An Van Khanh,
Nguyen Kim Vu and Do Tuyet Mai

ENHANCE CAPACITY OF SMALL AND MEDIUM ENTERPRISES IN AGRICULTURAL SECTOR OF APEC ECONOMIES

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Proceedings of workshop
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PREFACE

Agricultural production plays an important role in national income and being a great mean of support for the farmer income in Viet Nam as well as that of other APEC member economies. Presently, Viet Nam and others have integrated in to the world market. This includes extensive adjustments of the legal and institutional framework as well as a consistent enhancing capacity of small and medium enterprises (SME) in the agricultural post-harvest sector.

Manufacturing, preserving and processing for agricultural products are the important sub-sectors of agriculture. They help to create more jobs for farmers and make significant contribution to food security at regional and global scale. In the one hand, these enterprises make possible for the appropriate technologies to be transferred in order to minimize post-harvest losses, to increase the value added of agricultural products. On the other hand, their activities enable farmers to join regional food system, which helps to maintain the sustainability of the system and enhance the productivity.

In the globalization, agro-products of almost economies especially that of developing economies have faced with blazing hot competition in the market. In the sphere of ATC05/2007 of APEC, the workshop on enhance capacity of small and medium enterprises in agricultural sector of APEC economies was held aiming at exchanging information, experiences and expertise in developing SME in agriculture and rural among stakeholders from APEC member economies, including Viet Nam, China, Chinese Taipei, Thailand, Philippines, Indonesia and Malaysia. This is a forum for government, private sector and non-governmental stakeholders with key tools and methods to manage and develop SME in the field of storage, processing agricultural products as well as building cooperation styles between APEC's members in the region.

All participants and speakers had contributed to exchanging, sharing ones' information and experiences for the workshop with the expectations that all good gained experiences will be a new motive power for the development of SME in agriculture sector in particular in the field of agro-product storage, processing and trade as well as shorten the gap between APEC economies in the context of rapid globalization.

We would like to thank the APEC Secretariat Board, Ministry of Agriculture and Rural Development, Viet Nam for helps and supports in organizing workshop and publication

of the proceedings. We sincerely thank all presenters and participants as well as all those who were involved in organizing the workshop-the enthusiastic contributions of both these groups made the event an outstanding.

On Behalf of Organizing Committee

MSc. An Van Khanh, Vice Director,
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Project Overseer of ATC 05/2007 Project;

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Consultant of ATC 05/2007 Project.

OPENING REMARK

Diep Kinh Tan,
Vice Minister, Ministry of Agriculture and Rural Development, Viet Nam

Honorable ladies and gentlemen,

First of all, on behalf of the Ministry of Agriculture and Rural Developments of Viet Nam (MARD), to warmly welcome all esteemed guests and delegates coming here to attend the workshop "*Enhance capacity of small and medium enterprises in agricultural sector of APEC economies*" organized by Department of Agro-Forestry Product Processing and Salt Production under sponsor of APEC secretariat and Ministry of Agriculture and Rural Development, Viet Nam on 16 -18 October, 2007.

Ladies and gentlemen,

After 20 years of renewal, Viet Nam has made many achievements in the economic development, particularly in the rural agricultural development. VN is recognized by international friends as being a typical country in terms of achievements in hunger elimination & poverty reduction. In order to obtain these achievements, first we have to mention the sound renovation guidelines and the social-economic development policies created by the Party and Government of Viet Nam. In this context, operations of agricultural enterprises, especially SME in agricultural forestry - aqua cultural product processing & preservation sector, have become more dynamic.

Viet Nam has about 400, 000 agricultural forestry - aqua cultural product processing bases (establishments). These units have attracted over 1.7million labors. SME in the agricultural - forestry - aqua cultural product processing industry have asserted their important role and position in the national economy, actively contributing to enhancing agricultural product value and income for farmers.

Presently, Viet Nam is a member of the WTO. The Viet Nam Government has a desire to intensify the cooperation, experience exchanges and investments between APEC member economies, in which, focuses should be emphasized on research, preliminary processing technological applications for small & medium scale, post-harvest preservation technologies and advanced processing technologies to increase agricultural product quality and its competitiveness on the markets. We hope that through this workshop, you will exchange information, share experiences, expertise with an aim to help SME in the agricultural product processing & preservation sector be able to produce good quality products to meet the consumer's demands.

On this occasion, allow me, on behalf of MARD, to highly appreciate the cooperation of the APEC member economies and to express our thanks for the consideration, cooperation, assistant from the ATCWG, APEC Secretariat and the participation of all

delegates from APEC member economies at this workshop. I wish this cooperation will be improved and developed further for the sake of the prosperity of each APEC member economy.

Thank you and wishing you a good health!

Wishing a successful workshop!

THE DEVELOPMENT SITUATION OF SMALL AND MIDIUM ENTERPRISES IN AGRO-FORESTRY PRODUCT PROCESSING AND PRESERVATION FIELD IN VIET NAM

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INTRODUCTION

After over 20 years of renewal, Viet Nam has gained great achievements in rural and agricultural development. Agriculture sector has obtained fast, comprehensive and continuous development basically meeting the domestic demand on food and foodstuff; quickly increasing the volume of exported agricultural commodities especially rice, coffee, rubber, tea, pepper, cashew nuts, some kinds of fruits, vegetables and processed forest products; creating additional jobs, raising income for farmer, alleviating poverty and eradicating hunger in rural areas; contributing to stabilizing social economic situation. Agricultural enterprises in agro-forestry aquaculture product processing and preservation field have made their important contributions to the above achievements. The value of industrial processing production has been continuously increasing with the annual average growth rate of over 14%. The agro-food processing industry has changed its exported commodity structure and increased its export quotas.

I. THE SITUATION OF SMALL AND MEDIUM ENTERPRISES DEVELOPMENT IN THE AGRICULTURE PRODUCT PROCESSING AND PRESERVATION FIELD

To implement the economic renovation policy, small and medium enterprises (SME) in the agricultural product processing and preservation field have applied many advances in technology and science in the production, contributing to enhance the agricultural product quality and value, to boost the agro-product consumption and the agro-production development. Through these activities, SME have been developing step by step and affirming their positions in the economy. The growth rate of agricultural product processing and preservation establishments is increasing fast, up to 2006, there were sixteen thousand enterprises and eight thousand six hundred cooperatives operating in the field of production and business in rural areas. It's estimated that by 2005 there would be over 113 thousand enterprises, 2 thousand of which was agricultural and rural enterprises (agriculture, forestry and aquaculture enterprises), accounting for about 2.1% of enterprise population (The General Statistics Office). The agricultural product processing and preservation field has started attracting investments from many economic sectors, particularly, the private sector and holding enterprises (accounting for over 80% of the capacity), the rest are FDI and state-owned enterprises.

Many new advances in technology are applied such as: drying equipment, equipment for vacuum-frying, drying- curing fruits and vegetables, equipment for condensing fruit juice, equipment for refining flavor, food-alcohol, equipment for classifying and clarifying used in processing factories, frozen equipment and technologies. Simultaneously, traditional technologies and experiences in agro-product preservation, processing have also been applied.

1. Rice and paddy sector

The paddy is the key crop and also an agro-product with high export turnover. Presently, Viet Nam is ranking second in the world in rice export. The current paddy husking technology includes small husking machines, mainly serving domestic consumption; old factories have renovated equipments, technologies and supplemented polishing, classifying, packaging machines and some newly-invested factories have modern technologies.

For rice preservation and processing bases, in the North, there are about 300 state-owned husking bases, of which, 46 factories have the capacity of 15-30 tones/shift; 22 factories have the capacity of 3-5 tones/shift; the remainders are smaller bases having small husking machines with the capacity of about 10 million tones of paddy/year. In the south, there are over 5,000 husking bases with the total combined capacity of 25,000 tones of paddy/shift. The husking equipments in the South include: old husking systems with the capacity of 1-2 tones/shift, they are about 4,000 machines. The rice quality produced from this kind of husking machines is medium, mainly for domestic consumption or for the re-processing units for export. In addition, in the Southern provinces, there are over 130 lines for re-processing rice for export with the capacity of 6,000 tones/year with the reprocessed rice volume for export of about 1-1,2tones.

2. Fruit, flowers and vegetables sector

Viet Nam is located in the tropical and semi-tropical climate area. Therefore, agro-products are plentiful and diversified. In the recent years, the vegetable, flower and fruit area and export revenue have increased more and more. Presently, there are 680,000 ha for planting fruit trees, over 765,000 ha for planting all kinds of vegetables, flowers both serving the domestic consumption and for export. However, the development of vegetables, flowers and fruits for export has still not corresponded to the existing potential. Although, Vietnamese fruits are being exported to nearly 40 countries and territories, the competition ability of fruit in the market is not high due to the limited preservation technologies.

Fruit and vegetable activities in Viet Nam are mainly carried out by small households, farmers, small and medium enterprises. The production scale is rather small with average growing area from 0.5 to 2 ha per household and productivity levels are still below the world average. The main export fruits are dragon (Binh Thuan, Tien Giang and Long An provinces), pineapple (Ninh Bình, Bac Giang, Kien Giang and Tien

Giang), longan (Tien Giang, Ben Tre and Hung Yen), lychee (Bac Giang, Ha Bac), pamelo (Vinh Long, Tien Giang). Two large vegetable growing areas are Red River Delta (accounting for 26% the total production) and Mekong River Delta (accounting for 25%) provinces. At the present, most enterprises specialized in processed products are state-owned enterprises (more than 30), private (160) and joint venture investment (8) companies. Over 10.000 households are involving with doing business of fruit and vegetable processed products.

In order to ensure adequate processing capability for exported fruits and vegetables (including caned, dried, salted vegetables and fruits, condensed juices, soft drinks, etc), the existing old factories need to be upgraded and renovated, and synchronous, modern processing lines should be installed in factories with the capacity of 10,000-50,000 tones/year in concentrated areas and 1,000-2,000 tones/year in small and scattered areas. Processed products include caned vegetables and fruits, natural fruit juice, condensed and frozen products. Condensed pineapple, mango juices should be focused, as they are the spearhead products of the processing sector in the coming time. Post-harvest preservation so far is still an important factor in enhancing vegetables and fruits quality and their competitiveness on the markets. Some vegetable and fruit trading bases have already paid attention to investing in cold storages for preserving their products. However, due to financial limitation and cost cut, the investment in cold storage systems has yet to meet requirements. Viet Nam vegetable, flowers and fruit trading units are facing difficulties in their businesses due to the lack of insulated warehouse systems, specialized insulated transportation means and high transportation costs.

The orientation to develop vegetable and fruit processing factories up to the year 2010: For preliminary processing: Product preservation should be carried out on small scales among farmers. The fresh preliminary processing and preservation should be focused; old technologies should be renovated and new technologies should be applied in order to raise the product quality and to ensure food hygiene and occupational safety.

3. Tea processing sector

During 1995- 2005, the tea planting area increased from 66,000 ha to 118,000 ha, an annual average increase of 6%. Fresh budding tea output increased from 181,000 tones to 534,000 tones, 11% annual average increase. Viet Nam tea export volume accounts for 80-85% of the total tea output, mainly black tea processed under Orthodox technology.

According to survey's results, nationwide, there are 600 tea processing bases with the capacity of over 3 tones of fresh budding/day, of which, 49 enterprises are managed by the state (28 already equitized with the capacity of 800-2,000 tones of products/year; 5 FDI enterprises (100% foreign capital investment) with the capacity of 50-500 tones of products/year (producing black tea CTC, OTD and high value - specialized green tea such as Olong, Pouchung) and 2 big Joint Ventures with foreigners having the capacity of 2,000-3,000 tones of products/year. In addition there are 10,000 small - handicraft

bases. The total tea processing capacity is over 550,000 tones of fresh budding/year. Generally, recently, although the tea processing industry has met the processing output, factories have not had synchronous investment, not paid attention to in- depth investment to elevate product quality and diversification. On the other hand, tea products are mainly in preliminary processed form, not many high quality and sophisticated and refined products leading to low level of added value of products and low processing efficiency.

To demand with increasingly high quality requirements of exported tea, many tea-processing bases have paid more attention to investing in advanced processing and preservation technology. However, due to financial limitation, tea processing bases, especially SME, are facing many difficulties in investing, renovating technologies and equipments.

4. Coffee processing sector

Viet Nam is the world second largest coffee exporter. Coffee is one of the core crops in agricultural development, hunger eradication, poverty alleviation and living condition enhancement for farmers. Presently, coffee area is 500,000 ha, 2007 coffee export turnover is estimated to be over 1.5billion USD, accounting for about 13% of the total export value for agricultural products.

Coffee processing is mainly being conducted in households, purchasing bases and enterprises. There are two processing methods: dry and wet processing. After purchasing coffee from coffee planters, enterprises normally must go through the dry processing stage. Processing scales are different between factories. Coffee processing enterprises have over 50 processing lines, of which, 14 lines are imported from overseas, the rest are locally made, with the total combined capacity of 100,000 tones of seed/year. The capacity of each line is from 1 to 4 tones of seed/hour. Beside on spot processing, industrial processing bases also purchase coffee from farmers to re-process for export (additional drying, cleaning, classifying, mixing, polishing). For husked roasted coffee, beside the processing base of VINACAFE with the capacity of 2,000 tones/year, in the whole country there are about 1,000 bases with the capacity of 30kg/day. Recently, some private enterprises have invested in modern husking and roasting equipments with the capacity of 300kg/hour. The preliminary coffee processing is being conducted mainly (accounting for 80%) at the household scales with simple processing equipments, mainly small husking machines.

Development orientation in the coming time is to reduce the coffee planting areas in order to invest in enhancing coffee quality, developing sustain ably and boosting investment for coffee preservation & processing.

5. Cashew nuts processing sector

The exploiting of the great economic potential of cashew trees actually started in the beginning of 1980s; farmers were encouraged to plant these trees to get nuts for export.

Because of the demand and the development of material supplying sources, nuts processing bases, particularly, SME in cashew nuts processing sector have been developing very quickly. In terms of equipment, mechanization level of nuts production lines has been boosted, especially the silk shelling phase. After 2005, modern nuts processing factories with the capacity of 10,000 tones of nuts/year and establishments producing soft drink produced from cashew fruits have been invested. Currently, Viet Nam is checking the existing cashew nut processing bases, assessing the scale and the level of mechanization of each line and step by step binding processing bases with material areas.

Development orientation in the coming time is to concentrate on studying and renovating super-heat steaming systems, manufacturing machines for pitting hard shells, shelling soft silk shells and synchronizing production lines to ensure exporting standards. In terms of technology, shell-pitting method using super-heat steaming is to be applied instead of the oil frying method to avoid environmental pollution. Products produced from nuts are to be diversified and utilized. Attention needs to be paid to post-nut processing technologies suitable to consumer's taste. By-products from cashew shells should be utilized to produce cashew oil or for firing…. the method to recover cashew fruits and soft-drink processing technologies should be researched.

6. Sugarcane and sugar processing

There are 300,000 ha of cane nationwide; of which 258,000 ha is cane concentrated area. During the past time, cane concentrated areas have been increasing quickly; outside-planed cane areas have been reduced. With the growth rate of 5-7%/year in the sugar sector, Viet Nam has achieved the national sugar output of about 1million tones, basically meeting the domestic demand. About 40 sugar factories are operating nationwide; the majority of the processing enterprises in the sugar cane and sugar sector are SME. The number of current sugar factories in the whole sugar processing sector: seven factories have small capacity from 100 to 900 tan per day with the total combined capacity of 4,900 tan per day accounting for 6% of the national total capacity; 18 factories have the capacity from 1,000 to 1,800 tan per day with total combined capacity of 24,450 tan per day accounting for 30% of the national total capacity; 12 factories have capacity from 2,000 to 8,000 tan per day with total combined capacity of 53,000 tan per day accounting for 64% of the national total capacity.

Generally, the product structure of sugar industry is appropriate, however after 2010, along with the social-economic life, the demand of using nutrition sugars, high quality sugar demand will be increased. As a result, sugar factories should implement renovation steps, change to new technologies to produce products that are suitable to the market demand. In order to ensure the competitiveness during international economic integration process, the sugar industry should re-organize its production; reduce the cost of product to be on par with regional and world sugar prices.

7. The animal feed processing sector

The animal husbandry contributes an important part in the agro- production value structure. In average, during the period of 2003-2005, the animal husbandry sector contributed about 22% of the annual agro- production value. In 2006, there were over 240 animal feed enterprises and bases. Presently, the animal feed factories can only meet 45-50% of the domestic demand therefore the animal feed processing sector in Viet Nam is attracting the interest from many foreign investors.

Together with the development of the animal husbandry, localities built more new slaughterhouses such as export foodstuff processing enterprises. These companies are equipped with frozen facilities and preservation warehouses made in Japan and some locally made equipments. The capacity of the factories is 2000-3000 tones/year. A lot of private enterprises have built slaughterhouses with frozen equipments made in Viet Nam, Japanese and the USA. The capacity of each slaughterhouse is 1000-8000 tone/year. However, operation results of the slaughtering and meat-processing sector are still limited and have yet to meet the domestic and export demand.

8. Wood processing sector

According to uncompleted statistical data, presently, there are about 2,000 wood processing bases employing about 170,000 workers. The minimum operation capacity of each unit is 200 m^3 of round wood/year. Among these there are 20 fine-wood-chopping factories with the total designed capacity of 1.5-1.7 million tones of dried wood/year; 6 factories produce plywood with the total capacity of 140,000 m^3/year. The industrial production capacity is estimated to be 7 million m^3 of round wood/year. Big scale wood processing units concentrate mainly in Southeast provinces. There are over 370 units, of which over 50% are foreign capital invested enterprises. About 300 FDI enterprises are big scales accounting for 50% of the export turnover, the rest are domestic ones with small scale. In 2006, the wood export revenue was 1.9 billion USD, an 8 folds increase over the 2000 figure. Viet Nam wood products are being exported to 120 countries, of which the USA, EU and Japan. The growth rate of the sector is mainly from the outsourcing activities so it depends heavily on orders and designing samples from clients.

The wood and forest product processing industry has created a national network involved by many economic branches including over 1,200 business production enterprises (including FDI enterprises) with the total combined processing capacity of 2 million m^3 of round wood/year. Among these, 320 are state owned enterprises accounting for 27%; 40 are joint ventures enterprises and 100 % foreign owned enterprises accounting for 3%; the rest are non-state owned enterprises accounting for 70%. The developing orientation in the coming time is to speed up processing technology for making artificial plywood from planted forest wood. The existing sources of forest and forestland will help enterprises control the wood material supplies to ensure material for wood processing industry.

9. Aquaculture processing sector

The aquaculture processing is divided into two groups: Processing for domestic consumption and processing for export. In the past years, the import of overseas synchronous processing lines caused high costs for domestic processing activities, and product prices were not suitable to the purchase power of domestic consumers. Recently, aquaculture sector has encouraged enterprises in actively developing the cooling electrical mechanics industry manufacturing equipments for domestic aquaculture processing sector. On the other hand, the increase of income leads to the increase of consumption demand. A lot of aquatic processed products have been well consumed domestically and exported. Aquaculture processing factories for export including 272 Export processing factories were operating in 2001 attracting about 500,000 tones of materials/year. For the new market requirements, aquaculture-processing enterprises have been actively investing in modern facilities & equipments to have their production system automated. World-class advanced technologies were applicable such as post-harvest preservation, winter-sleeping technology applicable in transporting fresh aquaculture products, IQF frozen technology.... Enterprises have concentrated on processing value-added products such as frozen lean meat product, already-to-cook products or instant products, thanks to that the proportion of these products to the total processing products for export had increased and reached 35% in 2001, two folds over 17% gained in 1998. Thanks to the actively applying of food quality & safety management system, by 2003, 273 enterprises achieved food quality & safety conditions under Viet Nam Standards; 153 aquaculture export enterprises were recognized and added into the EU-market- aquaculture-exporters list; 255 enterprises had adequate conditions and standards to export to Switzerland and Canada; 248 units achieved USA standards and some other countries. Viet Nam has created its firm position in the world aquaculture market.

II. SOME SOLUTIONS FOR DEVELOPING AGRO-FORESTRY PRODUCT PROCESING ENTERPRISES

The development orientation in the coming time is to build and boost the competitiveness for agro- product processing and preservation sector in order to create more job opportunities, increase incomes for farmers, ensure food safety and enhance the competitiveness of agro-product in domestic and world markets. Some core solutions to be implemented are:

1. To comprehensively complete the planning and zoning of material production areas and attach them to the building of processing system and to the market.

To comprehensively complete the agricultural production planning on the national and local scale. Priority will be given to develop and build concentrated material areas on the basis of stimulating the advantages of each ecological area and attaching them to the market and the agro product processing and preservation.

To form industrial zones for agro-forestry and aquaculture product processing and preservation for processing industry in rural areas.

2. **To continuously research, supplement stimulation policies for developing SME in agro-forestry product processing and preservation field, of which the following issues should be focused:**

Land: To ensure enough spaces for building and expanding factories; to facilitate enterprises in utilizing land areas in long-term to stabilize material production, new varieties propagation and in demonstrating cultivation technique and then transferring them to farmers.

Finance and credit: To create policies on loans, credit interest, taxes, depreciation on equipments and processing lines that are suitable to characteristics of the agro-forestry and aquaculture product processing and preservation sector.

Building infrastructure: To implement the joining between investments for building rural road systems with material transportation road systems, minor roads together with the upgrading of the traffic roads; to support in building infrastructure to form small and medium scale industrial groups in rural areas, to develop rural mechanical engineering services, set up commodity quality inspection and supervision systems under international standards, to expand electricity and communication network...

3. **To encourage SME in the agro-forestry, aquaculture product processing and preservation sector in applying as well as renovating new technologies.**

Science and technologies should be invested in depth. Research and technological transferring organizations should be facilitated to enhance their capability, to import overseas technologies and equipment that will be used as samples for studying in order to quickly obtain advanced techniques to serve production.

To speed up scientific, technological research and transferring into production toward serving the material production with high, clean and stable quality and productivity for strategic export commodities.

To invest in researching technological process, equipment system and equipment with high-technological facilities for preservation, processing and transportation for exporting fresh agro products, particularly fresh vegetables, fruits and export clean and sophisticated products.

To pay attention to systematic and linkages in the production lines from field production to exporting phases; serving the domestic consumption with all kinds of markets, such as short-term fresh preserved products with short distance transportation, long-term fresh preserved products with long distance transportation; light processed products (preliminary, minimum processing) and depth synthetic processed products from diversification of agro products.

4. **To improve linkages between producers and processors, consumers and researchers in order to form and consolidate post-harvest technological transfer systems to meet demand of consumer in the market.**

Today international integration is the indispensable trend opening many cooperation and development opportunities for economies, particularly, extending consumption markets and speeding up the development of the agro-forestry, aquaculture product processing and preservation sector. The formation of SME in agro-forestry, aquaculture product processing and preservation sector will create production linkages and bring into full play advantages of each region. In this context, SME in agro-forestry, aquaculture product processing and preservation sector will play an important role in producing high-quality-product, intensifying the application of new technologies and raising the commodity value as well as the quality of processed agro products. As a result, the intensified cooperation to support and speed up SME in agro-forestry product processing and preservation sector plays very important role, contributes to creating the changes of agro-product's quality and value.

It is expected that through this workshop, with the coordination and assistance from APEC secretariats and from APEC member economies, the cooperation of the members the APEC economies will be greatly fortified and improved with the targets of sustainable development, enhancing living standard for rural peoples as well as for health and benefit of consumers. /.

OVERVIEW OF THE SMALL AND MEDIUM SIZED ENTERPRISES (SME) IN AGRO-FORESTRY PRODUCT PROCESSING & PRESEVATION FIELD OF VIET NAM IN RECENT YEARS

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I. THE DEVELOPMENT OF SME IN AGRO-FORESTRY SECTOR PLAYS AN IMPORTANT ROLE IN VIET NAM ECONOMIC DEVELOPMENT

Viet Nam's prominent economic achievement during the past 20 years of renewal process (1986 - 2006) is the consecutive economic growth in which a lot of sectors obtained high economic growth rates. During the first 5 years of renewal process (1986-1990), the economic growth rate was at low level, the average GDP was 3.9% and 7% for the period of 1991-1995; the highest average GDP was 9.5% in 1995. The average GDP during 1996-2000 was maintained at 6.9% and 7.5% for 2001-2005 and 8.17% for 2006.

The economic growth target of Vietnamese Government during 2006-2010 is to achieve 7.5%-8.0% with an aim to shorten the gap between Viet Nam & the regional & international developed countries and facilitate Viet Nam to implement other social-economic targets such as to enhance the national economic potential, increase incomes for labors, speed up the national modernization & industrialization. In order to gain the prominent economic achievements during the past 20 years of renewal process, the Vietnamese enterprise community had made very important contributions. The number of business production enterprises up to 31/12/2005 was 113,352 enterprises, an increase of 23.45% compared to those at 31/12/2004. The 2005 average GDP/capita in Viet Nam was US$ 659. The contribution from enterprises into 2005 GDP was about 53%, an increase of 27% over those in 2004. The annual investment of enterprises accounts for 55% and this proportion is increasingly that created employment opportunities for 500,000 labor/year during recent times.

Ninety percentage of the total of 113,352 operating enterprises are SME. According to the latest regulations from the Vietnamese Government (Decree No. 90/2001/ND-CP dated 23/11/2001), SME are the independent business production bases belonged to all economic sectors and registered their business licenses in accordance with the existing laws, and have capitals under 10billion Viet Nam Dong (equivalent to US$ 600,000) at this point of time or the annual average labor force do not exceed 300 people.

In the past recent years, Viet Nam agriculture had constantly renewed and developed. Agricultural production had made many progresses in terms of productivity, quality and efficiency.

The annual average value structure of Viet Nam agricultural production during 2003-2005 were: About 75% for the planting sector; over 20% for the animal husbandry; and the rest for the service sector; The forest production value - forestation was over 20%; the forest product exploitation was about 70% and the rest was for the service and other activities. The agricultural products has basically met domestic & export demands. In 2006, the agro. production value increased 3.47%; the total export turnover of the agro forestry products achieved US$ 7.16 billion, an increase of 19.7% over 2005. Agro. Enterprises are really the connecting bridges between farmers and markets, they were participating from material, equipments procurement phases to phases of purchasing, processing, developing domestic & international markets. A lot of Viet Nam agro-forestry commodities had asserted their position on the international markets in the past recent years. The commodities with its revenue of over $1 billion in 2006 included rubber, rice, coffee; the wood (timber) export turnover obtained US$ 2 billion. Enterprises are also core entities to support farmers in applying sciences & techniques to enhance production efficiencies on fields and in stalls.

However, the number of enterprises, labor & capital scales and production efficiencies of SME in Viet Nam Agro-Forestry sector in recent years were un-proportionate with the potential of the agricultural sector with over 70% of its population are living in the rural areas (Viet Nam population in 2005 was 83.12 million people) with 50% of the labor force are working in agro-forestry sector (Viet Nam labor force in 2005 was 43.3 million people). Presently, the number of enterprises involved in Agro. Forest sector is still small. The development of SME in agro-forestry sector in terms of quantity as well as their operation scales and the intensification of their business & production's efficiencies will have an important significant in:

- Contributing to the national economic structure transformation toward industrialization and modernization, particularly, industrialization in rural areas;

- Increasing incomes for farmers; contributing to the equal development between rural areas and mountainous areas; contributing to the state budget;

- Training the management staffs for agro-forestry enterprises to make them become high skilled people that will facilitate the development of big enterprises, this is the first factor to develop the national economy;

- Addressing employment issue and reducing unemployment rate, eliminating poverty & hunger; mobilizing social sources and strengths in business & production.

II. THE DEVELOPMENT SITUATION OF VIET NAM AGRO-FORESTRY ENTERPRISES IN RECENT YEARS

2.1. Labor quantity & scale of SME in agro-forestry sector

Presently, Viet Nam has about 1100 agro-forestry enterprises. The number of agro-forestry enterprises is just approximately 1% of the total enterprises of all national

economic sectors (the total was 113,352 enterprises in 2005). During 2003-2005, the number of agro-forestry enterprises increased 7%/year meanwhile the increase level of the total number of all enterprises was 26%/year. On average, every 57,000 rural people has one agricultural enterprise meanwhile this number on all national economic sectors was 733 people/one enterprise.

Labor quantity in agro-forestry enterprises and related services during 2003-2005 seems to have had no increase - about 220,000 labor accounting for 3.86% of the total labor force working in enterprises of all economic sectors; On average, each enterprise had over 200 labors, in which 84% enterprises have under 300 labors – they are classified as SME.

2.2. Capital scale for business and production of agro-forestry SME and their difficulties in credit source access.

About 60% of enterprises in Viet Nam agro-forestry sector have their capital of under 10 billion Viet Nam Dong and 87% of total enterprises in all Viet Nam economic sectors have this capital level, they are SME. During 2003-2005, the average capital/ agro-forestry enterprise/year was about 39billion Viet Nam Dong, in which, the average capital for business & production/labor/year was about 177 million Viet Nam Dong; the fixed assets/labor in agro-forestry SME was about 127million Viet Nam Dong.

The capital size for business & production of agro-forestry SME, generally, is too small compared to those in other countries & on the world and also too small compared to the actual demands. With small capital size, SME will be very difficult to coup with deep & wide integration trend of the current economy. This also justifies that technical equipment rate of Viet Nam agro-forestry SME is very poor.

The financial difficulty is the first & prominent issue faced by Viet Nam enterprises. The main difficulties in accessing capital sources from banks faced by agro-forestry SME are: small credit; complicated borrowing procedures; high interest; without collaterals.

The enforcement of regulations on loan guarantee mechanism is also meeting difficulties, obstacles such as slow land use right granting, manual (handicraft) asset assessment system but not based on markets…. particularly, in agro-forestry sector, loan cycles are not suitable with animal or crop cycles and high interest…

2.3. Scientific & technological capability of SME

Viet Nam's growth competition index (GCI) has been recently continuous declining (from 60th in 2003 down to 79th in 2004 and 81st in 2005 per the total of 117 countries). According the international analysts, it is attributed to the low technological capabilities of enterprises and to their slow renovation. The technological application index of Viet Nam lies in the backward group, standing at 92nd /117 countries.

The majority of Viet Nam agro-forestry SME possesses backward scientific & technological standards, low skilled -workers lead to low product and services quality, weak competition ability. The investment rate for technological renovation is low compared to the development demand. In agro-forestry sector, there are very little research & development activities to support enterprises.

2.4. Market accessibility of enterprises

The market accessibility of Viet Nam agro-forestry SME is very limited. It is attributed to low quality of Viet Nam agro-forestry products over the exporting standards, products output produced by enterprise is scattered. Although the export markets in recent year were expanded, they were short term contracts. A part from short comings on product quality, the limitation on IT & language abilities are also important reasons limiting enterprise's access to the outside markets.

The factors to evaluate Viet Nam enterprise's internal strengths to integrate into the world economy such as: The rate of computer related knowledgeable staff, the rate of staff who have language abilities, the rate of staff who participated in training courses, the rate of staff who built customers networks & brand names are low compared to those in other countries in the region & international. The low capacity to integrate into the international economy & backward technological standards resulted in poor product & service quality; these are also adverse reasons for Viet Nam enterprises in accessing outside markets.

2.5. Difficulties faced by enterprises in terms of land, spaces for their business & production

In order to extend spaces for business & production, Viet Nam agro-forestry SME are facing a lot of difficulties: complicated procedures, high land rental, difficult to find suitable land to rent. The current scattered land situation in Viet Nam is hindering the competitiveness of enterprises that are efficient operators and want to extend its business & production. This is also a factor that influences a lot on enterprise's development strategies.

Land is a pressing and difficult to deal with problem for the whole society and one of the biggest hinders for business & production of enterprises in Viet Nam. The Government regulated that localities must set up and publicize their land planning & zoning, land usage plans, but presently, these information have not yet been disseminated widely that make Viet Nam agro-forestry SME meet difficult when look for spaces.

2.6. Scientific & technological standard of management cadres & labor forces in enterprises

The manpower with college & upward standards in Viet Nam accounts for 7.24% of the total labor working in all enterprises of all economic sectors. In which, 71.9% possesses

university decree; 26.9% holds college decree; 0.9% holds MBA decree; doctorate & scientific doctorate decree accounts for 0.14%. Presently, 50% of the total enterprises whose owners have university & college decrees; 3.7% are holding MBA and doctorate decrees. The number of enterprises owners, who were trained on business management & economic knowledge, accounts for only 30%. The vocational trained labor rate is still low at 13% on the national scale. In this general context, professional standards of labors in Viet Nam agro-forestry SME would be poorer.

Besides the poor professional standards of Viet Nam agro-forestry SME, other necessary skills such as computer, language and negotiation skills of enterprises are also very limited. These fields also need to be improved in the context of integration to help SME able to access information and outside markets.

2.7. Business & production efficiency of enterprises

On average, during 2003-2005, over 60% of agro-forestry SME were generating profits with the average profit of over 4billion Viet Nam Dong/enterprise/year; 23% of agro-forestry SME were running losses with the average lost of over 900million Viet Nam Dong/enterprise/year. The monthly average income/labor was 1.4million Viet Nam Dong. The annual average fixed assets and long-term investment /labor was 127million Viet Nam Dong. The proportion between profit and business & production capital & annual revenue were 16.42% and 6.2% respectively. The profit before tax/labor/year during 2003-2005 was 11million Viet Nam Dong.

The above criteria reflect that Viet Nam agro-forestry SME are in small scale, their business & production efficiency are facing many limitations.

III. BUSINESS & PRODUCTION SITUATION OF SOME AGRO-FORESTRY PROCESSED COMMODITIES

The processing & preservation sector plays an important role in the value chain of agro-forestry product business and production (pre harvest, harvest, preliminary process, preservation, process, transportation, markets) and in the development of Viet Nam economy. Viet Nam agro-forestry products are meeting the increasingly domestic consumption and export demand; its turnover was US$ 7.16 billion in 2006, an increase of US$ 1.16 billion over 2005. A lot of Viet Nam agro-forestry products have important positions on the international market such as rice, coffee, cashew nuts and pepper. The processing & preservation of agro-forestry products will lengthen product's shelf-life, create new products; increase product value and income for farmers. The agro-forestry products processing enterprises are linkages on the markets between farmers and consumers. More over, it creates employments for rural peoples. In the current international integration context, when Viet Nam is an APEC member and WTO member, the agro-forestry products processing & preservation enterprises play an increasingly important role in serving export activities to export agro-forestry products to the world markets.

Presently, processing facilities and storages of Viet Nam agro-forestry SME are in poor conditions, firm & concreted facilities account for only 30%. Majority of SME are using old technologies, the mechanization rate accounts only 10%, and the rest are using handicraft equipments with semi-mechanization. Almost all SME do not use mechanized equipments. In general, Viet Nam agro-forestry processing enterprises have small & medium scales, weak competitiveness, and lack of experiences, capitals, and low market information accessibility. Almost all facilities and equipments used in the agro-forestry products processing & preservation enterprises were manufactured domestically. These facilities and equipments were often re-purchased and get supplemented. The overseas imported ones often have old technologies from RUS, China, India and a small portion of processing equipment was imported from Japan & Chinese Taipei. Due to poor infrastructure and old equipments, majority of Viet Nam processing enterprises did not registered to apply quality management measures under international and national standards. This situation influences products quality. As a result, the business and production efficiencies of enterprises in processing sector are low.

3.1. Rice sector

The paddy is the key crop in Viet Nam. In 1986, paddy planting areas was 5,688,6000 ha, the average yield/ha/crop was 2.81tones and the output was 16,874,8000 tones. In 2006, the above three figures were increased to 7,324,4000 ha, 4,89tones/ha and 35,826,8000 tones respectively. Presently, Viet Nam is the second rank of rice export. The exported rice volume in 2001 was 3.7million tones, it was 3.2 million tones in 2002 and 3.8million tones in 2003; 4.1 million tones in 2004; And in 2005, Viet Nam exported 5.3 million tones with the total export value of US$ 1.34 billion. In 2006, Viet Nam exported 5.1million tones of rice with the total value of US$ 1.1billion. For the first 8 months of 2007, Viet Nam just exported 3.592million tones but cashed in US$ 1.154billion. Vietnamese rice had penetrated into fastidious markets with high quality requirements such Japan, EU, and the USA. Viet Nam rice export market has been expanded into 100 countries in which the Philippines, Malaysia and Cuba are the core markets that import about 60% of Viet Nam rice.

The biggest limitation of paddy production is that there is no attachment between its processing and market activities. The paddy production is still scattered and dispersed under small scales, and developed for self-supply in rural areas. The post harvest technologies (from transportation, seed pulling, drying, preservation, preliminary processing to processing for export) are in poor conditions. The after harvest lost rate in Viet Nam is about 13 – 16%, the biggest lost occurs in the drying, preservation & husking phases, it is attributable to the lack of drying means; poor storage conditions; uneven rice and backward husking system. In Viet Nam, nearly 80% of paddy was husked by small enterprises. Hushing factories are all small scales without the synchronous provision in terms of drying grounds, drying furnaces, and storages. The quality of rice is low due to manual (handicraft) husking methods.

3.2. Coffee sector

Viet Nam coffee planting areas was 500,000 ha in 2006, an increase of 2.7 times over 1995. Coffee yield was 1.7tones/ha, 1.5 times increase compared to those in 1995. Coffee is regarded as the strategic crop in the development process of Viet Nam commodity agricultural sector, in contributing to poverty elimination & hunger eradication and bringing prosperous to farmers. However, Viet Nam policy is to reduce the coffee acreage but enhance its quality to ensure sustainable development. It is estimated that the 2007 coffee-export turnover is $1.5billion, an increase of nearly 1.5 times over those in 2006. Thanks to the high increase of coffee prices, the first 7 months of 2007, Viet Nam exported 893,000 tones and cashed in $1.328billion. Vietnamese coffee had quickly occupied many fastidious markets such as the USA, Germany and other EU countries. The international economic integration sped up the coffee processing & consumption toward enhancing product quality.

The impact of the integration to the competitiveness of coffee sector is shown in 2 sides. Viet Nam extended its relationship with overseas countries & partners resulting in the expansion of coffee markets. However, Viet Nam coffee sector is being influenced negatively due to the underdeveloped economy while it has to integrate with other stronger economies. In terms of the competitiveness of commodities & services such as prices, quality, organization, consumption, the competitiveness of Viet Nam commodities & services is much lower than those in other countries in the world. Viet Nam coffee was forced to sell at lower market prices, forced to enhance its quality therefore the selling prices of Viet Nam coffee were lower than the prices of the same kind of coffee in other countries. In Viet Nam there are 3 processing forms for coffee: Mainly, coffee is dried and processed by coffee households; or processed by private bases who purchase coffee from households; or process by enterprises – It is mainly dry processing method. In recent years, due to supply-exceeded demand, the selling prices was lowered, buyers required higher quality therefore Viet Nam coffee enterprises are facing with new challenges in terms of processing technologies. Enterprises often have to re-process coffee after buying from coffee planters. The cost of wet processing method is 3-4 times higher than dry processing method and the wet processing requires coffee to be mature therefore the processed coffees are more equal in terms of size, weight and color as a result products from wet processing have better quality and have higher prices.

3.3. Vegetables, fruits, flowers sector

Presently, Viet Nam has over 680,000 ha of fruit trees, over 765,000 ha of vegetables & flowers for domestic consumption and export. The 2000 export turnover of Viet Nam vegetables, fruits, flowers (mainly caned vegetables, fruits) was US$ 213million; was US$344million in 2001; was US$ 201million in 2002; was US$ 151million in 2003; was US$ 179million in 2004; was US$ 230million in 2005; it estimated to be US$ 280million in 2006. The exported products are mainly pineapple, longans, lychee, dragon fruits, bananas, mangos and rambutan. Despite, having gained some certain

results, the development of vegetables, fruits, and flowers for export is still limited; it is un-proportionate with its potential. The efficiency is still low due to small & scattered production organization, and advanced sciences & technologies have not yet been applied in this sector to increase yield, quality and to meet overseas standards to promote export.

