
Huong Phong	1.1	70.0	25.6	3.3
Hai Duong	2.8	54.9	39.4	2.8

Annex I.5 Sources of supports/ relief after disasters in the two communes (%)

Commune	Sources of supports	Poor	Non-poor	Total
	Local authorities	100.00	100.00	100.00
Huong Phong	Non-governmental organisations	100.00	100.00	100.00
	Neighbours	0	0	0
	Local authorities	95.70	96.70	96.20
Hai Duong	Non-governmental organisations	66.67	100.00	83.33
	Neighbours	0	0	0

Annex I.6: Status latrine of survey HHs in the two communes (%)

Xã	Septic latrine	Temporary latrine	No latrine
Huong Phong	65. <i>2</i>	18.3	16.5
Hai Duong	65.5	13.8	20.7
Total	65.3	16.3	18.3

ANNEX II. PHOTOES



Interviewing village leader, Huong Phong commune



Surveyed HH in Hai Duong commune



Surveyed HH in Huong Phong commune



Surveyed HH in Huong Phong with handicraft activity



ANNEX III: QUESTIONAIRE

Annex III.1: ASESSMENT OF VULERABILITY AND CAPACITY TO COPE WITH CLIMATE CHANGE

(Questionnaire for HH survey)

- Code:
- Interviewee:
- Date of interviewing:

A. HH information

- 1. Name of HH head:
- 2. Sex:
- 3. Age:
- 4. Name of interviewee:
- 5. Sex of interviewee:
- 6. Village:
- 7. Commune:

B. Basic contents of the survey

I. Factors affecting vulnerability

1. Family information

- 1.1. Family size
- 1.2. Number of labour:
 - 1.2.1. Male labour:
 - 1.2.2. Female labour:
- 1.3. Number of children:
- 1.4. Number of old person:

2. Education

2.1. Education level of HH head: □ Illeracy □ Primary scholl □ Secondary School □ High school □ higher level

2.2. Education level of wife

□ Illeracy □ Primary scholl □ Secondary School □ High school □ higher level

2.3. How many children have been to school?

Pre school:..... ... Primary S.C:...... ... Secondary SC...... High S.C

.....higher.....

2.4. How many children have not been to school?: Reasons.....

3. Housing status

3.1.	Housing conditions:	Temporary	Semi-perr	manent	permanent
3.2.	HH head is:	house owner	House renter	borrowe	r

4. HH economic conditions

4.1. HH income sources (ranking)

Income sources	Ranking
Crop prodution	
Livestock production	
Aquaculture	
Fishing	
Fish processing	
Wage	
Migration	
Other (specify)	

4.2. HH group?

Adjacent poor poor non poor

4.3. Having loan?

No

If yes: how much:..... from which source.....

.....

4.4. If your family is affected by disaster could you access any credit source for overcome the problems? Yes

No

If yes, from which source?

NGO	
BARD	
VBSP	

Yes

Relatives	
Private lenders	
Others	
(specify)	

5. HH properties related to DRR?

Properties	quantity
Radio	

TV	
Boat	
livevest	
flashlight	
First aid cabinets	
Pumps	
Lifebuoy	
Other (specify)	

6. Latrine

- 6.1. HH's type of latrine? no latrine temporary latrine septic latrine
- 6.2. Latrine ownership HH own belong to neighbor belong to the community

7. Daily used water resources

- 7.1. Sources of water for HH daily used? Earth wells Pumping wells water tap
 - Lake, pond River, canals
- 7.2. Ownership of water resource HH own neighbor community others

8. Gender issues

- 8.1. Who decide livelihood activities of HHs? Men Women Both
- 8.2. Who decide DRR activities? Men Women Both
 - 8.3. Who more update information about DRR and CC? Men Women Both
 - 8.4. Who are main person in HHs attend trainings? Men Women Both no oen attend

II. DISASTER RISKS AND COPING ACTIVITIES

9. Types of disaster in surveyed areas (base on HH perception)? Storm tornadoes floods tides

salinity drought land slide others (specify)

10 What would be the most concern of the family when a disaster occurs?

- Storm : human life properties production activities

- Flood : human life properties production activities

.....

11.	HH's	housing	conditions
-----	------	---------	------------

	Safe	Might be affected	Easily be
			affected/vunerable
Floods			
Storm			
Tides			
Tornadoes			

12. **HH's evacuation in recent years due to disasters?** *yes no*

13. HH's production activities be affected by disasters in recent years?

yes

no

If yes, please specify which production activities be affected with ranking and how HH can overcome?

Production activities	Affected activities(ranked)	Activities to overcome
Crop production		
Livestock production		
Aquaculturing		
Fishing		
Processing		
Others		

14. Level of affected by disasters on production activities?

extremely high high relative high low n affected

- 15. Aquaculture area?(m2)
- 16. Variable costs for aquaculture/ Sao in 2010 (Mil)
- 17. Revenues from aquaculture/ sao (mil) in 2010.....

