

Giao Co Lam Tea Value Chain Study in Ba Be National Park of Vietnam

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Abstract— Ba Be National Park has been recognized as a wonderful destination for tourist with potential products relations for bio-products nationally, regionally and possibly globally like Giao Co Lam medicinal tea, Bo Khai medicinal vegetable, honey beekeeping... However, the potential of Biodiversity-based Products, especially for the local indigenous population in buffer zones of protected areas in the region, is not yet sufficiently analyzed, their market potential often unknown. The article, rely on value link theory framework and methodology, evaluate current situation and potential of Giao Co Lam tea (*Gynostemma pentaphyllum Cucurbitaceae*) value chain and propose some suggestions for upgrading strategy of Giao Co Lam tea value chain.

Keywords— Giao Co Lam tea; value chain; biodiversity based products.

I. INTRODUCTION

Ba Be National Park’s rich natural resources and biodiversity offer significant potential for the region’s socio-economic development. Now more than ever, it is vital to understand and acknowledge the value of biodiversity. However, the potential of Biodiversity-based Products (BBP), especially for the local indigenous population in buffer zones of protected areas in the region, is not yet sufficiently analyzed, their market potential often unknown. In the promotion of BBP for the improvement of livelihoods and the conservation of biodiversity, the producers and suppliers do not get sufficient support.

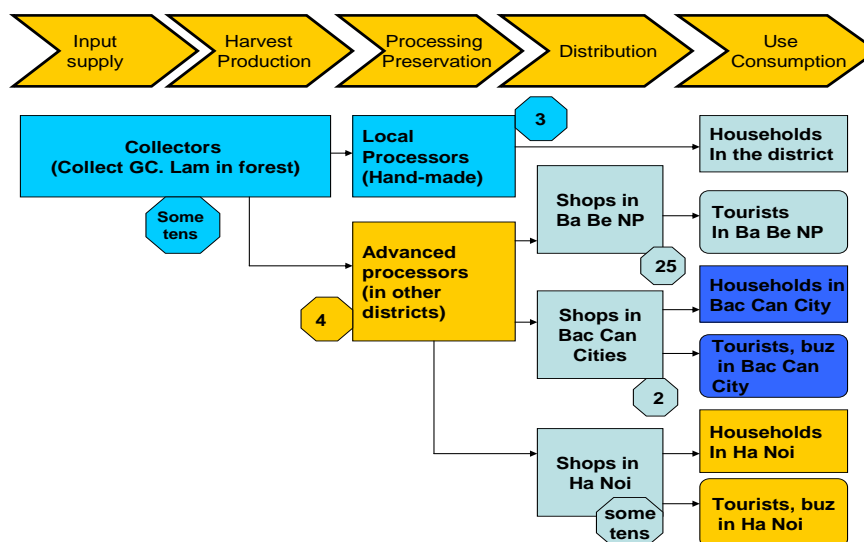
The overall objective of the study is to undertake prioritization of the BBP sectors & sub-sectors and pre-analyze the three most promising value chains of BBP products in the buffer zones of Ba Be National Park in Viet

Nam. The expected outputs of the research, among other concerns include as following: (1) Identify the key opportunities and constraints that limit market growth and/or production expansion; (2) Suggest improvements in the value chain system to ensure direct linkages & infrastructural access of the producers with/ to the major markets to create increased incomes from their products; (3) Give recommendations on how the proposed BBP value chains should be upgraded and could be supported

II. METHODOLOGY

Based on the Value Links methodology with consideration of reality context, the research has elaborated suitable approaches for the study.

Theory framework and research model: Based on the Value links methodology, Giao Co Lam value chain in Ba Be National Park is described as follows:



Graph 1: Giao Co Lam value chain map in Ba Be

Stakeholder workshop on VC selection and analysis

We began the assignment with the stockholder’s workshop on selection of potential sub-sectors in Ba Be with participation of Ba Be management board; representatives of commune people’s committees and mass organizations; farmers involved in collecting, processing and selling in Ba Be National Park.

After completing field surveys of households and local market research, we organized three workshops on value chain analysis of Giao Co Lam tea product. Outputs of those workshops are chain mappings, SWOT analysis and recommendations on upgrading Giao Co Lam tea value chain.

Field survey

Several interviews took place during the field survey with active contributions from collectors, producers, processors and traders of Giao Co Lam selected sub-sectors. We used questionnaires to get relevant data on the collection, production, processing and sales of the selected sub-sectors. The questionnaires also addressed constraints facing to primary collectors/ producers at different aspects, such as accessibility to natural resources, to the market access, technological and financial capacity.