Vegetables, fruits processing factories are operating much under their capacities due to material shortages. In 2001, Vietnamese fruits were exported to 42 countries and territories; its export turnover was US$ 344million. But in 2005, Vietnamese fruits were exported to only 36 countries and territories including China, Chinese Taipei, Japan, The Russian Federation and the USA and its export turnover was reduced nearly half of the figure in 2001. Vietnamese fruits are inferior than those produced in other countries in terms of quality, uneven size, but also plant protection chemical residues. Poor preservation technologies reduced Vietnamese fruits competitiveness.

The post harvest preservation is up to now still a hot topic that hinders the export potential of Viet Nam vegetables, fruits & flowers into overseas markets. In this sector, fruits are spoiled mostly, its spoiled rate is 25-30% meanwhile this rate in Thailand & Indonesia is only 15%. The unsuitable methods of harvest, preservation, transportation, packaging & bagging pushed up their prices to be higher than those in other countries in the region. Some enterprises specializing in fruit & vegetables trading, had equipped with cold storages to preserved their products. Due to the financial limitation, a lot of enterprises in rural localities, need to cut cost, didn't built cold storages. In general, Viet Nam vegetables, fruits & flowers enterprises area presently facing huge difficulties in their businesses due to the shortages of cold storages, cold specialized transportation means and high transportation cost.

3.4. Tea sector

During 1995-2006, planting tea area increased from 66,700 ha to 122,700 ha, the annual average increase was about 6%, the tea area for trading accounts for 75%. Tea sector had created jobs for about one million people excluding seasonal workers. The fresh budding tea output increased from 180,900 tones to 612,100 tones, the annual average increase was over 10%. The tea yield also increased 2 folds from 2.712tones /ha/year in 1995 to 5.02tones/ha/year in 2006, the annual average increase was over 5%. The proportion of exported tea to the total output is 80-85%, mainly, black, low quality tea processed under orthodox technology and it is wholesaled in raw form without brand name, trade mark and its original. Presently, there are over 600 bases producing and trading tea in Viet Nam. Up to 2006, due to the fast development of processing phase, material tea does not meet production demand. Viet Nam tea sector had created its national trademark, but enterprises and products that implemented the registration are still very small and only very small number of enterprises has been given this trademark symbol. Viet Nam tea's big & stable import market is Chinese Taipei, over 10,000tones/year. The potential imported markets of Viet Nam tea are the USA, China and The Russian Federation.

Currently, the tea cultivated technique is being implemented under the traditional way; processing technologies are backward, outdated, small scale household production, high product cost due to inferior quality of varieties, outdated cultivation, limited investment capital…. Many processing bases are farmer family-based ones; they did not registered to form enterprises that fact causes unhealthy competition. Viet Nam tea enterprises just shifted to the market mechanism, therefore their marketing experiences are poor, and the low their together cooperation results in difficult in accessing markets. Viet Nam tea's importing countries are actively imposing technical barriers with an aim to protect consumers and community health, thus requirements on exported tea quality is increasingly strict. Viet Nam tea export value in 2006 was about US$ 110million, an increase of US$ 10million over those in 2005.

3.5. Wood processing sector

Currently, Viet Nam has about 2000 wood processing bases using about 170,000 workers. The minimum operation capacity of each unit is 200 m3 of round wood/year. Among these there are 20 fine -wood-chopping factories with the total designed capacity of 1.5-1.7 million tones of dried wood/year; 6 factories produce plywood with the total capacity of 140,000 m3/year. The industrial production capacity is estimated to be 7million m3 of round wood/year. Big scale wood processing units concentrate mainly in southeast provinces. There are over 370 units, of which over 50% are foreign capital invested enterprises. About 300 FDI enterprises are big scales accounting for 50% of the export turnover, the rest are domestic ones with small scales. In 2006, the wood export revenue was USD1.9 billion, an increase of 2.4 times compared to those in 2003 and an 8 folds increase over the 2000 figure. Viet Nam wood products are being exported to 120 countries, of which the USA, EU and Japan are the three main markets.

The biggest challenge faced by wood processing enterprises is to be passive in material, presently 70-80% of needed wood should be imported with price increase levels of 10-20% per year that leads to low economic efficiency. Presently, the wood processing sector can only generate its export value of under US$ 10,000/worker/year, meanwhile it is $16,000/worker/year; US$ 17,500 in Malaysia and US$ 70,000 in Germany.

The growth rate of the sector is mainly from the outsourcing activities so it depends heavily on orders and designing samples from overseas clients. Only some big well-financed domestic enterprises with foreign invested capitals have invested in technologies, equipment for self-producing their products under their own designs and self-exploring consumption markets. The majority of wood processing enterprises is of small scales with small capitals thus resulting in low business efficiency. Over 90% of made in Viet Nam wood products must be sold via intermediatory markets and depend on distribution channels.

The majority of Viet Nam wood processing technologies is backward & outdated. Labor quality is low and workers lack operational skills. Material source scarcity forces many enterprises to implement contracts under agreed prices to protect their prestige and

market shares. The sector's weak competitiveness created a lot of difficulties for enterprises in the context of WTO membership, accordingly, subsidy policies will be cut, the technical barriers in trading (TBT) and requirements to show material original certificates force Viet Nam enterprises to try even harder.

In order to obtain the 2010 & 2020 export targets of $5.56billion and $7billion respectively as set forth in the Viet Nam Strategic Export issued by the Ministry of Trade & Industry, the wood processing sector should concentrate on forestation under cultivation method to self-supply wood material. Besides, the processing technology for making artificial plywood from planted forest wood should be sped up to reduce 40% of the artificial plywood importation by 2020. With the existing sources of forest and forestland, if Viet Nam can implement its target of planting 1million ha of forest under the cultivation method, by 2020 Viet Nam will actively in wood material sources. However US$ 7,000 is needed to plant 1ha of forest under cultivation method, this is a big investment capital, only well financial companies can be capable.

3.6. The animal feed processing sector

The animal husbandry contributes an important part in Viet Nam agro. production value. In average, during the period of 2003-2005, the animal husbandry sector contributed about 22.47% of the annual agro. production value. In 2006, there are over 241 animal feed enterprises & bases in Viet Nam. Imported material to produce feeds accounts for over 54.6% of the production value (equivalent to 9300 billion Viet Nam Dong) in which corn and soybeans account for 1.2 –1.3 million tones. Being depended heavily on import material sources, un-proportionate in development plan and limitation in inspecting feeds are problems that make enterprises difficult to sustainable develop and create enough competitiveness in the WTO markets. Presently, the Viet Nam domestic feed material supply source can only meet 70% of its demand; the rest is imported from overseas markets, accounting for 45% of the total value of industrial feed material. In 2006, Viet Nam had to pay US$ 740million for feed material importation, in 2007; the import turnover is estimated to be nearly US$ 1billion to ensure the production of about 7.5million tones of industrial feed with a value of US$ 2billion.

In the animal husbandry sector, on average, the feed expense accounts for 70%/ the cost of its product. It shown that the competitiveness of the animal husbandry's products is heavily depended on the feeds. Viet Nam feed processing factories can meet only 45-50% of the domestic demand. Therefore the animal feed processing sector in Viet Nam is attracting the interest from many foreign investors.

According to Viet Nam animal husbandry's plan, it is estimated that the animal husbandry sector will need an amount of 18.6million tones of feed by 2010; and 24.1million tones by 2020. With the norms on feeds from now up to 2010, the feeds importation will be progressing more strongly.

Viet Nam agro products are being exported under raw forms, its added value is low (Tea is being exported under preliminary processed products or in bulks; The rate of

Viet Nam white cashew nuts is just only 40% while this rate in India or Brazil is 70%; The rate of rice with 5% of fragments (broken pieces) is only 40% while it is 70% in Thailand…), the post harvest technologies are outdated without following any standards. Almost all products are being processed by manual (handicraft) methods and preserved improperly, (in 2003-2004 season, nearly 80% of the coffee output was handicraft processed. In recent years, the appearance of the mini-tea production bases, processing workshops that do not meet standards in terms of facilities, equipments, industrial hygiene … caused turbulent for the processing industry…). Material for and scale of the processing industry are scattered and dispersed. The uncertainty of material supply sources made some factories run at only 50-70% of their designed capacities.

IV. OPPORTUNITIES AND CHALLENGES FOR AGRO-FORESTRY ENTERPRISES IN GENERAL AND FOR AGRO-FORESTRY PRODUCTS PROCESSING ENTERPRISES IN PARTICULAR IN THE CONTEXT OF INTERNATIONAL ECONOMIC INTEGRATION

4.1. Opportunities

Viet Nam is a WTO member therefore Viet Nam agro products are entitled to enjoy the Most Favorite Nation Status.

Thanks to the renewal & integration process, agro-forestry enterprises had learned & drawn experiences from other countries & the world markets for their better development.

The commitments on the agro-policies suitable with WTO's regulations will create an equal business environment for all economic sectors.

4.2. Weaknesses and challenges

Weaknesses

+ The scientific & technical standard of Viet Nam agro-industry has been developing slowly. Small scales; scattered & dispersed production; low labor productivity, low product quality, inherent materiel shortages are resulting in low business efficiencies for enterprises.

+ Viet Nam underdeveloped infrastructure & outdated technologies have contributed in pushing up the prices of the input materials & transaction costs that lead to low quality and high cost products.

+ The capitals for production are small; workers professional skill & management skill of enterprise's owners are limited; enterprise's language ability & knowledge on integration are also poor.

Challenges

+ The trade liberalization in WTO will cause pressures on Viet Nam agro-forestry enterprises when Viet Nam opens the domestic markets for foreign enterprises. Viet Nam enterprises in vegetables, fruits & animal husbandry sectors will be incurred big pressures.

+ Being a WTO member, Viet Nam has to commit to extend business right for foreign enterprises. This is a big challenge for Viet Nam domestic enterprises as foreign enterprises are capable in finance, management skill and information system….

V. SOLUTIONS TO SPEED UP THE DEVELOPMENT OF VIET NAM AGRO-FORESTRY SME

To intensify scales and financial & credit accessibility for Viet Nam agro-forestry SME.

To improve sciences & technologies for Viet Nam agro-forestry SME.

To revise, adjust and supplement policies on land, taxes for Viet Nam agro-forestry SME.

To improve market accessibility for Viet Nam agro-forestry SME.

To enhance scientific & technological standards for management staffs and labor capacities in Viet Nam agro-forestry SME.

VI. The development orientation for Viet Nam agro-forestry product processing industry up to 2010 and 2020

The general target: to build and make Viet Nam processing sector to be the high competitive-power sector; to quickly increase the added value for products as a catalyst to advance the development of agro-forestry production; to create jobs and increase incomes for peoples; to create high quality products; to ensure food safety & industrial hygiene; to lift the competitiveness of products domestically and internationally.

The targets that need to be achieved agro-forestry product & food processing

+ Rice & paddy: 100% of the total output should be processed, in which 55% should be industrial processed to serve domestic consumption and export by 2010; 60-65% by 2020.

+ Coffee: 100% of the total output of coffee should be processed. The proportion of coffee processed by the wet method should be increased to 30% by 2010; 40-45% by 2020; trying to increase the proportion of floured coffee to be 10% by 2010; 20% in 2020.

+ Tea: 60-65% of the total output of fresh budding tea should be industrial processed by 2010 and over 85% by 2020. The tea product structure: 50% is green tea; 50% is black tea (In black tea: 50% is CTC and 50% is OTD).

+ Vegetables, fruits: Over 10% of the total output of vegetables, fruits should be processed and preserved by 2010; and 20-30% by 2020.

+ Meat: 30% of the total output of meat should be industrial processed by 2010; and 40% by 2020.

+ Timber & non-timber forest product: 50% of the total output of timber and non-timber forest products should be industrial processed by 2010; and 70% by 2020.

- The total export turnover of US$ 11billion on exporting all kinds of agro-forestry products should be achieved by 2010; and US$ 16.5billion by 2020.

OVERVIEW OF THE SMALL AND MEDIUM ENTERPRISE (SME) DEVELOPMENT IN THE AGRICULTURAL SECTOR IN THE CONTEXT OF ECONOMIC INTEGRATION[a/]

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Economic Integration

Economic integration is a term used to describe how different aspects between economies are integrated (http://en.wikipedia.org/wiki/Economic_integration). Economic integration links the labor, product and capital markets of the world. Somewhat loosely, the increasing trend toward economic integration in recent decades has been termed **globalization**. Some observers use the latter term to refer to increasingly open commodity markets providing producers the ability to penetrate more markets and giving consumers and downstream industries access to more choices. The rounds of the General Agreement on Tariffs and Trade (GATT) which set up the World Trade Organization (WTO) is just the most visible manifestation of this trend.

According to Mussa (2000) and Bernanke (2006), fundamental factors and determinants have affected the extent of economic globalization and will continue to drive the process in the future. These are:

(1) improvements in the technology of transportation and communication which reduced the costs of transporting goods, services and factors of production and of communicating economically useful knowledge and technology have been a major factor supporting global economic integration;

(2) the tastes of individuals and societies which generally, but not universally, favored taking advantage of the opportunities provided by declining costs of transportation and communication; and,

(3) public policy choices which have significantly influenced the character and pace of economic integration, although not always in the direction of increasing economic integration.

[a/] A paper presented during the APEC Workshop for Enhance Capacity of small and medium enterprises in agricultural sector of APEC economies on October 16-18, 2007 at Ha Noi, Viet Nam.

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Some salient features of the current wave of global economic integration were also reported by Bernanke, (2006) as follows:

1. The scale and pace of the integration is unprecedented;
2. The traditional distinction between the core and the periphery is becoming increasingly less relevant;
3. The production processes are becoming geographically fragmented to an unprecedented degree; and,
4. The international capital markets have become substantially more mature.

The author also mentioned some positive and negative effects of economic integration.

The positive effects include:

1. Wider range of goods available (like high-tech consumer goods);
2. On-going decline in transportation costs; and,
3. The extent by which ICT facilitate international trade in a wide range of services (from call center operations to sophisticated financial, legal, medical and other services).

On the other hand, the reported negative effects of economic integration are:

1. Social dislocation, and often social resistance may result when economies become more open; and,
2. Social/political opposition on the presumed bad effects on the environment or on the poorest countries.

Globalization was reported to have brought about several problems particularly to the marginalized sector of the economy since this essentially resulted to the opening up of the domestic market to international competition. For developing countries, economic integration will mean that its marginalized sector (such as agriculture) would be vulnerable to competition from other countries which are able to attain economies of scale and produce products efficiently at lower costs. Developing countries may not be able to compete with developed countries in this scenario thus, the need for safety nets and effective preparation for globalization.

Philippines SME development

Definition

In the Philippines, the definition of SME has evolved over the years, but always on the basis of either asset size or the number of employees (Salayon 2000).

In terms of asset size and number of employees, the Small and Medium Enterprise Development Council (SMEDC) of the Department of Trade and Industry (DTI) defines SME as any business activity or enterprise, whether engaged in industry, agribusiness or

services and regardless of whether they are single proprietorship, partnership, cooperative or corporation, whose asset size and number of employees corresponds to the following:

Category	Total Assets	No. of Employees
Micro	P 3 M or less	1 - 9
Small	> P3 M < P15 M	10 - 99
Medium	> P 15 M < P 100M	100 - 199

* This includes amounts arising out of loans but exclusive of the land where the firm's office, plant and equipment are situated.

Role and importance of SME

The SME sector is the backbone of the Philippine economy and plays a significant role in our country's development. SME help ensure a more equitable distribution of income, disperse economic activities to the countryside, and are a potent force in the war against poverty (Dee, 2003).

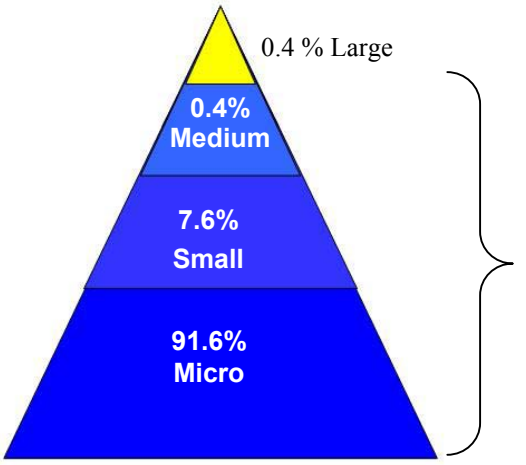
Features of the Philippine SME

In 2001, out of 811,592 registered firms, only 2,958 were considered large, the rest were either micro, small or medium enterprises.

As presented in Figure 1, it comprises about 99.6% of all registered firms nationwide and employs 69.9% of the labor force.

Figure 1. Composition of registered firms in the Philippines

(Source: SME Development Plan, 2004)



	# Firms
Large	2,958
Medium	2,923
Small	61,762
Micro	743,949
TOTAL	811,592

According to Perilla, the micro-enterprise sub sector employs the most people, with 38 percent of employment in all categories and followed by small-enterprise sub sector (24 percent). The medium-enterprise sub-sector recorded only 7 percent of employment while 31 percent was covered by the large-enterprise sub sector. It was also reported that SME contribute over 30 percent of sales and value added and that these SME are concentrated in a few areas, mainly the national capital region (NCR).

Opportunities for agro-based SME development

According to Deomampo (2006), some opportunities exist that can be taken advantage for agribusiness development. These are:

1. Increasing demand resulting from increasing population and economic growth;
2. Globalization and WTO;
3. Market liberalization and privatization
4. Information and communication technologies (ICT); and,
5. Developments in biotechnology
6. Constraints to agribusiness development

Just like in other developing countries however, the Philippine SME are confronted with the following problems (Salayon, 2000):

1. Weak access to financing;
2. Limited market information;
3. Low level of technology;
4. Lack of R&D program; and
5. Lack of human resource development program.

Philippine government' policies for SME development

Basic SME policies

1. Magna Carta for Small Enterprises (RA 6977 (January 22, 1991) as amended by Republic Act 8289 (May 6, 1997 by RA 8299):

- The landmark legislation which reflects the current policy to foster a dynamic SME sector, particularly rural and agro-based manufacturing ventures;
- Three (3) guiding principles:

  a. Minimal set of rules and simplification of procedures and requirements;

  b. Participation of private sector in the implementation of SME policies and programs; and,

  c. Coordination of government efforts.

- Three (3) major provisions:

  a. Creation of Small and Medium Enterprise Development Council;

b. Creation of Small Business Guarantee and Finance Corporation; and,

c. Eight percentages of loan able funds of commercial banks and other financing institutions are mandatory allocated to SME (6% for SEs, 2% for MEs).

2. SME development framework

- The SME Development Framework of the Philippine government for the next five years sets for its goal the increase of incomes, productivity and access to resources among SME.
- Its end objective is to have a globally competitive SME sector that will serve as the main vehicle to the national goal of improving the quality of life of every Filipino.

3. The Omnibus Investment Code (E.O. 226)

- It welcomes private investments – whether local or foreign – into the Philippine economy;
- Fiscal and other forms of incentives are given to economically desirable projects listed in the Investment Priorities Plan (IPP);
- Expansion projects are also given incentives provided they are: (1) export oriented; (2) SME that meet "good performance" criterion; (3) projects using new and superior technology; or (4) projects locating in "less developed areas".

4. Republic Act 7882 – An Act Providing Assistance to Women Entrepreneurs

- This particular legislation recognizes the special role of women in development and supports women entrepreneurs who are engaged in manufacturing, processing, service and trading businesses;
- Government financing institutions are mandated to provide financial assistance:

  a. to non-government organizations (NGOs) engaged in developing women's entrepreneurs to a limit of PhP 2 million provided they have operating track record for a year;

  b. to existing women entrepreneurs to the upper limit of P50,000; and

  c. to potential women entrepreneurs with sufficient training up to a limit of P25,000 each.

5. Agriculture and fishery modernization act (AFMA of 1997, RA 8435)

- A legislation specifically enacted to alleviate poverty and promote vigorous growth in the countryside;
- One strategy is to enhance access to credit by small farmers, fisher folk, particularly the women involved in the production, processing and trading of agriculture and

fisheries products and the small and medium scale enterprises (SME) and industries engaged in agriculture and fisheries;

- Through the provision for the Agro-Industry Modernization Credit and Financing Program (AMCFP). This program which was termed as an agriculture, fisheries and agrarian reform credit and financing system was designed for the use and benefit of farmers, fisher folk, those engaged in food and non-food production, processing and trading, cooperatives, farmers'/ fisher folk's organization, and SME engaged in agriculture and fisheries.

6. Barangay micro business enterprise (BMBE) Act of 2002 (Republic Act No. 9178, November 13, 2002)

- The act particularly has set a policy to promote the establishment of BMBEs by providing various incentives and benefits to entrepreneurs particularly those engaged in agriculture-based undertakings. Among the incentives that the law provides to micro-business enterprises are benefits such as:
  - exemption from income taxes and fees;
  - coverage of Minimum Wage Law;
  - provision of technical assistance, and others
- The Act likewise aims to integrate BMBEs in the informal sector into the mainstream economy, through the rationalization of bureaucratic restrictions and the active intervention of the government especially at the local level.

7. Philippine SME development strategy (http://www.aseansec.org)

The Philippines SME Development Strategy (1998) prioritizes the following five strategic imperatives to address the constraints/challenges in SME development:

1. Narrowing the focus by identifying priority sectors;
2. Promoting mutually beneficial linkages among small and large firms;
3. Strengthening technology and R&D initiatives;
4. Bolstering human resource development; and,
5. Improving access to finance

Philippine export development plan (PEDP), 1999-2001 (http://www.aseansec.org)

- The PEDP 1999-2001 provides the guide to boost export performance and lay the groundwork to develop a sustainable and globally competitive export industry;
- It puts emphasis on the synergy and complementation among the various programs and initiatives to create a unified and cohesive agenda;

- The Plan defines roles and commitments of both government and the private sector;
- The Export Development Council (EDC) oversees the implementation of the Plan.

The market and the private sector

According to World Bank (www.worldbank.org/agsourcebook), improved market efficiency and greater private sector activity are essential to aid the transitions from subsistence farming to more commercialized agricultural systems.

The expanding role of the private sector is increasingly recognized, as is realizing that markets are the best vehicle for rural economic growth and for facilitating specialization and diversification. The increased focus on private enterprise and market development emphasizes on the improvement of the enabling environment and adjustment of priorities to facilitate market participation. Key issues in this regard include:

1. adapting to globalization and dynamic market change
2. defining public and private roles
3. communicating with the private sector
4. public-private cooperation
5. reducing/managing risks faced by private firms
6. reducing barriers to market access and ensuring equitable outcomes
7. promoting competition
8. labor markets
9. addressing food safety and standards issues
10. ensuring gender equity and growth

Farmers as entrepreneurs

Farmers are intensifying existing patterns of production and diversify their farm enterprises in an attempt to improve their livelihood and in order to catch up with the expanding market for agriculture products in the context of economic integration. It has come to the point that to take advantage of the arising new opportunities in the world market, their technical know-how is no longer enough and they need to adapt their farm business to market changes to improve efficiency, profitability and income.

Along this line and in consonance with the quest for agribusiness development amidst economic integration, Richards and Bulkley (2007), stressed that the agricultural entrepreneur is the logical target for policy intended to build and sustain rural economic development.

Specifically, they recommended policy priorities that need some focused actions in order to remove constraints to successful agricultural entrepreneurs. These are as follows:

1. policies that improve access to credit;
2. policies that improve access to land;
3. policies that improve access to labor; and,
4. policies that improve technical assistance.

Technology development

The rapid development of technology in general, and IT in particular has created many opportunities and challenges for SME (www.unescap.org/fid/publication). On the negative side, this results to replacement of labor by the labor-saving technologies adopted by larger enterprises but cannot be taken upon by SME due to high costs of adoption. On the other hand, in the area of IT, the internet and the possibility of e-commerce have opened up countless opportunities for SME to start, operate and expand their business at low cost. These advances in IT will enable them to reach new markets, enhance customer relationships, reduce costs by optimizing business processes, perk up technology knowledge, attract more investments, and create new products and services for wider ranges of customers.

The main challenge for agribusinesses along this line is to upgrade their technological capabilities especially with regards to internet and e-commerce, and the constraints that may be encountered in this context are the lack of telecommunications infrastructures and the possible restrictive regimes which presently exist in various Asian countries.

Conclusions

Globalization has brought about problems particularly to the marginalized sector of the economy since this essentially results to opening up of the domestic markets to international competition. On the other hand, new opportunities are created by globalization that can be taken advantage of, particularly in the fields of transportation and IT to enhance growth and development of SME.

The development of agriculture SME is critical, particularly in developing countries, not only because the sector is the catalyst to economic growth and development, but also because it is the responsible sector in meeting a country's basic need of ensuring food security.

In the Philippines, basic SME policies, strategies and export development plan have been set up, together with efforts of various government institutions to address the various challenges in SME development, particularly in the rural and agro-based sectors.

Several areas where support measures could be concentrated for SME development in the agriculture sector include: organizational development; financial assistance; policy reforms; ICT development; human resource, (including entrepreneurial and management capacity) development; and linkages promotion.

The formulation of policies towards the development of agribusiness in line with economic integration, must strike a balance between these two critical functions of the sector. Trade agreements between economies must be formulated taking into serious consideration their possible overall contribution to economic growth in participating countries.

The challenge is to ensure that the benefits of economic integration are fairly shared among SME stakeholders in the agriculture sector.

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OVERVIEW OF SME DEVELOPMENT IN THE AGRICULTURAL SECTOR IN MALAYSIA

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1. INTRODUCTION

In 1998, the Third National Agricultural Policy (1998 - 2010) was launched in Malaysia which outlined the policy, strategies, programs and action plan to restructure the agricultural sector in order to enhanced competitiveness by 2010. In 2003, the Ministry of Agriculture (MoA) introduced the Balance of Trade Plan 2010 in which Malaysia aspires to be a net food exporter by the year 2010. The transformation of agriculture as a business begins in 2005 where efforts are undertaken by MoA to nurture entrepreneurship culture among the agricultural community in order to create a generation of successful agro-based entrepreneurs in the agricultural sector.

During the period of the Ninth Malaysia Plan (2006-2010), the agricultural sector is targeted to expand by 5%. This sector is to become the third engine of growth for the country's economy. To realize these targets, one of the initiatives undertaken by the Malaysian government is the launching of National Agro-based industry Development Program. The policy thrust on development of Agro-food sector including agro-based industries are as follows:

a) Increase the agricultural production including exploitation of new growth
b) resources with greater participation of the private sector
c) Expansion of processing activities based on agriculture and product
d) diversification
e) Strengthen the marketing and global network
f) Increase the incomes of small farmers and fisherman
g) Improve the delivery services system

In 2006, the Blueprint for Development of Agro-based SME was launched by the Hon. Malaysian Prime Minister in which Malaysia aims to develop 10,000 new agro-based SME by the year 2010 with each entrepreneur having at least a monthly net income of RM 2,000. Twenty percent of these new SME are expected to achieve international standards of certification by 2010. This paper will focus on efforts to achieve these targets.

2. CURRENT SCENARIO OF THE AGRICULTURAL SECTOR IN MALAYSIA

In 2005, Malaysia's economic growth continues to strengthen at 5.2% with the private sector as main contributor to the country's economy. The agriculture sector expand at a rate of 2.5% in 2005. Malaysia's agricultural exports expanded from US$ 2.8 billion to US$ 11.7 billion from 1985 – 2004, registering an impressive growth of more than 7.4% per annum. However, export growth slowed to 4.7% per annum from 10.4% per annum during the later decade after the liberalization initiatives. Nevertheless, average exports increased by almost 1.9 times between the periods. Overall, imports of agricultural products grew almost at the same rate as exports. Total imports increased from about US$2.0 billion in 1985 to about US$8.3 billion in 2004 registering a growth of 7.6% for the 1985 -2004 period. The production of food agricultural sub-sector during the period 1995 - 2005 are as shown in Table 1.

Table 1. Production of food agricultural sub-sector (1995 -2005)

Commodities	Production (1000 tons)		% Growth (1995–2000)	Est. Production 2005 ('000 TONS)
	1995	2000		
PADI	2,127	2,235	1.0	2,813
FRUITS	1,247	1,511	7.0	1,860
VEGETABLES	718	1,019	7.2	1,390
FISHERIES	1,020	1,376	6.2	1,982
POULTRY	687	1,050	8.8	1,329
EGGS (UNITS)	6,242	8,221	5.7	9,974
BEEF	17	28	10.5	40
MILK	37	50	6.1	65

The agricultural sector recorded trade surplus of RM 30.9 billion in 2006. This surplus is generated from primary commodity exports such as palm oil (30.8%) and forestry products (26.7%) to total agricultural exports. Foodstuff and Agricultural supplies both recorded trade deficits totaling RM7.8 billion and RM1.5 billion respectively during the same period. Export value for the agricultural sector in 2006 is RM 71.3 billion with contribution to the total Malaysian export of 12.1%.

Import value for the agricultural sector is RM 40.4 billion with contribution to the total Malaysian imports of 8.4%. In 2006, import value of foodstuff in Malaysia totaled RM 20 billion and total export value totaled RM 11.4 billion. Trade balance deficit for

foodstuff is RM 8.6 billion. The external trade of the agricultural sector is as shown in Table 2.

Table 2. External trade of agricultural sector, 2006

Description	Export	Import
Grand Total of External Trade Malaysia	RM 590.2 billion	RM 481.9 billion
Grand Total of Agricultural Sector	RM 71.3 billion	RM 40.4 billion
Contribution to Grand Total of External Trade (%)	12.9%	8.4%
Total of Foodstuff	RM 11.4 billion	RM 20.0 billion
Live animals	RM 400.2 million	RM 208.2 million
Meat and meat preparations	RM 93.1 million	RM 993.7 million
Dairy products and bird's eggs	RM 678.8 million	RM 1,708 million
Fish, Crustaceans, Molluscs and preparations	RM 2,206 million	RM 1,999 million
Cereals and cereal preparations	RM 951 million	RM 2,481 million
Vegetables	RM 512 million	RM 1,796 million
Fruits	RM 459 million	RM 754 million
Sugars, sugar preparations and honey	RM 502 million	RM 1,706 million
Coffee, cocoa, tea, spices and manufactures	RM 2,599 million	RM 3,549 million
Animal Feeds	RM 681 million	RM 2,957 million
Miscellaneous edible products and preparations	RM 2,323 million	RM 1,873 million

Main market for exports of Malaysian foodstuff is Singapore (totaling RM 2.2 billion and constitute 21.5% of total export of Malaysia's foodstuff). Other countries for Malaysia export markets are USA (9.8%), Indonesia(6.4%) and Japan (5.6%).

Main countries as sources of foodstuff imported by Malaysia are Australia (total import value of RM 2.4 billion or 12.9% of total imports of foodstuff); China (RM 1.92 billion; 10.5%); and Indonesia (RM 1.9 billion; 10.4%).

It is estimated that there are some 1.2 million active farm families operating small farm enterprises, livestock rearing and fishing. From over 6,000 food processors, 85% are operators of small establishment with investment of below RM 2.5 million shareholders funds. These small enterprises are relatively inefficient, low in productivity, utilize inferior technology, low in marketing competency and capability, do not have access to cheap funds and frequently dependent on intermediaries to facilitate their businesses. In

order to address these issues and enhance the development of SME, the National SME Development Blueprint was announced by the Malaysian Government in 2005. The purpose of the Blueprint was to:

a) provide a clear statement of the Government's strategic intent and focus for SME development;

b) facilitate coordination of SME policy planning, implementation of SME programs and monitoring of outcomes and achievement; and

c) enhance synergistic collaborations and synchronize efforts towards achieving desired outcomes for SME development by Ministries and Agencies.

The Malaysian Government's strategic intent and focus for SME development is to support the development of competitive and resilient SME to enhance their contribution to the economy. The SME major programs are designed under three main strategic thrusts which are:

a) Strengthening enabling infrastructure for SME development;

b) Building capacity and capability of SME; and

c) Enhancing access to financing by SME.

In 2006, Government annual expenditure for SME development was USD 2.2 billion which is 1.6% of the GDP. A total of 287,692 SME or 52.7% of SME benefited from Government policies and programs for SME development in 2006. SME's contribution to Malaysia's economy (GDP) is expected to increase from 32% in the year 2005 to 37% by 2010. Agriculture-based SME's contributes 3.9% in 2005 and is expected to contribute 4.3% by 2010. SME provides employment to 5.6 million people in 2005. The target for 2010 is 6.2 million people. Employment in the primary agricultural sector is expected to decrease from 0.8 million people in 2005 to 0.7 million in 2010 due to mechanization, use of new technology / knowledge and less dependent of foreign workers.

In Malaysia, more than 449,004 SME or 86.5% of total SME are in the services sector. There are 37,866 SME in the manufacturing sector mainly involved in production of clothing and textiles; metal and mineral production; and food and beverages. About half of the SME in this sector are micro producers; followed by small-scale manufacturers (39.5%) and medium-scale manufacturers (5.2%). There are 32,126 SME in the agricultural sector mainly involved in cultivation activities for food and markets, horticulture and animal production. About 93.3% of the SME in the agricultural sector are micro producers. Agro-based SME contribution to exports are as shown in Table 3.

Table 3. SME contribution to total exports

	2005 (%)	2010 (%)	SME Average Annual Growth (%)
SME contribution from total exports	19.0	22.0	-
Total export value of SME (RM million)	116.3	199.3	11.4
Fruits and aquarium fish	0.1	0.2	49.1
Wood-based products	2.1	2.7	7.7
Rubber-based products	0.9	1.4	13.0
Processed foods	0.6	1.1	16.7

The Census of Establishment and Enterprise 2005 highlighted the challenges faced by SME, which include:

i) limited access to advisory services
ii) limited marketing and promotion strategies
iii) limited access to domestic and global market
iv) management and technology capability constraint;
v) low value add and not competitive
vi) lack of training;
vii) limited capability in R&D and technology
viii) difficulty in obtaining financing

To assist SME in addressing these challenges, 189 major programs are being implemented in 2007, with a financial commitment of RM3.7 billion.

Case studies conducted on successful SME identified the following as critical success factors:

- management capability and sound integrity
- good business culture and entrepreneurship drive
- good financial management
- high quality product and services
- good human resource development programs
- strong support from financial institutions in providing loans and advisory services
- strong marketing strategy including good suppliers network.

Strong and dynamic SME will help drive the economy and contributes to meeting of various economic development activities. Successful SME growth will ensure efficient use of resources, create employment opportunities, generate domestic savings and investment, increase in numbers of local entrepreneurs, and with it an increase in the use of local resources and ensure equitable wealth distribution.

In Malaysia, there are more than 30 government organizations that is involved in facilitating and supporting the development of SME in the agro-food sector. Some of the Ministries and agencies involved are as listed in Table 4.

Table 4. Ministries and it's agencies facilitating and supporting the development of SME in Malaysia

Ministry / Agency
Ministry of Agriculture and Agro-based Industry (MOA) • Department of Agriculture • Department of Fisheries • Department of Veterinary Services • Malaysian Agricultural Research and Development Institute (MARDI) • Federal Agricultural Marketing Authority (FAMA) • Farmer's Association Authority (LPP) • Federal Land Development Authority (FELDA) • Agriculture Bank of Malaysia (BPM) • Muda Agricultural Development Authority (MADA) • Kemubu Agricultural Development Authority (KADA) • Malaysia Pineapple Industry Board (MPIB) • Fisheries Development Board of Malaysia (LKIM)
Ministry of International Trade and Industry (MITI) • Small and Medium Industry Development Corporation (SMIDEC) • Malaysia External Trade Development Corporation (MATRADE) • SME Bank • Malaysia Industrial Development Authority (MIDA)
Ministry of Entrepreneur Development and Cooperatives (MECD) • Majlis Amanah Rakyat (MARA)
Ministry of Domestic Trade and Consumer Affairs
Ministry of Islamic Development • Department of Islamic Development Malaysia (JAKIM)
Ministry of Health • Food Safety and Quality Division, Department of Public Health • National Pharmaceutical Control Bureau (NPCB)
Ministry of Plantation Industries and Commodities (MPIC) • Malaysia Palm Oil Board • Malaysia Cocoa Board • Pepper Marketing Board • Malaysia Timber Industry Board
Ministry of Science, Technology and Innovation (MOSTI) • Department of Chemistry Malaysia • Standards Institute of Research Malaysia Berhad (SIRIM Berhad)
Ministry of Higher Education (MHE)
Ministry of Domestic Trade and Consumer Affairs (MDTCA)
Ministry of Rural and Regional Development (MRRD) • Federal Land and Crop Rehabilitation Authority (FELCRA) • Rubber Industry Smallholders Development Authority (RISDA)
Bank Negara Malaysia

The supporting system includes financial and non-financial assistance. SME are given access to various financial aid mechanisms including grants, simple loans, equity payments, business capital, credit guarantee and tax incentives. The non-financial assistance provided includes advisory services, training, R&D and innovation, incubation center and mentoring services. The development of women entrepreneurs is also emphasized. Training and incentives are also provided to fresh graduates from universities to participate in agro-based commercial activities.

To ensure integrated approach in the development of the agriculture and agro-based industries, the Ministry of Agriculture Incorporated (MoA Inc.) is formed to ensure all services, brains, energy and resources available in the various departments and agencies within the Ministry will be mobilized in tandem. Every MoA Inc. projects will be headed by one lead agency. All departments and agencies will participate in the planning and implementation of projects including preparation of infrastructure, agricultural inputs, financial resources, usage of latest technology and marketing. In 2004, the Modern Agriculture Project was launched. Twenty-one companies have been identified to participate in this project.

3. DEVELOPMENT OF AGRO-BASED SME THROUGH TECHNOLOGY TRANSFER, INNOVATION AND COMMERCIALIZATION ACTIVITIES

The Malaysian Agricultural Research and Development Institute (MARDI) undertake research and development in the food, agriculture and bio-industry. It also provides developmental and technical services to the agro-based SME which includes training, technology transfer, expert advisory services, analytical services and downstream processing facilities besides contract research and technology commercialization. For the past 30 years, more than 10,000 SME have benefited from the various SME development projects carried out and more than 36,000 participants have attended the various training courses conducted by MARDI. The Technology Development and Promotion Center of MARDI is actively involved in the development of Agro-based SME . The Entrepreneur Development Programs carried out includes:

i) Entrepreneur Support Program
   - provides general technical information, training, product analysis and downstream processing facilities (MARDI Technology Test-beds)

ii) Entrepreneur Guidance Program
   - provides trouble-shooting, advisory services, specialized training, and assist SME in meeting local market requirements

iii) Entrepreneur Adoption Scheme
   - provides comprehensive advise on technical, business and marketing aspects, and assist SME in meeting export market requirements

iv) Special Entrepreneur Development Project
   - provides technological supports to other government agencies in implementing their entrepreneur development programs

To enhance technology innovation and commercialization activities, MARDI has a Business Unit which operates Technology Incubators and a wholly-owned subsidiary company, MARDITECH Corporation Sdn. Bhd. which has carried out more than 80 consultancy and technology commercialization projects since 1996.

5. CONCLUSIONS

SME face various challenges with globalization and liberalization of trade (WTO, AFTA). Removal of trade restrictions place a heavy pressure to open up local market for imports. However, trade liberalization creates opportunities for expansion of export markets. To be competitive, SME thus need to innovate, produce high quality products at lower prices and to meet high food safety standards.

In Malaysia, land for agriculture and livestock production is becoming limited due to competition with other sectors. There is a need for mixed and integrated farming system on commercial scale as well as intensive farming system. More downstream agricultural activities are encouraged and agriculture is now seen as a profitable business. Intensive farming and product processing must also meet environmental standard. This means that producers need to comply to international standards and ensure product safety. Here, the application of technology and management come into play. Hence, the importance of technology transfer, innovation and commercialization activities as carried out by the Malaysian Agricultural Research and Development Institute.

