

PROPOSAL SUMMARY

Project Title	Developing an adaptation model in aquaculture development in Con Truong, Hoang Chau Commune, Hoang Hoa District, Thanh Hoa - CBA/VN/SPA/09/08
Project Site	Hoang Chau Commune, Hoang Hoa District, Thanh Hoa Province
Proponent	Fisheries Associations of Thanh Hoa Province Address: 06 Hac Thanh Street, Thanh Hoa City, Thanh Hoa Province Phone: 037.3216.695 – Fax: 037.3726.420
Authorized Representatives	Authorized Representatives: Le Viet Rong, Chairman, Fisheries Associations of Thanh Hoa Province
Cooperating Organizations	Fisheries Departments of Thanh Hoa Province and Hoang Hoa District Fisheries Association of Hoang Chau Commune
Project Dates	from June, 2010 to June, 2012
Total Project Cost (USD) (local currency)	2,317,500,000 VND (121,910 USD)
Amount Requested from CBA (USD) (local currency)	950,500,000 VND (50,000USD)
Co-financing (USD) (local currency)	1,367,000,000 VND (71,910USD)
Project Objective	<p>General objective: Testing climate change adaptation models in aquaculture and fishing in Truong Islet, a brackish water region in Thanh Hoa, for sustainable fisheries development.</p> <p>Specific objectives:</p> <ul style="list-style-type: none"> • Identify and experiment with adaptable models that reduce risks and stabilize income from aquaculture and fishing activities • Protect, plant and manage mangrove forests and resources • Protect, regenerate and exploit natural fisheries resources in a sustainable manner.

	<ul style="list-style-type: none"> • Enhance community organisation, technical capacity and knowledge and understanding, and awareness on climate change impacts on human and natural ecosystems, focusing on aquaculture and fishing and sustainable fisheries
<p>Brief Project Description</p>	<p>Thanh Hoa is a province in the north of Central Vietnam, with 102 kilometers of coastline, 17, 000,000 km² of ocean surface and a population of over 3,6 million in 27 districts. The coastal and gulf area is favourable for aquaculture development. Ponds, lakes and shallow areas for aquaculture and rice growing account for 7,500 hectares. About 480 thousand people work in the aquaculture as their key income. The annual gross of fisheries products is 75,000 tons, 45,000 tons of which come from ocean exploitation and 30,000 tons from aquaculture. The potential to develop aquaculture is great, yet crop failures are common due to frequent natural disasters, exhausted coastal resources, polluted water and diseases.</p> <p>Located in the southeast of Hoang Chau Commune, Hoang Hoa District, Truong Islet has a crucial role in aquaculture development in Hoang Chau as well as in Thanh Hoa. Despite its being only an islet near Lach Hoi estuary, Truong Islet has a brackish water aquaculture area of 300 hectares, accounting for 1/10 of the total brackish water aquaculture area in Thanh Hoa Province. From an economic and social perspective, as Truong Islet is near the estuary, it has a crucial role in preventing the waves and the winds for inner regions, including Hoang Chau Commune. In biological view, Truong Islet has all the characteristics of an estuary with great biodiversity, both in the water and on the land. In the 1970s and 1980s, the mangrove forest area in Truong Islet was relatively large, of about 200 hectares, with many kinds of fisheries species like shrimps, crabs, oysters, and lots of fishes.</p> <p>Shrimp farming first appeared in Truong Islet in the 1970s. Presently, there are 5 divisions with 137 households doing aquaculture in Truong Islet, both natural resource exploitation and farming fisheries products.</p> <p>Currently, fishermen in Hoang Chau are facing several challenges, including the impact of climate change. The change in salinity due to salt water intrusion results in slow development or massive death of fisheries species. The residents have to make higher</p>

	<p>dykes to cope with higher sea level. The temperature fluctuations weaken fisheries species and make them susceptible to diseases and death. Small floods which come earlier make the residents harvest shrimps prematurely, affecting the economic values.</p> <p>Fisheries resources in the region are seriously degrading. In recent years, Ma River has been polluted due to human activities, affecting the aquaculture in Truong Islet. Aquaculture in Truong islet is at high risk because of environmental pollution and unpredictable weather. Aquaculture techniques have not changed ever since they started this trade: they still use the conventional methods although breeds, climate and natural resources conditions have changed a lot because of the degraded environment and negative impacts of climate change.</p> <p>The proposed project includes the following key activities:</p> <ol style="list-style-type: none"> 1. Improve farming techniques in aquaculture and fishing to adapt to climate change 2. Plant mangrove forests to reduce impact of natural disasters, to protect the surrounding banks and prevent erosion caused by sea level rise 3. Protect and regenerate natural fisheries resources for sustainable exploitation of natural fisheries resources in the project area 4. Experiment with a community revolving loan programme to assist affected fishermen in aquaculture development and disaster emergency 5. Enhance community capacity and awareness on climate change and sustainable aquaculture issues
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1.0 RATIONALE

1.1 Community/Ecosystem context

Hoang Chau is a commune in the southeast of Hoang Hoa District, 12 kilometers away from the district capital. The total are of natural land is 109.5 hectares, 401.5 hectares of which is water surface (37%) and it is used for aquaculture. Hoang Chau has a population of 8,264 people, with

1,844 households, 5,620 of whom are workers. The number of workers in the aquaculture industry is 820 people, accounting for 14.6% of the total number. Agriculture is considered the main trade in the commune and the main source of income for the local residents. It contributes a big part to paying for the children's tuition fees and household appliances, and to improving their living standards. Data from Fishery Association of Thanh Hoa show that the annual income per capita from agriculture is 2.5 million VND/ a year while it is 7 million VND/ a year from aquaculture.

