

PROJECT Capacity Building on CC for Civil Society Organizations

# **PRACTICES IN RESPONDING**

# **TO CLIMATE CHANGE**

# EXPERIENCE OF NON-GOVERMENTAL ORGANIZATIONS IN VIETNAM



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On the behalf of the Project Management Board, we would like to express our sincere thanks to all the staff of organizations implementing solutions to respond to climate change, for their collaboration and support in the completion of this document, for providing information, responding to interviews and surveys and providing suggestions for the draft of this document.

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In spite of significant effort, the compilation of such a document will still have its shortcomings because climate change is a quite new and complicated issue in Vietnam. We are looking forward to receiving suggestions and ideas from specialists, experts, scientists and government management authorities to improve and complete this document.

Sincerely thanks On the behalf of the Project Management Board

# EXECUTIVE SUMMARY

The "Practices in Responding to climate change – Experience of NGOs in Vietnam" document is the result of the research, collection and documentation process of CC response models in Vietnam.

This document consists of not only the experiences of national NGOs but also includes corresponding information and practices from international NGOS in Vietnam, as well as the information sharing from experts, specialists, officers of government authorities, citizens, bilateral projects, enterprises and the community in order to get the overall, diversified and objective view of CC response practices.

Information was collected and analyzed are reports from different organizations, national and international online databases, observations and interview results from field trips to several selected locations as well as results of telephone and face-to-face interviews. In spite of the efforts of all involved, this document still has shortcomings due to time limitations.

The objective of preparing this research and documentation of CC response practices was to collect, analyze and introduce good practices adapting to and mitigating CC based on the experience of communities in Vietnam. This information will be widely shared to all the related partners through the publication of a booklet, online newsletter, brochure, and updates on the project website.

The principal beneficiaries of this document are policy-makers, national and international NGOs, people working in the field of sustainable development, and officers of government authorities, particularly in the field of CC adaptation and damage reduction. Moreover, this project will share the experiences with individuals, organizations, communication agencies who are working or interested in this field.

This document consists of two parts:

- Part 1: Climate Change in Vietnam and criteria for good practice selection
- Part 2: Good practices and experiences in responding to CC

In Part 2, for the reader's convenience, good practices are classified into four different groups:

- Natural resource management and livelihood development in responding to CC
- Disaster risks prevention and mitigation
- Climate change mitigation
- Building capacity and changing behaviors in responding to CC

# ABBREVIATIONS

CC	Climate Change
MB/MU	Management Board/ Management Unit
CCRD	Center for Community Health Research and Development
CCWG	Climate Change Working Group
CCFSC	The Central Committee for Flood and Storm Control
CSDM	Centre for Sustainable Development in Mountainous Areas
CRD	Co-operative for Rural Development
CBE	Community-Based Ecotourism
CIFFEN	Civil Society Inclusion in Food Security and Poverty Elimination
	Network
DMWG	Disaster Management Working Group
DRR	Disaster Risk Reduction
EcoEco	Ecological Economy Institute
EMS	Environment Management System
ERA	Ecosystem Risks Assessmen
GAP	Good Agriculture Practices
HACEF	Ha Tinh Center of Vocational Training and Support for Farmers
HVCA	Hazard, Vulnerability and Capacity Assessment
IPM	Integrated Pest Management
JANI	Joint Advocacy Network Initiative
MARD	Ministry of Agricultural and Rural Development
MCD	The Centre for Marine life Conservation and Community Development
NGO	Non-Governmental Organization
OHK	Oxfam Hong Kong
PPSD	Plant Protection Sub-Department
PVA	Participatory Vulnerability Assessment
PPD	Plant Protection Department
DRM	Disaster Risk Management
REDD	Reducing Emissions from Deforestation and Forest Degradation
SRI	System of Rice Intensification
SRD	The Center for Sustainable Rural Development
VAC	Garden – Pond – Pigsty model
VNGO&CC	Vietnamese Non-Governmental Organizations and Climate Change
WMO	World Meteorological Organization
WVI	World Vision International in Vietnam

# PART I: OVERVIEW OF THE CLIMATE CHANGE SITUATION IN VIETNAM AND CRITERIA FOR THE SELECTION OF GOOD PRACTICES

# 1.1. CLIMATE CHANGE STATUS AND ITS EFFECTS IN VIETNAM

Climate change is one of the major challenges facing humanity in the 21<sup>st</sup> century, gravely affecting lives, livelihoods and the environment worldwide. Temperature increase and sea level rise are leading to floods and water resource pollution, which impacts negatively on agriculture, and poses serious risks to industries and socio – economic systems in the future. Climate change has widespread impacts on the global development process and security in a range of sectors such as energy, water, food, society, employment, politic, diplomacy, culture and economy.

According to the Intergovernmental Panel on Climate Change (IPCC) report in 2007, the global average temperatures and sea levels have been increasing during last 100 years, especially in the last 25 years. In Vietnam the average temperature has increased approximately 0.5°C, and sea level has risen approximately 20cm over the last 50 years.

Vietnam has been ranked as one of the countries having the most serious impact of climate change, and the Mekong Delta is one of the three deltas in the world most vulnerable to the sea-level rise, along with the Nile delta (Egypt) and the Ganges delta (Bangladesh). According to The Ministry of Natural Resources and Environment climate change scenarios (2009) by the end of the 21<sup>st</sup> century the average temperature in Vietnam is expected to increase approximately 2.3 °C, total annual rainfall and rainy season's rainfall would increase while dry season's rainfall would decrease, and sea-level is expected to rise about 75cm to 1m compared to 1980-1999 sea levels. The scenario indicates that if the sea-level rises by 1m, 40% of the Mekong River delta, 11% of the Red River delta and 3% of the other coastal areas will be submerged. 20% of Ho Chi Minh City would also be submerged, and 10-12% of Vietnamese population would be directly affected, with a loss of approximately 10% of GDP. The impacts of climate change in Vietnam pose a serious threat to, and the attainment of, the millennium development goals as well as the country's overall sustainable development.

Although climate change has significant negatives impacts on socio-economic development, taking effective action to respond to climate change may give us opportunities to motivate change in development practices, consumption models, innovation in environment-friendly technology, enhance competitive capacity and lead to market development of energy technology, product consumption services with less

carbon, the transfer of technology and the development of climate change response international finance institutions.<sup>1</sup>

Vietnam has been actively participates in efforts to combat climate change at the very start of the international climate efforts. Although the issue of CC has been discussed by scientists for many years, it is only has only recently been widely recognized in Vietnam, and seen by many organizations and donors as a major concern, with the release of the National Target Program to Response to Climate Change (NTP-RCC) approved by the Prime Minister in 2008.

Along with the efforts in the macroscopic vision and focus in Governmental policy, NGOs have been carrying out supportive activities in responding to CC in local communities. The majority of the CC activities of NGOs have been related to communicating and enhancing awareness of CC issues and implementing good practices to enhance CC adaptation capacity within communities. These initiatives utilize participatory practices such as the engaging the participation of the community to empower the local people, and build the capacity of local people and local authorities.

NGOs have been implementing CC projects in a range of fields, such as:

- Enhance awareness of issues related to CC (causes, impacts and solutions in responding to CC);
- Renewable energy and using energy effectively;
- Forest protection and reforestation community-based projects;
- Solutions for waste treatment, reduction of environmental pollution and GHG emissions;
- Solutions for sustainable and environmentally-friendly cultivation;
- Support in establishing initiatives for disaster prevention and community based CC response;
- Natural resources conservation; biological diversity conservation and rehabilitation;
- Supporting small projects to strengthen the community's supervisory role;
- Mobilizing all levels of government to develop and implement policies for protecting the poor people and disadvantaged groups because of CC impacts;

The NGOs projects usually are concentrated in areas facing particular difficulties, and most vulnerable to CC impacts, and target beneficial groups such as poor people, ethnic minorities, disadvantaged groups and other vulnerable people. The main outputs of NGO project activities are the change in practices in responding to CC at the community level. These practices generally have common characteristics, such as

<sup>&</sup>lt;sup>1</sup> National Strategy on Climate Change - Draft version, [internet]

http://www.chinhphu.vn/pls/portal/docs/PAGE/VIETNAM\_GOVERNMENT\_PORTAL/NEWS\_REP/DUTHA OLUAT\_NGHIDINHCP/NAM2011/THANG5/DT%20CLQG%20BDKH.HTM, last accessed 30/08/2011

setting realistic targets, meeting community demand, and ensuring high levels of support from the local authority and community members.

Due the wide reaching impacts of CC in many aspects of life, society, economy and the natural environment, and the interdisciplinary approach required to combat climate change, the integration of climate change considerations is becoming common in all NGO projects.. There are two ways of integrating climate change concerns: (i) grouping the contents of CC response in all the NGOs programs, projects which running currently and active in the near future and; ii) integrating the support of CC response with the local socio-economic development plan.

With the objectives of supporting the government's efforts, relating policies and delivering convincing evidence for responding to CC, NGOs have been played a pioneering role in responding to CC at the community level in Vietnam.

# 1.2. GLOSSARY<sup>2</sup>

**Weather** is the state of atmospheric conditions at a particular place in terms of air temperature, pressure, humidity, wind speed, rain and cloudiness...

**Climate** is defined as the weather averaged over a period of time (typically, 30 years)<sup>3</sup>

**Climate variability** is the variation in the mean state of climate on all temporal and spatial scales beyond that of individual weather events. Examples of climate variability include extended droughts, floods and conditions that results from periodic El Nino and La Nina events.

**Climate change (CC)** is the change in the mean state of climate and/or in its variability persisting for an extended period, typically decades or longer. Climate change may be due to natural changes (internal processes or external forces) or to persistent anthropogenic changes in the composition of the atmosphere or in land use.

**Vulnerability** to the impact of climate changes is the degree to which a system (nature, society, and economy) is susceptible to, or unable to cope with adverse effects of climate change.

**Response** to climate change is the human activities aiming at climate change adaptation and mitigation.

**Climate change adaptation** is the adjustment in natural or human systems to a new or changing environment, aiming to reduce vulnerability to actual or anticipated climate variability and climate change, and utilize any beneficial opportunities.

<sup>&</sup>lt;sup>2</sup> The Ministry of Natural Resources and Environment, 2008, National Target Program on Climate Change Response (Developing the Resolution 60/2007/NQ-CP on 3 Dec 2007 of the Government)

<sup>&</sup>lt;sup>3</sup> World Meteorological Organization (WMO)

**Climate change mitigation** is the actions resulting in reductions to the degree or intensity of GHG emissions.

# 1.3. SELECTION CRITERIA OF GOOD PRACTICES

The development of criteria for the selection of NGO's good practices in responding to climate change is based on the assessment and review of climate change-related international and national experiences. The main criteria are as follows:

- The effectiveness of the practices in responding to climate change
- Participation of local community;
- Sustainability;
- Creativeness;
- Replicability

Each criterion is described in more detail below.

#### 1. The effectiveness of the practices in responding to climate change 485

#### Practices of climate change mitigation

- Showing clear energy saving results and other environmental benefits (reduction of GHG emissions and other pollutants)
- Use of renewable energy sources
- Use of innovative and/or advanced technologies to increase the effectiveness of production and reduce emissions.

#### Practices of climate change adaptation

 Showing clear contribution in reducing related climate impact risks of affected communities, and through that strengthening the adaptive capacity of communities when facing climate change impacts.

#### Other criteria

 Good practices indicated economic, social and other environmental benefits, such as, contribute to the improvement of people's life/livelihood, of local environment and/or other benefits; and the cost-effectiveness, job creation and other social benefits (measured by costs reduced for consumers and creating benefits for vulnerable groups, etc.)

<sup>&</sup>lt;sup>4</sup> 2009, Cornelius, Report on good measures in CCA in water management plans, [internet]

http://icm.eionet.europa.eu/ETC\_Reports/Good\_practice\_report\_final\_ETC.pdf, last accessed 15/07/2011. <sup>5</sup> 2001, Kete&Petkova, Assessing good practices in policies and measures to mitigate climate change in Central and Eastern Europe, *Workshop on Good Practices in Policies and Measures of the UNFCCC*, [internet] http://unfccc.int/files/meetings/workshops/other\_meetings/application/pdf/kete.pdf, last accessed 01/08/2011

- Consider the unpredictable nature of climate change and its impacts and/or applied precautionary principles in the design, implementation, monitoring and evaluation of activities.
- 2. The participation of local community. (Level of participation in each phase of the activity; the extent of empowerment and level of participation of vulnerable groups in the activities of good practices)
  - Good practices need to base on the demands, priorities, knowledge and abilities of the local community;
  - Using the approaches with the participation of community in order to raise their awareness and capacity in climate change and its impacts;
  - Have active participation of local community in all processes of the project, from design to the development, supervision and measurement, especially the vulnerable groups such as the poor people, children, women and the elders;
  - Have close co-ordination between local community, scientists/ experts and project officers, in which the local community plays a decisive role.
- 3. Sustainability<sup>6</sup>(socio-economic and environmental effectiveness)
  - Good practices should be concentrated in resolving the immediate demands of community, while maintaining a consideration of medium-term and long-term priorities.
  - Recognizing and thoroughly considering the causes of vulnerability in the community/ region;
  - Applying the solutions flexibly, not neccessary limited to climate change responding activities, in order to reduce the vulnerability of the community/ region;
  - Have solutions to harmonize any conflicts of interest (existing and potential) which may appear during the implementation process;
  - The solutions provided by the good practice meets actual demand of community, learning from local experience and conforming with the local social, cultural and economic values;
  - Good practice needs to show that it has identified and considered the influences that national and international climate change policies & trends may have on local climate change responses and vice versa.

### 4. Creativeness<sup>7</sup>

 Have an creative approach, especially the flexible and creativeness application of knowledge/ solutions during the implementation and the ability to produce concrete results;

 <sup>&</sup>lt;sup>6</sup> 2011, Eriksen et al,. When not all climate change response is a good one: Identifying principles for sustainable adaptation, [internet] <u>http://www.cakex.org/sites/default/files/sustainable.pdf</u>
<sup>7</sup> 1963, Roger. E. M, Diffusion of Innovation.

- Appropriately integrate local and scientific knowledge during the implementation processes;
- Indicate the outstanding points comparing to the previous local practices (if any).

### 5. Replicability<sup>8</sup>

- Good practice which is representative, accepted and supported by community, and show clear positive impacts on the community.
- Issues solved in the implementation of the good practice are typical for a number of regions and community groups.
- The conducted activities and developed guidelines within the scope of good practice's implementation are simple, easy to understand, easily accepted and applied in the community level, especially with technical activities and guidelines.
- Good practice not only meets with the demand of community in responding to climate change but is also consistent with the local, regional and national's policies, strategies and priorities; and be supported by the government.
- Have effective methods of collecting and sharing experiences/ knowledge related to climate change and responding to climate change.

<sup>&</sup>lt;sup>8</sup> 2008, Minh, D.Q, CBDRM in Vietnam – Selection criteria of good practice and the inventory of integrating 135 program with DRR.

# PART II: CASE STUDIES AND GOOD PRACTICES RESPONDING TO CLIMATE CHANGE

# 2.1. OVERVIEW OF NGO ACTIVITIES RESPONDING TO CLIMATE CHANGE VIETNAM

Through the past years, national and international NGOs have been standing together with the government and people in poverty-alleviation programs, in programs to ensure just and sustainable development, in the areas of environmental protection, biodiversity conservation, gender and health care. Particularly in recent years, many national and international NGOs are also increasingly prioritizing and actively participating in activities related to climate change in Vietnam. Through this, many adaptation and mitigation to climate change initiatives were developed, including achievements such as:

- Showcase models in responding to climate change at the community level such as the cultivation methods on sloping land and on sandy soil; activities to control erosion and sand fly; activities of the community-based forest management and growing mangrove forest for the protection of coastal community against natural disaster 's impacts;
- Trainings and communication activities on enhancing community capacity to response to climate change;
- Integrating the issues related to Natural Disaster Risk Management (NDRM) and adaptation to climate change into local socio-economic development plans;
- Enhancing capacity and encouraging the participation and feedbacks of organizations in Vietnam climate change policies.
- Promoting energy saving and the effective use of energy and natural resources.

NGOs are not only delivering climate change adaptation and mitigation models, or provided related training, education and raising awareness activities, but they are also connected together in a network for sharing, learning and advocacy activities related to climate change issues. The establishment of the Climate Change Working Group (CCWG) and the Vietnamese Non-Governmental Organizations and Climate Change Network (VNGO&CC)<sup>9</sup> in 2008 has been a good contribution in the co-ordination, connection, sharing and capacity enhancement of relating organizations in the movement of climate change responses. These networks are opportunities for active participation of international and national NGOs, central and local authorities, donors and community in sharing information, coordinating and supporting each other in climate change response activities.

Together with the activities such as workshops, thematic discussions in the meetings and international & national forums related to climate change, and the development &

<sup>&</sup>lt;sup>9</sup> 2008, Minh, D.Q, CBDRM in Vietnam – Selection criteria of good practice and the inventory of integrating 135 program with DRR.

implementation of the Climate Change Capacity Building project for organizations & communities, VNGO&CC has played an important role in coordinating and supplementing the efforts of Vietnamese Government in order to assist the poor people of Vietnam in responding to climate change<sup>10</sup>.

The CCWG has also been creating opportunities for the participation of NGOs, organizations, government, donors and enterprise. This has created an opportunity for coordination, dialogue and advocacy in relation to climate change response and participation in policy making processes nationally and sub-nationally through the frequently official and unofficial meetings with the representatives of relating Ministries and organizations (such as Ministry of Agriculture and Rural Development, Natural Disaster Risk Management Unit, the Central Committee for Flood and Storm Control (CCFSC)), as well as opportunities to attend regional and international forums.<sup>11</sup>

These two networks have cooperated in the development of the three years project (4/2009 - 12/2011), funded by the Embassy of Finland for raising awareness and building capacity on climate change for Civil Society Organizations (CSO), where Vietnamese NGOs were given priority, where achievements made to date have been recognized and encouraged<sup>12</sup>.

Beside the CCWG and the VNGO&CC, other organizations in Vietnam also have many practical activities supporting and integrating with climate change responses in different development programs, such as natural resources management, poverty reduction, natural disaster risk mitigation, and gender and health care issues. There are some remarkable networks such as the Vietnam River Network (VNR), Civil Society Inclusion in Food Security and Poverty Elimination Network (CIFPEN), Joint Advocacy Network Initiative (JANI), Disaster Management Working Group (DMWG).

Through the promotion of the development of good practices in responding to climate change at the community level, the participation of relating parties (especially enhancing the role and participation of community) and the efforts of connecting, sharing and engaging in joint advocacy between organizations with the central and local authorities, in the recent years, NGOs and networks' activities have encouraged achievements and practical effects in climate change response in Vietnam. However, there are still many challenges ahead and tasks needed to be done in responding to climate change.

<sup>&</sup>lt;sup>10</sup> Network introduction about VNGO-CC, [internet] <u>http://www.vngo-cc.vn/cat/24/1193/1194</u>, last access on 30/11/2011.

<sup>&</sup>lt;sup>11</sup> CCWG, 2009, Synthesized from Reports of CCWG

<sup>&</sup>lt;sup>12</sup> Read more of the project information in the practice of Building capacity for Civil Society Organization in Vietnam, page 80-85.

# 2.2. NATURAL RESOURCES MANAGEMENT AND LIVELIHOOD DEVELOPMENT IN RESPONDING TO CLIMATE CHANGE

# **General information**

According to the report of General Statistics Office, the production value of agriculture, forestry and fishery sector in 2010<sup>13</sup> accounted for 20.58% of GDP, making up 48.72% of total national labor force<sup>14</sup>. Based on small and household scale with traditional manual methods, the activities of this sector heavily depend on weather conditions. For this reason the agriculture, forestry and fishery sectors are highly vulnerable to climate change.

Recently, the changes in weather patterns have been extreme and unpredictable due to climate change, and more frequent and severe natural disasters have directly impacted on production activities, caused loss of human life, and economic damage. Agricultural production in Vietnam has suffered from droughts, extended heat waves, storms and floods in the Central region; frost, damaging cold in the North; the seasonal occurrence of storms devastating the agricultural production and destroy houses in the South-Central Coast and sea level rise and saline instruction on coastal areas leading to the reduction of farmland and living land areas. The changeable weather also creates good conditions for epidemics of infectious diseases of plants and animals. Meanwhile, both local authorities and farmers is still lack of information and knowledge about reasons, recognized modes, the prevention and response to these climate changes.

Over the past years NGOs have made a significant contribution to assisting poor people in livelihood security, reducing the vulnerability and enhancing the withstanding ability of community to the abnormal changes of weather, and the sustainability of the socio-economy and environment. There are a lot of good practices of models which assist people in ensuring livelihood, increasing income and having a better capacity in responding to climate change, with remarkable projects which promote the application of sustainable production and/or the management approach based on local communities. Such practices show the positive outcomes including not only socioeconomic condition of people but also the positive changes in the relationship between local authority and people who have direct relations with important issues such as sharing the benefits, roles and responsibilities of natural resources management.

Based on the above criteria, we decided to select the following models:

 <sup>&</sup>lt;sup>13</sup> General Statistics Office, 2010, Statistics Information of Social Economic Situation 2010, [internet] <u>http://www.gso.gov.vn/default.aspx?tabid=621&ltemID=10835</u>, last accessed 19/08/2011
<sup>14</sup> General Statistics Office, 2010, Statistics Information of labor force over 15 years old, working on 1/7 yearly,[internet] <u>http://www.gso.gov.vn/default.aspx?tabid=387&idmid=3&ltemID=11466</u>, last accessed 19/08/2011.

- 1. System of Rice Intensification SRI;
- 2. Garden Pond Pigsty;
- 3. Change of cultivation method and livelihood diversification in responding to climate change
- 4. Watershed management with the community participation
- 5. Enhance the management of coastal ecosystem and development of community livelihood in responding to climate change

Detailed description and analysis of each of these methods are presented as below.

# **Good Practices/Models**

# System of Rice Intensification – SRI

### Background

The SRI model was developed in the context of the rice cultivation restrictions which

negative lead to impacts on productivity and quality, such as, (i) overuse and/or misuse of nitrogenous fertilizers have reduced the withstanding ability of paddy fields, increasing vulnerability to pest attack and decreasing soil quality due to the fertilizer residue; (ii) overuse of pesticide increases the drug-resistance of pestilent insects; (iii) increasing vulnerability to climate change such as floods, storms, droughts with more frequent and



Photo 1: Rice cultivated based on SRI. Photo taken in Van Chan, Yen Bai Province (by Chau Doan – SRD)

intense occurrence, caused of crops damages; (iv) the previous method was highly dependent on water, and there is an increasing scarcity of water resources for human living and production activities.

In addition, rice farmer households with small scale farms normally meet difficulty in approaching encouraged methods of agricultural expansion, they have to face the unstable price of initial input materials, even have a loss<sup>15</sup>.

<sup>&</sup>lt;sup>15</sup> WWF-ICRISAT, 2010. Africare, Oxfam America, WWF-ICRISAT. *More rice for people, more water for the planet . WWF-ICRISAT, Hyderabad, India* 

In order to resolve such problems and to ensure the sustainability and effectiveness of rice production, there are many organizations implementing the SRI method<sup>16</sup> in Vietnam. Since initially applied n 2003 on the basis of the Integrated Pest Management (IPM), SRI has been applied successful and received a good response by both local authorities and farmers.

Since 2003, SRI has been supported by a number of NGOs around Vietnam, and achieved many successes. For instance, (i) Oxfam America funds the "SRI – For the improvement of small-scale farmers in Mekong Delta" program with collaboration between three organizations: the Plant Protection Department, Oxfam Quebec and SRD, covering six provinces, namely Ha Tay (now in Ha Noi province), Yen Bai, Phu Tho, Thai Nguyen, Nghe An and Ha Tinh; (ii) Japan International Volunteer Center (JVC) supports SRI in Hoa Binh province; (iii) World Vision promoted SRI practices in Hung Yen<sup>17</sup>; (iv) Oxfam Belgium helps to implement SRI in Nghe An and Ha Tinh<sup>18</sup>; (v) SRD Center integrates SRI in the livelihood development projects in Bac Kan, Phu Tho and Yen Bai.

