

# Study on Knowledge, Attitudes and Practices of community members in Tien Giang and Ho Chi Minh City with regards to dengue fever and climate change



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## Abbreviations

BCC	Behavioural Change Communication
CC	Climate Change
CHS	Commune Health Station
DF/DHF	Dengue Fever/Dengue Haemorrhagic Fever
DoH	Department of Health
FGD	Focus Group Discussion
HCMC	Ho Chi Minh City
IDI	In-Depth Interview
IEC	Information, Education and Communication
IFRC	International Federation of Red Cross Red Crescent Societies
KAP	Knowledge, Attitudes and Practices
MD	Mekong Delta
MoH	Ministry of Health
PC	People's Committee
PCM	Preventive Medicine Centre
RC	Red Cross
ToR	Terms of Reference
VHWs	Village Health Workers
VND	Vietnam dong
VNRC	Vietnam Red Cross
WHO	World Health Organisation
WU	Women's Union
YU	Youth's Union

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## Executive Summary

Dengue Fever/Dengue Haemorrhagic Fever (DF/DHF) is a concerned health problem in Vietnam. The incidence of DF/DHF is increasing every year, especially in the Southern part of Vietnam. Vietnam Red Cross (VNRC), with support from International Federation of Red Cross Red Crescent Societies (IFRC) expands its health and care programme to implement interventions in dengue prevention and to meet the needs of community. This study was conducted in two provinces in the South of Vietnam consisting of HCMC and Tien Giang. The study baseline data will be used for developing project plan of actions as well as a basis for the project evaluation.

The study aimed at identifying knowledge, attitude and practice of community members in relation to dengue fever and climate change; understanding of health authorities and VNRC staffs on dengue fever and climate change; and understanding of the cooperation between VNRC, health authorities in response to dengue and climate change. Both qualitative and quantitative methods were applied for this study. A total of 405 households were randomly selected by using PPS techniques.

The study found that general understanding of people about dengue was good. 97.3% knew mosquito (*Aedes Aegypti*) as vector of DF transmission and raining was identified as one of the conditions conducive for an increase in mosquito breeding sites, thus an increase in DF transmission. In term of gaps in understanding, 51.9% erroneously thought that *Aedes Aegypti* mosquitoes breed in stagnant, dirty water. The majority of the respondents were aware of the common symptoms of DF while a smaller proportion knew of the more dangerous symptoms. Most respondents knew how to take care of the person with DF; however, a high proportion reported taking the person with DF to the health facility on the third and fourth day of disease (57.8% and 98% respectively). Community members reported taking a range of different measures such as putting fish in water tank and prevention of mosquito bites etc.

Regarding climate change, though 73.8% of people have heard about climate change, they did not know clearly the concepts of CC. Higher proportions of respondents mentioned the effects of CC including being hotter, more floods and rain coming at different time of the year. **Higher temperature (40.5%), more floods (34.3%) and health problems (33.6%)** were mentioned as main effects of CC in the Mekong Delta region. Particularly, 47.9% reported that CC has made people in their family get sick. More than one-third stated that CC affected their family income/livelihoods.

**56.3% believed that CC would affect dengue.** Out of those, 52.7% reported the number of DF cases increased in the rainy season. Due to CC, increased rain resulted in breeding sites of dengue mosquitoes. 39% stated humidity increased mosquito and larvae breeding.

Television is a main source of information that people received information on DF, CC and the linkage between DF and CC. Print media were utilised as the second source of information in the category. The most preferred communication channel by community members is combination of mass communication and inter-person communication.

The finding also showed that the officers of VNRC and Health authorities had a good knowledge of DF. Local leaders had a lower level of understanding about the concepts of CC. However, they reported observing changes in climate over the past five years. They identified rainfall, temperature and humidity as contributing factors to DF increases.

Health sector is leading for implementing and managing the DF prevention and control program. They have collaborated with VNRC and relevant governmental agencies/ organisations to carry out DF prevention and control activities. VNRC is involved in mobilising the community for DF prevention and control. At present, both VNRC and health sector have not yet implemented any interventions related to CC issues. VNRC reported integrating CC into their training curriculum of disaster risk reduction.

In summary, it is recommended to IFRC and its local partners to:

- Improve capacity for VNRC and health staffs on DF/CC;
- Strengthen the cooperation between VNRC and health sector in response to DF/CC;
- Deliver effective awareness-raising to the community about DF/CC.

# 1. Introduction

## 1.1. Dengue fever in Vietnam

DF/DHF is one of the important emerging tropical diseases at the beginning of the 21<sup>st</sup> century<sup>1</sup>. The incidence of dengue has grown dramatically around the world in recent decades. According to World Health Organisation (WHO), some 2.5 billion people – two fifths of the world's population – are now at risk from dengue. As estimated, currently there may be 50 million dengue infections worldwide every year<sup>2</sup>. **The disease is now endemic in more than 100 countries in Africa, the Americas, the Eastern Mediterranean, South-east Asia and the Western Pacific. South-east Asia and the Western Pacific are the most seriously affected**<sup>3</sup>.

DF/DHF is considered as a big public health problem. The incidence of DF in Vietnam is increasing, especially in the Southern part of Vietnam. **In 2004, DF was widespread in the Mekong Delta, accounting for 84% of cases, with 9% in the south central coast, 5% in the central highlands and only 2% in the north.** The health sector has made great efforts to reduce the incidence of dengue fever and, in 2008, only 88 deaths were detected. In 2009, the incidence rate was 119.6 per 100,000 populations, an increase from the 118.8 per 100,000 populations in 2007. There were 105,370 cases of dengue in 2009 and 87 related deaths. Although the mortality rate has declined, morbidity has not been controlled, with around 100,000 cases per year<sup>4</sup>.

The Pasteur Institute in HCMC reported that 64,844 cases were recorded in the November, 2010 decreasing by 2%, in comparison with the same period of 2009 (65,882 cases). The number of deaths also decreased by 5%, from 65 deaths in November 2009 to 62 deaths in the same period of 2010. Despite of a decrease in the number of DF/DHF cases and deaths, some provinces with districts have an increasing number of DF/DHF cases including An Giang, Ca Mau, Dong Nai, Dong Thap, HCMC and Tra Vinh. The mortality rate has increased in 16/20 provinces in the South. DF outbreak has occurred in the districts/ provinces that have had no DF before. The diseases are spreading quickly with a high fatality rate.

## 1.2. The review of the existing literature and previous KAP surveys

### 1.2.1. Climate change and Dengue fever

Global climate change has a wide range of health impacts<sup>5</sup>. The incidence of vector-borne diseases would result from changes in weather and climate. To date, various studies revealed that the occurrence of DF is sensitive to climatic conditions, particularly temperature increases and rainfall. Temperature affects the rate of

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<sup>1</sup> Duane J. Gubler, 2002. Epidemic DF/DHF as a public health, social and economic problem in the 21st century

<sup>2</sup> WHO, Dengue factsheet

<sup>3</sup> ibid.

<sup>4</sup> [http://www.wpro.who.int/countries/2010/vtn/health\\_situation.htm](http://www.wpro.who.int/countries/2010/vtn/health_situation.htm)

<sup>5</sup> World Health Organisation, 2003

mosquito larval development, adult survival, vector size and gonotrophic cycle as well as EIP of the virus in the vector. Humidity, defined as vapour pressure or specific humidity, is high only where rainfall and temperatures are high and these are conditions that are conducive to breeding and survival of vector populations, and rapid replication of the virus<sup>6</sup>. Modelling studies suggested that a warming projection of 2°C by 2100 would result in a net increase in the potential latitudinal and altitudinal range of dengue and an increase in duration of transmission season in temperature locations<sup>7</sup>.

### 1.2.2. Previous studies of the KAP on DF/DHF in the Mekong Delta

There had been various studies on dengue fever in Vietnam, of which some were to identify KAP of the community on DF in the Mekong Delta (MD). The literature reviews were done to review previous KAP studies representing for HCMC and the MD region (Dong Thap and An Giang). Based on literature reviews, it was found that the people in HCMC, Dong Thap and An Giang had different levels of understanding of dengue.

The study in HCMC<sup>8</sup> showed that 93.1% of respondents heard of DF. Out of the population 92.2% knew about the vector which is mosquitos, 61.6% knew *Aedes aegyptes* and 81.2% knew mosquito breeding sites. The study in Dong Thap found lower levels of good KAP of DF/DHF (50%, 57% and 26% correspondingly)<sup>9</sup>. Despite people in An Giang could identify at least one symptom of DF, they had a misperception that there was a protective vaccine against DF and that DF was curable<sup>10</sup>.

Regarding DF prevention, majority of the people knew about preventive methods focused on *preventing from mosquito bites and reducing mosquito breeding sites*. However, it was found that community's practices on DF prevention and control were very limited. In HCMC, 52.2% of the people identified five preventive measures, whereas only 13.1% of them had good practice<sup>11</sup>. The study in Dong Thap revealed that "the proportions of water containers with Aedes larvae were from 10.9% to 58.5%. All water containers without covers and regular cleaning had Aedes larvae"<sup>12</sup>.

Television was a main source of information on DF in the community. While people in HCMC preferred using TV, those in rural areas such as An Giang and Dong Thap used radio and loudspeakers to get information on DF. It is noted that though people knew much about DF mainly from mass media, they did not put them in practice because they could not completely trust what they heard. They trusted and applied what they learnt from health workers through face-to-face communications. In conclusion, mass media

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<sup>6</sup> S. Hales et al., 2002. Potential effect of population and climate changes on global distribution of dengue fever

<sup>7</sup> World Health Organisation, 2003

<sup>8</sup> L.L.Lan, 2004. KAP survey report on DF in District 5, HCMC

<sup>9</sup> T.V.Hai, 2006. KAP survey report on DF in Binh Thanh commune, Thanh Binh district, Dong Thap

<sup>10</sup> P.V.Be et al., 2004. KAP survey report on DF in Phu Tan and Thoai Son, An Giang

<sup>11</sup> L.L.Lan, 2004. KAP survey report on DF in District 5, HCMC

<sup>12</sup> T.V.Hai, 2006. KAP survey report on DF in Binh Thanh commune, Thanh Binh district, Dong Thap

are effective to increase the knowledge of people but cannot create much change in their behaviours/ practices.

