

GEF SPA CBA COUNTRY PROGRAMME REPORT – VIET NAM

FEBRUARY 2008 – DECEMBER 2012 COUNTRY OUTCOME REVIEW

PORTFOLIO OVERVIEW

Climate change in Viet Nam and in the Central Coast

Viet Nam's climate, topography and long coastline makes it particularly vulnerable to climate variability and natural disasters. Most analysis and scenarios suggest that climate change will exacerbate this vulnerability, particularly in coastal regions. Recent studies conclude that Viet Nam would be extremely vulnerable to these impacts. Dasgupta *et al* (2007)¹ analysed impacts associated with different sea level rise (SLR) scenarios in 84 coastal developing countries. Their analysis suggests that Viet Nam is one of world's top five most vulnerable countries to sea level rise and the most vulnerable to impacts in East Asia.

The Government formulated the National Target Programme (NTP) to provide a national strategy and action plan to respond to climate change (NTP 2008). The Second National Communication (SNC) to the UNFCCC emphasizes adaptation and provides guidance to promote Climate Change (CC) adaptation measures in Viet Nam.

Climate change in Viet Nam is expected to have multiple impacts to the Central Coast region of the country. Recurrence of disasters, temperature rise and sea level rise will significantly affect socio economic development and exacerbate poverty in the region. Biodiversity loss, water scarcity and land degradation and desertification (LD&D) will be critical issues in the face of climate change. The change in disaster patterns (in terms of intensity, duration, and periodicity of occurrence) and the drought issues in the Central Coast are attributed to climate change.

Climate change will increase land degradation pressures in the region by increasing desiccation and erosion risks though increased temperatures, evapotranspiration, and climate variability. Soils often have poor mechanical and low moisture retention properties. Large areas of sand dunes, together with tropical monsoons and a cyclic dryness-moisture regime, have sped up mineralization resulting in the development of laterite formations and desertification on a large area. The total land area of the Central Coast accounts for 26% of the total land area of Viet Nam. The arable land of the region, however, represents approximately 8% of Viet Nam's total arable land area (NAP, 2005). The area used for agricultural cultivation in the region is 0.079ha/capita (National Statistics 2004). The semi-arid climate, with high solar radiation and temperatures and a prolonged dry season, is the main cause of desertification in the area. With temperature and evaporation rise and prolonged dry season as an impact of CC, land degradations pressures will intensify.

¹ Dasgupta, Susmita, Laplante, Benoit, Meisner, Craig, Wheeler, David and Jianping Yan, "The Impact of Sea Level Rise on Developing Countries: A Comparative Analysis" (February 1, 2007). World Bank Policy Research Working Paper No. 4136 Available at SSRN: <http://ssrn.com/abstract=962790>



**VN/MAP-CBA/2010/04
Flooding in 2009 in Xuan Quang 2 Commune.**

Drought, which is a common phenomenon in the area, is now becoming a major concern for both government authorities and local communities because of its severity. During recent years, drought has occurred with an increase in number, duration, and intensity of drought events, with serious impact in provinces in the Central Coast, which causing serious impact in provinces in the Central Coast. With temperature and evaporation rise and prolonged dry season as an impact of CC, there will be additional loss of water for agriculture development and community life, leading to water conflicts among users and overexploitation of ground water resources. Sea-level rise and droughts together will also constitute a substantial salinization risk, further threatening dwindling water supplies, agricultural productivity, and the biodiversity of the key ecosystems in the region, including coral reef, mangrove, wetland, tropical forest, and agricultural biodiversity.

- Coral reefs are very vulnerable ecosystem in the face of CC exacerbated/induced coral bleaching.
- Mangrove forests – key coastal ecosystems which protect water resources, agriculture and aquaculture from climate extremes – and provide a rich habitat for many species, and will be decreased or forced to retreat inland due to sea level rise.
- Coastal lagoons – spawning grounds for sea turtles and a habitat for coastal species – will also be threatened due to sea level rise.

- Forest biodiversity will be affected by a temperature rise and increasing risk of forest fires, with forest types adapted to drier conditions becoming more prominent at the expense of moister forest types.
- Freshwater ecosystems will be increasingly stressed by increasing salinity. Habitats of fresh water living creatures will be threatened.
- Climate change will alter the nature and frequency of pest and diseases outbreaks, affecting traditional crops/plants and animals. Agrobiodiversity will also be affected by temperature rise and drought impacts of salinisation. Temperature rise will affect growing period, traditional crop calendars and crop distribution, and in many cases require migration of traditional crops or lead to their extinction...
- CC will intensify baseline land degradation and desertification pressures brought on by unsustainable agricultural development practices, through declining ecosystem resilience in the face of increasing temperature and water pressure, as well as increasing climate variability.

The surface water resource in the Central Coast is very limited. In the two provinces of Ninh Thuan and Binh Thuan in the South Central Coast, the density of the river systems is only 0.1 to 0.2 km/km² compared to 1.5 to 2 km/km² of the Central Coast. All the rivers and rivulets in the area have low gradients and flows. The soil types in the downstream areas of the rivers are mainly sand and mixed sand, resulting in great permeability and further reducing flows to the extent that some rivers dry up in the dry season. There is a big gap between water demand and water supply. In all provinces, there is a strong lack of irrigation facilities. The capacity of irrigation systems cannot satisfy the demand. Due to prolonged dry season, in Ninh Thuan province, only 33 per cent of the demand is satisfied. There have been conflicts among water users, including agriculture, aquaculture and tourism. The proliferation of aquaculture in many areas in the Central Coast has significantly reduced the mangrove forest, while increasing water demand – leading to water shortages in times of drought.

Heavy reliance on groundwater has led to significant saline-water intrusion. Underground water has an important role in the coastal sand dunes areas where both the population density and economic potential are relatively high. Due to the proximity to the sea, the underground water in these areas is commonly affected by salinisation. The over exploitation of underground water is worsening salinisation. In many places, the salinisation and unsustainable use of underground water resource puts high risks on the livelihoods and agriculture production.



CBA/VN/SPA/09/005 (Phuoc Hoa)
Flooding in rice field

In the Central Coast, the agriculture sector plays a very important role in the economic development, food supply, and livelihoods of most of the population of the provinces. Accounting for 50-65% of the province's gross domestic product (GDP), agriculture employs more than 70-80% of the labour force. The main crops in the provinces in the Central Coast are rice, maize, peas, and fruit trees such as dragon fruits, grapes, and short-day crops such as tomato, carrot, and potato.

Deforestation and unsustainable agricultural cultivation methods (overgrazing, over-exploitation of water and soil resources, etc.), combined with the semi-arid climate and the poor water and soil resources, are the main causes of erosion and the washing-out of soil nutrients, resulting in land degradation and desertification. Inadequate policies and limited institutional capacity are the key barriers for sustainable land management. Lack of preparedness and lack of local knowledge in dealing with the persistent droughts has exacerbated the situation. Droughts are attributed not only to decline in forest cover in the province, but also to the poor environment-management practices. Although the forest cover has been increasing thanks to the reforestation programme, forest density has declined, due to excessive illegal deforestation and severe drought-induced forest fires. The North Central Coast is considered to be one of the three regions in Viet Nam where the area of high biodiversity forest decreased sharply.

CBA Viet Nam project portfolio

CBA Viet Nam strategic directions

Viet Nam is one of the ten (10) participating countries under SPA CBA. CBA Viet Nam develops a country strategy programme (CPS) which provides strategic directions for implementation as described below.

- The objective of the CBA programme in Viet Nam is to integrate climate change risk reduction practices into existing sustainable management of biodiversity and land resources. Addressing strong linkages between baseline disaster risk and CC impacts, CBA in Viet Nam focus on drought and salt water intrusion issues.
- A portfolio of 8-10 projects is developed for the CBA Viet Nam. 80% of the funding will be allocated for projects addressing targeted sectors and issues in the geographic priority areas of the Central Coast. The remaining funding 20% is granted to projects with strategic and innovative ideas outside of the priority areas.
- The CBA projects develop pilot projects to identify cost effective CC adaptation measures to upscaling and replication, as well as to provide insight into potential policy targets for mainstreaming lessons derived from community-based adaptation into national/provincial policy and programmes.
- CBA interventions in Viet Nam build resilience to climate change in the focal areas of BD and LD&D. Climate change presents significant risks to global environmental benefits in these focal areas, including saltwater intrusion, greater erosion pressures, land degradation and desertification, water stress, changing rainfall regimes, recurrent of disasters, including flood, storms and droughts in terms of frequency and intensity – all of which will promote over-exploitation of biodiversity, land and water resources, leading to stronger pressures on these limited resources of the area and potentially greater ecosystem impacts.

- CBA Viet Nam support projects and activities which address the additional pressures of CC in the Central Coast, focusing on the increase in number, duration and intensity of droughts by minimizing the drought impact on water and agriculture development through better management of water, land and biodiversity resources and implementation of cost-effective adaptation measures to cope with the issues of declining water availability, soil and groundwater salinisation, and land degradation. CBA projects and activities contribute to preventing and controlling LD&D, which significantly threaten agriculture development, by promoting sustainable land management and integrated management of natural resources, including biodiversity, water and land resources. By doing this, CBA contribute to conservation and sustainable use of biodiversity resources of mangrove, coastal lagoons, forest and agro ecosystems in the area, in the face of climate change pressures. CBA projects and activities contribute to protection of international waters by promoting sustainable use of water resources to address the issues of water unavailability and salinisation, reducing water conflict and overexploitation of ground water resources as an impact of CC.

The achievement of the objective of CBA Viet Nam will be measured by the following impact indicators:

- Number of CC adaptation measures deployed as part of climate change-resilient sustainable resource management activities;
- Inclusion of CC adaptation in the local strategy and action plan on sustainable development (provincial agriculture and fisheries sectors).
- Rate of loss of natural resource base for livelihoods determined to be negatively impacted by climate change.
- Livelihoods options better suited to climate change available to target community.
- Number of families/households benefiting from climate change resilient sustainable resource management activities.
- Number of lessons learnt/ best practices from the CBA Viet Nam to contribute to national/provincial CC adaptation programmes.
- Community understanding about CC issues.

CBA Viet Nam geographic focus – the Central Coast

CBA Viet Nam targets the Central Coast as its geographic focus. The Central Coast stretches over 14 provinces from Thanh Hoa in the north to Binh Thuan in the south. The population of the Central Coast accounts for 23 % of the total population and 29% of the total area of the country. It is one of the four (4) highest priority areas in the National Action Plan to combat LD&D (NAP 2008) and the targeted priority in the NTP (2008).

The Central Coast is also chosen as a geographic focus area for the following reasons.

- *Socio-economic situation and poverty:* The North Central Coast (NCC) has after the North West (NW) the largest proportion of people living below the poverty line (32% vs. 20% nation-wide in 2004) (GSO, 2006).
- *Critical environmental issues and barriers for sustainable development:* The Central Coast contains large parts of the key biodiversity areas and conservation corridors in Viet Nam (WB et al., 2005). The Central Coast has four out of five world heritage sites, 6 national parks, 17 nature reserves, 12 protected landscapes and 12 international bird areas. The southernmost of

the Central Coast is the only place with a semi-arid climate in Viet Nam and is home to unique semi-arid ecosystems. Given this very long coastline, the Central Coast is home to many diverse ecosystems such as estuaries, swamps, bays, mangroves and coral reefs. The two marine protected areas (MPAs) in the Central Coast are the only ones already approved in Viet Nam so far. There are 12 lagoons, with a total area of 100,000 ha, located between Thua Thien Hue and Binh Thuan Provinces. The Central Coast is also home to six of the ten largest sea grass beds with a total area of 2,650 ha (WB et al., 2003). These coastal and marine ecosystems have a high biological diversity and productivity and are home to many rare and endemic species. Biodiversity degradation is a big issue in the area due to population growth and poverty and unsustainable management of biodiversity resources. This trend will be increasing in the face of CC.

- The national action plan (NAP) for combating LD&D identified four priority areas, among which the Central Coastal region. The Central Coastal provinces, especially those from the SCC, suffer from LD and desertification processes, such as prolonged drought periods, salt intrusion and sand encroachment.

- Land-based pollution in the coastal and marine environment is getting severe due to chemicals and pesticides used in shrimp farming and agriculture and wastewater releases from industries and urban areas.

- *Limited attention and investment by the donor/INGO community:* The Central Coast is not yet a priority by most other donors/INGOs. Although the Central Coast represents 29 % of the area in Viet Nam and 23 % of the population, it only receives 18 % of the environmental ODA (MoNRE and UNDP, 2003).

- *SGP past experiences and partnerships:* During the past years, SGP has gained knowledge and experience working in the focal areas of BD (especially the NCC) and LD (especially SCC) in the context of the Central Coast. During this work, SGP has established good working relationships with local governments and agencies and NGOs/CBOs in the region.