# Activities

With the objective of encouraging uptake of this new technical method for the sustainable development of agriculture, eight years on the effectiveness of the models has been proven in the involved areas.

The implementation process consists of the following steps:

- Develop SRI training materials;
- Discuss with provincial and local authorities (Department, Agricultural Division, Plant Protection Office, Encourage Agricultural Office) and the communes implementing the model; visit the model site in other local areas(if applicable);
- Select areas, farmer households (people who are eager to participate in the model)
- Co-ordinate with agricultural co-operatives in the development of communitybased SRI activities, with the participation of local authorities and other organizations;
- Organize training courses for main trainers and trainers who are farmers, then training courses for farmers applying SRI;
- Experimental planting in the rice-fields developed with co-operative;

<sup>&</sup>lt;sup>16</sup> SRI is a set of alternative crop management practices, developed in the 19080s in Madagascar to benefit farmers with small landholdings SRI increases the productivity of resources used in rice cultivation, reducing requirements of water, seed, synthetic fertilizers, pesticides, herbicides. SRI have been applied successful in 40 countries, w(*WWF-ICRISAT, 2010*)

<sup>&</sup>lt;sup>17</sup> Dung, Ngo Tien, 2010, *Application of SRI in Vietnam,* presentation at National SRI Seminar in Hanoi , [internet] <u>http://www.slideshare.net/SRI.CORNELL/0931-system-of-rice-intensification-sri-in-the-northern-upland-region-of-vietnam</u> last accessed 19/08/2011

<sup>&</sup>lt;sup>18</sup> Application results of SRI, [internet] <u>www.ppd.gov.vn/archive/files/SRI%20den%20DX%2009.doc</u>, last accessed 19/08/2011

- Trainers who are farmers organize Farmer Field Schools (FFS) in community and together design the experimental pilot fields.
- The selected plot fields for FFS are observed carefully and notes are take of all results<sup>19</sup>;
- Integrate the observation activity during the implementation process (possibly combine local authorities staff and the trained participants).
- Evaluate the result at the end of the crop; compare the old and new methods, experience lesson learned, advantages and disadvantages;
- Conduct the printing, publish materials, organize meetings for experience sharing, and communication activities for raising awareness of community at new cultivation process SRI.

In addition, an SRI website: <u>http://srivietnam.wordpress.com/</u> also makes a contribution to the communication activity and provides updated information about SRI projects implemented in Vietnam.

The above steps of project implementation are synthesized based on the implementation method of different organizations. Depending on actual conditions and project resources, some of the steps can be missed or adjusted in order to tailor to the area's specific situation.

### Effectiveness of climate change response

**SRI enhances the resistance of rice plants to weather change** such as droughts, storms and epidemic diseases. Rice plants grown using the SRI method have stronger stalks and larger and deeper root systems, reducing the risk of the plants collapsing and helping to absorb water and nutrition from the deep of the ground.

The SRI model also reduces the dosage and frequency of pesticide application. This helps to reduce the production costs while the rice plants still have a good growth and resistance of epidemic diseases.

Besides that, the reduction of water used for cultivation compared to the traditional method in the periodical drainage is approximately 2-3 times/crop, which helps save irrigation water and reduce high vulnerability to water scarcity.



Photo 2: Rice plants applied SRI have stronger root systems, firmly burrowed deep in the ground enhancing the resistance of plants to the winds and storms. This is the rice field image in Dong Tru hamlet, located in the North of Hanoi, after the storm. SRI rice field is on the left, traditional cultivated rice field is on the right. Resource: WWF-ICRISAT, 2010.

<sup>&</sup>lt;sup>19</sup> WWF-ICRISAT, 2010. Africare, Oxfam America, WWF-ICRISAT. *More rice for people, more water for the planet . WWF-ICRISAT, Hyderabad, India, page 22* 

SRI may reduce the emission of green house gases (GHGs) such as methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O). Methane is formed by bacteria that live where there is no oxygen due to the frequent inundation of the paddy fields<sup>20</sup>. Thus, the regular drainage helps to reduce methane produced. Moreover, the reduction of chemical fertilizers and pesticides leads to the reduction of nitrous oxide emissions. According to the assessment of GHG emission when using organic fertilizer complied with SRI, there is virtually no nitrous oxide rising from the SRI pilot rice fields<sup>21</sup>.

In addition to the effectiveness of climate change response, SRI model

#### SRI basic technical principles:

- Sow seedlings, sparse planting (0.05 0.1 kg/m<sup>2</sup>), avoid root injury when uprooting the rice seeding.
- Transplant rice seedlings one per hill, with wide planting space based on soil quality, seed and season; Planting in a square grid pattern with wide spacing for receiving equal sunlight in all directions.
- Undertake the first weeding and stirring mud combining with applying fertilizer for early tillering in the tillering stage.
- Manage the water supply and aeration for the soil periodically. There is necessary to keep moist for the soil but not water inundated on the rice fields.
- 5. Apply organic fertilizer to improve soil nutrient conditions, to increase biological activity.

also shows its flexibility, sustainability and ability to expand to different regions in the whole country due to other remarkable advantages, such as:

- SRI technical principles are simple and easy to apply at very low cost. This means that the approach is accessible to all people, inclucing poor farmers.
- SRI is an innovation intensive cultivation which is very flexible; only some parts of the methods can be used, or the full technical stages of SRI based on the specific conditions of each

#### Simple yet effective"

Often quoted by farmers applying SRDI, such as in the sharing meetings i in Thai Nguyen and Phu Tho provinces (*SRD, 2010*)

region. It can be applied to all scales of farming, thus households with small cultivated area may also use this technology.

- SRI receives the full support and participation of farmers because of this method helps the farmers to reduce workload and production costs. Women farmers in Hanoi, Ninh Binh and Yen Bai, the provinces applied SRI with high rate, said that the savings they have from applying SRI to reduce production costs has really helped them to reduce the pressure of short-term credits. As a result, they now can use the saving credits for their children.
- SRI also attracts the participation of other parties such as specialized governmental organizations, NGOs, universities, research institutes/ organizations, local authorities and locals in the research work, pilot study,

<sup>&</sup>lt;sup>20</sup> Nguyen, V.T., Nguyen Q.T. and Nguyen V.A., 2007. *Effect of irrigational management with the methane emission in Red River Delta areas, Vietnam.* Vietnam Department of Dykes Management [internet] <u>http://www.vncold.vn</u>, last accessed 19/08/2011

<sup>&</sup>lt;sup>21</sup> Iswandi, A.D.K., B. Kalsim, I. Setiawan, Yanuar, and S. Herodian. *Specifications of SRI research in Indonesis, Bogor Agricultural University (IPB)*. PowerPoint was presented in the seminar of Agricultural Ministry, Jakarta, 13/06/2008

implementation and project extension. For example, on 15<sup>th</sup> October 2007, Ministry of Agricultural and Rural Development issued Decision No. 3062/QD-BNN-KHCN acknowledging *"The application of the SRI in rice cultivation in Northern province is a technical advance"*, which created a good condition for the development and extension of this practice.

#### **Challenges and lessons learned**

#### Lessons learned

SRI method of organizations is "community-based" through all stages of experimental activities, verification, gaining experience and expansion, with the direct participation of farmers. This is an effective method in

developmentExperience of SRD after two years (2008-2010) implementing<br/>of<br/>SRI project in Phu Tho and Thai Nguyen indicated that SRIonsisonsisproject helped farmers be active in making selection and decision<br/>of applying SRI. Through on-field classes, farmers realized and<br/>got experience from actual experiment on rice-field, not just the<br/>instruction from technical staffs. SRD also indicated that<br/>experiment on rice-field is a key factor for applying and extending<br/>eeand<br/>SRI successful (Source: SRD, 2010, Two Year End Report -<br/>System of Rice Intensification Advancing Small Farmers in Phu<br/>Tho and Thai Nguyen Provinces).

persuading people to apply SRI due to the actual experience. Local people involved in SRI will often promote the expansion of SRI to other farmers as they have such thorough knowledge of all stages of the process.

- The positive support of local authority plays an important role in the application of SRI at a larger scale, as well as ensuring the maintenance and expansion of SRI after the project ends.
- The selection of place and participants by the farmer households applied

"System of Rice Intensification - Strengthening capacity of small farmers in the Northern provinces of Vietnam" program Implementing in six core provinces: Ha Noi, Phu Tho, Yen Bai, Thai Nguyen, Nghe An and Ha Tinh from 2007 to 2009. Experience shows that the total area and population applying SRI in such provinces with the active support of local government are increasing. For instance, Ha Tay province has a highest total area and population applying SRI in the program, counting to 2009, there are 36,000 ha accounted for 18.1% of planting rice area and 108,000 farmers applying SRI (Source: Oxfam, MARD & SRI, 2009, Mid-Term Report, [internet] http://vietnamsri.wordpress.com, latest accessed on 03/10/2011)

**SRI demonstration model plays an important role** in the success of the project. As the experience of WVI, lessons learned from SRI project at Kim Dong, Hung Yen province include, (i) the participation of partners and local people in the whole process of the implementation is invaluable; (ii) it is necessary to select active households, engaged to carry out this method, and

this helps the implementation and expansion of such method in the future; (iii) when working with the demonstration site, it is better to select a place convenient for the irrigation management and easy for community to observe; (iv) in case of the areas where the method of killing rats is not effective, setting up rats trap and killing rats in community should be undertaken while applying SRI<sup>22</sup>.

- The communication of SRI application via mass media aided the effectiveness of applying SRI in local area. Communication activities play an important role in encouraging the development of applying SRI, such as introduction via loudspeaker system, radio, signboard, and advertising panels. Enhancing the communication and advertisement of successful pilot through field visit, meeting, flyer, slogan, club meeting, and television reports<sup>23</sup>.
- A frequent supervision and support system at grassroots level is necessary. Enhancing the role and participation from the local to provincal level to ensure the sustainable maintenance of activity. Additionally, there should be a sufficient support to avoid the over-dependence of people on the project activity. The community needs to be encouraged to expand SRI itself and to apply SRI principles, either the whole processo or the relevant steps<sup>24</sup>.

#### Challenges:

- The contradiction in the implemention of different cultivation techniques. SRI is recognized as a technical advance by The Ministry of Agricultural and Rural Development (MARD). But at the same time, a direct-sowing technique is also promoted by MARD to implement in the Northern provinces and supported by The National Agricultural Encouragement Center. The direct-sowing technique has several points which contradict the SRI technique such as cultivated density andapplying pesticides at a minimum of times per crop. The encouragement of two cultivation methods which are conflicted with each other in the same time and place reusIts in confusion for local famers and a reduction in uptake of the appraoch.
- A number of households participated in the large-scale practice but did not comply closely with SRI implementation steps. This may reduce the effectiveness of the project and reduce accuracy and objectiveness when doing the assessment of SRI effectiveness.
- It is necessary to have a soil improvement strategy in addition to the change of cultivation method. The effectiveness of increasing productivity and reducing production costs based on SRI marked an obvious advance compared to traditional method but its productivity is still lower than SRI implemented in other countries like Cambodia, Myanmar and India<sup>25</sup>. One of the

<sup>&</sup>lt;sup>22</sup> Information provided by Mr. Nguyen Huu Hieu – WVI in Vietnam

<sup>&</sup>lt;sup>23</sup> Information provided by Mr. Nguyen Huu Hieu – WVI in Vietnam

<sup>&</sup>lt;sup>24</sup> Information provided by Mr. Nguyen Huu Hieu – WVI in Vietnam

<sup>&</sup>lt;sup>25</sup> S. K. Sinha and J. Talati, 2005. *Impact of the System of Rice Intensification (SRI) on Rice Yields:* 

Results of a New Sample Study in Purulia District, India. IWMI-Tata Water Policy Research Report 47.

main reasons is the poor quality of soil in the mountainous region of the Northern Vietnam<sup>26</sup>.

- There should be an improvement plan or encouragement policy for farmers to improve the weeding in order to reduce workload in stage of weeding and tillage. Both woman and men commented that the manual weeding and working the soil are more challenging than other difficulties of SRI method. Farmers are reluctant to stop using pesticides if there are no weeding tools or supportive machinery available. Households where women are main bread-winner find difficulty in the tillage without the support of machinery<sup>27</sup>.
- Lack of information and data for collecting and analyzing activities in order to demonstrate SRI effectiveness in the economical and environmental aspects at family level. Farmer households do not have a habit of recording detailed cultivation process or not update data frequently. It is important to promote communication activities to encourage encourage farmers to update the data of household handbook regularly. This is an importantbasis to support the implementation of the model and the management organization to persuade the people to participate for extending the model.

#### Garden – Pond - Pigsty

#### Background

In Vietnam, almost people are living in rural areas, and animal husbandry, farming and fishery are main livelihoods of many people. However, in the recent economical situation, market fluctuation has a big impact on input costs (such as the increasing price of feed stock, fertilizers and pesticides)), especially with households who are highly dependent on the input material of suppliers.

In addition, the over-use of synthetic foods, chemical fertilizers and pesticides has leads to the risk of reducing food safety. Additionally,

The purpose of VAC model development is the optimal utilization of land area, terrain, and water and labor resources in order to increase the economical effectiveness of farmer households. Thus, there is no standard model for crop and animal pattern in VAC. In order to develop an effective VAC model, there should be a crop and animal pattern which is in conformity with natural the conditions (area, land specification, terrain, water resource, and climate) and social condition working labor, market, transportation). The crop and animal pattern of each component of such model depends on each other. For instance, if raising chickens and fish in the confined space, a few falling leaves tree, having canopy, which creates a good condition for the living of chicken and fish" (Tran Ngoc Hien and partners, 2009)

mono-cultural cultivation methods create good conditions for the development of harmful diseases, especially in the context of climate change.

International Water Management Institute, India Program, Anand.

<sup>&</sup>lt;sup>26</sup> Uphoff Norman, 2007, CIIFAD, *Trip report on visit to Vietnam to review SRI progress for the Cornell International Institute for Food, Agriculture and Development*, [internet]

http://sri.ciifad.cornell.edu/countries/vietnam/vnntutrrpt0707.pdf, last accessed 19/08/2011

<sup>&</sup>lt;sup>27</sup> WWF-ICRISAT, 2010. Africare, Oxfam America, WWF-ICRISAT. *More rice for people, more water for the planet . WWF-ICRISAT, Hyderabad, India, page 23* 

In light of this, the well-known model "Garden – Pond – Pigsty" (VAC; V – Garden, A – Pond, C - Pigsty) with its high effectiveness expressed its ability to develop a model of small-scale and effective self-subsistent ecology presents a strong model for developing resistance and ability to recover from climate change impacts.

The VAC model was established in 1986 by The Vietnamese Gardeners' Association (VACVINA) and is widely applied by many organizations and individuals. The model consists of three elements: Garden, Pond and Pigsty. However, based on the development and demands of each region, variants of this model are developed and applied in the reality such as Garden – Pond – Pigsty – Forest (VACR), Garden – Pond – Pigsty – Biogas (VACB) model, or a model combining cultivation with aquaculture such as Rice – Fish, Rice – Shrimp. Ecological Village, studied and deployed by EcoEco in 1990s, is also a type of VAC model which considers the need of sustainable development in the appropriate ecological areas through the combination of cultivation, animal husbandry, aquaculture<sup>28</sup> and other factors.



Photo 3: Fish pond combining with duck breeding and orange garden of household in Quang Nam province, VAC model on coastal sand area. Source: VACVINA

The VAC approach has been widely applied by families living in rural areas in Vietnam, though informally. Through the new techniques and plan, associated with the instruction of technical and project staff, VAC model indicates more clearly its ability for replicate in community, based on the following advantages:

- *It's easy to encourage people to apply the VAC model* because it is very easy to apply at the family level. It also directly affects people's day to day living. Moreover, in the Vietnamese rural areas, cultivation and animal husbandry are very popular; almost all households plant trees and breed animals to feed the family and utilize gardening land.
- It is a sustainable model as it based on local knowledge. Almost all the farmer households are very good at cultivating and breeding animals, especially with local trees and poultries. Furthermore, people are not the main household workers (old people and children) in the family be able to participate in the cultivation and animal husbandry activity. With this method, households which are small size or in shortage of labours can still maintain their production. This

<sup>&</sup>lt;sup>28</sup> Hatim I., Anh Đ.Q, Nguyet Đ.V, 2009, Assessment Report on Ecological Village Practice, Assessment of Three Ecological villages, implemented by EcoEco and sponsored by CCFD

is particularly meaningful in the rural areas since most of the youth there nowadays have tendency to migrate to big cities to find works when they grown up.

- The creativity of VAC model is expressed from the application of scientific research achievements or new technical applications in selecting and developing species compatible with the local conditions in the context of climate change, or selecting highly productive and suitable animals. For instance, to adapt to climate change in several regions, there are some projects planting trees resistant to inundation or high temperatures, prolonged drought and reduced irrigation.
- VAC model also have a high flexibility. It is allowed the farmers to change the cropping pattern for climate change adaptation, or expand it into VACB model (where a small-scale biogas plant to utilize cattle and human waste is integrated in the model); or VACR (where afforestation activities are integrated in the model in the highlands or coastal areas in order to reduce the risk of erosion or saltwater intrusion).

Although the VAC model are considered not applicable for large-scale agricultural production or for specialized production and enhancing productivity as it does not meet the neccessary criteria. However, it can be said that VAC is a sustainable model where environmentally-friendly aspects and the diversification of agricultural products are ensured. These are also the aspects of sustainable agricultural production which we are aiming at achieving. When combine with the high flexibility and high adaptive capability through the change of cropping/ animal patterns, VAC model potentially can be replicated in any region; the mountainous, delta and coastal areas.

# Activities

• Conducting the survey of garden, pond and pigsty of households, including survey and research of crop species and animals suitable with local conditions.

• Evaluating the demand and ability of applying the model and then selecting the appropriate households to apply VAC model. In this period, there should be a meeting of farmer households to study their demands and ideas for selecting the suitable crop/ animal species.

• Provide technical training for households, including techniques for planning the garden – pond – pigsty arrangement, VAC implementation stages and cultivation/ breeding techniques. The project may support the initial species for households (depending on each condition, for example: poor households will not be able to purchase some crop/animal species, or apply species that are not local).

- Developing the model.
- Observation, control, supervision and adjustment.
- Organize workshop, site-visit for experience sharing between households implementing VAC model successfully and between provinces.

# Effectiveness of climate change adaptation and mitigation

The VAC model is a diversified small-scale and sustainable model which can contribute to the responding to the risks of climate change and market fluctuation; it is a fairly stable support for farmers which help reduces their anxiety during bad harvest years<sup>29</sup>. Some of positive benefits of the VAC model are:

• **Garden:** Highly adaptive to climate change impacts such as salt intrusion and drought if appropriate crop species and cultivation techniques is selected and applied. Based on each ecological area, the expansion of garden area (V), e.g. with afforestation involves, can helps re-greening barren hills, avoiding erosion & landslide, sand fly & flow or helps in mitigating waves and saving water when digging farm pond<sup>30</sup>. In mountainous areas, the plantation of fruit-trees and industrial crops such as tea, cassava and peanut helps to avoid erosion and landslides. In the coastal area, the plantation of suitable crops (sweet potato, corn, soybean or peanut) when combining with the adjustment of cultivation techniques (e.g. seed treatment, high furrow to avoid salting intrusion, adjusting quantity of fertilizer, using more organic fertilizers making from muck or pond mud instead of chemical fertilizers) can helps increasing community's adaptive capacity and mitigate climate change. Planting crops on sandy soil also plays an important role in avoiding sand invasion and desertification.

• **Pond**: Plays an important role in the improving the conditions of saline soil by conserving fresh water and rain water. These "fresh water bags" helps prevent salt water intrusion<sup>31</sup> and save the irrigation water in times of drought.

• *Pigsty*: When in combination with garden and pond, the pigsty waste and other by-products can be used to make organic fertilizers or as food for fish, helps reduce pollution in the surrounding environment, reduce methane emissions and reduce the use of chemical fertilizers.

<sup>&</sup>lt;sup>29</sup> Interviewed Professor. Dr. Ngo The Dan – VACVINA Chairman, 2010, Developing VAC, an effective solution in responding to climate change [internet] <u>http://www.kinhtenongthon.com.vn/printContent.aspx?</u> ID=25562, last accessed 19/08/2011

<sup>&</sup>lt;sup>30</sup> Khanh Phuong, 2010, VAC with Climate Change, [internet] <u>http://www.baomoi.com/VAC-voi-bien-doi-khi-hau/79/4748316.epi</u>, last accessed 19/08/2011

<sup>&</sup>lt;sup>31</sup> VAC economical development, [internet] <u>http://dongtamxanh.com.vn/Story.aspx?</u> <u>lang=vn&zoneparent=97&zone=107&ID=590</u>, last accessed 19/08/2011

#### **Challenges and Lessons learned**

• Method of approaching people and wide spreading VAC model should be based on local knowledge and opinion. Farmer households are the participants and beneficiaries of the project. They will be more engaged and take more ownership of the project if their voices and opinions are acknowledged and taken into account by the project staff.

• *"Hand-on training" method applied for local people with the supervision & adjustment is an appropriate approach.* Farmers have been working with the Co-operative model for a long time, and are used to working under the direction of local leadership. Therefore, farmers can feel confused when they are required to do almost everything by themselves when shifting to a new stage. Thus, there should be detailed instructions with "hand-on training" method for ensuring the technical process be implemented as standards required.

• *Implementing the model from easy to difficult phases.* The model should be carried out step by step. This means selecting the easier part that people want to apply beforehand, and then gradually move to expanding to other aspects of VAC model.

VACVINA has implemented the VAC model in the mountainous village of Hun, Chieng Co commune, Son La city. Phase 1 the projects aims to using short-term plans to achieve long-term plans, concentrating to develop animal husbandry based on local food resources. VACVINA organized a public meeting for all people in the village to introduce the sponsor's policy, providing 2 million VND for each participating family. And at the same time, VACVINA also asked local people's opinion on selecting suitable animals. At the meeting, farmer households suggested raising pigs, cows, and goat. However, it was also suggested that raise pig has a high cost because of the high price of purchasing bran. Finally, most of the households chose to raise goat due to the utilization of natural grass. After a period of implementation, the households raising goats gained a good result, and people were very happy because they have a chance to escape poverty. Phase 2 of the project aims to building on previous successes after escaping poverty. Using the same approaching method as Phase 1, 70% of local people's ideas agreed to plant orange trees due to its good price. However, initial research found that there is one local farmer household planting orange trees for five years and they found out that that 5 years oranges garden had yellow spots on leaves disease – which is easy to spread and there is no specific remedy for such disease yet. Finally, the expert came to the decision of choosing another kind of tree. VACVN decided to plant Tam hoa plum and Australian peach for experiment. After two years of implementation, there is a satisfactory result and it is ready for the first harvest in the third year. Until now, there is about 10ha of planting peach in this region. (Information shared by Mr. Ha Minh Trung -VACVN).

• Criteria for selecting participants should be clear and have the compliance of local people in order to achieve the project's objectives, especially with the project targeting poor households. The projects should be more focused more on people than agricultural techniques. EcoEco set up the ecological village of Dao people at So hamlet, Hop Nhat village located in the ecological rehabilitation area of Ba Vi National Park from October 1993, concentrating in the support for local people applying terraced fields cultivation method, with the instruction and support for planting fruit-trees, crops and animal/poultry raising, and several supports for medical station and kindergarten. In which, experts of agriculture & forestry good at training and project staffs usually stayed in the village to provide advices for the local people. Firstly, there are 25 households participated in the project, dividing into small groups for helping each other in mending garden, doing terraced fields. After that, it is applied with other households. (Source: Hatim I., Dau Quoc Anh, Do Van Nguyet, 2009, Assessment Report on Ecological Village Practice, Assessment of Three Ecological villages, implemented by EcoEco )

• VAC model can be implemented and/or expanded flexibly without obligatory implementing all three elements garden – pond – pigsty. Based on the local condition and development policy, the implementation of the model should be considered and adjusted appropriately and should be in combination with the development of livelihood. For instance, (i) raising red worms as food for chickens and duck; their waste is used as organic fertilizer; and cattle droppings are used as foods for red worms; (ii) planting VA06 grass as reserve foods in the winter for cattle when damaging cold is prolonged.

