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Issues of Post-Harvest in Rice Production of Viet Nam

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1. Introduction

In the world, rice is ranked second in terms of cultivation area, following wheat. However, rice provides a higher calorie quantity per hectare than any other grain, including wheat. The average number of people one hectare of rice can support is 5.7 per year, while the figure for maize is 5.3 and wheat is 4.1. In nutrition intake of Asians, including Vietnamese, rice provides 40-80 percent of daily calorie intake and at least 40 percent of protein. Compared to other grains, protein of rice is highly nurtured owing to the balanced characteristics of its indispensable essential aminoacids and to its high absorptive capacity (which can reach to 100 percent).

In addition, in terms of the social aspect, rice cultivation and its technologies, including post-harvest, create jobs for our planet's largest rural community, the rural population.

The requirements for food and fertilizer by the annually increasing amount population (80-100 million people each year) throughout the world come from poor countries. According to the forecast by Dr. Lampe, a former director of the International Rice Research Institute (IRRI), the demand for husky paddy over the next 30 years will be about 870 million tons per year, or 70 percent higher than today' s demand.

However, the area of rice cultivation will be the same or smaller due to the fact that rice areas will decrease. Paddy land has decreased due to rapid industrialization and urbanization in Asian countries. If the environmental fears lead to policies that abolish rice cultivation on land lying between cities and rural areas, and promote a strong shift from an intensive farming system to a less intensive one, the area for rice cultivation will decrease even more rapidly.

Under such constraints, two directions for raising total rice production output, especially in Asia, must be concurrently implemented to ensure sufficient rice for demand caused by increasing population. First, increasing yield through cross breeding, selection and use of new rice varieties created through genetic engineering or recombinant-DNA techniques, with high yield, good quality, disease resistance and a better standing against disadvantageous conditions of the environment. Second, decreasing losses in the stage of production and of post-harvest activities, especially in drying, preservation, milling and processing.

It takes a lot of time, investment and labor to generate outputs in agricultural production. However, waste in use of agricultural products, in fact, still exists.

First of all, losses in the post-harvest stage of agricultural products are still high. This is due to the fact that reasonable, synchronous organization of the post-harvest system and its proper investment has not yet been established.

As mentioned above, the largest loss proportion is in two stages, which are rice preservation and milling, with the figures of from 7.2 to 8.9 percent, accounting for 50 percent of all losses in the post-harvest stage.

If investment in upgrading and renovating technologies and equipment for post-harvest activities is made, especially in preservation and processing, the losses in that stage can be reduced to a low level, leading to very high socio-economic efficiency. It is calculated that if losses in the post-harvest stage could be reduced by 2-3 percent from the present level, the added volume of commodity rice every year in the Red River Delta alone would be 72,000-108,000 tons with an estimated value of about $20-30 million. This volume of rice requires 20,570-30,850 hectares of cultivated land, a condition that would be impossible in the Red River Delta.

If synchronous investment in the post-harvest stage is made, the proportion of losses would be further reduced and socio-economic efficiency would be higher.

2. The Actual Situation of Rice Post-Harvest Technologies

2.1. The current situation of Viet Nam's rice production

Viet Nam's agriculture has achieved very encouraging developmental steps in recent years due to the application of new technical advances in production, the grant of land use rights to farmers, and the effects of the State-regulated market economy. Presently, the planting sector of Viet Nam has already achieved an advanced level over other countries in the region (see table 1).

Table 1: Rice area, yield and production output of Viet Nam

Year	Area (1,000 ha)	Yield (100kg/ha)	Production output (1,000 tons)
1990	4,090	31.9	19,225
1994	4,252	35.8	23,500
1995	4,300	36.8	24,926
1996	4,284	37.7	26,396.7
1997	4,297	39.0	27,645.8

Source: General Statistics Office.

It seems that a magic hand helped Viet Nam's agriculture, in general, and the field of rice production, in particular, to "recover suddenly from an ailing state". With respect to rice production alone, the average output per year over the period from 1989 until the present has increased continuously by nearly one million tons. Therefore, although the population increase every year is more than 1.5 million persons, food (in paddy equivalence) per capita increased consecutively, from 280 kilograms in 1988 to 300 kilograms in 1989, 361 kilograms in 1994, 370 kilograms in 1995, 396 kilograms in 1996, and 400 kilograms in 1997. Over the same period, since 1989, a major change in the country's food situation had taken place, from an insufficient food situation in spite of the fact that millions tons of food was imported every year to one in which food is sufficient not only for the people's consumption but also enough for reserves. Moreover, Viet Nam has been one of the world's largest rice exporting countries for nine consecutive years. Every year, Viet Nam exports about 1.5-3.5 million tons of rice. Specifically, rice exports in 1997 achieved 3.6 million tons (see table 2).

Table 2: Rice exports in past years

Category	1989	1990	1991	1992	1993	1994	1995	1996	1997
Export volume (million tons)	1.42	1.43	1.01	1.95	1.65	1.95	2.15	3.06	3.68
Value ($ million)	310	275	230	405	355	445	538	824	899.8
Average selling price ($ per ton)	226	192	228	208	203	228	250	253	244.5

Besides the rapid growth of production, another problem to be addressed is that the price for exported rice is much lower than the world's average price due to the low quality of Vietnamese rice in comparison to other countries in the region. Food quality for domestic consumption is still low, and uses of food, agricultural products, their by-products and additives are also inefficient.

2.2. The actual technological situation of rice harvesting, thrashing, preserving and milling

2.2.1. Tools, warehouses and preserving technologies

There are two sectors preserving rice in Viet Nam. Rice preserved by farmers is about 15-17 million tons;preserved in large State warehouses (by National Reserve Department, corporations, Food Corporations) and by private owners is about 5-7 million tons. In 1995, the total capacity of large warehouses for preservation of rice was 2.4 million tons. However, the majority of them was built from 15 to 20 years ago, even as long ago as the 1960s. They are, therefore, very old and damaged. It requires a plan for repairing and upgrading warehouses with a total capacity of one million tons, of which 300,000-400,000 tons belong to warehouses of the National Reserve Department.

The figures of the Department of Planning and Projection show that by November 1997, warehouses in the Mekong Delta had a capacity of 1,195,500 tons of which:

- The capacity of solid warehouses was 917,000 tons (accounting for 81.3 percent);
- The capacity of semi-solid warehouses was 184,500 tons (accounting for 15 percent);
- The capacity of temporary warehouses was 40,000 tons (accounting for 3.7 percent).

Of the total capacity, warehouses of the Southern Food Corporation had a capacity of 577,864 tons (excluding those in Ho Chi Minh City).

The situation of existing warehouses

- The warehouses have unsuitable norms in terms of technology and size, being in disadvantageous locations owing to the fact that they were built a long time ago. According to assessments of the Provincial Departments of Agriculture and Rural Development, the number of warehouses that have degraded and require repair equal one third and 100,000 tons of the warehouses' total capacity; these warehouses are waiting to be liquidated.
- At the warehouses, which lack facilities for rice loading, having no wharves and parking grounds, it is difficult to exploit the capacity efficiently.

The capacity shortage and, at the same time, poor efficiency of warehouses has had a big effect on product preservation; these effects include an increasing proportion of losses and a severe shortage in capacity during the peak time of harvesting of Winter-Spring crop or of Summer-Autumn crops. This creates difficulties for farmers in selling rice, creates conditions for private traders to put downward pressure on prices, and makes product preservation for future processing impossible. In addition, rice, under such circumstances, must be either sold or bought immediately affer harvest, resulting in losses to farmers and national interests.

Table 3: Total capacity of existing warehouses (in the South)

Warehouse	Existing	Newly built	Total
Warehouse for rice	717,184	260,572	977,756
Warehouse for paddy	111,805	145,028	256,833
Total	828,989	405,600	1,234,589

A large amount of paddy in rural areas is stored by traditional and primitive means. According to initial figures of a survey conducted by the Institute of Post-harvest Technology, only 35 percent of paddy is stored in iron or wooden buckets, big jars, etc. which limit loss caused by insects and mice. The other 65 percent of paddy is stored in small bamboo lattice enclosures, jute bags or other bags. These means of storage do not suit food preservation because mice, insects, mould, etc., cause huge losses. According to figures surveyed in five outskirt districts of Hanoi, losses caused by mice amounted to 7-9 percent, and by insects 3-6 percent, when primitive preservation means are used (see table 4), while the total loss in

cases where better means are used is only 3-4 percent.

Table 4: The paddy loss caused by pests after one year in preservation

Agricultural products	Pest	Preservation Means					Average loss
		Bags	Bamboo lattice enclosures	Wooden buckets	Iron buckets	Big jars	
Paddy	Mice	12.2	12.5	0	0	0	9.02
	Insects weevils	11.6	11.8	5.2	2.6	2.5	6.43

Regarding large warehouses, three types exist, so far: A1 warehouses, rolling warehouses, and warehouses with iron frames. These types of warehouse are very backward and degraded. Therefore, mice, birds, insects, and mould damage results in big loss. The special difficulty with the warehouses is that advanced techniques can not be introduced to prevent pests. The average loss caused by the poor preservation is 1-2 percent per year. Some silos were imported to Cao Lanh in Ho Chi Minh City, but they are not yet suited to conditions in Viet Nam. Therefore, advantages of new technology have not yet been brought into play.

