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**THE RUFFORD MAURICE
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Final Report

**Evaluating and improving the awareness of the coastal
communities in Khanh Hoa province (Vietnam) on
natural marine living resources**

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CONTENT

EXECUTIVE SUMMARY	3
1. INTRODUCTION.....	4
2. MATERIALS AND METHODS.....	5
2.1. Evaluation of people awareness on marine resource	5
2.1.1. Study areas:	5
2.1.2. Data collection:.....	5
2.1.3. Data analysis:.....	6
2. 2. Activities to increase awareness of people on marine resource and environment	6
2.2.1. Distribution of posters and leaflets	6
2.2.2. Organizing the meeting to educate.....	7
3.1. Awareness level of people on marine resources and environments.....	9
3.1.1. Sampling structure	9
3.1.2. Status of awareness of local people on resources and environments....	10
3.1.3. Status of human activities in natural resource protection	15
3.1.4. The needs of improving awareness for residence on natural resources	19
3. 2. Activities to increase awareness of people	22
3. 2.1. Distribution of posters and leaflets	23
3.2.2. Organizing meeting and giving talks.....	24
3.3. Re-evaluation of the awareness of people on marine resources and environments.....	25
4. CONCLUSIONS AND RECOMMENDATIONS.....	28
5. REFERENCE	30
APPENDIX 1. Questionnaire	31
APPENDIX 2. Pictures of poster and leaflet	35
APPENDIX 3. Poster and leaflet distribution and talk to people	Error! Bookmark not defined.

EXECUTIVE SUMMARY

Evaluation the awareness of local community at 9 villages along the coast of Van Phong Bay was performed from March to December 2005. The previous study results have shown that Van Phong Bay is diversity and abundance of ecosystems and natural living resources but their exploitation was unsuitable, so quality and quantity of ecosystems have reduced. Communities along coastal areas of Van Phong Bay are low education results in low understanding on marine resource and environment. Five out of nine surveyed communities were most less awareness, which were at Ninh Tinh, Hai Trieu, Dam Mon, Bai Tre and Van Gia villages.

The education program including poster and leaflet distribution, meeting lectures, discussing were deployed in the surveyed villages during the period from March to August 2006, results have shown that this program has remarkable positive effective to the knowledge of people on marine resource and environment. There is still a need to expand and diversify forms of education program in the coastal village of Van Phong Bay for the purpose of sustainable use of natural resource.

1. INTRODUCTION

The marine natural resources of Vietnam, in general, and Khanh Hoa province in particular have been decreasing rapidly. There are many marine ecosystems such as coral reef, mangrove, seagrass being destroyed for living purpose of local communities. Previous studies have shown that the coverage of coral reef in the Khanh Hoa province has decreased more than 30%. Similarly, the mangrove has been decreasing at considerable level. In 1982 the Khanh Hoa province had more than 800 ha of mangrove; the total area is only 100 ha at present. The biodiversity of species in the mangrove has been reduced more than 66%. Sea grass bed reduction has been from 33.38% at Cam Ranh up to 85.71% at Nha Trang during a period of 5 years from 1997 to 2002 (Nguyen Tac An, 2005). As a result, a lot of species are in danger such as seahorse, top shell, anemone fishes. One of the main reasons for this disaster is the low level of awareness of the fishermen and communities on long-term benefits of those ecosystems. Consequently, increasing the awareness of communities on natural resource is necessary and urgent. Van Phong bay located in the north of Khanh Hoa province. The total area of the bay is about 46,100 ha (Nguyen Tac An et al., 2004). Van Phong bay has good conditions for developing the marine economic. In fact, many activities might damage the environment and resources.

One of the main reasons for continuing destruction of the ecosystems of the earth, in general, and particularly high stress on marine ecosystems is the low awareness of people about these ecosystems. The purpose of this project will help people in Khanh Hoa gain more understanding of some important marine ecosystems such as coral reefs, seagrasses and mangroves. The scope of this work is to estimate the understanding of the coastal communities along Van Phong bay on marine ecosystems and then select some communities for increasing awareness on marine environment and living resources, which will help to protect and use the resources sustainably.

2. MATERIALS AND METHODS

2.1. Evaluation of people awareness on marine resource

2.1.1. Study areas:

Study areas included 10 villages of 2 districts of Van Ninh and Ninh Hoa in Khanh Hoa province (Figure 1). Three villages (Code 1 and 7 – Table 1) belongs to Ninh Hoa and seven village (Code 2, 3, 4, 5, 6, 8 and 9 – Table 1) belongs to Van Ninh district.

2.1.2. Data collection:

Information were collected based on the PRA method, detail is the interviewing method with the questionnaires (Appendix 1). There are 4 main units including: general information about householder, general knowledge about resource and environment of the people, behavior in protection of resource and environment and demand for increasing of knowledge on resource and environment. Total number of questions in the questionnaire was 34.

At every village, at least 20 householders were chosen randomly for interview. However, because the Ninh Yen and My Giang are small villages, 20% of the total householder at each village was not enough data so that the data sets of Ninh Yen and My Giang villages were combined together. Number of interviewees in the data set was shown in Table 1.

Table 1: Numbers of the data set

Village names	Code on the map (Fig. 1)	Number of interviewees
Ninh Tinh village - Ninh Thuy commune	1	44
Hai Trieu village - Van Long commune	2	38
Dam Mon village - Van Thanh commune	3	22
Bai Tre village - Van Thanh commune	4	31
Tuan Le village - Van Tho commune	5	26
Van Hung commune	6	30
Ninh Yen and My Giang villages - Ninh Phuoc commune	7	21
Phu Hoi village - Van Thang commune	8	61
Van Gia town	9	52
Total		325

Because number of posters and leaflets were much lower than the total family at Van Phong Bay, they were priority given to the groups as following:

- The key persons in the villages: They are leaders of villages, person who have higher living standards in the villages, person who has more power in the villages. It is believed that through those persons, content of the poster and leaflet will be transferred to others, and more important, because their position, most people in the village will listen to them, it will be more effective.
- The office of local government and shops in the village: Those placed is priority to given the poster and leaflet. It is believed that, people will more concentrate in such place and will pay attention to the poster.
- The rest number of poster and leaflet were distributed to local people randomly.
- The posters were hung by the team at the publics places of the villages: markets, schools, communes.

2.2.2. Organizing the meeting to educate

In addition to the distribution of poster and leaflets activities, organizing the meeting for educating on marine resource and environment was also performed. Group of people was chosen for lecturing education based on the criteria as follows:

- (1) To be already for participating the class
- (2) Has abilities to transfer and expand the knowledge to other people or generations.

Because of the limited budget and time, we did not organize lectured meeting at all the village. Target groups were people at Tuan Le villages of Van Tho (Code 5 – Table 1), pupils at the secondary school at Van Tho and people at Van Thang (Code 8). The talk focused on definition of mains marine ecosystems, threats to those ecosystems and methods to reduce the threats.

2.3. Re-evaluation of the awareness of people on marine resource and environment

After performing the activities in item 2.2, re-evaluation on the awareness of people was carried out at Van Thanh, Van Gia and Ninh Phuoc. In which, Ninh Phuoc was the

control site which no distribution of the leaflet and poster. 30 questionnaires was distributed at each sites. The procedure of distribution and collection of the information was the same as in above evaluation process.

3. RESULTS AND DISCUSSIONS

3.1. Awareness level of people on marine resources and environments

3.1.1. Sampling structure

Total number of 325 questionnaires were distributed and collected in the field trips (Table 1). The interviewee distributed mainly in the labor age (from 18 to 60 ages) (Fig. 2). Activities of these groups have impacted directly and indirectly environment and natural resources in Van Phong Bay. Balance of gender has not occurred in the samples (Fig. 3, left). Most of the interviewee at Bai Tre, Van Gia were low education (more 60% were illiterate and elementary school) while at Ninh Tinh, Hai Trieu, Van Hung and Ninh Phuoc, the educational levels of interviewee were secondary school (more than 40%) or higher. Although the education level of the interviewees was different from site to site but there was a representation of all the groups of people at different education levels in the data set. So that, the randomly chosen of interviewee in Van Phong Bay has reflect the whole communities.