CBA Viet Nam projects



With the strategic directions above, CBA Viet Nam has developed and implemented a diversified project portfolio of seven (7) projects with the total CBA funding of 350,000USD. Amex 1 provides a list of these projects, detailing the project title and number, location, grantee's name, characteristics and status. All of these projects target rural poor farmers. Two (2) projects (CBA/VN/SPA/08/003 (Cam Tam) and CBA/VN/SPA/09/07(Soc Trang)) work with the indigenous

**CBA/VN/SPA/09/07 (Soc Trang)
Red onion-based cultivation**

peoples (Muong and Khmer). Six (6) out of seven (7) projects target the coastal ecosystems, including lagoons, mangrove, and delta. Five (5) projects are in the CBA Viet Nam geographic focus of the Central Coast and the other two (2) projects (CBA/VN/SPA/08/001 (Bac Lieu) and CBA/VN/SPA/09/07 (Soc Trang)) are in the Mekong Delta, the most badly affected area in the face of CC. All projects have co-financing (in cash and in kind) from local stakeholders and project grantees. All CBA projects are in the GEF focal areas of land degradation and/or biodiversity and international waters. Sustainable use of water, land and biodiversity resources are promoted in adaptation measures addressing droughts and saline water intrusion. All CBA projects are demonstration projects, adopting integrated approaches with 3 key components, including awareness raising, capacity building and model building. Multi-stakeholders approach is adopted with the involvement and participation of local NGOs/CBOs, local authorities and communities, and academic institutions. Communities in the project areas are the project key beneficiaries (Table 1).

Table 1: Participation in CBA projects

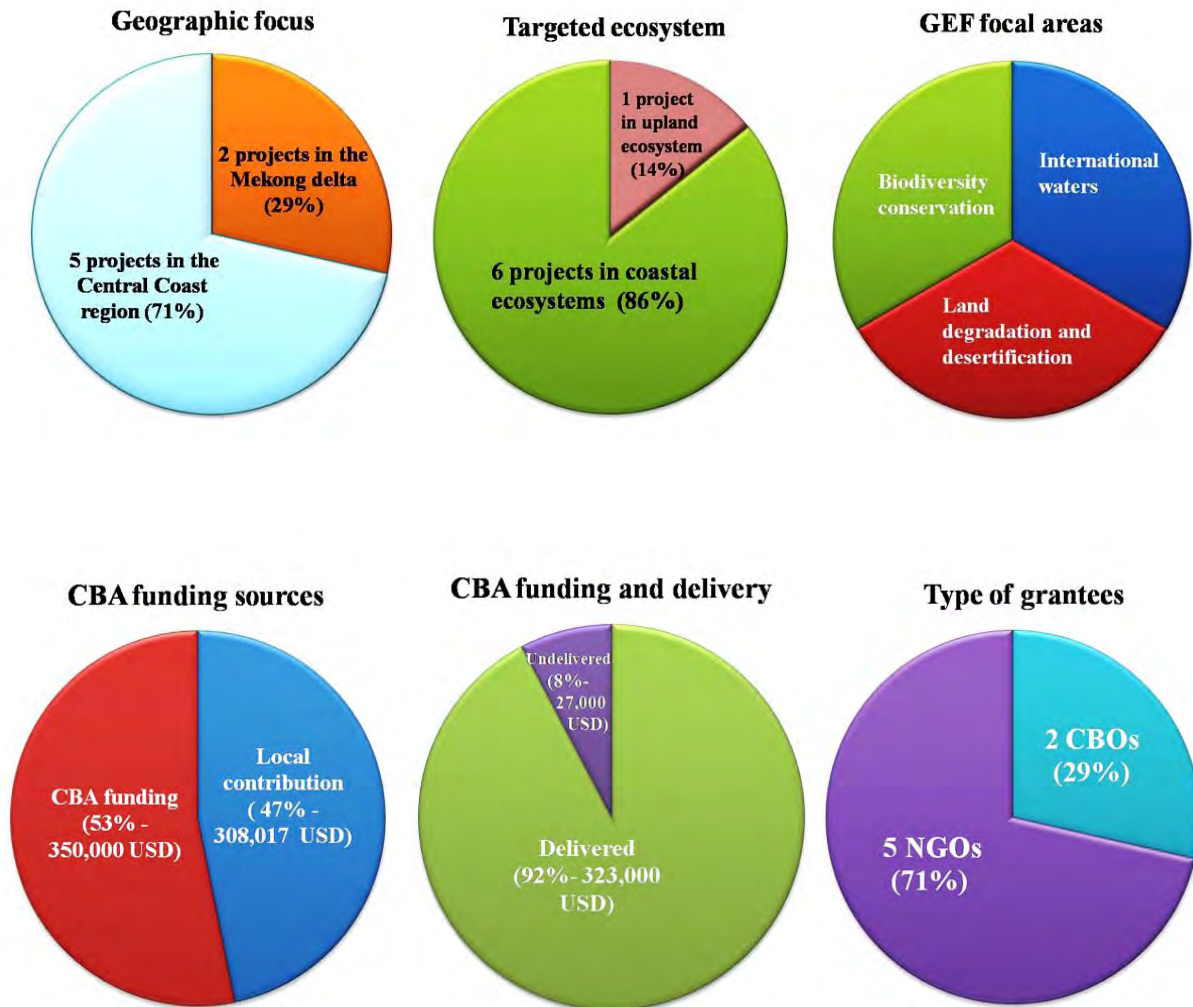
Project	Project model building				Trainings
	Total # of Participants*	# OF households	# OF communities	Project model area (ha)	Total # of training participants
CBA/VN/SPA/08/001 (Bac Lieu)	70	70	1	210	685
CBA/VN/SPA/08/002 (Ha Tinh)	370	58	2	45	171
CBA/VN/SPA/08/003 (Cam Tam, Thanh Hoa)	223	185	2	26	700
CBA/VN/SPA/09/004 (Huong Phong)	504	76	1	24	735
CBA/VN/SPA/09/005 (Phuoc Hoa)	330	77	2	40	588
CBA/VN/SPA/09/07 (Soc Trang)	93	93	3	165.5	750
CBA/VN/SPA/09/08 (Hoang Hoa, Thanh Hoa)	65	25	1	58.7	952
Total	1655	584	12	731.2	4581

- * See details in the table below

Project	# OF Women	# OF Youth	# OF Elderly	# OF Disabled	# OF middle - aged	Total # of Participants
CBA/VN/SPA/08/001 (Bac Lieu)	13	15	12	3	27	70
CBA/VN/SPA/08/002 (Ha Tinh)	20	20	30	0	300	370
CBA/VN/SPA/08/003 (Cam Tam, Thanh Hoa)	35	159	29	0		223
CBA/VN/SPA/09/004 (Huong Phong)	96	184	224	0		504
CBA/VN/SPA/09/005 (Phuoc Hoa)	120	80	110	20		530
CBA/VN/SPA/09/07 (Soc Trang)	18	23	9	5	38	93
CBA/VN/SPA/09/08 (Hoang Hoa, Thanh Hoa)	6	30	27	2		65
Total	295	496	429	27	338	1655

Figure 1 provides geographic focus, the type of grantees, targeted ecosystems, CBA funding sources and delivery, and GEF focal areas.

Figure 1



As of September 2012, the majority of CBA projects (6 out of 7 projects) have conducted most project activities and VRA (Table 2). 92 % (323,000 USD) of CBA funding is delivered to CBA projects (Table 2). 8% (27,000 USD) will be delivered in the 4th quarter of 2012.

Table 2. VRA results of CBA projects

No	Project number	First VRA	Second VRA	Third VRA
1	CBA/VN/SPA/08/001 (Bac Lieu)	3.76	4.03	4.43
2	CBA/VN/SPA/08/002 (Ha Tinh)	3.51	3.57	N/A
3	CBA/VN/SPA/08/003 (Cam Tam, Thanh Hoa)	3.62	4.11	4.25
4	CBA/VN/SPA/09/004 (Huong Phong)	2.47	3.62	4.19
5	CBA/VN/SPA/09/005 (Phuoc Hoa)	3.75	3.13	4.2
6	CBA/VN/SPA/09/07 (Soc Trang)	3.92	4.28	4.52
7	CBA/VN/SPA/09/08 (Hoang Chau, Thanh Hoa)	3.2	3.44	4.1

○ The four (4) projects (CBA/VN/SPA/09/004 (Huong Phong), CBA/VN/SPA/08/001 (Bac Lieu), CBA/VN/SPA/08/003 (Cam Tam) and CBA/VN/SPA/09/005 (Phuoc Hoa)) have conducted final project evaluation which show very positive results that these projects are successful in meeting the project objectives. These 4 projects are compiling the technical materials on the project adaptation measures and lessons learned, and implementing advocacy activities at the present and will be closed by end of Oct 2012.

○ The two (2) projects CBA/VN/SPA/09/07 (Soc Trang) and CBA/VN/SPA/09/08 (Hoang Hoa) are conducting the final evaluation at the present and will be

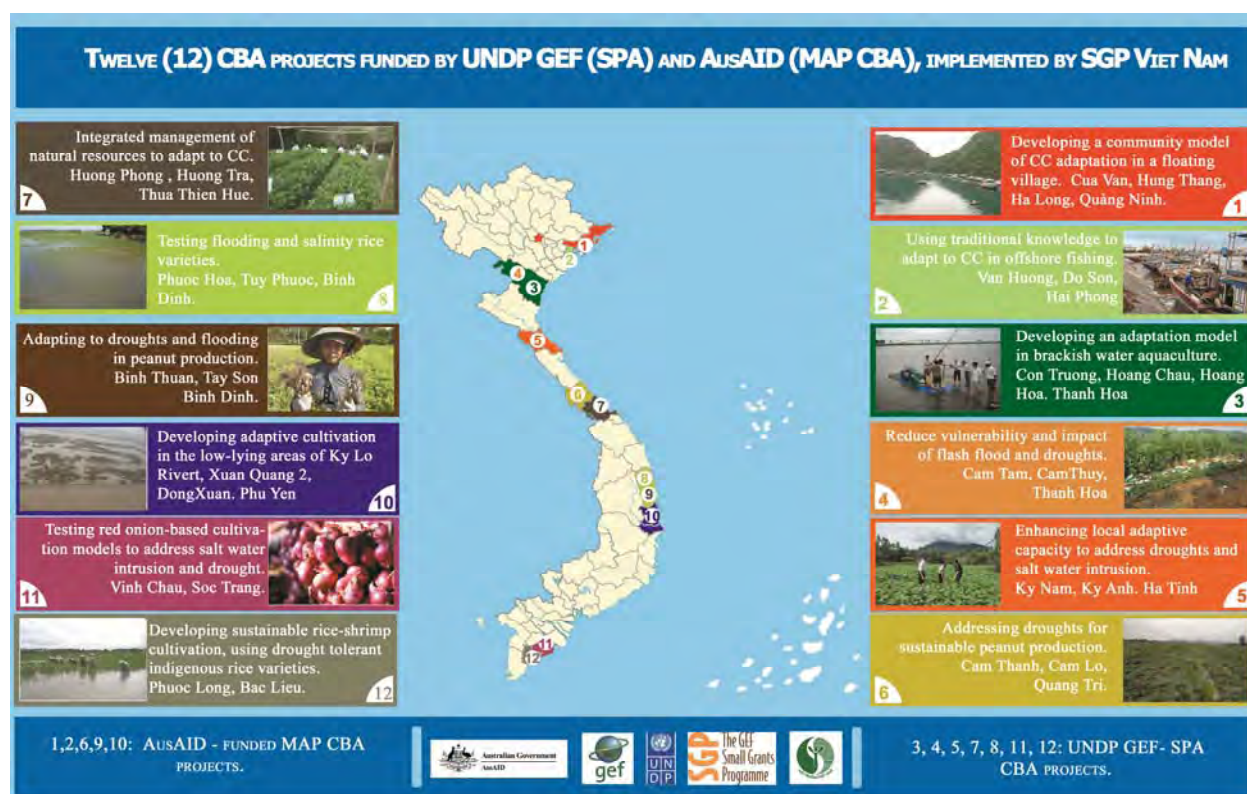


**CBA/VN/SPA/08/003 (Cam Tam, Thanh Hoa)
VRA meeting**

closed by end of Nov 2012. Based on the results of M&E during project implementation, the project grantees of these 2 projects and CBA Viet Nam (NC and NSC) have very positive assessments on these 2 successful projects.

- One (1) project (CBA/VN/SPA/08/002 (Ky Nam)) has been facing with difficulties in the project implementation and therefore the results are limited. The project is revised and extended until end Dec 2012.

With the positive results of the majority of projects, the CBA projects significantly contribute to the success of CBA in Viet Nam, highly meeting expectations from local stakeholders and CBA Viet Nam. The details of the outcome and impact of CBA Viet Nam and its projects are described in the following sections.



OUTCOMES AND IMPACT

CBA Viet Nam aims to enhance local adaptive capacity to address CC adverse impact to promote sustainable agriculture. The key objective of all 7 CBA projects is to experiment adaptation models which strengthen resilience of ecosystems and vulnerable communities in the face of CC. The adaptation models tested in CBA Viet Nam projects include the following characteristics.

1. Community-based approaches (community participation, benefit and ownership);
2. Addressing key CC impact issues identified as the key priority issues in the national and local strategy and action plan to respond to CC, including droughts, flooding, saline water intrusion, natural disasters;
3. Simultaneously addressing development impact as well as additional CC impact
4. Targeting both short-term and long-term CC impact on livelihoods and ecosystems, and testing both short-term and long-term adaptation measures by hard (local investment community infrastructure) and soft measures (technical capacity building).
5. Targeting most vulnerable communities and areas, including rural poor, women, indigenous people, in areas with harsh weather and climate
6. Using environmentally friendly technologies for environmental protection and sustainable use of natural resources in adaptation measures.
7. Giving priority to pilot projects which are potential for replication and upscaling.
8. Ensuring global environmental benefits through addressing global environmental issues of biodiversity conservation, land degradation and desertification, and international waters.
9. Combination of traditional knowledge and technologies in designing and applying adaptation measures
10. Targeting key crops (rice, onion, peanut, fish and shrimp...) and local commodity products in adaptation measures for sustainable livelihoods and local economic development.