Located in the southeast of Hoang Chau (Hoang Hoa, Thanh Hoa), Truong Islet has a crucial role in aquaculture development in Hoang Chau as well as Thanh Hoa. Despite its being only an islet near Lach Hoi estuary, Truong Islet has a brackish water aquaculture area of 300 hectares, accounting for 1/10 of the total brackish water aquaculture area in Thanh Hoa Province. Economically and socially, Truong Islet, being near the estuary, plays a crucial role in preventing the winds and the waves from the ocean, serving as a shield to inland residential areas, including Hoang Chau Commune. Biologically, Truong Islet has all the characteristics of an estuary with the biodiversity of the soil and underwater environment. In the 1970s and 1980s, the mangrove forest area in Truong Islet was relatively large, about 200 hectares (in the residents' estimation), with many kinds of fisheries animals like shrimps, crabs, oysters, many fishes.

Shrimp farms in Hoang Chau are mainly in Truong Islet (over 300 hectares, accounting for 3/4 of the water surface area for aquaculture). Shrimp farming first appeared in Truong Islet in the 1970s. However, the farming method has not much improved since then, mainly extensive farming and improved extensive farming, using natural and artificial food. This farming method highly relies on nature, therefore it is very risky. Presently, there are 5 divisions with 137 households doing aquaculture in Truong Islet. Shrimps and crabs are the main products. The harvest is spring-summer, from March to August when they shrimps and crabs. In other months, due to weather difficulties, people mainly harvest natural resources in the area. People still use destructive methods and together with over exploitation, this is the key reason of resource degradation in the area.

Truong Islet is very important to shrimp farmers in Hoang Chau, and Thanh Hoa Province. Being near the estuary, Truong Islet is a very sensitive region because it can be affected by the sea (i.e. winds, waves and salt contamination) and inland factors (i.e. water pollution from Ma River headwater and human activities). Nowadays, though most of Truong Islet area is used for aquaculture, the small mangrove forest area still remains, thanks to the help from domestic and international projects. In several reports, Truong Islet dyke is mentioned but it is simply banks of shrimp farms built by local residents. In many locations, the dyke has been seriously degraded, due to the winds and waves and it needs improvement. In fact, to protect shrimp farms, though the owners have invested a lot of money to reinforce the banks, they still become degraded after a short time. This is among the most costly steps in investing for aquaculture in Truong Islet. In addition, although the banks can benefit many people in the area, the contribution is given by

only farm owners so these banks lack the synchrony. Only those who can afford build better banks and this results in inadequate strength for the banks. An interesting fact, confirmed by the residents, is that the strength of the banks is not a concern in areas with mangrove forest because the mangrove trees serve as a shield from the winds and the waves.

Currently, fishermen in Hoang Chau are facing several challenges.

- Impact of climate change

Although there has been no detailed evaluation of the impact of climate change on aquaculture, considerable changes have recently been inflicted on the local residents' husbandry activities. The residents had to build dykes from 0.5 to 1 meter higher, yet it is not safe enough because the water sometimes still overflows, possibly due to of the rising sea level. Also, although the number of typhoons does not increase, high waves become more frequent. High salinity also seriously affects the local residents' husbandry activities. The salinity in the ponds used to be 10 – 15 ‰ but it has risen to 25 - 30‰ in the lagoons a few times, which causes slow development rate, or even massive death to fish.

The temperature fluctuation has recently caused many difficulties to the residents. The weather has become hot earlier and more unpredictable than before; the drastic temperature fluctuations among days has weakened the animals and made them more susceptible to diseases and death. Small floods that come sooner have also made people harvest the shrimps even before they are fully grown and this greatly affects the economic value of the shrimps.

The impact of climate change on decreasing the value of fisheries products is also a concern in the commune because fisheries cultivation is the residents' main business. Apart from the impact of climate change, the use of destructive fishing tools as shown below, is also a threat to the sustainable exploitation of fisheries products in the region.

- Impact of water environment

The water environment of Ma River has recently been seriously polluted due to human activities, which affects aquaculture in the islet. There has been no research on the pollution level in Ma River and its impact on aquaculture at Truong Islet, but the information from the residents should be considered. One typical example is the waste disposal in Quang Chau Drain, the main drain of Thanh Hoa City and industrial zones. Whenever people dispose waste, animals in the area die massively and the farmers in the fields get itchy.

- Impact of degraded resources

Natural fisheries resources in the islet area used to be very diverse, but they are now seriously degraded. According to local residents' estimation, some fisheries animals have been completely extinct (Nhan fish (local name), part of Keo fish family), while others have decreased to only 20

– 30% (natural fish like don, dat, rao shrimp,...). Another sad reality is the aquaculture exploitation by electrical equipment, which is also the main reason for degraded natural resources. Currently, around 70 fishing ships use electric equipment to fish fisheries products. Although this does not directly cause the degradation of resources in Truong Islet, this method has been forbidden due to its destruction of resources. Local residents still use this method because of their limited awareness and the need to earn a living.