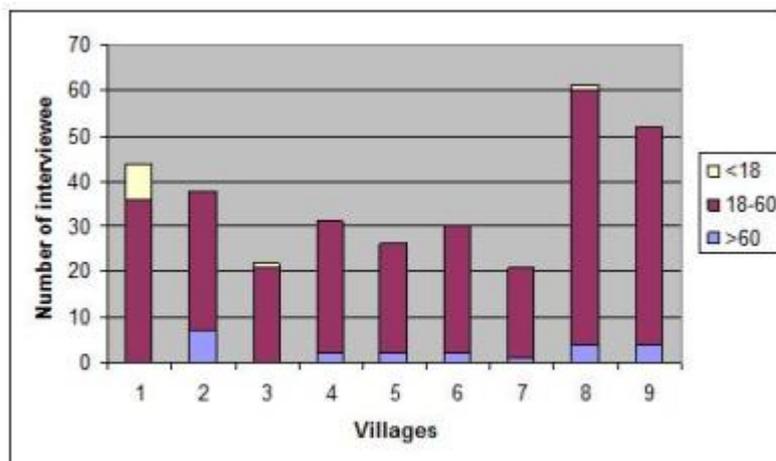


Fig. 2: Age distribution of interviewees in the data set

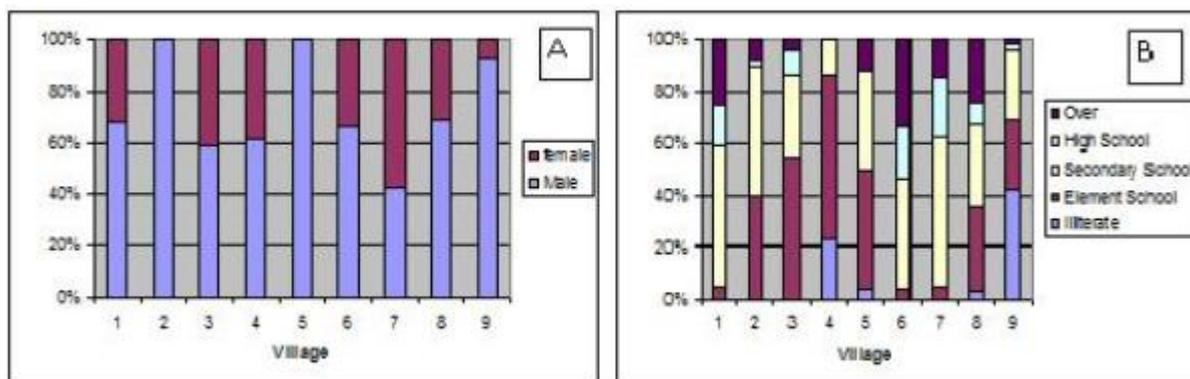


Fig. 3: Gender structure (A) and education levels (B) of the data set

3.1.2. Status of awareness of local people on resources and environments

Based on data collected from field trips, Fig. 4 shows that most people at Van Phong Bay know about the present of important ecosystems such as mangrove coral reef and seagrass in their region in which coral reefs are recognized easily by the local people. Mangrove forests locate at some villages such as Ninh Tinh, Hai Trieu, Bai Tre, Tuan Le, Phu Hoi, Van Gia but residents' awareness of distribution of mangrove forests in their areas was very different (Fig. 4). Specially, most people live in Tuan Le village identified mangrove forests existed. Similar mangrove forest, seagrass beds distribute at some villages with different awareness. In addition, other ecosystems also exist around Van Phong Bay but local people rather know because they have not related with their living and life. Van Phong Bay is diversity and abundance of coastal ecosystems of tropical regions.

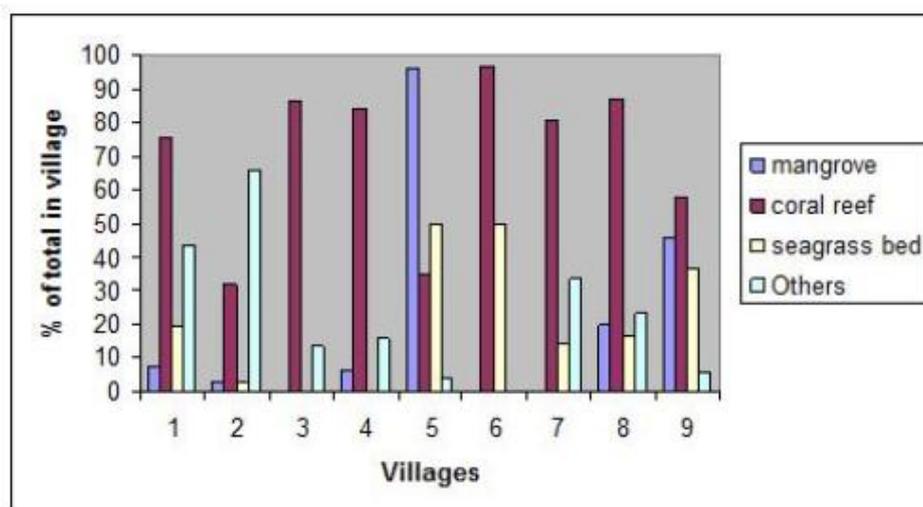


Fig. 4: Response to “Ecosystem kinds” in Van Phong Bay

Local people showed that these natural resources could be affected their profits. In 315 questionnaires, 293 people agreed that these natural resources impacted directly and indirectly economic activities of local people. Some people said that natural resources were not impacted to them (22/315). It is because their occupation did not directly relate with natural resources such as pupils, middlemen and officers (Fig. 5).

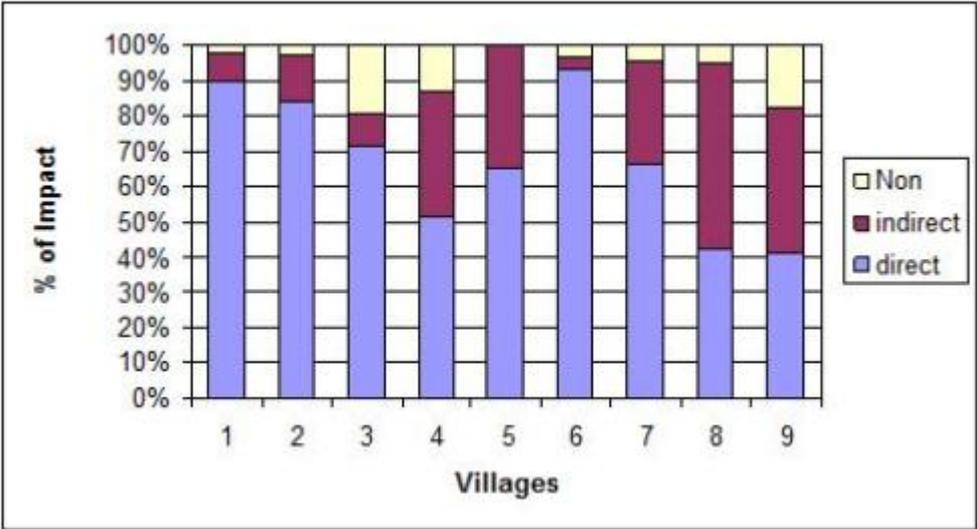


Fig. 5: Effects of natural resources on economic activities at villages in Van Phong Bay

There are some issues in local people’s awareness about organism resources. At Van Hung, Tuan Le and Phu Hoi, more than 50% of interviewees that fishes at the sea was from fish parents while at Ninh Tinh, Hai Trieu, Dam Mon, Bai Tre and Van Gia most interviewed people respond that fishes come from the sea (Fig. 6). They meant that, if the sea still exists, there would be the fishes. This untrue thinking demonstrated that the awareness of the local people in studied areas is rather low. However, most of them have right recognition that marine resources have reduced rather quickly and the number was about 10 years ago (Figs. 7 and 8). Especially, at Van Hung, 100% of people agreed that marine resource has been reducing. It indicated that, people have awareness of the reduction of marine resource.

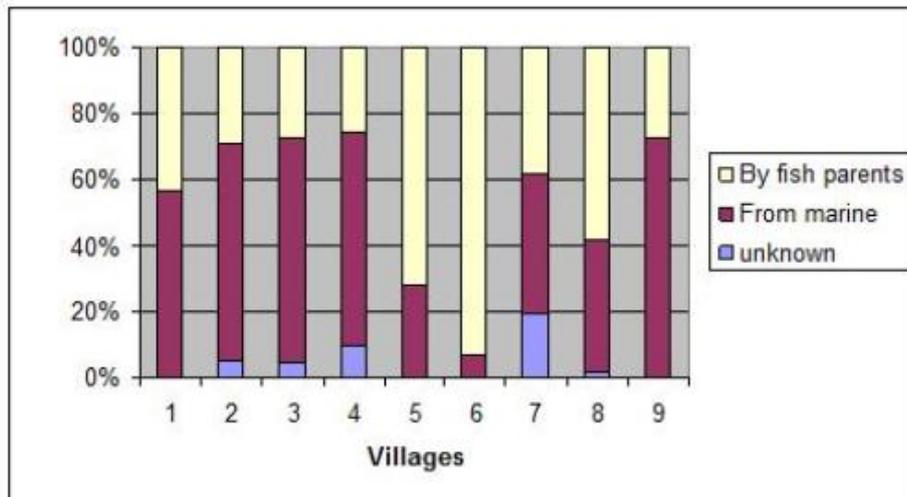


Fig. 6: Awareness about where marine fish come from.