### **1.3. Objectives of the study**

This study on KAP of community members in HCMC and Tien Giang on dengue prevention and climate change is a part of the program on Health Risk Management in a changing climate by Climate Change Centre, the IFRC and supported by a grant from the Rockefeller Foundation. The project aims at *enhancing capacity to assess, communicate and address changing health risks, especially at community level* .

In this context, the KAP study is designed to achieve following objectives:

- § To identify KAP of community members in relation to DF and CC
- § To assess understanding of health authorities and VNRC staffs on DF and CC
- § To understand the cooperation between VNRC, health authorities in responses to DF and CC.

## **2. Methods**

The study employed a combination of qualitative and quantitative methodologies. In order to achieve the study objectives as above, the study team followed these steps:

- § *Desk review.* Review previous KAP studies on dengue fever and climate change (as separate issues or together) that were previously implemented in HCMC, Tien Giang and other provinces in the Mekong Delta.
- § *Data collection tools* were prepared to collect qualitative data to response key study questions as mentioned in Terms of Reference (ToR), the project concept paper and other KAP studies.
- § *Collect qualitative data.* Focus group discussions (FGDs) and In-depth Interviews (IDIs) were conducted with households and local partners in Tien Giang and HCMC.
- § *Develop and test survey questionnaires.* Survey questionnaires were developed on the basis of initial qualitative results from FGDs & IDIs. Subsequently, the questionnaires were tested with some households.
- § *Finalise survey questionnaires and sampling.* After testing, the questionnaires were finalised. Sampling was reviewed and adjusted to ensure appropriate to the local contexts.
- § *Training for local enumerators.* One-day training was organised for local enumerators.
- § *Collect quantitative data.* All trained enumerators were responsible for collecting quantitative data.

## 2.1. Study participants

Please see the following table for an overview of study participants:

**Table 1: The participants**

Informants	Survey Q.	FGD	IDI
<b>1. National/ provincial</b>			
< Ministry of Health			1
< VNRC Headquarter			1
< Chapters of HCMC and Tien Giang			1
< Centre for Preventive Medicine			1
<b>2. District/Commune</b>			
< District Health department			0
< District RC			1
< Commune PC, RC, WU and CHS		7	
<b>3. Village</b>			
< Households	405	7	5
<b>4. TOTAL of study participants</b>	405	14	10

## 2.2. Ethics

VNRC obtained approval from People’s Committee and Department of Health, Centre for Preventive Medicines of Tien Giang and HCMC for carrying out this study as well as the project in two provinces.

Survey participants were recruited for interviews on a voluntary basis. Before starting interview, interviewers gave an explicit explanation on the evaluation objectives and expectations. With key informants, the interviews were conducted with written informed consent. All the interviews with households gained (oral) informed consent from the participants. The interviewers obtained permission from interviewees for tape-recording and note-taking during interview.

All the interviewers and researchers followed the rules of keeping study information confidential. All the interview notes, transcripts and interviewee lists were kept safe and confidential. Researchers ensured that the respondents’ name is not written in the study report. Recorded tapes and transcripts will be destroyed after the report is finalised and approved.

## 3. Results

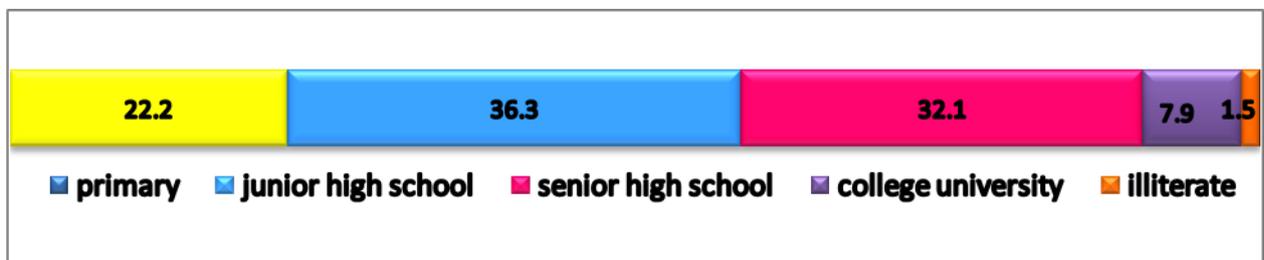
### 3.1. General Information

A total of 405 households participated in interviews with structured-questionnaires. Out of those, 32.3% (131) of the respondents in HCMC and 32.1% (130) of those in Tien Giang were residing in urban areas.

The mean age of respondents was 48. Kinh ethnic people accounted for 96% of total study population. 4% were Chinese. 60.7% of the respondents were female.

More than one-third of the respondents completed junior high school. The same proportion is senior highschool graduate and about ¼ has primary school education (Figure 1).

**Figure 1: Highest level of education attained**



The average household had 5 persons including 4 adults and 1 under-six child. Sex ratio was equally distributed in each household. Main jobs of the study participants were small trading (28.9%), hired labour (21.5%), agricultural farming (21.2%) and civil servant (11.9%).

Regarding household's economic status, it is noted that 9.9% of surveyed households categorized as poor as they hold poor household book while 8.6% and 4.7% of total study population self-ranked as "nearly poor" and "poor".

Figure 2. Economic status among interviewed households



91.9% of the respondents live in their own house. 65.9% reported that their house is located in a flooding area. Their house gets flooded when heavily raining (58.7%), when tide rising (41.3%) and when both heavily raining and tide rising (23.9%).

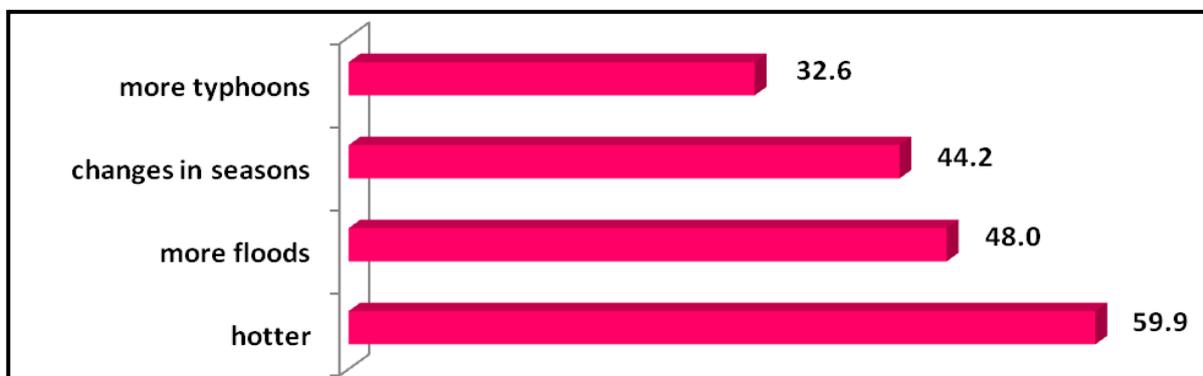
### 3.2. Understanding of community members on climate change

#### 3.2.1. Understanding of the concepts of climate change

In answer to the question “has weather changed over the last few years?” 84.9% of interviewees said “yes”. Out of those, people noticed the changes including:

- ◁ Being hotter (59.9%)
- ◁ Having more floods (48%),
- ◁ Having changes in seasons (44.2%)
- ◁ Having more typhoons (32.6%).

Figure 3. What does "climate change" mean to you?



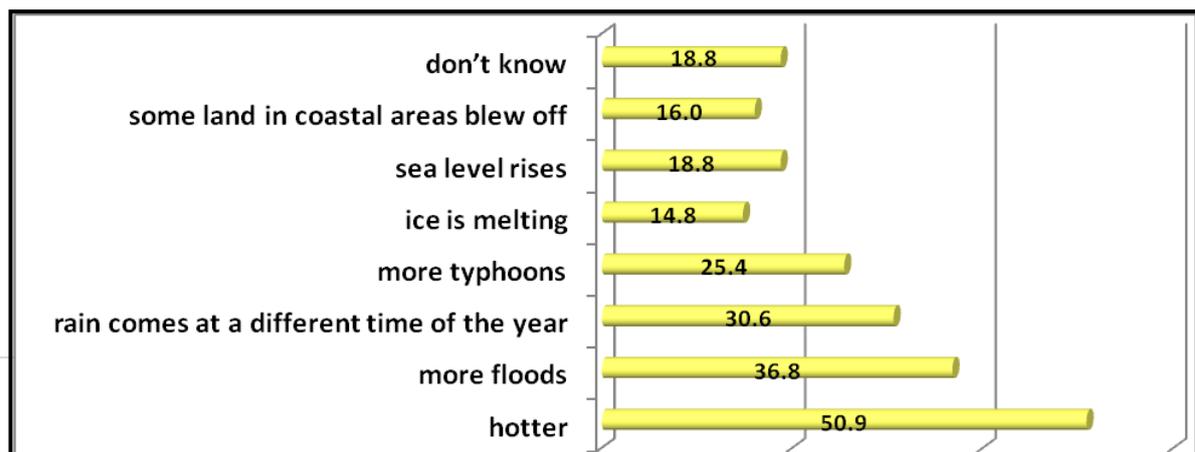
78.5% of the respondents stated that the seasons had changed over the last few years and 69.6% said that the weather continued to change in the future. When being asked what changes in season they noticed, 50.9% noticed that it was hotter in the dry season.

There are some changes in season including

- ◁ More heavy rain in the rainy season (39%);
- ◁ The rainy season starting earlier than usual (34.9%),
- ◁ The rainy season lasting longer than usual (29.6%).

A majority of surveyed households (73.8%) have heard about climate change. However, when being asked “what comes to mind when you hear the word climate change?” people’s correspondence were varied.