The Malaysian government has developed many policies and implemented various programs to ensure the transformation of agricultural sector into a modern commercially-viable sector. Development of agro-based SME now becomes a national priority. With these efforts undertaken, Agriculture as the third engine of growth for the country's economy will be achievable.

STRENGTHENING AFFINITY BASED RURAL INSTITUTION IN DEVELOPING RURAL MICRO ENTERPRICES IN AGRICULTURAL SECTOR IN INDONESIA

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ABSTRACT

Developing small and medium scale enterprises (SME) among villagers is one of some essential parts of the whole concept of agro-business development in Indonesia. Since small and medium scale enterprises have been played an important role in domestic income sources in Indonesia, especially among villagers, the economic growth will become meaningful if only the villagers also benefited from the added values of agricultural product. Accordingly, building strong institution among villagers is very strategic, particularly in order to sustain the agribusiness system itself.

As a matter of fact, most villagers live in poverty, even some of them live below poverty line. Most of them do not have sufficient capacity in developing "real" agribusiness, for the limitation in land possession and access to available resources. Realizing this situation the government has set up programs related to income generation through the development of micro enterprises among rural poor.

The biggest constraint in developing micro enterprises among rural poor has been their capacity, especially concerning the possession of needed skills, lacking of capital, lacking of market network, etc. Accordingly, it is important that rural poor organize themselves to improve the capacity of developing micro enterprises. Through "healthy" organization rural poor will be able to learn some skills, to generate capital, and to develop cooperation with other business players.

In Indonesia there are numbers of small farmers' group that shows the benefit of developing affinity based organization as a means of improving capacity in agribusiness development.

INTRODUCTION

Agricultural sector in Indonesia, as an integral part of rural economic development, is a very potential to become a leading sector of national development. It is supported by the fact that Indonesia has very large agricultural resources, particularly in rural area, such as land, labor-force, biodiversity, as well as technology, which comprise significant resources for agribusiness development. The agribusiness sector has played an important role in national development both directly and indirectly. The direct role is

showed by, among other things, its contribution to the formation of gross domestic product (GDP), employment opportunity, source of community income, poverty alleviation, export earning and national food security. Indirectly, agribusiness sector has contributed to the creation of conducive environment for development implementation as well as having synergistic relationship with other sectors.

In the multidimensional crisis in 1998, the agribusiness sector was proven to be able to survive. Lesson learnt from this crisis has lead the government to rethinking of national development strategy. Compared to other businesses, agribusiness uses more local resources rather than imported one. Hence, it turns to be less dependent on imported materials, thus saving monetary reserves.

Another fact that build the sound strong "endurance" of the agribusiness sector is that it needs relatively small investment and labor intensive using local appropriate technologies so that can accommodate all qualities of human resources competency rather than sophisticated and expensive technology. Therefore, this sector has an ability to create more opportunities of employment than that of other economic sectors.

By developing agribusiness system and enterprises as an alternative strategy for agriculture and economic development in Indonesia, it is expected that there would be a large positive impact on the Indonesian economic condition. As a matter of fact there are many medium, small and even micro businesses involved in agribusiness system, from the upstream to the downstream. The development of SME in agricultural sector would simultaneously develop those kinds of businesses that mostly run by villagers. In turns, the agribusiness system would spread opportunities to the very grass roots of agricultural based industry, those are the micro enterprise players in rural area. Through the development of core competencies and improve the professionalism of human resources among the agribusiness players, interrelation between on-farm and off-farm sub systems, would lead agribusiness to become national backbone of the country economy.

This paper attempts to share an experience in developing the entrepreneurial capability of small farmers' groups at the rural area as the basis of sustainable agribusiness, through strengthening their affinity-based institution.

Micro enterprise in agricultural sector

The development of micro-enterprises in agricultural sector has been made possible through the agribusiness system, especially for there are very large opportunities in the upstream and downstream agribusiness sub systems or in off-farm businesses. The most fundamental problem in on-farm businesses is the possession or availability of land as well as irrigation. On the other hand the large number of rural people are landless or marginal farmers who has insufficient piece of land to run economically viable on-farm business. They do farming activities mostly just for subsistence reasons.

In an agribusiness system the upstream sub system could play some essential role in providing pre production inputs, such as organic fertilizer, organic pesticide, seeds, agriculture simple machinery, etc. In the downstream sub system the opportunity is much more available, starting from the post harvest activities to the processing, packaging, delivering as well as marketing. Most of those businesses are using local inputs and able to absorb employment in rural labor force and benefiting many rural households as income sources either main or secondary income.

The micro enterprise in off farm businesses could be run as individual or group business. The size of such enterprises varies considerably, from individual household to small groups of neighborhoods to larger cooperative efforts. There were approximately 40 million micro-enterprises estimated operating in Indonesia and employing approximately 73 million people, mostly located in the rural areas (BPS, 2007).

The micro enterprises in off farm businesses are mostly house hold enterprises and become secondary or primary source of their income. These kind of businesses are generally characterized by:

a) Seasonal based of agricultural commodities
b) Non permanent location due to the seasonal commodities and demand
c) Simple and practical managerial skills
d) High turnover
e) Subsistence scale of business

Indonesia's micro enterprises are regionally dispersed. The problems may differ from region to region. There are many issues which linked to the human resources competencies, including lack of managerial skills, lack of formal schooling (even many of them are illiterate), no access to formal training, limited access to technology, etc. The lack of accessibility to the technology sources, lack of information and financial sources.

Externally, the important problem to be overcome in the development of local based agribusiness in rural area in Indonesia are marketing, distribution, and transportation. Those three elements always become obstacles for the government in empowering the small farmers as well as for micro-enterprise entrepreneurs to expand their business.

Although the government has set up various kinds of policies in developing micro-enterprises, no clear steps were made to overcome the problem. The lack of success of the government micro-enterprises program mostly was caused by the lack of coordination among relevant agencies in charge of micro-enterprises program, poor program design, and in adequate monitoring and evolution (word Bank, 2001). On the other hand, the micro enterprises have no capacity in providing their business progress, business planning, business prospect etc.

In Indonesia, there are at least two government agencies that directly concerned with micro-enterprises development, namely the Directorate General of Small Scale Industry,

Department of Industry and the Office of the State Ministry for Cooperative and Small Enterprises. The Department of Agriculture is not directly in charged in the micro-enterprises development. However, Ministry of Agriculture has certain program concerning the development of micro-enterprises in agricultural sector.

Affinity based rural institution in the agribusiness micro enterprise development

Micro-enterprises are usually operated by individuals based on their innate skills at managing risks and taking advantage of opportunities. Although they may not have adequate knowledge from formal education, they often have extra close of street-smarts. In the case of Indonesia, micro-scale enterprises can be found any where, even among villagers at very remote area. Nevertheless, individual micro-enterprises player mostly face high risk in running their business. They mostly lack of bargaining position in several stages of business, such as the procurement of materials and inputs, and marketing, especially in determining selling price.

The affinity group is conceived as an institution to bind individual micro-enterprise players in order to strengthen their business capacity. This institution, therefore, should be established according to the needs of the whole members based on similar interest. The ideal and prospective affinity group usually consists of members who have mutually compatible and relatively homogeneous social and income status, and agree to manage their business together in improving their welfare. In terms of micro-enterprise development, the affinity-based institution may be developed as merely the basis for learning process for the members or as group business in micro-enterprise.

Individual micro-enterprise players as members of affinity-based institution can utilize the organization as a means of improving their knowledge and skills, building common fund as a safety fund, developing leadership, strengthening bargaining position. Above all, the organization will stimulate the development of their self-confidence, and this is the essential entry point of any further development.

Affinity-based institution could also develop a group business. In this circumstances the organization should be able to transform into small enterprise in which more sophisticated management should be applied. The first condition should be fulfilled is the proper leadership that should arise among the members. All members should have respective particular roles in managing their small enterprise. The most important thing is the relationship among members should be based on equal opportunity, equal right and equal responsibility. There should be avoided the misleading relationship that tend to position the board of organization as the employers while the members as the employees.

Strengthening the affinity-based institution

The most common fact in the development of organization among rural people is that they are easily to bind together as a social organization. That is the essence of “affinity” among the members. However, when we intend to develop the institution to other

purpose such as developing business it would not be an easy task. Accordingly, the purpose of establishing the institution should be understood fully by all members from the very beginning.

The facilitation to strengthen the affinity-based institution, therefore, should be started even before the group is formed. First of all, the awareness of the would be group members should be arouse, particularly their genuine objectives of forming a group. These objectives of the group should be formulated together in a written document. Following the formulation of the group objectives is the agreement of all the group members upon the rules and norms of the group that should be obeyed by all members. Among the essentials of the group dynamic is the regular meeting schedules that should be obeyed by all members.

Another essential "blood" of the group is the supporting fund. The affinity-based group should develop a common fund as a source of various kind of needs either business or non-business matter. The most common way to build the common fund is through the saving and lending activities. In accordance to this purpose, there should be some members of the board of organization trained in bookkeeping and simple accounting.

In order to be able to develop more prospective micro-enterprise of agribusiness system the group should develop mutual relationship with other business players. The wider the network the more prospective the micro-business would be. Sometimes, this needs intermediation by the group organizer.

In short, any prospective affinity-based institution should be able to fulfill some criteria which determine them as active and healthy group in managing their micro business such as: (i) having mutual objectives, (ii) applying group management system, (iii) applying group common fund management system, (iv) applying group accountability norms, (v) building group linkage and (vi) being non-formal learning organization.

The strengthening process comprises of several approaches, such as technical assistance and skill development program in enhancing the capacity of human resources in the development of affinity-based institution for agribusiness micro-enterprises development in the form of training and extension services. In implementing the training program, the Ministry of Agriculture has collaborated with Ministry of Industry and Ministry of Cooperative and Small Enterprises, in terms of subject matters of education and training for improving the quality of products.

Broadly, the strengthening strategy could be systematically described as follows:

1. Strengthening group institution

This program is aimed to facilitate group through participatory activities in developing group institution as self-help group. The objective is to assist the

affinity-based groups to become active, healthy and beneficial to their members in improving their well being.

The group empowerment process is started from understanding the affinity group institution concept, formulating the group objectives, management and organization, saving guidance, business plan guidance, business networking, developing common fund and participatory monitoring and evaluation. Contact with the private sector will form the basic approach to improve in marketing. This also applies to product development and general familiarization of group to the commercial world. Assistance will also be provided in micro-enterprise management.

2. Human resource capacity building

Human resource development were implemented not only for group members, farmers, on villagers but also applied to the field extension workers, local NGOs and also the individual success entrepreneurs. The empowerment process has been arranged in phases. The beneficiary training through group includes basic training courses, comparative study tours, marketing workshop, etc. They are also provided skills in business management such as creative new product, packaging, management and marketing. All trainings have been using participatory approach.

3. Micro finance services

Micro finance services are needed to help group institution mobilize saving and access credit to complement other group activities, supporting their micro enterprises and livelihood. Encouraging formal saving mobilization, even the short term saving, has proven to be extremely effective in helping the villagers accumulate working capital which in itself contributes to the increased self reliance.

A credit line program was established to provide loan without collateral to group institution for the support to their micro-enterprises and livelihood activities.

4. Technical assistance

The Ministry of Agriculture, through the field extension workers, helps the group in improving their capacity and knowledge in terms of identifying, selecting, forming and fostering the group. The government officials in partner agencies such as the Ministry of Industry, Health, Education and Culture, Cooperative Smalls Medium enterprise, local government, and local NGO were encouraged to take part in assisting the group.

One of the famous government programs in providing technical assistance, especially in the micro small scale enterprises is the Foster Business Partner linkage scheme, under this program, a large private of state owned business (SOB) were encouraged to assist the micro enterprises in improving their capabilities in technology, marketing, management and in accessing financial services.

Other technical assistance is provided by business development service provider (BDSP). They also assist the micro and small enterprises by providing new information and technology and organizing micro-small business private partnerships.

How to assist the entrepreneurial skill development within the affinity groups in rural area?

1. After the group formation using PRA techniques, the group would be provided series of capacity building trainings, such as training on group management, leadership, group common fund formation, simple bookkeeping, group business plan exercises, etc.;
2. The second steps is skill development training for the groups and the provision of consultation that is compatible and appropriate for the groups in several fields including agriculture and added value process in agriculture. This activities have been implemented in collaboration with Universities, NGO, and other related institutions;
3. Conducting advance program for the groups, includes training on management, marketing, production management, new technologies, financial and entrepreneurship;
4. Assisting affinity groups to develop group business plans and apply loans to the bank guided by field extension workers and account officers;
5. Provides the groups with market information through extension process and also printed materials in the effort to build the awareness of the groups towards business opportunities;
6. Conducting comparative studies to other successful groups and group business meeting among affinity groups as well as production exhibition;

The experience has shown that the integrated education, entrepreneurship, and community development at the rural area have a real contribution to the rural economic development. Some lessons learnt have also proven that:

(1) Many of the villagers are in fact landless, benefiting only indirectly by increases in agricultural productivity associated with many development projects. Growth in off-farm employment opportunity not only can address employment issues in general but could also alleviate gender specific bases associated with agricultural production;

(2) Agribusiness enterprises of the farmer's groups based on their affinity at the rural area has offered the possibility of capturing added value and thereby increasing rural incomes and induces a multiplier effect in the rural economy;

(3) Increased employment opportunities within the rural areas can help contain pressures for urban migration. Not only does this reduce stress placed on urban services, but it can help rural based families together;

The agribusiness activities have established the market connections outside the rural area.

THE DEVELOPMENT OF SMALL AND MEDIUM ENTERPRISES OPERATING IN THE FIELD OF RURAL AGRICULTURE AND POLICICIES FOR THE DEVELOPMENT OF SMALL AND MEDIUM ENTERPRISES IN VIET NAM

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1. INTRODUCTION

After twenty years of reform and in the world context of integration, Viet Nam's agricultural sector has achieved an impressive growth rate of 4-5 percent per year and undergone significant structural transformation as well as faced up with numerous challenges. The national food safety has basically been ensured. Agricultural production has shifted from an autarkic production to a diversified commodity export-oriented agriculture. However, Viet Nam's agricultural sector is generally still at low development level. Low productivity, poor quality and efficiency, and poor competitiveness all have made its agro-products unable to meet the requirements of international economic integration. Production is small and scattered which makes it exposed to potential risks. Farmers are in difficulties and the difference in income among regions and sectors are gradually increasing. Many people are made redundant. Many social and environmental issues have not been solved.

Within this new context, the resolution adopted by the Vietnamese Communist Party at the 9th and 10th Congresses stated our policy "to continue completing socialism-oriented market economic institution" to best meet the requirements of socialism-oriented market mechanism and international economic integration.

In order to concretize the Central Party's policy, the Party Committee issued the Decision No 59- QĐ/TW on 7 May 2007 on establishing the Project "Completing socialism-oriented market economic institution in the context of global integration" (or the Project 59) and assigned the Ministry of Planning and Investment to be responsible for carrying out. According to the official document No 4391/BKH-QLKT dated 26 June 2007 by the Ministry of Planning and Investment, the Ministry of Agriculture and Rural Development (MARD) was assigned to prepare two subjects: (i) enterprises operating in rural areas, (ii) agricultural and rural markets.

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Presently, developing agricultural and rural enterprises is the key to fostering the agricultural commodity production, raising competitiveness and attracting financial capital and technological investment for agriculture and rural development, which consequently leads to higher returns for farmers and more job opportunities in rural areas.

This article "The development of small and medium enterprises operating in the field of agriculture in rural areas, and policies for the development of small and medium enterprises in Viet Nam" is to analyze the current situation of the development of agricultural and rural enterprises and issues relating to the institutions, then to propose measures to foster the development of agricultural and rural enterprises in the future.

II. THE CURRENT DEVELOPMENT OF AGRICULTURAL AND RURAL ENTERPRISES

Agricultural and rural enterprises are the institutions registering business operation according to the Law on Enterprise and other Laws in the fields of: (1) The production and business of agriculture, forestry and aquaculture products and services; (2) Processing and trading agriculture, forestry and aquaculture products and (3) Enterprises producing and trading non-agriculture and small scale industry's products and services in rural areas. Classifying according to ownership, agricultural and rural enterprises include: state-owned enterprises, foreign invested enterprises, collective enterprises (cooperatives) and other private enterprises.

2.1. Achievements obtained over the past few years

2.1.1. The increase in the number of enterprises

According to the statistics of 2006, Viet Nam had about 240 thousand enterprises, 90% of which was small and medium enterprises. Presently, there is not an official number of agricultural and rural enterprises. In 2006, according to MARD there were sixteen thousand enterprises and eight thousand six hundred cooperatives operating in the field of production and business in rural areas. The General Statistics Office (GSO) estimated that by 2005 there would be 113,352 enterprises, 2,429 of which was agricultural and rural enterprises (agriculture, forestry and aquaculture enterprises), accounting for about 2.1% of enterprise population. As shown by the NGO's data, in non-agricultural sector there are about 4,500 State-owned enterprises, 27,000 private companies and three million farm households participating in industrial production, construction, business, service and other non-agriculture activities. These numbers are much higher than those provided by MARD but they don't include other types of enterprises such as cooperatives, agriculture farms.

So, it can be said that there has been an increase in the number of agricultural and rural enterprises over the past few years. However, the growth of different enterprise types as well as among sectors and regions is not at the same pace. While there has been a rapid

increase in the number of private enterprises, agriculture farms and sole traders in rural areas, agriculture cooperatives and state-owned agriculture farms have experienced a gradual decrease. Until 1 July 2006, there were only 7,310 cooperatives operating in rural areas and about 1,000 state-owned farms have been restructured.

2.1.2. Diversification in types and scale of agricultural and rural enterprises

So far, agricultural and rural enterprises have developed in a diversified way. If prior to 2000 there were only cooperatives, State-owned farms and sole traders operating in the field of agriculture in rural areas, there are now thousands of private enterprises, foreign invested enterprises (FDI) and joint stock enterprises…

a) The development of agricultural production and service cooperatives

Until 1 July 2006, the whole country had 7,310 enterprises operating in the field of agriculture, forestry and aquaculture, a decrease of 203 compared to the same period in 2001. Of the existing enterprises, 7,056 are agriculture cooperatives, accounting for 96.5%, 235 are aquaculture enterprises, or 3.2%. There are only 19 forestry cooperatives nationwide and allocated in different regions.

Most of the agriculture cooperatives are now operating in the North where there has been a cooperation campaign since 1960. The Red River Delta is home to 46.9% of the total agriculture enterprises of the country and the North Central Coast 21%. In other regions, the population of agriculture enterprises is minor (1.8% in the North West, 2% in the Central Highlands and 3% in the South East). Noticeably, the Mekong River Delta, where the agricultural commodity production has been considered to be the largest nationwide, only had 515 agriculture enterprises by July 2006 (an average of 40 in each province).

Of 7,056 agriculture cooperatives which are under operation, 5,897 cooperatives are transferred cooperatives following new Law 2006, accounting for 83.6% and the rest 1,159 are new cooperatives established in accordance with Cooperative Law. Transferred cooperatives are most in the Red River Delta and the North Central Coast. 38% of the new agriculture cooperatives are in the Mekong River Delta, 24% of those are in the North Central, 12% are in the North East and the rest can be found in the Red River Delta and the North West…Some provinces with high number of new agriculture cooperatives established in accordance with the Cooperative Law are Thanh Hoa (with 246 cooperatives), Dong Thap (115 cooperatives), Hau Giang (93 cooperatives), An Giang (92 cooperatives), Can Tho, Kien Giang, Bac Giang (30-42 cooperatives each). Because these cooperatives have been recently established, their organization, structure and operation are basically in line with the Cooperative Law.

Number of permanent workers of an agriculture cooperative is 21, a decrease of 9 compared to that on 1 October 2001. This decrease is because one staff of an agriculture cooperative is now responsible for several duties. The difference in the number of staff

per cooperative is not much among regions (23 labors per cooperative in the Red River Delta and the North Central Coast while 11-20 labors per cooperative in other regions).

The total operating capital of the 7,056 agriculture cooperatives of the country was 6,273 billion VND as at 1July 2006 which showed an increase of 1,600 billion VND from that on 1 October 2001. An average operating capital of a cooperative was 889 million VND, an increase of 240 million VND compared to 2001. The majority of capital value was from non-current assets and long term investments. According to the source of assets, enterprise's capital can be divided into liability (16%, of which 15% is bank loan) and owner equity (84%). The average capital of an agriculture cooperative is greatly various among regions and provinces. An agriculture cooperative's average capital in the South Central Coast is the highest with 1,147 million VND, followed by the South East with 1,205 million, the North Central Coast with 915 million and next is the Red River Delta with 879 million. The South West and the Mekong River Delta are the lowest with 234 and 361 million VND per cooperative respectively.

In general, over the past 10 years since the Cooperative Law came into effect, Cooperative's operation has gradually changed: Organization and management have been strengthened; operation has been more and more diversified so as to fit with existing infrastructure system. Cooperatives have been able to provide basic services for agriculture production. Operation of many agriculture cooperatives has stuck to the principle of covering expenses by income earned, supporting the production of households and for the sake of community.

b) State-owned farms

Currently, there are approximately 500 state-owned farms with about one million hectares of agriculture and forestry land. These farms are managed under the Decree No. 1 issued in 1995 by the Minister, by that the farms entrust land and issue green books as the certificate of land use rights to households.

At the moment, the country has about 400 state-owned farms with the amount of land up to 6.5 million hectares (of which 5.09 million is being used) and the number of labors employed up to 30 thousand. So, state-owned farms are now controlling approximately 25% of agriculture land of the whole country but they are currently generating only 1% of GDP.

On 16 September 1999, the Minister issued the Decision No. 187/1999/QĐ-TTg on the innovation of state-owned farm's organization and management system with the following points: (1) Highly important and important protective forests can be allocated with production forests, and less important protective forests with an area of less than five thousand hectares should be assigned to farms to control. (2) Changing state-owned farms with more than five thousand hectares or over 70% of the forestry land which is under the restructuring plan of becoming important and highly important protective forests into the protective forest management committee operating under the mechanism of an economic unit.

Farms in difficulties and with less than one thousand hectares of forestry land allocated with agriculture land and in residential areas can be changed to appropriate business types in order to support the agricultural, forestry and industrial production. By the mid 2006, 392 farms had been restructured in accordance with the spirit of the Decision No.187 mentioned above.

c) Foreign invested enterprises (FDI)

In fact, FDI funded projects play an important role in agriculture and rural development. The attraction of FDI projects for agriculture will bring about (1) fund for the development, (2) advanced production technology, (3) modern scientific management methods, and (4) markets for agricultural produce, especially increase the value of exports.

By June 2007, although Viet Nam had attracted FDI funded projects with the total registered capital of USD 67.3 billion and total implemented capital of about USD 30 billion, only USD 3.78 billion or 5.6% of registered capital and 1.9 billion or approximately 6.3% of implemented capital was for agriculture. With 758 projects, FDI enterprises have brought about annual turnover of USD 312 million for agricultural sector and value of exports of USD 100 million. Agriculture as a whole induces 46 projects with the value of about USD 238 million annually.

d) Private enterprises in rural areas

As for quantity, most of the agricultural and rural enterprises are now newly registered enterprises, private enterprises, and those operating in the field of processing, non-agriculture support services and small industry. It is estimated by the GSO that in the field of non-agriculture, there are about 4,500 state-owned enterprises, 27,000 private enterprises and three million farm households participating in non-agriculture activities such as construction, trading, services and handicraft.

Despite of small scale, these enterprises have mobilized about USD 30 billion and employed nearly 3 million workers, creating 49% of non-agriculture jobs in rural areas and using 26% of all employment, contributing to more than 40% of GDP and 29% of exports. The use of capital has been quite efficient. In order to generate one VND value of turnover, State-owned enterprises require a non-current capital of 0.562 VND, while private enterprises and limited companies only need 0.197 and 0.188 VND respectively.

2.2. Some constraints in the development of agricultural and rural enterprises

The development of agricultural and rural enterprises over the past few years has shown the following key constraints.

2.2.1. The number of agricultural and rural enterprises has increased slowly and accounted for a small proportion in the economy

In spite of a recent increase in the number of agricultural and rural enterprises, the rate is slow compared to that of enterprises in general and constitutes a small proportion in the total number of enterprises. According to the survey carried out by the Ministry of

Planning and Investment, by the end of 2000, agricultural and rural enterprises accounted for approximately 14% of all enterprises nationwide and this dropped to 11% in 2003. It is clear that the rate of agricultural and rural enterprise development is slower than that of enterprises in other sectors.

2.2.2. Small scale of capital, land and labor, backward production technology

a) As for private enterprises operating in the field of non-agriculture

Over 90% of these are small and medium enterprises, if not to say very small. The popular number of labors per enterprise is from 10 to 300. As for capital, the registered capital is just from several hundred to less than ten billion VND with an average of about two billion VND per enterprise. According to experts, the average capital required for an employment in a rural private enterprise is only 35 million VND, in a limited company 45 million VND, while it is up to 87.5 million VND in a state-owned enterprise.

As for technology, agricultural and rural enterprises are possessing backward technology and machines. The annual rate of technology innovation is just about 5-7% (compared to 20% of the world). At present, there are about more than one thousand traditional craft villages, employing over ten million workers, creating three billion USD of exports. Each craft village in rural areas owns tens of small and medium enterprises in that site. Though knowledge and skills of labors in craft villages are very good, equipment and infrastructure of those villages have been downgrading. In general, small and medium enterprises are reluctant to provide investment in agriculture due to small scale of capital and high potential risks.

b) State-owned farms and cooperatives

Operating efficiency of many agriculture service cooperatives is still low. At present, about one third of the cooperatives which have been conversed are profitable. Most of the new style agriculture service cooperatives are short of capital and technology to implement and expand their activities. The majority of the cooperatives are in need of skilled staff who can manage and run the business. Economic efficiency of these agriculture cooperatives and income for cooperative's labors are low. Cooperative is a type of organization which has great impacts on agriculture production. However, cooperatives that have been conversed are operating inefficiently, so their roles are not visible to farmers.

2.2.3. The attraction of FDI in agriculture and rural development is still weak

By June 2007, FDI funded projects in Viet Nam had attracted 67.3 billion USD of registered capital with 30 billion was implemented capital. However, registered capital for agriculture was only 3.78 billion USD (equivalent to 5.6%) and implemented capital

was 1.9 billion (accounting for 6.3%). With 758 projects, FDI for agriculture has led to annual turnover of about 312 million USD and an export value of over 100 million per year. The whole sector attracts an average of 46 projects with the capital of 238 million USD.

Over the past few years, FDI for agriculture has not decreased but the increase has not been impressive, leading to a drop in its proportion. In the period of 1998-2002, the proportion of registered and implemented FDI for agriculture was 6% and 8% respectively of the total FDI dropped into Viet Nam. However, since 2002, this proportion has down to 4% or 5%.

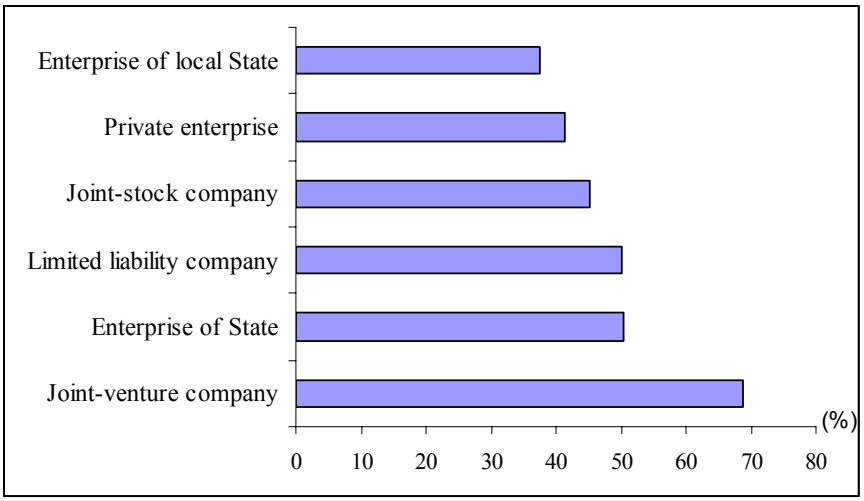
Thus, foreign invested enterprises operate mainly in the field of producing feed for livestock, processing agro forestry products because of quick return on capital instead of developing biotechnology in agriculture, creating new breeds by cross-breeding, growing and processing vegetables and fruits for export which require advanced technology. Moreover, sources supporting agricultural and rural enterprises are both in shortage and of low quality so 30% of FDI funded projects have been dissolved, which is high compared to 20% of the average of the country.

2.2.4. Agricultural and rural enterprises have been developing spontaneously; there has been a lack of proper plan for the development of agricultural and rural enterprises in each region and sector

Presently, there are 131 industrial clusters and zones but they are the products of the country's great plan (at provincial and national levels). Agricultural and rural enterprises mostly are allocated in rural areas near residential areas. Agricultural and rural enterprises normally have to manage themselves to have land for production. Experiences from some provinces show that if there are detailed plan in using land, enterprises will have better opportunities to develop. These are the three consequences of the poor development of agricultural and rural enterprises over recent period:

2.2.5. Inefficient production and low competitiveness

Although small and medium enterprises in rural areas participate in processing and trading many important export products such as: pepper, cashew, fisheries, handicraft and china…, their competitiveness is low. Agro forestry enterprises obtain an average competitiveness point of 46.4 out of 100. The joint venture enterprises get the highest mark of 68.7, followed by Central State-owned enterprises and limited companies (50 points). The lowest mark is for local State-owned enterprises (37.5 points), which is 4 points lower than private enterprises. It is low competitiveness that makes agricultural and rural enterprises encounter a lot of difficulties when participating in markets, expanding production scale and integrating into global economy.



Graph 1: Competitiveness index according to type of enterprises

Source: Following VCCI, 2006

2.2.6. Low impact of agricultural and rural enterprises on rural economic development

Although small and medium enterprises contribute to 26% of GDP, 31% of industrial output, 49% of non-agriculture employment and 26% of all employment (Nguyen Ngoc Phuc, 2005), these figures are not impressive for a country that has up to 70% of its population living in rural areas. In addition, agricultural and rural enterprises have not created an expected pervasive effect, such as:

- Most of the enterprises in rural areas, especially those processing agriculture products and producing handicraft products have not established material zones to support the production. Materials like bamboo, wood, rattan and sedge are less available and must be imported. Sources of materials like tea, sugar cane and silk… are instable and contract relationship between farmers and enterprises is risky.
- The attraction of employment and jobs created at site are very low so additional income has not been created for local people and profits from non-agriculture has not become a source for re-investment in agriculture.

2.2.7. The development of agricultural and rural enterprises has caused environmental pollution, the lloss of agriculture land has led to difficulties for economic development

Some locals presently are not interested in developing small and medium enterprises in agriculture and rural development because this development process is believed to create several difficulties in developing local economy.

Environmental pollution due to waste from enterprises in rural areas is alarmingly increasing, especially the environment of craft villages. The main reason is production

technologies of enterprises are now backward and enterprises have not paid reasonable attention to investing in environmentally-friendly technologies.

Another disadvantage of the development of agricultural and rural enterprises is the loss of agriculture land and the breakage of agriculture and rural space when developing small and medium enterprises in rural areas. In many sites, industrial zones are not properly structured, leading to the destruction of infrastructure and even rural landscapes. Up to now, 20% of the district's administrative units and 34% of the commune's have not established plans yet.

2.3. Factors influencing the development of agricultural and rural enterprises nowadays

2.3.1. Investment and business environment of enterprises in rural areas

a) Poor infrastructure in rural areas resulting in higher investment costs

Transport, information, water and power systems are the main infrastructure in rural areas. The poor infrastructure in rural areas presently makes it more costly for investors to access locations, which discourages investment in rural areas.

b) Markets of sources divided

- As for land for enterprises

Land and production sites are always causing difficulties for the development enterprises in rural areas. Enterprises find it hard to access land and production sites due to many reasons such as there is a lack of detailed plans so that enterprises must negotiate with land owners and land can only be rented for 20 years and enterprises have to pay annual rent.

Enterprises have to pay high rent for land. Although compensation that enterprises give to local people is low, costs incurred in order to access and rent land are rather high. Some studies show that compensation that enterprises have to pay for production land accounts for 30-50% of the total costs. So, cost for getting land for production accounts for high proportion of enterprise's initial capital.

Moreover, scattered land is a factor causing impacts on the attraction of investment in agriculture and rural. Enterprises investing in agriculture and rural development need to have plenty of land to establish material zones. However, in many locals, land is given to farm households under various management ways. In the field of forestry, the Government requires that a project using more than 200 hectares of land must be approved by the National Assembly. So, slow ratification process causes a lot of difficulties for investment projects.

- Credit and capital markets for enterprises.

Similar to land and production site issues, lack of capital is causing main troubles for the development of enterprises in rural areas. These are the reasons to the difficulty in accessing capital incurred by enterprises in rural areas:

- Newly established enterprises normally do not have assets for mortgage.
- Financial institutions treat partially towards state-owned enterprises.
- Credit guarantee funds have been established for enterprises in 14 provinces but the results are still limited due to poor consultant and guarantee capacity of those funds.

c) Taxes and tax incentives

Existing tax system is considered a great barrier to the development of enterprises in general and agricultural and rural enterprises in particular. Complex and inconvenient system of the tax sector results in higher transaction costs for enterprises. Moreover, unreasonable tax principles and frequent adjustment have caused:

* The lack of transparency and fairness among sectors and business types.

* The opportunities for negative activities implemented by staff of enterprises and tax sectors.

d) It is risky to invest in agriculture in rural areas

Investing in the field of agriculture and rural development has always been seen of high risk, especially natural and market risks; low interests, slow capital turnover due to livestock and crop cycle. Furthermore, enterprises also expose to risk of poor security in many locals, epidemics and natural disasters….

e) Unfair treatment and bureaucracy in some locals

In many cases, investors are not keen on registering the establishment of enterprises because of:

- More legal, tax and reporting responsibilities

- Higher responsibilities for society, environment, public welfare, charity and local transportation system….

In addition, in some areas, local authorities do not create favorable conditions for enterprises and treat them unfairly, which leads to a significant increase in costs incurred by enterprises.

f) Lack of skilled labors in rural areas

Labor cost in rural is more and more costly and skilled labors are not available this is due to insufficient attention paid to training farmers for a long time. In the Red River Delta in 2006, training fee for a labor in rural was from 20 to 30 million VND. So, only 20-30% of farm households were able to send their children to vocational training

courses. Moreover, well-trained labors do not want to come back to their hometown due to low income and life standard.

2.3.2. Inner constraints, low starting point

Agricultural and rural enterprises show their disadvantages which are:

- Poor management skills
- Lack of financial transparency which causes difficulties in approaching bank loan.
- Insufficient investment in advanced technology and equipment.
- Shortage of information and loss bargain power in their relationship.

2.3.3. Business registering system in rural areas is causing a lot of inconvenience and there is a lack of policy encouraging local authorities to participate in developing enterprises

It is different from cooperatives, associations and farmer's groups, the registering process was stated in the 2003 Enterprise Law and the Decree No. 109/2004/NĐ-CP, by that provincial People's Committee or the Ministry of Planning and Investment are able to issue business registering license. However, most of the departments of planning and investment in provinces (excluding big cities) now have only 0.5-1 permanent staff who is in charge of this process. So, what they can do is to appraise enterprise's files and provide license rather than to advise and supervise.

In many areas, local authorities (especially at district and commune's levels) have not considered developing small and medium enterprises in rural areas a key to agriculture and rural development. This is because there are not enough policies to encourage and motivate (both economically and politically) local authorities to participate in. In fact, local authorities in communes and districts are now just paying attention to developing collective economy such as cooperatives and think that upper levels are in charge of the development of enterprises.

Moreover, in somewhere the idea of eradicating private economy still exists. Most of the enterprises have private ownership. So, if local staff is interested in the collective economy, he is thought to work for community.

2.3.4. Confusion in applying collective economy development theories

The slow development of collective economy in general and cooperative economy in particular is due to many other reasons, including:

Cooperative economy is a non-profit economic type. It is important to differentiate various types of joint stock companies and cooperatives.

- The variety of cooperative economy needs to be strengthened; more attention should be paid to other cooperative economy types such as associations, groups….

- It is different from other institutions, leaders of cooperatives must be not only responsible, prestigious, enthusiastic but skilled and capable as well. Cooperative's staff must be voted by its members and receive payment according to what he contributes. Management skill of cooperative's staff must be improved through training.

- It is necessary to communicate and prove advantages of cooperatives.

III. INSTITUTION AND POLICIES FOR THE DEVELOPMENT OF AGRICULTURAL AND RURAL AND RURAL ENTERPRISES OVER THE RECENT PERIOD

3.1. Achievements from establishing laws and policies for the development of enterprises in rural areas

Over the past few years, the Government has issued number of policies supporting the development of enterprises in general and agricultural and rural enterprises in particular. Polices issued are gradually creating legal foundations for enterprises to operate. These institutions and policies have helped achieve the following results:

3.1.1. Having issued Enterprise Law, Investment Law, Competition Law and Bankruptcy Law

The Enterprise Law was issued in 1999 in accordance with the 1992 Constitution of the Socialist Republic of Viet Nam to recognize the existence of various economic sectors (State-owned, collective and especially private sectors). However, the existence of both State-owned enterprise Law issued in 1995 (modified in 2003) and 1999 Enterprise Law has shown the differentiation between State-owned and private economic sectors. At 8th conference of 11th National Assembly on 29 November 2005, the National Assembly approved the 2005 Enterprise Law to replace the 1999 Enterprise Law and 2003 State-owned enterprise Law. The issuance of the 2005 Enterprise Law has contributed to specifying our Party and Government's policy to establish a legal system which is suitable to socialism-oriented market economy and international economic integration. The 2005 Enterprise Law has several new basic contents compared to the 1999 Enterprise Law such as: (1) expanding scope and objects, (2) simplifying and clarifying the process of registering business, (3) improving enterprise management, (4) strengthening government's management towards enterprises.

The 2004 Competition Law has provided legal basis for developing markets with the State's intervention, minimizing imperfect competition and creating process to deal with conflicts relating to competition among economic participants. On the other hand, the Law also clearly states that the State's administrative offices are not allowed to carry out any activities preventing perfect competition in markets.

The 2004 Bankruptcy Law prescribes the process and procedures for enterprises and cooperatives to carry out bankruptcy, which has helped market and its participants can operate normally even if they cannot participate in the market any more.

3.1.2. Issuing policies encouraging the career development in rural

One of the outstanding examples of this policy is the Decree No. 66/2006/NĐ-CP issued on 7 July 2006 by the Government on the career development in rural areas. Previously, the Prime Minister promulgated the Decision No. 132/2000/QĐ-TTg on some policies of land, raw materials, finance, market information and science and technology investment for the rural career development. MARD issued the instruction No. 28/2007/CT-BNN on strengthening rural career development and preventing environment pollution.

3.1.3. Issuing policies on infrastructure investment and dealing with environmental issues in industrial clusters and craft villages

This policy group includes decrees, decisions and instructions issued by the government and ministries (Ministry of Finance, Ministry of Natural Resource and Environment…). On 7 September 2001, the Prime Minister issued the Decision No.132/2001/QĐ-TTg on developing infrastructure and transportation program for craft villages. The Decision No. 184/2004/QĐ-TTg issued on 22 October 2004 by the Prime Minister on using State's credit capital for the program strengthening drainage canals, developing rural transportation system, infrastructure for craft villages in the period of 2006-2010; The Decree No. 80/2006/NĐ-CP on 9 August 2006 of the government on specifying and instructing Environment Protection Law…

3.1.4. Issuing policies on credit investment

These policies consist of many circulars issued by the Ministry of Finance on the use of credit fund for developing careers in rural and credit for export… An example is the Circular No. 113/2006/TT-BTC issued on 28 December 2006 by the Ministry of Finance to clarify how to use State's budget to support the development of career in rural areas; the Decision No. 08/2007/QĐ-BTC issued on 2 March 2007 by the Ministry of Finance on interests for export credits provided by the State. Moreover, the Government also allows locals (provinces) to establish credit guarantee funds for small and medium enterprises. Enterprises guaranteed by this fund will be able to get bank loans without mortgage. Thus, more and more banks are paying attention to enterprises. Since 2004, the Agribank has provided loans for many small and medium enterprises. Consequently, enterprises' loans have increased many times over the short period.