Fig. 7: Awareness of changes of natural resources in Van Phong Bay

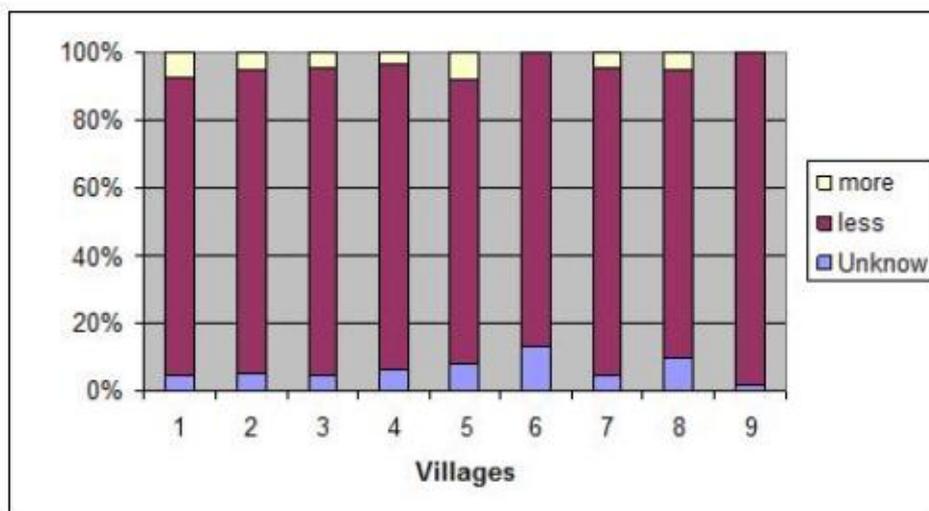


Fig. 8: Comparison of quality of natural resource at present with the past.

Similar to natural resources, marine environment was also recognized as negative changed during last decade. Eight out of nine studied villages have more than 50% of interviewee who said environment now is more dirty or worse in comparison with the past. Although some said that environment at their living area changed to better but the number of them was not so much (Fig. 9). Specially, at Tuan Le (5), there are many people who did not consider this problem (about 50% of interviewee).

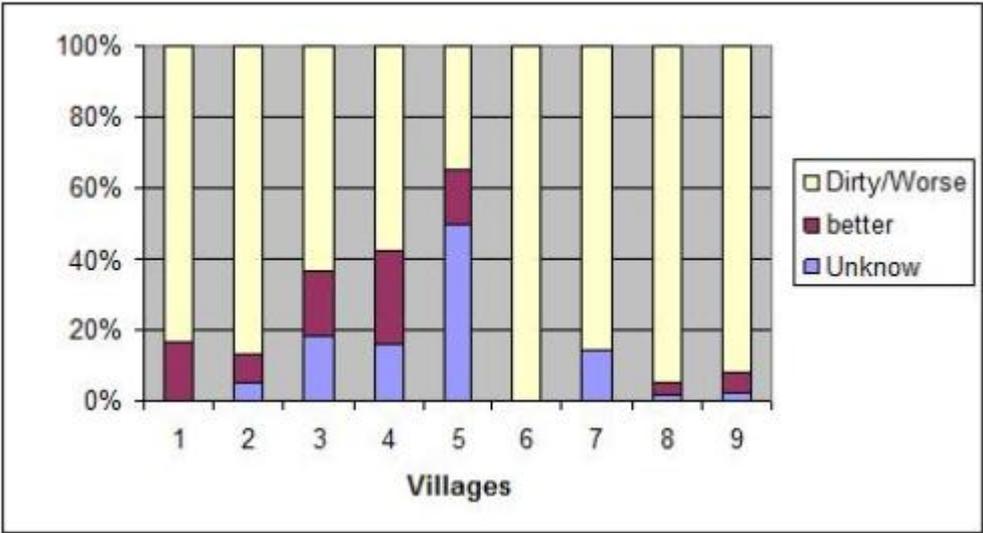


Fig. 9: Resident’s estimations of environmental changes in Van Phong Bay

However, there is a relatively high knowledge about the changes of environment and natural resources. Figs. 10 and 11 showed that about 80% people knew the reasons which caused reduction of natural resources and nearly 100% of them agree that polluted water is one of the reason for showed that any change of environment often impacting on status of natural resources.

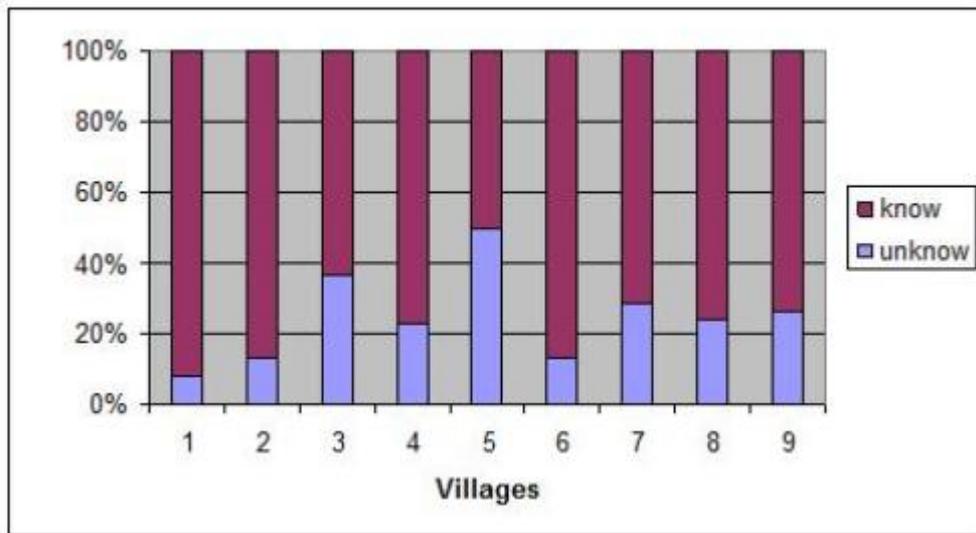


Fig. 10: People awareness about reasons, which caused the changes of natural resources

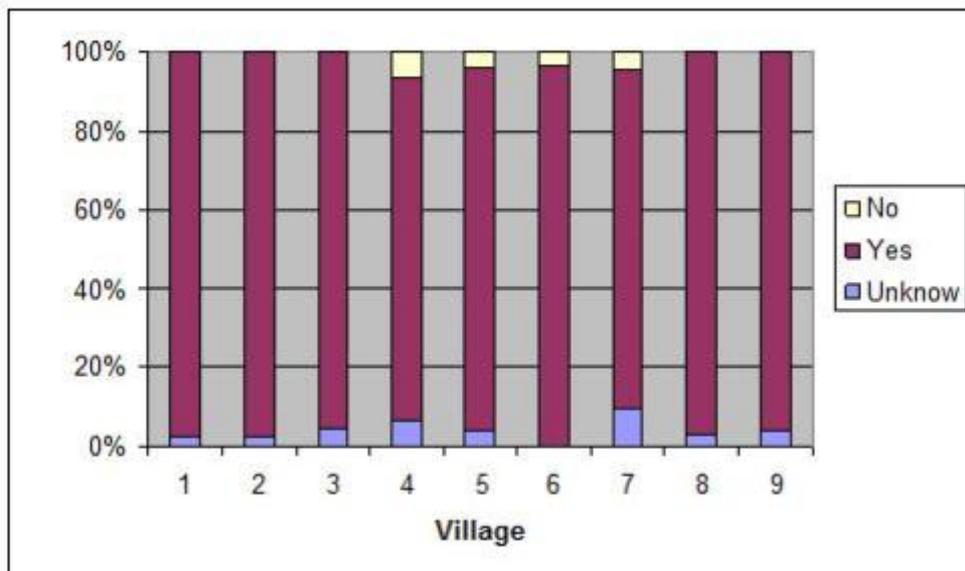


Fig. 11: People awareness about impacts of polluted water on natural resources

There are lots of reasons, which caused degradation of natural resources. Local people said that the main reason was over-fishing by illegal methods such as using fishnets with small mesh, dynamic fishing and cyanic poison. They also said that there are inverse relationships between the increasing number of fishing boats and ships with size of fishes caught under legal has caused reducing stock of fishes in Van Phong Bay. Some other ideas showed that destruction of ecosystems such as mangrove forests and coral reefs to develop of other economic sectors (shrimp culture, lobster cage culture and ports) has

changed living habitats of marine organisms, and then impacted directly to marine resources. In addition, environmental pollutions that were caused by transportation, industry and others, has a high pressure on sustainable development of natural resources.