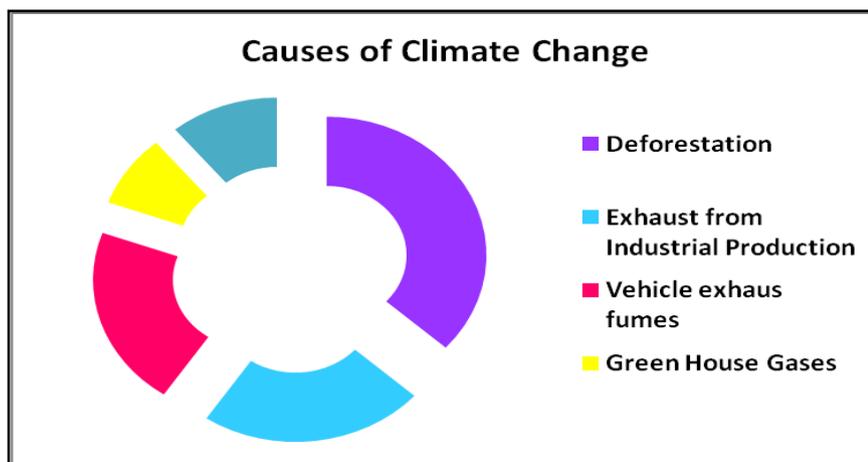
Figure 4. Percentage of the respondents explained the linkage between CC and natural phenomena



### 3.2.2. Causes and prevention of CC

In the survey, people were able to identify different causes of climate change, in which deforestation, exhaust from industrial production and vehicle exhaust fumes are identified as major causes. 57.5% referred to deforestation or burning vegetation as the biggest cause of climate change. Exhaust from industrial production (35.8%) and vehicle exhaust fumes (33.1%) were also identified as causes of CC. Only a small number of respondents mentioned “greenhouse gases” (13.3%) or holes in the ozone layer (17.3%). About one in four people did not know what might CC.

Figure 5. The cause of climate change by interviewed households



In answer to the question “What do you think is the main cause of climate change?”, the respondents suggested *no deforestation (48.4%), limiting exhaust fumes from vehicles (25.7%), and limiting exhaust from industrial production (31.6%). More than one-third (31.4%)* answered “I don’t know”.

### 3.2.3. Effects and adaptation to CC

Two-third samples recognised that the effects of CC are already happening whereas a third of them were unsure about it. The mean number of years that the effects of CC would happen was 3 years.

In response to the question “What are the effects of climate change?”, more than one-third identified higher temperatures, more floods and health problems (33.6%). Some of them mentioned about other effects of CC such as *more typhoons (27.7%), the environment is more polluted (26.9%)*. A smaller proportion of households said that CC would affect *livelihoods and household income* and *more drought*. It is also noted that 16% did not know about the effects of CC.

Figure 3 indicates the effects of CC in the family life as perceived by the respondents. Almost half of the samples stated that CC would make family members get sick. About

one-third of the respondents perceived that CC affected their income/ livelihoods and their work (it was difficult to work because of heat).

Figure 6: How will climate change affect your family? (%)

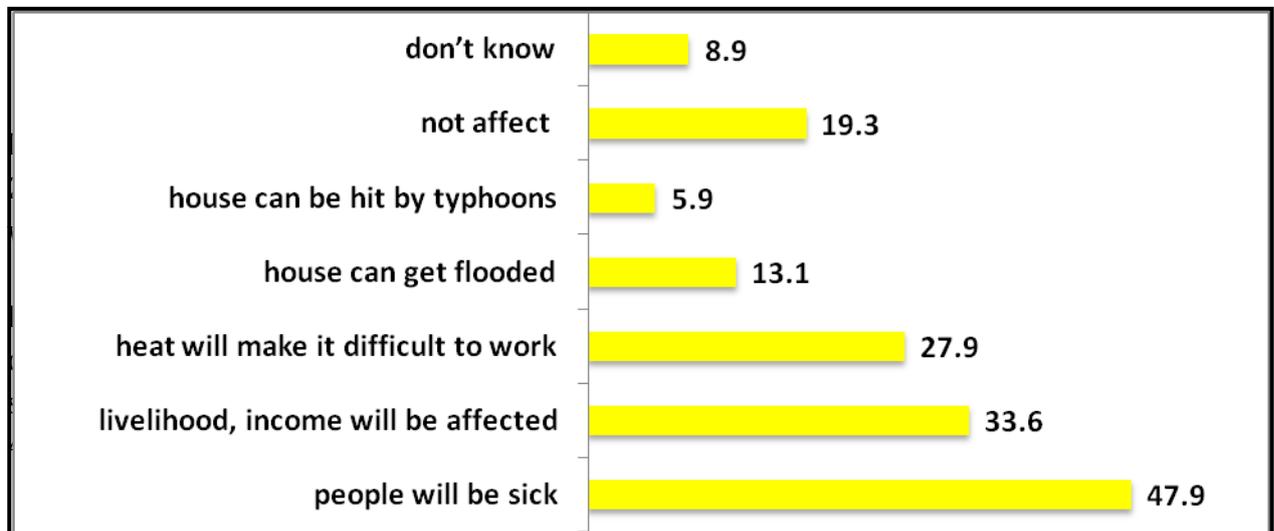
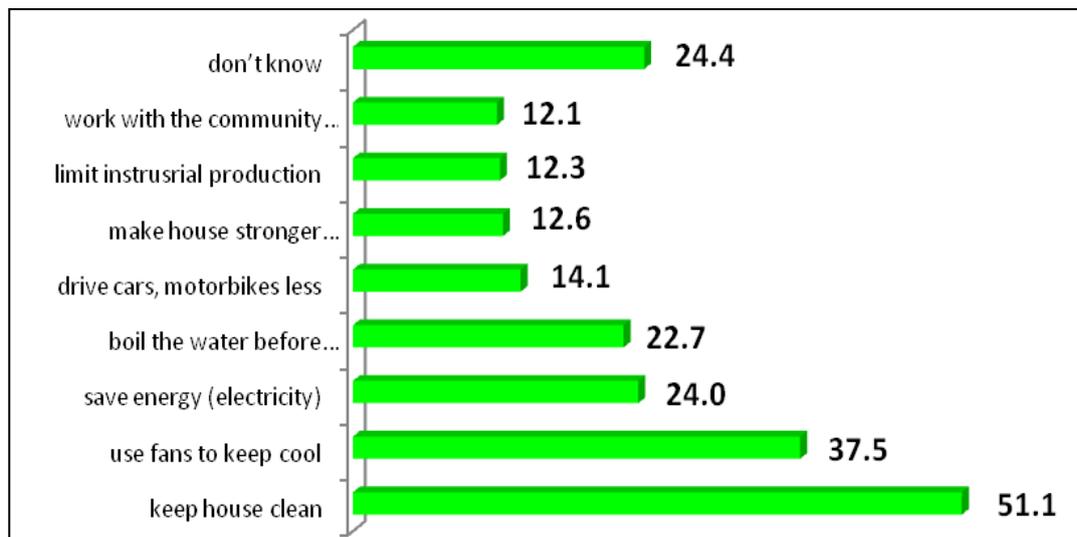


Figure 7: What can you do to protect yourself against the effects of CC? (%)



### 3.3. « © ± a ¥ ° μ - · Ž ° \$ · « a · Ÿ i a £ ± i · ¢ i ² i ® ·

#### 3.3.1. Understanding of DF epidemiology

98.5% of sampled households have heard about DF. As presented in Figure 3, television is the most popular communication channel utilised by households (83.5%) to learn

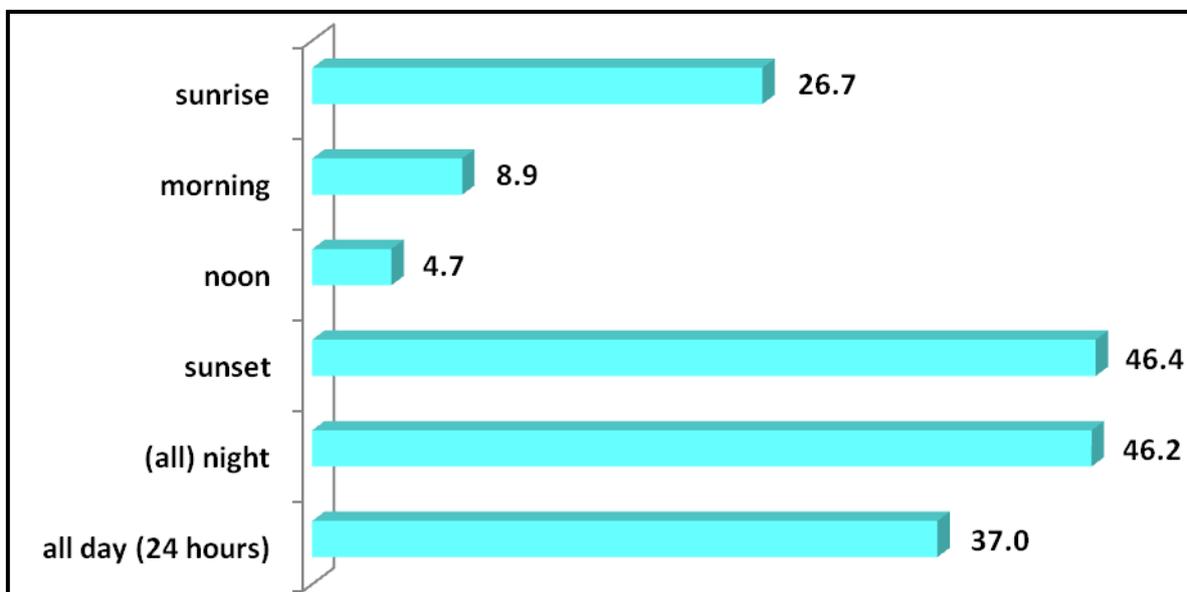
13 · Some of the measures in the list below are not correct. During interviews, enumerators were not supposed to read out the answers.

about DF. More than one-third of surveyed households got information on DF from print media i.e. book, newspapers, magazines etc. (39.8%), health workers (38%) and local loudspeakers (31.6%).

Most respondents (97.3%) knew that DF is transmitted by *Aedes Aegypti*. In FGDs with households, the participants described correctly the mosquitoes with stripes transmitting DF. They were able to differentiate between *Aedes Aegypti* and Anophen by seeing them standing with the rear end sticking up.