- Risks for aquaculture

The difficulties can make aquaculture in Truong Islet face a very high risk. Although this trade can bring high incomes to some local residents and enable them to afford new houses and an education for their children in big cities, other residents still owe money from banks and can hardly repay.

- Inadequate farming techniques

As mentioned above, the farming methods have experienced little change since the residents started this trade. Despite the drastic change in breeds, weather and natural resources, local people still use conventional methods. Some residents have considered changing farming crops, methods or even hatching species; still, due to limited financial capability, the majority of them dare not invest in those changes or if did, only in experimental scale. Thus, experiments on suitable farming models are really necessary to the local people.

To face these difficulties, local people are looking for appropriate production models that can adapt to extreme climate change. The project of “Community participation in minimizing negative impact of climate change for sustainable aquaculture” is expected to meet the local residents' expectations, help to solve the present problems and bring them a better life in the future.

1.2 Current (Baseline) Climate and Risk

We can use meteorological data from Thanh Hoa weather station (15 kilometers from Hoang Chau, along Ma River) to describe the specific climate conditions in Hoang Chau, Hoang Hoa.

Like other provinces in the North Central Region of Vietnam, Thanh Hoa in general, and Hoang Chau in particular, has a tropical monsoon climate with a cold and low-precipitation winter and a humid, hot and rainy summer. However, due to its vicinity to Ma River, only 8 kilometers from Ma River estuary and the sea, Hoang Chau has many harsh natural disasters, such as typhoons, tropical low pressures, heavy rains, severe cold, dry and hot West wind, droughts and salt contamination, etc.

Winter: from November to April, with a typical climate of low temperature and precipitation. The main natural disasters are severe cold weather, winter-to-spring droughts and salt contamination. From December to February, monsoons from the northeast usually (averagely 3 to 4 times a month) cause long cold spells (sometimes severe cold weather lasts over 20 days, the temperature drops to under 10oc at night or even to 5oC for 5 to 10 days). The highest wind speed is 18 – 20 meters per second (as in 1999, 2003, 2006, 2008), doing great harm to agriculture and animal husbandry in the area. January has the lowest average temperature (17oC). The total precipitation in winter only accounts for 15% of the annual precipitation (around 1700 – 1800 mm/year. In Thanh Hoa weather station: 1745mm/year). January and December have the lowest precipitation of 24.9mm and 28.5 mm respectively. The period from November to February, there are often long and severe droughts. The salinity rises to 28-30 ‰ or even 33 ‰ in some years, making animals and fisheries products hardly grow or die massively and strange diseases appear. November and April are the two transitional months between seasons. In these months, the weather is very complicated and unpredictable with frequent whirlwinds and hails. Although the average precipitation has been only around 76.5mm for many years, November can have a precipitation of up to 229mm/day.

Summer: from May to October, is the rainy season with floods. The typical climate is the heat and high precipitation. The main natural disasters are summer-to-fall droughts, typhoons, tropical low pressures and heavy rains causing floods. In early summer (May to July), the frequent dry and hot monsoons from the southwest (2-3 times a year, of 3 – 5 days each time) lead to hot sunny days, with low humidity, high air temperature of 41 to 42oC maximum and high ground temperature of 69oC to 71oC maximum. Such hot sunny periods have appeared frequently in recent years and some even lasted for 20 – 35 days, causing severe droughts. July has the highest average temperature (29oC). The total precipitation of the rainy season is 1454 mm, 85 % of that in the whole year. In the rainy season, normally there are heavy rains (about 200 – 400mm per day or even 731.3mm as on September 24th, 1963). September has the highest average precipitation of 404mm, followed by August with 278 mm.

Tropical cyclones???? and typhoons are the most destructive natural disasters to Thanh Hoa and Hoang Hoa. In 1996, 1998, 2002, 2004, 2006 and 2008, Thanh Hoa suffered from typhoons of force 9 or 10 or even higher, of 12 or 13, which caused a loss in people and property. In 1996, a typhoon of force 6 killed 168 fishermen in Hau Loc; in 2006, another one of force 8 killed 12 people, 4 of whom were from Hoang Hoa. Many ships sank, houses and sea, river and dykes for aquaculture were destroyed (over 30 – 40 km), estimated damage cost hundreds of billions VND, including a complete loss of crops of rice, cereals and fisheries products. The year 2009 alone saw typhoons of force 8 and 9 which damaged the property and the people due to heavy rains and high floods.

In comparison to the last decade of the 20th century, the frequency of storms and floods in recent years (2000 – 2009) has been much higher. Floods, in particular, come often and extends from the mountains to coastal plains with serious destruction. Sometimes the precipitation reaches 600

– 1000 mm, as in 2002, 2006 and 2008. In September of 2009 in particular, a long spell of rain happened in southern districts of Thanh Hoa, from Hoang Hoa, through Tinh Gia to Trieu Son, Nong Cong, Nhu Xuan.