As mentioned above, Van Phong Bay is diversity and abundance of ecosystems and natural resources but their exploitation was unsuitable, so quality and quantity of ecosystems have reduced. One of the seasons that cause the deduction is the limitation of awareness of local people. They knew what caused these decline but they cannot stop what they did because of their earning living. In general, the people groups with less awareness were seen more at Ninh Tinh, Hai Trieu, Dam Mon, Bai Tre and Van Gia.

3.1.3. Status of human activities in natural resource protection

Beside assessment of status of awareness of local people, the projects also recognized activities of protection of natural resources. The first, every people were aware that activities of economic sectors have been impacted on status and changes of natural resources. Some of popular economic activities in Van Phong Bay are fishing and aquaculture. The surveyed results showed that most of householders fishermen and aquaculture farmers.

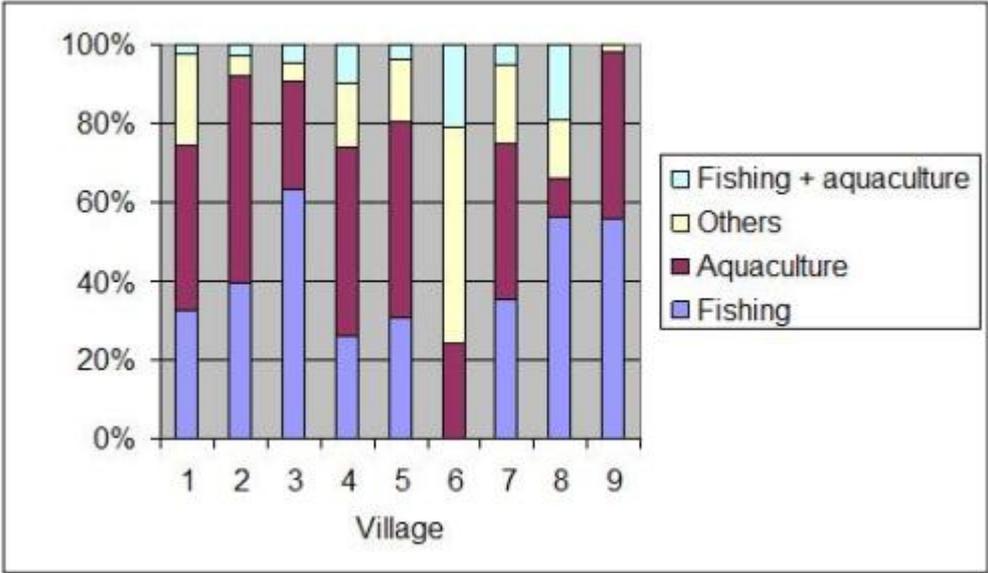


Fig. 12: Economic structure of villages in Van Phong Bay

Fishing has been affected on natural marine resources because many illegal fishing methods are still used in Van Phong Bay, including dynamite fishing, gill net, small mesh net, poison fishing and electronic pulse fishing. In 274 interviewed fishermen, 97 fishermen said they used to utilize dynamite fishing, 104 fishermen said they have used gill net with small mesh size, and 53 people said they have used electronic pulse fishing. Although several fishing methods have been illegal, at present, they are still used them in Van Phong Bay. However, the fishermen know that destructive fishing methods have been negative affected to natural marine resources, but they have to use them to earn some things for their life.

Beside of fishing, aquaculture also affected to environment and natural resources. According to Nguyen Tac An and Phan Minh Thu (2005), to operate 12,040 lobster cages in Van Phong Bay and Cam Ranh Bay, farmers have used 22,658 tones of by-catch. Furthermore, in Van Phong Bay shrimp culture also is popular with very high number of lobster cages, tiger shrimp ponds. Fifty percent of interviewees showed that they own aquaculture field. During aquaculture, by-catch is mainly used to feed culture animals. And the waste of spare food will cause pollutions or impact to the habitats. They also know that their activities can has negative impacts on environment and reduction of natural living resources.

Activities of economic sectors such as fishing and aquaculture have influenced on natural resources, but there are some signals from local people about their awareness of changes of environment and natural resources. The surveyed results show that domestic waste, putting into the marine, has reduced quality of the waters. They said that they knew waste materials affected to the environment and indirectly affect the fishes or prawn/shrimp and others marine organisms (Fig. 13) but their activities have produced a lot of wastes, especially the plastic waste.

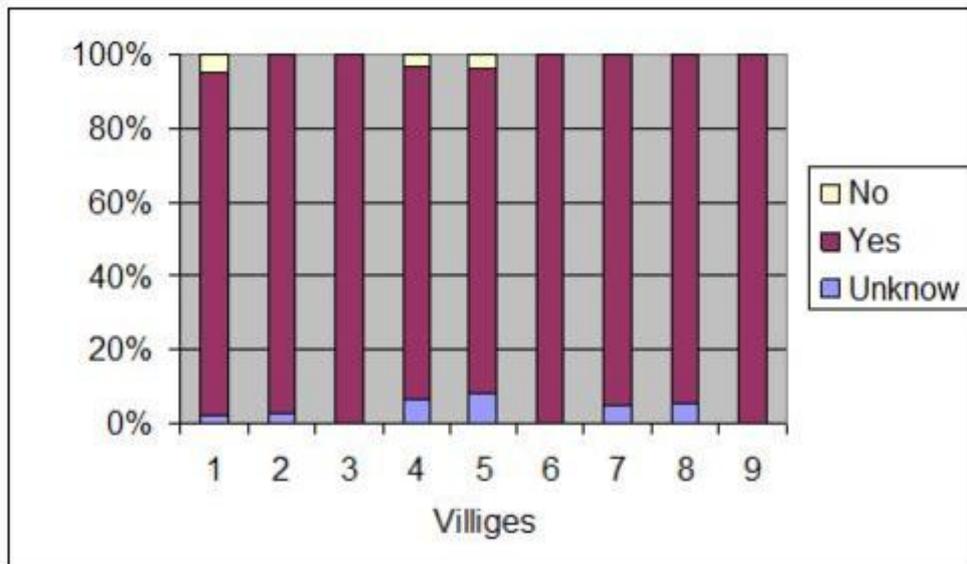


Fig. 13: Awareness about effect of waste to natural resources

In addition, the interview results also showed that people have participated in all of activities of protection of natural resources and environment. Except Van Gia, in other villages, most people knew how they can manage waste and to protect natural resources (Fig. 14). And they do these activities very well.

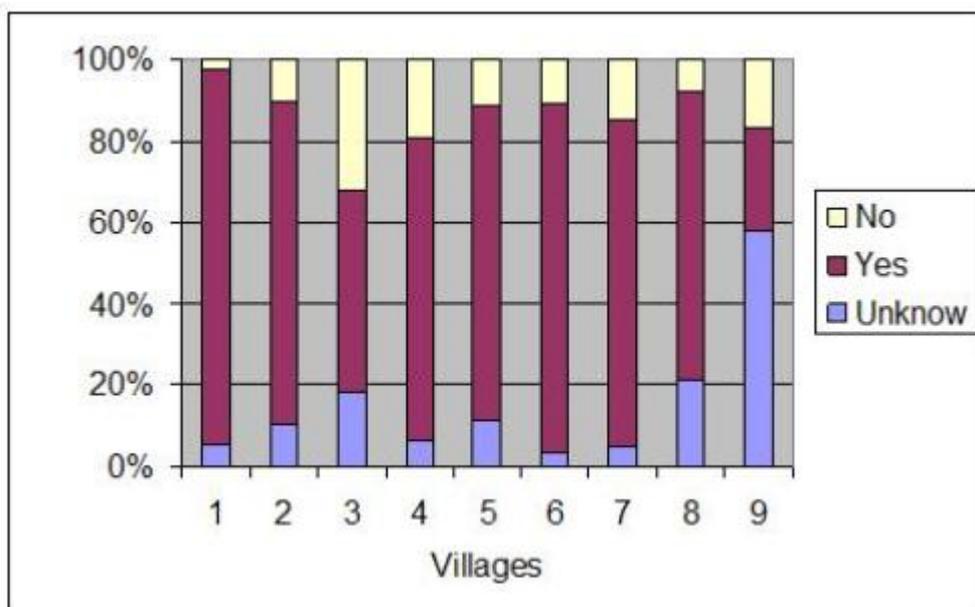


Fig. 14: Status of human activities in social activities in improving environment and protecting natural resources.

The interviewees said that they have done a lot of things for improving and protecting natural resources and environment. They are stopping throwing waste into marine, participating preventive hygiene for marine and coastal areas. Local people have applied the new method in aquaculture. It is eco-aquaculture such as co-culture lobster and green mussel, lobster and sandfish, mixed shrimp culture and mangrove forest. Additionally, local people have participated in some protecting natural resources, such as planting mangrove forests, preventing destruction of coral reefs and preventing environmental pollutions from inland activities.