*Aedes Aegypti* is a day biting mosquitoes with increased biting activity for 2 hours after sunrise and several hours before sunset<sup>14</sup>. About half of the people answered correctly that the acting time of dengue mosquito is sunset/dusk.

Figure 8: Percentage of the respondents stated the acting time of DF mosquitoes



Generally, the survey participants have a good understanding of major conditions favourable for increasing DF, including rain (83.2%), environment with a lot of breeding sites (51.6%) and poor hygiene (47.9%). Only 11.6% mentioned “high density of inhabitants” as a risk factor for increasing DF.

When being asked about the mosquito breeding sites, 58.5% of the respondents were cognizant of the fact that dengue mosquito breeds in rain water containers. About half of those said that the dengue mosquito breeds in “standing dirty water” whereas only 36% said “standing clean water”.

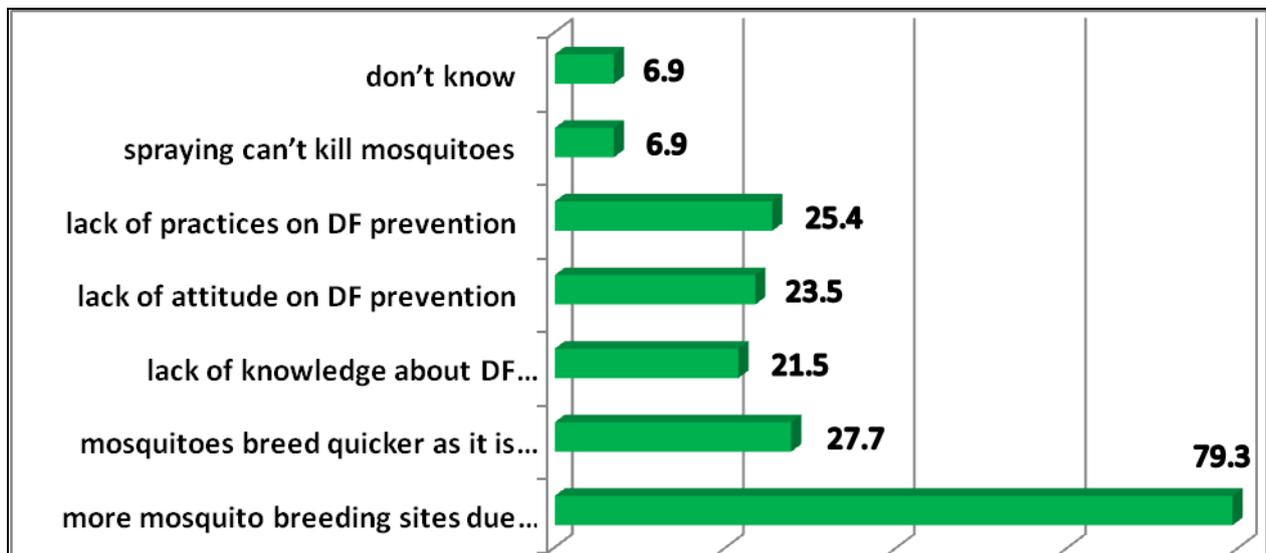
In response to the question “when in a majority of respondents (77%) stated that DF commonly occurred during rainy season whereas

<sup>14</sup> APHA & WHO, 2004. Control of Communicable Diseases Manual

24.7% believed it was equally common all year. As presented in Figure 7, “more mosquito breeding sites” was identified as a major reason that DF was more common at a particular time of the year (during rainy season).

During FGDs, the participants clarified that DF occurred all year round but it was more common during rainy season. They explained the reason that rainy season have started early and prolonged in recent years. The participants of FGDs observed that at present two seasons (wet and dry) in the Mekong Delta have not been clearly seen as before.

Figure 9. If people identified that DF were more common at a particular time of the year, they were then asked about why this was (%)



During FGDs/IDIs, the local leaders cited that DF outbreak happens every four years. The most recent DF outbreak occurred in 2008.

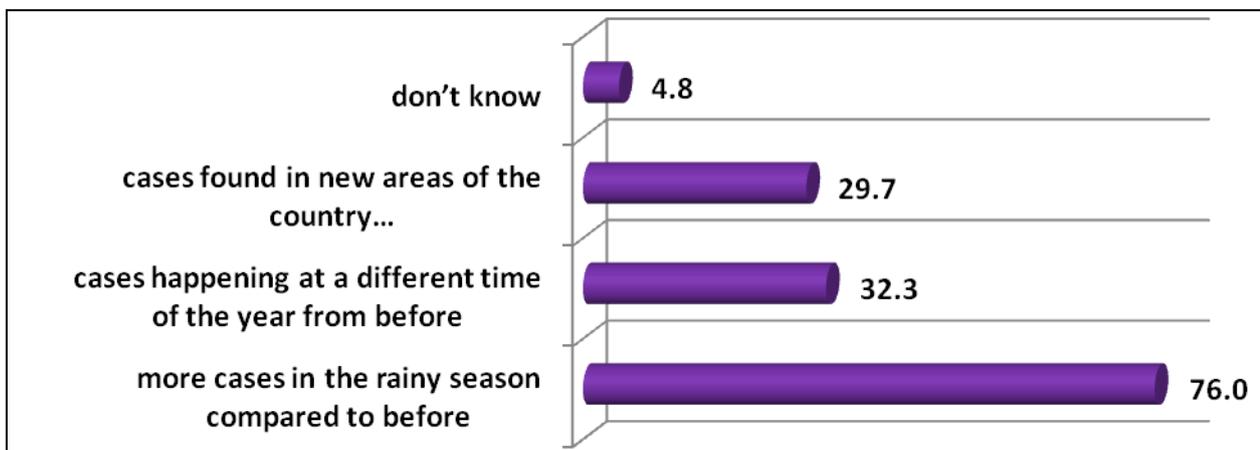
60% of the respondents reported that there is more dengue during some years and less in others year. To explain to this change, 76.2% said that there is *more rain* for some years. *Poor sanitation and hygiene practices* of communities are factors contributing to occurrence of DF. People mentioned that “*some years are hotter*” (32.8%), “*some years are cooler*” (26.6%). Only 25.8% said “*some years are hotter*”.

It was also found in the study that more than a half of the respondents (56.5%) cited that the situation of DF has got *worse over the last few years* whereas 20% of those said

that it has been *neither worse nor better*. Out of those who said the situation of DF has become *worse* over the last few years, then the respondents identified various aspects of DF situation that there were *more cases in the rainy season compared to before* (76%), *DF cases have happened at a different time of the year from before* (32.3%) and *DF cases* (20.7%). (Figure 7)

In interview with the local health workers, it was shared that DF in the Mekong Delta already happened in the areas (i.e. Phu Quoc, Con Dao Islands) in which it had not ever happened before.

Figure 10: Percentage of aspects of DF situation



In relation to the contributing reasons that make dengue fever worse, 64.6% said “*people are not keeping the environment clean, so mosquitoes breed*” and “*there is more rain in recent years*” (60.7%). One third considered *climate change* as a contributing factor.

The study found that communication channels that are considered the most appropriate and effective to communicate with community members about DF. Most respondents selected *television* (72.1%) for getting information on DF. *Village meeting, distribution of IEC materials and local loud speaker* (58.5%, 47.2%, 46.2% correspondingly) were selected as the second most frequent sources in the category. *Radio and household visit* were chosen by only 26.4% and 20.7%. The participants in FGDs preferred a combination of *village meeting, household visit and distribution of IEC materials* that would allow two-way communication.

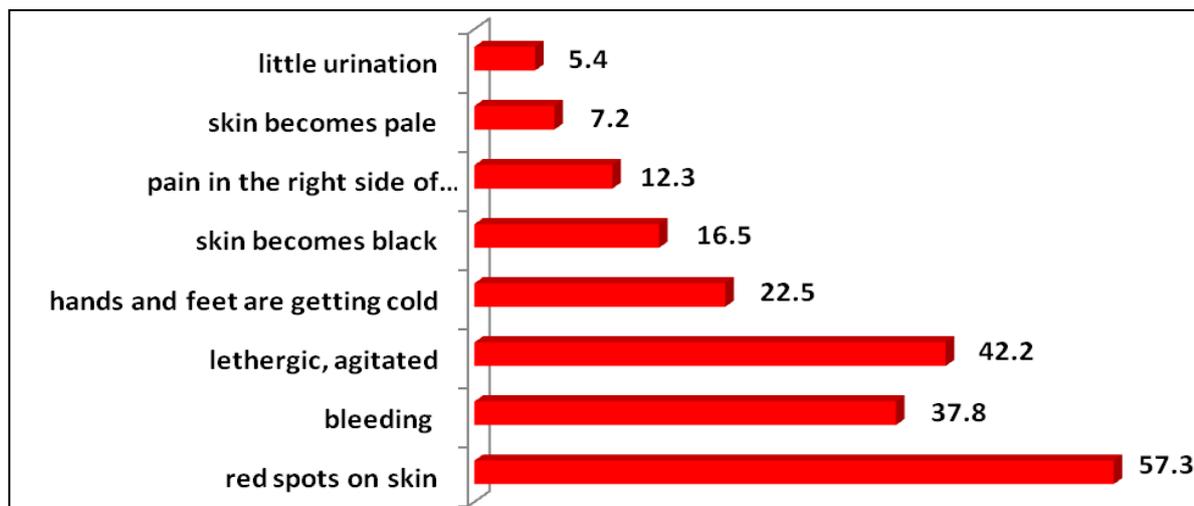
### 3.3.2. DF presentation, treatment and consequences

Majority of the sampled households knew about symptoms of DF. *Fever and haemorrhage* were identified as two common symptoms by most respondents (96% and 53.8% respectively). The FGDs/IDIs revealed that people considered *haemorrhage*

and rash, red spots on skin as the same symptoms. It is noted that DF in Vietnamese language means a combination of two symptoms of fever and bleeding .

The extent of understanding about symptoms indicating serious illness of DF is lower than that of common symptoms of DF. Haemorrhage, nerve related symptoms i.e. lethargic, agitated were known by majority of the respondents (57.3%, 37.8% and 42.2% respectively).