3.1.5. Issuing policies on trade activities, science and technology, extension and trainings

An example for these group policies is the Decree No. 39/2007/NĐ-CP of the Government exempting frequent independent business individuals from registering. The Decision No. 81/2005/QĐ-TTg of the Prime Minister issued on 18 April 2005 on supporting short term career trainings for rural labors. The Decree No. 56/2005/ NĐ-CP of the Government is to organize agriculture and fisheries extension activities. As for agriculture, the Decision No. 80/2000/QĐ-TTg was issued on 24 June 2002 by the

Prime Minister to encourage the linkages among stakeholders such as enterprises, farmers, banks and scientists, which in turn has helped farmers to produce and commercialize agriculture products stably.

3.1.6. Issuing policies on developing small and medium enterprises

The Decree No. 90/2001/NĐ-CP was issued on 23 November 2001 by the Government to regulate the support for the development of small and medium enterprises. The Decree No. 87/2002/NĐ-CP was on providing and using consultant services. The Instruction No. 27/2003/CT-TTg issued on 11 December 2003 is to promote the implementation of Enterprise Law, to encourage the development of small and medium enterprises. The Decision No. 236/2006/QĐ-TTg was issued on 23 October 2006 by the Prime Minister to approve the plan for developing small and medium enterprises for a five year period (2006-2010), in which the Government identified the goal of raising the number of small and medium enterprises nationwide to 500 thousand by 2010. In order to achieve that goal, the Government has provided some solutions like tax and land incentives or incentives for each business sector (see the Decree No. 90/2002/NĐ-CP of the government, the Circular No. 22/2001/TT-BTC and the Circular No. 98/2002/TT-BTC of the Ministry of Finance). However, these measures are quite general for all kinds of enterprises. There are not any incentive policies for particular enterprises in rural areas.

3.2. Shortcomings of policies and institutions

Although the government has tried to foster the development of enterprises by issuing series legal documents and policies, the implementation of these polices has shown the following shortcomings:

3.2.1. Inconsistent policies cause difficulties in predicting future policies of enterprises

The most popular policy establishment now is based on survey and discussing with enterprises to propose measures and policies to deal with difficulties of enterprises. There are few policies established on the basis of analyzing and predicting particular region and sector's strategies. Thus, existing policies focus on short term development, are inconsistent and often adjusted. Consequently, enterprises find it difficult to predict their future (profit and the chance for expanding operation…). Sometimes this factor makes investors feel unsafe.

3.2.2. Management system, legal practice and policies are of low quality and difficult to implement

It is a reality that management skill and legal consultancy of concerned departments supporting the development of enterprises, especially those in rural areas are of low quality and quantity. One businessman in rural area wants to expand his business but does not know where to seek for advice. Nearly 80% of foreign investors base on their

private relationship or their own experience when deciding to invest in the field of agriculture and forestry because they do not receive advice from concerned agencies. Moreover, there are too many departments responsible for dealing with the same problem so it is hard to agree on a particular solution.

3.2.3. Policies lack transparency, sometimes show the discrimination among business owners

One of them is the policy which gives preference to particular enterprises and business sectors. It is right to say that preferential policies and tax incentive have contributed to the development of enterprises in rural areas. However, in rural areas, tax incentive difference among different kinds of institutions operating in the same local or business can lead to inequality. Consequently, investors can take advantage of this to carry out their business which is not the one they register.

3.2.4. There is a lack of incentive policies (both political and economic) for local authorities to participate in the development of enterprises in rural areas

Presently, there have not been any policies encouraging local authorities to participate in supporting enterprises. In addition, in order to develop enterprises, local authorities sometimes have to sacrifice their benefits, expose to the risk of losing land and pollution.

In many regions, local authorities (especially at district and commune's level) are not really in the process. They have not regarded the development of agricultural and rural enterprises as the key to developing agriculture and rural.

IV. MECHANISM FOR DEVELOPING AGRICULTURAL AND RURAL ENTERPRISES

In order to make enterprises in general and agricultural and rural enterprises in particular to operate better, it is necessary to create good conditions for them to do at their most. Over the past period, this "mechanism" of agricultural and rural enterprises has shown some problems.

4.1. Economic scale has not brought about benefits for agricultural and rural enterprises as expected

Economic scale has not proved its outstanding advantage and the operation expansion of agricultural and rural enterprises has encountered many difficulties. One of the main reasons for this is the lack of uniform and clear planning of policies supporting enterprises that we have discussed above. Moreover, the separation and no linkages among labor, land, capital markets are also attributable to difficulties faced by enterprises during the expansion process.

4.2. Lack of mechanism encouraging the linkages between enterprises and other actors in the commodity chain and material regions

It is obvious that enterprises develop individually without linkage and support among themselves and with other actors in the commodity chain and material regions. This is because we have created a coordination-arbitrator mechanism for economic actors in general and for agricultural and rural enterprises in particular.

The Decree No. 80/2002/NĐ-CP issued by the government in 2002 to establish "the linkage among 4 actors" to support enterprises and farm households has not achieved what expected. In order to develop agricultural and rural enterprises, it is necessary to establish a legal mechanism to deal with three contradictory issues relating to enterprises in rural areas, they are:

Contradiction and conflict relating to land and site production for enterprises.

Benefit conflicts arising during the process of buying and establishing material zones.

Conflicts in dealing with environment issues

4.3. Lack of mechanism coordinating benefits of the development of agricultural and rural enterprises and for other stakeholders in rural areas, especially local authorities

In previous section, we analyzed the reason why local authorities and other actors in rural areas are not interested in developing agricultural and rural enterprises. That is there has not been any mechanism dealing economic benefits reasonably among rural actors in the process of developing agricultural and rural enterprises. Locals have complained that developing enterprises brings about benefits only for central government and enterprises themselves but not for local authorities even though it is local authorities who have to deal with many problems of the development such as land conflict, environment pollution and property right issues…

4.4. Lack of linkage between rural and urban areas and among SME or between SME and markets

Is it true to say that agricultural and rural enterprises are abandoned? Actually, the development of enterprise system in each commodity chain and in each local has not guided by a good strategy and plan. SME in rural areas have rarely received support from big enterprises in the field of capital, science technology, market information and human resource trainings.

4.5. Mechanism adjusting relationship between the State and enterprises

In order to show positive impacts of macro management on enterprises, the Government should not only create favorable legal environment but a simple and efficient operation system that will not cause unnecessary troubles for enterprises.

V. ORIENTATION OF AND VIEWPOINTS ABOUT THE ASSISTANCE FOR AGRICULTURAL AND RURAL ENTERPRISES

5.1. Policies

5.1.1. Treating all types of enterprises and their operating fields equally

In coming time, the law and policies on supporting agricultural and rural enterprises must be based on the principle of creating a consistent and equal environment for all types of enterprises and the economic fields they are operating in.

All current policies on encouraging enterprises need reviewing in order to eliminate the policies that discriminate enterprises in the same industry. Private economic sector needs advantageous conditions to develop without any limitation of scale, operating field, operating area… The state can still give preferential treatment to some special economic fields but has to diminish the incentives provided to some types of enterprises. The situation that enterprises operate under the cloak of co-operatives, farms… must be prevented.

5.1.2. Promoting the flexibility of resources and creating conditions for market mechanism to function well

Creating markets of resources, forming a consistent legislation system regulating the socialist-oriented market economy. Concentrating on solving the following issues:

- Land for enterprises: ensuring clarified, consistent policy on land and investments in agriculture and rural area.
- Setting up the planning for rural development in compliance with the progress of applying assistance for agricultural and rural enterprises.
- Making the procedures for the following activities simple, clear and decentralized: registering for business licence, paying tax, granting certificate of land use right; Stipulating and disclosing the regulations on the fees payable to localities.
- Creating a mechanism to make the assistance for agricultural and rural enterprises accompanied with promoting the inner force and social capital of rural regions, protecting environment, and ensuring order and security.

5.1.3. Promoting methods of assistance for the development of infrastructure in rural area and for public services

In order to attract investments in agriculture and rural area, the state needs to speed up the construction of infrastructure such as building traffic, irrigational works, installing electricity system for production, communication system... so that the costs of investments can be lowered. What is more important is that the different charges of electricity and water supply in rural and urban areas must be eliminated.

In the other hand, it is necessary to support agricultural and rural enterprises by giving incentives for agricultural expansion, providing loans, ensuring consumption of products and insurance for agricultural production.

5.1.4. To encourage the roles and the incentive of local authorities in developing agricultural and rural enterprises

The state and government need to research and make a mechanism to share the obligations and rights among authorities, enterprises and other actors in order to encourage authorities at grassroots level to support the development of enterprises at localities.

- Ensuring the land use right and the right of enterprises when localities withdraw land
- Clarifying tax policies, enterprises' payables to the state budget.

5.1.5. Setting up a strategy of workforce training for the development of the nation in general and of the agricultural and rural enterprises in particular

The agricultural and rural enterprises are now lacking skillful workers as well as senior managerial staff. Human resource is the key factor for the development of the national economy, therefore, training activities need to be considered as responsibility of the state, enterprises and inhabitant. However, it is essential to set up a long term plan for training workforce. Training activities should not be carried out through single projects or without clarified tasks and targets. It is necessary to support enterprises in remote areas so that they can get benefit from training courses.

Expanding training activities according to the direction of attaching training units with enterprises having demand by associating in training, providing training courses according to orders (enterprises should co-operate with training units including universities, research institutions to carry out training activities). It is also necessary to encourage enterprises to implement training activities on the premises; this method will help enterprises ensure their workforce, besides, thanks to the benefit that employees can get, they will work for long time at enterprises.

5.2. Policies on strengthening and developing agricultural and rural enterprises

5.2.1. Reorganizing the management over the state agricultural and rural enterprises

Determining on eliminating state-owned enterprises operating ineffectively by speeding up progress of capitalization or collectivization. Researching and finding out methods to transfer the resources of inefficient enterprises to co-operatives.

In the current international integration and market mechanism, in order to execute political function as well as diminish weaknesses of state enterprises, some major tasks in agriculture and rural area of state enterprises, such as providing some important and

sensitive services, need transferring to co-operatives or executing with the active participation of co-operatives.

- Organizing food production, storage and distribution; ensuring food securities
- Providing services for input stage of production in order to stabilize agricultural production, such as:
  - Supplying fertilizer, pesticide
  - Supplying materials, fuels
  - Providing veterinary, vaccine services.

State enterprises should not participate too much in distributing agricultural products in order to ensure a healthy competitive environment for agricultural production and trading and to abide by the principles of international integration.

The state enterprises operating in agricultural industry and rural areas concentrate on executing the tasks of protecting national interest and security, and serving the inhabitant's benefit such as managing forbidden forests, protective forests, large lakes and dams.

In the enterprises' operation, in order to promote capacity and effectiveness, the responsibility for managing capital, land and the responsibility for organizing business activities should be separated. In other words, it is necessary to abrogate the system of governing body, separate business activities from the management of the state and establish independent enterprises to administer the state capital. Another important thing is to do research and form institutions managing public land, operating independently of agricultural enterprises.

Clarifying functions, re-organizing plantations

In regard to the state-run plantations having special position related to national security and defense, the plantations managing many watershed forests, special-use forests, investors need to reserve the public land for the long-term purposes and investments in order to protect natural resources, ecosystem and environment.

In regard to plantations having large area, suitable for agricultural and forestry production, local organs in charge of controlling public land should be established in order to manage and exploit the land effectively.

5.2.2. Strengthening and improving the role of collective economy and cooperatives. Considering cooperative economy as an important part in the harmonious socio-economic development

If the socialism-orientation in rural areas can guarantee the harmonious economic development and bring about proper benefit for the mass of labors, cooperative economy needs to be invested and developed. Firstly, we must do research to clarify the

role, functions and organization of the collective economy in general and of the cooperatives in particular in the process of industrialization and modernization.

The cooperative economy also needs diversifying in models, occupations of labors in rural areas, business activities… The role of co-operatives should be shown in different fields and areas, not be limited in agricultural sector.

Models of cooperative economic according to territory, region or cooperative models of rural communities need to be developed and expanded. The cooperative economy plays important part in connecting and promoting the value (including the value of natural resources, workforce and immaterial value of native culture and knowledge…) of rural communities. This is the foundation for the diversified development of specific agricultural areas, the higher value of traditional and special products and the environment protection.

5.2.3. Developing private enterprises providing services for agricultural production and processing, and handicrafts

In order to develop this kind of enterprises, we need to associate the development of enterprises with the development of commodity chain; establish "supply chain", "value chain" and "associate cluster" among farmers, traders, and exporters inside and outside Viet Nam, actors in processing industry, tourism enterprises, hotels and restaurants in order to closely connect farmers with the market. Through sharing interests and profit among enterprises - farmers - locality, the farmers can gradually approach the knowledge of science and modern technology.

The state should provide more assistance for enterprises in:

- Approaching resources such as land, production premises, capital and qualified labors.
- Forming material supplying areas.
- Supplying cheap public services with good quality

VI. SOME SPECIFIC SHORT TERM SOLUTIONS TO DEVELOP AGRICULTURAL AND RURAL ENTERPRISES

6.1. General solutions

6.1.1. Speeding up administrative reform and rural management

Administrative reform needs implementing in both aspects:

- Reforming the methods of making policies for agricultural and rural development, including the development of agricultural and rural enterprises. Encouraging entrepreneurs, enterprise associations, scientists to participate in the

policy making process so that we can have the most innovative, realistic and feasible policies.

- Setting up policies that can create material and immaterial motivation. The interests of local authorities and communities should be closely connected to how they can attract investments into rural enterprises. Issuing policies to support local authorities to take part in assisting enterprises in the region. Reviewing and eliminating inconvenient administrative procedures which bring about great expenses for enterprises.

6.1.2. Creating good conditions for agricultural and rural enterprises to have production premises

- Improving quality of the project, plan for land use. The authorities are responsible for disclosing the project, plan for land use so that enterprises can be more active in choosing location for investment and avoiding the area that is not suitable to the planning.
- Studying, forming institutions to develop public land; helping enterprises to be more active in applying for land transfer or land lease.

6.1.3. Providing technical assistance and technology transfer

Building up national database to provide information on technology, equipment, technical standards, and quality standards for small and medium enterprises (SME). Researching the model of technology enterprise; encouraging the cooperation and combination among research divisions and production divisions of SME so that scientific, technological products can be traded, exchanged like other commodities.

Assisting SME in rural areas to register and protect intellectual property rights for products and services. Therefore, enterprises can trade, exchange their intellectual property rights or contribute capital by the intellectual property right.

6.1.4. Solution to assist market development

Changing the key trade promotion programmers of the nation from assisting enterprises to take part in exhibitions, trade fairs or carrying out surveys of foreign markets (accounting for 78%) to other activities such as training the export promoting skills, building infrastructure for export promotion, finding, collecting information on markets (accounting for only 22% of the total expenditure for trade promotion).

Subjects of the trade promotion campaigns will change from large enterprises and State corporation to enterprises in all economic sectors and SME in rural areas.

Issuing policies that create good conditions for combining SME in rural areas with large enterprises in urban areas; the large enterprises will share and supply services of market, capital, technology, training to SME in rural areas.

6.2. Issuing policies on institutions, organizations assisting the development of agricultural and rural enterprises

6.2.1. Encouraging the formation of enterprise associations, societies

The state needs to complete the draft law on associations so as to encourage the formation of enterprise associations, especially the occupational associations; respect opinions of enterprise communities; cooperate with enterprise associations to organize frank conversations in order to solve difficulties and create the most advantageous conditions for enterprises to develop as well as to ensure the state management in necessary cases.

6.2.2. Developing trade villages

Firstly, industry in rural areas should be developed in the direction of agricultural, forestry, aquatic processing so as to reduce the export of unprocessed agricultural, forestry, aquatic products. Besides, it is necessary to pay great attention to handicrafts, textile, garment, shoes, small mechanics, and small hydroelectric plant (supplying electricity for remote area). In regard to services, we should attach significance to financial, banking services, trade promotion, technical, training services, information, consultancy provision, construction, transport services... There should be an overall and long term planning for developing occupations, scale, standards of technology ... of the rural areas.

Restoring, developing traditional trade village along with tourism. At present, there are thousand of trade villages nationwide, including millions of handicraft enterprises, households, co-operatives and companies with nearly 10 million labors. In fact, enterprises doing business in trade village have great advantages to reap benefit from assets, experience, know-how of inhabitant, especially of craftsmen, from blood-relationships and traditional crafts.

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FOCUSING ON THE DEVELOPMENT OF THE SMALL AND MEDIUM - SIZED PROCESSING ENTERPRISES AND IMPROVING THE COMPETITIVE FORCE OF AGRICULTURE

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INTRODUCTION

Over the years, the Chinese government has put forward "promote the development of modern agriculture", it plays an important part in building the new socialist countryside and developing agriculture and rural economy in China. After entering the WTO, agro product has been facing with severe competition not only in international markets, but also at domestic markets. The influence of Chinese agriculture and its interrelation with the world agriculture have been increasing. Therefore, the improvement of agricultural competitive force has become the starting point for the modern agriculture. The establishment of agricultural industry system which will focus on agro product processing and positively extend the industry chain will be undoubtedly a strategic choice in improving agricultural competitive force. How to carry out this strategy? So I will introduce the experience of the development of the agro-product processing, taking the new type of industrial road, increasing the effectiveness of agriculture, increasing farmers' income and regional economic development.

I. TO RAISE THE OVERALL GROWTH LEVEL IN AGRICULTURE BY ADOPTING THE MODERN INDUSTRY SYSTEM

From the current agricultural development trend, the modern agriculture is an industry system, which combines production, processing and marketing. The competition of agriculture is no longer a competition in one sector, rather, it is a system competition arising from production, processing and marketing. To be precise, it is a competition between agro processing and marketing. Due to the reason that the traditional agriculture is a dual accumulation during the process of natural production and economic production, it is very limited in terms of its tolerance to face the natural and market risks. This requires the establishment of the modern agricultural production system, which will focus on agro product processing based enterprises, and we should apply the standardized, industrialized and internationalized production. Our practices are as follows:

1. Organize production with the focus on processing and trade

Chinese agriculture has entered into a new development stage, with enriched agro product supply and improvement of its quality. The demand for agro products has been

basically satisfied. The processing industry has shifted from the negative development of the "attached-processing", namely considering the processing of the surplus only, to positive development of "market-driven processing". In another words, we organize production depending on people's demand, and provide guidance to the crop farming and animal husbandry depending on the demand of processing. The formation and improvement of this new pattern has provided an effective guidance to the agro product varieties, regional scale and pattern as well as strategic readjustment, thus improving the overall industrial level of agriculture. During the Tenth Five-year Plan period, the annual increase rate of production value for processing industry on average was close to 15%, with the production value reaching 4.2 trillion Yuan in 2005, an increase of 16% year on year. The number of processing enterprises on scale across the country stands at more than 70,000, with total people employed reaching 18 million, accounting for 28% out of total employment in industry. At present, agro product processing industry has become the first pillar industry in our national economy, which is also one of fast growing industries in China.

2. Make the agro- product processing industry become stronger by relying on a group of small and medium - sized enterprises

The industry is a collective group of many enterprises, it need the support of the enterprise. Currently, there are 71,000 agro product enterprises with the sales income of more than 5 million Yuan, emerging a group of enterprises with relative strength, large scale, fast developing and large coverage capacity, which has resulted in a number of unique featured agro product processing zones. These enterprises being extended forward can possibly organize 240 million farm households to form large scale and standard production base. The enterprises being extended backward can establish marketing network, which will connect the first, second and ternary industry, combining various factors of agricultural production together, so as to promote the integrated operation of production, processing and marketing and gradually develop the small scale enterprises into large scale ones, connecting small scale production to big markets, so can solve the contradictions between millions of farmers and changing markets.

3. Improve system mechanism and increase farm's income

In order to increase farmers' income, the Ministry of Agriculture has launched a plan of action on "Agricultural Industrialization and Organization" with the aim of promoting the pattern of interest-connecting between enterprises and farm households on "Leading Enterprise + Cooperatives + Farm Households" , "Industry Association + Leading Enterprises + Cooperatives + Farm Households". On this basis, we will explore the new pattern and mechanism, such as establishing agro-product processing enterprises by farmer co-operatives, farm land operation right to be a shareholder, company + intermediate agency + shareholding organizations by farmers. So we can strength the interest-connected between enterprise and farm households, building an interest-connected mechanism for interest sharing and risk sharing. The farm households can

maximally share the benefits of processing and circulation as well as industry development.

4. Invigorate the agro-product circulation

With regard to building markets, we will accelerate the development of marketing network, form an agro product distribution network of rational design pattern with wholesale markets as the center and trade fairs, retailing stores and supermarkets as the basis. We also encourage the new type of circulation, such as modern circulation, chain-operations and e-commerce business. In the areas of market organization, we will develop various service intermediate agencies, associations and chambers of commerce, so as to enlarge the size of rural agents and nurture various market entities. In order to promote agro-product trade, the Ministry of Agriculture has held "China International Agro-product Trade Fair" for four consecutive years, which resulting in great achievements.

II. TO ENLARGE THE FUNCTIONS OF AGRICULTURE AND AGRO-PRODUCT

According to the economic development and pattern of growth in some countries, when their per capita GDP exceeds US$1000, the market's consumption of agro-product begins to shift from direct consumption to an indirect one with focus on processing industry, and such a shifting period is now underway in China. We should take the opportunity to develop the agro product processing industry in order to enlarge the functions of agriculture and agro product. The priority of our work for the future shall be placed on the following areas:

1. Enlarge the function of agriculture and materialize the shifting from uni-functional to multi-functional agriculture

In China, agriculture is shifting from uni-functional agriculture which supplies mainly fresh product to multi-functional agriculture which can not only produce food, feeds, energy, but also serve for processing and ecological purposes. Moreover, the future enlargement also includes agriculture for sightseeing and leisure and so on. During this shifting, agro product processing is a crucial link. Because it can meet people's demand for safe, nutritious, convenient, diversified and customized agro product and processed products. Therefore, we should combine the regional layout of the competitive agro-product areas with the good quality grain industrial project, give priority to the competitive processing industry and trade which make more contribution to agricultural production, increase the farmer's income and promote the export. We also develop deep processing and integrated utilization to increase the added value of agro product.

2. Innovate the thoughts and establish the new concept of developing agro-product processing industry

This new concept can be summed up in following terms: safe, nutritious, fast and convenient. First, safe. In order to ensure food safety, the Ministry of Agriculture

launched a campaign with the aim of strengthening supervision and management for agro-products' quality. By intensifying efforts on quality inspection and supervision on the producing environment, agricultural inputs and agro-products, we shall promote the certification for pollution free farm produce, green food and organic agro-products, implement the agro product origin export system and the quality tractability systems, strengthen market access management, intensify the rational use of pesticides, veterinary drugs and additives, improve agro-product quality and safety supervision system, strengthen law enforcement and supervision, and strive for the clean production, standardized operation and institutionalized supervision on quality and safety. Meanwhile, we should establish a quality control and tractability system which shall cover the whole production process so as to ensure the food quantity and safety. Second, nutrition. By encouraging enterprises to engage in technology and product innovation, the government will basically satisfy the public demand for improved nutrition, gradually eliminate malnutrition and nutritional imbalance etc. By this way, the dietary structure and nutrition level of urban and rural population can be improved continuously, and people's health status and living condition can be enhanced to a great extend. Third, fast and convenience. We should satisfy people's requirement for a modern life, further develop quality staple food, leisure food, convenience food, fast food and nutritious healthy food, so as to meet the market demand in an all round way.

III. TO INCREASE THE INTEGRATED BENEFITS FOR AGRICULTURE BY EXTENDING THE AGRICULTURE CHAIN

The key for an industry to attract advantageous factors of production is whether it can generate average benefits and surplus benefits on basis of that. Therefore, focusing on market, we will develop profit-driven agriculture and processing industry, which will press ahead agriculture from vulnerable industry to a competitive one. We will increase benefits through the following three areas:

1. Extend industry chain and increase benefits

If we want to change the uni-function of traditional agriculture which has been affected by nature, resources and market conditions, we should equip agriculture with modern facilities, transform agriculture with modern science and technology, upgrade agriculture with modern industry system, push forward agriculture with modern way of operation, guide agriculture with modern concept of development, develop agriculture by nurturing new type of farmers. So can upgrade agriculture by depending more on water conservation, mechanization and IT application, and increase land output, resource utilization and agro-productivity and improve the quality, efficiency and competitiveness of Chinese agriculture. Meanwhile, extending the industry chain by the way of processing, storage, transportation, fresh-keeping and packing etc, we can establish a new industrial system encompassing production, processing, storage, transportation and marketing and thus, creating new engines of growth and new space for development. According to estimation, in China, every increase of the output

proportion for agro-product processing in the whole agricultural industry by 0.1 percentage point means an increase of 2.3million job opportunities and an additional increase of RMB193 Yuan for each farmer.

2. Transform the pattern of growth

Deep processing is a key issue for industry upgrading. We should change from extensive farming to an intensive one. Efforts shall also be made to develop cyclic economy, improve comprehensive utilization and efficiency of agro-products and by-products and increase the value added value of agro-products. The core is to focus on leading enterprises, introduce modern concept and mechanism to develop agro-product processing industry, encourage technical innovation and upgrade the level of agro-product processing. We will apply marketing strategy to invigorate agro-product circulation and introduce multiple channels of financing so as to increase input in agriculture and agro product processing. We should improve the quality and efficiency of agro product processing industry according to the requirements of industrialized operation, factory scale production, market-based marketing, scientific management and social service.

3. Optimize regional pattern

At present, the development of agro-product processing industry is imbalanced in the eastern, central and western part of China. The mid-west part of China lags behind relatively, whose advantages in raw material resources are yet not to be transformed into industrial advantages. There is a mismatch between the regional distribution of agro-product processing industry and that of agro production and the mechanism under which the agro-production and agro product processing reinforcing each other is not yet to be built. Because of that, agro product processing industry's bourgeoning demand for raw materials is unsatisfied, which increases the cost for long-distance transportation and losses during the logistic process. And as a result, resources are wasting. To this end, the Ministry of Agriculture put forward the priority areas for agro-product processing and the regional pattern during the Eleventh Five-Year-Plan Period. We also require that all localities shall allocate their factors of production in a rational way in line with their comparative advantages on resources and location, concentrate agro production on advantageous areas, strengthen R&D of process able new product varieties and standardized production as well as production on scale, develop the agro processing industry with competitive edge and characteristics so as to shape agro production and processing belts suitable to different areas, strengthen the link between processing enterprises and raw material bases, realize the integration of products at the upper and lower link of the industry chain and scale up industrialized production.

IV. IMPROVE TECHNICAL INNOVATION CAPABILITY

Science and technology are the primary productive forces, and technical innovation may be regarded as number one in terms of competitiveness. In the past, the relatively lower

technical innovation capability, lack of technical reverses, poor equipment and facilities of the industry have brought about a lower technical level, and to some extent, restricted development. Therefore, in recent years, we have paid close attention to promoting the technical progress in the following aspects:

1. Increase investment to enhance overall technical innovation capability

With increased financial support from the Chinese government, we have implemented a series of major specialized projects, developed a batch of brand products with bigger market shares in both domestic and international markets, supported a number of leading enterprises with competitiveness, established a group of demonstration bases for technical innovation and industrialization, and fostered a scientific team with the innovative capability. All this has contributed to the upgraded overall technical level of the industry.

2. Promote innovation in an integrated way and combination of production, education and research to form technical innovation system

During the Eleventh Five-Year Plan period, the priorities of our work are placed on the following aspects: integrating technical resources, strengthening collaborative research and exchange with other countries, intensifying technical integration and innovation, and enhancing the independent innovation capability of enterprises. To this end, we have encouraged enterprises to work together with research institutions, colleges and universities to set up technical innovation agencies. Regional technical R&D centers have been established by relying on support from large enterprises in localities where required conditions are available. We have set up national key R&D centers in this regard. A number of R&D sub centers have been set up by relying on the existing research institutions in major production areas for competitive agricultural products

3. Popularize key technologies to raise technical level

We have further improved transformation mechanism of scientific and technological achievements in farm produce processing, linked research institutions with enterprises to transform rapidly technical achievements into productive force through convening technical meetings, setting up websites and building platforms. We have organized experts to select key technologies for processing grains, oil seeds, vegetable and fruits, livestock and aquatic products for prioritized demonstration and promotion in groups so as to constantly increase the technical weight in processing agricultural products.

V. IMPROVE PERFORMANCE AND COMPETITIVENESS

The processing industry of agricultural products has made fast development, turning out to be one of the most vigorous industries in the national economy. Nevertheless, there are still many problems and weakness in itself, such as small scale, lower centralization,

circulation at low level, poor quality and skill of employees. Taking into consideration these problems and weakness, we have focused on the following measures:

1. Increase financial support

We have increased financial support for the industry, strengthened construction of infrastructure for processing of key competitive agricultural products, maintained greater support for circulating fund of enterprises. We have also encouraged enterprises to make use of capital markets for direct financing, and spurred on establishment of specialized guarantor agencies in places where required conditions exist to offer the industry financial guarantees.

2. Establish and improve social services

We have encouraged service agencies of various kinds, in response to needs of the industry, to provide service in giving guidance to starting business of processing, financing guarantee, technical support, exchange of information, policy advices, training of personnel, development of standardization, and quality inspection and testing. We have encouraged processing enterprises of the same kind to set up specialized associations for better self-discipline and coordinated solution of internal problems, supported theses associations to call on export enterprises to take an active attitude toward restrictive measures adopted by other countries such as discriminatory antidumping to promote their healthy development. We have actively supported enterprises engaged in processing and marketing of competitive agricultural products take part in large scale exhibitions/trade fairs held at home and abroad to make their products better known to the world markets for increased market shares.

3. Enhance vocational training

A majority of processing enterprises in the country is characterized by labor intensity. After moving out of farming production, many rural surplus labors are employed by these enterprises. In general, they are of lower quality and poor skill, which have adversely affected the quality of processed products to some degree and even hold up development of these enterprises. To make a change for better, we have actively promoted vocational training and appraisal in this regard. Up to now, a total of 2.80 million rural workers have received training nationwide, of which about 100 thousands obtained vocational certificates issued by the state.

4. Facilitate implementation of key tasks

During the Eleventh-Five-Year Plan period, we provide support for this industry through the following six projects:

a. Projects for establishing demonstration bases: We are going to establish a number of national demonstration bases by taking into account development foundations and

characteristics of local processing enterprises in the suburbs of big cities and in agricultural processing areas with economic advantages that satisfy requirements for sufficient supply of farm produce and right locations of markets and for enterprises to get together.

b. Projects for development of production bases of raw materials. The Regionalization Plan of Competitive Agricultural Products identifies 13 competitive agricultural products such as wheat and corn for special purposes, high quality rice, high oil content soybeans, citrus, apple, sugarcane, beef, mutton sheep, pig, milk and aquatic products as well as 41 production regions where required optimum production conditions exist. In these production regions, we are going to select and breed varieties/breeds and establish raw material production bases for processing purpose so as to meet requirements for development of the industry.

c. Projects for innovation of processing technology. We are going to build technical innovation systems and mechanism for the industry through integrating forces available from universities, colleges and research institutions.

d. Projects for assurance of quality and safety. We are going to reinforce standardization management and quality control of raw materials throughout the whole process from production to processing so as to improve quality and safety of processing agricultural products.

e. Projects for development of IT application-based processing industry. We are going to promote the industry to take a new path through making use of information technology.

f. Projects for starting processing enterprises. We are going to strengthen support and services for starting small and medium-sized processing enterprises to rationalize the structure and product mix of the industry for more job opportunities of rural labors, higher farmers' income and stronger processing capability.

CONCLUSIONS

We are fully aware that there is still long way to go for promoting development of modern agriculture in China. We are convinced that we will be able to accelerate the process of realizing agricultural modernization so long as we adhere to taking the processing industry of agricultural products as our priority while promoting development of the industry.

SMALL AND MEDIUM ENTERPRISES IN AGRICULTURAL SECTOR

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INTRODUCTION

The industrialization and modernization of the economy need a structural change in the labor force and enterprises. Following processes will be happen during this period:

- The rural exodus: a part of peasant is quitting the rural areas, searching jobs in the urban areas.

- A part of agriculturists is leaving agriculture for industrial and service jobs in the rural areas.

- A part of agriculturists will continue to develop commercial agriculture but with a higher labor productivity.

The structural change of labor force is determined by the labor use projection and policies favourising the change. This paper will discuss problems of the labor and enterprises structural change in the rural area.

1. The rural exodus and the need of the development of non-agricultural activities in the rural areas

Rural urban migration was viewed favorably in the economic development literature. Internal migration was thought to be a natural process in which surplus labor was gradually withdrawn from the rural sector to provide needed manpower for urban industrial growth. It is now abundantly clear from recent LDC experience that rates of rural-urban migration continue to exceed rates of urban job creation and to surpass greatly the capacity of both industry and urban social services effectively to absorb this labor. On the contrary, migration today must be seen as the major contributing factor to the ubiquitous phenomenon of urban surplus labor and a force which continues to exacerbate already serious urban unemployment problems caused by growing economic and structural imbalances between urban and rural areas (M. Todaro, 1982). Especially in the LDC the population growth rate is higher than in the developed countries during their industrialization, the labor surplus is more severe. To day the technologies using in the modern industry are more capital intensive than in the past. Before this situation developing countries must create an appropriate rural urban economic balance by creating more non agricultural jobs in the rural areas in order to decrease the rate of urban migration. Several recent studies have addressed the importance of off-farm

incomes in rural areas of the developing world. They constitute between 40 to 50% of total rural households' income (World Bank, 1998 and 2003). In China, participation in non-farm activities has a positive spillover effect on household farm production. (A. de Janvry, E. Sadoulet and Nong Zhu, 2005).

The driving factors of the development of the rural non agricultural activities are:

- The production linkages between farm and non farm sectors,
- Activities arising from rural consumer demand for non farm products,
- Activities arising from the abundant supply of labor farm peasant families.

2. The craft villages in Viet Nam

In Viet Nam there exist a network of craft and trade villages which contribute to the development of non- agricultural activities allowing peasants to create employment and income. There are more than 2100 traditional craft villages in the whole country employing more than 2 million people. The Red River delta now contains more than 850 craft villages, roughly half of which are new.

During the collective period the activities of these villages were repressed. After the Renovation there was a process of resurrection and development of craft villages. In Viet Nam we have a proverb "the trade needs friends and the craft needs corporation". The main factor which determinate the success of craft villages is the cooperation but not the concurrence. The development of craft streets in towns and townships is the demonstration of this axiom. Craft streets-guilds in Ha Noi are the market for the craft villages. In the past Ha Noi was called" big market" (Ke Cho).

This process of the evolution of a peasant household from an agricultural household to a small non agricultural household consists of the following steps:

1. The peasant households begin off-farm jobs.
2. The households develop non-agricultural activities as a secondary activity together with the agricultural activities.
3. The non-agricultural activity become more and more important and become main activity.
4. The household left agriculture and concentrate only on non-agricultural activity.
5. The opportunity to have a source of income from non-agricultural activity,
6. The occurrence of a market for a new product,
7. The occurrence of an appropriate technology for the new activity,
8. The occurrence of labor force for the new activity,
9. The possibility of the investment to develop the new activity

In the present time with the integration of the Vietnamese economy to the global market, many craft villages meet many difficulties for the development. Without modernization and adaptation craft villages cannot survive. A new process is happening, that is the emergence of clusters of village industries and agricultural clusters. In some areas, especially in the Red river delta many craft villages develop industrial clusters consisting of a group of villages with new market, new products, and new technologies. We consider that this process is a new institutional process boosting the development of the economy and agriculture in the rural area. The driving forces of this process are:

- The production linkages between farm and non-farm sectors,
- Activities arising from rural consumer demand for non-farm products,
- Activities arising from the abundant supply of labor farm peasant families

The emergence of clusters of village industries and agricultural clusters is a spontaneous process in the search of modernization of non agricultural activities. Craft villages clusters are non organizational and informal institutions boosting the development of the economy and agriculture in the rural area. This process is determining by the following factors:

- Accumulation of the capital in the agricultural and commerce sectors
- The existence of a traditional network of handicraft boosted by the 36 street-guilds of Ha Noi
- Social capital and social relation (trust)

It is a process of the development of the household economy and the market economy, of the economic diversification and the creation of employment, of livelihood improvement and rural development. But this process is not supported by state policies. Households prefer to be informal than to be formalized.

It is a Governance issue. It is a Rights issue, since its workers and operators lack social protection, representation and environmental protection. Social capital – "features of social organization, such as trust, norms, and networks that can improve the efficiency of society by facilitating coordinated actions" (Putnam et al, 1993).

According to a recent survey of the general statistic office of Viet Nam on industrial enterprises (2007) in 2005 there are 104 194 SME, which consists 91,9 % of the total number of enterprises. Enterprises in agriculture were 0,87n%, in forestry – 0,29 %, in fishery –1,2 %, in food processing –4,55 %, in wood and bamboo processing – 1,59 %. The informal enterprises could not be count, but there are a great number as craft households in the craft villages, the family farms, producing agricultural commodities, family enterprises in food processing which are not registration as SME. For example in the Daily people (2006) the number of food processing enterprises was 400 000 which 90 % as SME, and the food processing craft villages were 220.

The constraints in the development of food industry SME are:

- The state orientation in the development of food industry is to create big state enterprises and to promote contract farming with farmers. This development strategy is not favorite the development of small industry in this sector.
- The food industry is too complex and dispersed, so it is difficult to develop craft villages clusters for the modernization of the technology

3. Craft villages in agricultural and food industry

There are many village clusters in agricultural and food industry which are very dynamic, modernizing their products and technology in order to enter in the world market. We show few examples:

***The Dong Ky wood processing cluster, Tu Son district, Bac Ninh**:* This commune consists of 3 villages, with 3 300 households and 15 400 people. More than 55% of household is involving in wood working in 30 limited companies, 14 private enterprises, 65 cooperatives and 1 800 family enterprises with 12 300 permanent within it 6 000 from other communes. Dong Ky creates employment for 10 communes. It was a village of buffalo traders. In the late 1970s, residents of Dong Ky began using their experience as traders to expand the market for traditional inlayed furniture first within Viet Nam and then internationally. As residents of Dong Ky moved from trading to manufacturing, the village gradually became the center of production, major point of sale, and source of sawn tropical hardwoods for the entire cluster. The villages continue to produce furniture of the highest quality.

The cassava processing cluster in Hoai Duc, Ha Tay:

This cluster is composed of:

- Cat Que commune agricultural products processing craft village with 3 277 workers,
- Duong Lieu commune agricultural products processing craft village with 6 920 workers,
- Minh Khai commune, agricultural products processing craft village with 1 761 workers,
- Duc Giang commune food processing craft village with 1 646 workers,
- Tan Hoa commune (Quoc Oai district) food processing craft village with 2 703 workers.

In Cat Que, Duong Lieu and Minh Khai communes from a small scale and handmade craft with low turnover, agriculture product processing craft has been improved rapidly in term of productivity and quality, suitable with the requirements of market economy by introducing science and technology applications. There are 6 095 households with 15 650 workers participated in the craft, which created jobs the whole year around. The

value of production is 211 milliards dong per year with 80 % from processing). In Duong Lieu commune there is a well-known auction center for cassava bulb.

