

# GREEN PRODUCTIVITY FOR COMMUNITY DEVELOPMENT IN VIETNAM

## 1 Background

The GP in Communities program began in Vietnam in 1998 as a pilot program in 3 villages, Tinh Loc and Kha Ly Ha villages in Viet Yen commune, Bac Giang province and My Khanh B village in Cu Chi district, Ho Chi Minh City. In this phase, the primary areas of concern were identified as clean water supply, solid waste management, pesticide and chemical fertilizer use reduction and traditional career development. In Phase II 1999 – 2000, the GP program was expanded to 9 villages in the North, the Centre and the South of Vietnam in Bac Giang, Ninh Binh, Hue, Da Nang, Phu Yen, Ho Chi Minh, Can Tho and Vinh Long provinces.

In response to the success of stage 1 and 2, 1998-2000, the Green Productivity (GP) program was expanded so that in 2001 – 2003, GP has been brought to 81 villages in 21 provinces: Ha Noi, Hai Duong, Quang Ninh, Ninh Binh, Bac Giang, Thai Nguyen, Hoa Binh, Ha Tinh, Nghe An, Hue, Da Nang, Quang Nam, Gia Lai, Kon Tum, Ho Chi Minh, Can Tho, Vinh Long, Vung Tau, Ben Tre and Ca Mau Vietnam. In addition to the GP options in phase I and phase II, additional GP options were generated and implemented. These include planting trees to prevent sand erosion, worm farming, bee keeping at the household level and the use of a foliage colour table to control nitrogenous fertilizer use in rice farming. Additional GP options for environmental protection and income generation were generated and implemented widely in this phase.

## 2 About the villages

Villages participate in GP program come from different areas of Vietnam (the North, the Central and the South of Viet Nam) with various conditions such as mountains, plain, tourist, coast, urban areas, traditional villages, minority groups.

The socio-economic conditions of villages varies. However, most (90%) of villages in the GP program are agricultural. The types of village are also different. For example, the total area of Lac, Dam and Trai village are only 4 km<sup>2</sup>, 1 km<sup>2</sup> and 4 km<sup>2</sup> respectively while others have large area (Man De village – Hai Duong province: 155 ha). Average income is different either (poverty rate in Ky Loi village – Ha Tinh province is 35 % compared with 5% in Thanh Lap village – Thai Nguyen province).



### 3 Main issues

The villages cover a range of different socio-economic conditions and have differing environmental conditions and problems. Some of the problems commonly faced are:

- Human and animal waste water pollution owing to lack of treatment facilities and unsuitable management methods.
- Polluted potable water supply
- Pollution due to storm water runoff
- Inappropriate use of chemical fertilisers and pesticides
- Solid waste disposal
- Inefficient use of cooking fuel
- Deforestation
- Inadequate Rural infrastructure
- Environmental awareness of villagers is limited, especially regarding the application of new technologies for environmental protection.

### 4 Green Productivity Options

GP options were generated based on the problems faced in each community. The most feasible GP options in terms of economic, environmental and social impacts were implemented. Implemented GP options are described as following:

Problem	GP options
Animal waste pollution	<ul style="list-style-type: none"> <li>• Construction of clean pig breeding facilities</li> <li>• Construction of cow breeding facilities</li> <li>• Construction of Biogas plants</li> <li>• Construct pig breeding facilities suitable for combining with a biogas model</li> <li>• Construction of a composting model</li> </ul>
Human waste pollution	<ul style="list-style-type: none"> <li>• Construction of private latrines</li> <li>• Construction of public latrine</li> </ul>
Lack of clean drinking water	<ul style="list-style-type: none"> <li>• Improve or update wells</li> <li>• Construct simple water treatment processes, filtration, settling or flocculation.</li> <li>• Construction of a water treatment plant</li> <li>• Construction of rain water tanks</li> </ul>
Wastewater pollution	<ul style="list-style-type: none"> <li>• Install water treatment facilities in each household</li> <li>• Construction of border and drainage systems around common community wells</li> </ul>

	<ul style="list-style-type: none"> <li>• Improve drainage system</li> </ul>
Improper use of pesticide and chemical fertilizer	<ul style="list-style-type: none"> <li>• Conduct training course on the proper use of pesticides</li> <li>• Use of high yield rice crop variety which also has high pest resistance</li> <li>• Application of Integrated Pest Management (IPM) on rice and vegetables</li> <li>• Application of biological instead of chemical fertilizers</li> <li>• Proper use of pesticide on fruit</li> <li>• Application of “safe vegetable” limit to the concentration of chemical fertilisers. Application of bio-fertilizer and bio-pesticide to replace chemicals.</li> <li>• Application of natural farming</li> <li>• Application of plant colour table to control the use of chemical fertilizer</li> </ul>
Solid waste pollution	<ul style="list-style-type: none"> <li>• Establishment of environmental protection regulations</li> <li>• Set up a solid waste classification system</li> <li>• Establish solid waste collection system</li> <li>• Construction of common rubbish bins</li> <li>• Launch of a cleaning campaign</li> <li>• Construction of bins for pesticide container collection</li> <li>• Construction of landfill</li> </ul>
Cooking fuel was used inefficiently	<ul style="list-style-type: none"> <li>• Construction of energy efficient stoves</li> </ul>
Income generation	<ul style="list-style-type: none"> <li>• Construction of Advanced furnaces for processing of agricultural products</li> <li>• Mushroom cultivation</li> <li>• Worm farming</li> <li>• Bee keeping at household level</li> <li>• Pilot planting of species with higher economic returns</li> <li>• Pigeon breeding</li> <li>• Frog breeding</li> <li>• Develop traditional careers (fish sauce, rattan-bamboo, straw)</li> <li>• Improve quality of cattle breeds</li> <li>• Rice-fish, rice-shrimp model</li> <li>• Pig rearing</li> <li>• Planting of orange trees with high pest</li> </ul>