Figure 11: Percentage of the respondents listed the dangerous signs of illness



A majority of the respondents (77.8%) said that they are (extremely) concerned when hearing about a DF case occurring in their village or a neighbouring village.

The biggest concern for a family having DF sufferer is medical care expenditures, as stated by 62% of interviewees. About half of respondents mentioned about loss of income (50.1%) and risk of fatality (48.9%) caused from DF. One-third said that care and treatment of a DF patient consumed a lot of time and children with DF would miss their school. (Figure 16)

Table 3 indicates economic losses caused by the bread winner of family suffering from DF. For instance, it would cost a minimum of 200,000 VND (10USD) and a maximum of 7,500,000VND (382 USD) to treat a DF patient. The mean cost for medical treatment of a DF case was 1,557,000VND (79USD). When the 'bread winner' of family had DF, a minimum of 50,000VND (2.5USD) and a maximum of 8,000,000VND (407 USD) would be lost. The mean loss of income was 1,128,000VND (57USD) when a bread winner was infected with DF.

Table 2: Economic losses if a bread winner in the family has DF (VND)

	Minimum	Maximum	Mean
Medical expenditures for treatment of a DF patient	200,000	7,500,000	1,557,000
Loss of income when a bread winner was infected with DF	50,000	8,000,000	1,128,000

The majority of surveyed households knew how to take care of a person having DF at home. Most people (71.1%) took different measures to reduce fever – a common symptom of DF, i.e. giving the person with acetaminophen, using forehead bandage, etc. A half of the respondents (50.6%) reported taking the person with DF immediately to the nearest clinic. 43.2% said giving the person with much drinking water, ORS or coconut juice to avoid dehydration.

Since having fever (on the first day), the mean waiting time before the person with DF is taken to health facility is 3.14 days. Taking the person to health facility before the third day and the fourth day of illness were reported by 60% and 98% of the respondents respectively.

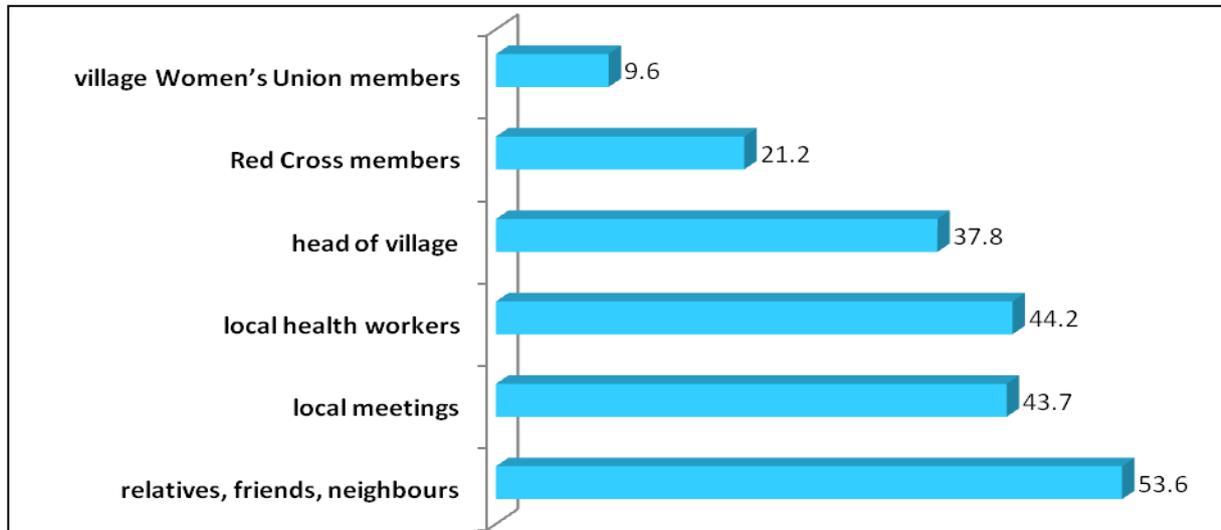
Table 3: Waiting time from a person having fever till he is taken to the health facility

	Percentage	Cumulation
im mediately (the 1 <sup>st</sup> day of disease)	7.9	7.9
wait for 1 day (the 2 <sup>nd</sup> day of disease)	16.5	24.4
wait for 2 days (the 3 <sup>rd</sup> day of disease)	33.3	57.8
wait for 3 days (4 <sup>th</sup> day of disease)	40.2	98.0
wait for 4 days (5 <sup>th</sup> day of disease)	0.7	98.8
wait for 5 days (6 <sup>th</sup> day of disease)	0.7	99.5
wait for 6 days (7 <sup>th</sup> day of disease)	0.2	99.8
wait for 7 days (8 <sup>th</sup> day of disease)	0.2	100

### 3.3.3. Prevention and control of DF outbreaks in community

People get to know a DF case happening in the village or nearby from various sources of information. 53.6% of the respondents knew about DF case from their relatives, peers and neighbours. Local health workers (44.2%), village meetings (43.7%) and head of village (37.8%) were identified as the second sources of information.

Figure 12: Percentage of the respondents identifying different ways of finding out about a DF case in the village



When knowing people having DF in community, most people took different measures to prevent their family members from DF such as *cleaning their house to prevent mosquito breeding* (77%) and *protecting family members from mosquito bites* (61.2%). Only 28.1% said reporting DF cases to the local health authority. The participants in FGDs said that health worker was the first person to know about DF case in the village. Hence, it was unnecessary to report DF case to health authority.

Surveyed households reported that local health authorities carried out various activities to control DF outbreak including

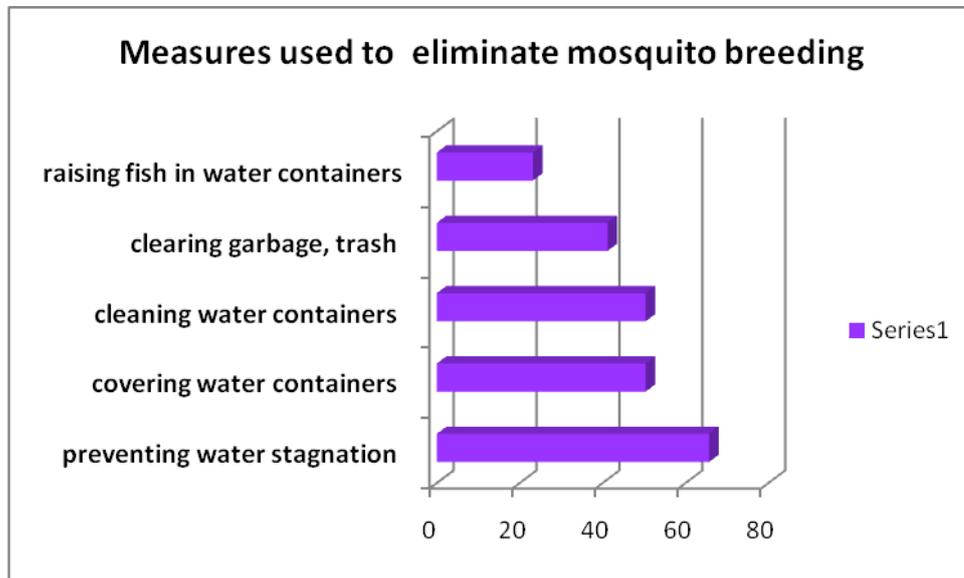
- ◁ Mosquito spray<sup>15</sup> (95.1%);
- ◁ Mobilise community members to kill mosquito larvae by cleaning the water containers, raising fish in the water tanks/containers (61%);
- ◁ Warnings to community members in the area where DF outbreak occurred (29.1%);
- ◁ Communicate with households on symptoms and how to follow up person with DF at home (26.7%).

Most respondents (91.4%) named at least one preventive measure of mosquito bites by *using mosquito bed net, door screens, mosquito cream, fans or wearing long sleeved clothes*. A high proportion of respondents (77.3%) knew the measures of killing mosquitoes by *mosquito spray, using electrocutor or smoking to drive away mosquitoes*.

The present measures for eliminating mosquito breeding sites applied by the people included *preventing water stagnation* (65.7%), *covering water containers* (50.4%),

<sup>15</sup> One of measures for DF outbreak control is mosquito spray that helps to eliminate dengue mosquitoes and prevent DF transmission to the nearby areas. Once a DF outbreak is reported, district health staffs conduct mosquito spray in the DF outbreak site (within a radius of 2 kilometres). Mosquito spray is done both indoor and outdoor, by using mosquito sprayer machine and chemicals.

*cleaning water containers* (50.4%) and *clearing garbage, trash* (41.2%). It is noted that only 23.2% applied the measure of “raising fish in water containers” usually promoted by local health authorities (please see the reasons in section 3.2.4 below).



During FGDs/IDIs, we got feedbacks from local leaders that community members had a higher extent of understanding about DF due to increased access to information dengue on mass media such as TV, radio, newspapers, internet etc. However, their practices on DF prevention remained very limited. Though people were aware of preventing DF transmission by preventing mosquito bites, they did not or never uses mosquito net when sleeping during day time. Poor families living in the city were considered more susceptible to DF since their health was not given much attention or priority.

Some participants suggested that in reality the awareness of urban residents on DF prevention was higher than that of rural residents. However, due to living in the areas with a high density of population and poor sanitation/ polluted environment, DF cases in urban areas were more common than in rural areas.

### 3.3.4. Water use and DF

Quantitative data showed that a majority of households (70.4%) used tap water as their main water source. Small proportion of households reported using other water sources including *public well* (17%), *private well* (12.3%) and *rain water* (11.4%). 57.7% reported of storing water in their family. Most of them kept water jars covered (85%) and tightly covered (74.7%). Observations during the interviews showed that 74.4% of households where water jars had NO larva inside.

Table 5 indicates that the rate of water storage among the households in rural areas (85.4%) was higher than that in urban areas (42.2%)<sup>16</sup>. No association between household economic status and (rain) water storage practices was found.