The Me So cluster in Van Giang district, Hung Yen

This village with 390 m^2 of land per capita, after the Renovation change the production orientation from grain to the ornamental crops. Formerly this village produced young plants of Kim Quat (fortunella), a decorative plant using in the occasion of Tet (lunar calendar new year), for some villages around Ha Noi. Now these villages were engaged in the urbanization, Me so took the relay in this production and organize a network of young plants production in the surrounding area, create many employment for peasants. The production of Kim Quat now extend in all the country and Me So provide young plants for many provinces far from Ha Noi. From 1999 to 2003 the value of production raised from 4.2 to 6.8 million dong per capita. In the field of animal husbandry this village developed pork production and process into cooking pig fat and dry pork lean meat for the market of South Viet Nam.

The Gia Loc vegetable cluster in Hai Duong

This cluster includes 11 communes, after the Renovation still developed vegetable production in the RRD, while in all the region this production declined due to the lost of export market for the ex-European socialist countries. This production was initiated by some vegetable growers of the region, they concluded contract with many vegetable production areas and organize a network of commercialization from the North to all provinces in the south. In 1998 the vegetable production of this area was more than 3 200 ha with 60-70 thousand tons of products.

The potato production cluster in Que Vo, Bac Ninh

This cluster includes 9 communes. It was initiated by a group of 10 potato growers of this area, conclude contract with peasants, providing them virus free potato seed of VASI, advancing inputs for poor household and purchasing all the production. They organize together with merchants in Bac Ninh city to transport potato to the South and to export in Cambodia. This area cultivates 2000 ha of potato every year.

The Nam Sach pork production cluster in Hai Duong

In Nam Sach district, Hai Duong province includes 12 communes. In the end of 1990 the demand for lean meat in the urban market incites the production of high lean meat percentage exotic pigs. This production needs a technical support in genetics, animal feed and veterinary that existing services cannot provide to farmers. In the marketing system there is not a price system in function of the quality of the pig. Farmers with the help of VASI organize new type of cooperative engaging in the production and marketing service for farmers. Each member raises more than 115 heads of pigs per year. A first cooperative of 20 members was created in 2002 gives a convincing example to farmers. Now in this area 8 cooperatives were found and farmers is

preparing to organize a cooperative federation in order to integrate the production with processing and marketing to help farmers to avoid risks of the market economy. The Nam Sach pork is now a known label in the RRD.

The Thanh Ha lychee production cluster, Hai Duong

This cluster includes 4 communes with 148 members. Thanh Ha is the place where the lychee cultivation began in Viet Nam in the 19 the century. The lytchee of Thanh Ha has a good quality and reputation. But now in the market Thanh Ha farmers cannot sell their product with a better price than lychee of other new regions with worse quality. VASI is helping farmers in Thanh Ha to organize an association in order to create an "Appellation d'origine controlee" (AOC) and to fight against fraud. Now the Thanh Ha lychee already has a reputation recognized by the Ha Noi market. The amount of products is about 200 – 400 tons of fruits. The association founded by farmers is a new type of institution helping to recon ciliate the contradiction between producers and traders. The division of profit of the association is Producers: 2, Traders: 1.

The aromatic rice production cluster of Hai Hau, Nam Dinh

This cluster restored the production of a traditional variety of aromatic rice: the Tam xoan rice variety belonging to the Japonica subspecies. This variety disappeared during the Green revolution. Hai Hau farmers for many years tried to conserve this traditional plant genetic resource, cannot do it due to fraud of traders. An association regrouping both farmers and traders in a collective action in order to conserve this precious heritage. The association helps farmers to create a common technical process, to reselect variety, to process the rice with an appropriate technology and to organize the marketing of the product. Now the AOC is recognized by the market and farmers can sell it with a better price. In 2004 the association has 437 members, produced 54 ha of Tam Xoan rice with a production of 174 tons.

4. SME for the development of the commercial agriculture

From cited examples on craft villages clusters, we see that beside the craft villages clusters there are an emergence of agricultural clusters, which is the result of the development of the commercial agriculture. The aim of the structural change in labor force in the countryside during the industrialization period is to create more favorable environment for the development of the agriculture. The objective of the development of the agriculture in this period is to increase agricultural products for the urban consumption and the export. The reduction of labor force in the agriculture will create condition for the increase of agricultural land per household and to increase the labor productivity. For the realization of theses objectives we need to develop family farm, which are really SME in agriculture. But in the present time there are not yet policies for the encouragement of this process.

The development of commercial agriculture needs the development of new market institutions in the countryside. The emergence of SME in the trade of agricultural products is developing very fast instead of the policies encouraging State owned enterprises in agro products business and contract farming.

Cooperatives and pre cooperatives farmers groups play an important role in the creation of family farms and marketing institutions. The participation of farmers to the market will improve the bargaining power of farmers in the market.

5. The strategy of development of the rural industries

Only 20 – 25% of total gross industrial output originates from rural areas. Industrial production is highly concentrated in two industrial development triangles of the North and the South which account for almost two thirds of gross industrial output in the country.

Ten million unemployed and underemployed and over one million potential new entrants to the labor force per year are a social tragedy of immense magnitude and a risk to stability. This is particularly a rural problem. Urban unemployment ranges 4.6 - 7.3% amongst regions. Underemployment is estimated to be greater, totaling 26% in rural areas and 17% in urban areas. Underemployment in the agriculture sector varies from 28% to 35% for most regions UNIDO, 1998).

State-owned enterprises do not operate efficiently, despite the fact that they have better access to land, infrastructure and credits, due to social responsibilities assigned to them.

Eighty percentage of rural industries surveyed by MARD fall into the category of agro/forestry/ fishery processing, the production of building materials or handicrafts indicating backward linkages with rural resources. Forward linkages appear to be modest, as production concentrates on final consumer goods rather than on intermediate goods. Non-farm household enterprises and mixed type households sell 93% of their products within the same province and only 7% to other provinces. None of them exports. Out of the non-state incorporated enterprises, 75-78% sells their products in the same province, 17-19% sells in the domestic market outside the province and only 6% export their products (UNIDO, 1998).

The SME sector would lay off workers, and foreign owned enterprises have some potential for increased industrial employment in rural areas. Private, domestic incorporated enterprises, mostly SME, have a large potential in the medium to long term. Even a strong growth rate would not be sufficient to effectively address the unemployment problem in the short to medium term.

The household enterprise sector represents the likely largest potential in the short to medium, and medium to long term. Even moderate growth rates would provide numerous employment opportunities. In the short to medium term, poor infrastructure would offer natural protection of their market. In the longer term, however, the limits of the household sector are set by local demand. However, as competition increases, only

those that become more efficient and eventually transform into incorporated enterprises would survive. This transformation process would be the challenge.

The department of agrarian systems of the Viet Nam agricultural science institute worked out a simulation model of the Viet Nam development to 2020. The best scenario is tat when the industrialization is conducted both in the urban and rural areas. This scenario shows that if the growth rate of the GDP will be 8, 35 % per year, the agricultural GDP will be 3, 5 % per year. The structure in 2020 will be (%):

	Agriculture	Industry	Service
GDP	10	52	38
Labor force	23	47	30

The agricultural labor force will be reduced from 19 million in 2002 to 9,5 in 2020, but the rural labor force will be 72 % of the total labor force and the non agricultural labor force will be 70 % of the rural labor. So the role of the rural industrialization will be very important in the industrialization of our economy.

The strategy of the rural industrialization in Viet Nam is to assure that the rural area would produce enough food for all people and raw material for the development of the industry. The objectives of the development is to achieve an appropriate rural urban economic balance by creating more non-agricultural jobs in the rural areas in order to decrease the rate of urban migration by developing rural industry and service. Beside the development of non-agricultural activities, the agriculture, including forestry and fishery must be modernized in order to increase the labor productivity and to assure for producers a higher income like non-agricultural activities. For this purpose these sectors should be mechanized and use more intensive technologies. From the institutional point of view, the development of SME should be emphasized, especially in the field of food processing, crop production, animal husbandry and agricultural services.

6. Main policies to enhance capacity of the SME in agriculture

- To create a fair rural market. The rural market in the present time is not fair. It let to the failure of the contract system between processing companies and farmers. The origin of this phenomenon is that farmers don't have a bargaining power. We think that the fair trade should be developed on the base of a program of the improvement of the quality of agro products. A system of institution of controlled geographical origin of products and of sanitary safe products is establishing for this purpose. In this program the institutional basis is the association regrouping both producers, processors and traders for the struggle against fraud.
- The establishment of new agro-processing SOEs supported by subsidized credits and unduly high protection by import restrictions or tariffs should be reduced and the capital should be use in the support of SME in food processing. The credit system for the SME should revised and improved.

- To improve the credit, tax and support systems for SME in order to attract the formalization of informal SME.
- The land policies should be revised in order to preserve the good agricultural land for cultivation and to transfer the land of migrants and peasants leaving the agriculture to be favorite the establishment of family farms.
- To give a lower priority to industrial investments in the deltas, and attach higher priority to the border of deltas and mountainous zones. Develop an industrial growth hub concept for rural towns and district centers. To develop industrial agriculture and Service Hub from craft villages clusters or nurseries to develop rural enterprises. Review activities of industrial research and development institutes with a view to rendering their activities more market oriented, to strengthening their links with the enterprise sector, and to disseminating information on technologies and make such information more easily accessible to rural enterprises. These Hubs will form the national innovation system of the country.
- To develop a system of rural tourism in order to develop tourism as an activity in the rural development.

ENHANCING CAPACITY OF SMALL AND MEDIUM ENTERPRISES IN FRUIT INDUSTRY

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ABSTRACT

Viet Nam has potential for production and export of tropical fruits. We have a fruit trees areas up to 760,000 ha. However, we export just 260 million USD of fruits and vegetable in 2006.

The small in export because of many reasons, one of them is the weak link between small and medium enterprises with producers. The small and medium enterprises said they are small enterprises, hence, they can not sign contracts business with farmers like big enterprises like METRO, VINAMIT, DONATECHNO. The small and medium enterprises like HOANG GIA, GINO DAO just buy the fruits from the producers when they are ready to sell. On the other hand, the big enterprises sign the contract with farmers, give technical guidance to the farmers how they have to produce their fruits to meet market requirements.

To support small and medium enterprises to perform better, the government sectors should support them market information, technical training courses, good interest rate to build packing house, and export promotion activities. Without these supports from the government, the small and medium enterprises can not give supports to the fruits producers as they can not sponsor technical training courses to the producers, can not support the farmers to obtain EUREPGAP standard like big enterprises METRO doing now for producers.

The small and medium enterprises should join hand under the VINAFRUIT (Viet Nam Fruit Association), this join efforts will help them enhance capacity of negotiation to their customers (big enterprises), improve the quality of the fruits and get better price.

I. CURRENT SCENARIO OF THE TROPICAL FRUIT INDUSTRY OF VIET NAM

a. Fruit tree areas

In 1995, the fruit tree areas in Viet Nam just 346,400 ha, fruit areas go up to 767,100 ha in 2005 (in Figure 1). We plan to have one million ha in 2010.

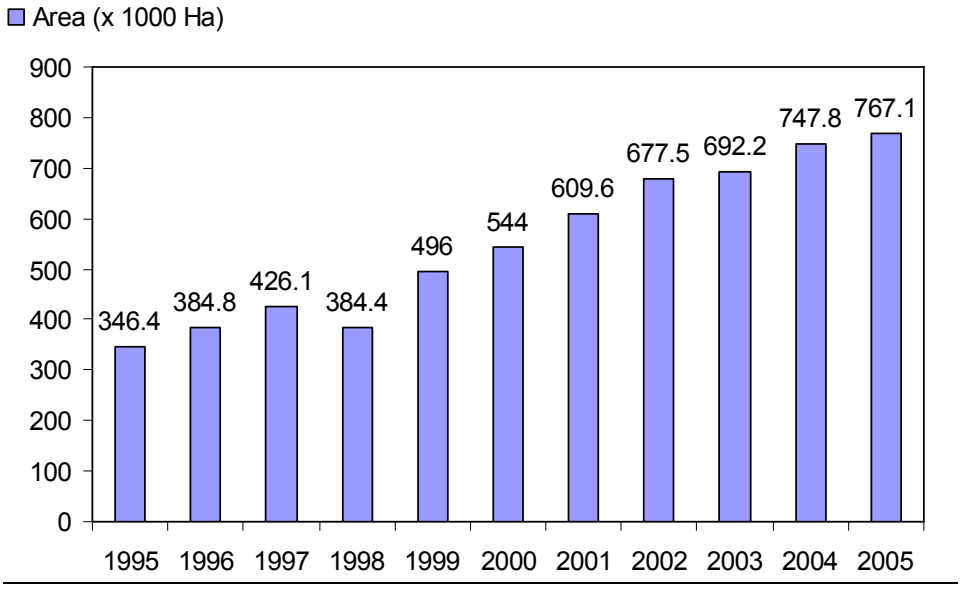

Figure 1. Viet Nam fruit areas during 1995-2005
(General statistic Department, MARD and Provincial Agriculture Services)

Fruit tree areas in Viet Nam is 767,100 ha (Table 1), which is higher than earlier target plan (750,000 ha). Among the fruit tree areas, the Mekong Delta is the largest with 269,000 ha which grow tropical fruits. The second largest is the Northern high land with 178,400 ha with which grow sub-tropical fruits (see Figure 2).

Table 1: Seven fruit production areas in Viet Nam (Source: MARD 2007)

No.	Location	Area in the year of 2005	Earlier program target	Plan up to 2010
1	Red River Delta	79.2	60	90
2	Northern highland	178.4	170	230
3	Northern of Central region	58.5	70	80
4	Southern of Central Coastal region	30.2	60	38
5	South Central Highland region	23.1	50	32
6	South-East region	128.4	90	150
7	South West region	269.3	250	380
Total		767.1	750	1.000

b. Fruit tree kinds in different agricultural zones of Viet Nam

- There are eight agricultural production areas in Viet Nam:
- The Mekong Delta is producing citrus, mango, longan, pineapple, sapodilla, milk fruit (star apple) , etc.
- The Southern East is a major producer of durian, rambutan, mangos teen, jackfruit, banana, sour soup, etc.
- The Central Highland in the South produces avocado, persimmon, strawberry, durian, etc.
- The Central of the South is major producer area of dragon fruits, late mango, grape, etc.
- Up to HUE, the old capital of Viet Nam, we grow tropical fruits.
- Northern of HUE is sub tropical climate, we grow sub tropical fruits like plum, peach, persimmon, apricot, lychee, longan, citrus, etc.

c. Fruit tree productions

The major fruit trees of Viet Nam are citrus, pineapple, longan, lychee, mango, dragon fruit, banana. The most advantages of fruit production in Viet Nam is most of them having fruit year round in the Southern part such as longan, mango, dragon fruits, pomelo, custard-apple, banana, etc. (see Table 2). The year round production of many fruits helps us to export them year round to China, etc. like longan, dragon fruits, water melon, pomelo, lime, custard-apple and mango (from October to July next year). (see Table 3).

Table 2: Area and production of major fruit trees in Viet Nam 2004 and 2005
(Source: MARD 2006)

Fruit tree	Area (x1000 ha)		Production (x1000 tonne)	
	2004	2005	2004	2005
Longan *	121.1	120.3	606.4	628.8
Orange, lime, mandarin, King mandarine	82.7	87.2	540.5	606.4
Pomelo *	28.6	30.4	209.3	242.2
Banana*	102.2	103.4	1,329.4	1,354.3
Lychee, rambutan*	110.2	113.7	507.5	379.6
Mango	77.5	78.7	337.7	380.9
Pineapple*	44.3	47.4	414.9	472.7
Durian	20.2	25.0	146.0	-
Dragon fruit**	8.5	11.5	133.3	-

Note: * Export fruits, ** The first position of export fruits

Table 3: Major markets of Viet Nam fruit export
(*VinaFruit-2007*)

Export markets	Commodities
China	Fresh dragon fruit, fresh rambutan, fresh lychee, fresh and dried longan, banana, water melon, etc…
The USA	Pineapple (canned) , etc.
EU	Pineapple (canned), lychee (canned, cocktail), fresh dragon fruit
The Russian Federation	Canned pineapple, etc.
Chinese Taipei	Canned pineapple, fresh dragon fruit
Singapore	Fresh dragon fruit, etc
Hong Kong, China	Dragon fruit, pomelo, etc.

d. Fruit export markets of Viet Nam:

China, Japan, USA, Russia, Chinese Taipei, Thailand, Hong Kong, China, Singapore and Europe are our key fruit export markets (see Table 4). To Japan and The USA, we export frozen fruit products like pineapple juice and acerola juice.

Table 4: Fruit export markets, November 2006
(Viet Nam Business news, 4th, Jan. 2007)

No.	Commodities	Export Markets
1	Dragon fruit	Thailand, Hong Kong, China, Chinese Taipei, Netherlands, Singapore, China, France, UK, Germany, Italia, Canada, Malaysia, Switzerland, Indonesia, Norway, Saudi Arabia, Belgium
2	Pineapple canned	Germany, UK, Poland, Belgium, Estonia, Netherlands, South Korea, Italia, Mongolia, Malaysia, US, Norway, RUS, Japan, France, China.
3	Fruit jams	Canada, Hong Kong, Kuwait, Liberia, Malaysia, US, Sweden, Sudan.
4	Longan	ROK, France, China.
5	Coconut meat	Chinese Taipei, ROK, Malaysia, China
6	Other fruits	Chinese Taipei, Canada, Malaysia, USA, Japan, France, Singapore, China
7	Jackfruit (dried)	UK, Malaysia, US, France, Singapore, China

8	Banana	Latvia, RUS, China
9	Rambutan	Canada, Netherlands, China, Cambodia
10	Lychee (dried, cocktail)	Netherlands, France, China
11	Custard-apple	Netherlands, Cambodia
12	Acerola	Netherlands, Japan
13	Sapodilla	Singapore, Brunei
14	Apricot	Chinese Taipei

e. Fruit export value

The highest export value recorded in 2001 with 330 million USD. From 2003, there is a sharp reduction of export value to China, as stronger competitions from Thailand, Philippines and Malaysia (see Table 5). So we are looking forward to new markets like The USA, RUS, Europe, Singapore, Hong Kong, China (see Table 6). We plan to export fruits and vegetables in 2010 at 460 million USD.

Table 5: Viet Nam fruits and vegetables export value (*VinaFruit-2005*)

Year	Value (1000 USD)	Number of country	China (1000 USD)
2000	196,58	33	120,351
2001	329,900	42	142,801
2002	219,698	42	121,529
2003	182,554	36	67,068
2004	178,800	39	20,638
2005	235,000	36	35,000
2006	259,082	40	24,60
2010 (plan)	460,000		

Table 6: Major markets and its export values of fruit and vegetables

No.	Export Markets	2006	2005
		Value (x1000USD)	Comparison (%)
1	China	24,614	-29.56
2	Japan	27,573	-4.89
3	US	18,401	39.87
4	RUS	22,070	23.81
5	Chinese Taipei	27,157	1.07
6	Thailand	9,040	179.54
7	Hong Kong, China	10,155	36.68
8	Singapore	7,917	19.59
9	Netherlands	8,939	11.22
10	Italia	4,623	12.62
11	Germany	2,9485	-19.05
12	France	3,953	-35.08
13	Malaysia	4,197	-0.84
14	Canada	3,209	38.68
15	UK	2,580	28,81
16	Australia	4,487	-17.60
17	Cambodia	3,920	87.10
18	Sweden	0,688	26.60
19	Switzerland	0,774	49.50
20	Ukraine	2,656	83.59
21	Belgium	1,554	9.65
22	India	2,889	92.32
27	Brazil	1,888	-8.89
28	UAE	1,518	-60.54
29	ROK	6,764	10.91
30	Indonesia	4,271	-4.74
31	Norway	0,441	1.27
Total		259,082	29,00

In January and February are new year of Asian, so Viet Nam produces off-season dragon fruit and exports to a number of countries. The important markets for our dragon fruit are Chinese Taipei, Thailand, China, Hong Kong, China, Singapore, Europe and North America (see Table 7).

II. WEAKNESS AND OPPORTUNITY IN FRUIT DEVELOPMENT NEW MARKETS

a. Weakness in development new markets

- The drawback is of small land holder and scatter in which farm size is about 0.5- 0.8 ha in the Mekong Delta region, and 3 - 5 ha in South- East region;

- Weak linking among farmers, hence, the volume, stable quality, and high price are problems.

- Packaging and storage facilities are behind many countries in the region. As most of the packers are small enterprises hence, their packing-house are not up to the standard.

- Export volume and value are lower than its potential

- Weak linking between traders and producers. As most fruit traders in Viet Nam are small and medium enterprises, they can not sign contracts with farmers.

- Our fruits are still not well-known in international markets, except dragon fruit.

Table 7: An example on export markets and values of dragon fruit in 2007 (*Viet Nam Business news, July, 2007)*

Markets	Feb. 2007	Jan. 2007	Fluctuation
	(USD)	(USD)	(%)
Chinese Taipei	625,634	703,749	-11,1
Thailand	594,380	808,935	-26,5
China	376,065	323,326	16,3
Hong Kong, China	278,729	532,795	-47,7
Singapore	213,823	178,910	19,5
Netherlands	177,827	170,674	4,2
UK	134,317	170,287	-21,1
Canada	107,439	91,382	17,6
France	50,340	40,160	25,3
Germany	29,607	25,493	16,1
Malaysia	16,675	25,209	-33,9
Poland	14,490	0	*
Switzerland	10,987	9,363	17,3
Japan	5,493	17,348	-68,3
Indonesia	4,200	13,809	-69,6

b. Opportunity for fruit industry

Large number of varieties with good to premium quality (mango, durian, pomelo, lychee, pineapple, banana, papaya, watermelon, etc). Those fruits can compete in international markets, if they produced with high quality, safety, good packing, etc.

An increasing in production area, yield, and quality are of potential for Viet Nam fruit in near future.

The export volume of Viet Nam fruits and its values increasing and are accessing a number of markets in the world.

The Vietnamese in Viet Nam and Vietnamese overseas in USA, Europe prefer to eat our Vietnamese fruits, like our mango, pomelo, durian, longan, etc. Hence, after Viet Nam join WTO in 2006, we do not observe competition in those fruit, i.e., pomelo, mango, durian, longan, star apple, etc.

The Government is considered fruits as one of export potential commodities, hence, they give investments and extension for this sector.

III. PRESENT FRUIT SUPPLY CHAIN IN VIET NAM

Current Supply Chain is a poor link between the producers and the buyers (small and medium enterprises):

- Most of the farmers sell their fruits through the farm collectors then the farm collectors bring fruits to the district collectors, who will send fruits to the big city wholesalers and then to retailers and finally to buyer. However, with METRO SUPERMARKETS supports, a new value chain is setting up for vegetables, and fruits. From farms, the fruit go to city wholesellers/retaillers. Hence, Metro induces a system for better quality, better price to consumers and reduce post harvest lost.

- AusAID , Australia is supporting a project to improve Supply Chain for mango and pomelo in the Mekong Delta, and VNCI, USAID supported small and medium enterprises projects, helped Dragon fruit obtained EurepGAP certificate in 2006.

Alain, 2007 presents an example on dragon fruit value chain as follows:

- The growers price is 4,500 VND/kg has gone up to 120,000 VND/kg in EU markets (Alain Chevalier, 2007) – the highest percentage in total product value lies in expenses in EU which occupies 78.46%. While the farmers got only 3.75% in percentage in total product value (see table 8), the exporters got 7.95% of total product value. Hence, there is a need to improve the share of total product value to the farmers by joining themselves become packers so that they can share another 5.71% of the total product value. If this can do by the farmers then the total

product value share by the farmer will be (3.75%+5.71%) as compared now only 3.75%.

Key players in Viet Nam fruit exports

Fresh F+V exporters

The majority are Small and Medium enterprises

See the list of most dynamic exporters on website

http://www.vinafruit.com

Processed F+V exporters

25 State enterprises

127 privates enterprises

7 foreign joint ventures

10,000 households

Table 8: Value Chain of Fresh Dragon Fruit

(main season time from April to September); Source: Team calculation (2006)

No	Participants	Price (VND/kg)	Cost (VND/kg)	Percentage in total product value
1	Growers	4500	3644	3.75%
	Fertilizer, plant protection		1563	1.30
	Labor		375	0.31
	Irrigation, water pumping system, electric devices, electricity, ware house etc.		1025	0.85
	Banking interest		72	0.06
	Management fee		75	0.06
	Depreciation		534	0.45
	Value added	856	0.715	
2	Intermediation/Packer	6850	6350	5.71%
	Price buying on farm		4500	3.75
	Harvesting cost		80	0.07
	Local transportation cost		100	0.08
	Washing, calibrating, treatment, labeling, packing, stevedoring		200	0.17
	PE bags, PP tape, washing resolution		250	0.21
	Carton box		850	0.71
	Chill storage (electricity, handling cost)		170	0.14
	Management fee		50	0.04
	Banking interest, depreciation, others		150	0.13
	Value added	500	0.42%	
3	Exporter	9536	8036	7.95%
	Buying price from intermediation		6850	5.71
	Transporting from packing house/chill storage to container yard		200	0.17
	Labeling		302	0.25
	Handling, stuffing, inspection, custom clearance		154	0.13
	Management fee		250	0.21
	Banking interest		280	0.23
	Value added	1500	1.25%	
4	International transporters	4611	3000	3.84%
	Value added	1611	1.34%	
5	Importers and foreign distribution (EU market)	120000	94147	78.46%
	CIF price		14147	11.79
	Other expenses		80000	66.67
	Value added abroad	25853	21.54%	

IV. HOW SMALL FARMERS, SMALL AND MEDIUM ENTERPRISES SHOULD REACT TO RAPID CHANGING NOW

a. Small farmers should join hand to improve the value chain

They should join hand to improve the value chain, hence, they can produce better quality, supply enough quantity and at good price to the consumers. Without join hand, the farmers can not send their fruits to the supermarkets, or their share in total product value will remain very low. As shown in Table 8.

With cooperative way, the farmers can ask the Government to give new technical trainings (GAP, BRC standards), market information. And with join efforts, they can pack their own fruit and enjoy this share of total product value which occupied 5.71%.

b. Small and medium enterprises should join hand to improve their capacity.

Being limit in resources, finance, man power, etc. small and medium enterprises can not sign contracts to farmers. While big enterprises can sign contracts with farmers. In case of pomelo, Hoang Gia, a small enterprise, can not compete with Metro, hence, Hoang Gia may lost its international markets to Metro in the future. So, for their survive, the small and medium enterprises should join hand under Viet Nam fruit Association (VINAFRUIT), so that, they can sign contracts to the farmers, to have good products ad hence can increase the export value, or to negotiation better with big enterprises.

So, in order to improve supply chain, a better link between producers and small and medium enterprises, and a better link among small and medium enterprises are key factors in a competition markets. Not suitable to stand alone nay more among the producers, and among the small and medium enterprises. Also with small and medium enterprises joining together under Vinafruit, they can send their difficulties and requests to the government more efficient than single enterprise.

THE TRAINING OF MANPOWER FOR RURAL SMALL AND MEDIUM ENTERPRISES (RSME) IN AGRO-FOOD SECTION IN VIET NAM

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1. INTRODUCTION

Small and Medium Enterprises (SME) are Enterprises which are low in capital, labor and income. There are 3 main forms of SME: Micro, Small and Medium Enterprises. Following the definitions of the World Bank: A micro enterprise has fewer than 20 employees, a small enterprise has 19-20 and a medium enterprise 50-300 employees. This is also dependent on the standards of each individual country (1).

In Viet Nam, companies whose capital is less than 10 million Viet Nam Dong or the number of employees less than 200 are considered SME.

SME in the agro food Processing and preservation sector are always closely connected with agriculture cultivation. Managers are often originally farmers or their, farmers' offspring, or farm employees, with little or no training, working to cultivate the crops.

Since the years 50-60 of XX century, many countries have increased their economic growth through industrialization. This is achieved through the application of Advanced Science and Technology, in connection with manpower development and training (quality of training and suitable employment policy) (2).

The history of world economic development has demonstrated that, in order to steadily increase economic growth, it is necessary to increase the quality (through training) and quantity of technical laborers and managers.

The increased quality of manpower (through improvements in education, professional skills and Health) is the precondition for success of newly industrialized ASEAN countries such as ROK, Singapore, Hong Kong, China, etc.

Viet Nam is a developing country, in the early stages of industrialization and modernization. Therefore, in the fields of science and technology, Viet Nam lags behind advanced industrialized countries including some in Asia.

In the next 20 years, The worlds will get across the Intellectual economy (3). In order to adapt manpower to support the needs of our country, the IX Party Congress issued the following resolution and decision "The development of education and training is the primary national policy: one of the most important forces for national industrialization

and modernization, a condition for developing manpower and one of the factors for social development, and a growing and stable Vietnamese economy ". It is therefore necessary to train the manpower in the rural small and medium enterprises (RSME) in the agro food section as quickly as possible.

2. SITUATION OF THE DEVELOPMENT OF RSME

2.1. Quantity and the rapidity boosted

In past years, many decree-edicts, protocols, decisions and resolutions were passed by the government to create favorable conditions for the development of RSME, especially The Law for Enterprises, launched in 1999 and amended in 2005.

According to data from the General Department of Statistics, from 2004 to 2006 there were 113,352 SME in the whole country. Of these, 2,429 were RSME, i.e., 2.1% of SME. These figures increased in 2006, with 240,000 SME nationwide, of which over 9% are RSME.

Nevertheless, the increase in numbers of RSME is less than for other SME, and some times decreases between years. In 2000, the percentage of RSME was 14% of all SME nationwide, but in 2003 only 11% of SME were RSME.

RSME take many forms, but are mainly newly registered and private enterprises. According to data from the General Department of Statistics, the non-agricultural sector of Vietnamese rural areas contains about 4,500 state enterprises, 27,000 private companies and 3 million rural families participating in industries such as handicrafts, construction, business and commerce, services, and so on.

2.2. Scale and efficiency of the use of labor, low capital and technology

Following (4), in the field of labor norm, RSME include more than 90% SME and most are micro scale. The average number of employees of the majority of RSME is 10 or <200 per enterprise. Despite this, the RSME represent around 30 billions USD in capital and nearly 3 million employees. They create jobs for 49% non-agriculture workers in rural areas, and 26% of workers nationwide. They contribute 40% of the national GDP and 29% of exports, create ideal conditions for developing the rural economic structure, and create new appearances and new professions for rural areas of Viet Nam.

In the field of business capital, the capital norm is also low and varies from two thousand millions to less than 10 billions VND with the average being about 2 billions VND.

According to business specialists, capital investment per employee in rural private companies is only 35 million VND, for limited companies around 45 million, but for state companies 87.5 millions VND. The efficiency of invested capital, calculated in terms of returns on 1 VND invested, is 0.197; 0.188 and 0.56, respectively.

In the field of technology, at the present time most RSME are using outdated technologies and equipment. The ratio of the adoption of new equipment to old is around 5-7%, while in the rest of the world it is around 20%.

Viet Nam currently has approximately 1000 traditional professional communities employing over 10 million people, and creating exports valued at about 3 billion USD. Each rural traditional community (RTPC) includes tens of RSME with good equipment and good levels of craftsman knowledge and skills. However, they are poor in terms of infrastructure.

2.2. The quality of manpower of RSME (see Section 5)

- Average Number of employees 24.02 head/Enterprise(E)

- Number of employees< 2 head/house	4.42%
3 – 5 head/house	15.77%
6 – 10 head/house	29.34%
11 – 20 head/house	26.81%
21 – 50 head/house	16.72%
51 – 100 head/house	3.97%
101 – 150 head/house	1.58%
151 – 200 head /house	0.63%
> 200 persons/house	~ 0.95%

- Education:

+ Not completing primary school:	8.42%
+ Completing primary school	22.52%
+ Completing lower secondary school:	43.39%
+ Completing secondary school	25.67%

- Training

+ Untrained:	49.89%
+ Technical workers:	43.23%
+ Highly skilled workers	6,94%
+ Artists:	0,68%
+ Technical secondary education:	3,60%
+ High level college and university	3,27%

- Number of rural houses

+ Purely agricultural house	7,56%

+ House for agro-food processing	1,99%
+ House for business and construction	3,47%
+ House for services	2,85%
+ House for combinations of the above	23,91%

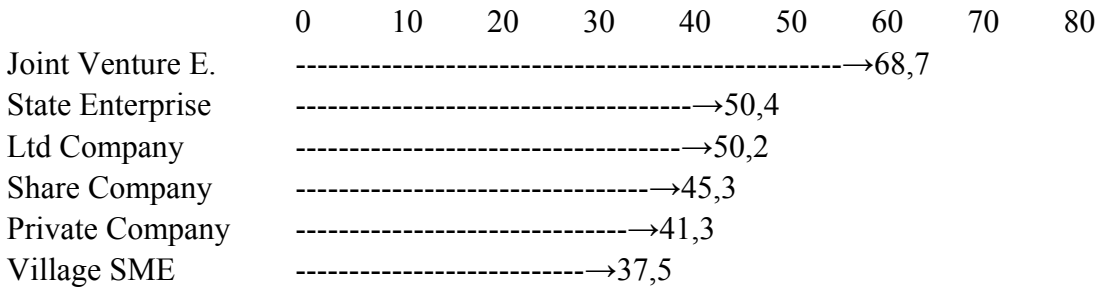
An examination of the above statistical surveys reveals that most RSME are micro- or small enterprises, the percentage of medium RSME being very low; less than 20% of the total number of RSME. Nearly 50% of manpower is untrained. The problem of how to train manpower for RSME clearly requires urgent solution.

2.4. Competitive competency of RSME of Viet Nam

RSME have produced many important exported products that have prestige on the international market. Among these are traditional special products: peppers, cashew nuts, aquatic products, porcelain and ceramic artifacts, handicrafts, and so on.

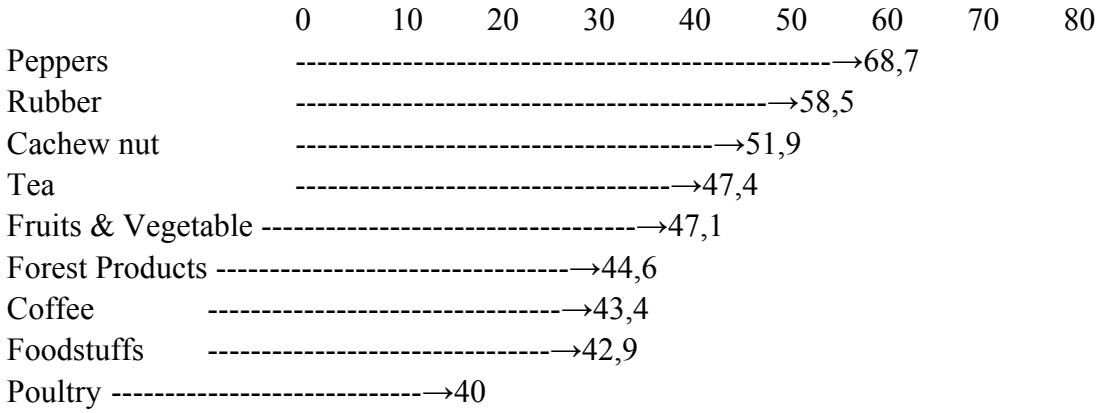
Even so, follow the order of competitive marks between SME with 100 marks, the distribution of SME can be seen in Figure 1.

Figure1. Competitive index of different enterprises



Considering the products, RSME produced peppers, rubber, and cashew nuts achieve the highest marks (from 30 to 69 marks). SME produce coffee and rice, which are the main products of Viet Nam, but achieve normal marks.

Figure 2. Competitive index for products



3. THE DIRECTION OF THE DEVELOPMENT STRATEGY FOR MANPOWER FOR RSME (2)

3.1. Prediction of labor demand and labor passing training in 3 main professional branches in Viet Nam (per 1000 persons)

	2000	2005	2010
Total:	4638,8	7488,4	11185,5
Projection 1			
- Industry, construction	1973,7	2965,4	4172,2
- Agro-forestry aquatic products	980,2	1807,0	3143,9
- Services	1684,9	2719,0	3869,4
Projection 2			
Total:	4638,8	8535,1	15.036,8
- Industry, construction	1973,7	3397,0	5383,2
- Agro-forestry aquatic products	980,2	2057,0	4195,3
- Services	1684,9	3081,1	5458,3

3.2. Establishment of the Committee for Development of National Manpower (CDNM)

3.2.1. The objective of CDNM

The main objective of this committee is to draw up a comprehensive strategy for manpower training and regulations harmonious between the Degree of Training and Manpower Using for State Development.

3.2.2. The main duties of CDNM:

+ Supply and analyzed statistical data in order to predict the demand of labor market.

+ Predict the demand for manpower in several programs such as: rural and economic development; industrial development; infrastructure development and service, business development

+ Supply information and consultancy services to the Ministry of Education and Training (MET); Ministry of Labor, Invalids and Social Affairs (MOLISA) on the problems of developing and attracting manpower in different localities, branches, and central industrial zones.

+ Participate in the definition of strategies for the development of the technical workforce.

+ Participate in establishing and managing national professional standards.

+ Combination between Training and Harmonious Using Manpower

3.3.3. Committee for development of local manpower (CDLM)

The committee should include:

-The people's committee of province or city belong to central

- Departments: Education and Training: Labor, Invalids and Social Affairs;

Planning and Investment; Finance; Industry and Commerce; Agriculture and Rural Development.

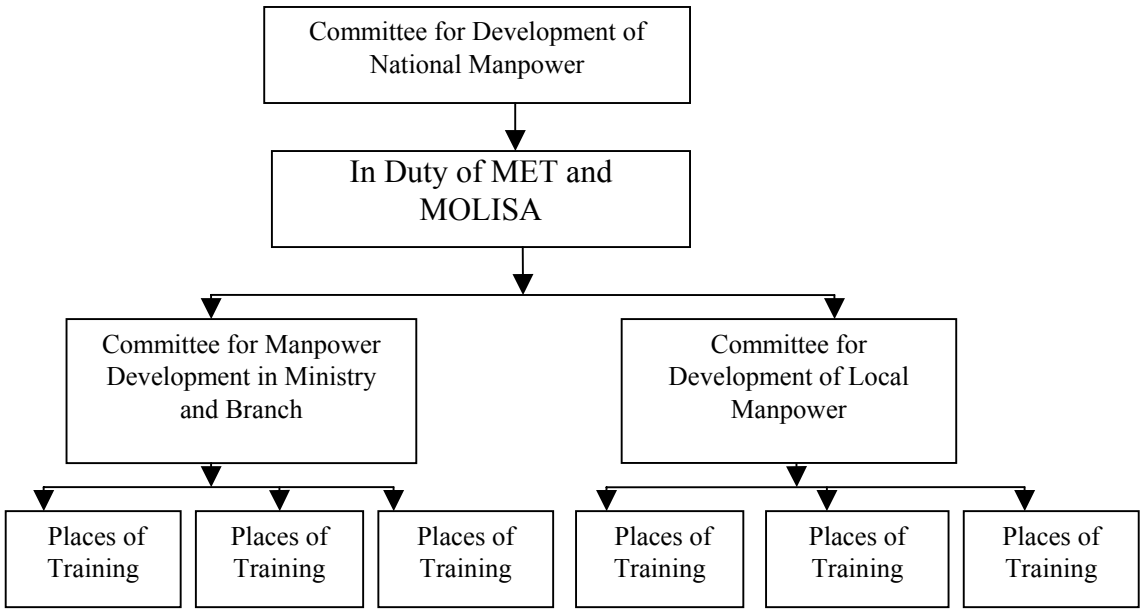
- Represents of state and private enterprises

- Represents of labor union

The committee has the same duties as the national committee, in combination with Government, to seek the best ways to develop and train manpower, both in rural and other areas.

Committee for Developing of National Manpower is organized in the Figure 3.

Figure 3: Structure of committee for the development of state manpower



3.3. The mode of training for RSME

Innovation in, and modernization of, curriculum guides and content for training in the direction of active learning, increased practical skills, applied production skills and adaptable skills in new technologies for production. RSME are closely concerned with training and establishing the demands of production, making suitable conditions for learners.

Set up professional modular curriculum guides featuring step by step activities, and adapt to different forms of training: short and long term courses, official course, in-service course, distance learning course, mobile course and continuing training course.