It is worth noting that paddy, when it is stored in warehouses full of living insects, is usually affected by high humidity and has many impurities. Therefore, in the period of preserving, paddy is easily spoiled and degrades rapidly. The safe preservation period for paddy in such warehouses is only 3-6 months, but the damaged proportion is still high compared to other countries in the region.

In addition to the conventional way of paddy preservation in the above-mentioned types of warehouses, advanced technologies for paddy preservation have been applied in recent years. For example, the preservation of rice and paddy in a carbon-dioxide environment (the volume of the products to be preserved by the method is 50,000 tons). In 1998, an advanced cluster of warehouses and semi-processing tools for agricultural products were imported to Dong Nai Province. The capacity of the cluster is tens thousand tons. It is expected that the cluster will make preservation and semi-processing highly effective. In addition, research relating to the killing mould and insects, as well as driving insects away by various agents, are being applyed in Viet Nam. However, this research is still at the experimental stage.

Generally speaking, paddy preservation technologies in Viet Nam are backward and have not yet been adequately addressed. Therefore, big losses (see table 5) are caused. The methods of killing insects in warehouses still mainly involve use of chemicals.

Table 5: Losses in the post-harvest stage of rice production in Viet Nam (in 6stages)*

Stage	Loss (%)
1. Harvest time	1.3-1.7
2. Paddy thrashing	1.4-1.8
3. Paddy drying and purifying	1.9-2.1
4. Transporting	1.2-1.5
5. Preservation	3.2-3.9 (depending on regions)
6. Milling	4.0-5.0
7. Total	13.0-16.0

Source: Institute of Post-Harvest Technology, Le Doan Dien and General Statistics Offices, 1992-1994

2.2.2. The actual situation of paddy drying

Paddy after harvesting in Viet Nam generally has 19-21 percent humidity. Even now, the method for paddy drying commonly involves putting it out to dry. Therefore, its humidity when it is put into warehouses is about 14-16 percent. The shortage of yards in which paddy is put for drying, especially in for Spring and Autumn rice harvests when the number of rainy days is much higher than that of sunny ones, makes paddy degrade immediately in the drying stage. Thus, paddy when it is milled becomes broken, resulting in a low proportion of unbroken rice and a low commercial value of rice commodity.

In recent years, some amounts of rice, especially rice for export, have been dried by special dryers. The Saigon Satake Rice Mill was installed with a Satake dryer from Japan with a capacity of 300 tons/hour. The Cao Lanh Warehouse in Dong Thap Province is also installed with a French drier with a capacity of 20 tons per hour. Mills in Can Tho and Soc Trang are installed with dryers from Germany and Italy, respectively, with capacities of 10 tons per hour. Mills in Minh Hai and Vinh Long are installed with a Satake Drier MDR with a capacity of 1.5 tons per hour and of 300 kilograms from Japan. Ho Chi Minh City is installed with an American drier named "Aeroglide" whose capacity is 2.5 tons per hour. In the southern provinces, dryers made in Viet Nam are also used. The capacities of these dryers are:5 tons per batch, 10 tons per batch, 20 tons per batch and 200 kilograms per batch. (They are designed and produced by Hanoi University of Agriculture No. I, Can Tho University, Thu Duc University of Forestry and Agriculture, the Institute of Agricultural Engineering, the Institute of Agricultural and Forestry Product Processing, and the Institute of Post-Harvest Technology.)

In June 1998, the Ministry of Agriculture and Rural Development in collaboration with other institutions organized the selection of dryers and thrashers for the Mekong River Delta. Fourteen corporations and institutes took part in the bid. The result was the selection of dryers that were the most suitable to the delta. This will be the basis for future drying of paddy in the region. It is estimated that about 1,150 dryers with a capacity of 1-12 tons per batch are available to serve for export of rice. In the north, the main paddy drying

method is still putting of it out to dry.

2.2.3. The actual situation of rice milling technologies

In recent years, rapid progress has been achieved in the field of rice milling. In the plains and midland regions, small mills have replaced primitively milling tools. In mountainous ar eas and city outskirts, over 80 percent of paddy milling is done by machines. Primitively milling tools are used only in the remote mountainous regions.

However, our technologies in the field of milling paddy for export are at such a low level that they have not yet met the quality demands of the market.

Presently, in the north, there are more than 50 medium and large milling enterprises, including 37 mills with a capacity of 15 tons per shift (2 tons per hour), and 13 mills of 30-60 tons per shift (4-8 tons per hour). In the Central Region, there are 18 mills, including 17 mills capable of 2 tons per hour and one of 1 ton per hour. In general, the mills do not operate effectively. Some of them are even no longer in operation. However, the system of small mills has developed rapidly, for example, in 7 provinces of the Red River Delta alone; 14,000 mills, each with capacity of 1 ton per hour, are being operated.

Up to 1997, the total number of mills in the Mekong River Delta was 263,088, with a total capacity of 20,654 tons per shift (equivalent to 11 million tons of rice per year). Large milling units are mainly state-owned and belonging to the Southern Food Corporation and provincial food companies. They are as follows:

+ In the state-owned sector, there are 106 mills, each with a capacity of 15-120 tons per shift. Their total capacity is 1,757 tons per shift, of which the milling capacity for export by the Southern Food Corporation in the Mekong River Delta alone is 1,353 tons per shift (703,872 tons per year), accounting for 72 percent of the state-owned sector's total capacity.
+ In the non-state sector, there are 1,891 mills with a total capacity of 18,897 tons per shift, accounting for 91.49 percent of total capacity in the Mekong River Delta.

  In the Mekong River Delta, clusters of rice processing enterprises for export, including various large and medium units, have formed. They are:

  Ben Luc Cluster in Tan Am, Long An Province
  Tran Quoc Toan Cluster in Sa Dec, Dong Thap Province
  Cai Be Cluster in Cai Lay, Tien Giang Province
  Chau Phu Cluster in Long Xuyen, An Giang Province
  Tra Noc Cluster in Phung Hiep, Can Tho Province
  Vinh Long Cluster in Vinh Long Province.

Regarding polishers and colorimeters, specialized equipment such as 351 polishers with a total capacity of 8,448 tons per shift (4,392,960 tons per year) and colorimeters, each with a capacity of 36.2 tons per hour, as well as a system of dryers with a capacity of 186.7 tons

per hour are used by rice processing units in order to meet quality demands for export rice.

Polishing capacity per year

	One shift	Two shifts	Three shifts
Existing	1,197,120	2,239,240	3,591,360
Newly installed and upgraded	1,137,600	2,275,200	3,412,800
Total	2,334,720	4,669,440	7,004,160

In the north, there are 20 sets of milling and processing units able to produce high-quality rice. They are main units serving export and domestic circulation. Some handicraft rice milling villages with tens of small mills, e.g., Mai Trang (in My Van, Hai Hung), serve mainly for local demands.

In the Southern Coastal and Northern Regions, there are about 30 mills, each with a capacity of one ton per hour, and more than 30,000 small mills, with capacities of 0.2-0.8 ton per hour. These mills are made mainly in Viet Nam and only a small portion of them is from China (their brand names are XQ-435, N-400, XPL-500, MX-600, Ln-011, Thanh Loi).

These mills are of either rubber impression roller or solid cast iron impression roller mills. For these mills, the proportion of milled rice to paddy is only 63-68 percent, rice and paddy are only partially separated, and impurities cannot be eliminated. As a result, about 80-100 paddy grains remain in one kilogram of rice. However, the mills are commonly used in plain and midland regions due to their low price (and consequently, low investment costs), although the quality of processed rice is low. The small mills are operated by motors in the areas where electricity is available and by diesel in others.

In rural areas, about two-third of rice to be milled annually is assumed by the small mills. However, these mills are of low quality, resulting in high losses.

It is notable that milling units are scattered in rural areas, leading to unreasonable and wasteful use of by-products. Rice husk is mainly used as fertilizer and bran as animal feed.

Above 50 percent of milling units use old equipment, while others have been additionally equipped with new but incompatible equipment, resulting in a low proportion of milled rice. The proportion of rice being whole grain for such units is only 50 percent, i.e., 10-12 percent lower than the proportion when new technologies are used. It, therefore, leads to low processing efficiency and reduces our competitiveness in rice export markets.

The mills operate seasonally due to a shortage of warehouses and ground for preserving raw materials and finished products. They operate at only 50-60 percent of designed capacity.

2.2.4. The situation of rice and paddy use in Viet Nam

It is noticeable that rice production in Viet Nam serves the main daily meals of more than 70 million people. In addition to rice cooking, about 3-5 percent of rice is processed into noodle and other rice products. The production of whisky from rice, which probably consumes about one percent of rice produced every year, is common in rural areas.

In addition to domestic consumption, in recent years, Viet Nam has exported about 1.5-3.6 million tons of rice, and has become one of the largest rice exporters in the world.

One traditional custom in Viet Nam is the use of rice to feed animals. The precise volume has not yet been calculated, but it is certainly not small.