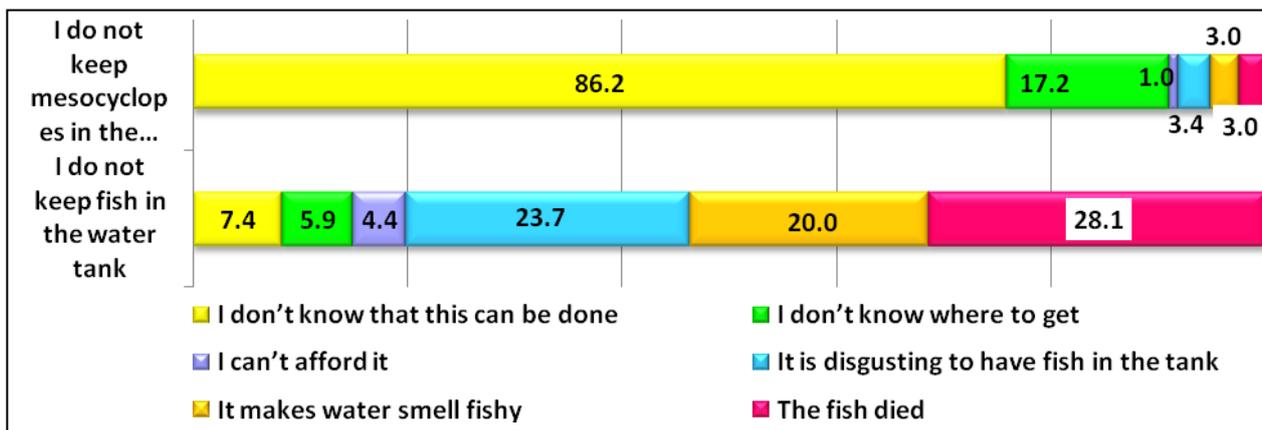
Table 4: Water storage and usage among the households

	Yes	No	$\chi^2$	p
<b>Rain water use</b>				
Poor	9	50	1.04	0.3
Non -poor	37	309		
<b>Water storage</b>				
Urban (District 1 and My Tho city)	110	151	71.12	0.000
Rural (Binh Chanh and Cai Be District)	123	21		
Poor	38	21	1.34	0.25
Non -poor	195	151		

From IDIs/FGDs we found that people living in urban areas did not store and use rain water while those in rural areas used different sources of water such as underground water, rain water and even water from the river, canal. Rural households commonly stored rain water for drinking over the dry season. During rainy season, people used rain water for daily activities (cooking, washing). Most rain water containers for daily use were not carefully covered and not frequently cleaned.

Out of the households storing water, 42.1% reported raising fish in the water tank and 12.9% raising mesocyclopes to eat larva. With those who did not apply two methods of killing larva as mentioned above, the participants in IDIs and FGDs said that they did not like to raise fish in water containers because (i) water smelled fishy and (ii) water got dirty. Figure 23 shows the reasons why participants in the quantitative survey did not keep fish in their water containers – also here there is a concern around smell and a perception of disgust. A clear majority of respondents – 86.2% - were not aware that it was possible to use mesocyclopes.

Figure 13: Percentage of the respondents listed the reasons for NOT raising fish or mesocyclopes in water containers



A majority of the sampled households (73%) reported cleaning their water containers more than once per month. 77.3% of households reported that some people visited their house to check if there was larva in water containers. From IDIs/FGDs, the participants claimed that those people were health workers of commune health stations, heads of village and members of other mass organisations (if possible).

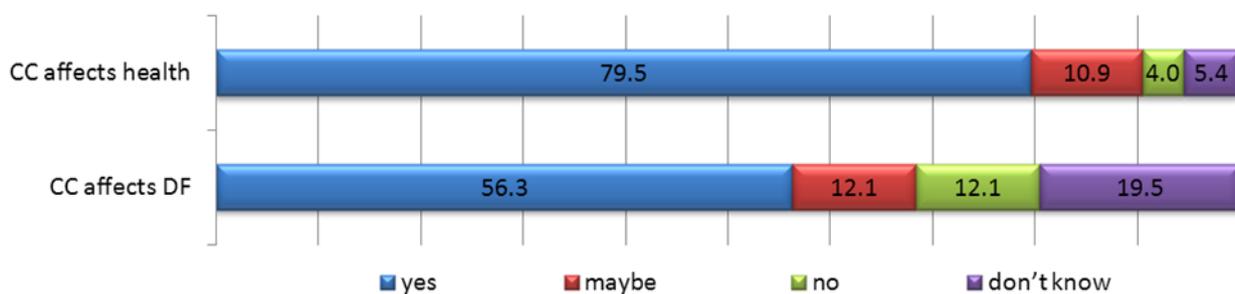
Local leaders reported that campaigns on killing mosquito larva were conducted twice per year, including once at the beginning of rainy season and the other after 1-2 months. Health staff conducted mosquito spray indoor and outdoor while cadres of mass organisations and young volunteers did home visits and mobilised households to cover carefully their water containers and discharge all the water containing larva. Additionally, health staff, heads of village and young volunteers regularly checked the water containers at households.

### 3.4. Understanding of the linkage between CC and DF

In response to the question “Will climate change in the Mekong affect human health?”, 33.6% of the interviewees mentioned “health problems” whereas 79.5% said CC affected human health and 10.9% said “maybe” when being asked “will CC affect health?”. Specifically, 68.4% confirmed that CC affected (and maybe affect) dengue.

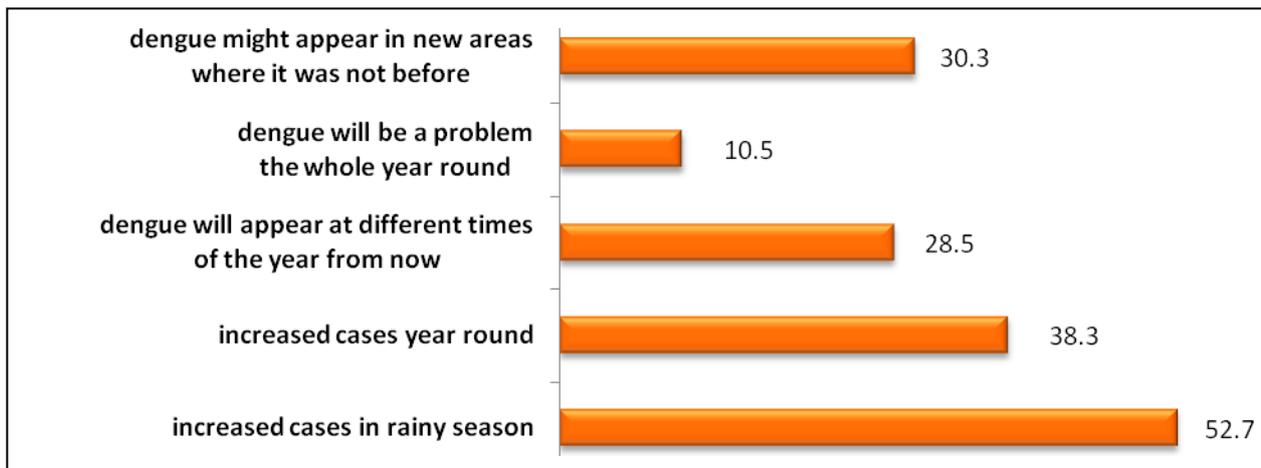
When being asked “Will climate change affect human health problems affected by CC including influenza, respiratory diseases, dengue, diarrhoea”, 56.3% answered “yes” to the question “Will climate change affect human health problems affected by CC including influenza (63.2%), respiratory diseases (49.6%), dengue (35.6%), diarrhoea (31.6%)”. 56.3% answered “yes” to the question “Will climate change affect human health problems affected by CC including influenza (63.2%), respiratory diseases (49.6%), dengue (35.6%), diarrhoea (31.6%)”.

Figure 14: The effects of CC on health and DF as perceived by the respondents (%)



Out of those who said CC either affects or maybe affect human health, in terms of time, 52.7%, 38.3% and 28.5% correspondingly stated that CC increased the number of DF cases in rainy season, all year round and different times of the year. 10.5% said that dengue would be a problem in the whole year round. In geographical terms, about one-third reported that dengue might appear in new areas where it was not before. (Figure 35)

Figure 15: The effects of CC on DF (%)



The finding also shows that increased precipitation resulted in increasing the number of breeding sites for dengue mosquitoes as stated by 87.7% of interviewed people. A smaller number of people said that humidity increased mosquito and larvae breeding (39%)

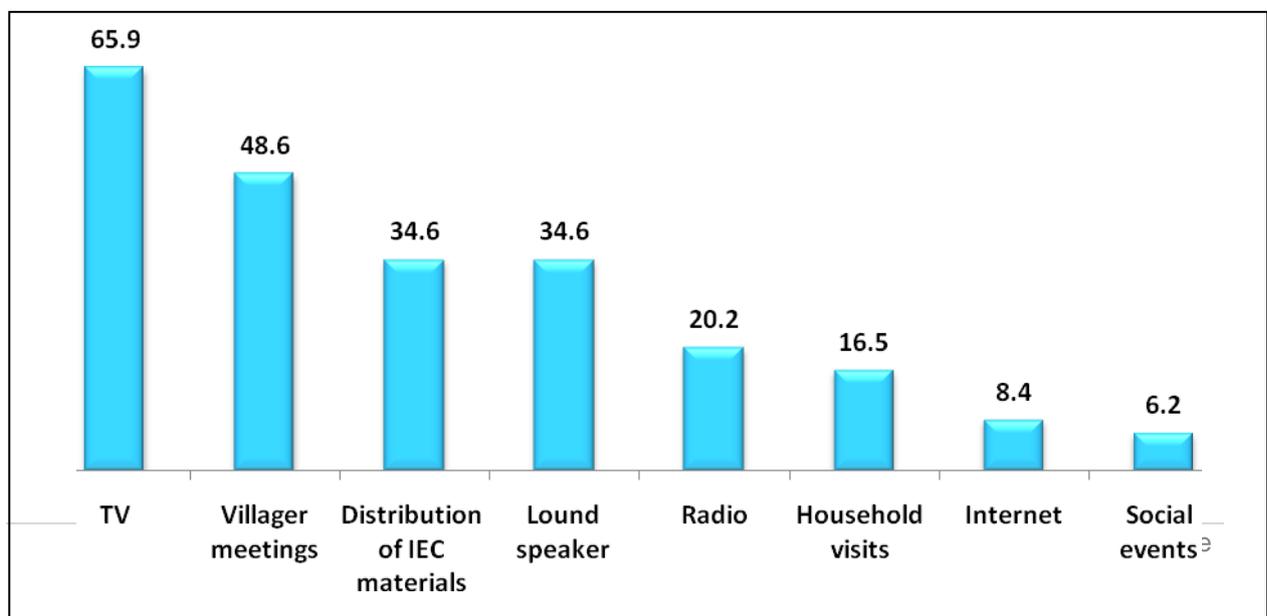
### 3.5. IEC on Dengue, Climate Change and the linkage between DF & CC

#### *IEC on climate change*

The finding showed that community people mainly learnt about CC from *television* (78.3%), print media i.e. newspapers, books and so on (42%). Small proportions of people utilised other channels such as *radio, loudspeakers, Red Cross, heads of village* etc. to learn about CC.