The main rationale in designing the curriculum guide have resolved union system between the Objective to Content guiding the Methodology in Practical applied Results for RSME.

+ Contents of training include: knowledge, skills, and attitudes, based on task analysis of one occupation. Following this, set up learner-oriented modules.

+ The Developing a Curriculum Method (DACUM) is a modern advanced method, which uses task experts to transfer all knowledge and skills. In the modern curriculum the teacher is also a consultant and guide, helping learners to develop competency in the tasks.

3.4. The demand of practical technical education systems

Trained manpower and continuous learning play an important role in the modernization and industrialization processes of Viet Nam, and help to create the conditions for contact with Intellectual Economy.

Nowadays, Viet Nam must adopt suitable regulations adapted to the global economy and supporting the continuous development and adoption of science and technology.

In order to create knowledge workers, nowadays There are a many white collar workers and gold collar workers who become the most important laborers in the Marketing Economy. (Increasing of Intellectual Workers achieve 30% all Labor Forces). Viet Nam must create a strategic plan for training intellectual workers for RSMSs.

3.5. Set up the policy framework

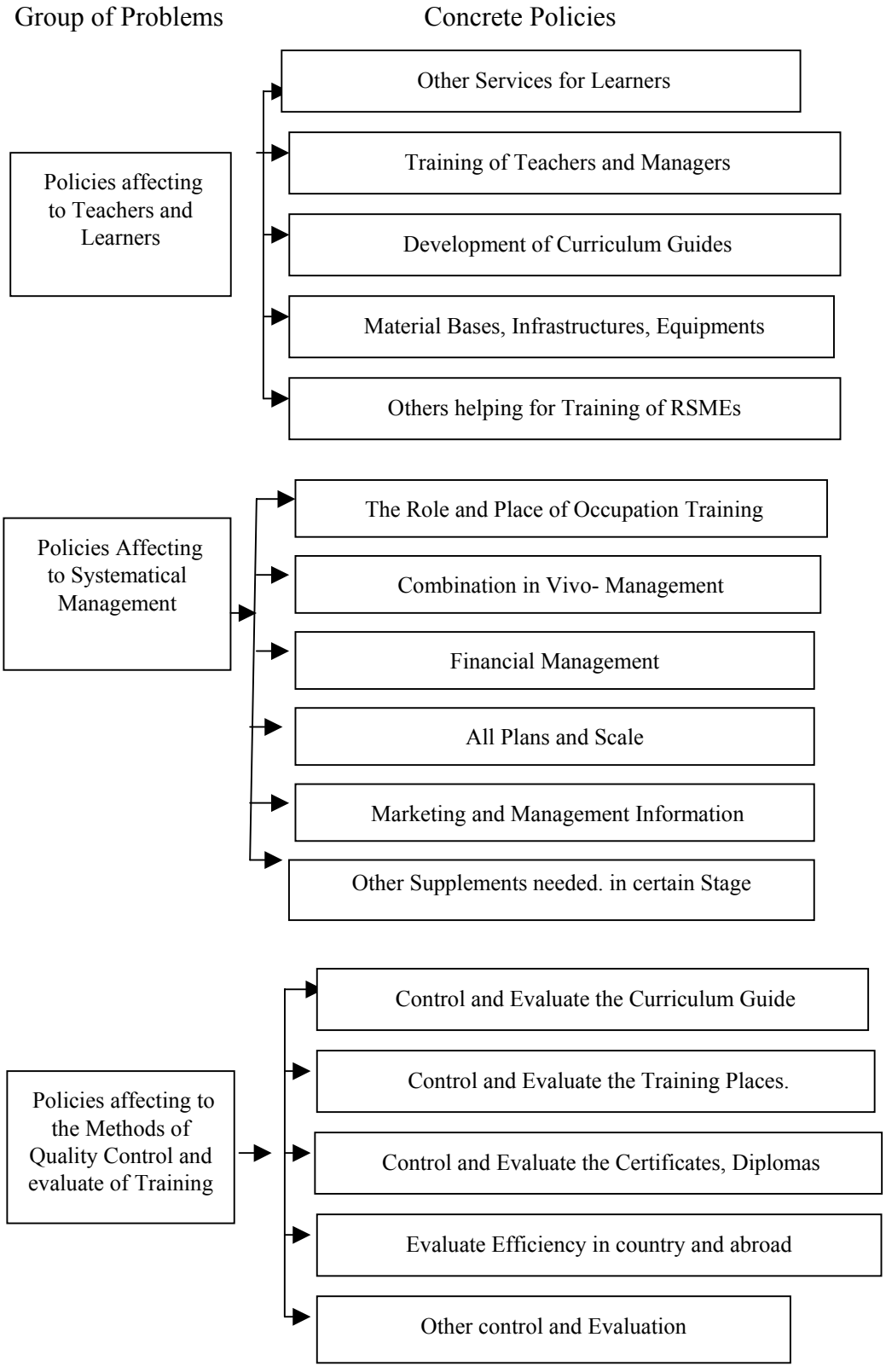
- System management.

- For teaching and learning:

- For quality assurance:

On the basis of this policy framework, over a specified time duration and dependent on concrete conditions, It is necessary to supply a suitable policy for training manpower for RSME.

Figure 4: Establish in policy frame for training of technical labors



3.5. Some characteristics in training manpower for RSME of Viet Nam

- Manual Action and Small Mechanism

- Different degrees in training and the low ratio of trained laborers as in the

data mentioned above.

- Many kinds of occupations.

- Managers are origin from developed Farmers without experience:

+ Special Skill Workers

The Objective of Training:

- Short Time: In Place. + Knowledge for Managers

+ Exchange and excursion to study experiences

- Long Time: At The Professional, the Secondary and Higher College, University

Establishing the curriculum guide as follows:

+ Traditional Mode:

+ Follow the Study Subjects and Duration of Time in a year.

+ MES (Module of Employable Skills). This is the accepted modern method.

+ CBT (Competency Based Training).

+ Combine the traditional and modular methods

Every method of establishing a curriculum guide has advantages and disadvantages, but the new tendency is to derive a module in connection with production, business, services and flexible working style.

Training Programs are established on the basis of Task Analyses, after which all modules are formed, following the DACUM (Development A Curriculum) method.

On the Material and Technical Bases

Step by step, it is necessary to standardize the teachers, colleges, practical pilots, residents and restaurants, Investment for on place of Learner.

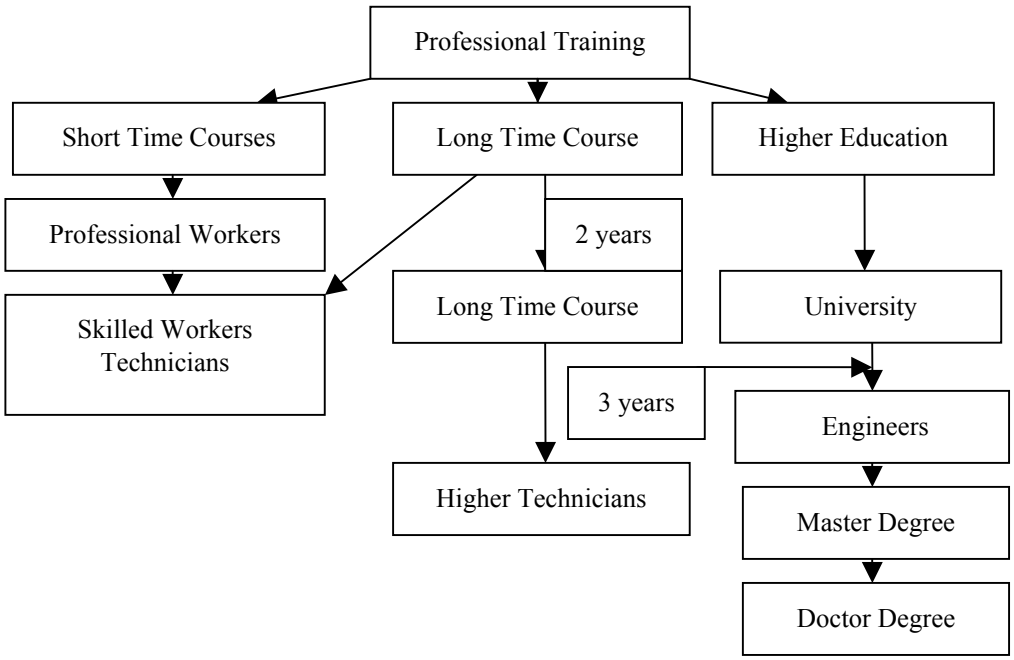
Modernization of Training Places by increasing state investment, through capital input from international organizations with interests in capital mobilization, and from social organizations, especially enterprises. Expand Joint-Venture investment from abroad or 100% capital foreign investment to install equipment and material bases for professional colleges providing higher Quality Training.

Increase quality and quantities of professional teachers by standardization and continuous retraining to catch up in science, technology and methodology.

Every college maintains a budget for constant training and upgrading the level of teachers in knowledge and skills each year.

Carry out the control and evaluation of training quality are shown at Figure 4 and Figure 5.

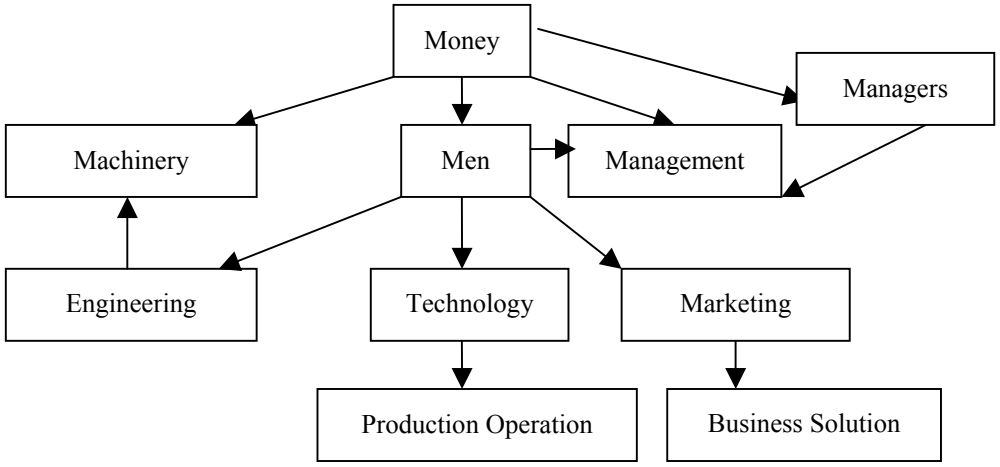
Figure 5. Training follows module



The new tendency to 2010 in Figure 4 and Figure 5.

Using the above information, the Vietnamese government has paid great attention to the training of manpower for RSME, but the results gained do not adapt technical labor needs from now up to 2010. Concrete Plans are urgently required for every stage of the development of RSME, which follow the rule 5M (6).

5M (Money, Machinery, Men, Management, Marketing)



Besides official training programs, the employees in RSME have attended in short Time courses about WTO, GMP, HACCP, ISO, CIP, applying and residues of insecticides, Herbicides, antibiotics, additives aided in Culture and Agro-Food Processing. Basic knowledge about Useful and Harmful Micro-organisms, Food Hygiene and Safety, Environmental Protection, Reuse and Treatment the wastes, …

CONCLUSIONS

Training manpower for RSME has become an urgent need in Viet Nam. It is constrain needs of Vietnamese Localities. The Government needs to pay great attention to this need, and launch suitable policies for Many sides and socialization of training models in order to more quickly adapt manpower for RSME and create favorable conditions for Viet Nam's entry into the WTO.

In recent days, the Prime Minister of Viet Nam has passed a decision for poor Learners to be loaned favor credit, to create ideal conditions for learners in rural regions attending different training courses and make suitable manpower readily available to RSME. I hope that in future years, with the help and assistance of International Organizations and our Government, the training of manpower for RSME will help to rapidly develop the rural economy of Viet Nam .

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DEVELOPMENT ON APPROPRIATE TECHNOLOGIES AND EQUIPMENTS OF AGRO-PRODUCTS PRESERVATION AND PROCESSING IN SMALL AND MEDIUM SCALE FOR BETTER ENSURING THE SOCIAL WELFARE

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Viet Nam Institute of Agricultural Engineering and Post-Harvest Technology

INTRODUCTION

Viet Nam's experience has showed that in recent years, for many famous scientists and scientific works that have high value could directly apply for farmers with hindrance of efficient. The problem is that farmers only listen to and follow "traders" about what to be produced and how quality it is. Because the trader is regarded as "the God" of farmers and traders make the settlement of output for farmers, providing exclusive sales for farmers so it is very easy to make farmers produce what and how quality it was as required. The "trader" is hereby considered as individual, family household, professional cooperative, business (in general it is called the Agro-Business or Enterprise) that specialize in purchasing, pre processing, mini processing, processing, preservation, trading, business of agro-products made by farmers such as cereal, root crop, vegetable, fruits, industrial plants. Generally, enterprises in large scale are often difficult to have direct access to farmers due to of the incoherent production feature of Vietnamese farmers. Only small and medium businesses have appropriate scope are highly active and they are bridging between farmers and consumers in the chain of producing and trading agro-products.

With the aim to shorten the distance between farmers that produce agro- products and consumers to ensure the social welfare for the whole society through sufficient in quantity, meeting requirements in quality, reasonable price for consumers in anytime and anywhere, small and medium businesses have been playing the important and integral role in this aim.

R-D organizers on technology and equipment of Agro-products in recent years is to intensively approach the demand of small and medium businesses instead of directly approaching farmers via the demonstrations and training of trainers (TOT) in forms of project lapping such as target, agricultural encouragement, industrial stimulation, hunger eradication and poverty reduction program etc. have been bringing about certain effective results.

1. Role of agro products preservation and processing in Viet Nam

Agro-products preservation and processing is one of the stages of the chain from agricultural production to consumers. It can solve the matter of seasonable and regional agricultural production. To meet the availability of food products in different seasons and places, it is necessary to apply the preservation and processing. In addition, the preservation and processing shall keep the quality and reduction of losses in a certain time for storage, distribution and transportation it to different regions, in order to: To contribute for the food supply, food security, nutrition security, income, hunger eradication and poverty reduction, export and part for animal feeding.

Viet Nam recent years has reduced proportion of household with low energy intake that the percentage of household with low energy intake (below 1800 kcal) to be reduced from 15% by 2000 to less than 10% by 2005 and below 5% by 2010 for food security; reducing the rating of Chronic Energy Deficiency (CED) about 1.5% per year; reducing the rate of children malnutrition approximately 1-2% per year in the period of 2000-2005. Contribution to the reduction of households who are poor in food in rural area from 8.9% by 2004 to below 4% by 2010 (former standard 2001-2005)[3] or 26.3% by 2004 (new standard)[4] or 28.9% by 2002 and 24.1% by 2004 (WB standard)[5].

In addition, it also makes contribution in economic value. The growth of Agro-food preservation and processing reaches approximately 14% per year compared with the country's GDP of around 7-8% per year. Of which, some agricultural products have made high contribution of exportation such as rice, coffee, pepper, vegetables and fruits, tea etc. with annual average export growth of 23%, even 26-27% for some certain years.

2. Structure of preservation and processing sector of Viet Nam

The general picture of the agro-food preservation and processing sector in 10 recent years, there are 163,000 businesses and over 500,000 labors, compared with total number of more than two million businesses in different sector nationwide and nearly seven million labors equivalent. Above results show that agro-food preservation and processing businesses accounts for about 8% of total number of businesses nationwide.

For the scope of food preservation and processing business, it employs under 10 laborers and these businesses prevail (accounting 62% of businesses), 1/4 businesses have over 100 labors. While labors of businesses with foreign investment capital only account 6.2% of number of labors in this sector. 84% of food preservation and processing businesses have the fixed capital less than one billion VND; 9% of food preservation and processing businesses do not operate profitably. Compared with businesses from other sectors nationwide, food preservation and processing businesses

[3] 80 000 VND, 100 000VND and 150 000VND per person. month in mountain, rural and urban area, respectively
[4] 200 000 VND and 260 000 VND per person. month in rural and urban area, respectively
[5] 2 USD per person. day

have their limited capital and the capital per labor is lower but they do not have the lower profit.

The aforesaid results show that in sector of the food preservation and processing businesses are mainly small and medium scale of fixed capital and labor in line with simplifier technology and their products are mainly supplied for local consumption. It is believed that food preservation and processing businesses shall obtain the higher growth after being added with the capital and technology.

3. Trend of Vietnamese consumers

Agricultural products are used for local consumption as same border as for export and nearly there has been no far distance between these markets for recent years. They would hope to use different multi forms and good quality goods from regions and appropriate prices and especially those are agricultural products needed to be applied under the assurance of food safety.

Traditional product groups: such as rice, soft noodles, cake, bean, peanut, fermented product…have still kept the main role because of their features of nutrition, deliciousness, habit of consumption…in some recent years, due to the increasing level of urbanization and industrialization, consumers demand products to be made of higher design forms, packing, hygiene of food safety and longer storage life. New technologies are applied in combination with traditional technologies without losing the traditional feature of product in accordance with the above mentioned demand.

Fresh product groups: such as fresh vegetables and fruits are expanding more and more to areas that do not have cultivation activities. In addition to the initial form, urban consumers have the trend of like cut fresh or mini-processed products.

New product groups: such as fast food, bakery, dried fry, and cracker.

Non-alcohol drinking groups: from the natural vegetables or artificial flavor; products from milk, grain, bean, all types of tea are more and more expanded. Especially, consumers trend to like the drinking-waters having functional foods from domestic materials.

4. Tendency of agro-food preservation and processing

4.1. Preservation and processing meet requirements of the consumers

Nutritional, commerce, cooking, eating and drinking quality, kinds, forms and price always meet for the consumers on different space and time. The products are improved but they are kept the traditional products' characteristics. The products are diversified and new products must meet manners, customers and users' habit. In some special cases, we create products to guide the market such as the functional foods and fortified foods.

4.2 Concept of low cost post harvest technology

This is a new concept in Viet Nam. It has origin from implementing process of Agriculture sector assistance program financed by Denmark Government for period of 1999- 2007. It is developed during the implementation period and completed from the reality.

The issue of the low cost post harvest technology is perceived by businesses in the ways of either investment or purchase for such technology that is not expensive, and the user of such a technology to pay for low price. Given the arguments above, the low-cost post-harvest technology should be defined within the scope of what is (1) technically feasible, (2) economically feasible and (3) socially acceptable.

Technical feasibility should be examined from the ability of businesses to produce a commodity (equipment) within businesses environment, and what the businesses can achieve, not what can be achieved on research station. From our observations, businesses perceived that the current technology some how is not fit to their condition and need to improve.

Economic feasibility is the ability of businesses to incorporate such technology into their farming system that has economic implications and businesses resource base (both human and financial) must be considered.

In term of social acceptability, innovations can be technically sound, but may conflict with the social norms, culture, habit, etc. For instance, rice farmers / businesses in the MRD are used to dry their rice by sunlight, even on ground, cement yard, or on road. Some farmers / businesses consider that sun drying method is better than mechanical dryer?

The quality assurance and food safety

Comply with all domestic and international regulations; settle the relationship between sanitation, safety, and nutrition. Apply appropriately the international standards and Viet Nam's conditions on index of microorganism norms, microorganism toxin, residue of heavy metal, chemical substance of plant protection and chemical substance for preservation, packing, and additive for preserving and processing… In order to meet the above requirements, we need to organize and build the quality standards (QS), quality control (QC), quality management (QM) for quality assurance (QA) according to the advanced direction such as HACCP, GMP… to reduce 25% (by 2005) and 30% (by 2010) in comparison with by 1999 about the food poisoning cases.

5. Appropriate agro-food preservation and processing technology in Viet Nam

In order to meet the consuming trend, basing on special characteristics of the preservation and processing in Viet Nam, there are 8 different ecological areas depending on soil, climate…there are different agricultural products; it is plentiful in

kinds; each kind is different varieties in the product's physiological and biochemical features. Therefore, it is necessary to have a specific technology for the above product.

Particularity of preservation and processing technology with small and medium scale is applied and developed in Viet Nam or it is met the requirements:

- Low investment expenditure / costs

- Low operation expenditure / costs per one unit of product.

- Simple, easy to use and operate.

- It is able to apply and work for multi a raw materials and products to guarantee the effect of investment because the agricultural products are seasonal; they are not produced continuously all year round.

Result of developing technology and equipment is suitable with small and medium scale to preserve, and process main agricultural products for the passed decades in Viet Nam showing that:

5.1 Rice

5.1.1 Technology of rice milling

The small (capacity of below 8-15 tons/shift) and medium (over 30-60 tons/shift) is appropriate in Viet Nam from purchasing materials to processing, and consuming on the spot, for the big cities, and a small quantity for exporting agents. Equipment in the line is manufactured in our country with high quality. Over 96% farmers sell rice to the traders, in which 2/3 above rice quantity is sold by the traders to over 100,000 small and medium rice milling enterprises. 70% rice is preserved and stored in households.

Technology of rice storage with the method of opening gradually is replaced by technology of hermetic and hypo baric storage with low pressure.

5.1.2 Technology of rice semi-hermetic storage combining with ventilation in micro scale

Advantages: Limit the bad impacts of environment to the grains such as humidity and temperature (forced ventilation); limit the isolation of insects, prevent mousse (because it is rather hermetic). This model is applied by nearly all Northern foundations because of its simple, cheap, easy to use, and tidy features and without occupying large space. Period of storage life is from 5-6 months, free insects (silo) and 8-10 months (silo combining with forced ventilation); it nearly does not have loss in quantity; quality meet the consumer's demand. Economic effect is higher than storage in bags. Scale of 1-5 tons by adjusting to assembly additionally in each hold according to the height.

5.1.3 Technology of rice hermetic storage in small scale:

This technology is applied in Nam Dinh and Long An. In order to reduce content of oxygen in the preservation environment, we use the super-bag or organic store system, scale of 5 – 10 tons/store. Oxygen content in the preservation environment gradually reduces as time and by 9% after 6.5 months of preserve, no insects after a one month. The good rice quality shows that the recovery rate of 69.05%, the rate of germination reaches 97% and the lose rate of 0.2% compared with the control method of normal preserve is 67.7%, 76% and 4%, respectively.

5.1.4. Technology of rice hypo baric storage in medium scale:

The technology has applied in Hai Phong, Ha Noi, Bac Giang, Nghe An, Da Nang, Binh Dinh, Can Tho.

Using PVC film with thickness of 0.3 – 0.5 mm covering the rice field, sucking the vacuum until the pressure of 20 – 30 mm H_2O, Keeping at the pressure during the storage time. The storage scale of 100 – 200 tons/store. The storage life of 24 months still keeps the good rice quality shown at the yellow grain rate of 0.1 – 0.2%, the recovery rate of 69.8 – 70.5%, the broken rice rate of 27.5 – 28% and the lose rate of 0.09 – 0.50% compared with the old method is 0.4%, 67%, 35% and 2%, respectively. Remarkably no insects after three months storage in comparison with the control of 25 insects/kg and B1 vitamin content only reduces 9.6 – 33.3% compared with the initial; meanwhile the control reduces 64.1%. Economic efficiency of hypo baric storage to get more 7030 VND/ton compared with the old method in the storage period of two years.

5.2. Root crop (Cassava)

Root crop in Viet Nam is mainly cassava. The modern technology of dry cassava starch processing with importing equipments, large scale of more than 50 tons/day only manufacturing the exporting goods. The rest of numbers are establishments of processing, storage units under the traditional technology, domestic equipment with small and medium scale of less than 10 tons/day still predominates and it is being brought into play effect for consumption, even they are establishments supplying the wet cassava starch as material for the large sized factories to solve and overcome the seasonal cassava. The small and medium model of processing, storage technology of wet cassava starch is specific in Viet Nam; it has been being developed and transferred the technology for the countries of Latin America and Africa. The wet cassava starch processing and storage technology has been applying in Ha Tay, Son La, Hoa Binh, Thanh Hoa, Tay Ninh, Dong Nai province.

Cassava root is past through peeling, washing, grinding by the wood-grinder and then extraction, separating / filtering during 1-2 days to get wet starch. And last go to store the wet cassava starch for 1-2 years that keep high quality. Wet cassava starch distributed to the large scale dry cassava starch factories and the other industrial factories that maltose, glucose, glutamine, alcohol, candy, bakery…

5.3. Fruit and vegetables

The technology of fruit and vegetable preservation and processing with imported equipments at large scale, capacity of above 5000 tons/year has been manufactured mainly for exporting, but lacking of raw material because of concentration planting and high seasonable.

Technology of preservation and processing in small scale (below 1 tons per day) and medium (above 5 tons per day) has been noticeably presenting establishments for the local and the other cities consumption with the traditional technology, the domestic equipment has usually improved, low costs in accordance with the medium and small sized enterprises. The small and medium-sized enterprises are also establishments supplying the material for the large enterprises and partial for exporting.

The preservation and processing of fruit and vegetables: at type as follow:

The fresh type includes classifying, cleaning, treatment,

packaging such as dragon, mango, lychee, longan, citrus, cabbage, tomato and vegetables

Cut fresh type as ready for use includes: classifying, cleaning, cutting, treatment, refrigerating, packaging as sweet corn, beans, carrot, potato, pineapple…

Canning type includes classifying, cleaning, treatment, processing, canning as fruits with sugar, fruit juice, pickled vegetable and fruit.

Dried type includes: classifying, cleaning, treatment, drying or vacuum frying, packaging as banana, jack fruit, beans, lychee, longan fruit, and onion.

5.4 Tea, coffee

Processing technology of OTD, CTD black tea and green tea in small scale of 6 ton per day is popularized in Viet Nam, almost all equipments are manufactured in domestic, conformity of technology was reconfirmed in many past decades.

Coffee processing technology on dry method, mainly peeling skin, polishing, classifying according to size and color is developed its effect at small and medium scale with capacity around 1-3 tons per hour, product is satisfied with standards for export.

Preservation and processing technology of agricultural products are carried out almost in packing house with small and medium scale (less 10 ton/day). These are purchasing units of agro-products from farmers. After pre-processing, packaging and preserving the fruits and vegetables will be distributed in locality and neighboring cities. Head markets of agro-products with scale of 500-1000 ton per day also perform this technology.

5.5 Traditional products

Processing technology of traditional products such as rice noodle, cake, candy, soy sauce, fish sauce, soy curd…. nearly all performed in famous professional villages which are existed hundred years and being invested in the trend of multi-level technology, in association with tradition technology (products manufacturing) and modern technology (mainly packing) substantially contributed to preservation of cultural character and serving consumers at modern tendency. Several traditional products have been exported to many countries in the world such as coconut candy, green bean cake, fish sauce, dried rice vermicelli…

5.6. Drying

Mainly drying grains, seed by natural method taken from sun light, low cost, but depended on weather and difficult to avoid dust clung to products. This manner is only applied to processing with very small scale such as rice, corn and a part of vegetables and fruits, products.

In 10 recent years, driers are begun using to dry grains, especially up to 2005, about 30% volume of rice in raining season was dried by driers. Capacity is 4-40 ton per batch by flat bed driers, fuel is rice husk. Drying operation cost is about less 100 VND/kg. Especially in rainy and flood season, removing driers were applied to avoid flood.

By this method, coal burned vertical cage driers are put in use, but they are at very small scale 200-500 kg/batch, small scale 4-40 ton/batch and medium scale more than 40 ton/batch, burned with rice husk.

Drying vegetables and fruits by using the chamber natural convection drying technology (dry longan fruit, banana) at micro scale. Flat bed drying (dry lychee, onion) at small scale less than 5 ton/batch. For medium scale, apply the tunnel convection drying type (pumpkin, various fruits) with scale of more than 10 ton/day. Quality of products after drying meets the requirements of domestic market and for export. Infrared and heat pumped drying method starts using in association with other drying methods to enhance high effect.

6. Proposals

For preservation and processing of Agro-Food to meet the trend of use, within limited resources in developing countries, it must:

Use multi level technology, in coordination and combination between traditional and modern technology to provide products with high quality, appropriate price, keeping natural character, specific features of their regions.

Restrain and go to eliminate use of prohibited chemical in preservation and processing in order to ensure food safety and human health. Enhance quality control and quality assurance, encourage applying HACCP, GMP to production

Preservation and processing agro-products are in association with environment protection. Forward research and apply technology of utilization by product to increase added value of products, diminish environment pollution. Experiment of applying appropriate technology of waste water treatment at small and medium enterprises with low cost.

Permanently exchange information and technology in domestic and international to apply suitable technology in order to increase production economic effect. Rise hours of training for labors during work at small and medium enterprises to high skill and knowledge of technology.

CONCLUSIONS

Preservation and processing of agro-products contributed to food supply for consumer, food security, nutrition security, income, hunger elimination, poor reduction and export. Besides, it also contributes economic value. Growth of food preservation and processing estimated reaching about 14%/year as compared with GDP of the country in 7-8%/year. Several agricultural products vigorously contribute to export such as rice, coffee, pepper, vegetables, fruits, tea… export increases in average of 23%/year, even 26-27% in many years.

Structure of preservation and processing agro-products sector is almost on small and medium scale in respect of fixed capital and labor, i.e. simpler technology, but in comparison with other sectors the preservation and processing agro-products sector has lower cost, lower capital per labor, but it remain not lower benefits.

Consumption trend of agro food for local consumers as same border as for export and nearly there has been no far distance between these markets for recent years. Three tendencies of Agro-food preservation and processing are meet demand of consumers, have low cost, guarantee quality, food safety.

In order to meet the above consumer and producers trend, on the basic of sector's structure in small and medium scale, mass appropriate preservation and processing technology is and being applied in Viet Nam according to multi-level technology type, in coordination of traditional with modern technology to shorten the gap between producers and consumers to ensure welfare for whole society via sufficiency in quantity, meeting requirements on quality, reasonable price for consumers in any time and space.

DEVELOPMENT OF AGRICULTURAL FOOD PROCESSING INDUSTRY IN CHINESE TAIPEI

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ABSTRACT

Agriculture enhanced both industrial and economic development of Chinese Taipei. Through the years, however, its contribution to the Chinese Taipei economy has declined, but it remains a necessary sector as it is closely linked to people's way of life and survival. Thus, the domestic food industry, an extension of agriculture, has continued to create an enormous demand for agricultural products to meet the nutritional requirements of the population. In the face of international free trade, however, only those high-quality and value-added agricultural products could survive the highly competitive world market. Food processing brought added value to farm products. Lengthened products' shelf life, and widened their distribution area. With economic development, rising per capita incomes, higher life expectancy, and women's employment rates, the Chinese Taipei people have been putting more emphasis on the nutritional and health value of the food they eat, in addition to its hygiene and convenience. Hence, the Council of Agriculture (COA), Chinese Taipei's central authority in charge of the island's agriculture, has been working on the framework and strategies to promote different scale agricultural food processing industry in Chinese Taipei.

***Keywords**: Agricultural food processing, value-added agricultural products, processed industry, agricultural production index*

INTRODUCTION

During the early stages of economic development in the 1960s, agriculture served as the core of Chinese Taipei's economy, offering inexpensive food, raw materials, foreign exchange capital, a strong labor force, and a market for industrial products. The great contributions made by agriculture to Chinese Taipei's economy enhanced both the industrial and economic development of the island. High production in the agricultural sector before the mid-1960s allowed Chinese Taipei to realize its goal of using agriculture to foster its budding industrial sector. As a result of this orderly economic development, agriculture not only provided Chinese Taipei with agricultural products, but also raised the livelihood and created a better living environment for its people. Thus, in the face of these changes, agricultural development was gradually transformed

from an economic to a societal goal. In view of this, despite the fact that its status in the total economy will probably continue to decline, the importance of agriculture will never be overlooked. No matter how insignificant its role may appear to be in the progress of economic development, agriculture will always remain a necessary sector closely linked to the people's way of life, not to mention that humans need food to survive.

The food industry is a very important component of Chinese Taipei agriculture. In the earlier stage of Chinese Taipei economy, the processed food industry made use of huge amounts of agricultural products for export in order to earn considerable foreign exchange to help develop our economy. The rural economy developed prosperously through products sold to and workers employed in food factories. In recent years, trade liberalization has allowed the importation of several food and agricultural products into Chinese Taipei. However, domestic food industries have continued to create an enormous demand for agricultural products, including contracted crops and seasoning agricultural products.

Food production and supply

Chinese Taipei has achieved rapid economic growth since the end of World War II. In the period between 1952 and 2006, the average annual growth rate of GNP estimated around 8.5%, and the per capita GNP rose from US$197 to US$16,471. During the same period, the annual growth rate for agriculture was far less than that of the industrial and service sectors. Consequently, agricultural production as a percentage of GDP fell from 32.1% in 1952 to 1.5% in 2006 (see Tables 1 and Table 2).

Table 1. Major agricultural economic indicators

Unit: %

Agricultural Sector	1952	2000	2001	2005	2006
Agro. Production as % of GDP	32	2.0	1.9	1.7	1.5
Agro. Population as % of total population	52	16.5	16.9	15.0	14.3
Agro. Employment as % of total employment	56	7.8	7.5	5.9	5.5
Agro. Exports as % of total exports	92	2.2	2.5	1.9	1.6
Agro. Imports as % of total imports	34	5.4	6.4	5.2	4.6
Composition of agricultural production					
Crops	69	45.4	45.6	42.5	45.8
Forestry	7	0.1	0.2	0.2	0.1
Fishery	9	24.9	25.5	24.3	22.7
Livestock	16	29.6	28.7	33.1	31.3

In 2006, Chinese Taipei has an agricultural population of 3.32 million, or about 14.30% of its total population. The number of farming households is around 765,000 with each farm size about 1 ha in average. Agricultural employment (labor force) accounts for 5.5% of total employment of which 28% is around 15-44 years old, 56% is about 45-64 years old, and 16% above 65 years old. Farm employed population was 555,000 in 2006, a decrease of 25.0% from 2000 (Table 3).

The steady decrease, with elderly farmers retired and lease of land to full time farmers, led more land used per agricultural employment and accelerated the shift of agricultural production from being labor-intensive to labor-efficient, as opposed to simply intensifying land utilization in early stage.

Table 2. Chinese Taipei's gross domestic product by industry (%) (at market prices)

Period	Total		Agriculture	Industry	Service
	(US$ million)	(%)	(%)	(%)	(%)
1952	1,682	100.0	32.1	19.5	48.4
1960	1,736	100.0	28.2	26.4	45.4
1970	5,739	100.0	15.2	36.0	48.8
1980	42,285	100.0	7.5	43.5	49.0
1990	164,513	100.0	4.0	38.4	57.6
2000	321,230	100.0	2.0	29.1	68.9
2001	291,694	100.0	1.9	27.6	70.3
2005	354,918	100.0	1.6	26.8	71.6
2006	364,422	100.0	1.5	26.8	71.7

Table 3. Farm households, farm population and farm labor force

Year	Farm Households (1,000 households)	% of Total Households	Farm Population (1,000 persons)	% of Total Population	Farm Employment (1,000 persons)	% of Total Employment
1952	680	45.5	4,260	52.4	1,642	56.1
1960	786	40.5	5,370	49.8	1,742	50.2
1970	880	33.6	6,000	40.9	1,681	36.7
1980	891	23.8	5,390	30.3	1,277	19.5
1990	860	16.9	4,290	21.1	1,064	12.9
2000	721	11.0	3,669	16.5	740	7.8
2001	746	10.8	3,783	16.9	706	7.5
2005	767	10.6	3,400	15.0	591	5.9
2006	765	10.4	3,323	14.3	555	5.5

Indices of agricultural production

In 2006, the agricultural production index was 94.91, a slight increase of 0.81% over 2005 (Table 4). Looking at the production indices for various categories, it can be observed that crop products such as fruits, vegetable, flowers, and rice mostly returned to a normal level after the abnormal weather of the previous year. The production index for the crop category consequently rose by 9.62%. In the forestry category, the increased output of saw-timber and firewood/bamboo caused the index for forest products to rise by 11.37%. In the fishery sector, a decrease in total catch of far sea, offshore and marine aquaculture attributed to 14.00% decrease in output. In the livestock sector, with increase output of major livestock, including hogs and chickens, and decrease output of cattle, caused the production index to increase by 2.42% (Table 4).

Table 4. Indices of agricultural production

Category	2001	2002	2003	2004	2005	2006	Change (2006 vs. 2005) (%)
General Index	100.00	104.10	104.26	99.85	94.15	94.91	0.81
Crop Products	100.00	105.50	102.72	97.63	88.37	96.87	9.62
Forestry Products	100.00	111.56	121.47	121.26	94.84	105.62	11.37
Fishery Products	100.00	108.14	115.79	107.54	105.34	90.59	-14.00
Livestock Products	100.00	98.13	96.17	96.05	93.34	95.60	2.42

Agricultural production structure

The total agricultural output in Chinese Taipei was valued at NT$377.0 billion in 2006. Credit for the slightly decreased value of 1.50% over the previous year was mostly attributed to the lowering price of farm outputs, the rebound of crop production, and the increase in foreign product importation as a result of trade liberalization and open market. Of the four major industries namely crop, forestry, fishery, and animal husbandry, crop was the largest category with an output value of NT$172.7 billion (45.81%); followed by animal husbandry, NT$118.1 billion (31.3%); and fishery, NT$85.7 billion (22.7%) (Table 1). As compared to the output value structure of the previous year, animal husbandry's share of total agricultural output dropped by 5.3%, crop's share grew by 7.8%, while fishery's share decreased by 6.3% due to the decrease landings of far-sea fisheries, offshore fisheries and inland water aquaculture and shrinking numbers of large fishing boat due to the decrease quota for fishing tuna allowed by the International Commission for the Conservation of Atlantic Tunas, ICCAT.

Table 5. Crop output value structure

Year	Output value (NT$1m)	Percentage of total					
		Rice	Coarse grain	Special crop	Fruit	Vegetable	Others
1955	7,728	56.38	16.96	18.36	3.26	5.00	0.04
1960	16,496	56.95	19.21	13.94	4.24	5.64	0.02
1970	30,405	45.00	15.07	12.10	11.80	14.33	1.70
1980	100,667	41.81	8.11	12.07	14.49	21.16	2.36
1990	138,389	27.45	8.56	10.40	29.77	19.65	4.17
2000	165,214	20.98	5.48	7.93	34.98	23.34	7.29
2005	162,631	17.30	4.59	4.56	38.31	26.21	9.03
2006	172,692	17.01	4.63	4.70	39.18	27.22	7.26
Change, 2006 vs. 2005 (%)	(6.19)	(-1.68)	(0.87)	(3.07)	(2.27)	(3.85)	(-19.60)

Note: ( ) indicates percentage comparisons; Source: The Agriculture and Food Agency, COA

The total crop output value was NT$172.7 billion, a 6.19% increase over that of the previous year. Fruits accounted for the largest share of crop output with a value of 39.18%, followed by vegetable (27.22%), rice (17.01%), special crops (4.70%), coarse grain (4.63%), and other crops (7.26%). This breakdown of 2006 crop output figures is roughly the same as that of the previous year (Table 5).

Food consumption

The average per capita food supply for residents of the Chinese Taipei area in 2005 included 91.49 kg of cereals (including 48.60 kg of white rice and 39.96 kg of wheat flour), 21.96 kg of starchy roots, 26.23 kg of sugar and honey, 27.34 kg of pulses and oilseed, 104.70 kg of vegetable, 123.31 kg of fruits, 77.12 kg of meat, 16.49 kg of eggs, 29.86 kg of fishery products, 47.36 kg of dairy products in equivalent of fresh milk, and 26.23 kg of oils and fats. In comparison with the 2000 level, apart from increases in consumption of wheat flour, pulse and oilseed, oil and fat, consumption of the remaining eight items decreased. The most significant drops were seen in the consumption of fish and seafood, and dairy products, both of which fell by more than 15% in recent five years (Table 6).