18. Village' rescue means/ facilities?

facilities	yes
Boats	
Water tank	
Life vest	
Pumps	
Life bouy	
Rescuse line	
Other (specify)	

19. Supports when disasters occur?

no

yes

Sources for support	What kind of support
government	
Non gouvernement org.	
Relatives	
Others	

III. HH AWARENESS ON DRR AND CLIMATE CHANGE

no

20. Have you heard about "climate change" ?

If yes, from where you hear?

yes

not

Source of information	
TV	
Radio	
News paper	
NGOs	
Governmental staff	
Friends, relatives	
Neighbor	
Mass organizations	
Others (specify)	

21. Did you receiving information on DRR in recent years ? yes no

,

If yes from where did they know?

Source of information	
CPC	
Village rescue team	
Radio	
TV	
loudspeaker	
Village leader	
neighbor	
Others	

22. HH awareness about the commune plan for DRR?

no

no

23. HH involment in planing activities regarding DRR of the village or commune?

yes

yes

If yes, who involved

men	women	both	

24. Do you know anything about "4 on spot" ? yes no

From where you know?

Source of information	
TV	
Radio	
Newspapers	
Mass organisation	
Governmental staff	
Friends	
Neighbor	
Other (specify)	

25. There is any rescue team in your village that can help people when disasters occur?

yes no

If yes,

Any of your HH members is a member of the rescue team?

yes no

If yes, who?

men women both

26. Have you ever been trained on DRR?

Community base disaster risk management

Community base DRR planning

First aid

Evacuation

Fire control

Diseases control

Environmental management

Other :

27. Do you know	where to evacuat	e when disaster occurs?	
yes	no		
If yes? Specify	where		
28. Did your hou	se has been recen	tly upgraded for DRR?	
yes	no	not necessary	
29. Did your fam	ily in recent years	prepared for DRR before disa	ster
season?			
yes	no		
30. Annually did	your family have a	any plan for DRR (especially b	efore the
disaster sea	son)?		
Yes	No		
If yes, specify t	he plan.		
Form of plan:			
Written plan	Verbal/ oral plan	Plan in thought	

Thank you for your cooperation!

ANNEX III.2: ASESSMENT OF VULERABILITY AND CAPACITY TO COPE WITH CLIMATE CHANGE

(Questionnaire for interviewing local staffs)

- Code:
- Interviewee:
- Date of interviewing:

1. Interviewees:

- 2. Age:
- 3. Education level:
- 4. Sex:
- 5. Position held:
- 6. Village:
- 7. Commune:

8. Types of disaster in	surveyed areas?		
Storm	tornadoes	floods	tides
salinity	drought	land slide	others (specify)

9. Livelihood activities of the community be affected by disasters? extremely high high relative high low not affected

10. Village' rescue means/ facilities

facilities	yes
Boats	
Water tank	
Life vest	
Pumps	

Life bouy	
Rescuse line	
Other (specify)	

11. Supports when disasters occur?

yes no

Sources for support	What kind of support?
government	
Non gouvernement org.	
Relatives	
Others	

12. Did you know about "climate change" ?

no yes, know abit know very well

If yes, from where you hear?

Source of information	
TV	
Radio	
News paper	
NGOs	
Governmental staff	
Friends, relatives	
Neighbor	
Mass organizations	
Training	
Others (specify)	

^{13.} If know, have you apply in practice? Yes, partly yes, fully applied

not applied

14. Do you know anything about DRR?

yes, somehow Know well

do not know

From where do you know?

Source of information	
CPC	
Village rescue team	
Radio	
TV	
loudspeaker	
Village leaders	
Neighbor	
Experiences	
Other (specify)	

If yes, did you apply in practice?

yes, partly yes, fully applied did not apply

- 15. Do you know anything about the commune or village annual plan of FSC? yes no
- 16. Did you involve in making plan of FSC of the village or commune? yes no
- 17. Do you know anything about the "4 on spot" princple? yes no
 - If yes, please specify:.....

From where do you know the "4 on spot" principle?

Source of information	
TV	
Radio	
Newspaper	
Friends	
Neighbor	

Trainings	
Other (specify)	

18. Is there any rescue team in our village to help people before, during and after disasters?

no

If yes,

Do you participate in any rescue team to help people?

No

yes

yes

28. Have you ever been trained on DRR ? Community base disaster risk management

Community base DRR planning

First aid

Evacuation

Fire control

Diseases control

Environmental management

Other :

- 19. Do village or commune staffs annually organize trainings on DRR/ DRM for villagers?..... if yes, how many time?.....
- 20. Participation of local people/ villagers in village meetings about DRM or CC? all of villagers some villagers very few

On average, how many percent of villagers participating?.....

Thank you for your cooperation!