The most appropriate and effective ways to communicate with the community on CC are *TV, village meetings, distribution of IEC materials and loudspeakers* (Figure 13).

Figure 16: Communication channels selected by households for learning about CC



## *IEC on the linkage between CC & DF*

With respect to the linkage between DF and CC, majority of respondents (86.6%) reported learning it from television. About half of the samples (49.1%) received such information from print media (i.e. newspapers, magazines, books etc.).

*Television* was identified as the most popular way for people in community to learn about CC and the linkage between CC & DF. Hence it may be the first choice for IEC activities. Nonetheless, FGDs/IDIs found that community people received a lot of information from TV but they could not fully understand or remember about what they heard. Some of them shared that even people did not really trust or applied what they learnt from television. Moreover, not everyone, especially rural, poor households is accessible to TV and makes time to watch television. It is one-way communication, especially difficult to change public behaviours. Therefore, two-way communication is strongly recommended for IEC activities of the project.

### **3.6. Perceptions of VNRC and local authorities towards DF/CC**

#### *Understanding of DF situation*

Most participants said that not only children but adults are susceptible to DF. Local leaders had a good understanding of DF regarding *den gue virus types, symptoms, causes, prevention, care and treatment*. We also found that local health staff had more in-depth knowledge of DF than local authorities and VNRC staff since they received training on DF through working on the national health program.

DF is a concerned health issue. The Southern provinces are more affected with DF than other areas in Vietnam. HCMC and Tien Giang are not excluded. Annually DF is common during rainy season (from May to October). It is observed that in the period of 3-5 years, DF has occurred all year round. There are more DF cases emerging during rainy season than dry season. The number of DF at level 3 or 4 is higher than before.

To understanding of VNRC and local leaders, there are different factors contributing to the increase in DF. Too much rain during the rainy season and/or long rainy seasons during a year has resulted in increasing mosquito habitants.

The survey participants also mentioned about environmental pollution due to poor sanitation practices of community members.

*[ 8 Y b [ i Y ' Z Y j Y f ' ] g ' h f U b g a ] h h Y X ' Z f c a ' ] b Z Y W h Y X ' aedese mosquito. Mosquitoes are reproducing themselves very fast in raining season when there are more favourable conditions for them for reproduction such as water stagnant , water containers or*

*thrown out objects in dumping areas that hold rain water. And because of rain, higher humidity is also favourable for mosquito*  
*h c ' f Y d f c (IDI WYMoH)*

### *Understanding the concepts of CC and the linkage between CC & DF*

Qualitative data showed that local leaders had little information on the concepts of climate change or CC related issues such as El-Nino, La-Nina, global warming etc. Some of them heard about it but they could not interpret or remember exactly what it is.

Most participants in FGDs/IDIs said that they witnessed the changes in climate over the past five year, including:

- ◁ No clear line between rainy and dry season
- ◁ Too much rain during rainy season
- ◁ High temperature in dry season
- ◁ Sometimes either rainy or dry season lasting longer.

The participants knew about that causes and impacts of climate change. *Deforestation, exhaust from vehicles, industrial production activities* polluting the environment and misbalancing the eco-system were specified as the main causes of CC.

Climate change has severe economic, social and environmental impacts on community health all over the entire world<sup>17</sup>. Local leaders concerned that the impacts of CC would be more severe in the future due to the increase of volume of exhausts/emissions to the environment.

Most participants in FGDs/IDIs noticed the impacts of CC on human health. People would get ill easily since their bodies were not adaptable to climatic changes. Heat waves, floods, storms, droughts have caused deaths and injuries, poverty, disease epidemics. Air pollutants, polluted water and environment have caused several diseases including hypertension, respiratory infections, cancer, bird flu, swine flu, malaria and dengue and so on.

Speaking about the link between DF and CC, most participants believed that the increase of DF incidence is closely linked to climatic factors including *rainfall, temperature, and humidity* . People in the rural area usually store rainwater for use over the dry season. These conditions provided suitable breeding grounds for the dengue mosquitoes, hence for the increase of DF transmission.

Despite temperature was considered as a contributing factor to the increase of DF, most participants, especially those at commune level, they were unsure about the relation

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<sup>17</sup> Phu Tran, 2009. Climate change and health: Challenge and Response Plan. Mekong Delta Climate Change Forum. 12 2009.

between temperature increases and occurrence of DF. They assumed that due to high temperature increases, people do not protect themselves from mosquito bites.

*Since it is too hot, we usually wear fewer clothes or men wear  
topless or do not want to use mosquito nets when sleeping. Hence,  
the mosquitoes bite us and transmit dengue fever to us.* [ fl : ; 8 k ] h \ ' .  
commune leaders -TG)

### **3.7. Cooperation mechanism between VNRC and Health authorities in response to DF & CC**

#### **3.7.1. Roles/responsibilities of VNRC and current responses to DF/CC**

VNRC currently provide a range of health care services including

- < Primary health care, water and sanitation,
- < Voluntary non-remunerated blood donation,
- < Health education and dissemination, health in emergencies – such as Avian Influenza, HIV/AIDS prevention,
- < First Aid-both training to general public,
- < Corporate sector and others;
- < FA service to the people,
- < Free meal,
- < Treatment to the poor patients, including provision of medicine.

Dengue fever is included in health education/communication activities. VNRC and its chapters currently work in liaison with health authorities and local government agencies/organisations at community levels to carry out IEC campaigns for dengue prevention and control. With a wide network of members and health volunteers, VNRC can disseminate health information to VNRC members and the communities at large.

However, VNRC has not yet worked much in response to climate change. From FGDs/IDIs, the VNRC participants reported that sometimes they were invited to attend workshops on climate change. VNRC chapters were requested by central VNRC to integrate CC into disaster preparedness and mitigation training program. Within VNRC, no communication channel has been established to provide VNRC staffs with CC information updates. They usually learn about CC from their interests.

#### **3.7.2. Roles/responsibilities of health authorities and current responses to DF/CC**

Dengue prevention and control program is one of the national target programs for disease prevention and control formulated and commenced since 1997-1998. At national level, MoH was appointed for managing overall the national target program. National Institute of Hygiene and Epidemiology (NIHE) is responsible for implementing and monitoring the health program in the Northern region while the Pasteur Institutes

of Nha Trang and Ho Chi Minh City are in charge of the central and Southern health programs.

A Health Care Committee (HCC) established at different levels (provincial, district and commune) for coordination and implementation of the national health programs. HCC is led by Vice-chairman of People's Committee (PC) as a Chief of HCC. DoH is appointed as a Deputy Chief, providing technical advice to PC in planning, implementing, monitoring health programs and reporting to HCC/PC. Relevant governmental agencies/organisations such as Department of Education and Training (DoET), Department of Information, Culture and Tourism, Women's Union (WU), Red Cross (RC) and Youth Union (YU) and others are appointed by PC for implementing health education and communication at community level.

Preventive Medicine Centre (PMC) of DoH plays a main role for carrying out various public health programs including DF prevention and control program/activities in coordination with members of Health Care Committee as mentioned above. PMC conducts the following key activities for DF prevention and control:

- ◁ Training on knowledge/skills of DF prevention and control for health staff/health workers, Village Health Workers (VHWs)/ Community Collaborators;
- ◁ Control of DF outbreaks
- ◁ Surveillance, monitoring and reporting of DF prevention and control program.

The PMC organises IEC campaigns on DF prevention and control in community twice every year (once at the beginning of and once at middle of rainy season). PMC encourages and supports mass organisations (RC, WU, YU) to integrate DF topics into their monthly health communication sessions to increase awareness of community; disseminates DF information/updates to the public via mass media (TV, radio, local loudspeakers, print newspapers etc.).

Additionally, when DF outbreak occurs, PMC coordinates with local authorities to do mosquito spray and mobilise communities to clean up the environment such as having discarded water containers removed, advising households to clean their rain water containers.

In response to climate change issues, Department for Environment Health (DEH) under MoH is responsible for CC. During IDI, we got feedback from MoH that DEH is currently doing research in order to get insights in CC issues and planning for response and adaptation to CC in health sector. Health Sector has faced some challenges in response to CC:

- ◁ Knowledge and skills of CC among health staff and communities are limited

- ◁ Staffing and organisational system for working in response to CC is not yet established<sup>18</sup>.

### **3.7.3. Current cooperation between VNRC and Health authorities in response to DF/CC**

At national level, a cooperation agreement between MoH and VNRC was signed for implementing health education and prevention of dangerous infectious diseases. At local level, the bi-lateral cooperation agreement between Chapter and DoH was also signed for a five year interval. VNRC Chapter and its members are involved in implementing some health programs through the HCC.