	resistance <ul style="list-style-type: none"> <li>• Planting high yield corn</li> <li>• Application of row sowing machine</li> <li>• Application of rice cutting machine, developed from weed machine</li> </ul>
Increase forest coverage area	<ul style="list-style-type: none"> <li>• Tree plantation</li> <li>• Planting trees to prevent sand erosion</li> </ul>
Inadequate rural infrastructure	<ul style="list-style-type: none"> <li>• Construction of concrete roads</li> </ul>
Lack of environmental awareness	<ul style="list-style-type: none"> <li>• Conduct training course to enhance environmental awareness of people</li> </ul>

## 5 Achievements

Through its 5 year implementation period (1998 – 2003), the GP program has brought significant benefits for people in rural area in terms of living standard enhancement and environmental protection. The program has achieved the visible outcome such as Biogas, energy saving stoves, hygienic latrine, etc and also invisible achievements such as awareness enhancement of people about their role for environment protection.

### 5.1.1 Training



Training and promotion are effective methods to increase local people's awareness of environmental protection. Through the training courses, people have opportunities to learn technical information that can help them to improve their quality of life and local environment. The training courses vary greatly depending on problems faced as well as related solutions proposed by the GP team. Training in the GP concepts and methodology

was held in the 21 provinces with the participation of 1857 people. Training courses on new rice varieties has attracted more than 1000 people in Hai Duong, Enhancing Environmental Awareness Enhancement has attracted 200 people in Phu Hai – Hue; Integrated Pest Management in Ha Tinh, Ho Chi Minh, Nghe An, Phu Yen has more than 700 participants. Through these training courses, people have an opportunity to learn about new GP options, which may help them improve their living standards as well as the environmental conditions in their area

### 5.1.2 GP options

Based on the problems faced in area, the GP team has identified the root causes of problems and generated GP options which are appropriate. The most suitable GP options in terms of social, economic and environmental aspects are implemented.

In term of **human and animal waste**, 200 pig breeding facilities, 96 biogas plants and 40 plastic bag model biogas plants were constructed. 507 hygienic latrines were constructed to solve human waste problem.



In term of **clean water**, 16 wells were upgraded, 27 simple water filtration models were applied and rain water collection system was installed to provide clean water for domestic purpose. 38 water treatments were constructed and drainage system was applied to remove wastewater pollution problem.

In term of **pesticide and fertilizer management**, 127 households applied IPM on rice, fruit and vegetable, proper application of pesticide and chemical

fertilizer, natural farming, plantation of safety vegetable and colour table to control pesticide application was introduced and implemented which has significantly reduced the amount of pesticide and chemical fertilizer. Through application of GP options, the use of pesticide and chemical fertilizer has reduced. This brings benefits, not only through reduced risks of chemical usage, but also reduces the financial burden. For example, through the use of a color table to control application of chemical fertilizer was applied to reduce extra application of nitrogenous fertilizer. Appropriate use of nitrogenous fertilizer can reduce the rice lost, which can cause 30 – 40% yield reduction. Through the application of a color table, farmers can reduce the nitrogenous fertilizer from 100 to 50 kg/ha. At a cost of 2 800 VND per 1 kg of nitrogenous fertilizer this represents a cost saving of 140,000 dong – 280,000 dong/ha.

In term of **solid waste management**, solid waste collection teams and solid waste classification system was established. Solid waste management has been integrated with cultural activities of area, such as solid waste collection campaigns at celebratory times in village. In addition, the establishment of environmental protection regulations have had significant benefits in villages. 183



rubbish bins were constructed for solid waste collection. The application of solid waste management in the communities has contributed to improve environmental conditions in the area, reducing adverse effects to human health through pollution of the environment. The awareness of people has been also enhanced through their daily activities.

449 energy efficient stoves were constructed which has contributed to reduce **energy consumption** in rural area. Construction of Biogas plants is also one option for energy conservation in rural area.

In term of **income generation**, 200 advanced furnaces were constructed in Hai Duong province. Mushroom cultivation, worm farming, bee keeping at household levels, Pigeon rearing, frog rearing, develop traditional careers, etc are the GP options which were implemented to increase living standard of people in rural area. Many GP options have brought significant benefits for people. Application of advanced furnaces is one example. This furnace contains a separate dry chamber to ensure improved hygiene and high product quality. Worker's health is also protected since smoke is released through a high chimney. In economic terms, the return for high quality product is greater. The product price from this furnace is 1000 dong/kg of product which, when considered with an



output of 6 tons/5 months/village, the villagers' income is higher when compared with the application of a traditional furnace. The application of an advanced furnace also saves 5% of fuel.

During five years of implementation, the Green Productivity Program has significantly contributed to rural development in terms of social, economic and environmental protection. The GP options vary, based on the different conditions of each village. GP has become part of people's lives and

can be considered an effective tool for enhancing productivity and socio-economic development in the direction of sustainable development. The concept of GP promotes the ideology that environmental protection should be viewed as an essential element in any development and should be integrated into the global community.