The VACR model is applied in areas with hills and land that needs re-greening for restoring and developing forest and in the regions with policy of farming economical development.

The VACB model is the combination of a biogas tank built model and VAC model in order to utilize methane generated from the disintegration process of cattle droppings, which is used as one kind of heating fuel in the family cooking. It helps to save heating fuel and to resolve the environmental pollution caused of cattle droppings as well.

Rice-Fish model or Rice-Shrimp model are also VAC model, which is the integration of growing wet rice and using rice-growing water area to raising fishes or shrimps. Such models are implemented by Encourage Agricultural Center of several provinces, districts and NGOs. For instance, Consultative and Research Center on Natural Resource Management (CORENARM) has supported the implementation of Rice – Fish model in Huong Phong village, Huong Tra district, Thua Thien Hue. The experience of implementing this model showed that it is only become sustainable when (i) the selection of fish species which are suitable with local conditions and (ii) the local people can have their own brood stock. Additionally, to guarantee the effectiveness of such model, other factors such as field surface and banks conditions should also meet the technical standards.

Model of raising Red Worms of the Center for Marine life Conservation and Community Development (MCD) has implemented in Giao Thuy district, Nam Dinh province. According to Mr. Hanh, one of the households applied this model, has said, since raising red worms, his family's income increases from 30 millions VND to 50 millions VND per year. His family integrated raising red worms with ducks and gooses. Good quality red worms are used as food for gooses, ducks; and selling worm species to other households want to raise worms. Wastes of raising worms are used as organic fertilizer for trees. This is a very effective integration of cultivation and animal husbandry.

### Background

The long coastal areas of Vietnam are often affected by natural disasters and it is also an area which is the highly vulnerable to climate change, leading a significant impact on lives of many people living there. Quang Tri is a coastal province, located in the northern center of Vietnam. According to the Center for Rural Development of Central Vietnam (CRD)<sup>32</sup>, this is the province that is hardest hit by impacts of climate change, and in the recent years most of



Photo 4: Model of planting hot pepper (chilly) at Hai Qua commune, Hai Lang district, Quang Tri. Source: CRD

natural disasters in this region have been more unexpected and severe than in previous years. Furthermore, several areas are below sea level, which leads to the increase of the salting intrusion due to the impact of drought and sea water level rising, and negative impacts on agriculture. Therefore, developing solutions to salt intrusion based on research, experience and local knowledge is vital work for Quang Tri province.

CRD, under Hue University of Agriculture and Forestry, is one of the organizations successfully in implementing "The project of capacity building for adaptation to climate change for Quang Tri Community", and has found suitable solutions applying local knowledge into agricultural production, helping local people to which adaptation to climate change impacts.

# Activities

**Evaluating livelihood (demand):** define the demand of people in the production through the evaluation of actual production, economical effectiveness, vulnerability, advantages, disadvantages and solutions.

**Developing the implementation plan:** define the timeframe and participants which models are to be used, and stakeholder responsibility.

<sup>&</sup>lt;sup>32</sup> CRD, 2010, Climate change, impact, adaptation in the agriculture and the responding policies: Case study in Quang Tri province.

#### Implementation:

- Select households to apply the models; evaluate and collect basic information and production of involved households.
- Specify the current situation, difficulties and experiences of each household in applied models in order to explore appropriate solutions, techniques and factors to adapt with climate change.



Photo 5: Model of vegetable off-season crop at Trieu Giang commune, Trieu Van, Quang Tri. Source: CRD

- Conduct the training according to the production stage.
- Implement the model.
- Monitor the model. Each household shall apply two cultivation techniques: traditional cultivation and new technique in the same field in order to be able to draw findings from implementing the model.

Assessment the result of applied model: Carry out the assessment based on the economical, social and environmental effectiveness, adaptability of such model with climate change.

**Implementing the expansion:** Collaborate with the People's Committee of the commune to evaluate the model's effectiveness. If appropriate, expand the model by introducing the approach into the economical and social development plan of the commune.

# Effectiveness in responding to climate change

The project's models are effective in enhancing the adaptive capability of local people in agricultural production and reducing the damage of negative impacts of climate change such as: enhancing tree resistibility of pestilent insects and drought; improving the soil fertility, minimizing the risk of desertification. This helps to improve people income, to enhance the adaptability and to reduce the vulnerability of the community to the risks of climate change.

# **Challenges and Lessons learned**

• Conduct detailed research of the project site and situation and defining the knowledge and demand of local people in order to select the suitable solutions. The process of conducting research, collecting information and studying local knowledge in responding to salt intrusion and agricultural production gave useful direction in selecting the models to ensure the appropriateness of the local actual conditions.

• *Mobilizing the key staff of the commune, village and farmers to participate in the model* in all stages: training, study tour and workshop. It helps to increase the replicability of the model when the project ends because the key staffs are well equipped with necessary knowledge and experience.

of the "Capacity building for adaptation to climate change for Quang Tri Community" project has selected five models of climate change adaptation for apply at Trieu Giang and Trieu Van commune, Trieu Phong district, and Hai Que commune, Hai Lang district, Quang Tri province. The models are, as follows:

**1.** *Planting local sweet potato for increasing resistance to drought, cold and pestilent insect* based on the determination of crop time, proper use of fertilizers (reduce nitrogen, increase potassium); use more organic fertilizers, making big sweet potato beds and minimizing the cutting of tuberous roots. This model has a resistibility to adapt with drought: it develops well and makes a good ground cover, reducing drought, keeps soil moist. And sweet potato weevil reduces 10-12% in both communes.

2. Plant hot pepper to improve sand and to enhance resistance to pestilent insects. With the adjustment of cultivating method by proper use of fertilizers (reduce nitrogen, increase potassium); use more organic fertilizers and proper density, which helps soggy soil, reducing drought and increasing the soil fertility.

**3.** Plant in the off-season and with appropriate vegetables to adapt to drought. The project has selected the crop species which adapt to drought condition (such as lettuce, cabbage sprouts, centella, amaranth leaves, malabar spinach) and integrating with net house. It actually led to an effective result, increasing income and creating more jobs as well.

4. Planting chives to adapt to drought, cold, flood and minimizing the desertification, improve the sand soil area.

**5.** *Planting the intercrops of corn and peanut to adapt to drought and pestilent insect* by solutions such as proper density (3 rows of peanuts x corns, 25-30cm of row distance; plant distance: 10cm for peanut and 25cm for corn); proper use of fertilizers; and use more organic fertilizers. The final result shows that corns and peanuts create a good ground cover, planting corns creates good condition for peanuts to grow; keeps warm and reduces evaporation. Rate of withered plants reduce 20%.

• The implemented model concentrates on enhancing people's capability. People are the beneficiaries and directly participate in the implementation of model, and enhancing people capability means enhancing the effectiveness and replicability of model. Enhancing people's capability can be undertaken through various methods, such as training in each stage of production and on model for easy understanding; arranging the model and comparative one in the same field and household for an accurate collation.

• Households applied model should record the data into the model handbook for the convenience of monitoring the growth and pestilent insect of such model, sharing experience and calculating the economical effectiveness.

• **A supervision activity should be carried out frequently** in order to recognize mistakes/ shortcomings of households and have a corrective action in time.

• **Requiring the households to commit to apply the model** in order to encourage them to take more responsibility during the implementation process.

#### Watershed management with community participation

#### Background

In spite of many efforts of local people and government, people living the mountainous areas still depend mainly on natural resources and their small areas of land with very few opportunities to change their cultivation methods, doing the management and investment into the land to ensure their living in the future. The information and resources available to access more opportunities and benefits from local natural resources are



Photo 6: Cultivation on slopping land, Ba Thuoc, Thanh Hoa. Source: CARE

also limited. High poverty rates, lack of co-ordination, regulations, environmental plans and lack of participation of local people in land and natural resources management have led to the vulnerability of poor communities<sup>33</sup>.

Ba Thuoc district, Thanh Hoa province is a poor area, suffering from natural resource degradation, especially deforestation, which has lead to a series of related issues such as shortage of cultivation water, serious flood spells and droughts. Additionally, the abnormal weather patterns mean drought and erosion problems becoming more and more complicated. To resolve such problems, CARE International in Vietnam collaborated with Thanh Hoa Union of Science and Technology Associations (TUSTA) to develop a model of activities helping to improve people's living conditions and natural resources management in the three watersheds of Ba Thuoc district.

The model has been operating for three years utilizing a people-focus approach, and has achieved some impressive successes, leading to an equitable society, livelihood security for the poor community in Ba Thuoc, and building management capacity of officers of local government and local people capacity through activities such as enhancing dialogues, sharing and collaboration. Results have indicated that model could be effectively replicated throughout Thanh Hoa province in particular and at Vietnamese mountainous areas in general, especially in disadvantaged areas (mountainous, remote areas), and poor communities vulnerable to climate change.

<sup>&</sup>lt;sup>33</sup> CARE, 2007, Project document: Watershed management with community participation

# Activities<sup>34</sup>

Analyzing the community and developing a "future picture" in order to support the community in building capacity of livelihood strategies, of natural resources management activities and defining development goals:

- Establish the structure of local organization and components;
- Carry out the survey, evaluation and analysis of economical social environment and natural resources use and management situation;
- Raise community awareness and support the process of developing a "future picture" of managing resources and livelihoods.

Promoting the establishment and development of business co-operation groups and community groups with the purpose of improving the approaching level to services and livelihood diversification through the capacity building activities:

- Develop the community groups through the supportive activities such as promoting groups establishment, provide trainings on management skills & decision making, and the promoting dialogues on livelihood and natural resources management.
- Develop the business co-operation groups based on (i) studying and analyzing value chains, market chains and the opportunity of products, (ii) evaluating the sustainability, feasibility and economical prospect of selected livelihood activities and (iii) promoting the establishment process and initial support (if necessary) for the collaboration groups.
- Organize capacity building training for the community and collaboration groups based on the actual demands.

# Developing the participatory watershed management system in hamlet, commune, village and district:

- Raising awareness of local government through activities such as (i) conduct survey about the watershed in which they are also participate in the survey actively, (ii) discussion and training about rights of the community and the purpose of community-based watershed management and (iii) on-site visits and study tours.
- Developing the community-based watershed management system by activities such as (i) evaluating and determining relevant stakeholders, (ii) organizing negotiation/discussion processes between related stakeholders about the management system (long term vision, goals, system structure, responsibilities & interests of related participants), (iii) setting up and coordinating the management plans and annual action plans, (iv) facilitating the approving process of local government and (iv) evaluating and extending the system in other communes of the watershed under the support of local government.
- Defining the demands for training and capacity building in implementing the participatory watershed management systems of related parties.

<sup>&</sup>lt;sup>34</sup> CARE, 2007, quoted

#### Organizing the implementation of participatory watershed management:

- Supporting sustainable agro-forestry development by (i) promoting agricultural extension services, (ii) conducting sustainable argo-forestry cultivation activities and (iii) supporting afforestation to protect the water resource as well as improve the livelihood.
- Conducting the forest and watershed management plans through (i) allocation of land and forest corresponding to the unified management system, (ii) promotion, support activities to find out opportunities for paying environmental services and (iii) providing opportunities for the development of new livelihood forms (e.g. ecological tourism).

Information sharing and model expansion through documenting, monitoring and evaluating, and providing policy recommendations.

### Effectiveness in responding to climate change<sup>35&36</sup>

Through model's activities local people and government have enhanced their responding capacity, become more resilience, equipped with better risks management capacity, and become less vulnerable to the negative impacts of climate change. It is indicated through the remarkable results as follows,

<u>Ensuring</u> livelihood\_ security: the livelihood activities such as construction of an irrigational barrage for increasing the production productive areas, afforestation, raising chickens, bees, breeding COWS (half-bred), reinvigorating the bamboo forest, planting rattan under the forest and promote canopy. sustainable cultivating in the sloping land. These activities have been chosen based on the demand and the future

Facing the increase of droughts, the afforestation and cultivation of sloping land in high areas make a good contribution in the adjustment and increase the water resources in the downstream of Bai Doi barrage. This barrage provides irrigation water for 30ha of cultivated fields of people iving in Man, Con, Co Con hamlet. Local people together signed in the agreement of afforestation, barrage repairing and maintaining to keep the water spring of the barrage and rrigation for the fields underneath. These activities are related to sharing responsibilities and interests in the management, protection and usage of natural resources (land, water, forest) and established based on the basic principle that people of our relating hamlets together participate in the management, protection and sustainable development of natural resources land, water, forest,) and simultaneously share the equitable nterests of natural resources in the watershed. (Source: Sharing of CARE project staff)

vision of local people. This approach helped Ba Thuoc community enhance the capacity of adaptation to changing weather conditions and the consequences of environmental degradation by the obvious improvements of (i) economics due

<sup>&</sup>lt;sup>35</sup> CARE, 2009, Project Report.

<sup>&</sup>lt;sup>36</sup> CARE, 2010, Community Based Management – Experiences from CARE International in Vietnam, Seminar Report CFM, [internet] <u>http://www.card.com.vn/News/Projects/CFM%20Workshop/EN/5/Main</u> <u>%20Report.pdf</u>, last accessed 30/11/2011.

to applying the appropriate agro-forestry cultivation methods, (ii) human resources based on the training activities of technique, on-site visit, study tour, (iii) local ecological services due to applying the rehabilitated activities such as afforestation, sloping land cultivation, (iv) community solidarity by the community and business collaboration groups development activities and (vi) greater ownership and more equitable participation of responsibilities and interests by the more equitable access to sustainable usage of natural resources.

Ensuring social equity: The thorough understanding of gender issues and ensuring more equitable participation of women and men in all activitites, as well as equitable costs and benefits sharing in natural resources management

"This cohesion shall enhance the support in community and ensure the sustainability of the models. I think this is a good practice which should be applied for in future projects." – Mr. Truong Van Lich, Head of Agricultural and Rural Development Division of Ba Thuoc district.

and usage has played an important part in promoting the participation of all people in the community activitites and mobilizing resources in the efforts of responding the climate change.

Significantly improving the management skills and capacity for planning and implementing the socio-economic development plan of the local government and relating parties: Through (i) dialogues, (ii) applying the participatory natural resources management mechanism to ensure equity and (iii) the application of this future planning method with active community participation etc. As a result, the voice of the local people (including the poor people and the vulnerable people) and their demands were considered carefully by the local government before making decisions and implementing activities. Thus, the approved development decisions and policies are realistic, highly feasible and have strong support and good participation from local people.

# Challenges and Lessons learned

#### Challenges<sup>37</sup>

- In many cases, the introduced 'developing a future vision' approach and some livelihood models has been quite new to the local community. Moreover, as the implementation time is quite short, there are still limitations in the application and replicability of the model.
- Agro-forestry staff and core farmers are keeping and developing a strong role with support and technical assistance, however, they also need to keep their own knowledge up to date in order to stay abreast of current developments.
- It is necessary to have a better co-ordination between different forces to conduct the community development plans and in integrating the community

<sup>&</sup>lt;sup>37</sup> CARE, 2009, quoted.

development plans with local economical - social development plans.

#### Lessons learned 38&39

- The flexible application of the participatory method to utilize local authority and community strengths and resources keeps a very important role.
- The application of the human-centered approach in defining the community demands and in developing an equitable natural resources management mechanism helps promote voluntarily spirit, self-awareness and sense of responsibility of local people in all activities, which plays an important role in ensuring the sustainability of activities.
- The community and collaboration groups play an important role in the promotion of community presence in the making decision process of local authorities.

• The combination of activities in increase livelihood, in raising awareness and skills, and in communication play a critical part in making positive changes in the awareness, action and behavior of related stakeholders in sustainable resource management.

• Wide reaching and timely communication and information sharing of successful models are key factors of taking full advantage of local authorities' support.

• The fully participation and active support of related parties, including local government, local people and technical organizations, especially the maintenance of dialogues which play a very important role in the success of the project.

<sup>&</sup>lt;sup>38</sup> CARE, 2010, quoted.

<sup>&</sup>lt;sup>39</sup> CARE, 2009, quoted.
# Background

Vietnam has a long coastline, with diverse marine and coastal ecosystems such as mangroves, coral reef, lagoons, seagrass bed, and tidal flats. In addition to a wide range of economical and social benefits, these ecosystems also play a significantly important role in mitigating the effects of GHG emissions, and protecting the coastal lines and areas from erosions, tropical storms and flood-tide.

However, these ecosystems have been degraded in both quantity and quality in the recent decades. Research shows that only 1% of 1,300km2 of coral reefs along the coastal areas in Vietnam arestill in good condition. The reef cover reduced 30% in several areas in the period of 1993-2004. The mangrove system have slowly been degraded since the beginning of 20 century to the 1990s, reducing from 400,000ha to only 155,000ha. The seafoods caught per ha of coastal lagoons has reduced to merely half compared with the previous decade. Seagrass beds are also significantly reduced; in Khanh Hoa province approximately 80ha of seagrass has been lost.

There are many reasons for this status, such as increasing population, high poverty rates of people living in coastal areas, over harvesting of marine resources, lack of planned aquaculture and sustainable methods, urbanization and industrial production, and ineffective resource management. In recent years, climate change also has been recognized as one of the biggest impacts on marine ecosystems. The long-term impacts of sea-level rise and the abnormal changes in the frequency and intensity of the extreme climate events have significant influences on marine ecosystems and the life of coastal community.

In such a complex situation, it is important to define and apply integrated solutions to address marine ecosystem degradation, to improve the coastal community's life, to enhance the effectiveness of managing and harvesting the marine resources and respond to climate change. A number of national and sectoral programs have focused on these issues, such as the integrated coastal zone management program in the North Central Coast and Central coastal area, scientific and technological research for the sustainable economical and social development in responding to climate change, sea-level rise and the planning project of the Vietnamese conservation area system. On December 2011, the Ministry of Agricultural and Rural Development decided to implement the technical co-operation program of integrated coastal area and mangroves protection in adapting to climate change in the Mekong Delta provinces. However, the implementation of such major programs is at the initial stages, and as yet no specific implementation model has been agreed upon.

In response to these challenges, MCD has been making efforts to ensure the diversification and productivity of marine and coastal ecosystems which are protected by knowledgeable communities and the people who live and work in harmony with the

natural environment. With the growing understanding that the impacts of climate change could reduce or destroy advances achieved from the efforts of marine conservation and livelihood development for people living in the coastal areas, marine ecosystem conservation efforts need to be increased in order to develop resilience and minimize negative impacts. Correspondingly, the "Enhancing the marine ecosystem management and practice approach is implemented as follows:

- Enhance awareness, knowledge and capacity for the sustainable marine ecosystem and resources management and marine livelihood development.
- Promote and support the restoration and conservation of marine ecosystems, enhancing effectiveness in managing marine resources.
- Motivate and support the diversification of marine livelihood with the friendly production method and in adaptation to climate change.
- Support the synthesis of experience, information sharing and influence on the policy makers about coastal areas.

The method was designed in 2007, and experimental projects have been run since then. Community-based integrated management of coastal resources coordinated by MCD has been implemented in four main communes, Giao Xuan (Giao Thuy, Nam Dinh), Nam Phu (Tien Hai, Thai Binh), Phu Long (Cat Ba, Hai Phong) and Van Hung (Van Ninh, Khanh Hoa). These communes have similar characteristics, such as a coastal location, belonging to a buffer zone of natural reservation area, two typical ecosystems (coastal wetlands and coral reefs), many people in the communes depending on the benefits of marine ecosystem and the impacts of climate change becoming increasingly apparent.

Furthermore, similar practices and approaches have been expanded into other regions. For example, the practice of Ran Trao Ecosystem Reservation Zone was expanded at Tam Hai – Quang Nam, Nui Chua – Ninh Thuan, Ninh Van and Nha Phu lagoon (Ninh Hoa town, Khanh Hoa); the community-based ecotourism project at Giao Xuan commune has been shared and extended into other reservation zones in Vietnam such as Nui Chua and Cu Lao Cham; the model of sustainable oyster farming at Giao Xuan has shared in Giao Thuy district; the model of raising black-tiger-head shrimp and crab at Phu Long is in the process of implementing and may become the show case for other communes of Cat Hai district and Hai Phong city. In the next few years (2012-2014), MCD will support the expansion of managing resources and livelihood in adaptation to climate change in the communes near the Red River and Cat Ba Biosphere Reserve, and Ninh Hoa district (Khanh Hoa province). Both integrated practices and show cases are documented in the good practices instruction for widely sharing purpose in coastal areas. Many regions with similar conditions in the Marine Conservation Zone and Biosphere Reserve system of Vietnam have approached MCD for good practices reference and an application plan.

### Activities

**1.** Enhancing awareness, knowledge and capacity of managing marine ecosystem, resources, developing marine sustainable livelihoods in the context of climate change. These activities are implemented after approaching the community for consultation, and continuously during the process of the practice's development. The methods of activity performance are as follows:

- Community communication at pilot communes of project, through community dialogue, commune radio broadcast and flyers and posters to communicate basic, easy to understand information for all the community to build general awareness.

- Training on the approach, targeted to the conditions of each area for the selected core groups, and support the groups in disseminating knowledge to others in the community.

- Providing instruction on practical methods of income source assessment and coastal economical – social conditions, marine spatial planning, marine ecological risk assessment (ERA), assessment of vulnerability and impacts of climate change and assessment of the lack of capacity and information, in order to support local people and the regions for improving knowledge about marine ecosystem and the climate change impacts of the local area, as the basis for developing suitable solutions and enhancing capacity.

- Setting up the Environmental and Climate Change Education Information Centre in the style of an Ecolife Café, managed and operated by local people, integrated with tourism information services, providing food and drink and entertainment. This is a community-friendly connection place for the coastal community to access information about the coastal environment and climate change and it is also a place where people can easily and frequently meet and have relaxed dialogues.

# Ecolife Café – Centre for Ecological Tourism Information and Community Learning Space for Environment and Climate Change

Ecolife Café is an initiative of VIETNET ICT, MCD started in October 2009 in order to set up the Centre of Ecological

Tourism Information and Community Learning Space for Environment and Climate Change which connects closely with the life, culture and entertainment of people living in the coastal areas. It is a business model of café, foods & drinks on-site, combining with a free information corner for free internet and information board or bookcase of updated information about environment, climate change and sustainable livelihoods in coastal areas, operated by people in the community eco-tourism core group, serving the benefit of community and eco-tourists. Compared to existing community education centers, Ecolife Café has the advantages of being community friendly space encouraging community meetings and dialogues, is easy to approach and closely connects with daily life of local people. It not only brings the added value of eco-tourism to the community, but also stimulates the creative business operation. Ecolife Café creates an opportunity for local community in approaching new information technology and knowledge, and helps to improve people's standard of living. Ecolife Café at Giao Xuan and Van Hung is now established and operating successfully, and Ecolife Café at Phu Long is in the preparation stages.

- Communication strategies on topics such as "Developing sustainable livelihoods in coastal areas", "Climate change and aquaculture", "Marine ecosystems and climate change" are implemented over the year in all MCD project locations and expanded into other coastal areas, at both central and local level, with the participation of national communication agencies, for extending the effect to public and policy makers.

2. Developing the specific model for integrating natural resources and *livelihoods community-based management in responding to climate change.* These activities are performed after developing and assessing the knowledge of local and community problems, demands and capacity and combining the inputs of application research and local knowledge. Intervention solutions are formed in which the community is the implementing party, local government is the coordinator and other related parties shall be the participants. In each location, there shall be different solutions but basically, they can be generated into main factors of the intervention model including the following management and livelihood practices:

- <u>Conservation zone joint-management</u>: This is a promoted method and creates a mechanism for local people, authorities and other parties to develop and utilize income sources from marine ecosystems, together with protection and sustainable development based on given regulation and plan. The showcase of this practice is Ran Trao marine ecosystem Protection Zone at Van Hung Commune.