Natural disasters cause devastating and widespread aftermaths in the whole area and coastal plains flooded by tides and floodwater are the most dangerous. Sea dykes in all coastal districts, including Hoang Hoa, have been completely destroyed and have to be rebuilt and reinforced every year, which is very costly. Disasters are getting more destructive, with stronger winds, waves and water that flood villages, fields and affect people's life, their property, as well as agricultural and aquaculture production. While droughts increase the salinity up to 30‰, floods reduce it to 0‰, causing a drop in aquaculture efficiency.

In addition to typhoons, heavy rains and floods, droughts and salt contamination are causing serious economic impact, pollute the environment and degrade the soil. In agriculture, droughts in the harvests from winter to spring and spring to summer dry the soil and make it salty, causing a loss of billions of VND to the rice and cereal crops. In aquaculture, due to Ma River exhaustion, the aquaculture area of 401,5 hectares becomes dry and its salinity increases, causing the death of shrimps, fish and crabs on the farms, resulting in a loss of billions of VND. The harvesting of hundreds of tons of fully grown fisheries products cannot be done so they develop slowly or die massively; thousands of tons of algae die or can no longer develop; natural products like don, giat die massively, leading to a loss of tens of billions of VND.

1.4 Impact context

Climate change has been witnessed in Vietnam and along the coast of North Central Vietnam in particular for the last 50 years, according to meteorological observation.

Temperatures: the average temperature in Vietnam has increased by 0.5 – 0.7°C for the last 50 years (1958 – 2007). In 2007, the average temperature in Ha Noi, Da nang and Ho Chi Minh City was 0.8 – 1.3°C higher than that from 1931 to 1940, and 0.4 – 0.5 higher than that from 1991 – 2000.

Precipitation: the average annual precipitation has decreased by 2% in the last 50 years. Precipitation decreases in Northern regions and increases in Southern ones. Droughts come frequently and affect a wide area, especially Central Vietnam.

Cold air: The number of cold air spells affecting Vietnam has decreased remarkably in the last two decades. However, some strange phenomena have appeared. Most recently, a severe cold spell has lasted of 38 days in January and February in the North, causing a great damage to agriculture.

Typhoons: In recent years, stronger typhoons have appeared more frequently. Their route tends to be southward and it gets more complicated, and the stormy season ends later.

Sea level rise: The rising speed of the average sea level in Vietnam is 3mm/ year (1993 – 2008), the same as the world's rising speed.

Impact of climate change in Hoang Chau Commune

According to the climate change forecast of the 21st century, , compared to 1980 – 1999, the average temperature in the coast of North Central Vietnam can increase by 1.5°C (in 2050) and by 2.8°C in 2100 ; the yearly precipitation can increase by 4% in 2050 and by 7.7% in 2100. Of note, the precipitation from March to May can decrease by 5.2% in 2050 and by 9.9% in 2100, while from June to August it can increase by 7.6% in 2050 and by 14.6% in 2100. The sea level can increase by 30cm in 2050 and by 75cm in 2100. International scientists have recently warned that the sea level in Vietnam can rise 1m or more, with the current rate of temperature rise and ice melting in the North and South Poles.

The negative climate phenomena will happen more frequently due to climate change. Droughts will become more severe in winter-to-spring and summer-to-fall periods, causing soil degradation and salt contamination. Although Hoang Chau could protect 120 hectares of mangrove forest, the possibility of river and sea dykes being broken and soil erosion in the region is very high due to the concurrent effects of typhoons, tropical low pressures, heavy rains and the rising sea level causing floods. Broken dykes would be a disaster to Hoang Chau and Truong Islet which is the tentative location for the project. The 401 hectares (71.5% the total natural land) used for aquaculture is of weak structure and is just slightly above the sea level (mostly 0.5 – 0.8m or even only 0.03m).

Although the residents in Hoang Chau are unaware of climate change, they start to recognise the negative changes that affect their life:

-They have built the sea dykes to prevent waves around the Islet based on personal experience: they keep making the dykes higher as the water rises so that these dykes can be higher than the highest tides. However, according to the local residents, even though the dykes are 0.5 – 1m higher than before, they are still over-flown by the tides. This might be an impact of rising sea level. Also, strong waves have become more frequent although the number of typhoons and storms does not increase. Change in salinity also seriously affects aquaculture. The salinity in farming lakes used to be about 10 – 15 ‰ but nowadays, it can be up to 25 - 30‰ in case of droughts or goes down to 0‰ in case of floods at Ma River headwater, making fisheries animals develop slowly or die massively.

-Big temperature fluctuations are also an unfavorable factor. Recently the temperature fluctuates unpredictably, causing lots of difficulty to the residents. The weather gets hot sooner and becomes more unpredictable than before. This change, together with big gaps in temperatures between consecutive days, has caused the residents to harvest shrimps even before they are fully grown. This also affects the economic value of fisheries products.

1.3Project approach

- a. Improve aquaculture techniques to adapt to changes in cultivation environment and aquaculture in Truong Islet.