Table 6. Food consumption

Food Type \ Year	2005	2000	Change, 2005 vs. 2000 (%)
1. Per Capita Food Supply (kg)			
Cereals	91.49	92.48	-1.07
White Rice	48.60	52.69	-7.76
Wheat Flour	39.96	32.60	22.58
Starchy Root	21.96	23.65	-7.15
Sugars and Honey	26.23	28.65	-8.45
Pulses and Oilseed	27.34	26.40	3.56
Vegetable	104.70	115.52	-9.37
Fruit	123.31	136.30	-9.53
Meat	77.12	79.00	-2.38
Egg	16.49	19.22	-14.20
Fish and Sea Food	29.86	40.22	-25.76
Dairy Products	47.36	56.04	-15.49
Oils and Fat	26.26	25.06	4.79
2. Daily per Capita Intake of Major Nutrients			
Energy (kcal)	2,904.12	2,948.41	-1.50
Protein (g)	91.76	96.71	-5.12
Vegetable Protein	47.42	46.13	2.80
Animal Protein	44.34	50.58	-12.34
Fat (g)	126.72	123.66	2.47

Source: Statistics Office, COA

Calculated on the basis of consumption of various types of food, the daily per capita intake of principal nutrients by residents of the Chinese Taipei area in 2005 were as follows: energy, 2,904 kcal; protein intake, 91.76 g (including 47.42 g of vegetable protein and 44.34 g of animal protein); and fat intake, 126.72 g. In comparison with the 2000 level, energy, and protein intake fell by 1.50% and 5.12%, respectively, while fat intake increases around 2.47% (Table 6).

A measure of the relative number of calories derived from protein, fat, and carbohydrate, the PFC ratio can be used to analyze the structure of the citizens' diets. The ideal PFC ratio is considered to be 12: 30: 58. Consumption of principal nutrients was employed to calculate the 2005 PFC ratio for Chinese Taipei area residents, which was 12.6: 39.3: 48.1. This PFC ratio indicates that people's diets include too much protein and fat, and too little carbohydrate. Moreover, a dramatic decline in per capita rice consumption occurred over the last half century, from 126 kg in 1952 to 48.6 kg in 2005 (Table 7).

Utilization

In the early stage of economic development in Chinese Taipei, agricultural labor was abundant, and the limited cultivated land was utilized very intensively. Since then the agricultural labor force has declined steadily, so the way of agricultural production gradually shifted from labor intensive to capital intensive. Only those high quality and value-added agricultural products can survive in the high competitive world market. On the other hand, food processing brings added value to farm products, lengthens product shelf life, and widens the product distribution area. Hence, the Council of Agriculture (COA, Chinese Taipei central authority in charge of the island's agriculture) has developed the framework and strategies, followed by the function of food processing and marketing orientation, to promote different scale agricultural food processing industry in Chinese Taipei.

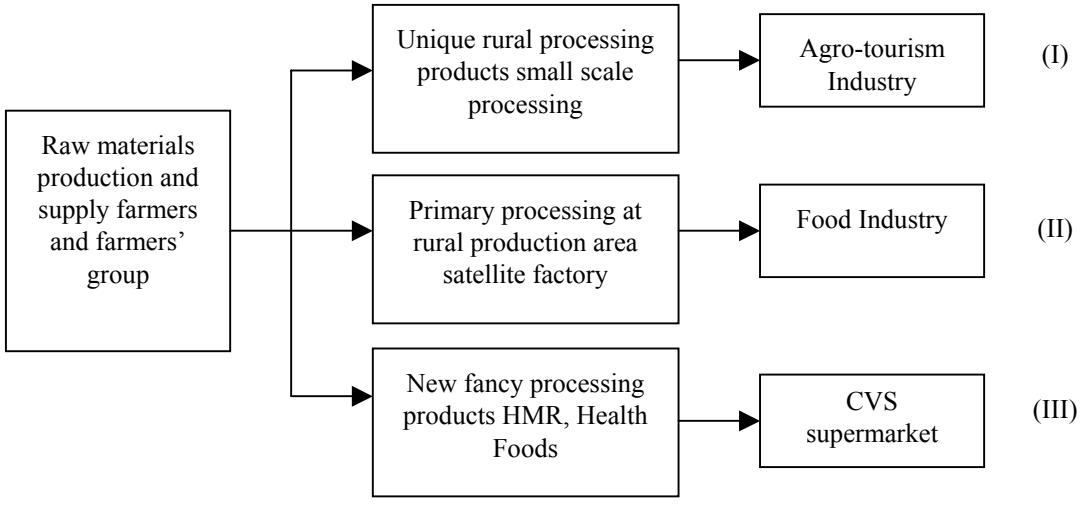
Table 7. Per capita annual food availability

Unit: Kg

Polished Rice	Wheat Flour	Starchy Root	Sugar & Honey	Pulse & Oilseed	Vegetable	Fruit	Meat	Egg	Sea Food	Milk	Oils and Fat
126.06	11.33	59.86	9.41	9.86	61.37	16.81	16.82	1.59	15.07	1.17	3.46
52.69	32.60	23.65	28.65	26.40	115.52	136.30	79.00	19.22	40.22	56.04	25.06
50.10	33.18	21.62	25.68	24.69	110.17	134.38	76.57	19.23	35.45	54.37	23.27
49.96	33.95	20.07	24.45	27.52	121.89	146.56	77.23	18.49	36.08	55.88	25.04
49.05	36.88	21.05	26.84	27.74	112.27	143.34	76.91	18.29	39.97	51.86	25.11
48.56	37.87	21.43	24.62	25.06	113.23	138.62	78.18	17.99	30.99	49.89	23.99
48.60	39.96	21.96	26.23	27.34	104.70	123.31	77.12	16.49	29.86	47.36	26.26

Source: Chinese Taipei Food Balance Sheet, COA.

Fig. 1. Framework of strategies to promote the agricultural food processing industry in Chinese Taipei



Mode I:

In the early stage of rural food processing industry in Chinese Taipei, most of the farmers processed foods for self-use. The techniques that local farmers had used to preserve agricultural products, were gradually lost due to social structural change. They became an essential part of Chinese Taipei's cultural assets.

Starting from 1976, the Council of Agriculture (COA) began to promote the Rural Food Processing Project in order to offset the farmers' economical deficit during the winter season owing to the surplus yield of produce. This project aims to assist farmers to utilize agricultural food processing to solve the regional surplus problems. It also aims to improve a product's hygiene and packaging, and raise the added value of the final products. Ever since the inception of this project, we have supervised over 100 townships, consisting of 300 plus products such as preserved mustard leave and stem, cucumber; dehydrated cabbage, radish, bamboo shoot, mango, longan and lychee; rice desserts and local dishes etc., These tasty unique local processed food products also accompany with the development of agro-tourism in Chinese Taipei.

Mode II:

The agricultural food processing industry is considered the lower-end industry of agriculture. This industry can add value to agricultural products, thus enhance their production. In the early days, pineapple, mushroom and asparagus were all exported in cans. The canning materials were supplied by contract cultivation. Later on, it was replaced by free purchase. After our admission to WTO, we had to establish new supply systems to be more competitive. We recruit agriculture production cooperative societies and farmers' associations to set up specialized satellite factories. These factories produced and packed the products according to the food factories' requirements and delivered the semi-finished products directly to production lines. In doing so, the factories reduced the labor and equipment cost for storage, washing, pre-processing and reject processing. Now, some of the cooperative societies also have the ability to produce fresh-cut vegetables and fruits for institutional users.

In recent years, some of the cooperative societies have changed from supplying the market with fresh vegetables and fruits into fresh-cut ones. Their customers include the army, large enterprises, hospitals, and schools. The quality, quantity, variety and cost of the supply can also become more stable this way. The COA also uses the CAS Certification System to upgrade it and possibly supply the fresh food market with cold salad and fresh-cut fruits.

Mode III:

With economic development, rising per capita incomes, higher life expectancy, and women's employment rates, the Chinese Taipei people, in addition to its hygiene and convenience, are putting more emphasis on the nutrition and health value of the food they eat. Hence the COA is working toward this direction.

Chinese food is already quite famous worldwide, thanks to the wisdom and craftsmanship of our ancestor. This is also an essential part of our precious cultural assets. Since 20 years ago, COA took note of this and began to develop it into frozen forms. Yet, we have difficulties in preserving the original flavor of the product in the process. Together with food science experts, Chinese cuisine specialists, and food industry technicians, we have been trying to upgrade all the techniques concerning material pre-treatment, transportation, industrial production, original flavor preservation, packaging, even temperature, safety, and hygiene. Our goal is to bring more varieties and the convenience of Chinese food to the tables of people worldwide.

In order to prevent hypertension, elevated blood glucose, hyperlipidemia and compromised immune condition, brought by the modern-style living, people are paying more attention to consuming a balanced diet and taking health supplements. The National Science Council – NSC - has set up a "Health Food Inter-Departments Integration and Promotion Subcommittee" to administer the annual scientific research cooperation projects of NSC, Health Administration and COA.

The aforementioned promotion of Chinese and health foods has been based not only on the research of the techniques, but also a lot on the integration with the marketing channels, meaning, the cooperation among agriculture, food industry, and business sectors. It will have to be market-oriented to start with. The promotion of 18% rice desserts serve a very good example. The 7-eleven franchise using its modernized marketing method took the lead in integrating farmers, satellite factories, and food industry manufacturers, creating a NT$5 billion annual market.

Technological needs for future development

Faced with growing competition in free-trade markets, Chinese Taipei's agriculture has to face out its passive protection and make its production more consumer-market oriented. For that purpose, Chinese Taipei should do everything possible to enhance its competitiveness in farm produces and to expand its overseas market. The food processing industry can add value to farm products, making agriculture industrialized and commercialized, transforming agriculture from a primary industry to a secondary and/or tertiary one, and helping farmers to gain profits not only from the land, but also from the outputs of post-harvest technology. This can ensure farmers a steady income from a commodity's production to its marketing.

Strengthened research and development in agricultural food processing industry also become more important. The COA projects now focus on developing unique points of difference, such as tasty local foods that are differentiated from imported ones. Moreover, special interest is placed on the blending of Chinese cuisine and herb medicine and developing of functional food, as well as cooked and ready-to-eat frozen foods, etc., in order to create the market niche for boosting the value of agricultural products.

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QUALITY ASSURANCE SYSTEM OF FRUIT AND VEGETABLE FOR SMALL HOUSHOLDS AND MEDIUM – SCALE ENTERPRISES IN VIET NAM

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ABSTRACT

With population of more than 80 millions and about 1.5 million ha of growing area of fruit and vegetable, and many different, well-known diversified products, Viet Nam is considered as a potential country to develop and export fruit and vegetable. According to the World Food and Agriculture Organization (FAO), the world average consumption requirement on fruit and vegetable increases 3,6%/year, while the fruit and vegetable supply source is only 2,8%/year. This means that there is a big potential for fruit and vegetable export market. However, in Viet Nam now, only 12% of total fruit and vegetable production is used for export in the form of fresh or processed products. In last recent years, the export turn-over of Viet Nam fruit and vegetable has sharply decreased, especially to China market- the biggest fresh fruit importer of Viet Nam, then slightly increased again, reaching 236,1 millions USD in 2006. The followings are the main reasons: poor variety selection and weak management; lack of master plan for long term development; scattering and small growing areas, poor post harvest technologies; high post harvest loss (20-30%), low quality and unstable quantity and consistency; a small number of farmers/cooperatives/enterprises as well as supply chain members applying the Good Agricultural Practice (GAP) and Quality Assurance (QA) system for their products.

This paper describes the existing situation of fruit and vegetable in Viet Nam and focuses on the important role of applying the QA for all supply chain members such as farmer household growers, cooperatives, collectors, transporters, wholesalers, retailers, processors…The paper also proposes some appropriate suggestions in order to develop, maintain the quality and increase the value and competitiveness of fruit and vegetable, specially when Viet Nam just recently joined the World Trade Organization (WTO).

***Key word**: fruit, vegetable, quality assurance system, supply chain, small and medium enterprise, Viet Nam.*

1. INTRODUCTION

Viet Nam's fruit and vegetable industry has strengthened a wide product range, diversified crop, favorable natural, tropical conditions, workforce availability and potential for high level of production. The areas of fruit, vegetable are 750.000 ha and 635.000 ha, respectively, producing nearly 4 million tons of fruit and more than 5 million tons of vegetable annually. Export accounts for only 15-20% of this quantity, in which, 85-90% are in processed form, mostly canned, some are dried and frozen. The main volume is for domestic consumption.

Fruit and vegetable activities in Viet Nam are mainly carried out by small households, farmers, small and medium enterprises. The production scale is rather small with average growing area from 0.5 to 2 ha per household and productivity levels are still below the world average. The main export fruits are dragon (Binh Thuan, Tien Giang and Long An provinces), pineapple (Ninh Bình, Bac Giang, Kien Giang and Tien Giang), longan (Tien Giang, Ben Tre and Hung Yen), lychee (Bac Giang, Ha Bac), pamelo (Vinh Long, Tien Giang). Two large vegetable growing areas are Red River Delta (accounting for 26% the total production) and Mekong River Delta (accounting for 25%) provinces. At the present, most enterprises specialized in processed products are state-owned enterprises (more than 30), private (160) and joint venture investment (8) companies. The huge number of more than 10.000 households are involving with doing business of fruit and vegetable processed products. The current supply chain is shown in Figure 1.

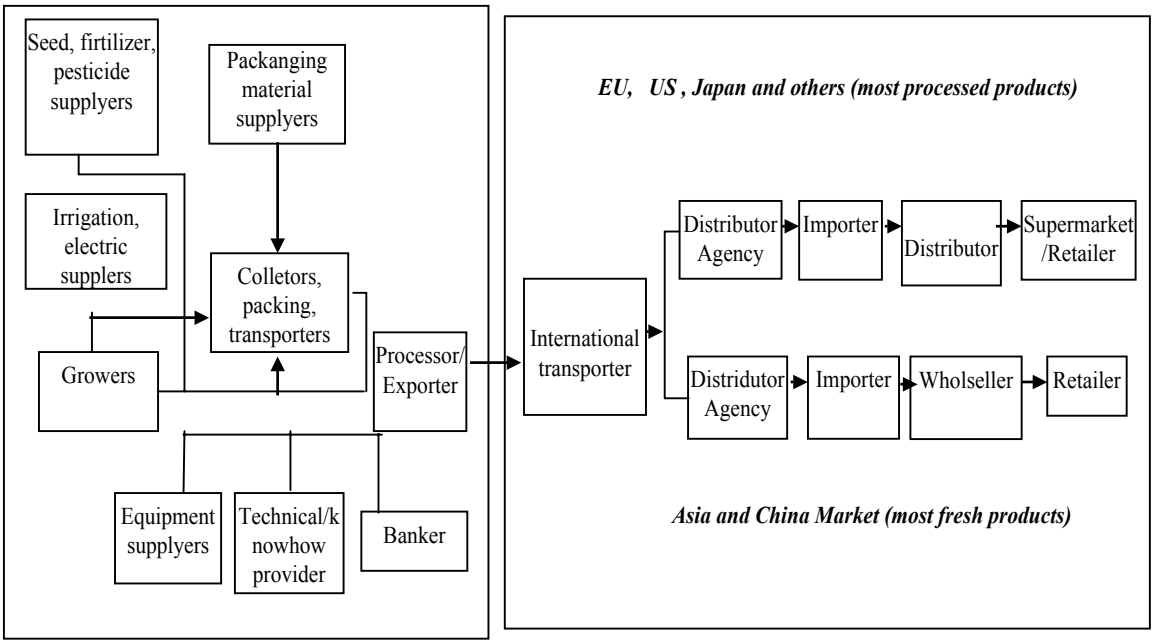
The export turn over of fruit and vegetable is increasing and up to maximum of 330 millions USD in 2001, then slightly decreasing down 151.5 millions USD in 2003, then increasing again, gaining 236.1 millions USD in 2006 as shown in Figure 2. For the first 5 months of 2007, it reached 130 millions USD. (Source: Viet Nam Fruit Association – Vinafruit, 2007). This export turn-over accounts for nearly 20% the total export turn-over of country, (Figure 3).While most Viet Nam fresh fruit is exported to China, canned and frozen fruit and vegetable are mainly exported to Europe and the US (Figures 4 and 5).

In general, the followings are main issues to eliminate the expansion for export market of Viet Nam fruit and vegetable:

- Insufficient or unclear government policies.
- Lack of cluster development.
- Poor product quality.
- Poor post harvest and/or biological technologies (only few packing houses).
- Poor seed/variety/lacks of product innovation.
- Not supply in time, not enough quantity and unstable quality.
- High price.
- Poor facilities and infrastructure.

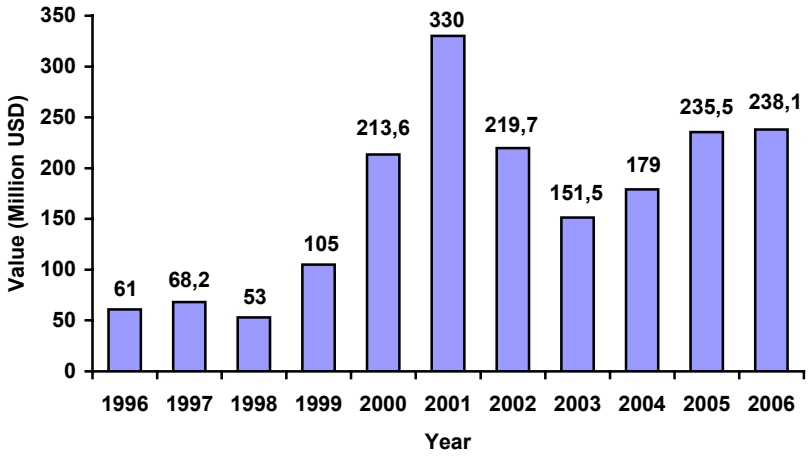
- Lack of market information.
- Most enterprises exporting fresh fruit and vegetable are small and medium, such as: Vegetexco I, Vegetexco II in Ho Chi Minh city, Hoang Hau Dragon Export, Fruit and Green, Viet Fruit, Vegetigi and Antes co companies.
- A lot of intermediates taking part in the supply chain , especially collectors.

Figure 1: Current supply chain of fresh and processed fruit and vegetable in Viet Nam



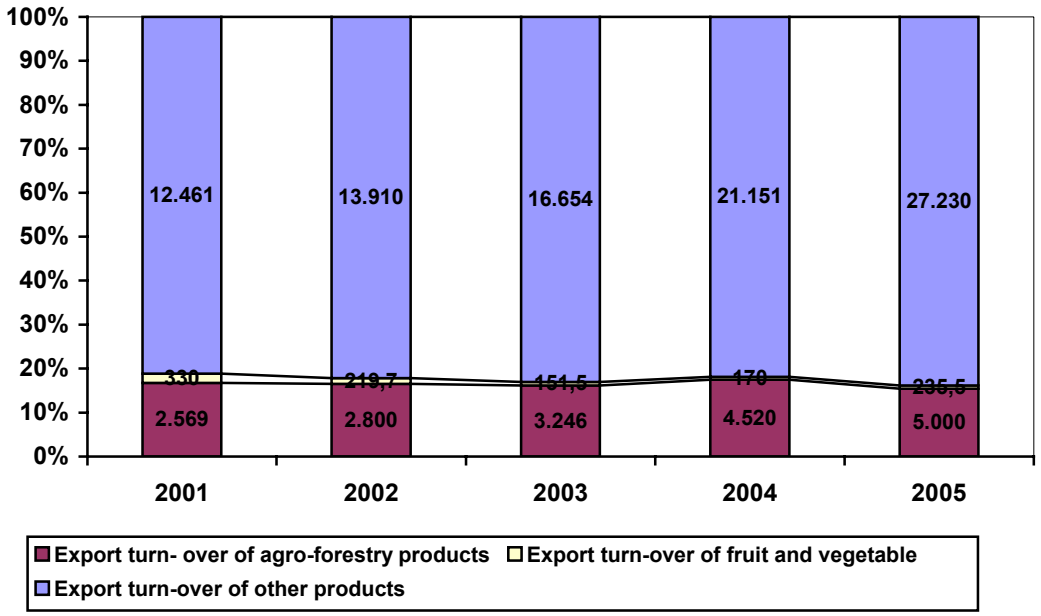
Source: Trade Promotion Department, Ministry of Trade. 2006

Figure 2: Viet Nam fruit and vegetable export turn-over last 10 years



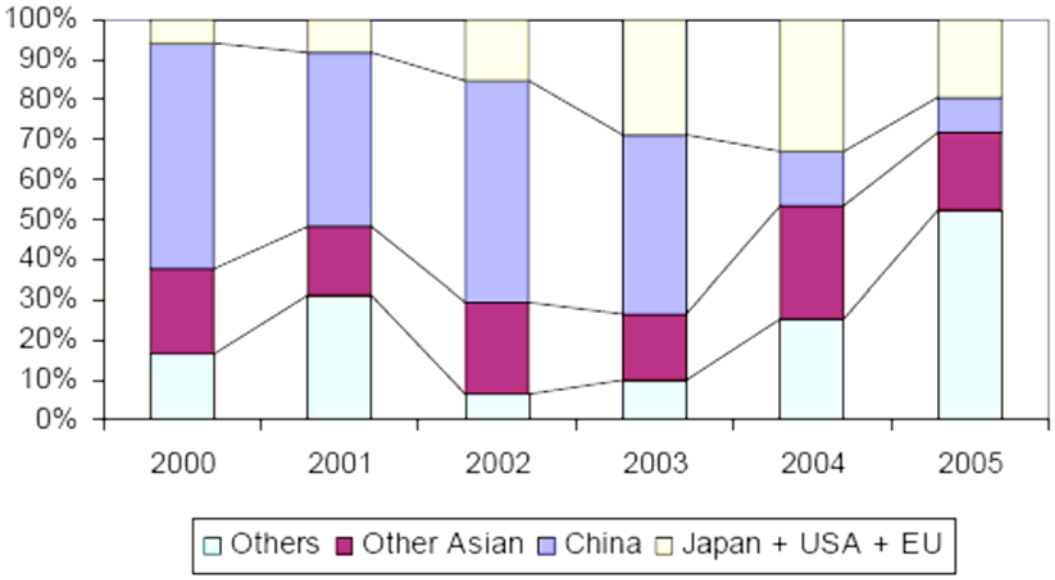
Source: National Statistic Agency, 2007

Figure 3: The percentage of fruit and vegetable compared to total export turn-over of Viet Nam



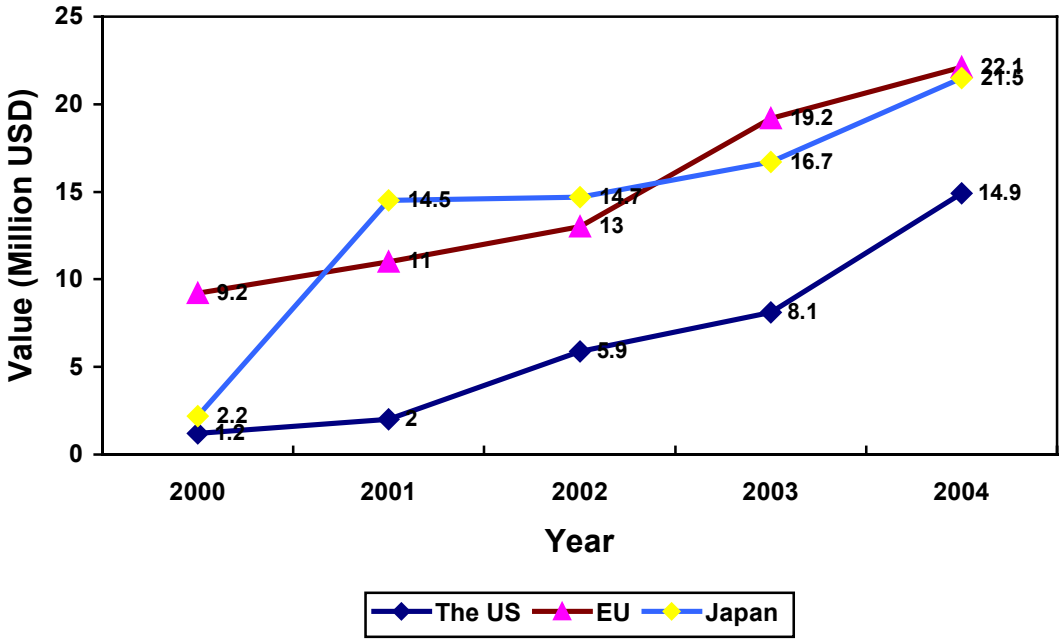
Source: Trade Promotion Department, Ministry of Trade. 2006

Figure 4: Export markets of fruit and vegetable from year 2000 to 2005



Source: Trade Promotion Department, Ministry of Trade. 2006

Figure 5: Export market share of fruit and vegetable products from 2000-2005



Source: Trade Promotion Department, Ministry of Trade. 2006

2. THE IMPORTANT ROLE OF ESTABLISHING THE QA FOR FRUIT AND VEGETABLE IN VIET NAM

- Fruit, vegetable and flower are one of the major export products of Viet Nam as well as the biggest agro-products of WTO with the annual value of 103 billions USD while rice, coffee bean, rubber are smaller, each accounting for about 10 billions USD, respectively. Other products like tea, cashew nut, pepper are about 3 billions USD.

- The import and export markets in the world now are well- organized, mainly driven and managed by inter-national supermarket systems, in which the quality of products is a very important factor for meeting the customer requirement.

The significant event that Viet Nam becomes the member of WTO has brought not only many good opportunities but also challenging for the country, particularly for farmers as well as small and medium enterprises working in agricultural sector. Below are some main issues that we should give much attention to:

Food quality: fruit and vegetable or their products have to get the certificate of Good Agricultural Practice (GAP), i.e., the innovation of Euro-Retailer Produce Working Group from 1997, so call EUREPGAP. Some markets require EUREPGAP (EU countries), FRESH CARE (Australia), Thai GAP (Thailand), INDON GAP (Indonesia). On November 2006, ASEAN GAP was introduced to ASEAN countries. On 14 April 2006, EUREPGAP committee has certified China GAP and applied to 14 provinces of

China, and also helped Japan to establish JGAP on 28 April 2006. At the end of 2006, EUREP GAP organization had certified for more than 35,000 producers in nearly 65 nations. However, in Viet Nam, there are only some dozens enterprises/cooperatives are certified by some international or national organizations.

Food safety: the official regulations applying for fruit and vegetable are not so clear. The international import clients forced the Viet Nam exporters to follow their own conditions or Codex standards. The 2005 annual report of the Plant Protection Department - MARD showed that the fruit vegetable samples taken from main markets at 6 different provinces and cities indicated that 115/392 vegetable samples had pesticide residues (29.3%), in which 99/392 (25.3%) samples are over the maximum residue limit (MRL). While 20% of grape samples taken had residues over MRL. Moreover, at the present, Viet Nam has not signed an agreement on SPS with many countries allowing fresh fruit and vegetable to be imported to those countries.

Quantity: because of small production, poor infrastructure, seasonal issues, clients can not get enough a number of quantity as they want.

Price: normally, the initial investments for fruit and vegetable production are rather high, compared to Thailand and China. The producers and exporters in Viet Nam have to face with this problem, especially when Thailand recently has signed an agreement with the Chinese Government to reduce the import tax down to 0% (while Viet Nam has to pay 12-14%).

Market: Viet Nam has to compete Thailand, Israel, Australia, Chinese Taipei, Southern Africa as well as Chile and The United States…in the EU, China, Hong Kong, China, Japan…where high quality standards for fruit and vegetable export must strictly observed.

- According to MARD, after 5 years carrying out the fruit, vegetable and flower program, the growing areas, production and export value are not met the initial goal objective requirements. Therefore, MARD has approved a new modified program for development of fruit, vegetable and flower to year 2010 with the vision to 2020, in which fruit area will be 1 million ha (area of main export fruit is 225.000 ha) with production is 10 million tons; vegetable area is 700.000 ha (area for safety and high technology applied vegetable is about 100.000 ha), with the production is 14 million tons. Export values of fruit and vegetable of years 2010 and 2020 are 760 millions USD and 1,2 billions USD, respectively. If the QA is not widely applied, Viet Nam can not meet this goals as expected.

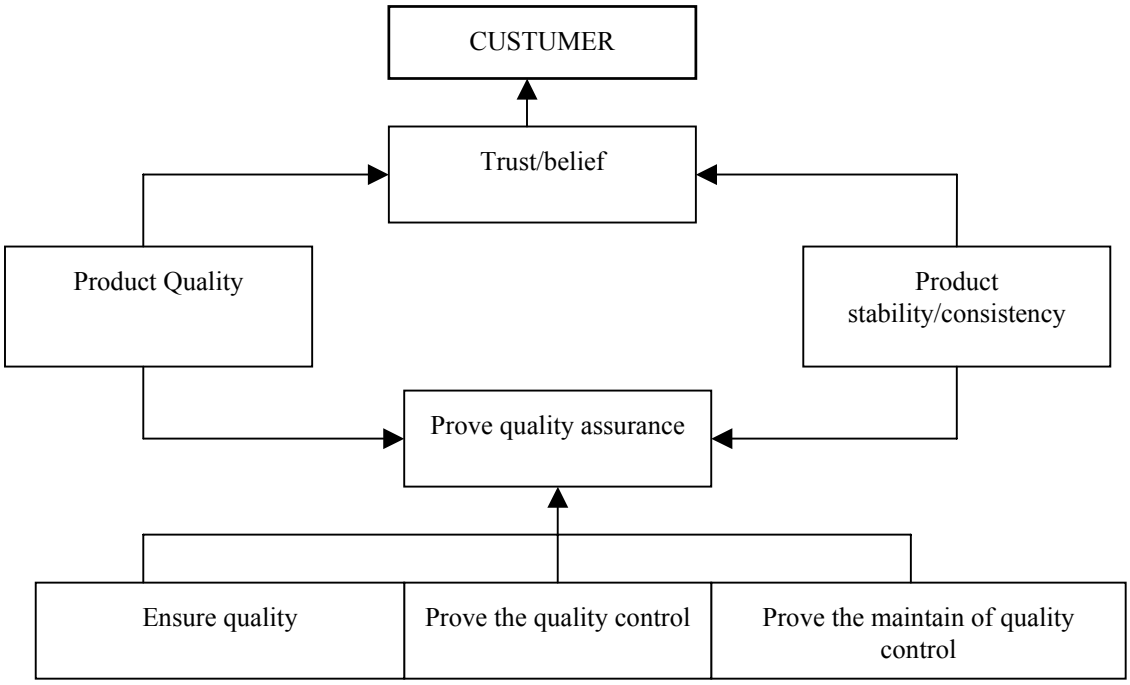
3. THE PROCESS OF ESTABLISHMENT THE QA FOR FRUIT AND VEGETABLE IN VIET NAM

Quality in a product or service can only be judged by the person purchasing or using the product or service, that is, the customer. Therefore, different market niches (for example fruit markets as opposed to supermarket) have different quality expectations. If these

expectations are met, then the product or service can be said to have quality. All quality systems need to achieve this end. Unless a horticultural business or supply chain members in today's world is prepared to accept the need to be market driven, then they run the risk of ceasing to be viable-regardless of the volumes produced. A definition of quality that could be considered for horticultural business is: Quality products consistently meet the expectations of customers. A quality horticultural business is one that consistently achieves quality in products and services as efficiently and cost-effectively as possible. Quality outputs only result when all inputs are planned for, effectively implemented, monitored and adjusted as necessary. QA in horticulture is being developed very much with the aim of compliance to international standards-specifically the International Standards Organization (ISO) 9000 series.

Quality assurance as considered as all planned, systematic activities carried out in a quality system and is proved enough to create the trust /belief that all objects would completely satisfy quality requirements. The " assurance" in quality assurance means consistently and reliably delivering products and services that have been predetermined by way of negotiated market descriptions. The scheme of quality assurance system as shown in Figure 6.

Figure 6: The scheme of quality assurance system



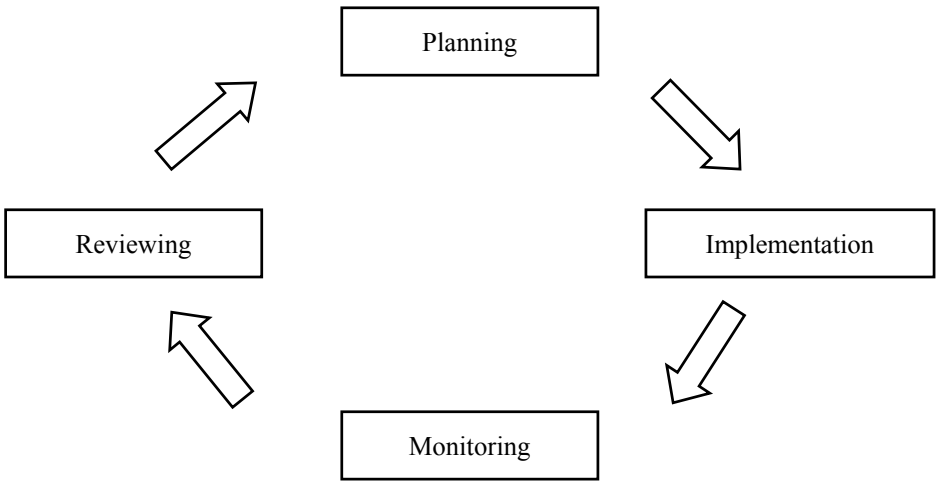
To be truly sustainable and successful, QA program must be driven and understood by the management of an enterprises and must reflect the specific goals, particular strengths and weakness of enterprises. The best way to visualize a quality system is an ongoing cycle of Planning, Implementation, Monitoring and Reviewing as shown in Figure 7.

In Viet Nam, thanks to the ASEAN- Australia Economic Cooperation Program – Phase III, through Project Quality Assurance System for ASEAN fruit (QASAF), and also Fruit and Tea Development Project sponsored by Asia Development Bank and MARD, the Sub-Institute of Agricultural Engineering and Post harvest technology (SIEAP) in Ho Chi Minh city has been implementing successful the QA for dragon fruit in Bin Thuan province, and introduced the QA procedures for many supply chain members in 10 provinces for different kinds of fruit.

The followings are summarized main steps to establish the QA system for fruit and vegetable in Viet Nam:

- Study on the characteristics of fruit or vegetable or its products
- Describe the market requirements
- Marketing
- Training
- Implement all regulation/requirements of the system
- Design the operation schedule at different stages
- Follow up all working principles
- Collect and process information
- Propose the mode and guidance for the works
- Complete the registered quality sheet
- Audit external control
- Simplify the system
- Change and improve the system.

Figure 7: An ongoing cycle of quality assurance system



When assessing existing systems and practices, 8 areas that are being evaluated: management (including planning), facilities and equipment, people (within an organization and externally), materials, quality control, corrective action, records and documentations. One way to ensure that any assessment is to use checklist.

It is not so difficult for our scientists to persuade all members of supply chain to come together and discuss about the QA, but it is extremely difficult for them to follow up what they have agreed to establish their own QA system, even each member know that QA concerned with building and maintaining a product's reputation. Six principles of effective supply chains should be considered when implementing the QA: focus on customers and consumers: creating and sharing value, getting the product right, effective logistics and distribution, effective information and communication and effective relationships.

Recently, the US Agency for International Development (USAID) already helped fruit producers through Program of Viet Nam Competitiveness Imitative (VNCI) with dragon fruit development as a model sample to get a better quality and to meet the export requirement to the US market. Up to now, Ham Thuan Nam dragon fruit cooperative already got the EUREPGAP certificate. Hoang Hau dragon fruit Ltd. Company (in Binh Thuan province) is going to get the same certificate soon. There are many cooperatives, enterprises are carrying out the production in the mode of GAP or GMP, HACCP (for processor). With the help of MARD and Viet Nam Fruit Association (VinaFruit), the Tien River Cluster is established to assist all supply chain members with specific fruit in 6 Mekong River Delta provinces to understand the GAP, QA form production, post harvest handling, transportation, distribution…in order to increase the value added, as well as the reputation of Viet Nam fruit in local and international markets. Through this cluster, thousands of participants were trained and contributed effectively in the fruit and vegetable development for the region.

Realizing the importance of food safety, MARD issued Decision N^{o} 04/2007/QĐ-BNN dated 19 January 2007 on management and certification of safety vegetable production and Decision N^{o} 41/2007/QĐ-BNN dated 15 May 2007 on the regulations of certification of plant variety in accordance with standard. Especially on 28 March 2007, the Viet Nam Prime Minister has issued an Instruction in carrying out the urgent activities to ensure food safety in Viet Nam.

In Ho Chi Minh City, the People Committee has approved the project of implementing GAP for some fruit and vegetable in Cu Chi District from July 2006, and up to now, 1,879.84 ha of vegetable have been certified as safety vegetable.

CONCLUSIONS AND RECOMMENDATIONS:

- When Viet Nam joins WTO, there are many opportunities and challenging for fruit and vegetable development in Viet Nam.

- QA management is not new for many processing enterprises in Viet Nam, but it is for almost of fresh fruit and vegetable supply chain members. Their perception does not keep up with new situations.
- QA program requires a great deal of effort, open-mindedness and hard work. QA system is not product maintenance, but is concerned with the management of all the components of the activities of supply chain.
- QA as the planned interaction of products, services, processes and people – a total approach.
- Through different programs, project from central or local government, international agencies, more trainings, workshops are needed to let people come together, share experiences, profitability, risk and to incorporate and to implement the QA.
- The new model of Tien river cluster should be studied and investigated to readjust and expand it for other provinces of Viet Nam.
- More R-D projects concerning variety, post harvest handling, distribution and marketing are needed to assist all supply chain members to get a better QA.
- New clearly appropriate laws, regulations to food safety, especially the organization to certify GAP for agro-products, and relevant policies from Viet Nam Government are urgently needed to help farmer, trader, processor and distributor to ensure the quality and brand reputation of Viet Nam fruit and vegetable in the world market.

STRATEGIES FOR WASTE TREATMENT IN SMALL AND MEDIUM ENTERPTISES (SME) AND MICRO-ENTERPRISES IN AGRICULTURE SECTOR

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ABSTRACT

Viet Nam is developing country and recently, Vietnamese economic is increasing rapidly. According to Asian development bank (ADB), the Vietnamese economic growth rate is about 8.2 % in 2007 and will be 8.5% in 2008. However, the growth of economic so rapidly makes society face on environmental problem. Because of the polluted treatment sector is not growth suitable with new situation. In an era of the worldwide economic trend, it is very an importance to sustainable develop. Especially, small and medium enterprises (SME) and micro-enterprises in agricultural sector should be more concentrated because they are a critical engine for economical growth, able to respond flexibility to technological advancement and the diversification of consumer needs especially in the Asia- Pacific region. In this paper we would like to emphasize the methods to treat waste water and solid waste in small and medium enterprises (SME) and micro enterprises in agricultural sector.

INTRODUCTION

Viet Nam is developing country and recently, Vietnamese economic is increasing rapidly. According to Asian Development Bank (ADB), the Vietnamese economic growth rate is about 8.2 % in 2007 and will be 8.5% in 2008. However, the growth of economic so rapidly makes society face on environmental problem such as air pollution, water pollution and soil pollution. Many cancer villages are appeared, many rivers call for help such as To Lich, Nhue, Day, … and especially, a huge number of patients suffer from new cancer and new diseases are increasing rapidly in the last decade. The main reason is the polluted treatment sector, which do not grow suitable with the rate of economical growth.

In an era of the worldwide economic trend, it is very an importance to sustainable develop. Especially, small and medium sized enterprises (SME) and micro-enterprises in agricultural sector should be more concentrated because they are a critical engine for economical growth, able to respond flexibility to technological advancement and the diversification of consumer needs especially in the Asia- Pacific region. In Viet Nam, small and medium enterprises (SME) have been developing dramatically during the last decade. The number of SME in 1999 was around 35,000. In 2005 it was more than

225,000. In 2010 it is expected to be 500,000 (Report of the Minister of the Ministry for Planning & Investment in the Meeting between the Prime Minister and Enterprises in February 2006). Clearly the SME sector is becoming the engine and the most dynamic part of the country economy. SME make significant contribution to social and economic development of the country. But they also cause great negative impacts on the environment.