In fact, when a activity, which related to environmental and natural resources, was organized by NGOs; participants of local people were not many. In some villages, few local people participated in environmental activities, such as at Van Gia, only few percentages of interviewees showed that they have been attended in such programs. At Ninh Tinh, Hai Trieu, Bai Tre and Tuan Le, participants are about 60% of surveyed who have joined in environmental activities (Fig. 15). The activities, including improving environment and protecting natural resources, which have been carried out in Van Phong Bay by organizing environmental seminars, environmental propogandas, preventing destructive methods and setting up protecting natural marine resources based on communities.

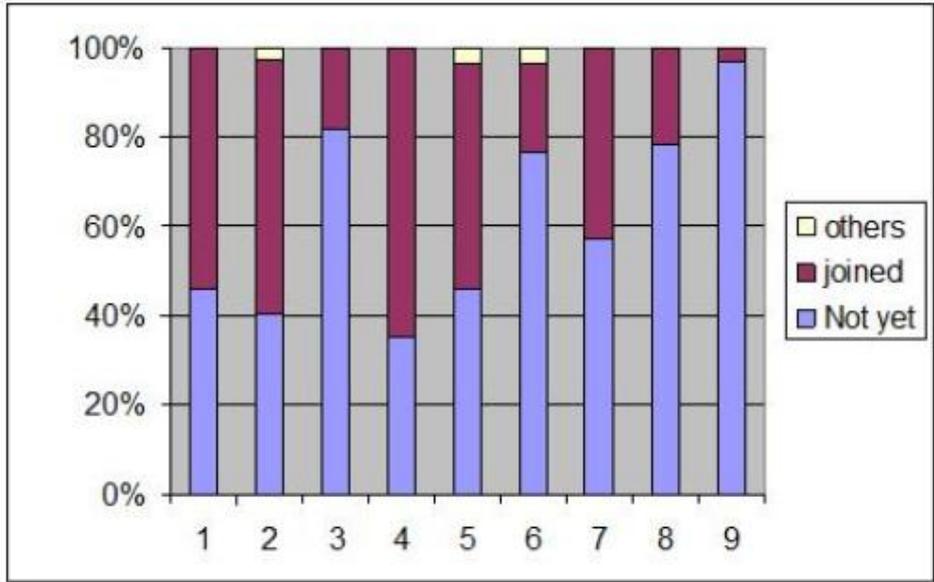


Fig. 15: Statistics of people has participated in activities of improving and protecting natural resource and environment

As mentioned above, in coastal villages around Van Phong Bay, local people have known their economic activities would be affected to natural resources. Because of their life, many of households have used destructive fishing methods to catch fishes. Many economic activities in inland and coastal regions such as fishing, aquaculture activities, port activities and domestic activities have impacted on environment and natural resources. However, they showed that they have some limited participations in activities of protecting environment and natural resources.

3.1.4. The needs of improving awareness for residence on natural resources

Beside of assessment of status of understanding of people on protection of environment and natural resources, the study also recognizes the needs of people in improving knowledge on protecting environment and natural resources. The results indicated that income of most of people in the surveyed areas are normal or under normal levels. This showed that living standard of local people in study areas is low (Fig. 16). These require the needs of protection of natural resources.

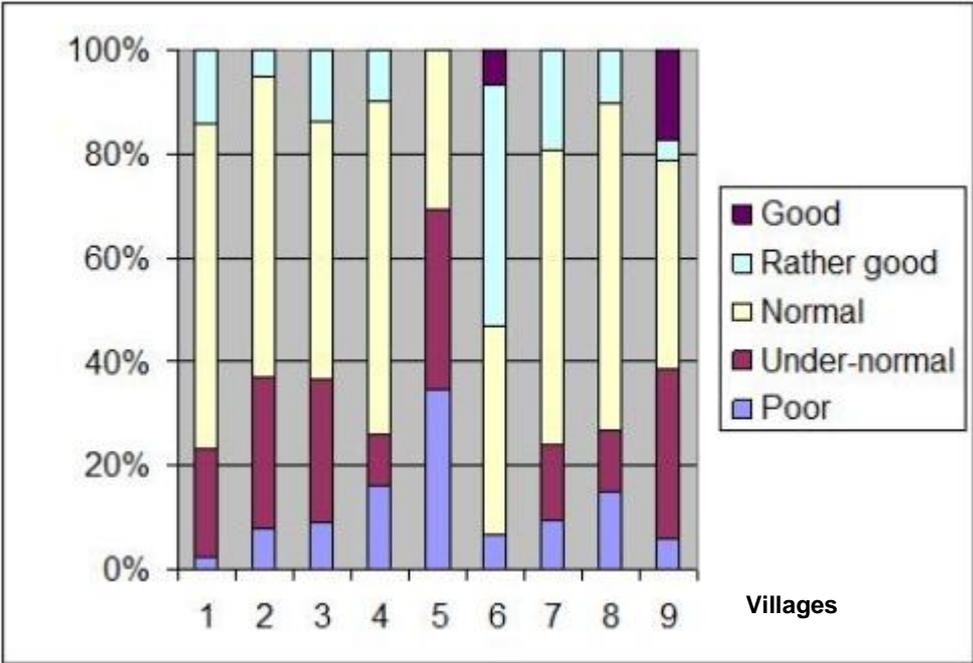


Fig. 16: Income structure of local people

When the people were asked if there is any activities of protection of environment and natural resources, many local people in study areas have not known any activities. At Ninh Tinh and Bai Tre, more than 60% of interviewees showed that they knew some activities on protection of natural resources and environment (Fig. 17). This indicated the needs of environmental education in these areas are high.

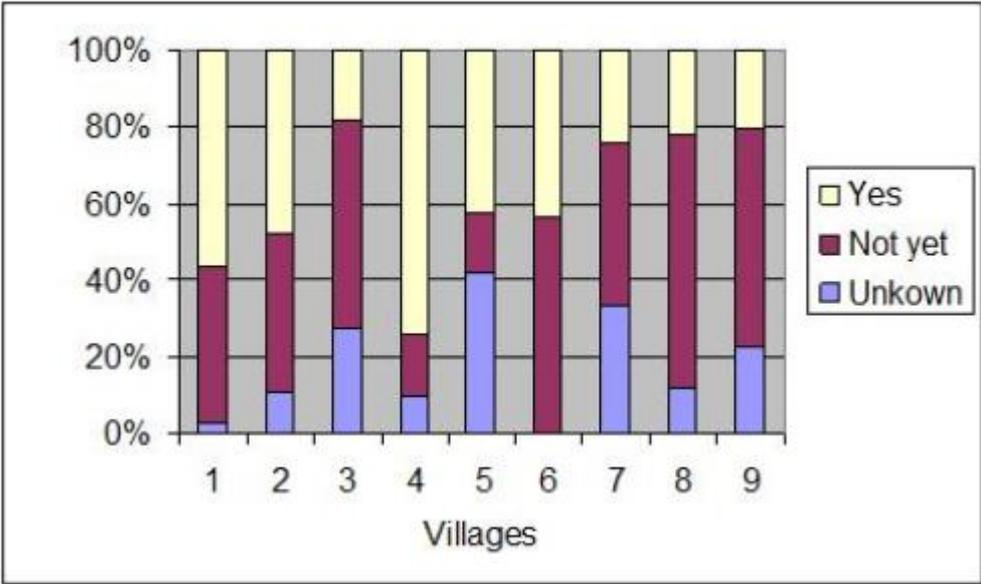


Fig. 17: Percentage of people who know about resource and environmental protection program

Needs of environmental education also indicated in suggesting any environmental activities and participating in these activities. The results (Fig 18 and 19) showed that if there are any activities of environmental education and protection of natural resources, they have suggested these activities should be carried out in their living places and they are willing to participate in these activities. An ‘Unknown’ person showed they do not know for sure to join the program or not. Most of the people desire the environmental protection activity at their locations.

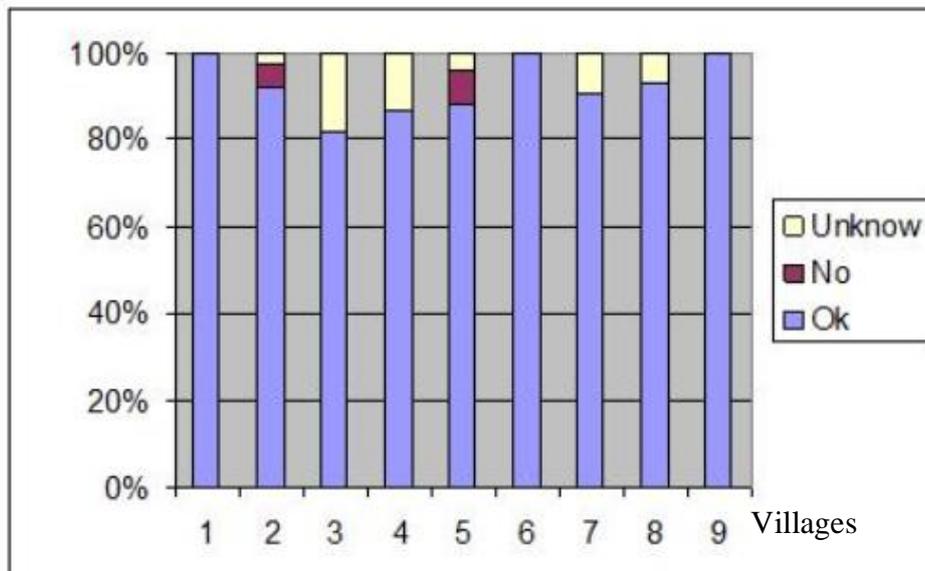


Fig. 18: Percentage of people desiring environmental protection activity organized at their place.