The project approach includes building experimental models to improve fisheries techniques and select suitable fisheries animals for the changing conditions, especially for the unpredictable climate and the salt intrusion. An area of about 50 hectares in the northeast of Truong Islet will be chosen to carry out the experimental models, which will include:

Aquaculture model modified with a change in crop: start earlier to avoid the early small floods and catch the summer. This idea has been considered by many members in the community and expected to be experimented but no one has had the adequate conditions to carry this out. According to local experience, conventionally, the main shrimp farming season starts in March and ends in July – August. However, recently, it gets hot sooner and floods also come earlier. Therefore, it is necessary to create a change in farming habits to adapt to the climate change so as to minimize risks caused by the unpredictable weather. Yet, changing their habits is very difficult to local residents because they are so used to farming practices based on their own experience without applying new technology. Built on the local knowledge and experts' technical support in applying new technology, this model provides a good opportunity for local residents to learn new things and to develop their trade.

Alternate farming model: shrimps – crabs, shrimps – fish, ... to select suitable fisheries products with higher salinity. Alternate farming is also a recommended method in unpredictable conditions. A suitable combination of species will make good use of food sources and minimize the risk of losing everything. Species raised alternately with the conventional ones should have good resistance to high salinity and big temperature fluctuations.

Fish farming: bong bop fish, chem fish

bong bop fish, chem fish are local fish of high economic value and they used to be available in nature but nowadays their number has decreased due to natural and human activities. With the help of technological advances, scientists have artificially bred these species in Vietnam. Therefore, bringing these species to farming in Hoang Chau to test is necessary.

Addressing water pollution and salt water intrusion is considered to be among the most important issue to local residents. In addition, the conventional fisheries farming techniques are no longer suitable in current conditions; therefore new techniques like reservoirs and best management practices will be introduced to address water issues.

- b. Planting mangrove forests to protect the dykes and to prevent erosion

The project plans to use the ecosystem to solve problems related to rising sea level and strong waves. Planting mangrove forests is a solution to minimizing the impact of rising sea level and strong waves for aquaculture development and disaster management. Around 20 hectares of mangrove forests will be planted around the Islet to create a barrier protecting the dykes, and to

improve the environment and natural resources. A long-term plan to manage and develop mangrove forests needs to be discussed and put into effect. In areas where the mangrove forests have already been well developed, the community and the authorities strengthen protection as well as effectively exploit the mangrove resources to create additional income such as beekeeping.

c. Community-managed revolving loan programme

Community-managed revolving loan programme will partly minimize the risks in aquaculture development especially post disaster. In reality, residents who have earned some profit can contribute to the fund to help those who have lost the crops so that they can continue their business in the next season. This has been discussed and advocated by local residents. A revolving loan programme will be developed and managed by the fisheries community in the project area.

d. Enhancing capacity and awareness and community organization to minimize CC impacts

Training and communication activities to improve the community capacity and awareness is very necessary because the local residents' knowledge about sustainable aquaculture and CC impact is limited. These activities will help the community proactively adapt to CC impact on their aquaculture development in their local context.

To create a bond among members of the community, a set of community rules will be compiled and monitored by the community. These rules will serve as a basis for the residents to adjust their own behavior, observe each other and build a better community.

e. Protect and regenerate natural fisheries resources

Aquaculture in Truong Islet largely depends on the environment and natural fisheries resources; therefore, the protection of natural resources around the Islet is crucial. Community rules, including rules to protect natural resources, will be the basis for the farmers to manufacture and protect the natural resources. Exploitation with destructive methods will be strictly monitored and stop when the rules are approved. A communal approach, together with government's restriction, will limit and gradually end destructive exploitation activities in the commune.

Growing mangrove forests is also a method to protect and regenerate natural resources. In addition, activities like building a crab bank model and releasing more breeds to the sea will also be experimented.

Crab bank model description: this model, founded in Thailand, is simple and easy to implement. Local residents create a small farming racket and put it near or inside mangrove forests. Harvested pregnant crabs will be put in that racket and until they deliver and release their offsprings to nature, then the mother crabs can be sold. This model has been very successful and

widely applied in Thailand. In Truong Islet, locations to put those rackets should be discussed among local residents and locations to be selected should be places with a rich source of crabs.

Project beneficiaries

All partners participating in the project will benefit from it, as detailed below.

No.	Partners	Benefits
1	Community and households participating in the building and implementation of the project models	<ul style="list-style-type: none"> - Have technical and financial assistance to implement models in aquaculture and fishing in the CC context, reducing the risks and adapting better to CC. - Have better technical capacity in aquaculture and fishing. - Have better awareness and knowledge about the environment and climate change issues.
2	Thanh Hoa Fisheries Associations	<ul style="list-style-type: none"> - Have the opportunity to test models in aquaculture and fishing in the CC context, contributing to the environment protection and natural resource management, and sustainable development in the area. - Enhancing visibility and credibility among local stakeholders, including their members and associations, and local authorities - Be able to maintain and strengthen a working relationship with related agencies like local authorities and departments, provincial offices, experts and GEF SGP. - Have the opportunity to gain experience in donor-funded community project management in the area of CC adaptation.
3	Local authorities and relevant agencies in Hoang Chau Commune	<ul style="list-style-type: none"> - Have the opportunity to test models in aquaculture and fishing in the CC context, contributing to the environment protection and natural resource management, and sustainable

		<p>development in the area.</p> <ul style="list-style-type: none"> - Gain more information and basis to create and adjust environmental and aquaculture management policies - Be able to develop a working partnership with the project partners, i.e. the Fisheries Associations of Thanh Hoa, departments, local authorities, experts and GEF SGP.
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2.0 COMMUNITY OWNERSHIP