General remarks on rice post-harvest technologies of Viet Nam

Development of agricultural production has gained attention from our Party and State for more than 20 years. The direction to be thoroughly understood by every sector and locality is to consider agricultural production as the forefront. As a result, the research system of the Ministry of Agriculture and Rural Development is the most diversified, multi-industrial and specialized one among ministries of Viet Nam. Although shortcomings still exist, the research system has contributed significantly to the development of seeds, stock and advanced cultivation methods. The success of the agricultural sector, which has become well known in the world, has been supported by this system. Dissimilar to pre-harvest technologies, post-harvest technologies have received attention only in recent years. Its present research system is so small that it cannot meet the demands required. Such stages as harvesting, thrashing, drying, purifying, and classifying have been implemented mainly with the use of primitive tools or small machines having a low technological level. Warehouses are lacking and very old, and do not meet normal standards. The facilities for preventing pests (such as mice, weevils, white ants, and mould) are small in number and cannot meet the requirements of production.

However, companies and owners have invested in procurement of modern equipment to meet the demand for export quality. Therefore, some processing equipment that is of high quality, is easy to handle and inexpensive have been imported. This has gradually raised rice quality. The quality gap between Viet Nam's rice and that of other countries in the region has been gradually narrowed. Nevertheless, in regions with low commodity rice, the situation has changed slowly, resulting in continued high losses in the post-harvest stage and low rice quality.

3. Requirements of Rice Post-Harvest Technologies of Viet Nam

The post-harvest stage includes links such as the near-harvest link, and during harvest time, the semi-processing link (grading, drying, purifying and so on); preservation,

processing, transportation and marketing. The post-harvest stage forms a bridge between agricultural production and consumers.

The role of the post-harvest stage depends on the economic and technical level of each country. If the economy is self-sufficient, post-harvest technologies are primitive and play only a minor role. Contrarily, in a market economy, their role is much more important, owing to their large effect on the following fields:

- Raising the value of agricultural products and consolidating the competitiveness of agricultural and food commodities;
- Reducing loss in the post-harvest stage, including harvesting, semi-processing, preservation, processing, and transportation links. The links in this stage are many, so total losses would be significantly high. In Viet Nam, the proportion of paddy losses is commonly 13-16 percent. Post-harvest technologies would contribute to good preservation and toan increase in nutritional value and health care to people in the community.
- Contributing to agricultural development and increasing farmers' income.

Presently, Viet Nam is still an agricultural country. In the past, post-harvest technologies were not emphasized because agricultural production was not sufficient to meet the society's demands. As a result, the technologies were so backward, even behind other countries in the region, for several decades. This led to low quality of commodity and high post-harvest loss.

Facing the urgent demands of the reality, the Party and State have issued various policies to develop post-harvest technologies. In the Resolution of the Eighth Party's Congress, the following point is stated: *"To comprehensively develop agriculture, forestry and fisheries, and link them with the processing industry of products of the agriculture, forestry and fisheries while renovating the rural economy's structure towards industrialization and modernization..." It is also indicated: "To combine, in a harmonious way, the various scales and levels of appropriate technologies and attract the participation of various economic sectors, both domestic and overseas"*. Therefore, the following issues should be addressed in the short term:

- To develop, in comprehensive way, all links of post-harvest technologies. This means that we should not only concentrate on processing links but also on *preservation, packaging, transportation and marketing*. By doing so, quality could be raised and post-harvest losses can be also reduced;
- To invest with a focus in modern equipment and technologies aimed at diversifying products made from rice and gradually forming special products of Viet Nam. By following such a direction, export value can be raised;

- To develop domestic technological capacity and to deal with demands for preservation and processing at small and medium scales that closely link with farmers. Although the volume to be preserved of each type of agricultural product is not large, the volume of rice to be preserved at this stage is large and total losses can be great. Moreover, this stage relates to everybody's living conditions and the nation's food security policy;

- In the process of technological innovation, it is necessary to pay special attention to foodstuff quality and security in order to achieve high quality for export and ensure the good health of people in the community (i.e., to respect nutrition standards, and guarantee that residues of chemicals used for foodstuff preservation, microorganism levels, and toxic mushroom levels are lower than acceptable standards)

- To develop, both qualitatively and quantitatively, the scientific and technological staff engaged in the field of post-harvest technologies. Without these staffs, the domestic demand for technologies and equipment will be difficult to meet. Capable scientific officers are needed for the import of foreign technologies and equipment because advanced and appropriate technologies can not be selected without them. The following figures could show us the urgency of this problem. In research institutes of the Ministry of Agriculture and Rural Development, there are more than 3,000 researchers working in the field of pre-harvest (animal husbandry, plantation, and so on), but the number of people engaging in post-harvest is only 100. Clearly, this is a big imbalance that needs to be addressed.

4. Solution

4.1. Technical and technological solutions to food drying

Presently, the drying of food still depends on heating from the sun. There are three main rice crops in Viet Nam: the winter rice crop accounts for about 30 percent of total annual rice production, the Winter-Spring crop makes up 43 percent and the Summer-Autumn crop (mainly in the South) accounts for 26 percent (more than 6 million tons of output each year). The Summer-Autumn crop is harvested in the wet season, so sunlight is not sufficient for rice drying. Moreover, the number of yards, on which paddy is put on to dry, is insufficient. Therefore, farmers in the South have to dry paddy on transportation roads, leading to a large loss and a degradation of rice quality when it is milled at the next stage. In addition, the lack of dryers leads to the humidity of rice when it is put into warehouses of up to 16-17 percent. As a result, quality of paddy decreases remarkably after just one or two months in the warehouses.

To solve the above-mentioned problem, some large mills and warehouses have installed systems of foreign-made dryers (from France, the Netherlands, Japan, the USA, and so on)

and Vietnamese ones. However, equipment imported to Viet Nam has not yet been suited to domestic conditions. Regarding drying equipment made in Viet Nam, improvement and selection of a suitable scale to regions and products have to be further made. At the same time, we need to seek new technologies, which use new material sources to lower costs of dried products.

Priority should be given to the design and manufacture of small- and medium-sized drying equipment that is suitable to households or groups of households and that uses locally available fuel (straw, rice stubble, rice husk, coal, wood, etc.).

Improving, developing and multiplying some adaptive and tested models of drying equipment that are designed and manufactured in Viet Nam.

Conducting research to design the dryers, of which "fluid layer" technology is employed to increase drying efficiency.

Providing loans to state-owned, non-state and private mills for investing and upgrading drying equipment. Special priority should be given to the Mekong River Delta and Central regions that produce rice in the Summer-Autumn crops and to northern areas that produce winter maize.

In short, it is necessary to develop some appropriate drying equipment to dry paddy, especially for key regions (Red River Delta and Mekong Delta)

4.2. Technical and technological solutions to food preservation

So far, the preservation of rice and paddy, used for distribution, export, national reserve, and farmer households remains an issue to be dealt with. The amount of rice that requires preservation is equal to tens million tons every year.

4.2.1. Solutions regarding warehouses

- In collaboration with provincial People's Committees in Mekong River Delta and Food Corporations, the Ministry of Agriculture and Rural Development will examine and classify warehouses according to their quality and location. Its aim is to formulate a master plan for the system of rice and paddy warehouses, including those of the National Reserve Department, temporary warehouses, commercial warehouses, port warehouses, etc. The plan will be submitted to the Prime Minister for approval, after which it will serve as a basis for capital allocation, aimed at completely addressing the problem in the next few years.

- Improving and upgrading the existing system of warehouses, used for national and business reserve, so that a modern complex of warehouses where better mechanical facilities are used to ensure conditions for proper preservation, advanced preservation technologies,

and export.

- Conducting research to design small warehouses that suit to the households' demand for rice and maize preservation. The storage tools, made from wood, metal, bamboo mate and so on, must ensure conditions to prevent the attack of mice and insects as well as to dry food in the preservation process itself.

- Experimentally applying some modern, simple warehouses to test their adaptability to conditions of Viet Nam.

4.2.2. Preservation technologies

- Applying rice and paddy preservation technologies, as in a vacuum, carbon-dioxide, or nitrogen environment, to national and commercial reserve warehouses.

- Applying cooling preservation technology (keeping the temperature at 15 degrees Celsius) in some modern national reserve warehouses. This is one modern technology that is applied in various countries.

- Producing and applying some biological products- products made from plants that kill insects but are not toxic to people and animals and do not pollute the environment- to preserve food in warehouses and in storage tools of households so that they will gradually replace chemicals.

- Using the compound of pyrethoid, a substance extracted from chrysanthemums, to prevent insects from eating food in warehouses.

The combination of new compounds that have little toxic effect on people but are highly effective against pests, weevils, and micro-organisms with physical preservation methods (cooling) and biological methods (preservation in a carbon-dioxide or nitrogen environment and so on) to reduce post-harvest loss and increase quality is a main issue to be addressed by agricultural countries. In the 1970s, losses in the preservation process were very high (10-34 percent) due to poor preservation facilities and little use of preservation substances (see table 6).

Table 6: Losses in food preservation by some countries in the 1970s

Country	Agricultural product	Loss (%)	Preservation time (months)
Nigeria	Wheat	34	24
India	Grain	20	12
Malaysia	Rice	17	8-9
Thailand	Paddy	10	-
Indonesia	Paddy	12-21	12
Pakistan	Paddy	8.75	12

Source: Chisman Sitrtonga- Techno Change in P.H. Handling of Grains

In recent years, these losses have been reduced remarkably. At the beginning of the 1990s, the proportion of loss was less than 40 percent.