All CBA projects in Viet Nam are demonstration with 3 key components of (1) awareness raising on CC issues; (2) capacity development to address adverse CC impacts; and (3) model building (testing adaptation measures, adopting integrated management and sustainable use of natural resources).

The adaptation measures tested in CBA Viet Nam projects include the followings.

1. Testing salinity and drought tolerant varieties of rice and other crops;
2. Sustainable use of natural resources, including biodiversity, land and water;
3. Rainwater harvesting;
4. Micro watershed management in upland areas (building contour ditches and planting forest to reduce impact of flash flood);
5. Integrated farming techniques (sustainable land and water management, fertilizing, shifting crop calendar, ...);
6. Documentation and utilization of traditional knowledge;
7. Protecting and planting mangroves;
8. Diversification of income/livelihood activities (off farm income).

The outcomes and impact of the 7 projects are described in the following section.

CBA/VN/SPA/08/001 (Bac Lieu)

Phuoc Long is a poor commune in Phuoc Long district, Bac Lieu province, with the poverty rate of 14.08% (2011). The commune is located in the rice basket of the Mekong delta which is the most affected by CC with typical issues of droughts and salinisation. Rice and shrimp farming provides key income to local community in the Mekong delta in general and Phuoc Long commune in particular (60% income).

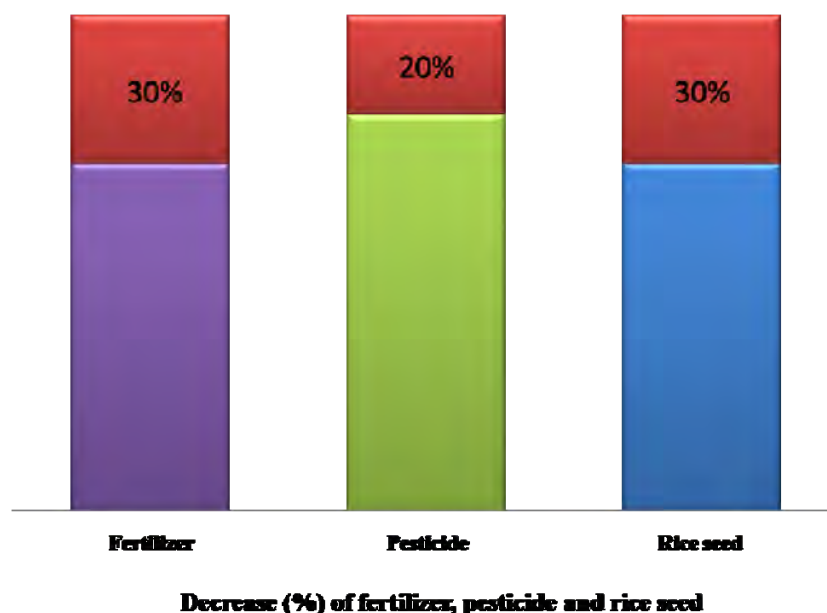
The project aims to reduce adverse impact of droughts and salinisation in rice and shrimp farming. A model of rice-shrimp cultivation is developed with 73 participating households in an area of 105 ha (producing 450-500 tons of rice and about 26-27 tons of prawns) during the project implementation. The result of the project model is as below.

An increase of 28kg/ha in the productivity of shrimp and profit of 4,981,000VND/ha compared to non-participating farmers.

The indigenous salinity tolerant rice variety of *Mot Bui Do* is purified and tested in a cultivated area of 6ha, an increase of 1,765 million VND/ha of rice compared to non-participating farmers. However, the profit in 2012 in rice production is much lower than in 2010 and 2011 due to unfavorable weather in 2012 (17.9 to 18.5 million VND/ha in 2010 and 2011 and 13 million VND/ha for 2011-2012).

A decrease of fertilizer (by 25-30%), pesticide (by 20%) and rice seed (by 30%) used in the project rice-shrimp model resulting in the reduction in the investment and especially, reducing soil and water pollution (Figure 2).

Figure 2



Successful experimentation of effective adaptive farming techniques in rice-shrimp cultivation:

- using community-based techniques in purifying salinity resistant rice variety of *Mot Bui Do*.
- adjusting crop scheduling (time of sowing) to avoid salinization, "Ba Chan" drought season (at the beginning of the crop) and flooding (in the middle of the crop).
- Techniques and procedure in intensive shrimp farming with *Mot Bui Do*. Thanks to the model, it reduces the pressures in water management in the field to address salinisation.

Adaptive capacity of the community in rice-shrimp production in the project area is significantly enhanced that is very strategic for effective application of adaptive measures. The community also has a better understanding and knowledge on CC issues, especially the real impact in their localities and the adaptive measures. Equipped with the technical adaptive measures, the participating farmers are now proactively coping with the droughts and salinisation in rice-shrimp cultivation.



CBA/VN/SPA/08/001 (Bac Lieu)
Droughts in Bac Lieu

The effective adaptive farming techniques in rice-shrimp production described above are documented in the project technical materials which will be reviewed by a technical board before providing to the local authority for wide dissemination.

In order to promote replication and upscaling, the project has conducted surveys to develop a replication plan. Results show that Phuoc Long commune has an area of about 3,700 ha which has similar conditions and CC issues (drought and salinisation). The figures for Bac Lieu province and the Mekong delta is 30,000ha and 120,000ha respectively. According to the climatic scenario for the Mekong delta, the area affected by salinisation is about 500,000 – 700,000ha. The successful experimentation of the

project rice-shrimp model is very useful as it has provided an effective adaptation model to Phuoc Long commune in particular and to the Mekong delta in general.

In order for a successful replication and upscaling, it is very strategic in terms of mainstream and replicate the project results in the local programme through a local policy which support the replication of the project adaptation measures. Therefore, the project will recommend the relevant policy issues to the local authority after documentation of these adaptive techniques and lessons learned.



**CBA/VN/SPA/08/001 (Bac Lieu)
Harvesting rice-shrimp**

During the project implementation, Phuoc Long commune suffered from a serious drought and high temperature (0.6 to 1.8 degrees C higher than annual mean temperature) and salt water intrusion (4.3 to 5.0 EC mS/cm) in the key crop of 2010-2011, causing huge damage in rice growing area. It was heavily affected by a big flood in 2012. However, the project has achieved all the objectives and expected results stated in the project document. The results of the project show that the project adaptation measures to droughts and salinisation are appropriate and effective, and therefore accepted by the local authority and community. The purifying of the indigenous rice variety of *Mot Bui Do* contributes to the conservation of this salinity resistant

rice variety. As described above, the potential for replication is very substantial as salinisation is the biggest CC impact issue in Phuoc Long commune in particular and the Mekong delta in general. Especially, in the context of unfavorable weather conditions during the project implementation, the project results have confirmed the effectiveness of the project adaptive measures. Thanks to the economic and environmental benefits of the project, it is very potential that the project will be sustainable and replicated/upscaled in the localities with similar conditions and CC issues.

The final project evaluation conclude that the project has provided a very successful model in rice-shrimp production in the face of CC and significantly enhanced local adaptive capacity and resilience of the ecosystems and communities. The project has provided a successful adaptation model to the implementation of the provincial action plan to respond to climate change.



**CBA/VN/SPA/08/001(Bac Lieu)
Mot Bui Do, indigenous salinity resistant rice variety**

CBA/VN/SPA/08/003 (Cam Tam, Thanh Hoa)

Cam Tam is a poor upland commune in Cam Thuy District of Thanh Hoa Province, with the poverty rate of 34.76%. 93% of the commune population is the Muong ethnic people. Agriculture is the key economic activity and 88% of the population depends on this for livelihoods and employment. Droughts and flash flood are the major threats to community life and production. The project aims to enhancing local adaptive capacity to reduce damage caused by droughts and flash flood.

The project has tested 3 adaptive measures, including (1) micro watershed management (building contour ditches and forest planting to minimize the impact of flash flood); (2) rain water harvesting technology; and (3) selecting the drought tolerant varieties for agricultural crops. The project results are as below.

Transferring rainwater harvesting technology: 20 participating households, 25 tanks built, containing 460m³ of water, meeting real needs of participating households in dry season. 2 rainwater technologies are applied, providing the choice for the local community in rainwater harvesting. The community in the project area has built 39 tanks from their own investment.



CBA/VN/SPA/08/003 (Cam Tam, Thanh Hoa)
Rainwater Harvesting – the new technology introduced
in the project area

- Micro watershed management: 3.714 km contour ditches are built. 8ha of acacia trees with density of 2000 trees/ha planted upstream. Thanks to this system, there was no flash flood in the area (especially in Vot Village and Lau Village of Cam Tam Commune) even though there was very heavy rain and flooding in 2011 which caused heavy damage to Thanh Hoa province. In the downstream area, 8 hectares of cultivated land which used to be in unstable rice production due to damage of flash flood become a very profitable cultivated land. The project has successfully tested the sugar cane in this area instead of rice which bring a much better income for the community (the sugar cane with yield

of 70 - 80 tons/ha, valued about 70 million VND/ ha (compared to 16 million VND/ha for rice before the project).

- Farming models: The project has tested 3 formulas so as to find out the suitable varieties for farmers coping with droughts and land degradation in a cultivated land of 26ha, in both irrigation and rain-fed areas. The results are that to identify the varieties for rice and other crops which have wide adaptability, high yield in both irrigation and rain-fed areas. Due to the prolonged droughts and unfavorable weather conditions during the project implementation, some tests completely failed and therefore, the result on this activity is rather limited. The prolonged

drought and very high temperature in 2010 was the main cause of the failure of the project rice model. The drought in 2011 also affected the productivity of peanut and sweet potatoes in the project area. The heavy rain and the storm numbered 2, 3 and 4 in 2011, especially in storm numbered 2 on 24 Jun 2011 caused flooding and landslides. As a result, some small part of the contour ditches (34m) was eroded and a small area of sugar cane was also affected by the landslides.

Community adaptive capacity in the project area is significantly enhanced that is very strategic for effective application of adaptive measures. Community also has a better understanding and knowledge on CC issues, especially the real impact in their localities and the adaptive measures. Equipped with the technical adaptive measures, the participating farmers are now proactively coping with the flash flood and droughts.

The effective adaptive measures described above are documented in the project technical materials which will be reviewed by a technical board before providing to the local authority for wide dissemination.



CBA/VN/SPA/08/003 (Cam Tam, Thanh Hoa)
Contour ditches

Viet Nam (V- garden, A – pond (fish), C - cage (pigs, animals), R – forest). Therefore, the rainwater harvesting and the contour ditches are very potential to be replicated in the project area as well as other upland areas in the province.

In order for a successful replication and upscaling, it is very strategic in terms of mainstream and replicate the project results in the local programme through a local policy which support the replication of the project adaptation measures. Therefore, the project will recommend the relevant policy issues to the local authority after documentation of these adaptive techniques and lessons learned.

The project has conducted surveys and workshops to develop a replication plan. Results show that flash flood and droughts are the key concerns in most upland communes. With the lessons learned in testing the project adaptation measures, testing the new technology in building the water tank provides lessons learned for designing a suitable type of water tank in the flooding areas. The contour ditches is also applicable in micro watershed, between farming households in upland areas, and effective in reducing damage of flash flood. A contour ditch applied in the model VACR will enhance the adaptive capacity in upland farming (note: VACR is very successful household farming model in

Results of the project final evaluation show that even though there is limited result with the agriculture models, the project has achieved most of the key objectives and expected results stated in the project document. The results of the project show that the project adaptation measures to flash flood and droughts are appropriate and effective, and therefore accepted by the local authority and community. The project adaptation measures are very suitable for Cam Tam commune in particular and the upland communes in general. Especially, in the context of unfavorable weather conditions during the project implementation, the project results have confirmed the effectiveness of the project adaptive measures to address CC impact in an upland commune.

CBA/VN/SPA/09/004 (Huong Phong)

Huong Phong is a poor commune located in Tam Giang Cau Hai lagoon in Thua Thien Hue Province, the biggest coastal lagoon in Viet Nam. The poverty rate of the commune is 21.6%. Two-thirds of the commune's boundary is surrounded by the Huong River and the Tam Giang lagoon. Therefore, it is very prone to natural disasters, including storms, flooding, droughts and salinisation. Agriculture (rice and other crops) and aquaculture are key sustainable livelihoods for community.

The project aims to strengthen the local adaptive capacity of Huong Phong by promoting the integrated management of natural resources, including the mangroves, agrobiodiversity (indigenous salinity tolerant rice varieties *chien den* and *chien trang*), water and land resources. The project has achieved the following specific results:

- Developing a map of natural resources and plans for the commune, adopting integrated management of natural resources, taking into consideration the impact of climate change on ecosystems and sustainable socio-economic development of the commune. This provides a key management tool to the commune and is substantively used by the commune.
- Traditional knowledge in disaster prevention is documented, as a basis for the design and application of adaptation measures.