Market Research

We took many visits to local shops, local market places to see and interview traders of the products. We visited some shops, market places in Bac Can and Ha Noi Cities to understand distribution channels, consumption trend, business linkages and other relevant information.

A lot of information is available on internet through online market research; we have studied many relevant websites to get understanding of international transaction of targeted products, opportunities for integrating into regional and global value chains as well as competition forces from other players.

Secondary Data Collection

A large amount of information was collected from relevant organizations and agencies at provincial, district and commune level. We prepared a checklist of information needed and arranged exchange meetings with related parties, who provided us with a number of studies and reports. Besides, we could get information on the past and on-going projects, programs supported by the Governments and donors.

III. OVERVIEW OF BA BE NATIONAL PARK

Ba Be National Park was established on 10/11/1992 by the Prime Minister’s Decision No.83/QĐ-TTg on 12/2003.

The Park contains an abundant bio-reserve area with the only fresh water lake on karst in the world, 1,268 species of fauna and flora and a series of caves. Total area of the park is 10,048 ha, zoned into three functional areas: Administrative and service area: 46.8 ha; Ecological restoration area: 5,374.8 ha; Strict protection area: 3,967.4 ha; and Inside buffer zone: 659 ha

The total buffer zone area is 25,309.1 ha, containing 08 communes of 02 districts, named Ba Be and Cho Don. The table 1 bellow presents the area of the communes in the core zone and buffer zone of Ba Be.

TABLE 1: Area of communes in the Ba Be.

District	Commune	Total area (ha)	
		Buffer zone	Core zone
Ba Be	Nam Mau	0	6,478.9
	Quang Khe	4,137.5	1,313.7
	Khang Ninh	3,308.4	1,126.0
	Hoang Tri	3,480.5	46.4
	Dong Phuc	5,899.0	0
	Cao Tri	2,030.2	394.8
Cho Don	Cao Thuong	3,490.0	416.7
	Nam Cuong	2,963.5	271.5
Total		25,309.1	10,048

Source: Data of CPC, 2014

Total population in 8 communes in Ba Be is about 23,535 people in 5,163 households, belonging to 5 ethnic groups. Tay ethnic group accounts for 90% of the total population in Ba Be.

Income and household poverty rate in the communes in Ba Be is a big matter. Accordingly statistic number from the province, there is quite difference in terms of the income per capita and the poverty rates across the communes¹. Especially, the income per capita and the household poverty rate of Nam Mau commune (situated in the core zone) is relatively high followed by other low income communes such as Hoang Tri, Dong Phuc and Quang Khe. It is noted that the household poverty rate in the communes in Ba Be is very high compared to the average household poverty rate in the Bac Can province, at 14.24% by 2014.

The local inhabitants have very limited livelihood assets. Especially, agriculture land area is very small, about 500m² per person with one crop a year. In many remote villages, average food production per capita only reaches 150 – 180 kg/ year.

Other income sources come from forestry activities, including collection of wide fruits, medicinal plants, vegetables ... However, local people often sell collected species in the raw forms with low value and those are seasonal activities with small gains. Most of households take part in the forest protection under the agreement with Ba Be from which they receive the forest protection fees, 200,000 VND per household/ year. Notably, about 90% of households collect firewood from forests, 41% of them collect timber and construction materials². For those, who are near by the Ba Be Lake also taking part in fishing activity and tourism service. However, there have been some tens of households in the whole community.

In conclusion, poverty situation is still the vicious circle in some communities in Ba Be. Therefore, it is very significant to seek market opportunities and to support for value added options, livelihood opportunities for the local inhabitants in Ba Be.

¹ Poverty lines are defined in Decision No. 09/2011/QĐ-TTg on 30/01/2011 by the Prime Minister. Accordingly, for rural areas, households earn income, on average, from 400,000 VND/ person/month (4,800,000 VND/ person / year) and below are poor households.