Table 7: Loss in food preservation of some nations

Country	Agricultural product	Loss during 12 months (%)	Reference
China	Grain	3.6	Ren-Jong, 1992
Thailand		5.0	J.S. Davis, 1994
Pakistan Household Warehouses	 Paddy Paddy	 5.2 3.5 (701.416 tons)	V.K. Baloch, 1994
Viet Nam	Paddy	3.2-3.9 (Large fluctuation among areas)	Le Doan Dien, 1994

In Viet Nam, the average proportion of loss in food preservation (over 12 months) is 3.2-3.9 percent. However, loss proportions fluctuate widely among regions. Our survey shows that loss in large warehouses is about 1-2 percent, while loss in storage at farmer households, is much higher, dependent on the quality of storage means. Presently, primitive means account for one-third of preservation methods (jute bag, paper bag and so on), causing high loss (see table 8).

Table 8: Proportion of preservation means by farmer households in the North (%)

Region	Bag	Wooden bucket	Iron bucket	Brick enclosure
Plain *	16.27	6.97	25.58	51.16
Midland**	38.09	42.85	7.14	11.90
Mountainous***	38.23	50.00	8.82	2.94

* *Figures from a survey in three communes:Nguyen Xa, Minh Quang, and Hoa Binh of Vu Thu District, Thai Binh Province*

** *Figures from a survey in three communes:Dinh Tri, My Thai, and Tan Dinh of Lac Giang District, Bac Giang Province*

*** *Figures from a survey in the following communes:Chieng Mai, Chieng Chung, Muong Bang, Co Noi of Mai Son District, Son La Province*

The low quality of preservation means resulted in a high proportion of loss: 3 percent (in the plains), 5.6 percent (midlands), and 10 percent (mountainous regions). Two main causes of the loss were mice and weevils. Therefore, the application of new technologies in food preservation is urgent to minimize the loss of agricultural products.

4.3. Technical and technological solutions to rice milling

Viet Nam's capacity in rice milling has rapidly accelerated in recent years. It is now sufficient for milling all of the rice that is necessary for domestic markets and export. However, increases in rice quality and the proportion of milled rice are necessary to meet demand, which is increasingly higher, by domestic consumers and for export, and to reduce food loss.

To achieve this aim, it is necessary to concentrate on improving and upgrading the system of small mills in the North and Central Region and the old system of mills in the South.

- Regarding the system of small mills with capacity of less than one ton per hour, it is necessary to introduce new mills with rubber and stone powder compression rollers. Presently, the mills are manufactured by VINAPRO and are a favorite in the markets. In the North, the Yanmar Company has already installed one mill chain with the technology and capacity for one ton per hour in Quynh Phu district. The mill chain can process rice with 5-10 percent broken rice and a milled rice proportion of 68-71 percent. In the chain's terminal link, a packager packs rice in defined volumes and grades.

- The old mills with a capacity of 15 tons per shift should be either upgraded or replaced by new equipment. Moreover, equipment for broken rice separation, rice polishing, elimination of yellow rice grain, and classification of rice according to grade and quantity have to be supplemented.

4.4. Solutions in the field of rice management, trade and reserve

4.4.1. Regarding rice management

The State should issue procedures and norms in various fields of the post-harvest stage to reduce food loss in post-harvest preservation and processing links. For example, the state-owned enterprises' list of procured substances used for preservation in warehouses and their residue proportion in rice, paddy, and so on have to strictly follow these procedures and norms. Regarding farmers and other economic components, it is necessary to issue appropriate policies to encourage them to follow the same procedures and norms. Only in this way can the objective of reducing post-harvest loss and ensuring good health and a safe environment to the community be reached.

4.4.2. Regarding rice trading

Presently, two problems in Viet Nam's rice trading activities that cause significant food loss still exist:

- The quality, commercial value and utility value of rice are still low. The quality of

domestically consumed rice has not yet satisfied demand because it is broken and mixed with husky rice and grit. Rice's by-products and waste have not yet been rationally used. Packaging and packages are not yet suitable and convenient for consumers. Trademarks that clearly define a product's quality have not yet been made, making consumers' product selection difficult.

- High socio-economic efficiency in food trading has not yet been achieved. An information system for food marketing has not yet formed. Moreover, a close relation that links all stages, from procurement and preservation to processing and consumption, that is suitable to conditions of the market commodity economy has not yet been established.

In order to overcome the above-mentioned situation, increase efficiency of food-trading activities, fully meet the demand for food and foodstuff, and create convenient conditions for consumers, the following measures need to be implemented:

- Organization of a trading network of agents, ranging from production to consumption;
- Improvement in the quality and utility value of products while making packages suitable and convenient for consumers;
- Building of a network of marketing information to capture the demand and taste of consumers over various areas and time points in a timely manner so that balanced plans for production and distribution can be formulated;
- Exploitation of the capacity of all five economic sectors to consolidate the marketing system, aimed at eliminating monopolies, ensuring equality and encouraging the development of the system of production and processing that produces diversified processed products;
- Preparation of a sufficient amount of rice for trading reserves in big cities, industrial parks and in the regions where rice is not produced and where natural calamities occur frequently.

4.4.3. Regarding reserves

Presently, the defined time period of preservation in the National Reserve Department's warehouses is one year due to the poor quality of the warehouses and technical basis. Poor facilities seriously decrease the quality of rice preserved for more than one year (the padd y that is in reserve for a longer time period must usually be used as animal feed and for whisky production). Losses during national reserve activities is not small. Therefore, appropriate investment policies should be issued to improve and upgrade warehouses used for national reserve activities. Moreover, a master plan for the warehouses has to be form ulated in the direction of a) building modern clusters of warehouses in key regions, b) applying advanced preservation technologies aimed at maintaining the best quality of reserved

paddy, and c) ensuring consuming value of rice milled from paddy that was in reserve for a long time.

Expand the scope of rice preserved in a carbon-dioxide or nitrogen environment. This alternative will not only save the capacity of warehouses but also meet urgent or relief demand without going through milling phase;

Build clusters of mills and by-product processing facilities (as the chain to produce edible oil from bran) in regions with reserve warehouses. These alternatives have many advantages, such as creating conjugate clusters for preservation and processing, reducing transportation costs, generating more jobs for workers, and increasing income to public funds and people in warehouse regions.

4.5. Policy and investment solutions to post-harvest technologies

As mentioned above, post-harvest technologies play an extremely important role in agriculture in general, and the field of rice and paddy production and processing in particularly. Therefore, priority should be given to this stage.

4.5.1. Policy solutions

Regarding conditions in Viet Nam, the State should issue policies and mechanisms to encourage post-harvest activities (e.g., policies for tax exemption over a certain period for the manufacture of new equipment and technologies for the post-harvest stage such as driers, mills, and warehouses suitable for households;policies for encouraging investment in the post-harvest stage; price policies, etc.). It is necessary to encourage the diversification of products processed from rice, and increase of their export value. Presently, a major part of the export value comes from unprocessed rice at various quality levels.

Attention should be paid by the State to the investment and attraction of foreign capital in order to equip a modern, large system of preservation and processing that can ensure product quality for export. At the same time, domestic investment capacity in the small production sector by farmers should not be taken lightly. The sector influences national food security and 75 percent of the rural population. Presently, little attention is paid to this sector.

5. Conclusions and Recommendations

The following proposals are our recommendations for reducing loss and increasing the commodity value of paddy and rice in the post-harvest stage in the near future:

5.1. We should realize the important role of the post-harvest stage agriculture of our country

as a whole in order to give it appropriate priority. This priority should be expressed not only in directions and programs, but also in specific actions, especially in investments of both working capital and equipment, and in formulating particular mechanisms and policies as well as implemented measures and so on to encourage all activities of the post-harvest stage. Research activities in the stage should be also given appropriate attention and investment.

5.2. The post-harvest stage involves many diversified industries, bearing both technological and socio-economic characteristics. In addition to its line industry, related ones such as mechanical engineering, material input, energy, capital construction, chemicals, trade, and transportation play very important roles. Together with central departments, local bodies, and the State, people have to become involved in and carry out tasks necessary at this stage.

Cooperation in inter-industrial and multilateral activities will generate combined strength that is strong enough to solve the complex tasks of the post-harvest stage.

5.3. The technologies of food preservation and processing must be transferred to all people and farmer households. It is the basis for increasing economic efficiency in agricultural production and the quality value of agricultural products. Appropriate preservation technologies and adaptive technological chains that require little investment capital and energy, and easy to handle and highly effective should be selected. Scales suitable to households, groups of households, cooperatives and so on in food preservation and processing should be emphasized.

5.4. The activities of both stages, pre-harvest and post-harvest, should be closely linked in the process of rice production and agricultural development in order to create a diversified, stable and highly qualitative material basis for the rice processing industry and for the stable development of local economies. It is necessary to effectively bring regional advantages into play and to facilitate the adjustment of the rural economy, which is inherently self-sufficient, in the direction of linking commodity production with consumption markets. The rural labor force should be reallocated in line with the gradually shifting rural economy from pure agriculture to commodity production. It is also the first step on the path of industrialization and modernization of the rural economy.

5.5. The State should invest in infrastructure building to form a basis for sustainable development in key economic regions so that they can contribute in large part to our country's progress. Particularly, investment in transportation system, communications, and the management procedure that governs transportation should be made to promote the distribution of agricultural products and commodities as well as to facilitate the development of post-harvest technologies. Commodity agricultural production must link with consumption markets, both domestic and overseas.