2.1 Project formulation

The project gives top priority to the participation by the community and fishermen in the project area. During the project design stage, opinions are collected among the community on priority issues to be resolved in changes in climate and weather in project areas and their impact on people’s livelihoods and with a focus on aquaculture, and related environmental issues. The project idea has been formed, based on the local residents’ expectations. Climate change has affected the aquaculture in the region, and although local residents have had attempts to improve the situation, the outcomes do not meet their expectations. The residents realize the need to get assistance from organizations and local authorities so that they can have improved production models to adapt to the climate change impact. Thanh Hoa Fisheries Associations has initiated the project after many discussions with local residents through community workshops and exchange through the interviews. Key content of the proposed project was discussed at the stakeholders’ workshop to seek their comments for the finalization of the project proposal to be submitted to GEF SGP Viet Nam for funding.

2.1 Project implementation

Project management is based on the principle of transparency and community participation and ownership. the community will be the main factor in all project activities. Main activities, such as developing and testing aquaculture models, regenerating and growing mangrove forests, will be carried out by the community, with the experts' advice and technical support. Participating households will be selected based on criteria set out by the project, and will receive technical and financial assistance from the project to carry out the models in accordance with the project revolving loan programme managed by the community. A cross-check supervision system between members of the community will be created to maintain the equitability in the

community. The implementation of aquaculture models will need the community participation and contribution so that they can have more responsibility in implementing the project. Capacity building is given priority aiming to ensure project success, sustainability and replicability. During the project implementation, training and awareness raising activities to enhance the community's technical capacity and knowledge will be frequently held. The community also participate in project monitoring and evaluation activities.

Women's participation receives due attention and priority during project development and implementation. Information is widely spread to the community through commune systems, meetings of project and commune mass organisations, workshops, and project printed materials.

2.3 Phase-Out Mechanism and Sustainability

The project will end after two years. The participating households will continue the practices if the project is successful in minimizing the risks from natural disasters and climate change impact to their aquaculture development, hence stabilizing and increasing their income. Experimental models will be evaluated and lessons learned to be drawn to share among the community in the project area and other areas where the community face similar challenges in aquaculture development. Technical guidelines on the design and implementation of the models will be compiled based on the results of the models and shared for the purpose of learning and model expansion and replication.

Funding for the projects will be recollected and used for micro credit and loans in the community to replicate the models. Mangrove forests will be managed by local residents and monitored exploitation is conducted with community rules. Building community rules is also expected to bring positive impact to the community in governance and social monitoring after the completion of the project.

The project will work in closely with relevant government agencies, including Provincial and the District Fisheries Departments who will use the results of the project models for expansion and replication in implementing the government-funded programmes and projects.

3.0 PROPONENT DESCRIPTION

Name of the proponent: Thanh Hoa Fisheries Associations

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Contact person: Mr. Le Minh Chau – fisheries engineer – General secretary of Thanh Hoa Fisheries Associations and Director of Technologies Advising, Training and fisheries services Center. Cell phone: 0168.249.3768 – home phone: 037.3859.989

Human capacity and project management experience

Human resources: Thanh Hoa Fisheries Associations Management Board consists of 7 members who are both retired and government managers/officers in the area of fisheries. In their network, there are 42 associations at the district and commune levels. The total number of members is 2,450. Thanh Hoa Fisheries Associations have strong expertise in the following areas:

1. Trainings and capacity building in aquaculture and fishing
2. Providing technical services and consultancy for the implementation of projects in the area of aquaculture and fishing

Financial resources: Thanh Hoa Fisheries Associations is a social professional organization with no funding from the Government. So they have to balance their own budget from many sources for their operations: membership fees, funding from government and donor funded projects, and technical services and consultancies for projects.

4.0 PROJECT DESCRIPTION

4.1 Objective, outcomes and planned outputs

Project objective: Testing climate change adaptation models in aquaculture and fishing in Truong Islet, a brackish water region in Thanh Hoa, for sustainable fisheries development.

Outcome 1.0: Building and testing models to adapt to climate change in brackish water aquaculture and fishing	
	Output 1.1: 3 Models with suitable species and crops are designed and tested.
	Output 1.2: A number of 20 households participate and directly benefit from the models.
Outcome 2.0: mangrove forests and resources are managed and used in a sustainable manner.	
	Output 2.1: A commune plan to plant, protect and exploit mangrove forests is constructed.
	Output 2.2: At least 20 hectares of mangrove forests are planted.
	Output 2.3: At least 20 households directly benefit from beekeeping models in mangrove forests.
Outcome 3.0: A revolving loan programme is developed and managed by the community.	
	Output 3.1: At least 20 households join the loan programme in the first year.
	Output 3.2: At least 30 more households join the loan programme by the end of the project.