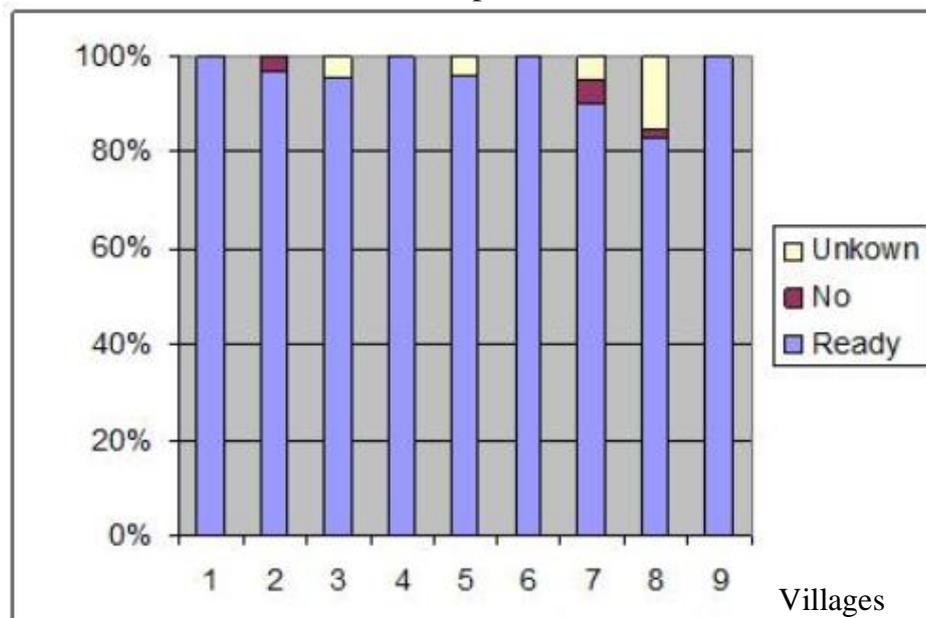


Fig. 19: Percentage of people who are willing to participate in environmental protection activities.

Furthermore, to response activities of protection of environment and natural resources, local people will change to other economic activities if these activities are indicated to be harmful to environment and natural resources. However, this ratio is very low at Van Gia village comparing to other villages (Fig. 20).

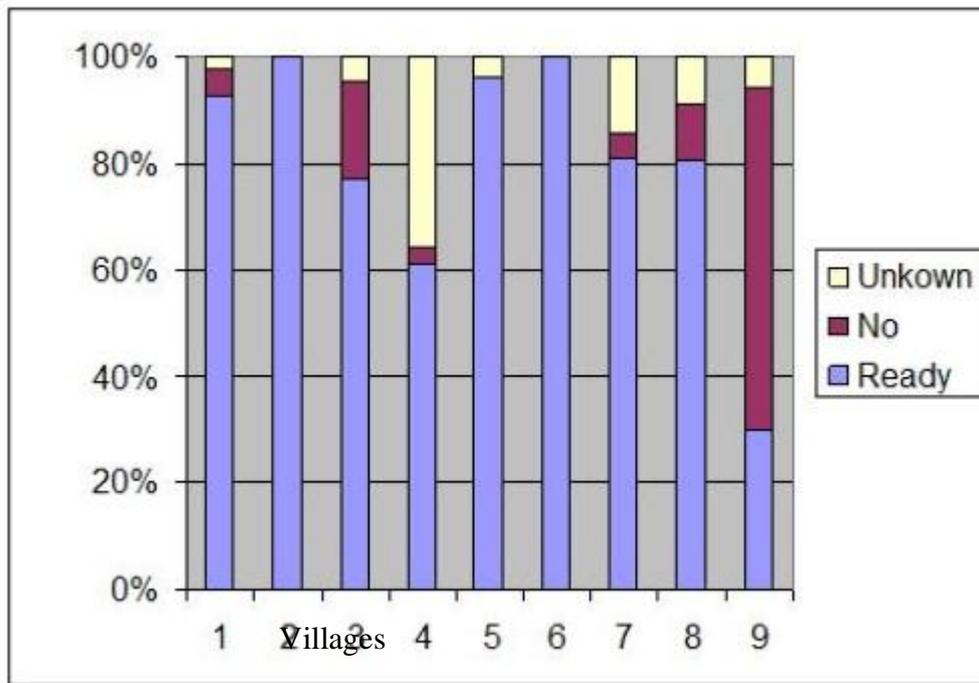


Fig. 20: Percentage of people who agrees to changes to another economic activity, which is less affected to environment and natural resources.

3. 2. *Activities to increase awareness of people*

From above results, it is clear that the understanding of people in term of environment and marine resource are relatively high. They already know about the marine ecosystem, the threats to these ecosystems and the way to reduce threats. However, because of living standard is low, they have to earn money to feed themselves. While there are very few alternative jobs, people still catching fishes at small size and catching the fishes using destructive methods such as dynamic fishing, poisonous (cyanide) fishing, electricity fishing. Moreover, waste is still not effectively managed when people still through into the sea.

Educating people to increase the understanding and awareness on natural resource is one of indirect methods for sustainable use of resource. Although there were some education programs about environment protection organized by NGOs and GOs at Van Phong bay, the effectiveness is still limited, so that there is a need to have activities to guild local people into the environment protection activities.

3. 2.1. Distribution of posters and leaflets

Table 2. Number of poster and leaflet distributed

Villages	Code	No. of Posters and leaflets
Hai Trieu - Van Long	2	120
Dam Mon - Van Thanh	3	150
Bai Tre - Van Thanh	4	50
Tuan Le - Van Tho	5	200
Van Hung	6	180
Phu Hoi, Van Thang, Van Ninh	8	200
Van Gia - Van Ninh	9	100
Total		1000

The total number of about 1000 posters and leaflet was distribution to 7 coastal villages of Van Phong Bay excepting Ninh Phuoc which was the control site. Number of posters and leaflets distributed to the communities at every village is in Table 2. Some picture about poster and leaflet distribution are also in Appendix 3.

In general, people at every village were very interested in the posters. They were curious in what we was doing, and so that we explained the details content of the posters and leaflets. Most people understood about it and were very willing to help us distribute to others.

It is clear that, using poster and leaflet is one of the effective methods of environmental education. First of all, the appearance of the poster have attracts people to concentrate on it. When people concentrate, they would like to know about the content, and of course the contents will be in their mind. It is demonstrated by the fact that, all most the posters distributed have been pasted in the house after received. Secondly, the effective of poster will last for longtime, evenly to the young generation. Poster and leaflet was designed with a lot of demonstrated picture, which was very attractive to children, so that, the children want to know about that, and of course this is a very useful lesson in environmental protections. This awareness will be in the mind still they grow up.

3.2.2. Organizing meeting and giving talks

The second method applied in education activities was organizing the meeting for talking about environment issues. Two target groups of people were organized for giving talk including:

- The first group was fishermen of which total participants was 90 (15 meetings) at Tuan Le village - Van Tho commune and was around 100 people (20 meetings) at Van Thang commune.
- The second group was secondary school pupils in Van Thang. The total participants were about 200 pupils (5 meetings). This group of people although not directly affect the marine ecosystems at the movement, but they need to be educated about that for sustainable utility of natural resource in the future.

The talk provided for people were divided into 3 main parts:

- The first part is introduction to marine ecosystems with example of local ecosystems.
- The second part is explaining of every threat affecting those ecosystems.
- The last part is explaining what people need to do to protect and reduce threat to the marine ecosystem and environment.

The people were very happy to participate the meeting, they all came to class on time. During the talk, people seen to be very ardent in discussion of the issue related to environment and resource used in the place especially at Van Tho. They also contribute their opinions in giving the solution for the issue. The main solution was:

- Re-plant the mangrove forest destroyed at their place
- Financial help to find the alternative jobs for the destructive fishing methods.
- Deploy more education program about environment and resource at their play.

Picture of education activities are shown at Appendix 3.