- <u>Community-based sustainable aquaculture:</u> This is an intervention to the traditional livelihood of coastal people which helps them to exploit marine resources and do aquaculture in an environmental friendly manner, adapt better to changes in climate, without destroying the marine ecosystem and with clear management and planning. The implementation of such method depends on the specific condition of each location. The realistic samples are the sustainable oyster raising at Giao Xuan, the rotation of shrimp – anabas farming at Nam Phu, otter snout clam breeding at Van Hung and black-tiger-head shrimp and crab farming at Phu Long.

- <u>Coastal community-based eco-tourism</u>: This is a livelihood diversification method, increasing incomes of people living in the coastal areas and reducing the direct pressure on marine ecosystem sources through the development of local eco-tourism, provided and managed by local people. This practice utilizes the advantage of project areas which are the coastal and have distinguished and attractive natural and ecological values, combined with the particular cultural characters of coastal community in order to develop the products of community-based eco-tourism.

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- <u>Garden and Pigsty:</u> This is also a livelihood diversification method, increasing incomes of people living in coastal areas, utilizing existing material facilities of each family and applying the new means of production such as transforming generic house gardens into gardens specializing in plants with high economic value, raising red worms or cricket or planting high priced mushroom. In addition to the concrete benefits of increasing family incomes, such production methods also take part in the reduction or in adaptation to climate change and indirectly protecting the marine ecosystem. This is showcased in the practice of raising red worm at Giao Xuan.

The process of establishment and development of each small practice in the integrated intervention model are described as the following diagram:



#### Practice of Conservation zone co-management

Ran Trao is a coral reef on the coast in Van Phong Bay (Van Hung commune, Van Ninh district, Khanh Hoa province). It is approximately 28 ha in area and 1km form the shore at the nearest point. In spite of its small area, Ran Trao has a rich and diversified ecosystem with a high level cover of high quality corals compared to other coral reefs in the bay. In light of the degradation of the environment and reduction of resources, since 2001 MCD has supported the local community in implementing a project to develop Ran Trao marine conservation zone to manage and conserve the coastal coral reef ecosystem and restore the aquatic products sources for improving local people's livelihoods. Until 2008, Ran Trao marine ecosystem protected zone officially was approved to be established and assigned for local management by Khanh Hoa province. The total area of the protection zone is 89 ha, in which the strict protection core zone is 54 ha in area. The protection zone is managed and directly protected by local people with the support of local authorities and scientific agencies. The process of establishment, maintenance, completion of such practice consists of the main phases as follows:

*Phase 1 – Preparation:* preparing human and financial resources, developing the organization structure, communicating to enhance knowledge, collecting basic information and data, preparing the implementation plan, provide training on how to conduct participatory survey about socio-economic condition and biodiversity of the site.

*Phase 2 – Inception:* defining the current situation of aquatic product resources, related issues and threats to coastal ecosystem; collecting the baseline information, enhancing the capacity of community in to enhance their participation in resources protection and mobilise the supports of local authority

*Phase 3 – Development:* setting up the action plan to address problems and threats; organizing the community and establishing community regulation; developing the functional zoning plan of Ran Trao area; setting up the legal document and long-term management plan.

*Phase 4 – Approval:* approving the proposal of the protection zone development, ensuring the legality of the protection zone, approving the plan of activities as well as the protection & management organization structure of Ran Trao Protection Zone.

*Phase* 5 – *Implementation:* conducting the approved plans and activities, including the establishment of a Management Board and protection team; monitoring ecosystem resources connecting with the economical – social situation (apply SOCMON method); setting up the protection zone boundary (floating buoys; implementing Ran Trao regulations; carrying out the communication strategies; organizing the training programs with selected subjects; developing the Community Environmental Education Center; running pilot of environmentally sustainable livelihood (aquaculture with a large number of species; otter snout clam pilot breeding; developing community-based eco-tourism), exchange and information sharing with other regions.

*Phase 6 – Selection and Consolidation:* completing the organization structure; assessing the results, documenting the experience and sharing lessons learnt; preparing the plan for the following cycle with implemented activities including: assessing of community awareness and relating parties; evaluating biological, economical – social of Ran Trao protection zone; correcting the regulations; completing the Management Board of Ran Trao protection zone; adjusting the core protection group; developing and wide spreading the documentation of Ran Trao practice; assessing the impact of climate change on the practice.

#### Practice of community-based sustainable aquaculture

Giao Xuan Commune is one of five communes in Xuan Thuy National Park's buffer zone. The oyster raising in Giao Thuy district is mainly implemented at Giao Xuan, counting for more than 50% of oyster raising areas of the district. The province has been raising oysters since 1991. The oyster raising area is approximately 559 ha, with the participation of more than 320 households, about 1200 people, which is nearly 14% of population. Due to rapid development without the close management of local management units and local government, oyster raising at the commune currently is facing alarming problems. Because of the density and high quantity of farmed oysters, productivity is decreasing and the duration of farming has increased from 24 months to 36 months which is badly affecting farmer incomes. Moreover, the natural breeding animals are becoming scarcer due to the approach of harvesting all oysters.

With the support of MCD, at the end of 2009 the co-operation team of sustainable oyster raising with eight members established and has implemented the pilot project based on the environmental friendly method on 4 ha areas. The team has developed its regulations and it is approved by Giao Xuan Commune's People Committee as a first team of the commune. The advanced technique has been applied to ensure the 2m distance between besieged nets (comparing to the previous 30-40cm distance), the canals are expanded 12 - 15m, and all the members have to conform to the "Instruction Handbook on Oyster breeding". All the activities are discussed and agreed during monthly meeting for monitoring all activities, sharing experiences and orienting the next actions. After three months of breeding, the recorded growing level of oyster has increased 2-3 times compared to previous years and the quality of living rate is significantly higher.

In addition to these community events, all related parties have been enthusiastically participating in the implementation process and co-management, including establishing the management advisory board. This advisory board meets twice per year to ensure thorough understanding of up to date information, and to improve the voice of the co-operation team, i.e. the "small" people, and to participate in the support of resources protection.

The activities of sustainable oyster breeding at Giao Xuan have achieved remarkable results in approaching the market. Giao Thuy oysters meet with the standards of EU food safety (Safety Products Level B) and the Giao Thuy oyster brand was approved on October 2008 by the National Office of Intellectual Property of Vietnam. There are about 100 lagoon owners in the Commune receiving information on sustainable oyster breeding through community dialogue, radio broadcast and consulting events. Lessons learnt through this approach are shared through studies, seminars and communication activities.

#### The practice of Community-Based Eco-tourism

Community-Based Ecotourism (CBET) is tourism operated by the community, based on nature and local culture with the twin objectives of environmental protection and promoting tourism. Development of CBET at the MCD project's locations make a contribution in supporting country's tourism, diversifying the livelihoods for local community and creating more jobs and increasing income to improve the standard of living for people involved in the projects. At Giao Xuan commune, this practice has started since 2007 and it has been the commune with the most well developed community-based eco-tourism project among the MCD project's locations, with the establishment of Giao Xuan CBET Co-operative in the beginning of 2011. The business activity of the CBET has been organized based the participation of other parties such as Social Enterprise of eco-tourist service EcoLife. The process of establishment and development of such practice consists of main activities as follows

(1) Survey: defining the potential, the market, the readiness of community and location, product orientation of CBET (2) Design: raising awareness, enhancing capacity, establishing the community organization, setting up the development plan with the participation of different parties, designing and developing the product, (3) Development: building up material facilities and tourist center (Ecolife Café), improving the skills of operating CBET, developing operation regulations, product testing, (4) Promotion: Developing promotion and advertisement channels, defining partners in the CBET value series, delivering product into the market, running the CBET business, and adjusting to the context of local conditions.

Over the two years of 2010 and 2011, Giao Xuan CBET has welcomed over 1000 visitors coming to holiday and study in the commune; 31% foreign visitors and 69% Vietnamese visitors. This brings an average additional income of 400,000 – 500,000 VND/household for the 45 households participating in the practice. Furthermore, there are about 1000 other people in the commune receiving indirect benefits.

The practice was documented, and the results and lesson learnt shared through publications such as the Instruction Handbook of Developing CBET Plans in Vietnamese coastal areas, Policy Suggestion – the requirements of policy & regulation innovation relating to the development of CBET in Vietnamese coastal areas, and presentations at related central and local forums.

This practice is replicated in other conservation zones in Vietnam such as Tien Hai Natural Conservation Zone (Giao Xuan CBET, Nam Phu), Ran Tra Marine Ecosystem Protection Zone (Van Hung), Cat Ba Biosphere Reserve, Hai Phong (Phu Long CBET), Nui Chua and Cu Lao Cham Marine Protection Zone. The practice shall be expanded and developed based on market demand and t potential as well as the capacity of community groups in the coastal areas and areas with high levels of biodiversity.

# Effectiveness in responding to climate change

<u>Adaptation effectiveness</u>: Are shown through the enhanced adaptive capacity and resilience against impacts of climate change for community group, related stakeholders and the ecosystems, as follow:

- <u>Raising awareness and knowledge of climate change of the community</u>: This includes the activities of communicating, training, visiting, assessing risks of ecosystems and the impacts of climate change for community to support the human resources of each regions becoming stronger, ready and active in responding to the challenges related to climate and weather changes in their lives and in production.
- <u>Achieving success in conserving the ecosystems and marine sources by increasing</u> <u>the resilience and recovery capacity of marine ecosystems</u>: The practice assists in reducing or fully eliminating the direct harvest activities and destruction of coral reef and mangrove forest, with wise harvesting with planned planting of appropriate aquatic species, and better conservation of coastal water quality.
- <u>Developing local business</u>, <u>stabilizing and diversifying income sources of community</u>: The livelihood practices have created more jobs and increased the incomes of communities participating in the practice (aquaculture, CBET, raising red worm, planting mushroom), which has contributed in raising human and financial resources/ livelihoods for community groups. It also helps to reduce the pressure of natural resources exploitation at Xuan Thuy National Park and Tien Hai Conservation Zone and to enhance the capacity in responding to climate change

risks and impacts. The CBET Ecolife Café environment and climate change education spaces have become one of the strongest initiatives of enhancing the social, financial capacity in responding to climate change in community.

- Enhancing the collective activities, improving social relationship and integrating • gender considerations: With the establishment of community structures and local business operations (e.g. Ran Trao security guards in Van Hung, Co-operation team of oyster sustainable breeding at Giao Xuan, Giao CBET Co-operative, Environmental Friendly Livelihood Club in Nam Phu, co-operation team of sustainable aquaculture in Phu Long etc.), the management capacity of outstanding members has increased, and the activeness of members and the roles of organizations/ community groups have been acknowledged in livelihood development and natural resources conservation. In addition, the solidarity and supportive spirit in community groups have been greatly enhanced. Women have more opportunities to participate in the livelihood activities (particularly to be involved in the CBET practice, sustainable aquaculture, and in having a secondary job) to increase family income and social communication, thus, gender relationships in family and community has improved. Personal capacity and the community connection are both important factors in creating community resistance to climate change
- <u>Enhancing participatory resource management capacity: the co-management of</u> • aquatic products (sustainable aquaculture) approach and integrated management of coastal zones at local level are integrated into different practices. The regulations for the use and protection of aquatic resources are approved by the local government with the participation of the community. Through the activities, the local staff's (Management Board of Red River Biosphere Reserve, the Management Board of Cat Ba Biosphere Reserve, and Ran Trao Marine Ecosystem Protection Zone) capacities in developing management plan in adaptation to climate change are enhanced. The plans are now developed based on the actual demand's assessment (including consideration about local livelihoods issues) and other related adaptive guidelines and regulations. The final outcomes of this model have provided important information which supported decision making and management planning processes (e.g. the plan for the development of aquaculture in Giao Thuy, the action plans in responding to climate change in Nam Dinh, Thai Binh, Hai Phong and Khanh Hoa province, the management plan of Red River Biosphere Reserve, of Cat Ba Biosphere Reserve, and of Ran Trao Marine Ecosystem Protection Zone).

<u>Mitigation effectiveness</u>: Are shown through the maintenance and development of coastal protection function of the marine ecosystem, through the adjustment of community livelihoods, as follow:

• The activities of joint-managing the conservation zone of the practice have plays a part the maintaining, recovering and developing of thousands of hectares of mangrove forest, coral reefs and sea grass in the Red River Biosphere Reserve, Cat Ba Biosphere Reserve, Ran Trao and Van Phong Bay Marine Ecosystem Protection Zone. As a result, the functions of these ecosystems (CO<sub>2</sub> absorption,

wave & windstorm barriers, seashore protection and reduction of seashore erosion) are maintained and enhanced.

• The practices of suitable aquaculture and CBET has contributed to protecting and recovering mangrove forests and coral reef ecosystems, reducing carbon dioxide and using sustainable energy, enhancing awareness and the participation of people in community to natural resources and coastal sources conservation. The story of Mr. Thanh, Phu Long commune – Cat Ba Biosphere Reserve is a typical sample in protecting the mangrove forest and conserving the valuable langur, integrating with the sustainable aquaculture in the context of climate change. Mr. Thang (practice of Giao Xuan CBET) is a typical person in the community contributing in the conservation efforts of rare migration birds and the protection of mangrove forest in Xuan Thuy National Park.

• Through community campaigns, coastal clean-ups with the participation of community in the project's regions and other provinces, have helped to raise waste resources awareness and to enhance the sense importance of keeping the environment clean and has promoted green living in the community. The annual Coastal Clean-up Campaign (CCC) has become a community event which attracts many participators and it has a great contribution in reducing pollution and keeping the living environment clean.

# Challenges and lessons learned

#### Lessons learned

Practices of resources management, livelihood development and adaptation to climate change have strengthened the capacity of vulnerable coastal communities to adapt to climate change and enhanced their roles in responding to climate change and in the sustainable development of coastal areas. During the implementation process of the practice in the local areas, there are several lessons learnt:

• The active participation of people in all the phases of the practice is an important factor, ensuring strengthened capacity in adaptation for the participants, monitoring and assessing results, and providing feedback to relevant parties.

• During the design of the practice, the assessments and applied scientific research played an important role providing useful information, especially at the local level. The assessment of vulnerability to climate change in livelihoods development can provides information about the impact level and adaptive capacity of the community, and also assists the making of a participatory adaptation plan which included feasible solutions.

• The implementation sustainable livelihood and adaptation practices are a "transformation" process which is impacted by various environmental, economical and social factors and management regulations. Practices in resource management, livelihood development and climate change adaptation adopted the "livelihood and ecosystem service approach" in order to increase the resilience of the community against climate change impacts, to maintain the services provided by marine ecosystems and resources for people, and to change the approach in the usage and management of resources in a sustainable way.

• The scale of the specific intervention is still small; there is a need for coordination of other parties, especially the governmental agencies, to expand the scale of the practice or enhancing its impacts. In addition to that, additional financial supports, more local participation (province/district level) and supportive policies will ensure the sustainability of the practice and its repicability.

• It is necessary to enhance policy advocacy activities, building institutional capacity, and enhance the integration of climate change in management planning programs, in which responds measures should included the support of livelihood solutions in order to maintain stable livelihood and ability to adapt to climate change in the long term for the people.

• The projects coordinated and implemented by MCD all have the acceptance of People Committee in the participating provinces, where feedbacks and information from relevant consulting agencies and the regions directly participating in the project are exchanged regularly. As a result, the activities are integrated closely with the programs of the local authorities and their units.

This connection with the national and local programs and plans is a key factor in the success of the approach. The process of designing and implementing the practice ensures it responds to local demand and integrated with local plans. Dialogues were organized to collects information and feedback of local community and local government staff to ensure that information collected during the survey is corrected and agreed upon by both the community and local government. This will served as a foundation for future consensus among related stakeholders. Furthermore, the planning processes always have active participation of local people and experts' consultancy before conducting any activities. Livelihood practices including both aquatic and non-aquatic products are selected carefully, aiming at diversifying income sources, encouraging non-destructive exploitation, providing production/business solutions which are environment friendly and in harmony with local development plans and strategies. MCD applied the approaches of co-management and integrated management, which are all stated and encouraged in national programs and policies. On-site experiences, and knowledge of MCD have been shared, integrated and consulted for policies of marine resources management such as National Target Program to Respond to Climate Change (NTP-RCC), the program of Integrated Coastal Zone Management of the North Central Coast and Central coastal area, the planning project of Vietnamese Marine Conservation Zones System, the Strategy of National Biodiversity Conservation, the strategic proposal of Integrated National Coastal Zones, the National Action Plan in Responding to Climate Change in MCD project areas.

#### **Challenges**

In aiming to achieve positive results in conserving the marine ecosystems and improving the lives of coastal people in the context of climate change, the development of integrated practices as described above faces many challenges in implementation with the community and other participating parties. • The design of appropriate intervention solutions in conformity with each area is a great challenge because it needs a profound knowledge about the local environmental, economical, social and cultural issues and community target groups which need to be supported, especially in the current complex climate change context.

• Implementing the intervention solutions requires many necessary conditions such as the consensus, supports and participation of not only local community but also many other relevant parties (governmental institutions at all levels, specialized institutions, experts and associations); significant investment of human and financial resources of sponsor organizations; long-term commitment and effort; flexibility in responding to the relevant events; consistency with the selected approach, and the multi-sector capacity of supportive organizations in implementation.

• When implementing a holistic group of interventions, it may be difficult to define direct and immediate results of these interventions, especially with regards to responding to climate change. As a result, criteria in responding to climate change should be integrated right at process of designing measures to ensure that the implementation of such measures will enhanced people adaptive capacity against climate change.

• The series of activities implemented in project areas on different topics in the integrated solutions package may lead to difficulties in gaining sufficient and active participation of local people, as well as in their decision to participate in which activities and about their roles in such activity. To overcome this challenge, it is necessary to ensure the clarity and coherence in the design of detail contents and intensive mobilization and engagement of local people.

• In spite of the national focus of marine and island integrated management, the current actual planning project and management is still a mono-disciplinary type. This is a great challenge for connecting and institutionalizing the integrated practice into the local planning project, and plans of resources management in responding to climate change.

# **General Information**

Because of its complex and diverse topographies, Vietnam is vulnerable to the impacts of tropical cyclones, floods, droughts, sea invasions, landslides, forest fires and occasionally even earthquakes. Nearly 60% of Vietnam's land area and more than 70% of the population are facing threats from natural disasters, notably from tropical cyclones and floods. In the past 20 years, natural disasters have claimed more than 13,000 lives and, on average, cost approximately 1% of the national GDP annually<sup>40</sup>. Moreover, climate change has been adding the complexities and variables to the pre-existing occurrence of natural disasters, which poses significant challenges for the management of disaster risks in Vietnam.

Therefore, in order to ensure sustainable development within this current context, disaster risk reduction (DRR) and climate change adaptation (CCA) should be seen as issues which are closely intertwined. The recently published IPCC Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX report)<sup>41</sup> can be seen as a confirmation for the necessity of linking the two issues. This report has provided us with the most up-to-date understanding about the relationship between natural disasters, disaster risk management and climate change; and also emphasized the complementary natures of DRR and CCA, and the necessity of considering DRR and disaster risk managements as one of the core components of CCA. Many of disaster risk reduction measures can be considered as low regret adaptation measures and can help us to facilitate decision making processes when dealing with future uncertainties.

For a long time, disaster risk management practices in Vietnam focused on structural measures, e.g. building preventative dykes, and on post disaster recovery and emergency relief activities. These measures have yielded many positive effects, however the experiences and outcomes of DRR activities in Vietnam over the last decade have shown that it is vital to have an appropriate combination of both structural and non-structural measures (e.g. community-based disaster risk management), and the importance of engaging the community at the grass-root level in disaster-related decision making processes and response activities. Over the last decade, there have been many successful DRR stories and best practices shared by various organizations and agencies, such as the "Four on the Spot" principle, the DRR panel at local level, and DRR Clubs. All of these DRR activities have been credited for their effectiveness, sustainability and ability to be replicated in Vietnam, and can be considered as good

<sup>&</sup>lt;sup>40</sup> World Bank, 2011, Vietnam Development Report 2011 – Natural Resources Management, [internet] <u>http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/EASTASIAPACIFICEXT/VIETNAMINVIETNA</u> <u>MESEEXTN/0, contentMDK:22416760~pagePK:1497618~piPK:217854~theSitePK:486752,00.html</u>, last accessed 15/11/2011.

<sup>&</sup>lt;sup>41</sup> IPCC, 2011, Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation – Summary for Policy Makers, [internet] <u>http://ipcc-wg2.gov/SREX/</u>, last accessed 25/11/2011.

references for climate change adaptation activities. The information about these practices is well-documented and can be found at the website of the Standing Committee of the Flood and Storm Control Panel http://www.ccfsc.gov.vn/KW376B3F/An-pham--Tu-lieu.aspx.

In this report, instead of introducing the well-documented practices, we have chosen a few new practices which are more holistic and emphasize the necessity of having a combination of activities focusing on sustaining livelihoods, raising awareness and promoting behavior changes for the community in order to reduce the risks of weather extremes and long term climatic changes. The new introduced practices are as follow:

- Community-based Mangrove Plantation, Protection and Management.
- Intergrating Disaster Risk Reduction and Climate Change Adaptation into Socio-Economics Plans and Planning Processes at Local Level.

# **Good Practices**

Community-based Mangrove Plantation, Protection and Management.

# Context

The mangrove ecosystem is one of the most important coastal ecosystems. In addition to the basic biological functions which it provides, mangroves also play an important role as a system which helps prevent and reduce the impacts of natural disasters such as typhoons, high waves and rising tides. It also helps stabilize the coast, facilitate the sedimentation process and reduce coastal erosion<sup>42</sup>.

Wars have destroyed approximately 30% of the Vietnam's mangrove areas. In addition to that, since the beginning of the 'Đổi Mới' period, the rapid development of the fishery industry, tourism industry and other coastal economic activities has lead to the continuous reduction of mangrove areas in Vietnam<sup>43</sup>. Although efforts to restore the mangrove systems for disaster risk reduction and national defense purposes commenced soon after the loss of mangroves, it was not until 2001 the reduction trends started to reverse. However, even now mangroves cover only 42% compare to before the area before the war<sup>44</sup>. Along Vietnam coastal line, mangrove reforestation and management initiatives have various purposes. In the Northern and Central regions, due to its vulnerability against natural disasters especially typhoon, mangrove planting has been closely related to disaster risk mitigation tasks, ensuring the full protection of the mangroves. In the South, mangrove plantation, management and

<sup>&</sup>lt;sup>42</sup> Hong P.N. & San H.T., 1993, Mangroves of Vietnam, IUCN, Bangkok, Thailand.

<sup>&</sup>lt;sup>43</sup> Hong P.N. & San H.T., 1993, ibid.

<sup>&</sup>lt;sup>44</sup> Powell N., Maria O., Sinh B.T. & Toan V.C., World Resource Report Case Study – Mangrove Restoration and Rehabilitation for Climate Change Adaptation in Vietnam, [internet] http://www.worldresourcesreport.org/files/wrr/wrr\_case\_study\_mangrove\_restoration\_vietnam.pdf, last

http://www.worldresourcesreport.org/files/wrr/wrr\_case\_study\_mangrove\_restoration\_vietnam.pdf, last accessed15/10/2011.

protection activities often focus on poverty reduction and livelihood diversifications purposes.

Although efforts to restore, protect and manage mangrove forest have been implemented by the Ministry of Forestry (Now the Ministry of Agriculture and Rural Development) since the 1960s<sup>45</sup>, only in the 1990s have various international organizations, such as the Japanese Red Cross – JRC, Danish Red Cross – DRC, Save The Children, Action for Mangrove Reforestation - ACTMANG, OXFAM, CARE, GIZ etc, been joining the activities under various schemes and with varying levels of success.