CBA/VN/SPA/09/004 (Huong Phong)
Planting mangroves in aquaculture pond

- The 5ha mangrove forest of Ru Cha, the only existing mangrove in the Tam Giang Cau Hai lagoon, is better protected with the strong participation of the community. A mangrove nursery with an area of 200m² is built and managed by the community. 10,000 mangrove trees are planted in aquaculture ponds and along the banks for anti-erosion. The project has tested four (4) varieties of mangrove plants. Although testing results are limited with low survival rate, the project has provided many practical lessons learned which are essential for the rehabilitation of mangroves and the strategy for the protection and sustainable management of ecosystems in Tam Giang Cau Hai lagoon. The most remarkable results of mangrove-related activities is to raise awareness and understanding of the local people and mobilize them to actively plant mangrove trees. The district authority has a plan to rehabilitate mangrove forests with an area of 70ha in the region.

- Successfully testing of the adaptation model in rice-fish model with two (2) indigenous salinity tolerant rice varieties *chien den* and *chien trang*, mixed aquaculture of fish and shrimp,

and capacity building activities for local people on community eco-tourism for livelihood and income diversification. Specific results of the models are as follows:

- Rice-fish model: tested in an area of 4 ha, 7 households, profits increased by 4.574 million VND/ha (compared to mono-cultivation of rice before the project).
- Two (2) indigenous salinity tolerant rice varieties *chien den* and *chien trang* was purified for improving rice quality and productivity, contributing to the conservation of these 2 varieties for adapting to the increased salinisation in the project area. The model was tested in an area of 16ha in 4 crops (4ha/crop), seed volume selected after two years of implementation was 835kg of *chien den* and 773 kg of *chien trang*. Yield, productivity, average profit in the project model increased by 18% compared to those before the project. Thanks to the success, the People's Committee of Huong Tra District has mainstreamed this model in their agricultural extension programs and invested 30 million VND to continue the activity.
- Mixed aquaculture model (shrimp and fish): tested in an area of 4ha, 8 participating households, the average profit of 40 million - 50 million/ha. Due to the risks of shrimp monoculture in recent years with diseases and additional CC impacts, 100% of the participating households are committed to continue this model after the project ends. Local authorities have also planned for replicating this model in their localities.



**CBA/VN/SPA/09/004 (Huong Phong)
Mixed aquaculture, rice-fish cultivation.**

The project has successfully experimented the effective adaptive farming technique, including:

- Developing a nursery and making mangrove seedlings and planting mangrove in community aquaculture ponds and along the banks;
- Purifying indigenous salinity resistant rice varieties of *chien den* and *chien trang*.
- Techniques in rice-fish cultivation and mixed aquaculture.

Capacity for community ecotourism is strengthened thanks to the project trainings. Local community is well aware of the protection of mangroves for addressing CC impacts as well as developing a new sustainable livelihoods option.

Community adaptive capacity in agriculture production and protection and sustainable use of mangroves in the project area is significantly enhanced that is very strategic for effective application of adaptive measures (Figure 3). Community also has a better understanding and knowledge on CC issues, especially the real impact in their localities and the adaptive measures. Equipped with the technical adaptive measures, the participating farmers are now proactively coping with the natural disasters and salinisation in rice cultivation and aquaculture.

The effective adaptive farming techniques in mangrove planting, rice cultivation and aquaculture described above are documented in the project technical materials which will be reviewed by a technical board before providing to the local authority for wide dissemination.

The project has conducted surveys and workshops to develop a replication plan. Results show that the project models are accepted by the community and potential for high sustainability and replication in the project commune. Natural disasters, salinisation and diversification of income due to the overexploitation of Tam Giang Cau Hai lagoon resources are the typical CC impact issues and therefore, it is very potential for project replication in the similar areas. Especially, the project provides with lessons learned in mobilizing community in mangrove rehabilitation in the lagoon which is very vital for the adaptation in enhancing resilience of the lagoon ecosystem.



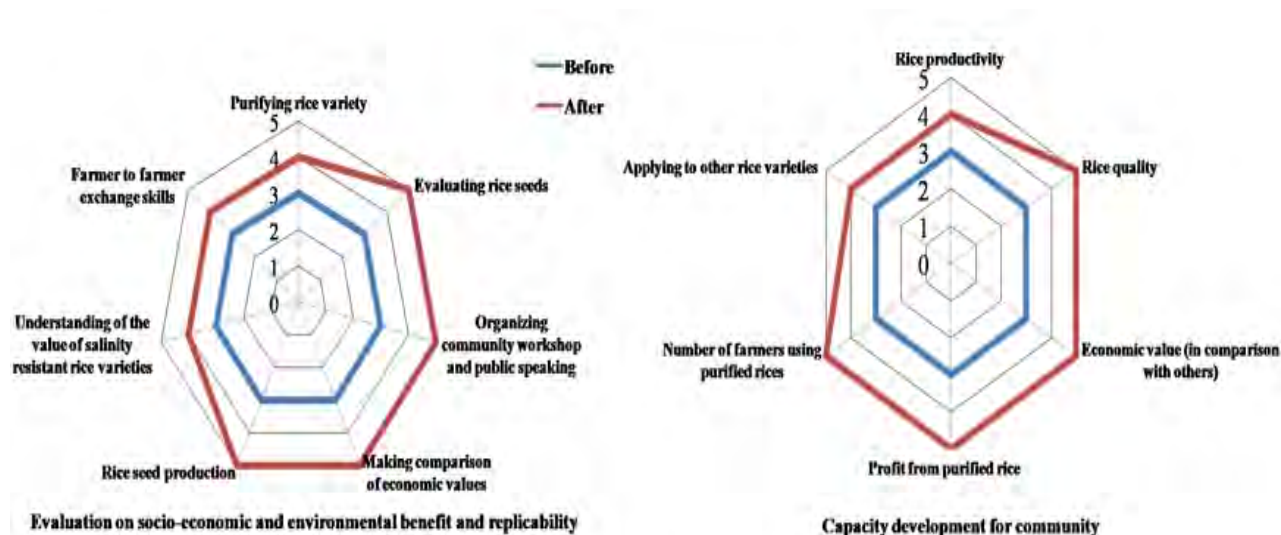
**CBA/VN/SPA/09/004 (Huong Phong)
Community dialogue**

In order for a successful replication and upscaling, it is very strategic in terms of mainstream and replicate the project results in the local programme through a local policy which support the

replication of the project adaptation measures. Therefore, the project will recommend the relevant policy issues to the local authority after documentation of these adaptive techniques and lessons learned.

Results of the project final evaluation show that the project has achieved all the objectives and expected results stated in the project document. The results of the project show that the project adaptation measures to natural disasters and salinisation in rice cultivation and aquaculture are appropriate and effective, and therefore accepted by the local authority and community. The project adaptation measures are very suitable for Huong Phong commune in particular and many other communes in the lagoon in general. The project has provided a successful adaptation model in the coastal lagoon ecosystem and contributes to the implementation of the provincial action plan to respond to climate change.

Figure 3: Project final evaluation – purifying salinity resistant rice varieties



CBA/VN/SPA/09/005 (Phuoc Hoa)

Phuoc Hoa Commune is one of the key rice growing areas in Binh Dinh Province. It is one of the poor communes with over 10% in terms of the rate of poverty (compared to the average of 5.7% of Tuy Phuoc district) with growing rice as the community key livelihoods and income (yearly income of 500,000VND per capita). Phuoc Hoa has about 300 hectares with 2 crops per year. But it is the most low-lying area in Binh Dinh. This area is located in Thi Nai lagoon, just from 0.5 to 1 m above sea level. Although there is a dyke in the region, the risk of flooding and saline water intrusion is very high, especially during high tides. With a predicted sea level rise of 30 cm according to climate change scenarios, Phuoc Hoa's rice growing area will be severely affected and become barren due to salinisation. Thus, adaptation to the immediate and long-term risk of flooding and salinization is the solution to maintain rice cultivation for sustainable livelihoods and food security.



CBA/VN/SPA/09/005 (Phuoc Hoa)
Testing flooding and salinity resistant rice varieties

The key project objective is to test flooding and salinity tolerant rice varieties. Two villages of Kim Dong and Tan Giang, the most low-lying areas of Phuoc Hoa, are chosen to carry out the project activities. The project has achieved the following specific results:

1. The community selected and tested five (5) rice varieties for their rice crops: AS996, 24SS, SH2 and DV108 and IR 64 Sub1, using IRRI-developed Participatory Varietal Selection method (PVS). The project adaptation measures were implemented in four crops with these 5 rice varieties in the two years of 2010 and 2011, with the results as follows.
2. Area: 40 ha (10 ha/crop), 77 participating households, rice farmer's income increase by 7.91 million VND/ ha compared to before the project thanks to the higher average farm productivity (640 kg/ha). This is highly appreciated by the rice farmers due to their very low income (500,000 VND/ household/month). The project area suffered a very unusual and unfavorable weather conditions during the project implementation. While rice in non-participating areas was heavily damaged in 2011 due to the bad weather, there was very good results from the project area with good productivity and good income for rice farmers in the project area
3. Three (3) rice varieties are proven as highly resistant to flooding and salinisation. SH 2 and DV 108 rice varieties are proven to be adaptive in the current flooding and salinisation and

IR 64 Sub 1 for long term impact when flooding and salinisation is getting more serious based on the climatic scenarios.

4. Successful experimentation of effective adaptive farming techniques in rice production:
- Selecting and using appropriate flooding and salinity resistant rice varieties.
 - Integrated farming techniques: reasonable sowing density (reducing the number of sowing seed, reducing labor force) balanced fertilizing mechanism, applying IPM in pest management (reducing the number of spraying of pesticide (less than 2 - 4 times per crop), thereby reducing the cost for pesticides, less pesticide residues, accumulation of toxic chemicals in agricultural products affecting people's health.
 - Farming techniques to look after the field and rice after flooding and salinisation.

Community adaptive capacity in rice production in the project area is significantly enhanced that is very strategic for effective application of adaptive measures. Community also has a better understanding and knowledge on CC issues, especially the real impact in their localities and the adaptive measures. Equipped with the technical adaptive measures, the participating farmers are now proactively coping with the flooding and salinisation in rice cultivation.

The effective adaptive farming techniques in rice production described above are documented in the project technical materials which will be reviewed by a technical board before providing to the local authority for wide dissemination.



CBA/VN/SPA/09/005 (Phuoc Hoa)
Attracting media

Thanks to the success of the project models, the Agriculture Extension of Tuy Phuoc district has invested in replicating the project model in Phuoc Thuan commune, a neighboring commune of Phuoc Hoa, with an area of 50 hectares. Binh Dinh Department of Agriculture and Rural Development officially include SH2 as a key rice variety in the crop structure of the province. The project has stimulated the province in using PVS for selecting adaptive varieties for rice and other crops.

The project has conducted surveys and workshops to develop a replication plan. Results show that there are 8 other communes in the coastal lagoon of Thi Nai with an area of over 5,000ha which has similar conditions and CC issues (flooding and salinisation) and therefore very potential for replication and upscaling. In order for a successful replication and upscaling, it is very strategic in terms of mainstream and replicate the project results in the local programme through a local policy which support the replication of

the project adaptation measures. Therefore, the project will recommend the relevant policy issues to the local authority after documentation of these adaptive techniques and lessons learned.

The project has achieved all the objectives and expected results stated in the project document. The results of the project show that the project adaptation measures to flooding and salinisation in rice production are appropriate and effective, and therefore accepted by the local authority and community, reducing the threat of land degradation in rice growing areas caused by salinisation and sea level rise. The project adaptation measures are very suitable for Phuoc Hoa commune in particular and the low-lying areas in the lagoon in general. Especially, in the context of unfavorable weather conditions during the project implementation, the project results have confirmed the effectiveness of the project adaptive measures for sustainable rice cultivation and food security.

The project results have officially mainstreamed and replicated in the local programme. Therefore, it is very potential that the project will be sustainable and replicated/upscaled in the localities with similar conditions and CC issues. In conclusion, the project has provided a very successful model in rice production in the face of CC and significantly enhanced local adaptive capacity and resilience of the ecosystems and communities. The project has provided a successful adaptation model to the implementation of the provincial action plan to respond to climate change. Thanks to the successful implementation of this project, the project grantee has received a certificate of appreciation from Binh Dinh Provincial People's Committee.



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**UNDP GEF SGP VIETNAM
LOCAL, NATIONAL AND GLOBAL ENVIRONMENTAL BENEFITS**

COMMUNITY-BASED ADAPTATION

Testing flooding and salinity tolerant rice varieties to promote food security in the context of climate change

Rice - the only crop grown in the Phuoc Hoa Commune



Flooding in the rice field



Rice crop damaged by heavy rain



Replanting after heavy rain and flooding



Community training workshop



Female farmers testing the new rice varieties



Participatory Varietal Selection PVS – farmers selecting the rice varieties adapting to flooding and salinisation



Successful testing SH2 and DV 108, salinity and flooding tolerant rice varieties



Sharing and exchanging among farmers



The good Project results - Attracting media



COMMUNITY OWNERSHIP, PARTICIPATION AND BENEFIT

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CBA/VN/SPA/09/07 (Soc Trang)

Vinh Chau is an agricultural commune, located in Vinh Chau District, Soc Trang province in the Mekong delta. Khmer people accounts for 77% of the population in the commune, mostly poor and low-educated. Red onion is the traditional local commodity of Vinh Chau commune. It is also grown in many other areas in Vinh Chau District and other provinces in the Mekong delta, bringing the key income for the local communities and vital for local economic development. Rotation and intercropping of red onion with other crops, such as aromatic rice, radish, chilly ... in a red onion-based cultivation is the most common in red onion growing areas.