Based on official statistics of pollution discharge by industry, the following sectors are particularly polluting in Viet Nam: Textile, Paper Mills, Metal Processing & Galvanic and Food processing and slaughtering. In this paper we would like to emphasize the methods to treat waste water and solid waste in small and medium-sized enterprises (SME) and micro-enterprises in agricultural sector.

Waste water treatment

There are a number of methods can be used for waste water treatment. However, three main methods, physical methods, chemical method and biological methods, are used for waste water treatment in separation or mixture of these methods.

Physical methods include processes, in which no chemical or biological changes are carried out and strictly physical phenomena are used to improve or treat the waste water.

Examples would be coarse screening to remove larger objects and sedimentation. In this process, physical phenomena relating to the settling of solids by gravity are allowed to operate. Usually this consists of simply holding a wastewater for a short period of time in a tank under quiescent conditions, allowing the heavier solids to settle, and removing the "clarified" effluent. Sedimentation for solids separation is a very common process operation and is routinely employed at the beginning and end of wastewater treatment operations. While sedimentation is one of the most common physical treatment processes that is used to achieve treatment, another physical treatment process consists of aeration to provide oxygen to the wastewater. The other physical phenomena is used in treatment is filtration. In this process, wastewater is passed through a filter medium to separate solids. An example is the use of sand filters to further remove entrained solids from a treated wastewater. The phenomena will occur during the sedimentation process and can be advantageously used to further improve water quality. Greases or oils float into the surface and skimming or physically methods are used to remove them from the waste waters.

Chemical treatment consists of using some chemical reaction or reactions to improve the water quality. Chlorination is used as the most commonly compound in chemical process. Chlorine, a strong oxidizing chemical, can kill bacteria and to slow down the rate of decomposition of the wastewater. Bacterial kill is achieved when vital biological processes are affected by the chlorine. Another strong oxidizing agent, which also use as an oxidizing disinfectant is ozone.

A chemical process commonly used in many industrial wastewater treatment operations is neutralization. Neutralization consists of the addition of acid or base to adjust pH to neutrality. Since lime is a base and it is sometimes used in the neutralization of acid wastes.

Coagulation consists of the addition of a chemical that, through a chemical reaction, forms an insoluble end product that serves to remove substances from the wastewater. Polyvalent metals are commonly used as coagulating chemicals in wastewater treatment and typical coagulants would include lime, certain iron containing compounds (such as ferric chloride or ferric sulfate) and alum (aluminum sulfate).

Some processes may actually be physical and chemical in nature. The use of activated carbon to "adsorb" or remove organics, for example, involves both chemical and physical processes. Processes such as ion exchange, which involves exchanging certain ions for others, are not used to any great extent in wastewater treatment.

Biological treatment methods use microorganisms, mostly bacteria, in the biochemical decomposition of wastewaters to stable end products. Several microorganisms, or sludge's, are formed and a portion of the waste is converted to carbon dioxide, water and other end products. Generally, biological treatment methods can be divided into aerobic and anaerobic methods, based on availability of dissolved oxygen.

The purpose of wastewater treatment is generally to remove from the wastewater enough solids to permit the remainder to be discharged to a receiving water without interfering with its best or proper use. The solids which are removed are primarily organic but may also include inorganic solids. Treatment must also be provided for the solids and liquids which are removed as sludge.

However, in fact we use a mixture of these methods. Three commonly wastewater treatment technologies: mechanical treatment, aquatic treatment and Terrestrial Treatment Technologies.

Mechanical treatment technologies

Mechanical systems utilize a combination of physical, biological, and chemical processes to achieve the treatment objectives. Using natural processes within an artificial environment, mechanical treatment technologies use a series of tanks, pumps, blowers, screens, grinders, and other mechanical components, to treat wastewaters. Flow of wastewater in the system is controlled by various types of instrumentation. Sequencing batch reactors (SBR), oxidation ditches, and extended aeration systems are all variations of the activated-sludge process, which is a suspended-growth system. The trickling filter solids contact process (TF-SCP), in contrast, is an attached-growth system. These treatment systems are effective where land is at a premium.

Aquatic treatment technologies

Facultative lagoons are the most common form of aquatic treatment-lagoon technology currently in use. The water layer near the surface is aerobic while the bottom layer, which includes sludge deposits, is anaerobic. The intermediate layer is aerobic near the top and anaerobic near the bottom, and constitutes the facultative zone. Aerated lagoons are smaller and deeper than facultative lagoons. These systems evolved from stabilization ponds when aeration devices were added to counteract odors arising from septic conditions. The aeration equipments can be mechanical or diffused air systems. The chief disadvantage of lagoons is high effluent solids content, which can exceed 100 mg/l. To counteract this, hydrograph controlled release (HCR) lagoons are a recent innovation. In this system, wastewater is discharged only during periods when the stream flow is adequate to prevent water quality degradation. When stream conditions prohibit discharge, wastewater is accumulated in a storage lagoon.

Constructed wetlands, aqua cultural operations, and sand filters are generally the most successful methods of polishing the treated wastewater effluent from the lagoons. These systems have also been used with more traditional, engineered primary treatment technologies such as septic tanks, and primary clarifiers. Their main advantage is to provide additional treatment beyond secondary treatment where required. In recent years, constructed wetlands have been utilized in two designs: systems using surface water flows and systems using subsurface flows. Both systems utilize the roots of plants to provide substrate for the growth of attached bacteria which utilize the nutrients present in the effluents and for the transfer of oxygen. Bacteria do the bulk of the work in these systems, although there is some nitrogen uptake by the plants. The surface water system most closely approximates a natural wetland. Typically, these systems are long, narrow basins, with depths of less than 1m , that are planted with aquatic vegetation. The shallow groundwater systems use a gravel or sand medium, approximately eighteen inches deep, which provides a rooting medium for the aquatic plants and through which the wastewater flows.

Aquaculture systems are distinguished by the type of plants grown in the wastewater holding basins. These systems are basically shallow ponds covered with floating plants that detain wastewater at least one week. The main purpose of the plants in these systems is to provide a suitable habitat for bacteria which remove the vast majority of dissolved nutrients.

Sand filters have been used for wastewater treatment purposes. Two types of sand filters are commonly used: intermittent and re-circulation. They differ mainly in the method of application of the wastewater. Intermittent filters are flooded with wastewater and then allowed to drain completely before the next application of wastewater. In contrast, re-circulating filters use a pump to re-circulate the effluent to the filter in a ratio of 3 to 5 parts filter effluent to 1 part raw wastewater. Both types of filters use a sand layer, 0,4 to

0,7 m thick, underlain by a collection system of perforated or open joint pipes enclosed within graded gravel. Water is treated biologically by the epiphytic flora associated with the sand and gravel particles, although some physical filtration of suspended solids by the sand grains and some chemical adsorption onto the surface of the sand grains play a role in the treatment process.

Terrestrial treatment technologies

Terrestrial treatment systems include slow-rate overland flow, slow-rate subsurface infiltration, and rapid infiltration methods. In addition to wastewater treatment and low maintenance costs, these systems may yield additional benefits by providing water for groundwater recharge, reforestation, agriculture, and/or livestock pasturage. They depend upon physical, chemical, and biological reactions on and within the soil. Slow-rate overland flow systems require vegetation, both to take up nutrients and other contaminants and to slow the passage of the effluent across the land surface to ensure maximum contact times between the effluents and the plants/soils. Slow-rate subsurface infiltration systems and rapid infiltration systems are "zero discharge" systems that rarely discharge effluents directly to streams or other surface waters. Each system has different constraints regarding soil permeability.

Although slow-rate overland flow systems are the most costly of the natural systems to implement, their advantage is their positive impact on sustainable development practices. In addition to treating wastewater, they provide an economic return from the reuse of water and nutrients to produce marketable crops or other agriculture products and/or water and fodder for livestock. The water may also be used to support reforestation projects in water poor areas. In slow-rate systems, either primary or secondary wastewater is applied at a controlled rate, either by sprinklers or by flooding of furrows, to a vegetated land surface of moderate to low permeability. The wastewater is treated as it passes through the soil by filtration, adsorption, ion exchange, precipitation, microbial action, and plant uptake. The vegetation is a critical component of the process and serves to extract nutrients, reduce erosion, and maintain soil permeability.

Overland flow systems are a land application treatment method in which treated effluents are eventually discharged to surface water. The main benefits of these systems are their low maintenance and low technical manpower requirements. Wastewater is applied intermittently across the tops of terraces constructed on soils of very low permeability and allowed to sheet-flow across the vegetated surface to the runoff collection channel. Treatment, including nitrogen removal, is achieved primarily through sedimentation, filtration, and biochemical activity as the wastewater flows across the vegetated surface of the terraced slope. Loading rates and application cycles are designed to maintain active microorganism growth in the soil.

Table 1 Advantages and disadvantages of conventional and non-conventional wastewater treatment technologies

Treatment Type	Advantages	Disadvantages
Aquatic Systems		
Stabilization lagoons	Low capital cost Low operation and maintenance costs Low technical manpower requirement	Requires a large area of land May produce undesirable odors
Aerated lagoons	Requires relatively little land area Produces few undesirable odors	Requires mechanical devices to aerate the basins Produces effluents with a high suspended solids concentration
Terrestrial Systems		
Septic tanks	Can be used by individual households Easy to operate and maintain Can be built in rural areas	Provides a low treatment efficiency Must be pumped occasionally Requires a landfill for periodic disposal of sludge
Constructed wetlands	Removes up to 70% of solids and bacteria Minimal capital cost Low operation and maintenance requirements and costs	Remains largely experimental Requires periodic removal of excess plant material Best used in areas where suitable native plants are available
Mechanical Systems		
Filtration systems	Minimal land requirements; can be used for household-scale treatment Relatively low cost Easy to operate	Requires mechanical devices
Vertical biological reactors	Highly efficient treatment method Requires little land area Applicable to small communities for local-scale treatment and to big cities for regional-scale treatment	High cost Complex technology Requires technically skilled manpower for operation and maintenance Needs spare-parts-availability Has a high energy requirement
Activated sludge	Highly efficient treatment method Requires little land area Applicable to small communities for local-scale treatment and to big cities for regional-scale treatment	High cost Requires sludge disposal area (sludge is usually land-spread) Requires technically skilled manpower for operation and maintenance

The rate and length of application are controlled to minimize the occurrence of severe anaerobic conditions, and a rest period between applications is needed. The rest period should be long enough to prevent surface ponding, yet short enough to keep the microorganisms active.

In rapid infiltration systems, most of the applied wastewater percolates through the soil, and the treated effluent drains naturally to surface waters or recharges the groundwater. Their cost and manpower requirements are low. Wastewater is applied to soils that are moderately or highly permeable by spreading in basins or by sprinkling. Vegetation is not necessary, but it does not cause a problem if present. The major treatment goal is to convert ammonia nitrogen in the water to nitrate nitrogen before discharging to the receiving water.

Solid water treatment

There are several methods for solid waste treatment such as dumping, incineration, composting. Dumping method is easy method however it cost a lot of land and time. Incineration is very quickly method but it consumes a huge amount of energy and can cause air pollution problem such as dioxin emission. Among these methods composting is an excellent method of recycling biodegradable waste from an ecological point of view of the agricultural sector

Composting process

Composting is natural way of recycling. In this method, organic wastes such as food waste, manure, leaves, grass trimmings, paper, wood, feathers, crop residue are biodegraded and turn it into a valuable organic fertilizer. Composting is not a mysterious or complicated process. Natural recycling (composting) occurs on a continuous basis in the natural environment. Organic matter is metabolized by microorganisms and consumed by invertebrates. The resulting nutrients are returned to the soil to support plant growth.

Composting is a natural biological process, carried out under controlled aerobic conditions (requires oxygen). In this process, various microorganisms, including bacteria and fungi, break down organic matter into simpler substances. The effectiveness of the composting process is dependent upon the environmental conditions present within the composting system such as oxygen, temperature, moisture, material disturbance, organic matter and the size and activity of microbial populations.

Table 2. The C: N ration in difference materials

Material	C:N Ratio
Vegetable wastes	12-20:1
Cow manure	20:1
Fruit wastes	35:1
Leaves	40-80:1
Corn stalks	60:1
Grass clippings	12-25:1
Paper	150-200:1
Poultry manure (fresh)	10:1
Coffee grounds	20:1

Among such environmental conditions we would like to emphasize on C: N ration. Because in compost, the microbes use carbon for energy and nitrogen for protein synthesis. The proportion of these two elements required by the microbes averages about 30 parts carbon to 1 part nitrogen. Accordingly, the ideal ratio of Carbon to Nitrogen (C:N) is 30 to 1 (measured on a dry weight basis). This ratio governs the speed at which the microbes decompose organic waste.

In composting method, there are some modified methods. In this paper we would like to introduce some general method, which should be used in agriculure sector: aerated static pile composting, aerated windrow composting,vermicomposting, onsite composting and in-vessel composting

Aerated static pile composting

In aerated static pile composting, organic waste is mixed together in one large pile instead of rows. To aerate the pile, layers of loosely piled bulking agents (e.g., wood chips, shredded newspaper) are added so that air can pass from the bottom to the top of the pile. The piles also can be placed over a network of pipes that deliver air into or draw air out of the pile. Air blowers might be activated by a timer or a temperature sensor.

Fig 1: Steam Rising from Compost Pile

Aerated static piles are suitable for a relatively homogenous mix of organic waste and work well for larger quantity generators of yard trimmings and compostable municipal solid waste (e.g., food scraps, paper products), which might include local governments, landscapers, or farms. This method, however, does not work well for composting animal byproducts or grease from food processing industries. Like windrow composting, in a warm, arid climate, aerated static piles are sometimes covered or placed under a shelter to prevent water from evaporating. In the cold, the core of the pile will retain its warm temperature, but aeration might be more difficult in the cold because this method involves passive air flowing rather than active turning. Some aerated static piles are placed indoors with proper ventilation. Since there is no physical turning, this method requires careful monitoring to ensure that the outside of the pile heats up as much as the core. One way to alleviate bad odors is to apply a thick layer of finished compost over the pile, which can help maintain high temperatures throughout the pile. Another way to

deal with odor, provided that the air blower draws air out of the pile, is to filter this air through a biofilter made from finished compost. This method typically requires equipment such as blowers, pipes, sensors, and fans, which might involve significant costs and technical assistance. Having a controlled supply of air enables construction of large piles, which require less land than the windrow method. This method produces compost relatively quickly—within 3 to 6 months.

Aerated windrow composting

Organic waste is formed into rows of long piles called "windrows" and aerated by turning the pile periodically by either manual or mechanical means. The ideal pile height, which is between 1-2 m, allows for a pile large enough to generate sufficient heat and maintain temperatures, yet small enough to allow oxygen to flow to the windrow's core. The ideal pile width is between 3-4 m.

Fig 2: Huge Compost Pile

This method can accommodate large volumes of diverse wastes, including yard trimmings, grease, liquids, and animal byproducts (such as fish and poultry wastes), but only with frequent turning and careful monitoring. This method is suited for large quantities, such as that generated by entire communities and collected by local governments, and high volume food-processing businesses. In a warm, arid climate, windrows are sometimes covered or placed under a shelter to prevent water from evaporating. In rainy seasons, the shapes of the pile can be adjusted so that water runs off the top of the pile rather than being absorbed into the pile. Also, windrow composting can work in cold climates. Often the outside of the pile might freeze, but in the windrow core, temperature can reach 60^{O}C. Liquid, released during the composting process, can contaminate local ground-water and surface-water supplies and should be collected and treated. In addition, windrow composting is a large scale operation and might be subject to regulatory enforcement. Samples of the compost should be tested in a laboratory for bacterial and heavy metal content. Odors also need to be controlled. The public should be informed of the operation and have a method to address any complaints about animals or bad odors. Other concerns might include zoning and siting

requirements. Windrow composting often requires large tracts of land, sturdy equipment, a continual supply of labor to maintain and operate the facility, and patience to experiment with various materials mixtures and turning frequencies. This method will yield significant amounts of compost, which might require assistance to market the end-product. Alternatively, local governments can make the compost available to residents for a low or no cost.

Vermicomposting

Through this method, red worms are placed in bins with organic matter in order to break it down into a high-value compost called castings. Worm bins are easy to construct (they are also commercially available) and can be adapted to accommodate the volume of food scraps generated. Worms will eat almost anything you would put in a typical compost pile (e.g., food scraps, paper, plants). Vermicomposting can be ideal for apartment dwellers or small offices that want to derive some of the benefits of composting and reduce solid waste. It is frequently used in schools to teach children conservation and recycling.

Worms are sensitive to variations in climate. Extreme temperatures and direct sunlight are not healthy for the worms. The optimal temperatures for vermicomposting range from 28-32°C. In hot, arid areas, the bin should be placed under the shade. By vermicomposting indoors, however, one can avoid many of the problems posed by hot or cold climates. The primary responsibility is to keep the worms alive and healthy by providing the proper conditions and sufficient food. Vermicomposting has only a few basic requirements, among them: worms, worm bedding (e.g., shredded newspaper, cardboard), and a bin to contain the worms and organic matter. Maintenance procedures include preparing bedding, burying garbage, and separating worms from their castings. One kg of mature worms (approximately 800-1,000 worms) can eat up to half a kg of organic material per day. It typically takes three to four months for these worms to produce harvestable castings, which can be used as potting soil.

Fig 3: Red worm in a bin

Backyard or onsite composting

Backyard or onsite composting can be conducted by residents and other small-quantity generators of organic waste on their own property. By composting these materials onsite, homeowners and select businesses can significantly reduce the amount of waste that needs to be disposed of and thereby save money from avoided disposal costs. Backyard or onsite composting is suitable for converting yard trimmings and food scraps into compost that can be applied on site. This method should not be used to compost animal products or large quantities of food scraps. Households, commercial establishments, and institutions (e.g., universities, schools, hospitals) can leave grass clippings on the lawn—known as "grascycling"—where the cuttings will decompose naturally and return some nutrients back to the soil. Backyard or onsite composters also might keep leaves in piles for eventual use as mulch around trees and scrubs to retain moisture.

Climate and seasonal variations do not present major challenges to backyard or onsite composting because this method typically involves small quantities of organic waste. When conditions change, the process can be adjusted accordingly without many complications. Improper management of food scraps can cause odors and also might attract unwanted attention from insects or animals. Backyard or onsite composting requires very little time or equipment. Education is the most critical aspect of backyard or onsite composting. Local communities might hold composting demonstrations and seminars to encourage homeowners or businesses to compost on their own properties. The conversion of organic material to compost can take up to two years, but manual turning can hasten the process considerably (e.g., 3 to 6 months). The resulting natural fertilizer can be applied to lawns and gardens to help condition the soil and replenish nutrients. Compost, however, should not be used as potting soil for houseplants because of the presence of weed and grass seeds.

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ENHANCING QUALITY OF SALL-SCALE DRIED FISH PROCESSING IN THE PHILIPPINES THROUGH COMMUNITY USE OF MULTI-COMMODITY SOLAR TUNNEL DRYER

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ABSTRACT

This study attempts to improve the quality of dried fish products through the use of Multi-Commodity Solar Tunnel Dryer (MCSTD) as an alternative to sun drying. Six units of MCSTD were installed and evaluated nationwide. The technical and financial performance of the dryer was determined in drying six species of marine products. Results of technical performance showed that MCSTD was superior compared to sun drying, in terms of shorter drying time, lower microbial load and cleaner appearance of dried product. However, the MCSTD would not be economically feasible, unless the market is willing to pay higher price for quality dried products.

INTRODUCTION

Fish is a cheap source of protein and eaten by majority of the country's population. The Philippines ranked 11th among the top fish producing countries in 2000, with production of about 3 million metric tons. In 2002, the total production increased at 3.4 million metric tons valued at about 115 billion pesos (46.00 pesos (PHP) = 1.00 USD). About 25-30 % of annual catch is processed as salted, dried, smoked, fermented, frozen, canned and as fish meal.

Dried fish remains a popular dietary item among Filipinos. The dried fish industry plays an important role in the local economy providing employment opportunities for fishing families. Sun drying remains the most common method used. The practice can be done almost without cost and fish can be dried near their homes. However, sun drying exposes the raw material to unfavorable weather condition as well as contamination by dusts, flies, microbes, animal wastes, and vehicle fumes, resulting to poor quality dried products. Such products are unacceptable for export and would not pass quality standards.

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The Multi-Commodity Solar Tunnel Dryer (MCSTD) originally developed in the University of Hohenheim, Germany is an alternative system for fish drying. MCSTD offers several advantages over sun drying such as shorter drying time, protection from contamination, and better quality dried products.

In an attempt to improve the quality of dried fish products the Bureau of Post harvest Research and Extension (BPRE) in collaboration with the Bureau of Fishery and Aquatic Resources (BFAR) evaluated the potential of MCSTD as alternative method of drying fish products.

Description of MCSTD

As shown in Figures 1 and 2, the dryer has three major components: (1) heat collector, (2) drying chamber and (3) fan.

Figure 1. The perspective view of locally-fabricated MCSTD.

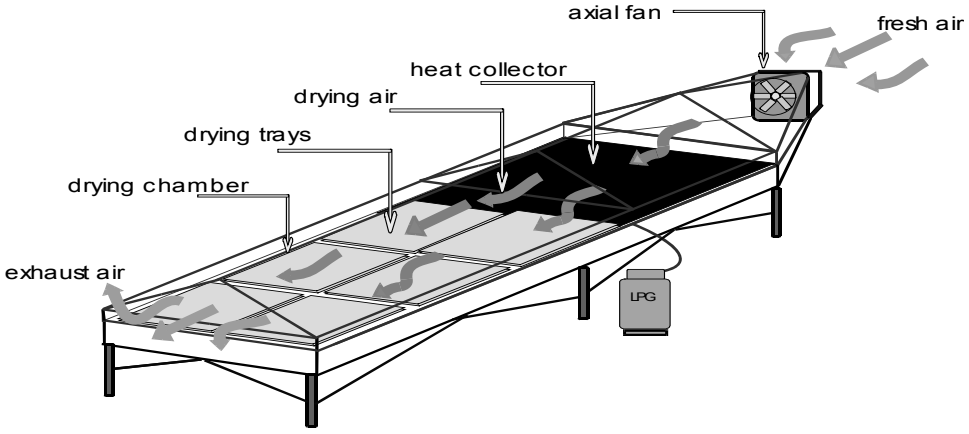


Figure 2. The schematic diagram of MCSTD.

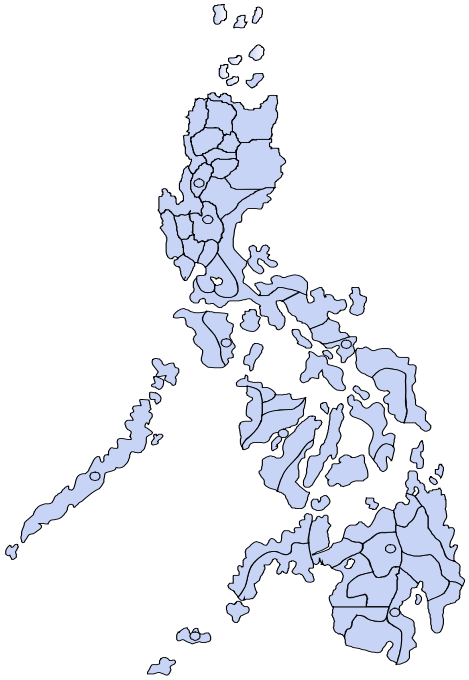
The heat collector and drying chamber are made of two layers of 6-mm marine plywood, with 25-mm polystyrene board inserted between the two plywood. The 7.3 m long heat collector is painted black to absorb solar heat, while the drying chamber (9.8 m long) is painted white. Both are covered with 2-mm UV-stabilized polyethylene plastic sheet mounted in inverted 'V" metal frames. Installed inside the drying chamber is 50-mm square wire mesh, made of 4-mm iron bars. The trays containing the product are placed on top of the mesh. The dryer can be loaded with 100 to 200 kg of fresh product. Metal frames, 0.90 m high, serve as dryer stand. The dryer is installed in an east-west orientation to align the heat collector with the sun's path. An axial fan with 90 W electric motor forces air into the heat collector which increases the drying air temperature to 45 to 60 °C.

Organization of collaborating institutions

A multi-disciplinary technical working group composed of researchers from BPRE and BFAR was created to conduct project activities nationwide. BPRE provided six MCSTD units for distribution to project sites and undertook the technical and financial performance evaluation of the dryer. On the other hand, BFAR conducted the quality assessment of dried fish products, and served as resource person/advisers in the conduct of training on hygienic and sanitary processing standards. The BFAR Regional Field Units in collaboration with the concerned local government units (LGUs) provided the funds during shipment and delivery of the dryers.

Description of project Sites, cooperators and fish products

Six locations nationwide were identified as project sites (Figure 3):



MCSTD Project Sites:

1. Site: Aparri, Cagayan
   Commodity: Shrimp
   Cooperator: Rural Improvement Club-Aparri,
2. Site: Damortis, Sto. Tomas, La Union
   Commodity: Hairtail
   Cooperator: SAMNEDA
3. Site: Balanga, Bataan
   Commodity: Anchovy
   Cooperator: Lingap Dagat, MPCI
4. Site: Cadiz City
   Commodity: Squid
   Cooperator: LGU-Cadiz City
5. Site: Zamboanga City
   Commodity: Sardine
   Cooperator: YY Sea Int Corp.
6. Site: Baliangao, Misamis Occidental
   Commodity: Rabbit fish
   Cooperator: Naburos Multi-purpose Cooperative

Figure 3. MCSTD project sites nationwide

1. Damortis, Sto. Tomas, La Union, Samahan ng Mga Negosyante ng Damortis (SAMNEDA), Hairtail Fish (Espada)

Damortis is a coastal village famous for its dried hairtail *(Trichiurus haumella)*. SAMNEDA is a cooperative composed of 35 members mostly women, who are engaged in the processing of dried hair tail. Each member processed at least 40 to 60 kg of fresh fish daily on a self-financed entrepreneurship because the cooperative lacks capital to finance a common processing operation. Dried products are produced all year round and sold in small stalls along the highway and in neighboring towns and provinces.

2. Aparri, Cagayan, Rural Improvement Club of Maura (RIC), Shrimp (Aramang)

Aparri, a major trading center and port, is known for its soft-shelled shrimp (*Nematopalaemon tenuipes*), locally known as Aramang. The Rural Improvement Club, organized and supervised by LGU Aparri is composed of 37 women processors. The members earn their income by providing labor for drying Aramang and other fish species as their main source of livelihood. Each member dries an average of 140 kg (10 cans) per day and daily earns about PHP 300 during peak harvest. Aramang is being exported to Japan.

3. Balanga, Bataan, Lingap Dagat MPCI, Anchovy (Dilis)

Balanga is a city with many commercial fish processing plants and famous source of dried anchovy (*Stolephorous indicus*) locally known as dilis. The Lingap Dagat Multi-Purpose Cooperative Inc. is engaged in processing of dried and smoked fish, bottled sardine and other fish products. The cooperative has 40 active members, and dries 50 kg anchovy per day with an operating capital of PHP 200,000.

4. Cadiz, Negros Occidental, LGU-Cadiz, Squid (Pusit)

Drying of squid (*Sepiuthosis lessoniana*) is a traditional industry in Cadiz. Small scale processors dry 55 to 100 kg/day of fresh squid near fisherman's houses. The LGU promotes the use of MCSTD through the Self-Employment Assistance Program (SEAP). The LGU through SEAP provides funding assistance to Mrs. Marife Espina who is a dried squid processor.

5. Zamboanga City, YY Sea International Inc., Sardine (Tamban)

The YY Sea International Corporation is a private company in Zamboanga engaged in volume trading of fresh and dried fish, as well as processing of bottled sardine (*Sardinella fimbriata*). It processes 450 kg of fresh sardine daily. The company would like to use the MCSTD for the production of quality dried sardine for export market.

6. Naburos Island, Baliangao Misamis Occidental, Naburos Fisher folk Multi-purpose Cooperative (NAFIMCO), Rabbit fish (Danggit)

Naburos is an island village noted for processing of dried rabbit fish (*Siganus Fuscescens*) locally known as danggit. The Naburos Fisherfolk Multi-Purpose

Cooperative (NAFIMCO) has 25 members composed of fisherman and processors, mostly women. The processor, usually a housewife, buys or consigns her raw material (about 17 to 20 kg), and then processes and sells the dried product to nearby towns or to traders who market the product to major cities. The dried fish is sold either in split or fillet (boneless) form.

Undesirable practices in traditional dried fish processing

In general, cleaning, washing, processing and drying operations were not performed satisfactorily in all sites. Some undesirable practices during processing were observed as follows:

1. Raw materials bought from landing areas were transported without ice, sorted on unclean floors and exposed to sunlight;
2. Fish cleaning and washing were done along streets or on individual homes of processors without using ice during the process;
3. Fish were washed with polluted seawater taken from the harbor or seashore or with dirty water reused many times;
4. Drying of fish was done on unclean surfaces: spread directly on pavement without underlay; laid on trays made of bamboo and fishnets; or spread on nets laid on the ground;
5. Numerous flies were present on raw materials during processing and drying. Raw materials were placed on unclean trays or in contact with soil;
6. Some processors applied household insect spray when flies are too numerous;
7. The amount of salt used in the brine solution varied greatly depending on freshness of raw material. More salt is added to low quality material to arrest spoilage;
8. During packing, workers oftentimes used their barefoot to compact the dried product in the packaging material;
9. Dried products were not properly packed, exposing the product to contamination;
10. Non-food packaging materials were used for packing;
11. Waste materials were not properly disposed, causing pollution and foul smell.
12. Processing sites were located in overcrowded housing areas with the exception of YY Sea International Inc., Zamboanga which had its processing center far from the homes.

Conduct of training

Two types of training were conducted in the six project sites. The first one was a "Seminar-Workshop on Good Manufacturing Practices (GMP) and Standard Sanitary Operating Procedures (SSOP) of MCSTD" for fish drying. The second was a "Hands-on

Training on the Operation of MCSTD". The training on GMP and SSOP enhanced the participants' knowledge on the hygienic and sanitary handling, processing and drying of fish products. One of the outputs of the workshop was a GMP and SSOP plan prepared by the participants for use in their own processing activities. The plan was composed of code of practices and standards on the production of quality dried fish. On the other hand, the hands-on training on the operation of MCSTD not only improved the participants' skills in the proper dryer operation but also enhanced their knowledge on the dryers' important features and function.

Technical performance evaluation of MCSTD

Drying trials on MCSTD were conducted during peak fish harvest season. Fresh samples were prepared and dried by the processors in accordance with recommended practices by BFAR. Simultaneously, small portion of the prepared fresh samples were dried using traditional sun drying practice. After drying, fish samples from MCSTD and sun drying were obtained for microbiological analysis. Table 1 and 2 shows the result of the drying tests. In general, shorter drying time was attained in MCSTD. Reduction of drying time was greater for split hair tail and squid compared to species which were not split.

Table 1. Results of drying trials for rabbit fish, squid and hair tail.

Particulars	Rabbit fish	Squid		Hair tail		
		Trial 1	Trial 2	Trial 1	Trial 2	Trial 3
Initial weight, kg	53.8	40.8	39.8	42.3	42.3	40.4
Final weight, kg	18.1	8.7	8.5	9.3	9.2	8.8
Drying temperature, °C	35.8	42.7	43.3	41.4	40.9	43.7
MCSTD drying time, hr	7.0	6.0	5.0	4.8	4.0	5.0
Sun drying time, hr	9.0	10.0	10.0	8.0	8.0	8.0

Results of microbial analysis are shown in Table 3. The total bacterial count (TBC) of MCSTD dried anchovy was only 33,000/g which was very low compared to standard limit of 500,000/g, passing export quality standards. On the other hand, sun dried anchovy exhibited bacterial presence which was too numerous to count (TNTC). The TBCs for MCSTD dried shrimp, squid and hair tail did not pass the standard limit. However, the values were much lower compared to the sun dried products.

Table 2. Results of technical evaluation for anchovy, shrimp and sardine

Particulars	Anchovy		Shrimp		Sardine		
	Trial 1	Trial 2	Trial1	Trial 2	Trial 1	Trial 2	Trial 3
Initial weight, kg	26.5	52.0	62.4	62.4	138.7	46.8	40.0
Final weight, kg	6.7	12.0	18.3	16.8	101.0	36.0	32.5
Drying temperature, °C	46.4	40.7	42.1	43.5	38.4	36.4	37.5
MCSTD drying time, hr	6.0	7.5	4.0	4.0	10.0	4.5	5.0
Sun drying time, hr	8.0	8.0	5.0	5.6	-	5.0	5.0

Table 3. Microbial analysis of dried products from MCSTD and sun drying.

	TBC	Staphylococcus	Molds	TBC	Staphylococcus	Molds
Hair tail	4,366,666/g	600/g	300/g	8,000,000/g	600/g	300/g
Shrimp	624,000/g	580/g	40/g	TNTC	TNTC	40/g
Anchovy	33,000/g	2,500/g	50/g	TNTC	TNTC	TNTC
Squid	1,400,000/g	600/g	20/g	9,200,000/g	900/g	100/g

TNTC - too Numerous to count Standard limits
Total bacterial count= 500,000/g
Staphylococcus - 1,000/g
Molds - no standard limit specified

Financial analysis of MCSTD for fish drying

Key informants and members of the cooperator were interviewed to establish economic data for the analysis of the financial performance of the dryer. Financial analysis showed that the use of MCSTD drying service resulted to increase in income when there is increase in price of dried product due to better quality. This was observed for squid, shrimp and anchovy. For other fish products, however, the processors did not obtain any price incentive for better product quality.

Perceptions on the technology

The cooperators, other processors, fisher folks, traders, local officials and consumers were interviewed on their perceptions on the use of MCSTD for fish drying. Perceptions regarding dryer design, capacity, performance, product quality and other relevant information were gathered. Some of the positive comments were as follows:

1. Drying is faster compared to sun drying;
2. Drying is hygienic, prohibiting entry of flies and rain;

3. Dryer produces clean and visually appealing dried fish;
4. Dryer is not difficult to operate, even by women;
5. Dryer is easy to repair and maintain because it is made of locally available materials.

Some of the negative comments, on the other hand, were as follows:

1. Dryer acquisition requires high investment;
2. Dryer capacity is not sufficient to meet drying requirement of fish processors;
3. Dryer needs wide open area to accommodate the dryer.
4. Dissemination of results and findings

The project conducted series of consultative meetings and seminar workshops to the different project sites to disseminate initial findings of the study. The activities were sponsored by the LGUs in collaboration with BFAR Regional Field Units. The seminar/workshops were attended by the different sectors involved in the dried fish processing industry, including the collaborators, cooperators, processors, traders, manufacturers, fishers, LGU representatives and representative from the Department of Trade and Industry. Local media representatives were also invited during the launching activities and helped promote the project through press releases. Information materials in a form of brochures were also distributed to create awareness to the general public.

Summary, conclusions and recommendations

The drying performance of MCSTD is significantly better than traditional sun drying methods in terms pf shorter drying time, better product appearance and less contamination by microorganisms and other foreign substances. However, the acquisition of the dryer is financially feasible only when market offers better price for good quality fish products. The LGU should play stronger role in the improvement of the dried fish industry in order to generate more employment opportunities among its constituents. The LGU should acquire MCSTD units as public investment facility and offer the dryers to processors at minimal cost. The LGU should also find ways to minimize the problem of pollution inherent to current processing practices. On the other hand, processors should be continuously trained and encouraged to observe proper hygiene in all stages of fish handling to ensure good quality of dried product.

Future research should give emphasis on the role of women in the fish processing industry. They currently constitute 80% of the industry's total labor force.

ACTION PLAN FOR FUTURE

I. SOME COMMENTS

1. During the developing agriculture, the situation of some APEC member economies as following:

- A part of farmers will continue to be very closely connected with farming works and to develop market orientated agriculture with higher productivity and income.
- A part of farmers is moving to get jobs in the cities.
- A part of farmers is doing in the farm with other works such as: services, food processing and trading.
- The small and medium enterprises are established as well as the craft village set up and developed. The SMEs' and craft villages play an important role in economies, especially in the developing economies. They contribute not only a part of GDP but also are the only realistic employment for millions of poor people in rural areas.

2. Some advantages for the SME in agricultural sectors in the context of economical integrate:

- Increasing demand from increasing the number of consumers and economic growth;
- Market liberalization;
- Information and communication technologies;
- Access to advance technologies, especially biotechnology.

3. Some disadvantages for the SME in agricultural sectors in the APEC economies, especially the developing economies:

Poor infrastructure and inadequate transport facilities;

Inadequate advance technologies, low in marketing competency and capability;

Limited access to available supported fund;

Lack of market information and training;

Lack of knowledge on GMP (good management practices) and international standards and other advisor services.

4. Some APEC member economies have established the effective strategies for agricultural development such as:

- To promote and develop modern agriculture" in China;

- To develop national agro– based industry in Malaysia
- To industrialize and modernize agriculture in Vietnam.
- To promote the agricultural Food processing industry in Chinese Taipei.

These strategies have good effect on the agricultural production and business.

5. Some useful policies and programs that the government of APEC member economies has the initiative such as:

- The national SME development Blueprint of Malaysian Government and 189 major programs are being implemented in 2007, with a financial commitment of RM.3.7 billion.
- The Program of agricultural and modernization and organization and "The establishment of agricultural industry system" in China.
- The policy for the rural industrialization in Viet Nam is to assure that the rural area would produce enough food for all people and raw material for industries...

6. After the workshop "Enhance capability of SMEs' in agricultural sector of APEC economies", many valuable experiences are considered to apply for instance:

- The partner: "Interest – connecting between enterprises and Farmers" building an interest-connected mechanism for interest sharing and risk sharing.
- The shifting a uni-funtional agriculture to set up the multi-functional one which can not only food, feed, energy but also serve for processing, ecological purpose and the satisfaction of the people's requirement.
- The SME development Blueprint in 2005 from Malaysia;
- The using the CAS certification system to upgrade and supply the fresh food market with cold salad and fresh-cut-fruits in Taiwan.
- The Affinity Based Groups as small farmer's groups are set up and developed in Indonesia that improved capacity in agribusiness development.

II. SOME SUGGESTIONS FOR THE WAY FORWARD

1. The governmental agency has to set up the policies concerned on following actions

- To focus on supporting key reform actions in creating an enabling agribusiness and investment climate;
- To build the suitable policies enhancing the competition of agricultural product in the international market;

- To improve mechanisms for the preparation of laws and other legal document for SME in agricultural sector, such as: Policies that improve to access to credit; to train the labor in rural areas, especially in SME; to have land for investing SME;

2. To help SME to improve and access advance technology

- To identify and develop suitable food preservation and processing technologies for increasing product quality and reducing post-harvest losses;
- To encourage closely cooperation trend of technology transfer among the APEC member economies;
- To find the main solutions that help farmer in each APEC member for applying new technology in post harvesting stage;
- To support SME in agricultural sector access advanced technologies and international standards, such as HACCP, ISO, GAP…

3. To support SME to access in the domestic and international market

- To focus on the ago-industrial sub-sector, specially agro-industrial value chains/clusters identified in the pilot province.
- To develop the agribusiness and increase value added of agricultural products;
- To strengthen to build linkages between farmer and SME and researcher with the national and international market.

4. To set up study tour for SME in agricultural sector of APEC member economies to China, Chinese Taipei, Indonesia, Malaysia, The Philippines as well as other economies under the assistance of ATCWG, APEC.

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PICTURES OF WORKSHOP ACTIVITIES

Overall picture in the conference room

Philippines presenter

Workshop audiences in the conference room

Visting Ha Noi Business Incubator (HBI) at Le chi, Gia Lam, Ha Noi

In the front of Ha Noi Business Incubator

Listeners to introduction about Ha Noi Business Incubator

Visting Dai An Food Procesing Enterprise at Ha Noi Business Incubator

Visiting micro-enterprise for processing dried onion at Nam Trung, Hai Duong

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