² Dr. Dave Huitema & Dr. Jetske Bouma, “Discourse versus reality: conservation and livelihoods in biodiversity hotspots around the world”, July 2011

IV. OVERVIEW OF INTERNATIONAL AND DOMESTIC MARKETS OF GIAO CO LAM MEDICINAL TEA

A. *Giao Co Lam in the world wide and international trade of Giao Co Lam*

Jiaogulan is a plant of the genus *Gynostemma*. There are twenty-one species of *Gynostemma* growing throughout China, with many of them growing abundantly in the Southwest. Most of the species have other Asian distribution in one or two countries. The pentaphyllum species is the most widespread, with distribution in Bangladesh, India, Japan, Korea, Laos, Myanmar, Nepal, Sri Lanka and Vietnam. In China, one or more of jiaogulan species can be found growing wild in the provinces of Shaanxi, Sichuan, Yunnan, Guizhou, Guangxi, Hubei, Hunan, Jiangsu, Zhejiang, Anhui, and Hainan. Jiaogulan can be found growing in the mountains and plains, at an elevational range of between 1,000 and 10,000 feet (300-3200 meters)³.

According to an abstract of the review paper⁴ “*jiaogulan (Gynostemma Pentaphyllum) is age old herb in traditional Chinese herbology. It has been widely researched. It is true Rasayan (Rejuvenator/Antiaging) herb as it is immunomodulatory, adaptogen, antioxidant, anti-cancer, neuroprotective, nootropic and hepatoprotective*”.



The review paper also refers to a research of Dr. Tsunematsu Takemoto from 1970 to 1984 which discovered that Jiaogulan contains four kinds of saponins exactly like those in *Panax ginseng* and seventeen other kinds of saponins very similar to those in *Panax ginseng*. The work of Dr. Takemoto then proved Jiaogulan to enhance endurance, inhibit tumors and help protect the cellular immunity in humans, as well as provide many other healthpromoting benefits.

There are 69,900 results when searching “trade of Jiaogulan”. There are tens of advertising pages selling Jiaogulan tea and Jiaogulan capsules on e-commerce site Alibaba, in which the majority of suppliers is from China. Price of packaged Jiaogulan tea ranges from 10 USD/kg to 38 USD/kg, etc.

In addition, a number of companies in Thailand⁵ and US specialize in processing and supplying Jiaogulan tea to US and Canadian market. However, the HS (Harmonized System) for

³ <http://www.jiaogulan.net/Jiaogulan-book/chapter%204.htm>

⁴ International Journal of Research in Pharmaceutical and Biomedical Sciences, ISSN: 2229-3701

⁵ <http://www.jiaogulan.com>

Jiaogulan tea cannot be found so there is no data on the volume, value of import and export on the international market.

B. *Overview of production and trade of Giao Co Lam tea in Vietnam*

In Vietnam, *Giao Co Lam (Gynostemma pentaphyllum Cucurbitaceae)* has been collected from forests by some local people for use for a long time. It is called with different names such as *Dan tong, Ngu diep sam, Sam phuong nam, Cay bo dang*. In 1997, it was named *Giao Co Lam* by Prof.PhD. Pham Thanh Ky who was former rector of Hanoi university of Pharmacy after he found it in Fansipan mountain located in Lao Cai province. He had known *Giao Co Lam* during his business in China many years ago. *Giao Co Lam* is transliterated from Chinese called *Jiaogulan*. Since 1997, there have been various studies on *Giao Co Lam* guided by Prof. Ky. The studies have indicated that *Giao Co Lam* harvested in Vietnam helps to strengthen health system, lower high cholesterol, fight atherosclerosis, reduce blood sugar, prevent oxidizaion, protect livers and prevent aging. The main element of *Giao Co Lam* is saponin. Besides, it contains flavonoid, amino acid, vitamin and 35 micro elements of relatively high content such as Se, Zn, Fe, Mg, Mn. His team extracted 7 new saponins with Damaran structure similar to ginsengs (Source: <http://suckhoedoisong.vn/dien-dan/vi-giao-su-danh-10-nam-can-man-nghien-cuu-cho-moi-cay-thuoc-20141212164635472.htm>). *Giao Co Lam* grows mainly in a number of provinces in the North such as Cao Bang, Lao Cai, Tuyen Quang, Ha Giang, Hoa Binh and scarcely in some provinces in the Central.