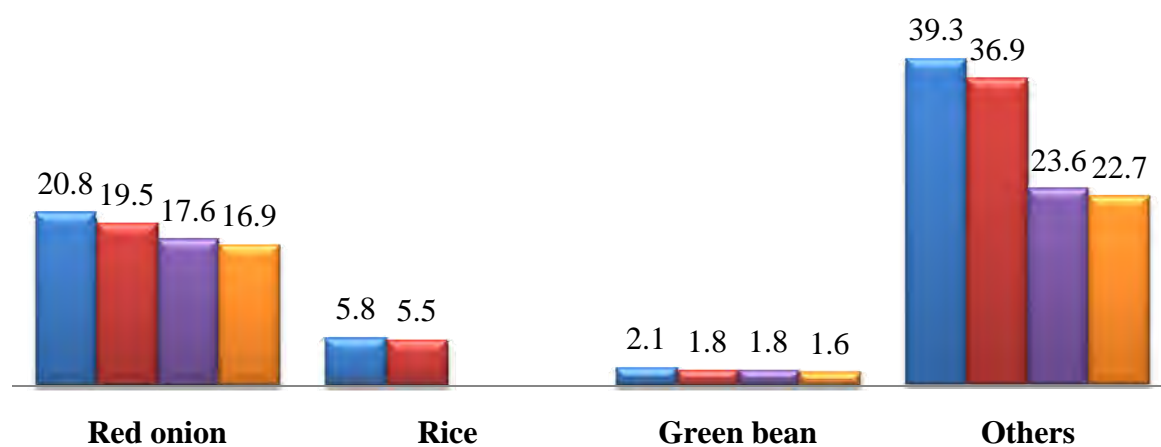
The key CC issues to be addressed in red onion cultivation are droughts and salinisation which are the typical CC impact in the Mekong delta.



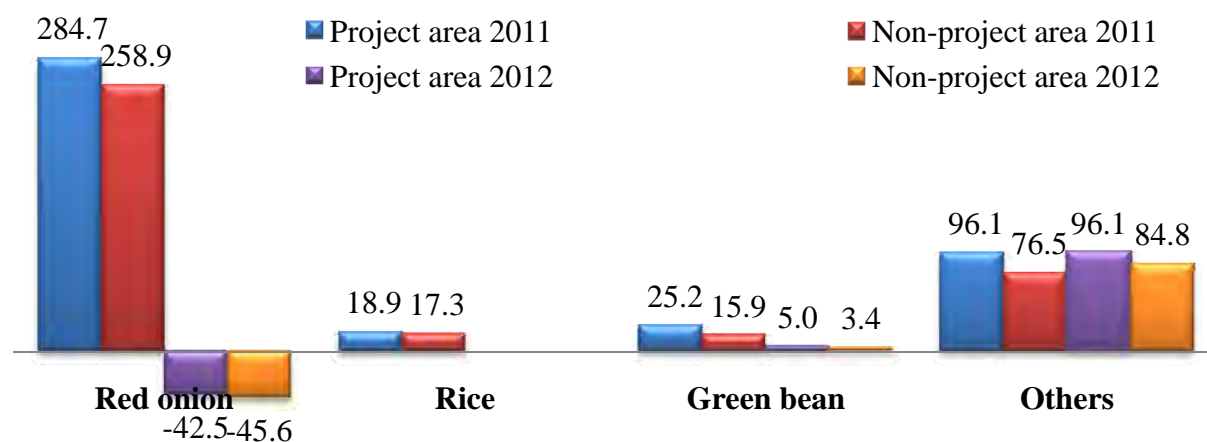
CBA/VN/SPA/09/07 (Soc Trang)
Red onion – local commodity

The project aims to test models for sustainable red onion-based cultivation by addressing the adverse impact of droughts and salinisation. The project is implemented in three villages of Ca Sang, Ca Lang A and Vinh Binh with 93 participating households in a total cultivated area of 165.5 hectares in 5 crops in 2010 and 2011. Figure 4 and Table 3 shows the results of the project models during the project implementation. Even though the project area suffered a very unfavorable weather during the project implementation, the results are very promising compared with non-participating areas in terms of productivity and profit in red onion cultivation. This has proven the effectiveness of the project adaptive measures successfully applied in the project areas. However, even though there is a good productivity in the project area in 2012, due to a significant drop in the price of red onion in 2012 due to the expansion of red onion growing in the Mekong delta provinces, the profit and community income is very heavily affected (Figure 5). Marketing is an issue to be addressed for sustainable red onion crops in the Mekong delta.

Figure 4: Profit and productivity of the project models



Productivity of red onion – based cultivation (tons/ha)



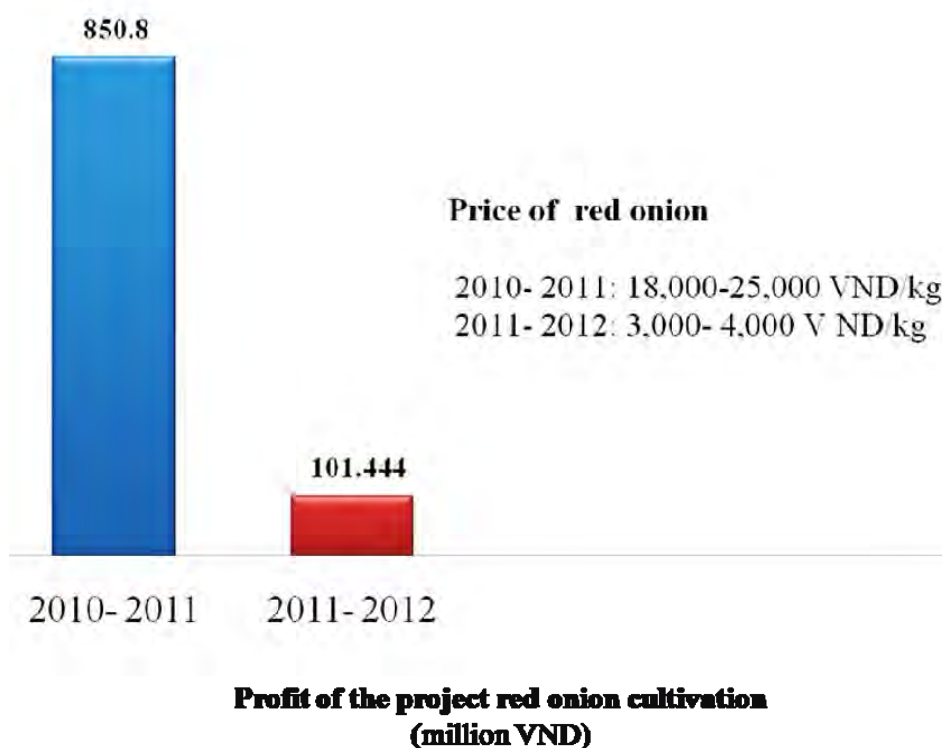
Profit of red onion – based cultivation (million VND/ha)

Table 3. Productivity and profit of the project red onion-based cultivation models

Crops	Productivity (tons/ha)				Profit (1,000 VND/ ha)						Profit of the model (million VND)	
	2011		2012		2011			2012			2011	2012
	Project area	Non-project area	Project area	Non-project area	Project area (1)	Non-project area (2)	(1)-(2)	Project area (3)	Non-project area (4)	(3)-(4)		
Red onion	20.83	19.53	17.575	16.896	284,677.00	258,973.00	25,704.00	(42,525.200)	(45,589.900)	3,065.000	850.80	101.444
Rice	5.75	5.53			18,880.90	17,335.50	1,545.00				51.14	
Green bean	2.09	1.79	1.764	1.630	25,150.00	15,862.00	9,288.00	4,976.900	3,392.400	1,584.500	246.13 (26,5 ha)	36,443.5*
Other crops (radish, pepper)	39.29	36.89	23.62	22.66	96,046.40	76,454.20	19,592.00	96,104.00	84,753.39	11,350.61	129.31 (6,6 ha)	375,705** (33,1 ha)
Total											1,277.38	477.149

** Including 67 households (out of 93 participating households) having green bean crops or inter-cropping with others (*) in spring-summer crop 2012. Therefore the value is not added in the total profit of 2012.

Figure 5.



Successful experimentation of effective adaptive farming techniques in red onion-based cultivation:

- Testing and selecting the crops with low water demand and short growing time as green beans to recommend as one of the key crop for the rotation model of red onion and other crops.
- Reducing water use for red onion cultivation with traditional methods by increasing the straw to cover crops. Together with using crops with low water demand like green bean, water savings in the project model is from 8.2% to 18.4% depending on the crop cultivation, reducing the cost for water (1.2 to 1.8 million VND/ha). This is a very good result of the project as overexploitation of underground water for red onion cultivation and the additional CC impact of droughts and salinisation in the project area are the biggest issues that need to be addressed for sustainable cultivation of red onion.
- Balanced fertilizing mechanism, using organic fertilizer and reducing chemical fertilizers (cost for fertilizer reduced from 433,000 to 889,000 VND/ha).
- Using drought and salinity tolerant rice varieties with short growing time (OM5451, OM6377, OM6976, OM5451, ...)
- Applying IPM in pest management (using biological pesticides; reducing pest density in onion (12.73% Beet armyworm and 14.87% stem borer); pesticide cost reduced 1.08 million /ha.

Community adaptive capacity in red onion-based cultivation in the project area is significantly enhanced that is very strategic for effective application of adaptive measures. Community also has a better understanding and knowledge on CC issues, especially the real impact of droughts and salinisation in their localities and the adaptive measures. Equipped with the technical adaptive measures, the participating farmers are now proactively coping with the droughts and salinisation in red onion-based cultivation.

The effective adaptive farming techniques in red onion-based cultivation described above are documented in the project technical materials which will be reviewed by a technical board before providing to the local authority for wide dissemination.



CBA/VN/SPA/09/07 (Soc Trang)
Water for red onion cultivation – a critical issue

Red onion is a key commodity of Vinh Chau district which has an area of more than 5,000ha. It is also grown in many other areas in the Mekong delta. Therefore, it is very potential for replication and upscaling. In order to promote replication, the project will conduct surveys and workshops to develop a replication plan. In order for a successful replication and upscaling, it is very strategic in terms of mainstreaming and replicating the project models in the local programme through a local policy which support the replication of the project adaptation



**CBA/VN/SPA/09/07 (Soc Trang)
Red onion-based cultivation**

of unfavorable weather conditions during the project implementation, the project results have confirmed the effectiveness of the project adaptive measures for red onion-based cultivation in the region. It is very crucial as red onion is the key commodity in the project area which is very vital to sustainable livelihoods of local communities, especially the poor Khmer people, as well as local economic development of the localities.

Thanks to the urgent need to address CC impacts on red onion-based cultivation and the promising results of the project, it is very potential that the project will be sustainable and replicated/up-scaled in the localities with similar conditions and CC issues. In conclusion, the project has provided a very successful model in red onion-based cultivation in the face of CC and significantly enhanced local adaptive capacity and resilience of the ecosystems and communities. The project has provided a successful adaptation model to the implementation of the provincial action plan to respond to climate change.

measures. Therefore, the project will recommend the relevant policy issues to the local authority after documentation of these adaptive techniques and lessons learned.

Even though the project has not completed the final evaluation, according to the project grantee and local stakeholders and CBA Viet Nam (NC/NSC), the project has achieved all the objectives and expected results stated in the project document. The results of the project show that the project adaptation measures in red onion-based cultivation are appropriate and effective, and therefore accepted by the local authority and community. In the context



THINK GLOBALLY - ACT LOCALLY

**UNDP GEF SGP VIETNAM
LOCAL, NATIONAL AND GLOBAL ENVIRONMENTAL BENEFITS**

COMMUNITY-BASED ADAPTATION

Addressing droughts and saline water intrusion for sustainable red onion cultivation in the context of climate change

Red onion, the key commodity



Red onion cultivation, key income for Khmer people



Red onion cultivation



Exploitation of undergroundwater



Red onion and reddish



Red onion and yam



Sustainable use of land and water resources by applying integrated cultivation of red onion and other crops

Red onion and chili



Testing salinity tolerant rice variety



Training for community



Vulnerability reduction assessment



Experience sharing in the field



COMMUNITY OWNERSHIP, PARTICIPATION AND BENEFIT

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CBA/VN/SPA/09/08 (Hoang Chau, Thanh Hoa)

Con Truong islet is a typical area with brackish aquaculture in Thanh Hoa province. It is located in Hoang Chau commune, Hoang Hoa district, and surrounded by the water of Ma River. With this specific location, Con Truong is very prone to natural disasters, such as flooding and typhoon. 137 households in Con Truong village rely on small fisheries and aquaculture for their livelihoods and income. In recent years, aquaculture in Con Truong is very much affected by diseases and unfavorable weather. Extreme weather events such as prolonged drought, very low or very high temperature and sub-chronic flooding are the key concerns as they have caused severe damage for aquaculture in the project area. In order to address these issues, the project has tested a number of adaptation measures in aquaculture. The results are as below.

Three (3) models in adaptive aquaculture were tested, with 25 participating households in a total area of 58.7 ha in 2011 and 2012, including the followings:

- Shifting aquaculture (shrimp) with shifting spawning and harvesting dates to avoid unusual cold weather and sub chronic flooding,
- Mixed aquaculture (shrimp with fish, crab, seaweed),
- Aquaculture with indigenous species (species which are resistant to unfavorable weather conditions).