5.6. Promoting management and control of agricultural product quality and standardization:

Viet Nam is one of the largest rice exporters in the world. Therefore, the quality of rice and products made from rice is a measure of economic and productive efficiency of every product and of the whole nation. Therefore, quality must be the first and most important issue. It is a theme that prevails in export, import and domestic consumption in all countries. Consequently, legal documents should be formulated to put the control and management of quality into routine order. This is necessary to expand the network of quality control and management so that it can stretch from grassroots units to the district, provincial and central levels. The control procedure over measuring tools and quality standards in the sector should be made uniform so that it can gradually harmonize with regional and international standards. Putting all activities of the field into routine order is essential to satisfy the demands of domestic distribution and export of the immediate time and the long-term future.

8

The Rice Market in Viet Nam

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PADDY-RICE MARKET IN VIET NAM

BACKGROUND

Viet Nam is an agriculture producing country in which rice production always plays an important role. Around 80 percent of the population living in rural areas are cohered with the tradition and custom of food production for their living, in which rice annually accounts for 90 percent of total grain outputs. In the years before the decade of 1980s, satisfying the demands of the population in terms of food was a very difficult task. Viet Nam has always faced a serious situation of food deficit, and consequently, that brought negative impacts to the economy and the society as well. The government had to import food annually, and in certain years, imported rice reached 1.0 millions tons per year. However, in recent years due to the positive impacts of new economic mechanisms, the economy has achieved noticeable performance. Many new policies of the Communist Party and the State have been profoundly acknowledged by the people, which has created a new momentum for the development of agriculture. Especially, food production has seen a high growth rate;the average increase is 1 million tons per year (around 5% increased per year). This growth is reflected in termsof all three aspects: area, yield, quality and efficiency. Viet Nam has recently become the second largest rice exporter in the world rice market.

After introducing Resolution No.10 of the Politburos in April 1988, the mechanism of contracting between the employer and the employee(s) in terms of final products has been completely implemented, and the household has been determined as an independent and autonomous economic unit in production as well as in business. There were also many laws and policies, which have been promulgated and renovated, such as the land law and the market policy in which the process of commercialization has been conducted to smooth the circulation of products throughout the country. These basic changes have directly and comprehensively affected farmers and systems of production and consumption of agricultural products. That has created preconditions for the development of agricultural production in general and of food production in particular.

However, production and distribution of rice in Viet Nam has still given rise to many problems which need to be solved at both the macro and micro levels in order to reinforce

further reform in the agricultural products' market as well as the rice market, to ensure the continuation of the development of food production with high economic efficiency.

I. The Role of the System of Food Markets

1. To the national economy

Food is a strategic product, directly affecting the economy and national security. Therefore, agricultural production, particularly, food production is a main duty of the nation. It needs to be conducted in such a way as to balance between the demands and the supply of food, to stabilize food prices and hence, the social-economic situation as well.

Paddy which, generally speaking, accounts for 90 percent of the food output, is still a main food. Therefore, when one mentions the food market, they are actually referring to the paddy-rice market. Presently, the paddy output value accounts for 45 percent of the total agricultural output's value and for more than 60 percent of cultivated tree's output's value in Viet Nam. The turnover of Vietnamese export rice has been increased through the years. The total export turnover of rice from 1988 to 1997 was USD 4.282 billion;on average it was USD 475 million per year. Therefore, the production and the distribution of food are the central issue of agriculture and also play an important role in the national economy.

2. To producers and consumers

Since the years when the renovation process was taking place, circulating operations and the food business have been conducted under the market mechanism. Producers themselves select markets to sell their products and they can also pay the agricultural tax in cash. After fulfilling the duty of the agricultural tax, farmers have the right to sell their products in the market without paying any other taxes since they are no longer in the food business.

Consumers can buy food products whenever and wherever they want and from anyone who would like to sell them.

Rice production is the main source of income for the farmer. Hence, the food business must meet the following goals: be able to purchase all of commodity food of farmers, satisfy the consumption demand of the people, and fulfill export contracts in order to enhance the efficiency of rice production and the living standard of farmers.

II. The Actual Situation of the Food Market

2.1. Before renovation (before 1989)

The main characteristics of this period were as follows: food was considered as a strategic product, and the government implemented subsidy policies and monopoly in food business.

Circulation and distribution were managed centrally from the top down. The market was highly controlled and free trading among regions was prohibited. Buying and selling rice based on planned indicators assigned by the Government to production units (cooperatives, collectives, State-owned Enterprises...) were the legal indicators that every agency and organizations had to implement.

The other part of collecting and buying paddy was in the form of contracts for input exchange, agricultural services supply (irrigation, land preparation, seed, pesticide, fertilizer...) or exchange with other necessary consumption products (oil, gasoline, soap, bicycle) in which the exchange rates were determined by the government. In such a highly controlled market, the private sector was not given the opportunity and conditions to become establish.

The policies of monopoly in the food market and "two prices" were required during the wartime period. However, because those policies were maintained for such a long time, they led to many problems such as inactivity and slowness in the food market. The government was always concerned about food deficit and made steps to face it. In addition, the collecting, circulating, and distributing networks were bulky with very complicated procedures. As a result, the government was forced to subsidize enterprises doing food business.

Because food was subsidized and could be purchased cheaply, many people had not even finished consuming one ration of rice before they bought more for storing and speculation in order to earn money as the price of food fluctuated (as an income source). That created an artificial relationship of "demand-supply" and normally, the artificial demand was always much higher than the real demand. It distorted the food market and did not reflect its reality.

During this time, food production was stagnant, and even tended to decline. Food companies were chronically unprofitable and became a burden for the Government budget (in 1988 only, the loss of food companies was about 400 million VND).

This situation required the reform of the market and economic management mechanisms. 1989 was considered the landmark year in the transitional process to a market economy.

2.2. The food market from renovation up to now (after 1989)

There have been four main players in the food market since renovation up to now as follows:

- State-owned Enterprises (SOEs)
- Private sector
- National buffer stock
- The enterprises of State Organizations

a) SOEs activities

On 20th November 1991, the Government promulgated degree No.388 on establishing SOEs and State food companies.

Since 1989, when the Government abolished the monopoly and subsidy policies, State food companies have been rearranged into 2 systems:central companies and local ones. At the central level, there are 2 corporations: VINAFOOD I and II, managing the network of lower level companies. At the local level, there is one company in each province directly managing stores, selling and buying agencies as well as wholesaling and retailing in the province.

The facts are that the State food companies located in the northern and central regions have concentrated their business on balancing domestical food supplies, while those in the Mekong River Delta have concentrated mainly on export activities.

The volume sold by SOEs for domestic demand has declined from 815 thousand tons (1991) to 510 thousand tons (1993) to 226 thousand tons at the present time (a 50% decline compared to 1993). Private enterprises creating a large network in cities, towns, and places with good transportation have served the domestic demand. In rural areas, traders and small millers are serving 95% of the demand of farmers lacking food.

* Some main business activities of food companies are as follows:

- In the South, the Food Corporation II (VINAFOOD II) and provincial food companies located in the Mekong River Delta, where there is plenty of commodity paddy, are mainly concentrating on exporting rice and importing fertilizer. These enterprises have the responsibility of purchasing paddy and rice in local areas, and processing and exporting it;in exchange, they sell agricultural input to farmers. In these areas private food traders (farmers having milling machines) are dealing in such fields as milling service for farmers (directly or indirectly) and working as exporting agents for outer-inner provincial enterprises;they also do business as wholesalers or retailers of agro-products for local consumption.

- In the North, because of little commercial food, food is balanced locally. In this context, trading activities of the Food Corporation and provincial companies usually have a shortage of food. In addition, the trading business of State-owned enterprises co-exist with the operating network of small-scale millings and businesses of the private sector in rural areas. Thus, State-owned enterprises usually concentrate on solving sudden fluctuations of the market.

- In mountainous area's, food companies actively purchase commercial paddy on the spot and, from other sources to ensure having enough food for selling, especially in remote areas where few private farmers participate in business. So the State-owned enterprises

undertake nearly all activities such as supplying, circulating, and distributing food to farmers.

In summary, the State-owned enterprises in trading food have achieved the following results:

- To participate in purchasing commercial food for farmers, supply of food to society, and stabilization of food prices and the socio-economic situation as well.
- Rice quality being sold for domestic consumption and for export is improved and better meets the diversified demands of consumers' market
- Reduction of the management and administrative system, while improving quality of staffs in the food trading sector.
- Although there are many economic sectors as well as many types of enterprises participating in food trading, the Food-related State-owned enterprises are still playing the leading role in balancing supply and demand in order to monitor all fluctuations of the rice market, while in addition, also taking part in exporting rice.

* So basic reform of the food market has contributed to increasing food trading amounts and overcoming the situation of the artificial shortage and local surpluses of food in various regions.
* However, with the above-mentioned mechanism many State-owned enterprises in food trading can not compete in the market and have suffered losses. Therefore, these enterprises have to disband or scale down the trading activities (They are mainly those food-trading enterprises in districts). Other enterprises must change to export rice, and domestic markets are assumed to be left to private enterprises and merchants.