One of the most successful manrgove plantation programs is the 'Community based Mangrove Plantation and Disaster Prevention Program' implemented by Vietnam Red Cross. This program has contributed to the restoration of more than 9.032 ha of mangrove forest (approximately 23.8% of the entire Nothern mangrove coverage) after 15 years of implementation (1994-2010). This program has played an important role in reducing disaster risks, raising awareness and developing additional livelihoods for coastal communities. Although the program has succeeded in meeting its immediate targets, the program faces many long term challenges such as: (i) the lack of effective management resources and the low level of investment for capacity development have led to insufficient monitoring and guiding processes, (ii) the program has yet to develop an effective exit strategy to put in place after the program ends and (iii) the disaster risk mitigation method focused too much on plantation had lead to some implemented measures that were not very effective and/or not in line with the program objectives<sup>46</sup>.

On the other hand, CARE's Community-based Mangrove Plantation practice implemented in Hậu Lộc, Thanh Hóa from 2006 to 2010 aiming at reducing people's vulnerability and enhancing their resilience to disasters, with its appropriate distribution of resources in (i) plantation, (ii) helping the community to manage and protect the manrgove and (iii) building capacity for the community, mass organizations and local government, has proved to be successful with many valuable lesson learnt on how to implement community-based approaches in mangroves plantation, protection and care to reduce disaster risks and respond to climate change.

# Implemented activities:

- Conduct baseline surveys to collect data about the ecosystems to determine options for intervention, scopes for the intervention and the feasibility of applying the community based approach in mangrove plantation, restoration and management in the chosen site.
- Choose local organations as partners and from that developing a management system which expands from the provincial to commune level, including a Project Sterring Committee, Project Implementing Committee and the Community Panel on Mangrove Management, in order to create the foundation for the

<sup>&</sup>lt;sup>45</sup> Hong P.N. & San H.T., 1993, ibid

<sup>&</sup>lt;sup>46</sup> IFRC, 2011, Planting Protection – Evaluation of community based mangrove reforestation and disaster preparedness program 2006-2010, [internet] <u>http://www.ifrc.org/docs/Appeals/annual11/MAAVN00111myr-Planting-Protection-April-2011-EN.pdf</u>, last accessed 15/10/2011.

community based mangrove management system, to establish technical groups and implement awareness raising and capacity building activities for the communities in mangrove management.

- Support the people in mangrove plantation and management in Đa Lộc and Nga Thủy.
- Establish a mangrove nursery.
- Provide training for 20 members of the Project Management Board on how to apply 'participatory land use planning processes' and conduct many awareness raising activities for the community on mangrove protection. The regulations for mangrove protection are drafted, ratified and implemented by the people themselves.
- Establish green groups to implement awareness raising activities in environmentalprotectio n, to participating in waste treatment activities for the community and in protecting the the mangrove and local environment.

The Green Group consists of 164 youth from the commune's high schools has played an active part in cleaning the beach, in caring for the newly plant mangrove, in cleaning the neighborhoods,in recycling water and making organic fertilizer. Through these activities, the communities' awareness on the benefits of mangroves and of environment protection has been greatly enhanced. More than 5000 community members have received information about environment and mangrove protection from the Green Volunteers Group.These activities has also help the communities to have better knowledge on mangrove management and climate change adaptation. (Information provided by CARE Vietnam Staff)

- Partnering with other disaster risk reduction projects to provide training to raise awareness oflocal people about disasters and how to carry out the assessment and planning process to develop community based disaster management plan in Đa Lộc.
- Provide technical training and support to diversify livelihoods and create alternative livelihoods for local people such as bee keeping, raising ducks, and pigs, etc.
- Building irrigation channels for the local people to desalinate the soil to reduce the pressure on mangrove systems.

# Practice's Effectiveness in Responding to Climate Change<sup>47 & 48</sup>:

The increased in quality and area of mangroves helps protect the coastal community against natural disasters and climate change impacts. Furthermore, mangroves can also be carbon sinks, helping to mitigate climate change. Approximately 200ha of new mangroves were planted from 2007 to 2009, with exceptionally high survival rate (more than 80%). This is a notable success, as other mangrove planting program implemented by Save the Children, JRC and the

<sup>&</sup>lt;sup>47</sup> CARE Australia, 2009, Review of CARE's Community Based Mangrove Reforestation and Management Project, [internet] <u>http://www.care.org.au/Document.Doc?id=421</u>, last accessed 15/10/2011.

<sup>&</sup>lt;sup>48</sup> CARE Vietnam, 2010, Interim Narrative Report from 1<sup>st</sup> August to 30<sup>th</sup> June 2009 – Project: Community Based Mangroves Reforestation and Management.

Government in this area have received a highest survival rate of only 60%. Over the coast line of Da Loc commune there is a total 350ha mangrove in healthy condition, in which approximately 250ha is already from 1.8 to 2 metres high and approximately 40cm in stump perimeter. The newly planted mangrove has already had positive impacts, such as helping to stabilize the coast and the alluvial areas, and turn the area into multiple uses forest. After three years of project implementation, the total area and the quality of Hau Loc mangroves have been improved and expanded. These results play an important role in enhancing the community's adaptive capacity against the changing natures of natural disasters due to its effectiveness in reducing waves, reducing wind and protecting the sea dykes.

Additionally, the establishment and operation of the mangrove nursery helps the local community in having stable sources of seedlings and additional income.

One other aspect which needs mentioning is the fact that other aspects related to climate change mitigation, such as the potential for receiving more financial resources through mechanisms such as CDM and REDD+ have also been studied<sup>49</sup>. This will help open a new path for ensuring the sustainability and of the practice and its ability to be replicated across Vietnam.

The significant increase in awareness, capacity and level of participation of the community members in co-managing the mangrove forest has helped ensure strongcooperation between community members andlocal government, and in mobilising collective strength in disaster response and in responding to climate change. Due to the effective operation of the farmer groups and the Community Mangrove Management Board (election and regulations for operation are developed by the people themselves), the tasks of planting, managing and protecting mangroves within the project all received high levels of active participation from the local community. Moreover, community members were participate actively in land use planning and disaster risk reduction planning processes throughout all steps, alongside local governments and other related stakeholders. These processes help the local communities to really understand that the mangrove forest in their commune are actually theirs, and they are responsible for caring and protecting it, and that in the long term they will receive benefits from that ownership and protection.

From the successful protection of the mangrove forest, the project has helped the Community Mangrove Management Board to develop a participatory land use plan where community members of three villages participated in the measuring processes, in the determination of forest areas, and in determining the roles, responsibilities and rights of each stakeholder toward the forest area. Based on this plan and the Community's Declaration of Forest Protection, Hau Loc District's People Committee had approved the rights to protect, manage and develop the mangrove forest area for the community in five years. This has allowed the people to be independent in managing and protecting the forest. (Information shared by CARE Vietnam Staff)

<sup>&</sup>lt;sup>49</sup> Mangrove for the Future(MFF), 2010, Summary report: Mangrove for the Future, Phase 2, Vietnam Launch, [internet]

http://cmsdata.iucn.org/downloads/mff\_2\_launch\_meeting\_summary\_october\_2010\_final\_1.pdf, last accessed 15/10/2011

The practice also helped facilitate changes in the community's awareness and behavior toward the environment through communication and awareness raising activities.

In addition, the community's capacity in co-managing the mangrove forest was developed throughout the life of the project and has helped improve the relationship between related stakeholders and the community, brought positive impacts to the local forest management processes and increased people's awareness towards their surrounding environment. These positive changes are very important and have increased community capacities in responding to disasters, which is certainly very necessary in the context of climate change.

The benefits of the mangrove forest and other activities to support the communities' livelihoods and create alternative livelihoods (raising pig, oysters and bee keeping) play an important role in reducing poverty and people's vulnerability against disaster risks and climate change. Households who live in the

To desalinate the soil from the broken dyke incidents after the land fall of typhoon Damrey in 2005, CARE supported the local community to build a fresh water channel to provide water for more than 200ha of agriculture land. As a result, rice production has increased from 50-200kg/sào (1 sào = 360 m<sup>2</sup>) to 300kg/sào.Training activities on how to raise pig and duck also help increased income for the people. The first duck stock has bring more than 47 million VND/household for 35 participating households. (Sharing of CARE staff) commune's coastal area (approximately 30% of the total households) have all confirmed that the crops and the production is better, although not significantly. The amount of fish and other marine species harvested in the alluvial area and within the mangrove area has also increased. This has created additional income for the local people, which is very meaningful especially for the poor. In addition, the project is also helping poor households in the community through providing training and initial support for these families to raise pig, raise duck and grow vegetable as a means to

create alternative livelihoods and to reduce pressure on the newly planted mangrove area.



Photo 7: Helping the community to diversify their livelihoods – Raising Oyster in Len River (Photo provided by CARE).

The mangrove is creating conditions for marine life to develop. When planning for exploitation is appropriate, the people can have benefit from the mangrove. More than a thousand people were allowed to harvest fish, small crabs as breed, oyster and snails etc. in the forest. It is has been recorded that there were day when more than 400 people can earn about 20 million VND from the mangrove forest, and there were about four or five times like that a year (from April to September). The project also promote bee keeping in summer, the flowering time of the mangrove. (Sharing of CARE Vietnam staff)

# **Challenges and Lessons learnt:**

#### Lessons learnt:

*The community-based approach in managing mangroves is an effective method in building capacity and empowering the community, which help them to participate in, and have responsibility for natural resources management.* The understanding, acceptance and active participation of the local people in mangrove planting, protection and management after joining in the project's activities are strong proof for the appropriateness of this method<sup>50</sup>.

*On-site leadership, monitoring and evaluation are of critical importance for the success of the practice and is a worthy lesson which need to be replicated.* The setting up of a project office and the presence of field officers in the project site play a crucial role in the success of the project. However, it should be noted that it is vital for the sustainability of the project to have a process in place for exiting the project appropriately and strategically <sup>51</sup>.

The organization of participatory meetings to collect ideas. information and experience of the local people play an important role<sup>52</sup>. These will not only can helped the project to utilise indigenous knowledge, but also help build a culture of participation and build people's confidence when participating in decision community's making processes. It is a critical factor which helps engage and mobilize the local people in project



Photo 8: Youth volunteer provide helps in caring the mangrove (Provided by CARE Vietnam)

implementation. Transparency and openness in all project activities also play a equally critical role in building the people's trust towards project activities, and helping them to understand that in fact this project is theirs, not CARE's, not the local government's or any other organisation's, and to feel a sense of ownership of the project.

*Flexibility in mobilising people is also a worthy lesson.* At the beginning, the project had difficulties in getting local people to participate in project activities, mostly due to a majority of the labor forces in the project site having migrated to the big cities

<sup>&</sup>lt;sup>50</sup> CARE Australia, 2009, ibid.

<sup>&</sup>lt;sup>51</sup> CARE Australia, 2009, ibid.

<sup>&</sup>lt;sup>52</sup> CARE Vietnam, 2010, ibid

to find jobs because of the difficult local situation after the land fall of typhoon Damrey in 2005. However, with the flexibility in implementation, the project has been able to mobilize the remainder of the community labor force to participate in project activities, with women and young people being the most active participants.

Building relationships and conducting communication activities to various target groups about the success and lesson learnt from the project help utilize supports of stakeholders and increase the potential of the project's replication. Maintaining good relationship with local partners, from the provincial to commune level, will help facilitate administration procedures, and preparation for workshops, training courses and meetings. The participation of different stakeholders in project activities is not only allowing the project to take advantage of their ideas and experience, but can also help participants to understand and accept the community based approach. This also helps improve the relationship among people and the local authority and increases chances for the project to be replicated in surrounding areas.

#### Challenges:

There is a need for more raising awareness and capacity building activities, and expanding the scope of the project to surrounding area. The project has already implemented many raising awareness activities in which the participants from the surrounding communes outside the project site were also invited to participate. However, in the near future, there should be more activities to minimize external impacts to the newly establish mangrove areas, as well as reducing potential future impacts when the resources available for harvesting in the mangrove increase.

Sharing the benefits among different target groups should be done better in the near future. The benefit-sharing mechanism based on participation frequency and activeness of the participants may ignore some of the vulnerable groups who participate in mangrove management (e.g. people with disabilities, elders or the extremely poor who do not have time to participate in the activities). This requires further need assessments and support so that all community members can participate in protecting the mangrove and share the resulting benefits.

# Integrating Disaster Risk Reduction and Climate Change Adaptation into Socio-Economic planning processes at the local level

### Context

Located in a typhoon prone region in the Asia Pacific area, Vietnam often suffers from a variety of natural disasters. According to some assessments, Vietnam will be among the countries to endure a great deal of climate change impacts, especially sea level rise, due to Vietnam's complex topography and long coast line. Over the last few decades, natural disasters have occurred in all regions of the country, causing massive losses and damage. Moreover, in the context of the changing climate, there have been observations that recent natural disasters are more and more complex and unpredictable<sup>53</sup>, and causing disastrous impacts to different regions and the socio-economic development process.

Vietnam is currently implementing policies related to responding to climate change and disaster risk reduction (DRR). All of these policies highlight the importance and necessity of integrating DRR and climate change adaptation (CCA) into strategies, policies and plans, especially socio-economic development plans, at all levels. However, up until now there are no official documents to provide proper guidance for implementing the integration process.

As part of many efforts to address this issue, Oxfam in Vietnam has implemented a model on integrating DRR and CCA into socio-economic planning processes. The final result of this process is a manual on "Integrating DRR and CCA into the socio-economic planning processes at the commune level". This manual will serve as a supporting tool for the local authority related agencies, and where necessary instruments and skills on how to integrate DRR & CCA into each part of the commune's socio-economic plan are presented.



Photo 9: PCVA training in Hải Lăng, Quảng Trị (Source: Oxfam Việt Nam)

The experimenting processes has show positive changes in the planning processes, which is shown by the increasing roles of the poor, ethnic minority people and women in the planning process. This helps to ensure that their short term and long term rights related to DRR and CCA are considered in the planning and local budget allocation processes.

# Implemented activities

<sup>&</sup>lt;sup>53</sup> Trần Thục et. al, 2008, Climate Change and Response Measures.

#### **Integration Principles**

The integration of DRR and CCA issue into socio-economic planning process should abide by the following principles:

- Integrating at all steps of the planning process;
- Integrating DRR & CCA based on the principles of sustainable development, which are systematic, wholistic, sector's based, interdisciplinary, region and interdisciplinary, contributing to the poverty reduction and gender equality, priotising vulnerable groups such as the poor and children;
- Focusing the integration in the key points, have priorities and take into account DRR & CAA with other immediate impacts and potential impacts in the future;
- Integrating based on active participation of all stakeholders;
- Mobilising community resources: based on the results of hazards & climate risk assessment to
- analyse the strength and weakness of the community, promoting self-active and innovative mmethods of the local people in the design and integration process;
- Must not be complex and created additional responsibilities and work for the planning officers and local authority.

(Source: Oxfam in Vietnam, 2011, Draft Manual on the Integration of Disaster Risks Reduction and Climate Change Adaptation into the socio-economic planning process at commune level)

In order for the integration be effective, the activities need to be done are as follow:

**Establish the planning team.** The team must ensure the participation of all stakeholders involved in DRR and CCA, and provide training on integrated planning processes and other participatory methods (e.g. Participatory Capacity and Vulnerability Assessment - PCVA).

**Collect information.** The information include baseline information about risks, damage, climate change signals and impacts, guidance information and activities related to DRR and CCA from all related sectors and agencies.

#### Analysing and reviewing the information.

- Review information on damage, weather/climate trends, and the current state of DRR and CCA practices in the commune.
- Analyse the current status, determine measures and priorities related to DRR and CCA needed for commune's socio-economic development. It is also neccesary to review the potential impacts these measures may have on the development process, as well as on DRR and CCA status of the commune.
- Identify DRR and CCA objectives and criteria.
- Prepare for the drafting of the integrated socio-economic plan.

**Developing the draft socio-economic plan.** It is important to ensure that intedisciplinary measures and DRR and CCA activities are reviewed and considered in this stage of the process.

Organise consultation meetings to gather feedback and comments about the draft socio-economic plan, make changes where necessary. The consultation must have active participation and contribution of the local people; based on their feedback make necessary changes to the draft plan.

**Complete and submit the integrated socio-economic plan for approval**. Submit the plan to the required higher level for approval, follow up and updates about the approval processes and results.

#### Practice's effectiveness in responding to climate change

Intergrate DRR andCCA into socio-economic development plans help increase sustainability and move towards increasing the capacity of poor people and ethnic minorities to respond to natural disaster and CCA. Throughout the integration process, disasters and climate risks and its impacts to the development processes are reviewed, measures to respond to these risks are proposed and/or planned development activities revised to better respond to these risks.

Hải Dương Commune in Hải Lăng District, Quảng Trị province is a sandy coastal commune. Most of the people living here are farmers. However, in recent years, abnormal changes in weather, especially prolonged drought, have been causing great difficulties for agricultural production here. In the dry season, the land areas left barren are quite substantial.

The project 'Integrating DRR&CCA into socio-economic development plan at commune level', implemented by Oxfam Vietnam, has supporting the agriculture sector in Hai Lang through collaboration with scientific institutes to help the local people determine their priority livelihood needs. Through this, a set of simple and effective adaptation measures have been determined and put into the commune's socioeconomic development plan. One of the notable measures is the model of growing vegetables with cover in which other simple technical measures for adaptation such as spray watering, covering the vegetable bed with straw and raising the bed to save water have been applied. These measures have helped the commune's women be able to grow vegetables in the dry season, generate stable incomes, and ensure that the land is not left abandoned.

Moreover, the integration process has helped the local authority to understand about people needs in difficult times, about what they can do to help them and how to develop good socio-economic plans. (Source: Hồng V.T, 2009, Report on the consolidation and collection of good models/practices in DRR &CCA, [internet], <u>http://ipcvr.net/files/2010/03/Oxfam-DRMCCA-Practices-Report-Nov09.pdf</u>, last accessed 15/10/2011)

The integration processes are also being institutionalized step by step so that it can be replicated in other communes and districts. Following this, the experimental Community Development Fund which aims at promoting activities and measures proposed in the integrated plan has been established. This fund will focus on identified CCA and DRR measures listed in the plan, in which the priority activities will be agriculture related and DRR specific activities. Although the budget for the operation of this fund is only a small section of the commune's socio-economic development plan budget, it may play an important role in promoting the participation of the community and enhancing the effectiveness of the planning process.

In addition, the development of the "Integrating DRR andCCA into socio-economic planning process" manual has received active participation and feedback from many government agencies and related NGOs. This manual is contributing to solving the problems of lack of guidance on how to integrate DRR and CCA in Vietnam, and helps to replicate the lessons learnt from the model. This manual is being tested in some

provinces and beingused for advocacy efforts, with the aim to institutionalized DRR and CCA integration process into socio-economic development planning practices throughout the whole country.

# Challenges and lessons learnt

# Challenges:

- The government has not issued any regulation on socio-economic planning processes for all levels.
- Inappropriate allocation of time for planning, district and commune's authority allows too little time for planning.
- There are limitations on the integration of sector plans in the local planning processes.
- Weak coherence in different parts of socio-economic development plan.

# Lessons learnt:

- The draft verion of the intergrated socio-economic plan should be developed from (i) district's development direction, including direction for community based CCA and DRR, (ii) people contributions and ideas (through village's representatives) about the commune's development plan, and (iii) Sectors' feedbacks (through technical groups).
- The analysis of impacts, causes and measures to adapt to climate change and reduce disaster risks should be integrated at each steps of the planning process.
- The participation of local authority at all level, especially related provincial agencies, plays an important role in guiding and monitoring the commune's planning processes.

# **General information**

Since the 'Renovation' economic reform, Vietnam has done a remarkable job of lifting the country out of poverty and sustaining an economic growth rate of approximately 7% annually since the 1990s. Despite this impressive achievement, Vietnam is now facing many issues arising at the expense of economic growth such as environmental degradation and the growing development gap between rural and urban areas in Vietnam. Moreover, after more than 30 years of economic renovation, the country economy is still out-dated and is wasting considerable energy in its functioning. Vietnam energy's efficiency in 2008 is 3.7 USD/kgoe, approximately 1.5 times lower than the world average and lower than most of the other countries in South East Asia region such as Thailand (4.7 USD/kgoe), Singapore (12.5 USD/kgoe), Malaysia (4.9 USD/kgoe), Philippines (7.1 USD/kgoe), Cambodia (5.0 USD/kgoe) and Indonesia (4.2 USD/kgoe)<sup>54</sup>. Economic growth also increases Vietnam greenhouse gas (GHG) emissions, in only six years from 1994 to 2000, Vietnam GHG emission increased 1.5 times, from 103.8 million tons CO<sub>2</sub> equivalent to 150.9 million tons CO<sub>2</sub> equivalent<sup>55</sup>.

The government and the scientific community started actively participating quite early in international efforts to respond to climate change. As a member of the United Nation Framework Convention on Climate Change (UNFCCC), Vietnam has develop two National Communications, the first in 2003 and the second in 2010, which provide GHG inventory results. The approval of the National Target Program on Responding to Climate Change (NTP-RCC) in late 2008 also plays an important role in attracting organizations and donors in climate change activity in Vietnam.

Being one of the countries projected to be heavily impacted by climate change, and at the same time facing serious energy security challenges, Vietnam has many opportunities for mitigating climate change. However, up until now most of climate change research projects, assessments and discussions have focus on impact assessments and adaptation measures. Climate change mitigation issues are still not being considered seriously, due to facing the following barriers<sup>56</sup>:

- Financial barriers (Cost for technology investments and risks):
  - Immaturity of mitigation technology market.
  - Weak financial capabilities of comercial banks and investors.
  - Inadequate infrastructure and difficulties in accessing resources.
  - Inadequate incentives for development.
  - Small sizes of resources and projects.
  - Lack of funding.

<sup>&</sup>lt;sup>54</sup> The World Bank, 2010, World Development Indicators, pp 154 – 156.

 <sup>&</sup>lt;sup>55</sup> MONRE, 2010, 2<sup>nd</sup> National Communication to the UNFCCC, [internet] <u>http://unfccc.int/national\_reports/non-annex\_i\_natcom/items/2979.php</u>, last accessed 30/08/2011.
 <sup>56</sup> Nicolas T., & Martin S., 2011, Country Case Study Vietnam – Removing barriers for climate change mitigation, [internet] <u>http://www.climatestrategies.org/component/reports/category/71/322.html</u>, last accessed 30/08/2011.

- Capacity, information and knowledge barriers:
  - Lack of general information on mitigation technologies to make appropriate choices.
  - Imprecise information systems on mitigation potential.
  - Lack of technical know-how and management experience.
- Policies and regulation barriers:
  - Poor division of authority and responsibility among government agencies.
  - Weak coordination among agencies.
  - Insufficient policy incentives to promote mitigation actions.

The current official viewpoint of the government on climate change mitigation as written in the highest regulatory documents related to climate change state that the NTP-RCC is still based on the UNFCCC principle "common but differentiated responsibility" and emphasize that Vietnam will implement programs to mitigate climate change when there is sufficient support for capital and technological transfer from developed countries. It is, however, worthy to note that the draft version of the National Strategy on Climate Change has show great changes in Vietnam's viewpoint on climate change mitigation. The draft strategy emphasized that low carbon economy and green growth will be the dominant pathway of Vietnam sustainable development, and GHG emission reduction and enhancing GHG sinks will become a compulsory criteria for development.

This signals great changes in Vietnam's position towards climate change mitigation. Together with other policies on appropriate uses of natural resources and energy saving and efficiency, once approved this draft will create policy frameworks which help to promote climate change mitigation activities, and help Vietnam prepare the challenges, as well as seizing the opportunities, related to climate change.

Furthermore, with the diverse topography and regional climate, Vietnam is in good position for the implementation of various pilot adaptation and mitigation measures. This advantage could make Vietnam one of the leaders in the region on strategy and technology for climate change adaptation and mitigation, help Vietnam to take a step ahead of other countries in development and receive and transfer low carbon technology<sup>57</sup>.