The results in Figure 6 and Table 4 show that all project participating households achieved higher outputs compared to non-participating households in the project area. Especially, the model on aquaculture (shrimp) with shifting spawning and harvesting dates is the most successful one even though the weather was very unfavorable for the crops during the project implementation.

Successful experimentation of effective adaptive techniques in brackish water aquaculture with the project three (3) models. These techniques will be documented in the project technical material which will be reviewed by a technical board before providing to the local authority for wide dissemination.

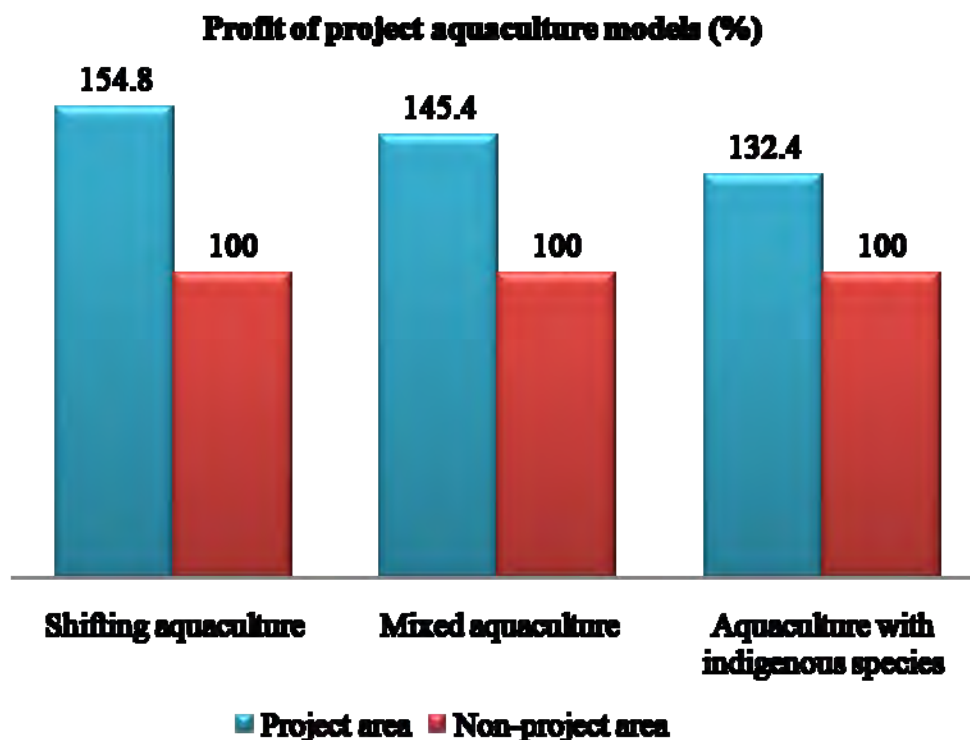


**CBA/VN/SPA/09/08 (Hoang Chau, Thanh Hoa)
Adaptive aquaculture**

Community adaptive capacity in aquaculture in the project area is significantly enhanced that is very strategic for effective application of adaptive measures. Community also has a better understanding and knowledge on CC issues, especially the real impact in their localities and the adaptive measures. Equipped with the technical adaptive measures, the participating farmers are

now proactively coping with the sub chronic flooding and unfavorable weather condition in aquaculture.

Figure 6: Results of project models



180 ha of mangrove forest is well-protected with the strong participation of community. The forest area is allocated to 60 households residing close to the mangrove for protection. Bee keeping in the mangrove is tested with the participation of 10 households. Even though the productivity of the bee did not meet the farmers' expectation (average of 0.7 liters/bee hive) due to the lack of experience in bee keeping, the community confirms that bee keeping can bring good income and contributes to mangrove protection in the project area.

A revolving loan programme is established and managed by the project participating community for the purpose of promoting sustainable aquaculture in the context of CC. The number of households benefiting from the loan programme is 18.

The project area suffered a very unfavorable weather during the project



**CBA/VN/SPA/09/08 (Hoang Chau, Thanh Hoa)
Planting mangroves**

implementation. Very strong wind, a prolonged cold days (20 days, low temperatures (below 10°C, even down to 5°C for 5 to 7 days) in 2011, droughts and very hot weather 3 - 4 times, lasting 3 to 7 days with a maximum temperature up to 40 - 42°C. However, the project has proven the effectiveness of the adaptive techniques in aquaculture as shown in Figure 3. All of the 3 project models have brought stable and better income for the participating farmers compared to non-participating farmers. In order to promote the replication of the project model, the project is focusing on the documentation of these techniques in its technical material. The project plans to conducted surveys and workshops to develop a replication plan.

Table 4: Profit and productivity of the project models

Model	# of households	Area (ha)	Productivity (tons/ha)		Value (million VND/ha)		Cost (million VND/ha)		Profit (million VND/ha)		Non-participating households (%)
			Project models	Average	Project models	Average	Project models	Average	Project models	Average	
Participating Households											
shifting aquaculture (2011)	5	15	41,485	2,77	1789,015	119,27	1173,0	78,20	616,05	41,07	154,8
shifting aquaculture (2012)	7	15,5	3,69	654,6	1388,7	39,59	864,9	55,8	523,8	33,79	145,46
mixed aquaculture	6	19,4	52,93	2,73	1998,46	103,01	1249,94	64,43	748,52	38,56	145,4
aquaculture with indigenous species	7	8,8	23,32	2,65	888,18	100,93	579,04	65,8	309,14	35,13	132,4
Total (1)	25	58,7	121,425	662,75	6064,355	362,80	3866,88	264,23	2197,15	148,55	144,52
Non participating households	119	256,8	695,92	2,71	22059,12	85,90	15192,3	59,16	6830,7	26,74	100

Even though the project has not completed the final evaluation, according to the project grantee and local stakeholders and CBA Viet Nam (NC/NSC), the project has achieved all the objectives and expected results stated in the project document. The results of the project show that the project adaptation measures in brackish water aquaculture in Con Truong are appropriate and effective, and therefore accepted by the local authority and community. In the context of unfavorable weather conditions during the project implementation, the project results have confirmed the effectiveness of the project adaptive measures for aquaculture in the region.

Thanks to the urgent need to address CC impacts on aquaculture and the promising results of the project, it is very potential that the project will be sustainable and replicated/upscaled in the localities with similar conditions and CC issues. In conclusion, the project has provided a very successful model in brackish water aquaculture in the face of CC and significantly enhanced local adaptive capacity and resilience of the ecosystems and communities. The project has provided a successful adaptation model to the implementation of the provincial action plan to respond to climate change. Thanks to the successful implementation of this project, the project grantee has received a certificate of appreciation from Thanh Hoa's Provincial People's Committee.

SUSTAINABLE BRACKISH WATER AQUACULTURE IN THE CONTEXT OF CLIMATE CHANGE
CON TRUONG, HOANG CHAU COMMUNE, HOANG HOA DISTRICT, THANH HOA

Adaptation measures include:

1. Community mangrove protection, bee keeping
2. Shifting spawning and harvesting dates to avoid sub chronic flooding and extreme weather
3. Mixed aquaculture of shrimp, fish, crab and seaweed
4. Using indigenous species resistant to unfavorable weather

LOCAL, NATIONAL AND GLOBAL ENVIRONMENTAL BENEFITS
COMMUNITY BASED ADAPTATION
THINK GLOBALLY - ACT LOCALLY

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CBA/VN/SPA/08/002 (Ha Tinh)

Ky Nam is one of the poorest communes in Ky Anh district, Ha Tinh province, with people's yearly income of about 3 million VND per capita (about 150USD). It is located in a narrow valley with high slope, three sides surrounded by mountains and by the coast on the East, thus forming a specific micro climate and prone to extreme weather (droughts, heavy rain, floods and salt water intrusion ...). Even though there are unfavorable conditions for agriculture production (poor soil and lack of water) and a very harsh weather, key community livelihoods rely on rice cultivation and crops in home gardens, and exploitation of mangrove resources.

The project aims to test adaptive measures in farming, addressing salinisation and droughts and identifying suitable adaptive crops, targeting local drought tolerant varieties, in rice growing area and home gardens to stable and increase community income. Rainwater harvesting technology is transferred to assist the community in coping with the lack of water for use in dry seasons due to droughts and salinisation. However, due to the failure in the project farming models, the project was revised with a forestry component, targeting the mangrove protection and planting in Minh Duc village and preventing forest degradation in Minh Hue village.

The project has achieved the following results.

- 15 water tanks are built for 5 groups of households (3-4 households/group) in Minh Hue village, meeting community critical water needs in the dry season, reducing the labor force and cost in getting/buying water.

- 27.2 ha of mangrove forest is allocated to local community for protection in Minh Duc village by the commune authority. A five-member team is established by the community for mangrove protection with incentives from a loan programme. 5ha of mangroves is planted by the community. This is a very promising result of the project as it is the first effort and trial in Ha Tinh province in



CBA/VN/SPA/08/002 (Ha Tinh)
Planting mangroves

terms of forest allocation to village community for protection. The local government is strongly supportive to the project initiative as it is very challenging for the government in forest protection due to limited funding and human sources while deforestation is a very serious issue in the region. In order to prevent forest degradation, the project replaced eucalyptus with the indigenous forest plant of *Melia azedarachon* in 10 hectares in Minh Hue village.

Adaptation measures are applied in 10ha of rice growing area and home gardens, using local drought tolerant varieties, such as green bean (DX 208), peanut (L14) and custard apples. The successful experimentation of these local varieties encourages the local farmers to continue in the following crops.



**CBA/VN/SPA/08/002 (Ha Tinh)
Community forest protection team**

However, the project does not meet the key objective of agrobiodiversity conservation for addressing droughts and salinisation for sustainable livelihoods. The key cause of this failure is that there is a mistake in project design with a lack of a thorough PRA to identify community real expectations and needs as well as feasible solutions. The project also faces with difficulties in recruiting technical experts to provide technical assistance to the implementation of project activities and therefore, the project has not had good technical assistance support during the project implementation. Lack of understanding and experience with CBA project and limited experience in project management of the project grantee is also a key cause of the project failure. In addition, one of the biggest challenges of the project is the low education of the people. Due to the practice of benefiting from many Government subsidy programmes, the local community is very hesitant to test new ways and not hard working and committed to the project. The local community in the project area is also very much affected by the community resettlement plan for a development of an industry area in the district. This is one of the key reasons for the failure of the project models. During the project implementation, the prolonged droughts with very high temperature (42 degrees C) in 2010 and 2011 were also the key cause of the project failure in the project farming models.

Due to the difficulties facing in the project implementation, the project has to be extended until Dec 2012. The failure of the project has provided lessons learned in CBA project design (community expectations and feasible solutions in CBA projects need to be designed through a thorough PRA during the project design) and the selection of the project area for CBA projects. Even though Ky Nam is a suitable area for a CBA project as there are critical needs to address CC impact which is very visible, in the context of a very poor and limited community, it is very challenging to try adaptation measures which require big efforts and commitment so as to achieve a success.

CO-FINANCING AND PARTNERSHIP

CBA Viet Nam adopts the following strategy for resource mobilization, sustainability and replication/up-scaling.

- Working in partnerships with local government and relevant agencies.
- Mainstreaming CBA projects in local programmes.
- Giving demonstration projects to pilot cost effective adaptation strategies which are suitable to local context and potential for replication/up-scaling and provide insights for policy influence.
- Targeting sustainable livelihoods and poverty reduction as one of the key objectives in CBA projects.
- Selecting and addressing local priority issues identified in local programmes on CC and sustainable development in CBA projects.
- The key purpose of co-financing is to promote the accountability and sustainability of CBA projects.
- Giving priority to project communications and advocacy for resource mobilization and replication/upscaling.
- Strengthening capacity of CBA project grantees in project management, especially on financial management and communications, so as to convince local authorities in resource mobilization.
- Contribution (in kind) is a criteria in CBA project approval.
- Enhancing awareness of local stakeholders on CC adaptation, including the criteria for CBA project approval, i.e CBA programme only funding for additional impact of CC, not for baseline activities.

All CBA projects have co-financing, in cash and/or in kind with the total amount of co-financing of 308,017USD (Figure 1). The ratio of CBA and co-financing is 1:0.8 (Table 2). Co-financing comes from local stakeholder, including local government and communities and grantees. The purpose of co-financing is to promote the accountability and sustainability of CBA projects. Lessons learned show that co-financing has also enhanced participation and involvement of local stakeholders which has promoted the chance for project success and sustainability. As all CBA projects address adverse CC impacts for sustainable livelihoods, they are very successful in achieving co-financing from participating households/farmers. In some projects, such as CBA/VN/SPA/08/001 (Bac Lieu), CBA/VN/SPA/09/07 (Soc Trang), and CBA/VN/SPA/09/08 (Hoang Hoa, Thanh Hoa) community contribution is substantial,



**CBA/VN/SPA/08/003 (Cam Tam, Thanh Hoa)
Bee keeping in Mangroves**

accounting for 60-80% of the project model building cost. In the case of CBA/VN/SPA/08/001 (Bac Lieu) and CBA/VN/SPA/09/005 (Phuoc Hoa), due to the disasters affecting the project models, the project grantees have successfully mobilized funding from the local authorities in providing more support to the participating farmers.