Giao Co Lam has been increasingly concerned and used since Prof.Ky proclaimed his studies. Therefore, a number of enterprises have collected, processed and sold *Giao Co Lam* to consumers through various different distribution channels. Currently, some enterprises have specialized in processing and selling *Giao Co Lam* in quite large scale in Hoa Binh and Lao Cai (in Sa Pa). The main product of these enterprises is *Giao Co Lam* that is distributed to numerous provinces and cities along the country. Its main distribution channel is through pharmaceutical shops in cities such as Hanoi, Hoa Binh, Sa Pa (dozens of shops in each city). These shops often support online sales and door-to-door delivery services

However, current materials for processing *Giao Co Lam* medicinal tea in Vietnam are collected from nature, mainly from the forests. Therefore, the source of materials is at risk of being depleted as people are not concerned about the

regeneration ability and lack the knowledge of sustainable harvest. It is remarkable that there are various species of Giao Co Lam in nature which are distinguished through their leaves, including species of three leaves, five leaves, seven leaves and nine leaves. According to the scientists and physicians on herbal medicine, only five-leave and seven-leave species have healing effect. However, consumers hardly distinguish those species after they are processed into tea while most processing facilities have no registration of inspection and quality. In addition, the management of Giao Co Lam medicinal tea quality seems not to be strict. Therefore, consumers may find 7-leave Giao Co Lam medicinal tea processed by different facilities with price gap from 80,000 VND/kg to 280,000 VND/kg.

V. FINDINGS FROM ANALYSIS OF GIAO CO LAM TEA VALUE CHAINS WITH UPGRADING STRATEGIES

In Bac Can province, Giao Co Lam grows naturally in many places, mainly in Cho Don, Na Ri and Ba Be district. In Ba Be National Park, people have collected Giao Co Lam as a kind of vegetables and medicinal herb for a long time. Since 2009, some households have begun collecting big quantity of Giao Co Lam for sale to Giao Co Lam processing units in other districts.

A. *Giao Co Lam buyers:*

There is a diversity of Giao Co Lam consumers in Ba Be National Park. The main groups of customers include: households in Ba Be National Park, tourists to Ba Be National Park, customers from Bac Can city, Hanoi and households in Hanoi.

The households in Ba Be National Park buy local Giao Co Lam primarily as gifts for their relatives and friends in other provinces but not a big quantity.

Best consumers are tourists to tourism sites in Ba Be National Park with the trust of health improvement and disease treatment. Each customers buy one or two 0.5-1kg packages. Some customers want to buy more but they cannot because of inconvenient transport (they travel with many other people in a car). Most customers make no bargain. The traders in Ba Be have quite stable sale with selling price of 120,000 – 140,000 VND/kg of Giao Co Lam.

The second group of customers is tourists and businessman to Bac Can city and Hanoi. They buy Giao Co Lam in the shops in the cities. There is a quite big gap of price between Giao Co Lam tea in Bac Can city (200,000 VND/kg) and that in Ba Be. There are various types of Giao Co Lam tea in medicinal shops in Hanoi with different selling prices. There is almost price gap of mass-produced Giao Co Lam tea (young and old leaves, strings in Ba Be) and Giao Co Lam in shops in Ba Be National Park (120,000 VND/kg).

B. *Giao Co Lam traders:*

Corresponding to the regional markets, groups of Giao Co Lam traders in Ba Be National Park include: The shops in tourism sites in Ba Be National Park, Giao Co Lam shops Bac Can City and shops specializing in pharmaceuticals in Hanoi.

The owners of Giao Co Lam shops in Ba Be National Park are also above mentioned. Most of them are local people. Their shops which are just the tents, sell various types of local products such as Giao Co Lam and other local medicines, Shiitake (a kind of mushroom), arrowroot vermicelli, peanuts... A number of shops sell beverages. It should be noted that these traders purchase Giao Co Lam tea from some processors in Cho Don District (about 25 km far away). They sell Giao Co Lam tea primarily to visitors. Because of the seasonality of tourism in Ba Be National Park, traders work mainly in crowd season (from April to October each year). From November to March (of the next year), only a few definite shops open to cater for a small number of tourists who are mostly foreign visitors or those visiting at weekends.

There are two shops selling Giao Co Lam tea in Bac Can city, one of which plays role as a showroom for product of Women's Union in Bac Can province. This shop sells a variety of other local specialties such as Giao Co Lam tea, Reishi (a kind of mushroom), Shiitake (a kind of mushroom), arrowroot vermicelli, Shan Tuyet Tea in order to promote the consumption of products of the Women's Unions from districts within province. Customers buying Giao Co Lam from these shops are tourists from Bac Can city, customers who collaborate with the provincial Women's Union coming from the Centre and other provinces. In some cases, officials of Women's Union in Bac Can province send Giao Co Lam tea to Hanoi shops to sell to their patrons. The selling price of Giao Co Lam tea in these shops is much higher than that in Ba Be National Park at the price of 200,000 VND/kg of 7 leaf Giao Co Lam tea. However, it is really difficult to distinguish different kinds of tea after being dried and packaged (as mentioned above). The shops introducing products of the Women's Union purchase Giao Co Lam tea from the processing units in Cho Don District at the price of 120,000 VND/ kg.