	Output 3.3: The investment for experimental models are repaid and put in the loan programme for revolving.
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Risk description	Likelihood	Solutions
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Outcome 4.0: Training and awareness raising activities on CC issues and sustainable fisheries are conducted.	
	Output 4.1: At least 4 awareness raising workshops are held for at least 300 participants.
	Output 4.2: At least 12 training sessions and 10 community workshops are held for at least 500 participants.
	Output 4.3: About 50 community meetings are held to discuss project issues and activities.
	Output 4.4: Groups of key fishermen for monitoring environment protection, mangrove forest protection, exploitation of fisheries resources protection are formed and operated.
	Output 4.5: Community regulation is developed and widely applied.
	Output 4.6: Working relationship with related agencies in water management is strengthened to manage the water source and protect community's rights.
Outcome 5.0: fisheries resources are regenerated.	
	Output 5.1: Build a crab bank model at 3 different locations around Truong islet.
	Output 5.2: Organize 3 fish and shrimp releases in the project area.

4.3 Risks and barriers

Risks	Likelihood	Solutions
Conflicts may arise among participating and non-participating households	Low	- Community select participating households based on the project criteria.
Risks of technical problems, diseases in aquaculture	Medium	Provide technical trainings to the community Monitor the application of the project techniques The Project Management and Expert Teams have frequent site visits and timely help with technical problems.
Natural disasters (unpredictable storms, tornadoes, out-of-season rains)	Medium	Provide warnings and weather information to the community. Instruct the community to take caution.
Related departments and local authorities do not accept suggestions from the project	Medium	Competent and experienced experts should be selected to provide technical assistance to the project. Project recommendations are consulted among local stakeholders. Provide full info on the project results to local authorities and relevant agencies. Develop a close working partnership with them and involve them in project activities.
Late disbursement of funding from CBA and co-financers	Low	Comply with financial management rules by CBA and co-financers Mobilise commitment in the start up stage.

4.4 Monitoring and Evaluation Plan

4.4.1 Initial Vulnerability Reduction Assessment (VRA) Analysis

A meeting was organized with the participation of 26 participants, including 20 men and 6 women. They are commune leaders and fishermen of Hoang Chau Commune (members of the Hoang Chau Fisheries Association). Most of them are from Con Truong Islet. The objectives of the meeting were to seek information on climate change and its negative impact on their life and production, and suggestions from the community on how to minimise these negative impacts. The discussions were based on the VRA questions described below. Results from the discussion show that the community is very concerned about the changes in the climate and weather as well as diseases caused by pollution. They recognized the changes in the salinity which requires a change in aquaculture and the degradation of fisheries resources in the area caused by overexploitation and especially destructive methods which will pose a threat to the income of the

fishermen. They are well aware of the need for protection and development of mangrove forests to cope with the natural disaster which becomes more frequent in their localities. They are interested in the idea that enhances community support each other with a revolving loan programme as well as community monitoring to stop destructive fishing. In general, the community is aware that there are a lot of risks for aquaculture and fishing and they need to change their business way of doing in aquaculture and fishing as the environment has been changing and natural disasters are more frequent and therefore eager to learn new methods for sustainable aquaculture and fishing in the CC context.

Vulnerability Reduction Assessment Reporting Form	
Index 1	3
Index 2	3
Index 3	3
Index 4	3
Index 5	4
Total VRA	3.2

4.4.2 Project M&E Plan

The Vulnerability Reduction Assessment (VRA) will be measured at the planning stage of the project, at the mid-point, and at the end of project. Given that the VRA is qualitative and is based on the community perceptions, the first VRA was conducted to establish a baseline during the Project planning phase as described above. A second VRA will be done at mid project after all the project model building activities have been completed. A final VRA will be done at the end of the project to assess the overall impact of the project on the community adaptive capacity.

The VRA questions that will be used are as follows:-

1. Rate the impact of climate change (extreme weather and early small flooding, temperature rise, sea level rise and salinity) on your income from aquaculture and fishing
2. Rate your ability to cope with the negative impacts of climate change
3. Rate the impact on your livelihood if climate change impact doubles
4. Rate how effective you think this project will be in reducing your risks from increasing natural disasters and temperature rise, sea level rise and salinisation.

5. Rate your confidence that the project will continue to reduce climate change risks after the project ends.

The Impact Assessment System (IAS) indicator will be measured at the end of the project using the following components:

- (1) The number of hectares/models of aquaculture development applying the project techniques in sustainable aquaculture and fishing to adapt to CC impact
- (2) The number of hectares of mangroves protected and planted
- (3) number of innovations developed/applied under the project
- (4) The number of policy recommendations proposed in environmental protection and sustainable use of natural resources (fisheries and mangroves) for sustainable aquaculture and fishing in the climate change context

The targets for the above are as follows:

- (1) Three (3) models will be tested by the project.
- (2) 15-20 ha of mangroves will be protected and planted.
- (3) 2-3 innovations developed/applied under the project
- (4) Three to four recommendations on policies in sustainable aquaculture and fishing in the climate change context will be proposed to local authorities

UNDP ADAPTATION INDICATORS:

The project will contribute to the UNDP adaptation indicators adopted by the Viet Nam CBA country programme strategy, namely:

1. The number of measures that address the additional risks posed by climate change deployed as part of sustainable resource management activities;
2. Percentage of area concern in which climate change risk management activities, in the context of sustainable resource management are implemented; and
3. Number of local and national level policy recommendations proposed as a result of lessons from CBA projects

The targets for the UNDP Adaptation indicators are outlined below:

- (1) Three (3) models will be tested as part of the activities for sustainable aquaculture and fishing in the project area.
- (2) Five percent (5%) of project area will be engaged in climate-resilient farming activities. Three to four policy recommendations proposed as a result of lessons from the project.