Table 5. Co-financing of CBA Viet Nam projects

Project number	Co-financing amount (cash) (USD)	Co-financing amount (in kind) (USD)	Total co-financing (USD)
CBA/VN/SPA/08/001 (Bac Lieu)	6,000	42,000	48,000
CBA/VN/SPA/08/002 (Ha Tinh)	2,468	25,000	27,468
CBA/VN/SPA/08/003 (Cam Tam, Thanh Hoa)	2,468	35,000	37,468
CBA/VN/SPA/09/004 (Huong Phong)	8,000	29,803	37,803
CBA/VN/SPA/09/005 (Phuoc Hoa)	15,000	35,285	50,285
CBA/VN/SPA/09/07 (Soc Trang)	3,200	29,193	32,393
CBA/VN/SPA/09/08 (Hoang Hoa, Thanh Hoa)	2,500	72,099	74,599
Total	39,636	268,380	308,016

CBA/VN/SPA/09/005 (Phuoc Hoa) has the highest contribution in cash from the local government of Binh Dinh Province. Due to the unfavorable weather during the project implementation, the CBA/VN/SPA/09/005 (Phuoc Hoa) project provided more financial support to the participating households from this local contribution funding, contributing to the CBA project success. The project is also successful in mobilising more funding contribution from Tuy Phuoc district to replicate the project model in a neighboring commune of Phuoc Thuan after successfully testing the first crop. CBA/VN/SPA/09/004 (Huong Phong) is similar in terms of mobilising more funding contribution from Huong Tra district to continue another crop for the project model (purification of indigenous rice varieties) after successfully testing the first crop. In CBA/VN/SPA/08/003 (Cam Tam, Thanh Hoa) project, the community has invested their own funding to build 39 water tanks after the project rain water harvesting technology was successfully introduced in the project area.

However, most projects were facing with difficulties in mobilising local funding (in cash) from local governments. This has affected the project results to some extent. For example, some projects, such as the CBA/VN/SPA/08/003 (Cam Tam, Thanh Hoa) and CBA/VN/SPA/09/08 (Hoang Hoa, Thanh Hoa), have some limited results due to the lack of funding contribution from local authorities. Expansion of mangrove area in CBA/VN/SPA/09/08 (Hoang Hoa, Thanh Hoa) project is not conducted. A dam to reduce impact of flash flood in CBA/VN/SPA/08/003 (Cam

Tam, Thanh Hoa) is not built. Even though most of the project models are successful, the projects are not able to seek more funding to replicate or expand the project areas.



**CBA/VN/SPA/08/003 (Cam Tam, Thanh Hoa)
Project final evaluation – interviewing farmers.**

Working in partnership with local stakeholders, including local government and relevant agencies, academic institutions, local grantees and communities, is one of the priorities and strategies in CBA implementation for programme and project success, sustainability and replication/up-scaling. Like SGP projects, CBA adopts a multi-stakeholder approach. Community is the key player in the project model building, testing adaptation measures with the project technical assistance. They are committed to the project implementation as the projects aim to address the key CC impact issues of their concern. Similar to community projects in general and SGP projects in

particular, voluntary contribution from the project community and grantees are substantial and critical for the project success and sustainability. This voluntary contribution is the result of a trusted working partnership between the project and CBA Viet Nam through the transparent and cost effective procedure applied in the project management for the ultimate purpose of community benefit.

Local government and relevant agencies are the CBA strategic partners for project implementation as well as policy influence. Results from CBA project final evaluation show that CBA projects help to strengthen working relationship of CBA Viet Nam and project grantees with local authorities which promote project sustainability and replication. In CBA projects, due to the lack of information and data on CC issues and impact, working in partnership with academic institutions and making use of results of researches/studies on CC is very useful. CBA/VN/SPA/09/005 (Phuoc Hoa) tests the rice varieties which were researched and recommended by an IRRI-funded project, managed by the ASISOV, the research institute on agriculture in the Central Coast. CBA/VN/SPA/09/07 (Soc Trang) and CBA/VN/SPA/08/001 (Bac Lieu) also involve the technical experts from Cuu Long Rice Institute which has implemented many research studies on salinity and drought tolerant rice varieties. Most of CBA projects invite CC experts for awareness raising activities. However, lessons learned show that it is very necessary to have CC expertise in many project activities because all project grantees lack an adequate understanding on CC issues.

At the programme level, CBA Viet Nam has not been successful in resource mobilization. It is very challenging in the context of Viet Nam because Viet Nam is a middle income country. Therefore, it is getting very difficult in mobilizing funding from international donors. Most of the national government-funded programmes on CC is for research and studies, development of CC scenarios and action plans to respond to CC. Therefore, it is not suitable for CBA projects and activities. Many international NGOs have CBA programmes. However, CBA Viet Nam works in partnership with them for sharing CBA lessons learned and replication and upscaling of CBA Viet Nam project results.



CBA/VN/SPA/09/004 (Huong Phong)
Mangrove Nursery – community voluntary contribution in making seedlings

MAINSTREAMING, TRANSITIONING/PHASING IN, UPSCALING AND REPLICATION

As described in the section on co-financing, CBA Viet Nam adopts the same strategy for mainstreaming, upscaling and replication. CBA Viet Nam gives priority to demonstration projects, piloting cost effective adaptation measures which are potential for upscaling and replication. The project issues are selected based on the priority issues of CC impact identified in the national and local strategies and action plans to respond to CC. Working in partnership with local authorities in CBA projects is a key strategy for mainstreaming the project results into local programme for sustainability, upscaling and replication, and influencing on the local policy. Knowledge management in CBA projects, documentation and dissemination of adaptive measures successfully tested by the CBA projects, and lessons learned is given priority in the project activity of compiling project technical materials. Communications and advocacy on CBA project results promotes upscaling and replication of successful adaptation measures.



**CBA/VN/SPA/09/004 (Huong Phong)
Tam Giang Cau Hai, the biggest coastal lagoon in Viet Nam**

All CBA projects have mobilized the participation of local relevant agencies in their projects. Results of the final project evaluation show that most projects have strengthened working partnership with local authorities thanks to CBA project implementation. CBA/VN/SPA/09/005 (Phuoc Hoa) has successfully mainstreamed the project results into the provincial programmes. The rice variety (SH2) successfully tested by the project becomes a key rice variety in the provincial rice crop system. PVS is widely used for selecting adaptive rice varieties thanks to the success of the project in using PVS. Another success example is CBA/VN/SPA/09/004 (Huong Phong) in which purification of salinity tolerant indigenous rice varieties (*chien den* and *chien*

trang) are successful. The local authorities have provided funding for continuing this activity in their local programmes.



**VN/MAP-CBA/2010/03 (Cam Lộ)
Peanut, a local commodity**

Most projects have developed the technical materials which will be reviewed by a technical board, consisting of members coming from local relevant agencies and research institutions. The technical materials will be provided to the local authorities for wide dissemination and use in the local programmes, including the agricultural extension programmes and CC adaptation programmes.

CBA Viet Nam targets the priority issues of CC impact identified in the national and local strategies and action plans to respond to CC. CBA/VN/SPA/09/07 (Soc Trang) address the impact of salinisation and droughts to the cultivation of red onion, a key commodity in the project area as well as in the district with 5,000ha of red onion cultivation. The successful tested adaptation measures for red onion-based cultivation is significantly strategic for replication and up-scaling. Similarly, CBA/VN/SPA/08/001 (Bac Lieu) targets rice-shrimp cultivation which is the key agricultural ecosystem in the project area and in the Mekong delta. The adaptation models in CBA/VN/SPA/09/004 (Huong Phong) is very potential for wide replication in the coastal lagoon of Tam Giang Cau Hai, the biggest lagoons in Viet Nam which provides livelihoods to thousands of households depending on the lagoons resources for their livelihoods.

Coastal lagoon is the key ecosystem in the Central Coast with key CC impacts of salinisation and natural disasters as of in the project area of Huong Phong. Results of the CBA/VN/SPA/09/005 (Phuoc Hoa) shows that the project adaptation measures are replicable in the other 8 communes which face similar CC issues. CBA/VN/SPA/09/08 (Hoang Hoa, Thanh Hoa) is implemented in a typical area of brackish water aquaculture. Figure 3 shows that a big area with a big number of households involve in aquaculture in the project area. Therefore, it is believed that CBA/VN/SPA/09/08 (Hoang Hoa, Thanh Hoa) will provide a good model and lessons learned to assist local communities in the project area to adapt to CC in their aquaculture.



**CBA/ VN/SPA/08/001 (Bac Lieu)
Rice – Shrimp, the adaptive cultivation in Mekong delta**

Developing a replication plan is a key activity in all CBA projects. In these plans, the CBA projects identify the areas where CBA project adaptation measures can be replicated. The replication plans also detail the key activities and the funding sources, including local communities, government and GEF SGP/CBA. Local supportive policy for promotion of adaptation measures are suggested in the project replication plans. Lessons learned from CBA projects show that there is a real need for local supportive policy for promotion of implementation of adaptation measures. Therefore, communicating and advocacy the CBA project results and suggestions on relevant policy issues are among the key activities of all CBA projects. Successful projects, such as CBA/VN/SPA/09/005 (Phuoc Hoa), CBA/VN/SPA/09/07 (Soc Trang), have attracted local media in communicating their project results on the national and provincial TV and newspapers.

At the national level, CBA Viet Nam shares the information and lessons learned on CBA projects at the relevant national workshops and fora where the NC/NSC have had the chance to

participate and through the NC/NSC networks. Lessons learned on CBA projects are presented at a number of training workshops organized by the network on CC and local NGOs, VUSTA (the umbrella organization of local NGOs in Viet Nam) and Government workshops. CBA Viet Nam had the chance to share the CBA project results at regional/international workshops, such as SGP Asia NC workshop in China and UNEP SCS workshop in Thailand in 2011, EAS in Korea Jul 2012 (PEMSEA project), and CBA 6 in Hanoi in 2012. Two project sites under CBA/VN/SPA/09/004 (Huong Phong) and MAP CBA VN/MAP-CBA/2010/05 (Ha Long) were selected for project site visits during CBA 6. The international NGOs (Save the Children, Plan International) visited CBA/VN/SPA/09/004 (Huong Phong) and CBA/VN/SPA/09/005 (Phuoc Hoa) in their training programmes on CBA.

CBA Viet Nam will document all the CBA project results and lessons learned and share with the UNFCCC Secretariat in Viet Nam and MONRE/GEF Viet Nam, particularly the Office of the National Target Programme to respond to CC.

SGP Viet Nam is also a participating programme of AusAID-funded MAP CBA. CBA implementation provides very good lessons learned for MAP CBA implementation. CBA has attracted GEF SGP Viet Nam project partners to work on CC adaptation issues. CBA projects have similar thematic and geographic focus, and approaches as GEF SGP Viet Nam. In the context of Viet Nam where CC adaptation is high on the government agenda, there is

a real need to target both CC adaptation as well as mainstream CC adaptation. Therefore, mainstreaming CC adaptation in GEF SGP Viet Nam is a strategy for the coming years.



VN/SPA/09/005 (Phuoc Hoa)
SH2 rice variety, successfully tested in the project, becomes
a key rice variety of the province.

LESSONS LEARNED AND CHALLENGES

CBA implementation in Viet Nam has gained the following lessons learned.

1. The common definition of CC adaptation of local stakeholders is how to be proactive in developing readiness for coping with extreme weather events. Local stakeholders' expectations on CBA projects is the specific impacts of CC in their localities (What kind of CC impacts for their localities?) and the appropriate adaptation measures for their region (What are the appropriate and short term adaptation measures to promote sustainable livelihoods in the context of CC?).

2. CC adaptation is high on the government agenda of Viet Nam, at the national and local levels. CC is real and there is a critical need for adaptation/CBA. CC impact is visible in all the CBA project areas.

3. CC adaptation projects in Viet Nam have the basic characteristics: natural resource management, disaster risk reduction, community development, poverty reduction/sustainable livelihoods, in the face of climate change.

4. Local communities and people have already taken adaptive measures, but this has been passive and the measures adopted have been limited to those available with their indigenous knowledge, skills and resources.

5. Effective adaptation requires:

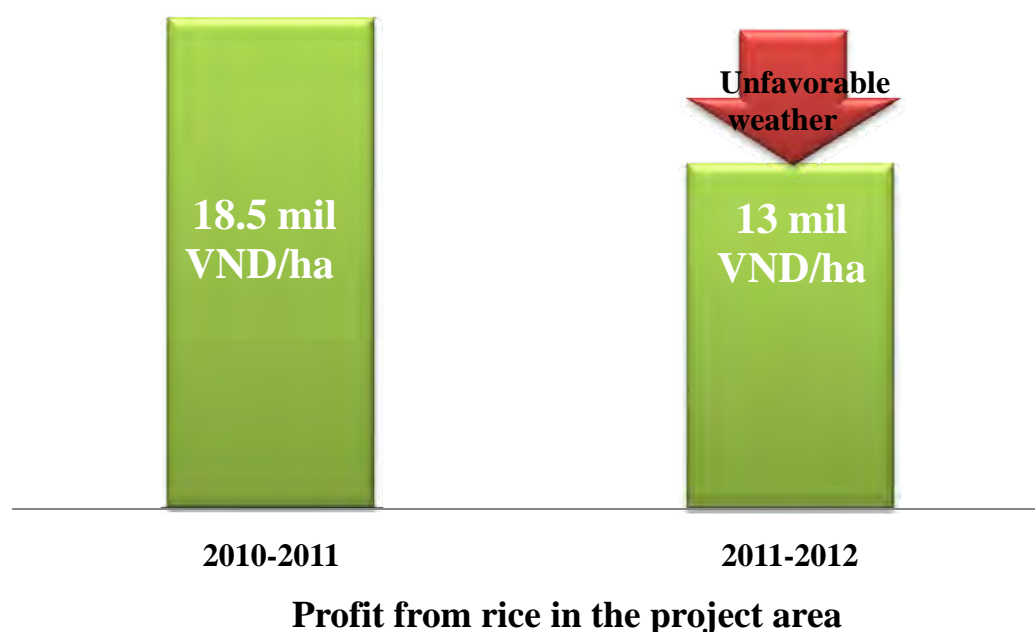
- Giving the development of capacity for local communities the highest priority.
- Address simultaneously:
 - the short-term impacts on livelihoods and the longer-term impacts on ecosystems and natural resources
 - the impacts of development (non climatic reasons) and of climate change (climatic reasons)
- Combining indigenous knowledge with advanced technologies in adaptation measures - to proactively responding to CC impacts in a flexible manner.
- The adoption of flexible adaptation measures.
- Appropriateness for the specific community – taking into account the local cultural, environment and natural resources.