Searching for good practices/models on climate change mitigation in Vietnam is not an easy task, despite its necessity. However, looking back at the environment protection movements, various agriculture development activities and the development of business sectors in Vietnam, one can find a number of good practices/models with many potential for replication. Within the scope of this study, we have chosen the following models:

<sup>&</sup>lt;sup>57</sup> Baumuller H., 2010, Building a low carbon future for Vietnam – technological needs for climate change adaptation and mitigation, *Enegy, Environment and Development Program Paper: 09/02.* 

- Develop biogas market for the VACVINA biogas system.
- Market development for fuel efficient cooking stove.
- The development of bamboo industry in Thanh Hoa experience of managing and utilizing resources sustainability.
- Promoting Environment, Resources and Energy Management System for Business Enterprises.

The above good practices/models all have one thing in common; their starting points is not aimed at mitigating climate change, but implemented to respond to other urgent needs that arose during the development processes of the country such as environment protection, increasing hygiene and living conditions in the rural areas, sustainable use of natural resources and improving the management and operation of enterprises towards sustainability. However, these models have also shown clear results for climate change mitigation. This is evidence for the co-benefits and synergies between climate change response activities and general development activities, and of the importance of integrating climate change issue into development practices.

The chosen good practices/models are initiatives promoted by NGOs in Vietnam. The following are their distinctive features:

- Using a market approach to promote the sustainable development of mitigation technologies, and promoting the adoption of management, operation and monitoring systems to be used appropriately and effectively.
- Consider small and medium business enterprises as their main target groups and/or aiming at establishing the business sector at the local level (e.g. as in the cases of VACVINA biogas and fuel efficient cooking stove) for the sustainability of the models.
- Participatory approaches are used actively and regularly in the planning, in the implementation, and in monitoring and evaluation, in which all stakeholders (local authority, other organizations and enterprises, the community members and the project staff) participate in project activities.
- Capacity development, awareness raising and skills development for stakeholders play a crucial role.

# **Good Practices/Models**

# Develop biogas market for the VACVINA biogas system

# Context

Although biogas had attracted the attention in Vietnam since the 1960s, the industry did not begin to develop significantly until the 1980s, with the National Program on New and Renewable Energy (Code 52C) and the support, research collaboration and

dissemination of international organizations such as OXFAM, UNICEF, ACCT, SIDA, and, particularly, SNV.<sup>58</sup>.

The Centre for Rural Communities Research and Development under the Vietnamese Gardeners Association has researched and developed the VACVINA biogas system. This biogas model is the very first true "Vietnamese biogas design". It has inherited the strengths and limited the weaknesses of other imported biogas system in Vietnam, including: (i) the cost for the construction of this biogas system is among the lowest compared to other popular biogas design in Vietnam<sup>59</sup>, (ii) has a flat top and is built underground, allowing the farmer to minimize changes in the design of their farm and utilizes the area above the biogas to build breeding facilities or toilet<sup>60</sup>, and (iii) it has a simple design which does not require high skilled mason and technician to build as in other designs (e.g. the dome biogas model). These advantages in design are critical for the replication and maintenance of the VACVINA biogas system.

After a period of testing and developing since 1998 with three first models in Vĩnh Phúc province<sup>61</sup>, in 2002, The Ministry of Agriculture and Rural Development issued Decision No. 4414/QD - BNN - KHCN recognized the VACVINA biogas digester as advanced technology and allowed the replication of this model all over the country. This is one of the critical factors in promoting the replication and implementation of the model.

Since August 2006, the project 'Biogas Market Development' has been carried out in Thanh Hoa and Nghe An province by CCRD with the funding from the Enabling Access for Sustainable Energy Network – EASE, a network facilitate by Education Training Consultancy – ETC, Netherlands. The VACVINA biogas system are currently being replicated all over the country with nearly 10.000 digester systems installed and operating, and all cost for construction have paid by the local people themselves<sup>62</sup>.

# **Implemented Activities**

All good practice/model's activities are implemented in accordance with the five step strategy of the EASE network, (website:http://www.ease-web.org)<sup>63</sup>.

- 1. Showcase model.
- 2. Establish the service providers (commune's biogas service providers) network at local level.

<sup>&</sup>lt;sup>58</sup> Lượng, N.G & Khải, N.Q, 2005, Biogas Technology Development Status in Vietnam, Husbandry Magazine, No. 05/2005, [internet] <u>http://www.vcn.vnn.vn/PrintPreview.aspx?ID=2895</u>, last accessed 26/07/2011.

 <sup>&</sup>lt;sup>59</sup> CCRD, 2008, What biogas actually brings, [internet] <u>http://www.ease-web.org/wp-content/uploads/2010/10/What-the-biogas-project-actually-brings.pdf</u>, last accessed 25/07/2011
 <sup>60</sup> CCRD, 2008, ibid.

<sup>&</sup>lt;sup>61</sup> Thành P.V., Improved Biogas Model, [internet]

http://www.mekonginfo.org/mrc\_en/contact.nsf/0/EDFE2AC318386C7047256CE70027B21F/ \$FILE/invite003\_vn.html last accessed 26/07/2011.

<sup>&</sup>lt;sup>62</sup> Civil Society Inclusion in Food Security and Poverty Reduction Network - CIFPEN, A selection of good practices in Sustainable Agriculture for small scale farmer, [internet] <u>http://cifpen.org/wp-content/uploads/2011/02/Mot-so-mo-hinh-NN.pdf</u>, last accessed 20/07/2011, pp. 20-24

<sup>&</sup>lt;sup>63</sup> Project report, [internet] <u>http://www.ease-web.org/?p=1302</u>, last accessed 25/07/2011.

- 3. Provide Business Development Services (BDS) for the service providers.
- 4. Set up business development services network.
- 5. Roll out implementation. .

After nearly four years of implementation, there are 61 trained technicians: 45 in Thanh Hóa<sup>64</sup> and 21 in Nghệ An<sup>65</sup>. During the same period, approximately 30 service providers established take advantage of the Vietnam Gardeners Association chapters at commune level. With the support of CCRD, these service providers have been equipped with skills for the construction and set up of VACVINA biogas system and biogas marketing techniques.

Additionally, a set of business support activities has also been implemented, including: (i) Building of showcase models at each commune (two VACVINA biogas systems per commune). These showcase models were built by the trained technicians under the supervisors of CCRD experts. (ii) Establish showrooms in each commune to provide to potential customers relevant information as well as biogas equipments, (iii) Design and distribute leaflets, information CDs and organized marketing campaigns through local communication channels, (iv) Run promotion programs at the of the project to advertise biogas techniques and the VACVINA biogas system, (v) Set up post sale telephone hot line so that customers can contact service providers, CCRD experts and The Vietnam Gardeners Association when needed, and (vi) Set up warranty and maintenance services, implemented by the local technicians themselves and, and establish a post sale quality monitoring system.

# **Practice's Effectiveness in Responding to Climate Change**

The use of biogas for cooking and light can help mitigate climate change. On average, a VACVINA biogas system with tank size from 7 to 8 m<sup>3</sup> can generate approximately 2.5 m<sup>3</sup> biogas per day. According to CCRD calculation, on when using VACVINA biogas system each household can reduce their fuel wood consumption by approximately 4.5 tons/year and can help reduce about 5.67 tons  $CO_2$  equivalent/year<sup>66</sup>.

During and after project implementation, the local authority and Vietnam Gardeners Association always keep track of the number of biogas system built carefully for the management and follow up on performance. The information is collected and monitoring, helping them prepare for getting emission reduction certifications under Clean Development Mechanisms in the future. Management activities related to biogas service are reported each quarter, biannually or annually. All sale information such as name, address, size of the biogas system, initial date the gas is produced and the

<sup>&</sup>lt;sup>64</sup> CCRD, 2008, ibid.

<sup>&</sup>lt;sup>65</sup> Biogas Market Development – Up scaling to Nghe An Province, [internet] <u>http://www.ease-web.org/?</u> <u>p=1302</u>, last accessed 20/07/2011.

<sup>&</sup>lt;sup>66</sup> Thành P.V, VACVINA Biogas in the combat against climate change, Rural Economy Online Magazine, 23/06/2010, [internet] <u>http://www.baomoi.com/Home/KhoaHoc-TuNhien/kinhtenongthon.com.vn/Biogas-VACVINA-voi-cuoc-chien-chong-bien-doi-khi-hau/4441261.epi</u>, last accessed 09/08/2011.

name of technician in charge are written down in the reports and can be cross checked with the signed contracts<sup>67</sup>.

*In addition to help mitigate climate change, biogas technology brings people other benefits* such as (i) improve hygiene conditions, (ii) helping local people,, especially woman, reduce time for fuelwood collection and (ii) help save money through the reduction of purchased fuel for daily usage such as coal and fuel wood etc.

# Challenges and Lessons Learnt

**Negative impacts of the subsidy mechanisms and the problems with the biogas system promoted by the National Biogas for Husbandry Sector Program cast doubts on people opinions towards biogas**<sup>68</sup>. The National Biogas for Husbandry Sector Program started to introduce fixed dome biogas system (KT1 and KT2) in Thanh Hoa from 2004, and have been dispensing these based on a subsidy system by giving 1 million for the customers per biogas unit built. This has create a mindset of reliance on subsidy of the potential customers. Furthermore, some technical problems araised from the KT1/KT2 models such as operation freezes or not produced sufficient gas have also meant customers have lost their conviction in the effectiveness of biogas technology. The problems mentioned above of the National Biogas Program are mainly due to the following reasons:

- Since the technicians within the program are only trained at provincial and district levels, the national program has not yet established an effective network of first-line operators which are close to the customers.
- The program did not create proper mechanisms for training end-users and honoring the warranty service. All fix-dome biogas plants built under the national program have a one year warranty. However, these plants often face difficulties after 18 months or two years, and this negates the warranty and maintaining services.
- All maintainance and guarantee services were stopped right after the National Program finished<sup>69</sup>.

The restoration of customer trust is one of the biggest challenges for CCRD and the service providers groups. The lessons learnt were documented after the success of the project in Thanh Hoa and Nghe An included

• Details of different biogas models is displayed and described in detail using small scale prototype in the showroom. The content of advertisement banners and leaflets should include information about the strengths and weaknesses of different biogas systems (including cost for construction), which will help the customers to make the right choices.

<sup>&</sup>lt;sup>67</sup> CCRD, 2007, Project Proposal [internet] <u>http://www.ease-web.org/wp-content/uploads/2010/10/079265-</u> <u>Project-Proposal-BIOGAS-CCRD-2007final3107007.pdf</u>, last accessed 15/10/2011.

<sup>&</sup>lt;sup>68</sup> Project report, [internet] <u>http://www.ease-web.org/?p=1302</u>, last accessed 25/07/2011.

<sup>&</sup>lt;sup>69</sup> Project report, ibid.

• The owner of the showcase models should meet the following criteria: (i) have easy access for potential customers to come and visit (ii) willingness to host visiting guests and is an ambasador of goodwill, (iii) the household has a good reputation and prestige in the local community, (iv) have husbandry activities which provide enough dung for the biogas system to ensure regular functions of the plant, and (v) the owners with secondary jobs such as production of wine, tofu or fresh noodles, as they should have plenty of by-products for raising pigs, and in turn, have enough dung to feed the biogas digester.

• Provide training for customers on how to use the biogas system and honoring the five years warranty services.

• Set up local service provider groups at local level, where they both constructbiogas plants and provide warranty and maintenance services and training end users.

*The immaturity of the biogas market in Vietnam means that extensive communication efforts are required.* At the local level, mass organizations such as the Womens Union, Farmers Union, Youth Union and Veteran Union have a significant influence over the local community. Experiences from the CCRD project in Thanh Hoa and Nghe An shown that communication and advocacy activities focusing on these important sources can be very effective; once the members of these organization are convinced on the effectiveness of the model their opinions will contribute to change awareness in the local community. Additionally, the distribution of advertisement materials about biogas technology, the setting up of displayed instruments in the showroom, and the organization of local advertisement campaign through local communication channels also play important roles in changing people awareness<sup>70</sup>.

Addressing difficulties in accessing credit resouces for the construction of biogas plants requires close collaboration with local authorities and organizations. The implementation of the project has show that the ability of local people to access to loans plays an important role in the development of biogas market at the local level. For example, in Thach Thanh district in Thanh Hoa province, local service providers have collaborate with the local branch of Vietnam Bank for Social Policies to provide small credit for the households who are members of the Vietnam Gardeners Association with a reasonable interest rate for the construction of biogas plants. In Ha Trung district, Thanh Hoa Province, suppliers have collaborated with the local Veteran Association to provide loans for the household to construct sanitation facilities associated with the construction of biogas. Additionally, local authority support also plays a critical role in the replication of the biogas system in rural animal husbandry communities<sup>71</sup>.

<sup>&</sup>lt;sup>70</sup> Project report, ibid.

<sup>&</sup>lt;sup>71</sup> Biogas Market Development Project: Up scaling in 1 Province, Project Closing Form, [internet] <u>http://www.ease-web.org/?p=1302</u> last accessed 15/08/2011.

# Market Development for Fuel Efficient Cooking stove

### Context

Health problems associated with the usage of traditional cooking stoves and efforts to reduce deforestation are the main reasons for the efficient cooking stove movements in the world since the 1970s. For the same reasons, Vietnam efficient cooking stoves movement has started since 1980s, mostly focusing in the rural areas where majority of the population still use traditional biomass stoves. In Vietnam the usage of biomass fuels is still the norm, great potential remains for the research and application of efficient cooking stoves.

Efforts to combat climate change over the last two decades, even until quite recently, did not regard efficient cooking stoves as an issue of interest, mostly because biomass energy is considered a renewable energy resource. However, unsustainable exploitation of biomass also creates pressure on resources, and can cause huge impacts on local and global ecosystems<sup>72</sup>. Just until recently, fuel efficient/advance cooking stoves have gained the interest of organizations working to combat climate change, since it can help reduce GHG emissions, save resources and improving health conditions for local people, especially for women and children.

With more than 9 million households still using biomass for daily cooking activities, in which approximately 70 - 80% still use traditional cooking stoves which are not very efficient<sup>73</sup>, Vietnam is one of the countries with great potential for the research and dissemination of fuel efficient cooking stoves.

The dissemination of fuel efficient cooking stoves has been implemented by a number of NGOs in Vietnam, in which the popular method is to collaborate with the Women Union, using a subsidy approach, and often integrating the dissemination of the cooking stoves into other livelihood, environment protection and conservation activities. However, using a subsidy or giving the cooking stoves to local people for free may have several shortcomings: (i) high cost for the producers, (ii) may not suitable in other areas due to diverse cooking habits and uses of different types of biomass for cooking, and (iii) issues with the quality of the cooking stoves<sup>74</sup>.

On the other hand, there are some other approaches which have shown positive results and potential for replication. For example, the market approach without using a subsidy to develop local efficient cooking stove service providers promoted by the Centre for Population, Environment and Development Research – PED in Thanh Hóa

<sup>&</sup>lt;sup>72</sup> World Bank, 2010, Household Cook stoves, Environment, Health, and Climate Change – A new look at an old problem.

<sup>&</sup>lt;sup>73</sup> Centre for Energy Saving in HCM City, 2010, The wide spread of fuel efficient cook stoves using agriculture by products in rural households, [internet] <u>http://thanhgiong.vn/Home/To-guoc/NewsDetail.aspx?id=4171</u>, last accessed 15/10/2011.

<sup>&</sup>lt;sup>74</sup> Giang, D. H & Pauline, O., 2010, Fuel Efficient Stoves – Air Quality and Health: An Assessment of Initiatives and Opportunities, [internet] <u>www.mcnv.nl/uploads/media/Fuel\_Efficient\_Stoves.pdf</u> last accessed 30/08/2011.

and Thái Nguyên provinces<sup>75</sup>. This approach promoted by PED, focusing on the establishment of technician groups and local cooking stove enterprises, as well as other door to door advertisement and marketing activities<sup>76</sup>. Another success story is the support for the development of small scale cooking stove enterprises at the local level promoted by Research and Technology Transfer Organization (GRET) and Quan Hoa's Cooperative for Rural Development (CRD) under the Green Future project in the northern part of Thanh Hoa province, which focuses on the application of repetitive participatory approaches in all activities of the project.

# Implemented Activities<sup>77, 78</sup>

- Determine appropriate project site and partners.
- Use participatory methods for market research. Assess current technological status in the community to gather information about types of biomass which can be used and available materials for the construction of cooking stoves.
- Design different types of appropriate cooking stoves, focus on diversifying products.
- Assess product effectiveness and user-friendly properties using participatory methods to gather feedback from local people and make neccesary revisions.
- Determine on-site human resources, select and provide training for the technicians.
  Provide necessary tools and business start-up supports for potential technicians who have difficulties.
- Pricing products.
- Diversify services from building cooking stoves to distribution agencies etc.
- Develop and implement marketing strategy and other appropriate market support mechanisms.

# **Practice's Effectiveness in Responding to Climate Change**

#### Climate change related<sup>79</sup>:

- The replacement of traditional cooking stoves with fuel efficient stoves can help reduce from 40 to 50% emissions and save 40 50% fuel.
- Improved cooking stoves can help mitigate climate change through: (i) saving biomass, (ii) reducing black carbon emissions (one of the main factors, beside other GHGs, which contributes to the warming of the earth) and other GHG such as nitrous oxide and methane generated during incomplete burning process (which often observed in traditional stoves).

#### Others:

<sup>&</sup>lt;sup>75</sup> Khôi, Đ.Đ., 2007, Project Proposal: Market Development for fuel efficient cook stoves, [internet] <u>http://www.ease-web.org/?p=141</u> last accessed 30/08/2011

<sup>&</sup>lt;sup>76</sup> Khôi, Đ.Đ., 2007, ibid

<sup>&</sup>lt;sup>77</sup> PED, 2008, Project Final Report, [internet] <u>http://www.ease-web.org/?p=141</u> last accessed 30/08/2011.

<sup>&</sup>lt;sup>78</sup> GRET, 2010, Workshop presentation: How to promote climate change mitigation activities in remote areas – The case of biogas and advance cook stoves development in Thanh Hoa under Green Future Project.

<sup>&</sup>lt;sup>79</sup> Civil Society Inclusion in Food Security and Poverty Reduction Network - CIFPEN, ibid, page 20.

- Improve health save time for women and children through the reduction of pollutants and time for collecting fuel wood.
- Reduce pressure on natural resources through the reduction of biomass fuel used.



Photo 10: Different types of fuel efficient cook stoves designs in the Green Future Project (Photo by GRET)



Photo 11: Pricing products and gather feedbacks of the people (Photo: GRET)



Photo 12: Making cook stoves (GRET)

• Create new jobs and livelihoods for local technicians and enterprises focusing on vulnerable and poor people.

#### Challenges and Lessons Learnt<sup>80 &81</sup> :

- A market approach for the dissemination of fuel efficient stoves needs *clear direction.* Detailed discussions with local partners, potential customers and technicians should be done right at the beginning of the project to shape and clarify direction.
- Local partners play a critical role in the success of the projects. For activities related to fuel efficient cooking stoves, the Women's Union is an effective partner. This is because in Vietnam, women play the leading role in family cooking, so choosing Women Union as a partner can help the project to approach the main target groups most easily, as well as take advantage of their intensive networks and members at all levels and maximize potential for continuation of the activities after project ends.

<sup>&</sup>lt;sup>80</sup> PED, 2008, Project Final Report, ibid.

<sup>&</sup>lt;sup>81</sup> GRET, 2010, Workshop Presentation, ibid.

- Determining project sites and implementing market research activities should have the active participation of local partners and community members.
- **Providing support for the development of service providers' network plays a critical role** in the establishment of product delivery systems and related consultancy services.
- Diversification of products is necessary to meet the demand and increase options for customers. However, the introduced products should meet the needs of customers, e.g. their cooking habits, their ability to pay for the products, and should respond to previous feedback received about the products.

# The Development of Bamboo Industry in Thanh Hoa – Experiences of Managing and Utilizing Resources Sustainability

# Context

The support of Research and Technology Transfer Organization (GRET) in the Luong Value Chain Development Project in Thanh Hoa since 2005 has helped the people in the mountainous districts of the North-Western Thanh Hoa province (Quan Sơn, Quan Hóa, Bá Thước, Ngọc Lặc and Thường Xuân district) to:

(i) strengthen, recover and expand the bamboo resource areas in a sustainable manner through various activities to support the local people in planting bamboo, in managing the resource effectively and in protecting the environment,

(ii) increase added values for the bamboo plant and generate new livelihoods by promoting the development of local bamboo processing industry,

(iii) develop measures to increase "added values" for bamboo through the utilization and recycling of bamboo by-products,

(iv) and create, strengthening the supporting environment for the development of bamboo sector and dissemination of experiences<sup>82</sup>.

This project has brought many benefits for the local people and helped them reduce poverty. However, there are still challenges which need to be solved in the issue of how to utilize the by-products of the bamboo processing industry such as sawdust, bamboo splinting chips and joints most effectively. Additionally, existing local socio-economic problems still prevail, such as (i) increasing pressure to the forest due to lack of wood for fuel, (ii) degradation of bamboo forests due to over exploitation and fertilizers shortage, (iii) youth employment opportunities<sup>83</sup>.

In order to address these problems, part of GRET's long term strategy is to support the sustainable development of bamboo industry and complete the bamboo value chain in Thanh Hoa province. As a result, GRET has collaborated closely with the Quan Hoa – Thanh Hoa Cooperative for Rural Development (CRD) and the local bamboo enterprises to implement the Green Future Project. The main goal of the project is to create more jobs and income at the local level by utilizing bamboo by-products to generate energy, produce activated charcoal, grow mushrooms and make organic fertilizers. Additionally, this project also aims at building capacity for the bamboo sector in Thanh Hoa so that they will be ready for the carbon market and different

<sup>&</sup>lt;sup>82</sup> Lamballe P., Hanh X. Đ. & Sáu C. V., 2010, Workshop Presentation: Introduction of Green Future Project.

<sup>&</sup>lt;sup>83</sup> Lamballe P., Hanh X. Đ. & Sáu C. V., 2010, ibid.
mechanisms such as CDM and REDD, as well as building capacity for local partner and communities on issues related to climate change<sup>84</sup>.

# Implemented Activities

- Using renewable energy: sustainable production of bamboo charcoal, utilizing sawdust and splinting chips for processing bamboo and drying agriculture products; testing various appropriate technologies using renewable resources.
- Reducing agriculture production costs; increasing products through active farmer groups and marketing support; piloting several handicraft enterprises using bamboo by-products as input materials, and marketing support for new products.
- Increase community awareness in energy saving, energy efficiency and environment protection through communication activities.
- Capacity building for local NGOs on sustainable development, climate change and energy saving and energy efficiency through various research activities, training courses, networking support and building partnerships.
- Implementing monitoring and evaluation activities and learning from experience by documenting lessons learnt and developing technical guidelines and communication materials.

# **Practice's Effectiveness in Responding to Climate Change**

## Climate change response and environmental benefits:

- Contributes to climate change mitigation and protecting the environment through (i) the application of technologies that use less fossil fuel, and (ii) reduce the use of chemical fertilizers by using more organic fertilizers in local argo-forestry activities.
- Creating a healthier environment by reducing amount of bamboo processing waste.
- Reduce pressure to the forest, help protect forests and limit forest degradation by reducing the time local people spend on collecting, and the amount of, firewood.

## Other benefits:

## Economic benefits:

- More jobs for poor households through creating more employment opportunities in bamboo processing factories and new livelihoods such as handicrafts, efficient cooking stove productions and growing mushrooms.
- Increasing value for Luồng bamboo and increased income for farmers through the utilization of bamboo processing by-products, which in the past was only used as fuel or treated as waste.

<sup>&</sup>lt;sup>84</sup> GRET, 2009, GRET International Annual Report, [internet],

http://www.gret.org/decouvrir\_gret\_uk/ra04.htm last accessed 30/08/2011.

- Help small and medium sized bamboo processing enterprises save costs and increasing income for farmers.
- Create competitive advantages and increase opportunities for exporting products through the diversification of bamboo-origined products.

## Technological benefits:

- Increase communities' technical skills and help them own the technology.
- Pilot and transfer new technology for poor and remote areas.
- Increase awareness, transfer sustainable agro-forestry techniques and skills on how to make (and use) organic fertilizers for the farmers who grow bamboo.
- Create and showcase good practices which can be replicated in other regions by providing networking support to the local NGOs network.