In accordance with the above-mentioned facts, some newly-emerged problems need to be addressed:

* In the south, the biggest rice area of the whole country, food-related state-owned enterprises have purchased almost all of the volume of commercial paddy (about 88.8%) to implement 2 objectives:export and balancing food for the north. However, the volume purchased directly from farmers is small, accounting for only 10 percent of commercial food;the remaining volume is purchased through middle organizations, merchants, and wholesaling collectors in the region.
* For the north and the central regions, purchasing commercial food aims to balance food in the region. In almost areas of the region, these activities are mostly handled by the private economic sector, and the state-owned units play a very minor role.
* Food-related state-owned enterprises are defined as a tool for regulating the food market of the country, and they are assigned the important mission of exporting rice. However, presently they lack funds. Total existing working funds of the system of the Food-related

State-owned enterprises for the whole country are 273 billion VND. In which, the Food Corporation in the South has 205 billion VND (being able to meet 20% of the demand of working funds), and the Food Corporation in the North has 68.5 billion VND (being able to meet 10.5% of the demand). With limited working funds, they can purchase about 180-190 thousand tons of paddy at the current price in the Mekong River Delta, accounting for 30% of commercial paddy outputs needed for consumption in the whole country.

There are many improvements being applied in the food management and business of the State, but the network is still heavily under the influence of an administrative routine that goes from the district to the province and the central levels. The system of State-owned enterprise has been renovated and re-arranged several times. However, the State is maintaining the exclusive right of exporting rice and the State assigns this duty only to those strong enterprises defined as indicators for exporting rice. In the period of 1993-1995 there was a rearrangement in which only 17 rice export units were identified. In 1996 the number was reduced to be 15 export units, concentrating on the strong enterprises of the State (VINAFOOD Ⅰ, Ⅱ,) and some food companies located in the provinces where rice production output is more than 200 thousand tons per year. For those enterprises which are not provided export quotas, they actually have a small amount of funds, so obviously they become much weaker. Since 1997, there has been a policy in which the number of rice exporting units is to be expanded, including in the private sector. However, private enterprises have to go through many complicated procedures for registration and obtaining licenses so that, in fact, there are no private enterprises that can export presently.

b) The private sector in supplying and purchasing food in the markets.

Activities of the private sector in food supply in each region are different depending on the production and food balancing situation in the regions. In provinces of the Mekong River Delta, besides undertaking the service of milling and processing paddy for farmers and selling for consumption demands on the spot, the large private enterprises known as "chu vua lua" are mainly supplying to enterprises which have export quotas. The operating system of private enterprises is very diverse and quite flexible, therefore many State-owned enterprises, which have the export quotas, can ask them to collectively purchase rice so that it can be delivered to the enterprises at the ship for export very quickly. For example: through an interview survey in Long Phu district, Soc Trang province, it was found that there are 25 small-scale milling and processing units with capacity of 5-10 tons/day and 5 milling and processing units with a capacity of 20-30 tons/day, pertaining to private enterprises. They indicated that if they have a contract, they are able to supply rice thousands of tons of rice to export enterprises within only 10 days, and they will deliver it to the stores or ships. In addition, these private businesses and enterprises are very dynamic, flexible, and diversified in trading activities. In marketing channels, they sell rice for local consumption in the region

and also collectively purchase rice to supply to other provinces, especially wholesale to Northern and Central markets when needed or there is a price difference among regions.

In general, the private sector plays a more and more important role in retailing for consumption demands on the spot. If before 1989, the share of the private sector in terms of retailing supply was only 10-15%, then in 1994 this figure increased to 80-85%. In addition, the private sector also supplies a great volume of paddy to State-owned enterprises and processing factories for export.

The activities of wholesalers and retailers of the private sector in the food markets are very essential, being able to meet the diversified demands of consumers, and contributing to improve food markets. However, it is very necessary manage things strictly to prevent unfair competitive which makes the market unable to function well, and thus advesely affecting farmers and consumers. Thus, on the one hand, it is necessary to speed up the process of privatization and freeing of the markets so that all activities in the market will become more lively and flexible. On the other hand, there is a need for proposing managing mechanism and methods which are specific and effective to create a favorable and equal environment for economic sectors participating in rice trading.

c) The National reserve stocks

Annually, the national reserve stocks store hundreds of housands of tons of food. However, because of long-term preservation, and the incomplete system of storage, the quality of product decreases; therefore, the State's budget has to compensate for losses. An issue that has emerged is that it is necessary to connect closely between circulation-distribution with the task of reserving food stocks. Either the national reserving stocks, to a certain extent, can participate in trading activities, or it is possible to assign the food trading system to take the mission of managing the national reserve stocks.

d) Activities of State-owned enterprises, which do not belong to the food sector.

There are some State enterprises trading other commodities, but in trading, they have some relations with partners purchasing and selling food that involve such activities as exchanging materials, goods or doing business. Therefore, these enterprises participate in exporting food, too. This type of functionally combined enterprise is becoming less common and they are transforming to undertake the function of food enterprises.

2. 3 The system of channels circulating and purchasing paddy-rice.

a) The general outline on circulation and distribution of paddy-rice in the markets

* Food produced, after balancing all items for consumption and other uses such as for home consumption, reservation, varieties, animal raising, etc., according to periods of time (week, month, quarter, year), the remaining surplus will be sold in the markets in various forms, through various "channels", and at various "levels". Besides the network of State-owned enterprises taking part in purchasing, circulating, and distributing food, the main activities of farm-households participating in markets are as follows:

- For regions having a small volume of commercial paddy, farmers usually undertake trading through traditional marketing channels. They sell paddy directly in rural markets to consumers. In addition, farmers can sell it to merchants, collectors, wholesalers, and retailers in rural areas or they also can sell through purchasing agents.

- For regions having a large volume of commercial paddy, for instance, the Mekong River Delta, farmers directly sell to merchants in the form of collectedly purchasing. They also can sell to wholesalers through the large private enterprises (chu vua), or to paddy milling units in local areas;these units then supply rice to big enterprises for export.

b) " Paddy-rice" marketing channels in Viet Nam

b.1. The agents in the paddy-rice market:

The main agents participating in "paddy-rice" market are farmers, merchants, paddy milling persons, and State-owned enterprises and companies. The relationships among these agents are described through analyzing the marketing channels. The common objectives are the transporting, restoring, milling, and supplying of rice to domestic and export markets.

Each market channel contains various agents, which undertake different functions of the market. Each agent can participate in many functions, such as collecting, restoring, transporting, milling, distributing, and export.

* The merchants can be split into 3 groups:collectors, wholesalers, and retailers.
- Collectors are usually local people, mainly collecting paddy from farmers and selling to traders or to milling units. The collector becomes a mid-person among farmers, traders, and milling persons.
- The wholesaler is a mid-person among different traders such as collectors, retailers, milling persons, and enterprises. The scale of activities of wholesalers is bigger than those of retailers and collectors.
- The retailer is a person selling rice in the market, or they can market rice to households if needed.

b.2. Main marketing channels purchasing paddy - rice in Viet Nam

- The direct marketing channel for sellers and consumers in rural areas is presently undertaken by merchants (accounting for 80% of the volume of rice retailing to consumers). This channel is described as: producers → merchants (rice wholesaler in local areas) → milling persons → retailers (who directly sell to consumers)
- The marketing channel for consumers outside the province or district where the wholesaling process is needed: producers → local collectors (rice wholesaler in local areas) → milling persons → wholesaling to other provinces (districts) → retailers (who directly sell to consumers)

* The above-mentioned process can be generalized as in the following diagram: (see annex)

The marketing channel diagram 01, which clearly indicates the role and the position of objects and agents participating in marketing in rural areas. It is basically undertaken by the private sector in various forms such as collecting for wholesaling, retailing and supplying services in a small scale for the next period.

Diagram 02 is for the regions having a large volume of commercial paddy (the Mekong River Delta). The market activities are very bustling and on a large scale, with the participation of many State-owned enterprises, traders, milling and processing units, etc., i.e. those who undertake various functions of the market in the linkages of "paddy-rice" marketing

In which, the State-enterprise and whole-buying traders (through units such as shops and purchasing agents, which purchase about 30-35%) and private enterprises, (with the marketing collecting system in rural areas, etc. purchasing about 40-45%), the remaining roughly 15-20 % is directly exchanged among buyers or retailers in the region (commune district)

- For the traders, the marketing channel is as follows:

Collectors for wholesaling → traders → wholesale (supply) to the enterprises (Food Company) and milling factories → export and wholesale, retail to consumers.

* It is possible to summarize the circulation of rice exporting channels as follows:

1. Producers → milling units → export-import companies
2. Producers → collectors → milling units → export-import companies
3. Producers → collectors → paddy merchants → Rice milling units → export-import companies
4. Producers → paddy merchants → milling units → rice merchants → private companies →

export-import companies.

At present, because State-owned enterprises lack funds, collecting and purchasing are mainly undertaken by wholesale traders and private companies.

2.4. The rice market and export results of Viet Nam

From 1990 up to now, rice exports of Viet Nam have been increasing. Presently, Viet Nam is ranked second among rice exporting countries in the world. The volume of exported rice in 1997 was 3.62 million tons, which was a twofold increase compared with 1995. The exporting market is expanding. Currently, Vietnamese rice is exported to about 80 countries in the world, in which Asia is the biggest market accounting for 43.24%. Especially, in recent years the Asian region has consumed Vietnamese rice with a very big volume, accounting for 62%. The second-largest market is Africa which accounts for 26.2% of rice export volume. The major countries importing rice from Viet Nam are: Indonesia, the Philippines, China, Iran, and Peru.