It is estimated that dozens of shops specializing in pharmaceuticals in Hanoi do sell Giao Co Lam tea. However, most Giao Co Lam tea in these shops was taken from Sa Pa and Hoa Binh. These shops sell many kinds of Giao Co Lam tea including common types such as mixed leaves, old or young stems and kinds of tea classified and processed closely. Therefore, Giao Co Lam tea's prices also vary. The common type of tea usually has price equivalent to that in Ba Be National Park. The closely processed tea has the price of 225,000 VND/kg.

C. *Local Giao Co Lam processing units*

There are about three households processing Giao Co Lam tea with manual method. They are in Quang Khe and Nam Mau communes. Processing techniques are very simple. After purchasing Giao Co Lam leaves and strings from some local households, they chop up and put all of them in a large pot, dry over fire until moderately dry, then expose the tea before packaging for sale. They do not process Giao Co Lam tea regularly, instead, they only produce when there are orders from acquaintances or relatives. They also do not expand processing operation of Giao Co Lam tea because of two main reasons. Firstly, the complete manual techniques in processing

lead to limited power and productivity. Secondly, they cannot compete with facilities using mechanized method for fresh raw material.

D. Giao Co Lam tea processing units in Cho Don District

There are about 4 households processing Giao Co Lam tea in Bang Phuc and Phuong Vien commune in Cho Don District, which is about 25 km far away to the north of the center of Ba Be National Park.

From 2009 to 2011 when demand for Giao Co Lam tea increased quickly (spread from Hoa Binh and Lao Cai province), these households began processing Giao Co Lam tea to facilitate such demand and to satisfy goods orders from shops in Ba Be National Park.

These households have already processed Shan Tuyet tea before Giao Co Lam tea. Therefore, they are now simultaneously processing both kinds of tea with the same technology. However, there is technical and time adjustment in processing Giao Co Lam tea. Under this technology, some steps were mechanized. For example, machines are used to chop and dry materials. As a result, the application of technology has both increased processing productivities and ensured uniformity of tea after processing.



These households process Giao Co Lam tea almost throughout the year to meet the demand of various customers such as shops in Ba Be National Park, shops in Bac Can city and some customers in Hanoi. The average productivity of each household is about 30 kg/day, the average processing time is 15 days/month. Thus, each household processes and supplies approximately 5,400 kg of Giao Co Lam tea to the market and sells about 28,000 kg of fresh Giao Co Lam collected from the forest (5.2 kg of fresh Giao Co Lam is processed into 1 kg of Giao Co Lam tea on average). All four processing households, hence, sell approximately 112,320 kg of fresh Giao Co Lam from the forest each year (equivalent to 112.32 tons).

Processing households purchase fresh Giao Co Lam from dozens of households in Bang Phuc commune (Cho Don District), Nam Mau, Quang Khe, Hoang Tri commune (Ba Be district). In many cases, these households often ship Giao Co Lam by motorbike to households. In some cases where there are many orders, processing households themselves have to make order and collect materials from the harvesters.

Processing households often ship Giao Co Lam tea by motorbike to shops in Ba Be National Park. They can ship from 30-60 kg of tea per trip. Selling price of Giao Co Lam to these shops ranges from 100,000 to 120,000 VND/ kg.

E. Households harvesting Giao Co Lam from forests

It is estimated that there are 15 households collecting Giao Co Lam in Nam Mau commune and Quang Khe commune. However, four interviewed households said that they harvested Giao Co Lam irregularly during a year. The seasonality and frequency of harvest prolong sparsely throughout the year from April to December 12. They go to collect Giao Co Lam only when there are orders from processors in Bang Phuc commune, Cho Don District (usually at the time these households cannot buy enough materials from suppliers in Bang Phuc commune and nearby communes). Each collector goes to forests three or four times on average per month during four to five months throughout a year. Thus, each household goes to harvest Giao Co Lams about 15 times per year.

The harvesting areas are of natural forest in both the buffer zone and the core zone of Ba Be National Park. It is quite close from the households to these areas, particularly from 1.5 to 2 km.

According to the harvesters, there are many kinds of Giao Co Lam in Ba Be National Park, i.e Giao Co Lam with leaves of 3, 5 or 7 grooves. They also recognize the varying usage value of such 3 types of local Giao Co Lam. However, Giao Co Lam with leaves of 5 grooves is the most popular one growing in Ba Be National Park. This is also the kind of Giao Co Lam used to make tea and medicines. They said that Giao Co Lam grew much in many areas in the National Park in clumps.