## Social benefits:

- Significantly reduce women's and children's burdens by shortening the time they spend for cooking and collecting fuel wood.
- Increased knowledge and favor conditions for women to participate in local economic and production activities (e.g. growing mushrooms and making handicrafts).
- Strengthened the relationships between local authority, local NGOs and local people.
- Improved community relationships through the implementation of collective activities.
- Community and related stakeholder awareness on environment protection, sustainable production, marketing and technical skills are improved. The notable change is that the local community now can see that protecting the environment and using resources effectively can bring clear benefits.

## Challenges and lessons learnt

- The application of comprehensive and repetitive participatory approach. The continuous process of evaluating of the impacts that the project has brought to the local community so that neccesary lessons learnt can be documented and discussed has played a critial role.
- In-depth investments in human resource development which have skills and knowledge at the local level, providing support to local initiaties and capacity building activities for small and medium enterprises in the communities plays a crucial roles in poverty reduction and facilitating local economic development. There are very few programs and projects related to poverty reduction, development and climate change that choose small and medium enterprises as their main target group. This is exactly why GRET&CRD activities in Thanh Hoa which begin with this group as a good

reference for other programs and projects<sup>85</sup>, especially with the current and expected-future trends of donors to focus budgets for government activities.

- Helping local enterprises to approach new markets is a big challenge, and project support is critically important. However, attention should be paid to the scale of support activities. Small and medium support activities, with careful piloting and scrutinizing evaluations, will be welcomed more easily, and have a smaller risk. Also, a focus on available local markets and domestic markets would be easier for small/medium enterprises to approach.
- Strenthening relationships in the bamboo supply chain in Vietnam plays a critical role in sustaining the sector, from the farmers who grow bamboo to the local pre-processing bamboo enterprises and the leading enteprises in bamboo products<sup>86</sup>. In the case when the local capacity is not strong enough, the project supports in building capacity for local enteprises are critical, so that they can, step by step, meet the demands of the market and of other partners in the supply chain.
- For regions which are remote, poor and find it hard to attract investments, instead of focusing on international market, support should focus on: (i) the development of the domestic market, (ii) building capacity for local enterprises, (iii) supporting sustainable practices in the region, in which small initiatives promoted by local communities and local enterprises are getting special attention.

<sup>&</sup>lt;sup>85</sup> Renard O. & Lamballe P., 2008, Creating sustainable jobs and incomes to reduce poverty: Lesson from Bamboo Supply Chain Development Project in North West Vietnam – VIII World Bamboo Congress Proceedings

<sup>&</sup>lt;sup>86</sup> Renard O. & Lamballe P., 2008, ibid.

# Promoting Environment, Resources and Energy Management System for Business Enterprises

## Background<sup>87</sup>

Efforts of assisting the hotel industry in Vietnam become environmentally sustainable through resource management commenced in 2000 at the Majestic Hotel (Hochiminh City), with the technical support of ADEME and ENERTEAM. After only three months of implementation, the electricity bill of the hotel had reduced by a staggering 17%.

This attracted the participation of many other hotels in Hochiminh City. In 2000, the project "Greening the hotel industry in Vietnam through the effective resources management" developed in the framework of Asia EcoBest program, with the technical support of ADEME, ENERTEAM and the participation of Saigon Tourist, the biggest tourism business group in Vietnam. After participating in the project, each hotel had achieved an average reduction of 10% electricity and water costs.

This initial success impressed the National Administration of Tourism. This organization wanted to spread the benefits of "Greening the Hotel" in the whole country and in 2001, they decided to conduct the "Developing guidebook of self-implementing the resources management in the hotel industry" project. ENERTEAM conducted a survey on 50

hotels in the whole country to identify the reference threshold for resources used by hotels and applied good practices.

Hotels in Hochiminh City, with the proactive role in the above efforts, have continuously promoted and developed the project "Apply the plan and environment management habits into hotels and tourism attractions in Vietnam" within the framework of Asia Invest program in 2002. The project used the approach method of "Business Environment Plan" developed by ADEME, including the smooth

"Saving energy and managing resources effectively contributes to environmental protection. Sustainable development is a global trend and a business ethnic. We believe that good environmental activities shall create sustainability and enhance the brand image to customers. It is one of our effective marketing activities" (Speak of Mr. Nguyen Huu Tho, General Director of Saigon Tourist in the introduction Day of 'Guidebook self-implementing Environment of Protection at Management and the tourist accommodation in Vietnam).

collaboration between resources and environment management. By October 2003, 15 hotels and tourism attractions participating in the project had saved 120,000Euro from a combination of activities.

These successes have gained the attention of government authority, especially the National Administration of Tourism, in the expansion of experience and good practices.

<sup>&</sup>lt;sup>87</sup> Ministry of Culture, Sports & Tourism of Vietnam – National Administration of Tourism, ENERTEAM & ADEME, 2008, The guidebook for self-implementation of environment management & protection, [internet] <u>http://www.mediafire.com/?mmnh5yimnnc</u>, last accessed 30/08/2011

With the technical support of ADEME & ENERTEAM and the leadership of National Administration of Tourism, the guidebook for hotels and tourism attractions to selfimplement the environment management & protection at their own hotels and sites was developed in Vietnam. This document has received much positive feedback and has been invaluable in the expansion of good habits in effective the management, protection and usage of resources and environment at tourist accommodation in Vietnam.

# Activities

- Provide technical support for the environmental status assessment of tourist accommodations, including status of (i) use of energy, (ii) use of water and waste water, (iii) garbage, (iv) noise, (v) air quality, and (vi) purchasing strategies and human resources.
- Provide technical consultancy services and support for developing and implementing the Action Plan of Environmental Management & Protection in tourist accommodations, including: (i) develop the Action Plan (identify objectives, actions, activities of enhancing awareness for staff, and a method for updating information frequently and (ii) implementing the action plan (energy, water, waste, noise and internal communication plan)
- Assessing the result of the environmental management and protection, including (i) monitoring the implementation of objectives and the file set-up, (ii) providing the standard thresholds of using resources, (iii) results assessment of energy, water, waste and other aspects of the hotel.
- Providing technical support and consultancy services on the development of environment management and protection and effective resources usage from the design, construction and improvement of the tourist accommodations, meanwhile, helping these accommodations become familiar with and, follow the standards of ISO 14001, and establish an environmental management system accordingly.

## **Effectiveness in Responding to Climate Change**

<u>Effectiveness related to the saving of</u> <u>resources, energy and climate change</u> <u>mitigation</u>: The application of process and solutions of improving efficiency and behavior of using resources reasonably and efficiently has yielding significant results. These good behaviors have supported Saigon Tourist branches in saving costs as well as ensuring the quality of products and services, reducing waste, protecting environment, enhancing company's brand

"Besides turning lights off where possible, hotels and restaurants in the clubs also commits to turn off air-conditioners in the Earth Hour campaign. In 2011, members of the Green Club aim to switch off electric devices at the last Saturday of every month". (Sharing of Mrs. Dao Hoang Lien, Head of Green Club of Saigon Tourist about Earth Hour 2011).

images and client's trust. In five years of applying environmental management solutions, from 2003 to 2007, 15 hotels and tourism attractions of Saigon Tourist had saved 5.5 million kWh of electricity, equal to about 7.7 billion VND<sup>88</sup>.

<u>The benefits to the application of the Environment management system as meeting to</u> <u>the ISO 14001 standard</u>: Following the successes of projects supported by ADEME and ENERTEAM, all 15 participating hotels gained ISO 14001 Certification at the end of 2004. The accreditation of Environment & Energy Management System (EMS) meeting with ISO 14001 has brought many benefits to the hotels. Majestic hotel has shared their benefits as follows:

- Decreasing operational costs every year through the reduction of electricity, water and waste costs.
- Enhancing the awareness of staff and officers of the hotel in resource management and environmental protection. This is one of the great benefits.

#### The results of applying EMS in the business enterprises of Saigon Tourist

- Continental Hotel, through the technical interventions enhancing the effectiveness of using energy has saved over 1.2 billion VND (9/2001-2006),
- Victory Hotel has saved approximately 230 million VND of electricity payment per year through purchasing an inverter air conditioner system instead of the normal type, even though only 30% of air conditioners have been replaced.
- The installation over 60 extra electricity meters and over 40 extra water meters for helping the Management Unit of Rex Hotel in counting and identifying the consumption norm for every departments in the defined time. Therefore, Rex Hotel has saved over 500 million VND from 2003 to 2005.
- The use of solar water heater system instead of electricity takes part in the saving of Europa hotel about 1.3 million VND/ month.
  - (Source: Guidebook of self-implementation environment management and protection, ibid"

#### Moreover, the application of environment, energy and resources management

<sup>&</sup>lt;sup>88</sup> News dated 11/04/2008, Saigon Tourist takes interests in energy saving – green environment, [internet] <u>http://www.saigon-tourist.com/news/detail\_vn.asp?id=12949</u>, last accessed 30/08/20011.

system meeting with ISO 14001 also promotes behavior change and good habits in the internal departments.

• Raising the brand image of hotel in the eyes of tourists, especially the growing number of tourists who are interested in environment issues.

## **Challenges and Lessons Learnt**

## Challenges:

- Lack of supporting policy of the Government<sup>89</sup> and fair competitive environment between business enterprises who apply Environment management system and those who do not<sup>90</sup>. There is no specific policy for encouraging or supporting enterprises applying EMS and the implementation of environmental protection law in Vietnam is not effective. The EMS application may put the business enterprises at a disadvantage as the process of developing and applying environment management system may also lead to additional investments and additional human resources.
- Capacity of integrating issues relating to resources, energy and environment into the policy of general development and activities of business enterprise is still limited. This is one of barriers of promoting the individuals participating in the activities of environment protection and resources and energy management effectively, causing difficulty in identifying reasonable and realistic environmental objectives of business enterprises.
- Changing behavior is a long-term and difficult mission of business enterprises<sup>91</sup>, which needs investment of time and creative approaches.

## Lessons learnt<sup>92&93</sup>:

• Using resources effectively and saving energy attracts significant attention from business enterprises and perhaps more than other subjects, such as climate change mitigation or environmental projection.

<sup>&</sup>lt;sup>90</sup> Guidebook of self-implementing environment management and protection, quoted, page 70.

<sup>&</sup>lt;sup>91</sup> Guidebook of self-implementing environment management and protection, quoted, page 70.

<sup>&</sup>lt;sup>92</sup> UNEP, 2006, Energy efficiency guide for industry in Asia, pp. 71, [internet] <u>http://www.energyefficiencyasia.org/brochure\_pub.html</u>, last accessed 30/08/2011.

<sup>&</sup>lt;sup>93</sup> Join Service Pollution Prevention and Sustainability Library, EMS Primer – Success factors, [internet] <u>http://www.p2sustainabilitylibrary.mil/ems/emsprimer/success.html</u>, last accessed 30/08/2011.

- The commitment and belief of business enterprise leadership plays a very *important role.* The understanding of the business enterprise manager about EMS benefits, activities needed and commitment shall ensure the EMS objectives are clear and consistent with other objectives of the organization. Moreover, management commitment is needed to if the green initiative is to transfer to every department in the enterprise.
- The active participation of staff decides the success of the practice: Staffs are the core of each enterprise, and they are the people with the knowledge of issues relating to the use of resources and energy of their own departments. Their active participation in the process of developing EMS shall help the enterprise to take control of the system.
- Developing EMS based on the existing systems/programs of enterprise: An important factor in developing EMS at the first stage is that they do not need to develop the environmental program from scratch. All the existing environment or efficiency programs of any departments or branches/subbranches of the enterprise can contribute to the EMS system.
- Effective communication plays an important role: Meetings and discussions between project officers and the enterprise manager during the development process of activities is a very important encouraging factor. The sharing of successful stories, experiences and breakthroughs, even very small, play a decisive role in enhancing the participation of people in EMS.
- **Developing the employees:** the multi-specialized groups were established and implement EMS in the enterprise to guarantee the process of collecting and analyzing data of resources and energy usage with the sharing and contribution of officers working in different departments. In some cases, it may include clients, suppliers and partners in the groups.
- Training with adequate duration and reasonable content is important for the success of the practice in all the implementation stages including EMS maintenance.
- Sharing experiences between business enterprises may help the expansion of good practices and habits.

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# 2.5. ENHANCING AWARENESS AND CHANGING BEHAVIOR

# **General information**

Climate change is a global problem and needs international agreement and cooperation to address and mitigate. However, reaching international agreement on reducing GHG emissions is not happening as quick as expected. While waiting for the negotiation of governments to achieve important agreements on climate change, the individuals and communities may take action right now. Individuals and communities are vital in creating positive changes in behavior of individuals, in the policy institution of the Government and in production. It is only achievable if awareness and capacity of individuals and communities is increased to respond to climate change through strengthening education and awareness of climate change and its impacts<sup>94</sup>.

Climate Change Education (CCE) has been successful implemented in many countries all over the world, and in Vietnam, hawse have also had several remarkable advances. Nevertheless, with the urgency of climate change issues, awareness strengthening, education and communication should be expanded to a large-scale. At the International Seminar of Climate Change in Paris (July 2009), the participating parties stated that more attention needs to be paid to the following strategic orientations:

- Integrate the contents of climate change into educational practice, program and plan;
- Enhance the development and usage of educational tools, materials and good practices of climate change;
- Encourage the development of climate change education networks and cooperation.

With the advantage of experience in implementing activities at a community level and working network system of communities widely and closely, in the past years, NGOs have made great efforts in supporting communities to understand more clearly about reasons and impacts of climate change as well as helping them to develop solutions in adapting to and mitigating climate change. The target subjects that NGOs aiming at are diverse, including children, youth, women, farmers, and officers of governmental authorities or civil society organizations. Raising awareness and education of climate change makes a contribution in the development of knowledge, skills, support of culture, lifestyle and sustainable value systems, preventing the instability of climate change and its impacts.

<sup>&</sup>lt;sup>94</sup> Tuan, Tran Duc, 2009, Introductory Report – Practical demand of Education on Climate Change

# **Good practices**

# Building capacity in responding to climate change of Civil Society Organizations (CSO) in Vietnam

## Background

NGOs and CSOs have been played an important role in the assistance and support of communities facing serious impacts of climate change, especially women and children, helping them to strengthen and enhance their capacity in adapting to climate change impacts, by introducing adaptation solutions, readiness to respond to disasters and enhanced disaster management



capacity. Correspondingly, in order to contribute in the effective implementation of these activities, it is necessary to enhance capacity of the NGOs and CSOs officers.

The "Climate Change Capacity Building for Civil Society Organizations" project was funded by the Embassy of Finland for CCWG and VNGO&CC, and implemented from July 2009 to December 2011. This was a typical project in enhancing awareness and building capacity for CSOs, concentrating on NGOs and their partners, in responding effectively and integrating climate change mitigation and adaptation into CSOs' and NGOs' relating programs, and contributing to the long-term and sustainable development of Vietnam.

## Activities

# 1. Enhanced communication and co-ordination of climate change issues in NGOs

- Upgrade and develop websites in both English and Vietnamese with up to date information on international and national climate change activities.
- Organize online forums.
- Publish monthly e-newsletters and quarterly e-Bulletins in both English and Vietnamese. The enewsletters and e-Bulletin are sent to all the members of VNGO&CC and CCWG by email and the e-Bulletin is printed quarterly and sent to the partners with limited internet access.



• Develop a database of: (i) activities in responding to climate change existing in Vietnam; (ii) list of experts who are able to contribute effort, time and knowledge in climate change activities; (iii) climate change related training organizations;

(iv) sponsors and sponsoring opportunities; (v) participants of training courses, learning events of projects.

- Design and print traditional publications such as flyers and brochure of project activities, a "Question and Answers" book for the community, and a short video clip about climate change and the role of NGOs.
- Organize regular co-ordination meeting with the participation of Operational Board members.

2. Training on reducing impacts and adapting to climate change to enhance knowledge and skills in responding to climate change, as well as related capacity for integrating climate change and disaster risk reduction into existing programs:

- Design training activities for selected subjects, including developing lesson plans and other relevant materials.
- Training for several NGOs' officers and other related organizations to be key climate change trainers.



- Training in foreign countries for typical key trainers, integrated with inviting foreign experts to Vietnam to conduct training for trainers sessions.
- Training for officers, partners of NGOs and CSOs and local partners of NGOs.

**3.** Organize activities for sharing and learning actual experience and good practices in the process of mitigating and adapting to climate change:

- Organize seminars for sharing information related to climate change.
- Study-tour of good practices in responding to climate change.
- Consolidate typical show cases, case studies and actual experiences in climate change mitigation and adaptation for publishing and disseminating.



# Effectiveness in adaptation to and mitigation of climate change

The project indirectly brings benefits for climate change mitigation and adaptation activities in Vietnam, especially with regard to the current state where climate change is critical yet a new issue to many national organizations' leaders and officers. The effectiveness of the approach is indicated in the following points:

• Trainers team on climate change has been established and is operating effectively, play an important role in promoting communication about climate changes in their follow up activities, as well as integrating the knowledge they received for the development and implementation of climate change project for their own organizations.

The trainers team including 15 staff of NGOs in Hanoi, Nam Dinh, Thanh Hoa, Ha Giang, Hue, Can Tho and Hochiminh City. These trainers have implemented the training for more than 500 staff of NGOs/ CSOs and partners from the North to the South of Vietnam. This staffs are also the trainers, promoters, speakers, researchers in the seminars, forums, research & assessment relating to climate change in their own organizations and for other parties. This team has implemented the training for 1,585 individuals which are local partners of their own organizations, and among the 15 key trainers, 68% are integrating climate change into the projects of their own organizations, 66% and undertaking studies on climate change, 40% are presenting seminars and 4% are writing project proposals relating to climate change.

(Sources: SRD, 2011, Summary the project results, Plan of terminal phase and orientation after project – Project of Building capacity on climate change for Civil Society Organizations in Vietnam)

• Develop the database system, training materials and communication materials on climate change which are useful and targeted specifically for the officers of NGOs/CSOs. This will allow organizations to share information and learn from experiences of implemented projects with the purpose of mitigating and adapting to climate change. For example: the website, online forum, especially the printed materials sent to local organizations where members have limited internet access.

• Awareness and knowledge on climate change of NGOs/CSOs staff working at CCWG, VNGO&CC and their local partners is increased and contributes to promote these action to mitigate climate change through changing behaviors in their personal lives, in their own families, in the organizations, and at the same time support the communities to adapt to climate change, forming ideas, and piloting the integration of climate change and disaster risk reduction into development projects.

# Lessons learned and Challenges

#### Lessons learned

Using appropriate approach. This is showed through the mobilization of beneficiaries participation the activities, from in designing project to developing plan and to implementing activities. Through effective mobilization and participation, the project activities are ensured to respond to the demand of beneficiaries and to achieve the proposed objectives.

According to the project design, there are two training opportunities in a foreign country for a number of key trainers, however, the selection of participants facing the difficulty of commitment after training, thus, all the members of Operational Board have to discuss and agree to conduct both assigning typical key trainers participating in training in a foreign country and inviting foreign experts to Vietnam to conduct the training. This method will help the project to guarantee its quality and effectiveness of training activity, and reduced project costs as well. The Project Operational Board has decided to use the saving expenses from this method into increasing the number of participants at the training courses. This is proving to be a creative and effective method. (Sources: SRD, 2011, Mid-term Assessment Report – Project of Building capacity on climate change for Civil Society Organizations).

• **Be flexible and creative** in the implementation method, from the organizing phase and throughout the implementation of the project.

• Selecting the appropriate organization in charge of project co-ordination is one of key factors deciding the success of project. The project has a connection between many types of participants, so the project co-ordination role is vitally important. Having an experienced presiding organization with methodical working methods will help the project work effectively and achieve positive results.

#### Challenges:

• The maintenance of co-operation and participation of Project Operational Board members is one of the great challenges. Normally, these members hold an important position in their own organizations, so their time allocation for participating in such activities is limited.

# Enhancing capacity of community in responding to disasters and climate change through promoting child's participation

## Background

In the process of enhancing capacity on climate change and working with different target groups, it is necessary to have a suitable approach. Women, for example, play a significant role in production, livelihood and family care, activities which occupied a lot of their time. For that reason they often do not have much opportunity to participate in community activities. Furthermore, due to the persistent prejudice about the role of women in society; women still face many difficulties in enhancing their knowledge. On the other hand, for ethnic minority people or the farmers who do not have many opportunities to approach new information and knowledge, there is a need to have the educational method to transfer knowledge in a simple and easy to understand way, especially in regards to the abstract topics such as climate change.

There are many organizations that are now putting significant focus on climate change education and raising awareness for the participants such as officers, farmers and women. But only in the recent years have children and youth received interest from concerned organizations (e.g. Save the Children, International Plan in Vietnam, Action for the City, CECI) and been considered as having important role in responding to climate change. The activities for disaster risk mitigation with the participation of children have been implementing in Yen Bai, Thanh Hoa, Quang Tri, Tien Giang and other locations by Save the Children Alliance and Plan International in Vietnam since 2005 have achieved remarkable successes and showing new ways for approaching the issue. This new approach is children's right based, aiming at ensuring their fundamental rights, roles and demands before, during and after disasters happen. It is concentrated on the four basic rights recognized by Convention on the Rights of Children of the United Nations: survival, development, protection and participation.

In these practices, children always participate actively in the whole implementation process and directly contribute to the project activities, in the meetings, in training courses, in communication campaigns and in education activities, as well as participate in activities of local mass organizations in the schools and community. Through these activities the role of children is recognized and it has revealed that children are not only capable of becoming an active agent in the development process and are members with many important contributions to the community, but they also can be an effective communication channel to convey information to friends, family and local people about disaster risk management and climate change.

Climate change and disasters have been affecting the rights of children in all aspects. Via supporting the community to have a deep understanding about the fundamental rights of children, and enhancing the children awareness and help them to recognize their role as a complete community's member in disaster and climate change response

activities. These models have shown that children, instead of being the victims of extreme climate phenomena, can become an important force in responding to disaster and climate change at the community level.

# Activities

## Enhancing capacity of community:

- Training on child rights and the roles of child's participation for the community and officers of local authorities.
- Facilitate the development of child-focused disaster mitigation plan.
- Organize and establish the children clubs for disaster risk reduction and climate change adaptation, in which, children vote for their representatives of the clubs.

## Communication to promote changing behavior:

- Develop a plan for communication to promote changing behavior, with the participation of both children and adults.
- Conduct the communication campaigns (deliver flyers, organizing events, and presenting movies etc.) to promote changing behavior with the co-ordination between schools and local authorities.
- Conduct training for the local communication group, provide communication applications (cameras and video cameras) and organize seminars to train children about the disaster risk reduction measures, e.g. how to develop a Risk Map, how to share and discuss about DRR and CCA activities and how to write script and produce the communication documentaries.

## Implementing mitigation activities of disaster risk and developing infrastructure:

- Create more chances for children to participate in the selection and planning of DRR activities (such as enhancing dykes, and upgrading the infrastructure of schools, kindergartens and centers for children emergency-aid).
- Facilitate child's participation in monitoring of the implementation DRR activities.

## Support equipments and applications:

• Based on the proposal of needed equipment for the Children DRR Clubs, there shall be the support for purchasing necessary equipments such as life-jackets, buoys, lifeboats, and loudspeakers.

# Effectiveness in mitigation of and adaptation to climate change<sup>95</sup>

Activities to promote child's participation in DRR activities have contributed to the enhancement of their knowledge about disaster risk and climate change, including their knowledge about adaptation measures. Through such activities, children have played an important role and gained confidence in the discussion and sharing activities with adults.

The short communication documentary of climate change and disaster risk made by children from Thuan commune, Quang Tri province has been displayed in their communities. The discussion after the documentary helped children to be able to advocate for adaptation measures which are suitable with them. This material has been used by other organizations for communication purposes. (Source: *Plan International in Vietnam, 2011, the short documentary of climate change and disaster risk, [internet] http://www.youtube.com/user/PlanVietnamt/pu/3/5/UyjWe0* 



Photo 13: Children of Thuan commune, Quang Tri province discussing in the participatory training on film making (Source: Plan International in Vietnam)

Child focused DRR and CCA activities have brought practical benefits to hundreds of thoudsand of beneficiaries. There are currently 21 child-focused DRR community plans, which have all been developed with active contributions from children and youth.