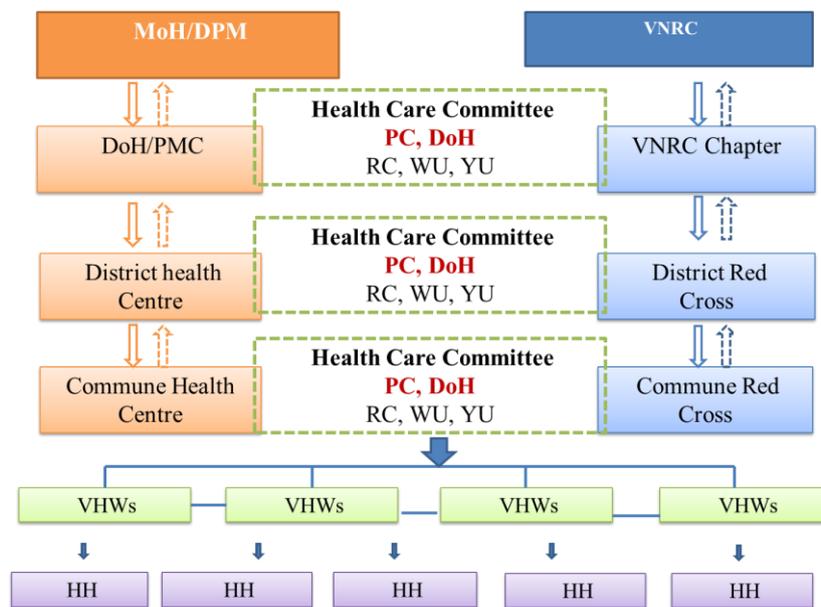
With respect to DF information updating and sharing, no clear line of communication has been set up. Hence, VNRC and its members received information on DF through the meeting of Health Care Committee or upon their request to DoH/PMC. This meeting is organized upon outbreak alert, ranging from weekly to monthly meetings.

With respect to reporting, VNRC and Health Sector have their own reporting system, in which VNRC will report to the relevant People's Committee at relevant levels about their response as the People's Committee coordinate the Steering Committee for infectious diseases. Reporting is made on a monthly basis from the lowest to highest levels as illustrated in Figure 40. During DF outbreak, report has to be done weekly and even daily. Community members who have DF suspected symptoms have the first visit to CHS. CHS refers patients with DF symptoms to district or provincial hospital for diagnosis and treatment. Some of them go directly to district/provincial hospital. The hospital reports back to CHS and the local health authorities about the confirmed DF cases, so that they take actions for controlling the DF outbreaks at community level.

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<sup>18</sup> *ibid.*

Figure 17: Cooperation mechanism between VNRC and Health Sector in response to DF



#### 4. Conclusions and Recommendations

The study showed that community members had a good knowledge of DF. They knew *Aedes Aegypti* as dengue vector. Most of them could identify common symptoms and dangerous signs of DF. People also knew about home-based care and the appropriate time to send the person with DF to health facility. Conditions favourable for DF increases were correctly identified. People had adequate knowledge of DF prevention methods in family and community.

The people expressed their concern on the fact that DF have been increasing for recent years. Nevertheless, methods of killing larva and mosquitoes have not been sufficiently applied by the population.

In recent years, various IEC activities on DF have been implemented through mass media. The survey found that the IEC activities literally improved the knowledge and attitudes of communities on DF. However, the extent of practices on DF prevention and control remained very low. Hence, we recommend to improve the quality of IEC activities and to consider essential supports to assist community people to apply or implement DF preventive measures.

People have seen some changes in weather, seasons and climate in recent years. They affirmed that those changes continue in the future. Though people could specify some phenomena related to climate change, the extent of understanding of community members about CC remains very low. Less than half of the respondents gave correct answers to the questions regarding causes, effects and adaptation to CC.

Majority of people identified that CC has affected people's health. Climate change has effects on DF increases due to more rain and long-lasting rain in the rainy season. These are conducive to increasing dengue mosquito habitants.

Commune, district and provincial leaders have not ever been provided with any training either on CC or the linkage between CC and DF. Hence, IEC activities on CC have not been implemented in the communities. Currently local leaders mainly get information on CC from television and other mass media. It is recommended to increase the capacity of local leaders on CC and DF.

Cooperation mechanism between VNRC and health sector has been established. At present, health sector is leading implementation and management of national health programmes including dengue prevention and control. VNRC is involved in community mobilisation for dengue prevention. However, health sector and VNRC have not yet had implemented any activities regarding CC and DF. Hence we recommend that strengthening cooperation between VNRC and health sector in response to CC and DF is required to carry out this project.

In the project context, in order to ensure that IEC/BCC activities on CC &DF are effectively and efficiently implemented, we would recommend to IFRC/VNRC to develop a strategy of IEC/BCC on climate change and the linkage between CC and DF with involvement of local partners/ authorities at all levels. It is recommended to start with building up a core trainer group on climate change as the links between CC and DF within VNRC structures. Training of Trainers approach will ensure that skills, knowledge and know-how are passed both horizontally<sup>19</sup> and vertically<sup>20</sup>. The focus on training for VNRC volunteers, village health workers has utmost importance. They are considered as a change agent in the community.

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<sup>19</sup> Horizontal: amongst and within the peers and colleagues

<sup>20</sup> Vertical: Y U W \ ' ' \ ] [ \ Y f Đ ' ' Y j Y ' ' k ] ' ' ' h f U ] b ' h \ Y ' ' a c f Y ' ' c W U ' ' ' Y j Y ' ' i b ]

## 5. Annex

### 5.1. Data collection

Qualitative data were collected by using various techniques comprising of desk review, Focus group discussion, In-Depth Interview and On-site observation. Interview of individual households was done with structured questionnaires to collect quantitative data.

Three sets of data collection tools were developed including: One set of semi-structured interview protocols for FGD/IDI with households; one set of semi-structured interview protocols for FGD/IDI with local stakeholders; one set of structured questionnaires for households.

The researcher was responsible for qualitative data collection while local enumerators conducting interviews with households to collect quantitative data. The local enumerators were VNRC volunteers recruited by HCMC and Tien Giang Chapters.

The researcher trained enumerators on basic interview skills, sampling households and structured questionnaires. During training, researcher ensured that the enumerators only read out the question but not the answers for most questions and that the enumerator had to pick from a list of choices.

### 5.2. Data processing, analysis and reporting

All quantitative data were processed and analysed by using SPSS 18 (statistical software). Qualitative data from FGDs and IDIs were recorded, transcribed and translated into English and manually analysed.

Study report was drafted from qualitative and quantitative analysis. The study findings were validated by two sources of data. The report will be finalised upon feedback from IFRC/VNRC and local stakeholders.

### 5.3. Sample size, sampling strategy and justification

#### Sample size

The sample size was calculated by using this formula:

$$n = 1 + Z_{(1 - \alpha / 2)}^2 \frac{p(1 - p)}{d^2}$$

It is assumed that  $d = 0.07$ ;  $p = 0.51$ ;  $Z = 1.96$  then  $n = 196$ .

The sample units are equally distributed in 30 villages and extra sample units for contingency cases. For instance, some information is missed since interviewees are not at home or unavailable for interview, or questionnaires are uncompleted. Therefore, the number of sample units for each province is 210 (n=210). The total of sample units for two province is 420 (n=420).

The sample size was adjusted after collecting qualitative data and in consultation with local stakeholders. Adjusting the sample size was based on (i) timing for the study; (ii) capacity of local enumerators; (iii) estimating the households unavailable for interviews and invalid questionnaires; (iv) Expected outcomes of study design; (v) *p and d values* are adjusted.

### **Sampling**

Probability Proportional to Size Sampling Technique (PPS) was used for selecting villages. In each province, a total sample size of 210 was selected from 30 villages of 20 targeted communes. About 7 households in each village were randomly selected from the list of eligible names of households.

Selection of households for interviews was done by local enumerators with guidance by the researcher. Once arriving at the village, the enumerators approached the village head to borrow the name list of households for sampling. For instance, if there are 120 households in the village, then the range is 17. It is supposed that random start number is 5. The first household to be visited is household number 5 in the name list. The second household is household number 22.

For the IDIs, the survey team employed purposive sampling to select the individuals considered to have the highest degree of cultural competency in relation to the project activities. This was done in consultation with IFRC/VNRC and local partners.

For the FGDs, the survey team used convenience sampling based on participant lists, which served as the initial sampling frame. 10 individuals from each identified group were invited with a desired FGD size of between 6 to 8 representatives.

#### **5.4. Study team**

The study team consisted of one external consultant working as a researcher leading the study team (and her colleague), Health Project Officer of IFRC in Vietnam, VNRC staffs and 20 local enumerators in HCMC and Tien Giang. The study team was provided with technical support from Health Specialist of Red Cross Red Crescent Climate Centre.

Each party had responsibilities as followed:

	<b>Consultant</b>	<b>IFRC/VNRC</b>
Preparation	<ul style="list-style-type: none"> <li>§ Study design</li> <li>§ Develop data collection tools</li> <li>§ Develop work plan</li> </ul>	<ul style="list-style-type: none"> <li>§ Prepare ToR and study proposal</li> <li>§ Provide inputs/comments on data collection tools</li> <li>§ Coordinate with local partners to arrange for field work</li> </ul>
Data collection	<ul style="list-style-type: none"> <li>§ Provide training for enumerators</li> <li>§ Monitoring and support for enumerators</li> <li>§ Conduct FGDs and IDIs</li> </ul>	<ul style="list-style-type: none"> <li>§ Recruit enumerators to collect quantitative data in HCMC and Tien Giang province</li> <li>§ Conduct some FGDs and IDIs</li> </ul>
Data processing and analysis	<ul style="list-style-type: none"> <li>§ Training and arrange for quantitative data entry</li> <li>§ Coordinate transcribing and translating FGD&amp;IDI results into English</li> <li>§ Data analysis</li> </ul>	<ul style="list-style-type: none"> <li>§ Provide support for data analysis</li> </ul>
Reporting	<ul style="list-style-type: none"> <li>§ Write draft report in English</li> <li>§ Translate the report into Vietnamese</li> <li>§ Finalise the report in English and Vietnamese based on feedbacks from IFRC/VNRC and local partners</li> </ul>	<ul style="list-style-type: none"> <li>§ Review draft report (English and Vietnamese) and provide comments/feedbacks</li> </ul>