4.5 Project Management

4.5.1 Management Structures

The Project Management Team:

- Thanh Hoa Fisheries Associations is the grantee organization and is accountable for the project.
- In order to manage the project, Thanh Hoa Fisheries Associations establishes a Project Management Team who manage the project to achieve the project objective, outcomes and planned outputs set up in the project's document approved by CBA. The Project Management Team undertakes management tasks following the CBA project management rules and operates in a democratic and transparent manner. Monthly meetings are organised to discuss the project issues and decisions are made at the meetings. Ad hoc meetings will be held when needed and once requested by the Team leader of the Project Management Team to resolve in time all the project's important issues. Members of the Project Management Team, besides the meetings, will exchange information and seek agreement in implementing the project through various communication channels.
 - + The Project Management Team comprises of 5 members:
 - 3 members (Project Management Team leader, Secretary and Accountant) from Thanh Hoa Fisheries Associations
 - 1 member from Hoang Chau Commune People's Committee
- 1 member representing fishermen community in Hoang Chau Commune

The project management team has the following functions:

- Develop project workplans and budget for the project's activities
- Organize activities according to the approved workplans and budget.
- Monitor, evaluate, report on the project's implementation progress and use of resources for CBA, the local authority and local's stakeholders.
- Select and sign the subcontract with the project's expert group and oversight the deployment of the technical advice contract done by those experts.
 - Establish relations with local authorities and relevant agencies to seek their supports and mobilize resources for the project.
- Manage the project's resources financed by CBA
- Mobilize and oversight co-financing given by organizations and community, report the results achieved by using this resource.
- Make announcement and discussion with CBA to find solutions and adjustments to the problems encountered during the implementation of the project
- Keep archives of the project

The project's sub-contracts

The project will have a sub-contract which provides equipment and materials for the project's demonstration models. The Project Management Team will sign the sub contract with suppliers in Thanh Hoa for purchasing equipment and materials for the project's demonstration models.

The project's sub-contractor of technical assistance

A contract of technical experts will be signed to supply the project's technical assistance services. The Project Management Team in consultations with CBA to recruit the expert group to carry out the technical activities of the project. The main responsibilities of the expert group are:

- Provide technical assistance in implementing the project: provide training and technical support for community to deploy the technical measures of the project.
- Supervise, evaluate the results of the project, draw lessons and make recommendations on policies for stakeholders.
- Develop project technical documents.

The expert group includes:

- 3 qualified experts (from research institutions and universities) with specialization and experience in the fields of climate change, aquaculture, fishing and mangroves.
- 3-4 local technical staff who have specialization and experience in aquaculture, fishing and community-based projects, responsible for the implementation of activities on the ground under the experts' guidance.

- The consultant services fall under the supervision of The Project Management Team, based on the contract of technical support signed by the Project Management Team and the expert group. The latter makes plans, cost estimate and reports in accordance with to the principles set in the contract. It also has an internal working mechanism agreed by the Project Management Team. During the implementation of the project, the expert group collaborates closely with the Project Management Team to hold a meeting every six months to evaluate the project's progress, draw lessons and suggest necessary adjustments.

Project monitoring and evaluation

In project monitoring and evaluation, the project management team's responsibilities are defined as follow:

The project management team is responsible for monitoring projects in terms of technology and finance in order to gather required information for project management. Besides monthly meetings, the project management team will hold site visits (every 3 months) with aims to:

- Examine the practical situation, checking the rate of projects' activities.
- Solve potential problems during the projects' execution/implementation.
- Gathering information for building action plan, cost estimates and making reports.
- Draw lessons learnt from the project implementation.

The project management team held a meeting every 6 month with the expert group to review the progress and results based on the project workplans and technical assistance contract.

Project evaluation

Project midterm and final evaluation is conducted in the middle and by the end of the project. The purpose of the evaluation is aimed at:

- Evaluating the progress and extent of achieving the project outputs and outcomes and objective
- Evaluating the potential for project expansion and replication, making the recommendation about project sustainability and expansion and replication based on the project's results.
- Revising the project if necessary so as to best achieve the project objective.
- Drawing experience and lessons learned in project management and project models.
- Evaluating the effectiveness of projects design and efficiency and effectiveness of using the project resources.

The content for evaluation is based on the objectives, outcomes and outputs, and success indicators stated in the project document. Participatory methods will be adopted on project monitoring and evaluation. To have information for project monitoring and evaluation, baseline data will be collected during the project inceptions.

VRA meetings will be organized to assess the adaptive capacity as described above.

4.5.2 Relationship and Responsibilities of Proponent and Project Partners

The project will cooperate with the People's Committee of Hoang Hoa District, Hoang Chau Commune and relevant departments like Department of Agriculture and Rural Development, Department of Natural Resources and Environment, Department of Science and Technology, etc. to conduct activities of the project, such as:

- Share the project experience with coordinating programs and projects with similar objectives.
- Organize education activities about environmental issues, project models and training classes.
- Create a cooperative relationship with related agencies to gain financial assistance and support for households that implement the models.

- Work with GEF SGP to evaluate and summarize results, compile and publicize technical materials and draw lessons learned.
- Suggest related issues and plans for the replication of the project models.