In addition to above activities, the network of collaborators was also organized to achieve the goals of environment education. There is the involvement of leaders of each village, teachers at schools. At the present the network has been setup with attend of: (1) Leader of the 9 coastal villages at Van Phong Bay; (2) Teacher at Van Tho high schools.

It is undoubted that, leader of the villages is play an important role in education activities. They had enough prestige to be chosen for responsible as leader of the village. Because of it people will listen to them. Via the village leader, education activities will be more wide and deep into the communities.

Teacher at school is on of suitable groups participate in the education program. It based on the fact that, teachers have certain role in transferring of knowledge to young generation. By mean of their jobs, the knowledge on environment and resource will pass to the pupil who will be the future owner of the resource.

However, the number of collaborators is thought not enough, their is a need to expand to all the school at coastal communes at Van Phong Bay, local association such as women association, farmer association, Communist Youth Union at each commune.

Although the education program has obtained the significant results, but there are some limitations. The first one is that, the number of leaflet and poster was not enough for all the householders because of limited budgets; there should be more financial supports for more leaflet and poster. The second is that, the network for education is still not strong, that is also because of the limited fund.

3.3. Re-evaluation of the awareness of people on marine resources and environments

Re-evaluation of the awareness of people on marine resource and environment were carried out to evaluation the effectiveness of education activities. Collection of data was also based on the method of above, the results were as following:

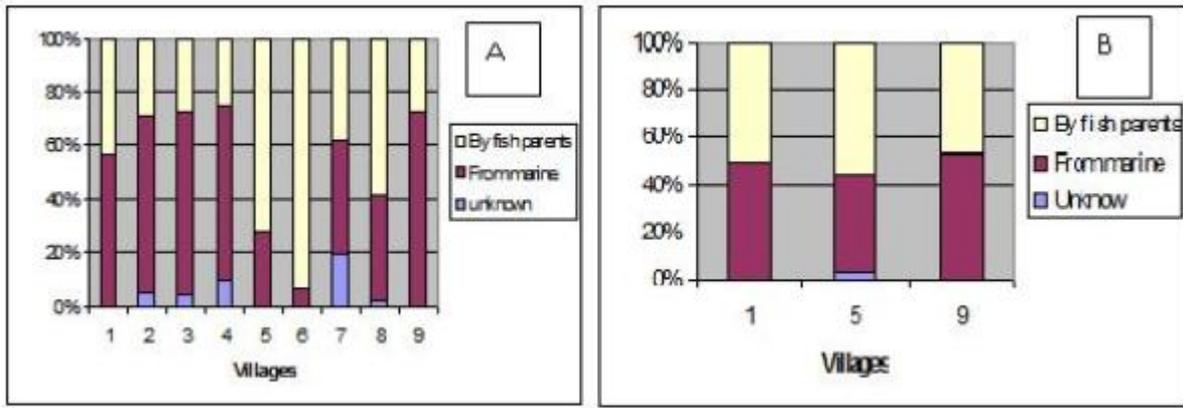


Fig. 21. Awareness about where marine fish come from (A: before education and B: after education)

There is a little bit change in understanding about the resource of fish in the community of village Ninh Phuoc (1), Van Tho (5) and Van Gia (9). Especially, more people at village 1 and 9 know where the fish come from after educating (Fig 21).

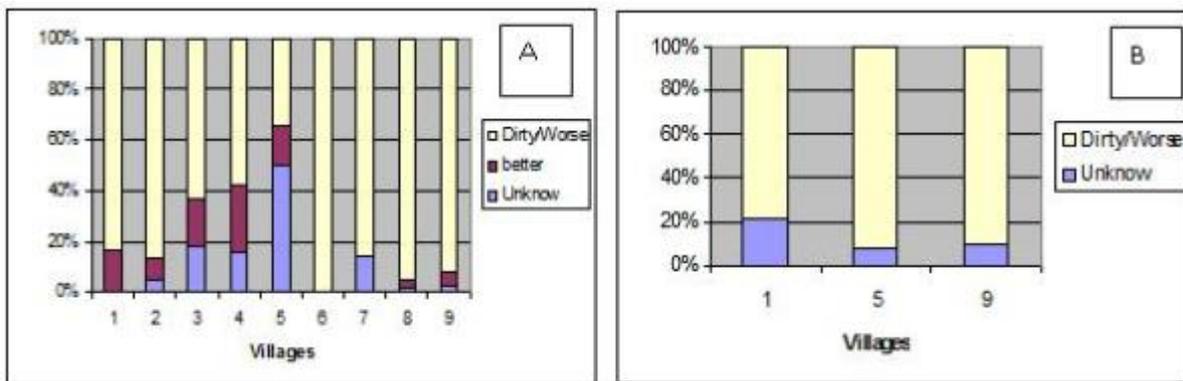


Fig. 22: Resident's assessment of environmental changes in Van Phong Bay (A: before education and B: after education).

In term of knowledge about the quality of environment change in Van Phong Bay, more people know about that after educated. After education none of them respond to "unknown" about that, they become aware about the fact that environment quality at Van Phong Bay has changed. Especially, community at village 5 has increased much about that. Before educating, there was only around 38% people know the fact, but after that, more than 90% of people at village 5 understand that the environment at Van Phong Bay has become worse comparing to the past (Fig. 22).

Understanding on the reasons of changing in environmental quality and marine living resource at Van Phong Bay were also improved after education especially of the community of village 5 and 9 (Fig. 23).

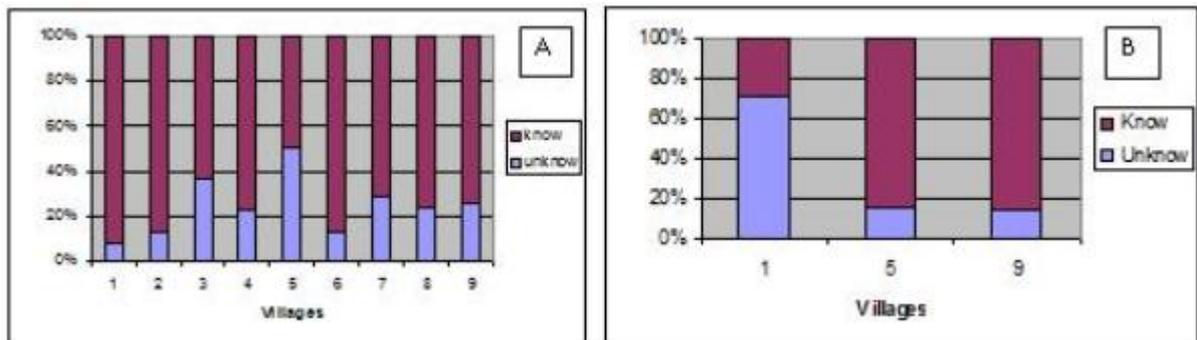


Fig. 23. Resident awareness about reasons of changes of natural resources (A: before education and B: after education).

There was also more people at village 9 and 5 know that, environment change has impact on marine resource comparing to the time before education (Fig. 24).

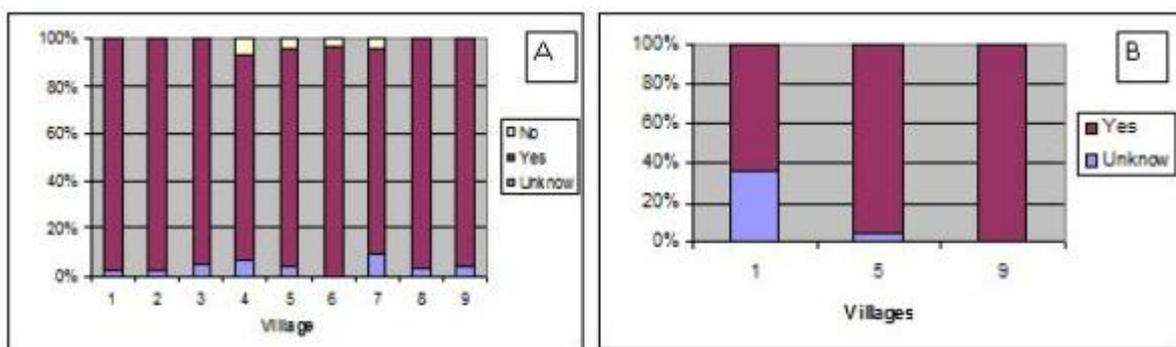


Fig. 24: Resident awareness about impacts of environmental changes to natural resources (A: before education and B: after education).

After education, most people at the survey villages agree and are happy to joint to any activities of environment protection organized at their place. This is proved by the fact that there are more people at surveyed village agree to change there economic activities to the new jobs that not effect to environment (Fig. 25). However, most of them need the financial and other support from government and organizations.