Table 01: Structure of Vietnamese rice export to regions in the world

Unit: %

Region	1991	1992	1993	1994	1995	1996	1997
Total	100	100	100	100	100	100	100
Asia	33.81	39.2	33.7	34.01	68.47	62.4	33.0
Africa	22.32	37.87	27.9	15.49	14.85	9.89	46.0
EU + Middle East	6.65	9.04	10.85	2.17	1.87	16.62	13.0
America	36.22	-	27.47	48.30	14.8	11.04	8.00
Pacific	-				0.01	0.01	

Source: Ministry of Trade, 1998

The quality of exported rice has increased. The proportion of rice containing 5-10% broken rice in the total with high quality has increased remarkably from 0.32% (1989) to 53% (1995), and 49.24% (1997). Many milling plants have renovated their facilities of grinding, polishing, and classification. Additionally, paddy quality is better (as mentioned above, there are many new seeds and new technical advances having been employed).

Table 02: Quality of exported rice of Viet Nam

Unit: %

Item rice	1990	1991	1992	1993	1994	1995	1996	1997
5% broken rice	3.98	7.51	18.96	25.62	44.51	30.50	30.59	27.36
10% broken rice	10.21	27.58	21.48	25.62	25.00	24.58	17.66	16.20
15% broken rice	5.69	4.98	11.03	13.24	4.03	12.02	5.45	7.11
20% broken rice	3.42	5.58	4.25	8.23	9.03	10.73	6.23	1.27
25% broken rice	20.47	25.85	13.32	11.08	7.31	18.11	21.70	35.98
>25% broken rice	56.23	28.50	30.96	16.21	10.12	4.06	18.37	12.08
Total	100	100	100	100	100	100	100	100

Source: Ministry of Agriculture and Rural Development

2.5. Management of export quotas and rice exporting indicators in Viet Nam

* From 1992, the export quota had been allocated in line with the capacity of each enterprise on negotiating and signing rice exporting contracts. This mechanism is known as "first to sign the contract, first served".

From 1993, the export quota was allocated in the following way: the Prime minister approved the total exported amount based on proposals from the Ministry of Agriculture and Rural Development, the Ministry of Trade, and the Ministry of Planning and Investment. Of which, the Ministry of Trade was able to allocate 70% of the total amount in the form of quotas to enterprises acknowledged as rice exporting crews, 30% remaining of the total amount were for effectively performing enterprises. These enterprises, even though they were not the exporting crews, were recognized by the Rice Association as being able to export rice.

Since 1996, 15 enterprises have been identified as rice exporting crews and are entrusted with an export quota equalling 60-70% of the total amount. The remaining of 30-40% is consigned to units that do not have a quota. Also, since 1996, in order to purchase the entire amount of commodity paddy of the rural community, the Government has been supplementing quotas depending on the rice volume in stock per year and the capacity of enterprises to penetrate new markets.

* Rice exporting crews in Viet Nam: Exporting and importing rice have been decentralizing step by step. At the beginning, there were only some big State companies such as (VINAFOOD Ⅰ, Ⅱ, Ⅲ) that exported rice. However, now provincial companies and private enterprises have also joined in exporting rice.

* The situation of rice exporting crews in Viet Nam

- In 1992, there were more than 100 rice exporting units. There were too many rice exporting crews and many enterprises were not yet experienced in exporting-importing activities.

Moreover, there were only a few customers. Thus, the problem of competitively buying and then selling to foreign customers happened leading to confusion in the market, and causing more losses than general benefit.

- In 1993, the Government decided to reduce rice-exporting crews so there were still 17 rice exporting crews and the figure was further reduced to only 15 in 1996. Other enterprises are selected as not directly exporting crews. If those enterprises want to export rice, they have to export via companies having a quota and pay a commission of 1-1.5% export value (FOB price at a Vietnamese port).

2.6. The price of exported Vietnamese rice

The price of exported Vietnamese rice has increased, reducing the gap between the price of exported Vietnamese rice and the standard international price. The reasons are to increase rice quality and to improve capacity of marketing as well as loading, transportation, port, and stores. The gap between the price of exported Vietnamese rice compared with the price of the same type of Thailand narrowed from USD 106/ton (in 1989) to USD 61/ton (1992), USD50/ton (1994-1995) and USD 42.5/ton (1996-1997).

Table 3 Comparison of Exported Rice prices of Viet Nam and Thailand

Unit: USD/ton.

Year	Average Price of Thailand (FOB)	Average Price of Viet Nam (FOB)	Difference of rice price (TL-Viet Nam)
1989	300	194	106
1990	271	170	101
1991	293	226	67
1992	268	207	61
1993	236	203	33
1994	270	218	52
1995	320	266	54
1996	301	258	43
1997	293	252	41

Source: Ministry of Trade.

Ⅲ. The Existing Problems in Developing the Food Market in General, and the Rice Market in Particular

3.1. Market

- Admitting multi-economic sectors in the food business has created a competitive environment to promote the development of the market. However, the Food-related State-owned enterprises are still facing difficulties, for example, lack of funds; in fact, the system of the food State-owned enterprises still does not have enough capacity to reserve a large volume in order to be active in exporting as well as balancing domestic supply and demand.
- There are still many problems in exporting rice, such as quota allocation and determination of crews for exporting, and these problems limit the development of market. Increasing rice exporting crews is needed to enhance competitiveness and to meet the demand for paddy purchasing for farmers in the Mekong River Delta.
- The market information system is not updated properly and is not organized in a close and unified manner.

3.2. Exporting

- Weaknesses in exporting rice: up to now, the long-term exporting strategy (market, customers, and product strategies) has not been formulated yet. The import-export mechanism is frequently changed and it is still in need of applying "hard" mechanisms such as: quota, allocation of quotas many times per year, and regulation of exporting crews.
- Rice exporting units are not in an active position regarding sources of rice, i.e., to export first and then to purchase later. There are neither strategies for developing and linking closely with materials-producing areas nor investment or assistantce via paddy buying price from farmers in order to create a firm source of material areas which are stable in quantity and improve quality.
- Technology and quality after processing are still poor, and many aspects do not meet the demands of the market.

Ⅳ. Recommendations and Solutions to Developing the "Paddy-Rice" Market in Viet Nam

4.1. Production

* To increase investments for infrastructure

This is a big problem for the long run, and in need of a large amounts of funding. However, it is necessary to have investment plans to create preconditions for the development of production as well as of the market, such as planning of production areas and investing synchronously for production-processing-circulation and distribution (transportation, carrying means, stores, ports.)

* To increase R&D, and application of advanced technologies, in both the short-term and long-term, concentrating on cross-breeding research to improve productivity and product quality to meet the requirements of consumption and for export.

* To invest for renovating the preserving and processing technologies (technological solution). Establish programs such as "assistance for technological renovation in agriculture, in general, and for exported agricultural products, in particular". The focus should be on harvesting, preserving, and processing with modern technologies to meet the various demands of the market. First, existing plants should be upgraded. Plants need to be reviewed to identify those that are backward, so that solutions in accordance with the principle of "effective targets" can be made. At the same time, building new plants in areas supplying raw materials with application of synchronously advanced technologies to improve quality and products' design to enhance competitive capacity in the market.

4.2. The development and the expansion of market

* To develop the exchange and circulation of agricultural products in all regions to meet demands of production and consumption as well. Attention should be paid to the specific modernization of "markets, merchandising places" in rural and urban areas and also, integration in order to "modernize the market" through the development of "economic-culture-technical-trade-service clusters" for commodities-producing areas. Implementing an open trade policy in order to promote changing the economic structure and renovating production- processing-preserving technologies.

* To diversify circulating channels at all levels, paying attention to small and middle-level circulating channels which are suitable with the scales of supply and demand of the market in rural areas. Also, it is necessary to build channels and large commodities circulating-levels to meet the demands of exporting markets and to guide domestic production (including assisting funds and science and technologies for production and marketing of products).

- For areas concentrating on producing agricultural products for export (for instance, the Mekong River Delta), establishment of lengthy, wide, and deep marketing channels with commodities-circulating levels which are competitive enough;and to closely combine the production, processing, and consumption to become commodity chains and commodity sources in the market channels in the long run.

* To set up a market information system for exporting and importing rice to provide information to rice production and trading units timely manner. This should be further studied to create and expand Vietnamese rice exporting markets.

4.3. To create a favorable business environment for enterprises (in general) and for enterprises producing and exporting agricultural products (in particular)

* To study insurance forms for planted trees and to establish an insurance fund for each commodity industry. In the short term, establishment of insurance funds for the following agricultural products is reguired:rice, coffee, rubber, and meat. The fund will come from from export taxes, collections, and other contributions for each agricultural product.

* The land policy:it is necessary to define and to plan concentrated areas for commodity production, specialized in producing agricultural-forest products. This should be planned and invested synchronously to include infrastructure, irrigation, transportation, electricity, liaison information, and processing. In implementing those approved projects for specific areas, the relationship between the property rights and the land-use rights should be firmly settled. Hence, land use certificates should be granted quickly for farming households.

- To create favorable conditions for households to exploit the potentials of land resources well.

- There have been some persons who were assigned land but did not directly use it for production because they found another job with a higher income. It is better to give them favorable conditions to transfer the land to other households to extend the scale and establish the family farming style.