After collecting Giao Co Lam, the harvesters continue some preliminary processing steps as follows: separate the leaves from the strings; arrange fresh leaves in layers, roll the strings; package and then transport for sale. Each household collects an average of 20 to 25 kg/day. After collecting sufficient quantities from 60 to 70 kg in about 3 days, the households will preliminarily process Giao Co Lam and sell the products.

The income of Giao Co Lam harvesters ranges from 240,000 VND to 280,000 VND per two – day period, including the fee of transportation for sale. The average annual income of each household is only from 1,800 million to 2,100 million VND.

The interviewed household said that they hoped there would be someone who make orders and purchase Giao Co Lam in their local area. Besides, they needed to be trained how to harvest Giao Co Lam under the way of conservation and sustainability. Moreover, they wanted to visit processing units. They hoped to be provided with technical assistance and equipment for Giao Co Lam processing in their locality.

VI. SUGGESTIONS FOR GIAO CO LAM TEA VALUE CHAIN UPGRADING STRATEGIES IN BA BE NATIONAL PARK

Upgrading strategies for Giao Co Lam tea value chain in Ba Be are based on findings on chain mapping analysis.

Accordingly, upgrading strategies for Giao Co Lam value chain are recommended as follows:

Evaluate the quality and reserves of Giao Co Lam in nature; zone an area for planting, protecting and sustainable harvesting Giao Co Lam in Ba Be under co-management models of community. Some activities should be conducted such as: Collect natural species of Giao Co Lam in Ba Be, analyze their physical and chemical composition for medicinal value determination; Measure and evaluate reserves of Giao Co Lam in Ba Be; Organize groups of Giao Co Lam collectors, make plans and regulations of zoning an area for planting, protecting and harvesting Giao Co Lam (concentrated in the buffer zone); Monitor the implementation of regulations on sustainable harvest of Giao Co Lam in community

Develop a pilot model of Giao Co Lam nursery that is managed by local interest groups or cooperatives. Some activities should be conducted such as: Organize study tours to Giao Co Lam processing units in Bac Can province; Assess the need of forming Giao Co Lam processing units in communes under models of interest groups or cooperatives; Support for formation of interest groups/cooperatives on processing and buying Giao Co Lam in the most potential commune; Support training courses and provide supports of machinery, equipment of Giao Co Lam processing for similar interest groups/cooperatives; Train on packaging, labeling, food safety and production on trial...

Develop pilot model that transplants Giao Co Lam from natural forest to the plant garden of Ba Be and establish seedling multiplication. Some activities should be conducted such as: Study and plan the pilot area of Giao Co Lam in the botanical garden of Ba Be; Organize study tours to plantation demonstrations in Phuong Vien commune, Cho Don district, Bac Can province; Apply suitable method to transplant Giao co lam from forest to the plant garden of the Ba Be; Monitor and evaluate the development of the transplantation model to have suitable actions

Support to develop models of Giao Co Lam plantation for needed households. Some activities should be conducted such as: Study the demand for Giao Co Lam plantation in Ba Be; Organize study tours to Giao Co Lam Support to plan the area of Giao Co Lam plantation in the forest (communes in buffer zone) demonstrations in Cho Don District for needed people

Enhance the capacity of Giao Co Lam harvesters and processors; create business linkage between processors and traders, distributors based on the "win-win" approach. Some

activities should be conducted such as: Train skills of negotiation and business planning for leadership of Giao Co Lam cooperatives; Develop contracts between Giao Co Lam cooperatives and shops in tourism sites in Ba Be; Conduct sales and purchase contracts with Giao Co Lam contribution shops.

VII. CONCLUSION

Giao Co Lam tea in Ba Be National Park is one of the best product with potential relations for bio-products nationally, regionally and possibly globally, However, the potential of Biodiversity-based Products like Giao Co Lam tea in Ba Be is not yet sufficiently analyzed, their market potential unknown. Based on the methodology of value link with participating from almost concerned stakeholders, the article has evaluated current situation and potential of Giao Co Lam value chain and proposes suggestions for upgrading strategy of Giao Co Lam value chain aim at attracting more tourists and create jobs and opportunity development for local citizen. Those suggestions mainly includes conducting evaluation of potential an quality of Giao Co Lam; pilot model development; different training courses; and enhance the capacity of Giao Co Lam harvesters and processors.

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