**CBA/VN/SPA/08/002(Ky Nam)
Community Training Workshop**

6. Conservation and sustainable use of natural resources is an effective adaptation strategy as:
- Those poor communities facing environmental degradation and living in a prone disaster area are the most vulnerable to CC, heavily depending on natural resources for livelihoods.
 - CC adaptation measures need to be based on the use of more environmentally friendly technologies and methods, promoting conservation and sustainable use of biodiversity, water and land resources.
 - Diversification of income, promoting off farm-income generation to reduce the climatic risks in agriculture development and overexploitation of natural resources.
7. All CBA project areas suffered from unfavorable weather during the project implementation. The successfully tested project measures are confirmed to be better adaptive as there is an increase in the productivity and profit of the project models even though it is affected by the unfavorable weather. In the case of CBA Bac Lieu, there was a decrease by 5.5 mil VND/ha in rice production due to the negative impact of the droughts occurred in the project area (Figure 7). In the context of CC, there is a real need for the experimentation of the adaptation measures in a number of years/crops so as to confirm its adaptability to CC impact.

Figure 7. CBA Bac Lieu - Profit from rice affected by unfavorable weather in 2012



8. Hard measures (community infrastructure) are needed for effective adaptation. Building contour ditches in a micro watershed in the context of CBA/VN/SPA/08/003(Cam Tam) show that hard measures are needed and the limited funding of CBA project (Max 50,000USD) can afford such low investment infrastructure which contributes to addressing CC impact of flash flood.

9. Adaptation measures require investment and therefore, there is a need for local policy to support the application of adaptation measures. CBA projects need to address local relevant policy issues to promote the replication and upscaling of successfully tested adaptation measures.

10. CBA project management and M&E have similar characteristics and challenges as community development projects led by local NGOs/CBOs. Limited capacity in project management and M&E requires an intensive assistance from CBA programme. Together with this, a strong lack of understanding on CC issues is the biggest challenge of the project grantee in CBA project implementation. Therefore, capacity building on CC for local stakeholders, including local government, is very critical for the success of CBA implementation.

11. There is a critical need for CC technical expertise in CBA project implementation. Making full use of results of relevant researches/studies on CC and working in partnership with academic institutions is a good lesson learned gained from CBA/VN/SPA/09/005 (Phuoc Hoa), CBA/VN/SPA/09/07 (Soc Trang) and CBA/VN/SPA/08/001 (Bac Lieu).

12. Even though there are local/regional/national climate scenarios and action plans, a strong lack of CC data and info for designing and implementing adaptation measures in the project areas makes it difficult for CBA project implementation. A thorough PRA during project development is needed to address the lack of CC data and info. One of the steps in CBA project final evaluation is to verify the CC impact in the project area.

13. Vulnerability reduction assessment (VRA) is a challenge for CBA projects as there is a lack of facilitating skills and the requirement in participation for the whole 3 VRAs conducted during the project implementation. The project grantees find the H form very difficult to fill in with the information gathered from the VRA meetings. The community is very confused with the numerical data required in the VRA results.

14. There are challenges in communicating on CC issues to the local communities and people.

15. CBA project implementation benefits from the existing mechanism of GEF SGP and its lessons learned. CBA implementation in Viet Nam shows that it is very effective and efficient to use an existing mechanism to deliver funding on CBA. On the other hand, CBA provides a very good opportunity for GEF SGP Viet Nam to experience in a new area of CC adaptation which highly meets its stakeholders. In the context of Viet Nam, there is a real need to target both CC adaptation as well as mainstream CC adaptation. Therefore, mainstreaming CC adaptation is a strategy for GEF SGP Viet Nam in the coming years.



VN/MAP-CBA/2010/05
Adaptation for a floating village in Ha Long Bay.

16. SGP Viet Nam is also a participating programme of AusAID-funded MAP CBA. CBA implementation provides very good lessons learned for MAP CBA implementation. CBA has attracted GEF SGP Viet Nam project partners to work CC adaptation. CC impact is visible in all CBA project areas. In the project areas with harsh weather, such as CBA/VN/SPA/08/003(Cam Tam) and CBA/VN/SPA/08/002 (Ky Nam), there are clear signs of CC impact. All project areas suffered a very unfavorable weather conditions during the project implementation. This has confirmed the effectiveness of CBA adaptation measures successfully tested in CBA projects.

OTHER IMPORTANT REPORTING

1. **Relevance:** Viet Nam is one of the countries who is badly affected by climate change. The rural poor communities are groups who are the most vulnerable to CC impact. There is a strong need for testing adaptation measures so as to strengthen the community capacity in reducing negative CC impacts on ecosystems and community lives, resulting in poverty and hunger. CBA projects in Viet Nam address the CC impact issues identified in the national and local strategies and action plans to respond to CC (National Target Programme NTP 2008).

2. **Effectiveness**

The CBA projects have implemented most of their activities. Results from final evaluation of the majority of CBA projects (6 out of 7 projects) show that the CBA projects have identified appropriate adaptation measures and successfully tested them in the project areas.

3. **Efficiency**

The majority of CBA projects (6 out of 7 projects) are working smoothly. Results from the final evaluation of the 4 projects (CBA/VN/SPA/09/005 (Phuoc Hoa), CBA/VN/SPA/09/004 (Huong Phong), CBA/VN/SPA/08/003 (Cam Tam, Thanh Hoa) and CBA/VN/SPA/08/001 (Bac Lieu)) show that the projects are successful. CBA programme (NC/NSC) and the project local stakeholders of the 2 projects (CBA/VN/SPA/09/07 (Soc Trang) and CBA/VN/SPA/09/08 (Hoang Hoa, Thanh Hoa)) strongly believe that these 2 projects have highly met expectations of CBA Viet Nam and the local stakeholders. The CBA/VN/SPA/08/002 (Ha Tinh) project has not met the project objectives and outcomes. However, thanks to the project revision, the project is promising in terms of providing a community forestry model to the province of Ha Tinh as the trial of forest allocation to local community for protection is firstly tested by the CBA/VN/SPA/08/002 (Ha Tinh) Project and has achieved very positive results so far.

4. **Sustainability**

The projects are sustainable as they meet the real needs of the local authorities and communities in testing adaptation measures. The projects aim to reduce negative impact of CC on the community agro forestry activities which provide key income and livelihoods to the local communities. The projects also give priority to capacity building aiming to strengthen community adaptive capacity and therefore promote sustainability.

GEF SGP Viet Nam – CBA projects
List of twelve (12) community-based adaptation projects (CBA)

No	Project number and title	Grantee's name	Project location	Project characteristic	Project Status
SPA CBA projects					
1.	CBA/VN/SPA/08/001 (Bac Lieu) Contributing to climate change adaptation through conservation and development of salinised and drought tolerant rice varieties in Phuoc Long Commune, Bac Lieu Province.	The Farmers' Associations of Bac Lieu Province	Phuoc Long Commune, Phuoc Long District, Bac Lieu Province	Coastal, delta ecosystem – salinity intrusion. Rice – shrimp cultivation – typical agriculture in the Mekong delta Agro-biodiversity conservation (indigenous rice variety)	To be closed by October 2012.
2.	CBA/VN/SPA/08/002 (Ha Tinh) Reduce vulnerability and increase local adaptive capacity to address droughts and salt water intrusion at Ky Nam commune, Ky Anh district, Ha Tinh province	Union of Science and Technology Associations of Ha Tinh Province	Ky Nam Commune, Ky Anh District, Ha Tinh Province	Upland ecosystem, droughts, flash flood, land degradation, harsh weather Mangrove, rainwater harvesting, reforestation, drought tolerant varieties	To be closed by December 2012.
3.	CBA/VN/SPA/08/003 (Cam Tam, Thanh Hoa) Reduce vulnerability and increase local adaptive capacity to address natural disasters/extreme weather (flash flood and droughts) in Cam Tam Commune, Cam Thuy District, Thanh Hoa Province	Irrigation Associations of Thanh Hoa province	Cam Tam Commune, Cam Thuy District, Thanh Hoa Province	Upland ecosystem, droughts, flash flood, land degradation Small infrastructure development, rainwater harvesting, reforestation, drought tolerant varieties.	To be closed by October 2012.
4.	CBA/VN/SPA/09/004	Consultative	Huong	Coastal lagoon	To be

	(Huong Phong) Contributing to integrated management of natural resources to adapt to climate change at Huong Phong Commune, Huong Tra District, Thua Thien - Hue Province	and Research Center on Natural Resource Management (CORENAM)	Phong Commune, Huong Tra District, Thua Thien - Hue Province	ecosystem, salinity intrusion, storm, land degradation Mangrove, rice-fish cultivation, management plan of natural resources, community ecotourism.	closed by October 2012.
5.	CBA/VN/SPA/09/005 (Phuoc Hoa) Reducing the impact of flooding caused by sea level rise to promote sustainable agriculture production and ensuring food security	Union of Science and Technology Associations of Binh Dinh Province	Phuoc Hoa Commune, Tuy Phuoc District, Binh Dinh Province	Coastal lagoon ecosystem, salinity intrusion, flooding, land degradation Testing salinity and flooding tolerant rice varieties Sustainable land management	To be closed by October 2012.
6.	CBA/VN/SPA/09/07 (Soc Trang) Developing cultivation crops adapting to saline water intrusion and droughts in Vinh Chau, Soc Trang	Women Union of Vinh Chau District	Vinh Chau Commune, Vinh Chau District, Soc Trang Province	Coastal, delta ecosystem – salinity intrusion, droughts, land degradation, over exploitation of underground water, poverty of the Khmer people. Onion-based cultivation – typical agriculture in the Mekong delta, onion: key commodity/income Diversification of crops Sustainable water and land management.	To be closed by November 2012.
7.	CBA/VN/SPA/09/08 (Hoang Hoa, Thanh Hoa) Developing an adaptation model in aquaculture development in Con Truong, Hoang Chau	Fisheries Associations of Thanh Hoa Province	Hoang Chau Commune, Hoang Hoa District,	Coastal ecosystem, flooding, salinity intrusion, degradation of natural resources Sustainable	To be closed by November 2012.

	Commune, Hoang Hoa District, Thanh Hóa Province		Thanh Hóa Province	brackish water aquaculture, mangrove.	
MAP CBA projects					
8.	VN/MAP-CBA/2010/01 Strengthening local adaptive capacity of fisheries village: the case of Do Son, Hai Phong	The Hai Phong Associations for Environment Protection	Do Son, Hai Phong	Marine ecosystem, natural disaster, off shore fishing Traditional knowledge of local fishermen Diversification of income – community tourism.	To be closed by June 2013.
9.	VN/MAP-CBA/2010/02 Experimenting a model in peanut production to adapt to droughts and flooding in Binh Thuan commune, Tay Son district, Binh Dinh province	Plant Protection Associations of Binh Dinh Province	Binh Thuan commune, Tay Son district, Binh Dinh province	Upland ecosystem, droughts, flooding, land degradation Replacement of rice with peanut Sustainable water and land management.	To be closed by September 2013.
10.	VN/MAP-CBA/2010/03 Contribute to sustainable peanut production by addressing droughts in Quat Xa village, Cam Thanh commune, Cam Lo district, Quang Tri province	Union of Science and Technology Associations of Cam Lo district, Quang Tri province	Quat Xa village, Cam Thanh commune, Cam Lo district, Quang Tri province	Upland ecosystem, droughts, land degradation, peanut as key commodity/income Drought tolerant varieties, community-based water management, efficient watering techniques Sustainable water and land management.	To be closed by September 2013.
11.	VN/MAP-CBA/2010/04 Develop a community-based agricultural production model to effectively adapt to flooding in the low-lying areas of Ky Lo River, Xuan Quang 2 Commune,	The Farmers' Associations of Dong Xuan district	Ky Lo River, Xuan Quang 2 Commune, Dong Xuan District,	Low lying area, upland ecosystem – flooding, droughts, land degradation Diversification of crops, change crops Sustainable water	To be closed by September 2013.

	Dong Xuan District, Phu Yen Province		Phu Yen Province	and land management.	
12.	VN/MAP-CBA/2010/05 Developing a community model of CC adaptation in a floating village of Ha Long	Quang Ninh Fisheries Associations	Ha Long, Quang Ninh province	Marine ecosystem, natural disaster, marine pollution, community resettlement (floating village) Sustainable aquaculture Diversification of income – community tourism.	To be closed by June 2013.