Active child participation, along with adults in disaster management groups, with local authorities and local people, in the implementation of Hazard, Vulnerability and Capacity Assessment (HVCA) can often bring out important contributions. Through the assessment process, children have a chance to directly speak with adults to express their needs and concerns in emergency situations, including what children want adults to do to protect them from disaster risks and how children could use their skills and abilities to contribute.

Furthermore, the activities also helped teachers, parents and community leaders recognize the importance of mobilizing children to participate in the activities of raising awareness and changing behavior in responding to climate change and disaster risk.

The project also placed the children at the centre of monitoring and evaluation tasks whenever possible. They are the key project informants and have provided the best assessment of project achievements. During the evaluation, through the meeting with

<sup>&</sup>lt;sup>95</sup> DIPECHO, Advocacy Network Initiative DANI, 2007, *Community-Based Disaster Risk Management: Good Practices Examples*, [internet] <u>http://www.ccfsc.gov.vn/resources/ccfsc/images/download/CBDRM</u> <u>%20Good%20Practice%20Examples-V.pdf</u>, last accessed 15/10/2011.

children, evaluators could determine the knowledge they had gained, their understanding and how they benefited.

The successful results of these practices of enhancing community's capacity in responding to disaster and climate change through promoting child participation have brought out valuable experiences related to approaches and implementation methods. The experiences gained from these practices are good references and absolutely can be replicated for the implementation of the tasks "to integrate knowledge of disaster risk management and prevention into the schools' educational program", which is stated in the Strategy of Disaster Risk Prevention and Mitigation to 2020 and the in the implementation of for the implementation of the Strategy of Disaster Risk Prevention, Response and Mitigation in the Education Sector in 2011-2020.

## Lessons learned and Challenges

## Lessons learned:

- Children are very creative; their ideas should be highly appreciated.
- Programs with child participation have low costs and can have high effectiveness.
- In education, raising awareness for children should use dynamic visual and creative educational materials, using learning games (e.g. jigsaw puzzles) on selected themes in open spaces to encourage their active participation.
- A child-focused approach in the activities contributed to enhancing capacity in responding and mitigating the vulnerability of children when disaster occurs, and it also gave them a sense of respect and involved them in making decisions about their lives.

## Challenges:

- The awareness of society about sustainable development in general and climate change in particular is not as high as expected.
- The Ministry of Education and Training has conducted the development and approval the educational action plan and priority project in responding to climate change in the period of 2011 – 2015. After 2015, climate change education shall be introduced as the general subject integrated in the environment education curriculum at all levels, but it is not clear how action plan be implemented at local level.
- An important issue is that while teachers and students also recognized the benefit and necessity of this subject, they are reluctant to take on an additional burden. Currently, due to the over-loaded educational programs, teachers find it difficult to find time for enhancing knowledge on climate change, while students have many other academic subjects to learn. The prevention of disaster risks and climate change is a new topic, where knowledge is constantly needed to update. However, it also equipped with much fundamental knowledge. As a result, there should be consideration to introduce this content in pedagogy

schools and university systems and to organize the additional training courses for teachers.

• NGOs programs/projects in remote areas often do not have long-term commitment from relating organizations for the maintenance and replication of the practices. This fact poses significant challenges to project implementation.

# Building a Green Generation Network – Engaging Vietnamese Youth With Climate Change and Sustainable Development

## Background

Vietnam is a young country with 60% of its population under the age of 30, and a quarter of its population 15 – 24 years old<sup>96</sup>. Vietnamese youth are increasingly equipped global information and technology, foreign languages and modern knowledge. However, youth face severe ecological literacy challenges, and see climate change as too abstract an issue and too big a problem to relate to their everyday life. In addition, they may feel that their positive actions are too insignificant to influence the big picture. Despite these challenges, youth are demonstrated that they are not passive victims in the face of climate change: they are productive stakeholders with fresh and innovative ideas. In recent years, there have been growing numbers of Vietnamese young people starting groups, mobilizing volunteers and implementing activities related to climate change awareness and action in both rural and urban areas. However, these youth face many obstacles due to a lack of expertise, experience or inadequate institutional support.

With the objective of developing a network of individuals and youth organizations that share common concerns on climate change and are willing to learn and take action for a sustainable way of life, the Green Generation Network was established on July 2009. This emerged from an initiative of several youth and environmental clubs with the support and coordination of Live & Learn for Community and Environment (Live & Learn). With common concerns about climate change and related issues, youths have connected together and developed a network. This is creating an active youth generation willing to enhance community awareness on climate change and sustainable development, promoting actions for a sustainable future. With enthusiasm and action, the Green Generation Network promotes and connects Environmental Clubs and individuals who have a desire to learn and take action for a green community.

<sup>&</sup>lt;sup>96</sup> United Nations, 2010. "World Youth Report 2010: Youth and Climate Change". United Nations, New York

# Activities

The Green Generation Network activity consists of three components: Awareness, Action and Advocacy for youth on climate change issues and sustainable development.



#### Activities and events include:

Raising awareness and building capacity for active youths as green messengers: through Forums of Vietnamese Youths and Sustainable Development (Aware and Act – 2009; Tomorrow starts Today – 2010), activities of developing network and training, organizing meetings, on-line sharing, as well as face-to-face meetings between Green Messengers of all areas throughout the whole country. Activity themes include: climate change and responses, biodiversity, energy, poor and vulnerable people, disaster, food security and developing "soft skills" for youths.

- Financial and technical support for youth initiatives in the international and national environmental campaigns (such as 350.org, Earth Hour, 26C+, Become a Vegetarian, I Agree and Say-NO to nylon bags).
- Networking clubs, schools and managing Green Generation website and other social networks (Facebook and Google Group Mailing List).
- Support youths to develop a partnership relationship with Governmental Organizations (e.g. NATCOM, CETAC), enterprises (Panasonic, BOO, KOTO), international organizations (CARE, Oxfam, British Council, Rosa Luxemburg Stiftung, Embassies) and international youth organizations (YUNGO, EcoSingapore, The Australian Youth Climate Coalition – AYCC, Peace Child International).

## Effectiveness in mitigation of and adaptation to climate change

In the future, youths will need to have certain skills to adapt and mitigate climate change. Thus, it is important that youth should share information and be active in the combat against these challenges<sup>97</sup>. The Green Generation Network has demonstrated the effectiveness in raising awareness and action of youth, with outstanding results as follows:

- In 2010 2011, the network organized training of capacity building for 1,108 youths (the Green Messengers) with subjects relating to climate change and sustainable development.
- 21 events of training/seminar of building capacity for Green Messengers were conducted throughout the country.
- A range of Green Generation activities has spread to 23 cities/provinces and connected 77 clubs and schools together. The clubs have mobilized 5,000 young people in Vietnam participating in the events organized by Green Messengers.

## Lessons learned and Challenges

## Lessons learned:

The Green Messengers and key members of the network play an important role in the promotion of active participation of youth in all the stage of activities. The Green Generation Network has a huge number of enthusiastic volunteers, and is an active organization motivated by the young people involved. Based on this motivation, Green Generation Network has become a partner of governmental authorities, NGOs, and enterprises. Young people had a chance to participate in all stages of activities, from idea forming, program design, implementation, monitoring and assessment. In each project, each individual becomes a "changes agent" spreading "green awareness" and "green action" to community.

<sup>&</sup>lt;sup>97</sup> United Nations, 2010. "World Youth Report 2010: Youth and Climate Change". United Nations, New York

Actively applying, updating and using online channels and the internet for the communication and information sharing activities plays an important role in attracting youth and student participation. There are currently 891 registered members on the Green Generation Google Group Mailing List and 1,738 friends on Green Generation Facebook, and more than 50 websites of groups, clubs, e-newspapers published articles about Green Generation Network information & activities. Moreover, the maintenance of relationship with communication agencies helped to communicate and update network activities on radio and television channels.

Promoting creativeness and activeness of youth in all activities, from forming ideas, developing plans, deploying the implementation and conducting the monitoring and assessment, plays a very important role. The Green Generation Network mobilized the participation of clubs and individuals with common concerns about the environment through a diverse range of approaches, such as project or separate activities. The Network always aims to find creative methods which are attractive to youth, such as training courses, seminars or events which are designed as the interactive games, films, ask and answer and game shows. The Networks has developed an "open network" without a fixed operational board, management board or permanent members of the network: there are only the supportive staff to coordinate activities and to connect members of the network with other organizations and unions, which helps Green Generation to be flexible and in line with the youth in implementing activities and attracting more participants of other clubs and individuals.

#### **Challenges:**

Youth living in big cities such as Hanoi, Danang and Hochiminh have had many opportunities to participate in climate change awareness training opportunities, and are often active and open minded, and will try to make a difference in their homes and communities. However, designing and transferring the course content to meet with their high expectation can be a big challenge. In order to attract the concern and participation of youths, Green Generation has been applying various new transferring methods such as organizing competitions as games, exhibitions or eloquent contests. Another challenge of the project executors is the pressure of finding the creative methods and strategies to attract more young participants. An important factor requiring more concerted effort is the development of training materials and publications in the support of application and practice in responding to climate change.

In spite of an obvious and comprehensive financial support mechanism for youth groups and clubs in the process of developing proposals, implementing projects and carrying out the monitoring and assessment of results. There is still a challenge of a needing to continuously enhance capacity of groups and clubs to ensure the achievement of proposal objectives and obligations to sponsors, while the short-term focus is concentrating on the development of "soft skills" such as strategy, project financial assessment and management.

## Developing green living in school and in community

## Background

Currently, Vietnam is in the process of rapid change of both society and environment, particularly in the big cities. This means that people have more new opportunities, changes in lifestyle and there is an increasing consumption demand of necessary goods.

In the era of climate change, there are more and more rich people with an unsustainable consumption lifestyle, while poor people are becoming more vulnerable to the climate change impacts. Rapid economic development in the urban areas has increased the social and environmental issues in big cities in Vietnam such as traffic, water quality, infrastructure, and housing, barriers to social connection and lack of green spaces.

The "Green Living" practice aims to address these challenges through encouraging individual and community behavior change to reduce their impact on the environment, including reducing GHG emissions. For example, since 2009, the Center of Action for the City has implemented activities with the "EcoTeam" volunteer club in communities to raise awareness and change attitudes and behavior in a range of sustainable development themes. Recently, these activities have expanded from the community into schools, to encourage more pupils and students to participate in climate change mitigation activities.

Additionally, many environment clubs have now become places for learning, sharing and practicing a sustainable lifestyle for students and young people, such as 3R and Fun recycle – for promoting saving and recycling awareness and actions, Cycling for Environment (C4E) - for using transports with fewer emissions. At the Vietnam Youth and Sustainable Development Summit 2010, youth agreed to take action together in green living campaigns. These campaigns are supported by Live & Learn through the Green Generation Network. Other organizations such as the Center for Development of Community Initiative and Environment (C&E) also offer support such as training courses on sustainable lifestyles and green initiatives of youth. These practices have some remarkable characteristics as follows:

- Community participation. Starting from a small group with a few members, EcoTeams have now become the centre of many new initiatives. On the other hands, the activities of youth's environment clubs and green living campaigns, they are the owners of campaigns, idea makers, designer and collaborating with volunteer teams to replicate the community participation in practicing green living.
- Sustainability. All the campaigns and youth-led activities were started with very little financial support. The youths themselves are responsible for mobilizing the resources such as human, finance and other professional support to be able to implement their ideas. In spite of the low expense, the activities of these

environment clubs and youth campaigns have high impacts. The connection of campaigns through the network also provides a way for youth to learn from projects of other clubs and from other members in the network. Synthesizing, assessing and documenting their activities and creating inspiration for initiatives, also necessary work and is currently being undertaken to ensure the sustainability as well as the replicability of good activities.

The green living practice in the community and in schools implemented by EcoTeam is sustainable because it has a deep connection with the communities such as schools, parents and other local agencies such as local NGOs and the Women's Union and Veterans Association. For example, in Danang, the Women's Union plays a lead role in the implementation process of EcoTeams. In Hochiminh City, local NGOs combined the green living activities into their program. These connections help ensure the changes in community and individuals continuously maintained even when the support ends.

Unique and creative. The activities of environment clubs and youth-led green living campaigns have encouraged the creativeness of young people. They are the people who contributed ideas for campaigns and activities, developed and conducted the plan, found organizations and sponsors for technical and financial support to be able to put their ideas into practice. Events such as "Living green – Easy or Difficult" are a good example of the creativeness and creating inspiration of young people.

Meanwhile, the EcoTeam's Green Living approach in schools and he community created opportunities for members to study creative solutions for dealing with their own community issues through the active participatory methods. At Phuc Tan commune, a poor area in Hanoi along the Red River, riverside garbage dumps have now become thriving vegetable gardens, thanks to one initiative of EcoTeam members.

 Replicability. The good practice of environment clubs and youth-led campaigns has replicability as all of the activities are based on simple ideas and concepts which are proposed, own and implemented by the youth groups/clubs themselves in their neighborhoods.

Eco-Team's practice in schools and the community has developed based on the successful practice of Global Action Project in Ireland about changing behavior. Experience of this project has indicated that EcoTeams communities have ability for self-replication. Up until now, EcoTeam activities currently still focus on urban areas. It is required certain adjustment if the practices is going to be implemented in rural communities.

# Activities

EcoTeam's activities have followed the behavior change process: **Initial assessment** & survey  $\rightarrow$  change behavior  $\rightarrow$  Re-do the assessment & survey  $\rightarrow$  Synthesizing **Results.** The team was trained about sustainable subjects such as electrical energy, water, vegetable, waste, shopping, health and personal relationships. Details are as follows:

## • Green living in community

- EcoTeams, established at 10 wards and communes in Hanoi, Hue, Danang and Hochiminh city. Approximately, comprised of 1,000 participated households. The teams were introduced and trained about different sustainable themes.

- When there are enough EcoTeams are operating in a neighborhood, they form Green Living Club to conduct the activities at a larger scale in community.

## Green living in school

- Junior high schools pupils are coached weekly in small groups (maximum 12 members/group), during their weekly extracurricular activities. Through their activities in school, they also attracted their families and friends to participate and support the activities.

The youth-led living green campaigns and environment clubs activities with the motto "Be the change that you want to see in the world"

- Organize events and youth gatherings to respond to and connect with other international events, such as 350.org and Earth Hour.

- Organize green festivals and ecological fairs.

- Organize campaigns and presentations for community with subjects relating to sustainable development (such as becoming a vegetarian).

- Organize "A clever housewife" program to encourage the re-use of nylon bags.

- Organize seminars and training activities for youth about the above themes, and other sustainable development themes.

# Effectiveness in adaptation and mitigation to climate change

The "Green Living" practice in the community has concentrated on changing behavior sustainably, measured through the process of periodical energy consumption auditing. This is the sample of the energy consumption result report of these program participators:

Index	Average reduction of consumption/month
Electric	9 kW
Water	Reduce 2m <sup>3</sup>
Solid waste	Reduce 30 kg
Average use of nylon bags	Reduce 90 bags

Up until September 2011, there are 100 Green Living groups (i.e. EcoTeams) with the participation of 1,000 households. Green Living program in schools was implemented at four secondary schools in Hanoi and Thua Thien Hue also showed similar results.

Although not using the method of measuring the changes in energy consumption as the EcoTeams, the Youth-led Living Green campaigns attracted a large number of Vietnamese young people to participated in the activities with the detailed results as follows,

- Over 8,000 youths participating in the youth-led events, activities and campaigns in 2010-2011.
- 1,500 young people participating in the global action day 350.org on 10/10/2010 and proposed various practical initiatives for green living in this event.
- 3,000 young people participating in Earth Hour events.

Furthermore, with the use of the **Aware**  $\rightarrow$  **Act**  $\rightarrow$  **Advocacy** approach, the Living Green practice of environment clubs and youth-led campaigns has delivered evidence of changing behavior. The youths participating in the campaigns and club activities are often the first who have actually changed their habits and behavior. For example, youths are often the ones who usually select the vegetarian restaurants to organize their meetings and activities, and reduce the use of nylon bags.

# Lessons learned and Challenges

- Gathering a large number of members to join EcoTeams groups at all ages is a challenge because members are often busy and can not participate in all activities. Several solutions were successfully implemented to replace members, such as approaching women, old people and students and encouraging them to be leaders of activities in their own areas.
- The issue of continuously building capacity for local partners and facilitating networks among cities is also challenges which needed to be addressed.
- Volunteer spirit is an important factor which leads to the success of the Living Green practice done by Environment Clubs and youth-led campaigns. However, there is a challenge when some key leaders leaving the club as they are too busy with their work, study commitments, and/or because of family issues.
- Young people still face difficulties and have limitations in developing strategies, in planning and financial management, due to limited knowledge, and this is an obstacles in keeping all activities thriving and operating well.
- When implementing campaigns or organizing environment events at a large scale, youth often do not take advantage of the support from local authorities due to the lack of experience in the complex administration procedure (such as applying for the authorization of local authorities).

## APPENDIX

#### List of implementing organizations and contact information

No.	Practice	Organization	Contact information
1.	System of Rice	The Center for Sustainable Rural	Vu The Thuong
	Intensification – SRI	Development - SRD	56, Alley 19/9, Kim Dong Str., Hoang Mai Dist., Hanoi
			Tel: +84 4 3943 6676 / Fax: +84 4 3943 6449
			Email: <u>thuong@srd.org.vn</u>
		World Vision International in Vietnam	Nguyen Huu Hieu
			Kim Dong – Hung Yen Office, Project "Livelihood Development –
			Area Development Program of Kim Dong Province"
			Tel: +84 3213.811.745
			Email: <u>Nguyen_Huu_Hieu@wvi.org</u>
2.	Garden – Pond - Pigsty	Center for Community Health Research	Pham Van Thanh
		and Development (CCRD)	28 Pham Tuan Tai, Nghia Tan ward, Cau Giay dist., Hanoi
			Tel: (84-4) 3793 0380 / Fax: (84-4) 3793 0306
			Mobile: 0913 209 430
			Email: <u>tvc.vacvina@fpt.vn</u>
		Vietnam Gardening Association	Ha Minh Trung
		VACVINA	15, Lane 71/14 Hoang Van Thai, Thanh Xuan dist, Hanoi
			Tel: (04) 35665476/77
3.	Enhance capacity in	Center for Rural Development of the	Vo Chi Tien
	adaptation to climate	Central Vietnam – Hue Agro-Forestry	102 Phung Hung, Hue city
	change for community	University	Phùng Hưng, TP Huế

No.	Practice	Organization	Contact information
			Tel: +84 54 352 9749 / Fax: +84 54 353 0000
			Email: vctien.crd@gmail.com
4.	Participatory	CARE International in Vietnam	1. Nguyen Sy Phuong
	management of		Manager of Participatory Management of Watershed Project, Ba
	Watershed		Thuoc district
			Tel: (04) 3716 1930 / Fax: (04) 3716 1935
			Email: <u>nsphuong@care.org.vn</u>
			2. Vu Thai Truong
			Component Manager of natural resources management
			Tel: (04) 3716 1930 / Fax: (04) 3716 1935
			Email: <u>vttruong@care.org.vn</u>
5.	Enhance the	The Centre for Marine life Conservation	Ho Thi Yen Thu
	management of coastal	and Community Development (MCD)	Suite 3104, Level 31, Building 34T, Hoang Dao Thuy Street, Cau
	ecosystem and		Giay District, Hanoi
	development of		Tel: +84 4 2221 2923 / Fax: +84 4 2221 2924
	community livelihood in		Email: <u>thu@mcdvietnam.org</u>
	responding to climate		
	change		
6.	Plant, take care, protect	CARE International in Vietnam	1. Nguyen Viet Nghi
	and manage Mangrove		Manager of Plant and Manage Mangrove Forest based on
	forest based on		Community Project – Thanh Hoa office
	community		Email: <u>nvnghi@care.org.vn</u>
			2. Nguyen Thi Yen
			Manager of Disaster Risk Reduction and Climate Change
			Program - Hanoi Office

No.	Practice	Organization	Contact information
			Email: <u>yen.nt@care.org.vn</u>
7.	Integration of mitigating	Oxfam in Vietnam	Nguyen Dang Nhat
	Disaster Risk and		Floor 5, 22 Le Dai Hanh, Hanoi
	adaptation to climate		Tel: 04 3945 4362
	change		Email: <u>nhatnd@ohk.org.vn</u>
8.	Developing biogas	Center for Community Health Research	Pham Van Thanh
	market for Biogas system	and Development (CCRD)	Contact : as Section 2
	VACVINA		
9.	Developing fuel efficient	GRET in Vietnam and Co-operative for	Duong Nhat Linh
	cooking stove market	Rural Development in Quan Hoa –	Ban Cang, Xuan Phu, Quan Hoa, Thanh Hoa
		Thanh Hoa (CRD)	Tel: 0915 418 742
			Email: duongnhatlinh007@gmail.com
		Center for Population, Environment and	Do Duc Khoi
		Development (PED)	58, Lane 162, Nguyen Van Cu, Long Bien, Hanoi
			Tel: (04) 3872 4509 / Fax: (04) 3872 4508
			Email: <u>khoi.ped@vusta.vn</u>
10.	Developing Bamboo	Group of Research and Exchange	GRET office in Vietnam
	industry in Thanh Hoa -	Technology	Room 307+308, Block A1, Van Phuc Diplomatic Compound –
	Experience of	GRET in Vietnam	298 Kim Ma, Ba Dinh, Hanoi
	Sustainable development		Tel: (84-4) 3846 4493/3846 4491 / Fax: (84-4) 384 64 514.
	of Resources		Email : <u>gretvn@gret.org.vn</u>
11.	Motivating the	Energy Conservation Research &	Huynh Thi Minh Trang
	Environment	Development Center (ENERTEAM)	273 Dien Bien Phu, District 3, Hochiminh City
	Management System,		Tel: (+84) 8 3930 2393 / Fax: (+84) 8 3930 7350
	Resources and Energy of		Email: trang_htm@enerteam.org

No.	Practice	Organization	Contact information
	Enterprise		
12.	Building capacity in	The Center for Sustainable Rural	Phạm Thị Bích Ngọc
	responding to climate	Development - SRD	56, Alley 19/9, Kim Dong Str., Hoang Mai Dist., Hanoi
	change for Civil Society		Tel: +84 4 3943 6676 / Fax: +84 4 3943 6449
	in Vietnam		Mobile: 090 4123 516
			Email: <u>NgocPTB@srd.org.vn</u>
13	Enhancing capacity in	Save The Children in Vietnam	Nguyen Van Gia
	responding to disaster &		141 Le Duan, Hanoi
	climate change of		Tel: 0912 879 888,
	community through child		Email: gianv@savechildren.org.vn
	participation	Plan International in Vietnam	Nguyen Trong Ninh
			Floor 10, Capital building, 72 Tran Hung Dao, Hanoi, Vietnam
			Tel: +844 3822 0661
			Email: <u>ninh.nguyentrong@plan-international.org</u>
14	Motivating the	Live & Learn Vietnam	Do Van Nguyet
	participation and		30, Lane 32/26, To Ngoc Van, Hanoi, Vietnam
	connection of youth to		Tel: +844 3718 5930;
	aware and take action for		Fax: +844 3718 6494;
	climate and sustainable		Mobile: +84 (0) 904 109 301
	development		Email: nguyet.dovan@livelearn.org
15	Developing the green	Center of Action for the City	Dang Huong Giang
	lifestyle in school and in		1 Pham Ngu Lao, Hoan Kiem, Hanoi
	community		Tel: 046 2700184, 046 2702553
			Email: giang.dothi@gmail.com / vidothi@gmail.com
		Live & Learn Vietnam	Do Van Nguyet

No.	Practice	Organization	Contact information
			Contact : as section 14