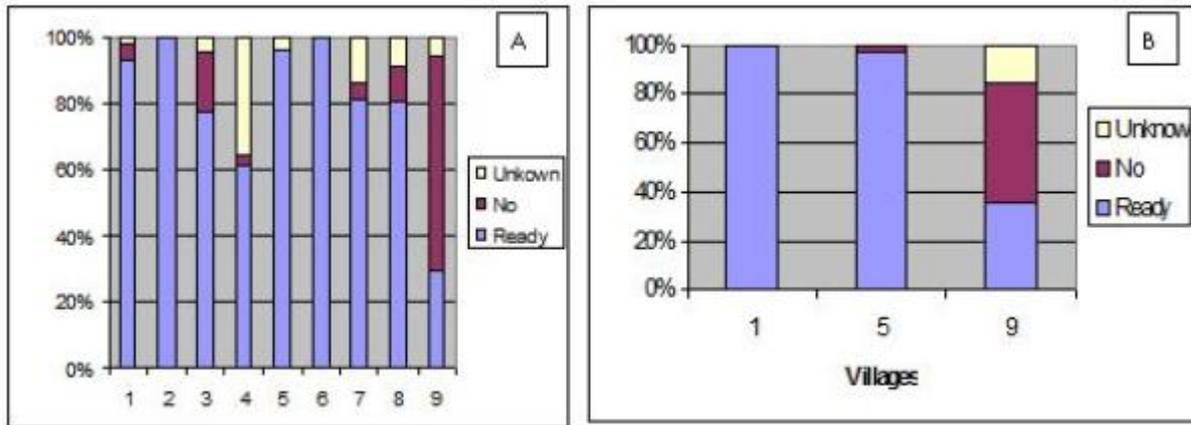


Fig. 25: Percentage of people who is ready changes to another economic activities which is less affected to environment and natural resources (A: before education and B: after education).

From the obtained results, it is clear that, the education program have certainly effectiveness on the awareness of local people on marine resource and environment. Most of people agree to shift to other job less affect to the environment and resource. However, creating the new jobs for al local people is not an early task.

4. CONCLUSIONS AND RECOMMENDATIONS

Van Phong Bay is diversity and abundance of marine ecosystems and natural living resources but their exploitation was unsuitable, so quality and quantity of ecosystems have been destroyed. Communities in coastal areas of Van Phong Bay are low education, as results, these are negatively impacted to local people’s awareness of natural resources and environment. In addition, the awareness also is low. The people groups who were less awareness were at Ninh Tinh, Hai Trieu, Dam Mon, Bai Tre and Van Gia. In addition, local people have known their economic activities would be affected to natural resources but because of their life, many of households have used illegal methods to catch fishes. However, they have participated in activities of protection of environment and prevention of natural resources. The awareness is the least in Van Gia. Beside Dam Mon and Van Hung are also noted in human activities of environmental protection. And finally, needs of improving awareness of environment and natural resources are recognized in coastal villages, in which, Van Gia and Bai Tre villages are essential. After

attending education program on through poster, leaflet and meeting, the people have more understanding about the issue of resource and environment. How every, the education program should be continued as periodical and expand to achieve the goal of long term effects on the communities.

There are some recommendations regarding to the above issue as follows:

- Local people should be educated more on sustainable use of marine resource.
- More people and more social sectors should be educated and raising awareness on protection of marine living resources and marine ecosystems.
- There is a need for more funds to expand the education programs such as deploying the mangrove plantation program with participating of local communities.
- There is also the need in collaboration working between scientist and teacher at the schools to expand the education program to the pupil who will generate the resource in the future.
- Government should have plans to create new jobs for local people to reduce the impacts on marine resource.

5. REFERENCE

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3. By your knowledge, where do the fish/shrimp come from? Not known From the sea From the fish/shrimp parents

4. Could you please respond that, what are status of marine organisms in your place now?

Not know Few Medium Relative Many

5. If comparing to the past time (10 years), how is the number of fish in your place now?

Not know Less More

6. Do you know the reason of that change? Not know Yes

7. Please give some reason?

.....
.....
.....

8. According to you, how is the water environment change comparing to the past time?

Not know Better More dirty

9. Do you think the dirty water will affect the fish, shrimp and other aquatic organisms?

Not know Yes No

III. Behavior in protection of resource and environment

1. Do your occupation relate to the followings?

Fishing Aquaculture Others.....

2. In your opinions, which of following fishing methods will destroy the marine living resources and habitat?

- Lift net Dynamic Trawling Electricity Poison others

3. Releasing waste from aquaculture will affect water quality or not?

- Yes No Unknown

5. Releasing of garbage into the sea will affect water quality or not?

- Not know Yes No

6. Have you ever done something to protect the marine organisms and surrounding environment?

- Not know Yes No

7. If answer 'Yes' on question 6, list some activities:.....

.....
.....

8. Did you participate in resource and environmental protection programs?

- Not know Yes

9. If answer 'Yes' on question 8, List some activities:.....

.....
.....

IV. Demand for knowledge on resource

1. Is there any resource and environmental protection program organized at your place?

- Not know Not yet Yes

2. What do you think about other people: Do they protect the environment?

- No Less than 25% 25-50 % 50-75 % More than 75%

3. If there is an environmental protection activity, do you suggest it will be organized at your place?

- Yes No Not know

4. If an environmental protection program organized at your place, will you participate?

- Yes No Not know

5. How is your family income?

- Poor Less than normal Normal Relative good Good

6. If your job negatively affect the marine organisms and environment, are you ready to shift to others available job which the same or higher income?

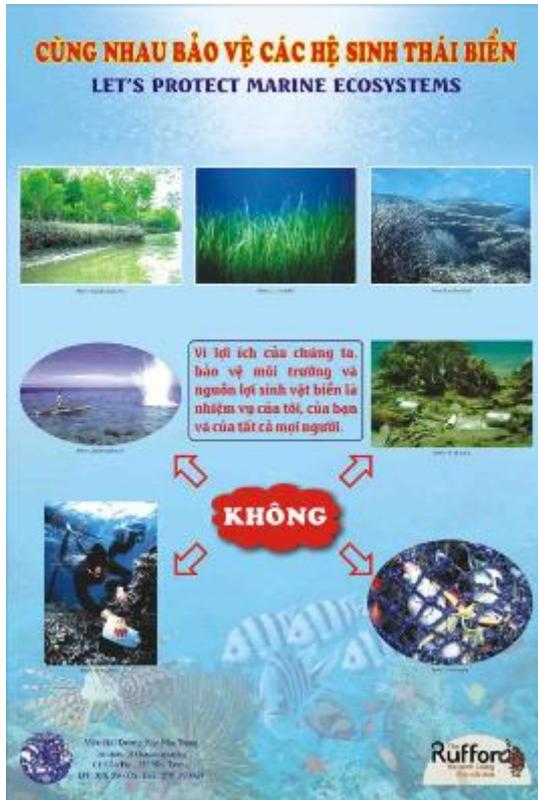
- Yes No Not know

6. Do you have any suggestion for local government and organizations in improve the environment and resource rehabilitation.

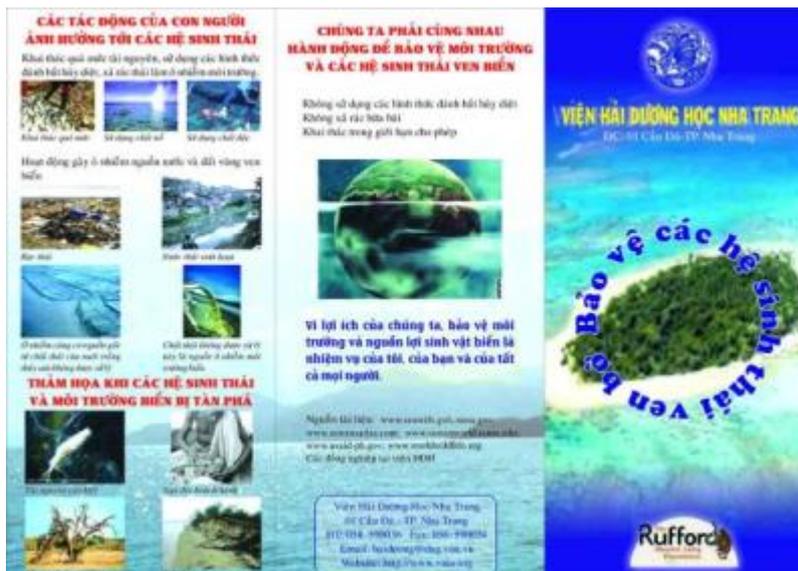
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APPENDIX 2. Pictures of poster and leaflet

Poster



Picture of leaflet





APPENDIX 3. Poster and leaflet distribution and giving talks to people



Giving talks to pupils at Van Tho



Talk to fishermen at Van Thang commune



Talk to community at Tuan Le village – Van Tho commune