Viet Nam has a lot of potential and advantages in rice production, and it also has a high competitive capacity in the world market. Rice production is gaining high socio-economic efficiency. However, in order to get higher efficiency, it will be necessary to coordinate the solutions of economic, organizational, and technological problems, especially, in a severely competitive environment. It also requires the efforts of production units and the comprehensive attention of the State to implement the strategy on agricultural industrialization and modernization, enhancing the position of Vietnamese agriculture in the world market in the coming years.

FIGURE 01. RICE MARKETING CHANNELS IN THE REGIONS HAVING SMALL PURCHASED VOLUME

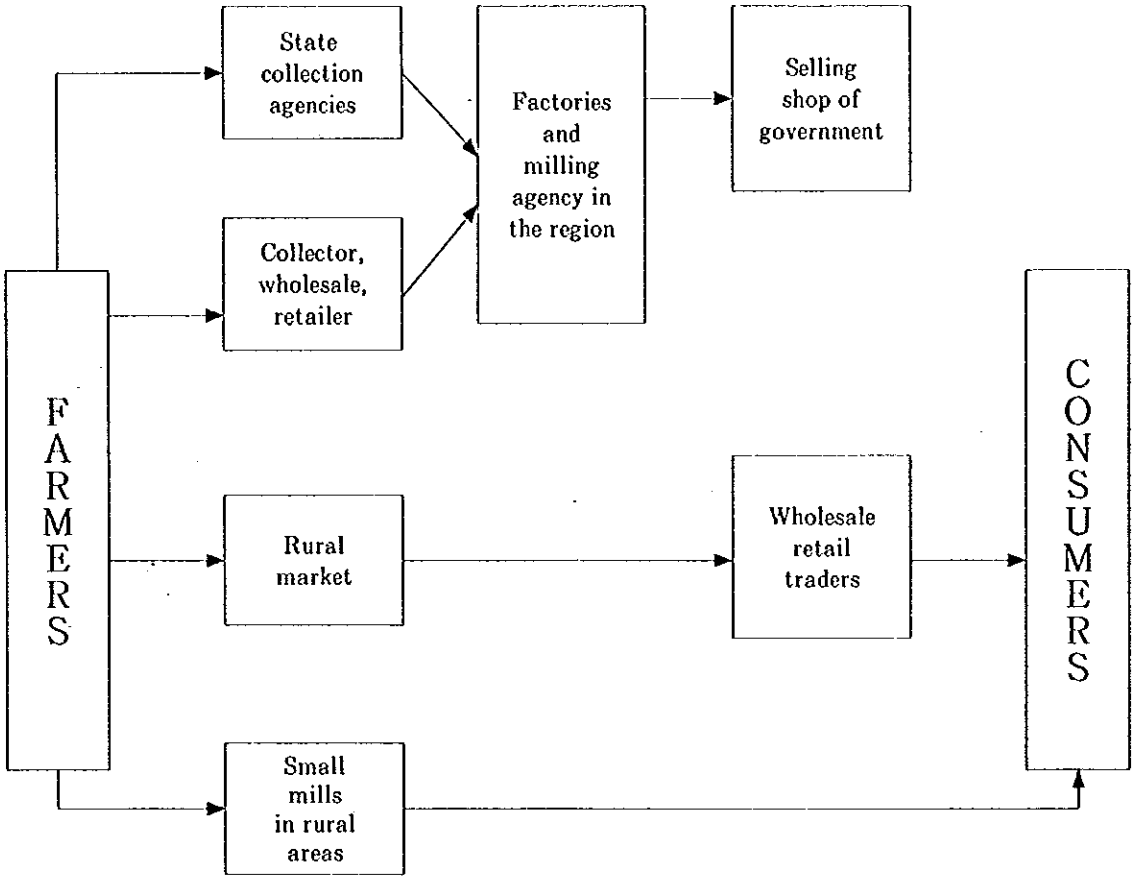


FIGURE 02. RICE MARKETING CHANNELS IN THE REGIONS HAVING LARGER PURCHASED VOLUME

(MEKONG RIVER DELTA)

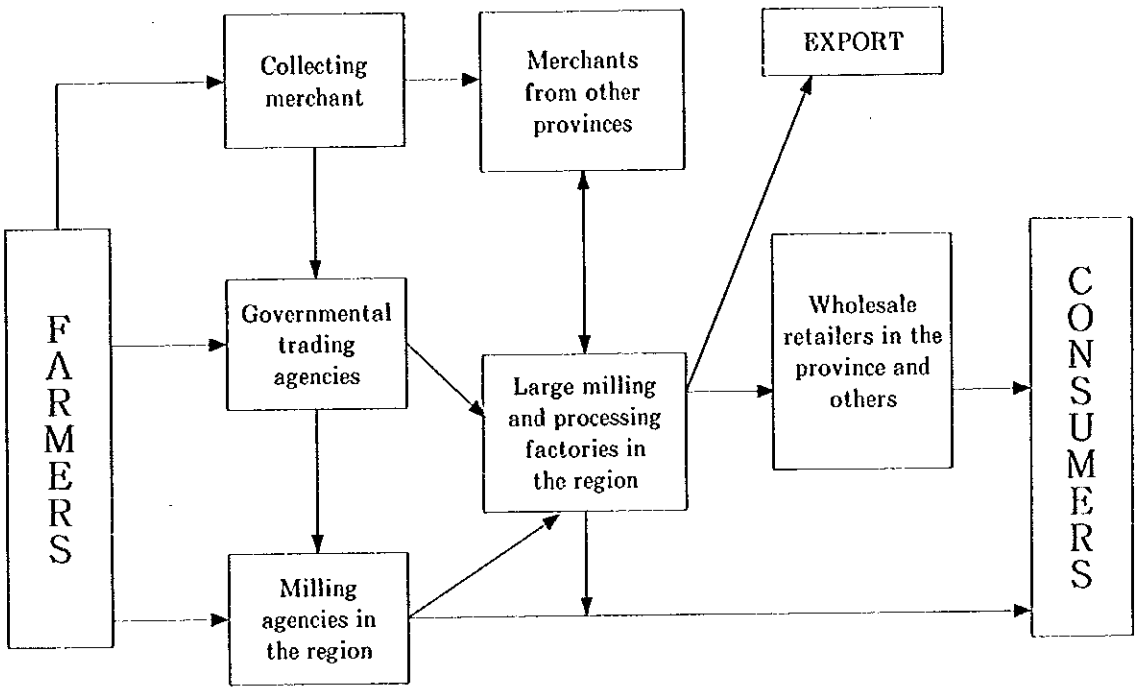


TABLE 01. RICE PRODUCTION DATA

Year	Area		Yield		Production	
	1000ha	% increase	Ton/ha	% increase	1000 ton	% increase
1989	5895.8	–	32.3	*	18,996	–
1990	6027.7	2.24	31.9	−1.24	19,225	1.20
1991	6302.7	4.56	31.1	−2.50	19,622	2.06
1992	6475.4	2.14	33.3	7.07	21,590	10.03
1993	6559.4	1.30	34.8	4.50	22,837	5.78
1994	6598.6	0.60	35.65	2.44	23,528	3.03
1995	6765.6	2.53	36.8	3.23	24,630	4.68
1996	7020.7	3.77	37.6	2.17	26,397	7.17
1997	7090.8	0.99	39.0	3.72	27,651	4.75
1998	7258.0	2.35	38.6	−1.25	29,140	5.38
Average	6526.0	2.33	34.8	2.38	22,717	4.80

* Source: Statistical data−General Statistics Office

TABLE 02. RICE EXPORT DATA

Year	Export volume (1000 ton)	Value of rice (mill. USD)	Total value export agr. (mill. USD)	(%) Value of rice against Total value export agr.
1995	2,052	539.0	1900.0	28.40
1996	3,047	868.0	2200.0	39.45
1997	3,600	864.0	2400.0	36.00

TABLE 03. EXPORT VOLUME OF SOME MAIN AGRICULTURAL PRODUCTS

Unit : 1000ton

TT	Item	1990	1991	1992	1993	1994	1995	1996	1997
1	Rice	1624	1033	1946	1722	1983	1988	3003	368.0
2	Maize	36.10	60.70	76.80	70.50	120.9	60.40		
3	Cofee	85.59	93.47	116.20	122.6	176.4	248.1	283.0	390.0
4	Tea	16.10	7.95	12.96	21.20	23.50	18.82	20.80	31.50
5	Rubber	75.87	62.95	81.92	96.66	135.5	138.1	194.0	197.0
6	Raw cashew	24.70	30.60	51.70	47.70	81.30	98.8	23.00	32.00
7	Vegetables	52.30	33.17	32.25	23.61	20.82	56.12		
8	Pepper	8.99	16.25	12.34	14.87	15.98	17.95	25.30	26.00
9	Peanuts	70.70	78.90	62.80	105.5	129.0	115.0	127.1	84.00
10	Soybeans	31.24	12.63	8.75	3.67	8.47	2.78	1.20	
11	Beans	7.90	10.20	19.65	12.63	8.40	3.95	0.75	1.89
12	Meat	16.15	25.01	12.09	19.65	12.64	6.39	9.54	12.03

• Source : Statistical data – General Statistics Office

TABLE 04. EXPORT VALUES DURING THE PERIOD 1990-1997

Unit : USD

Criteria	1990	1991	1992	1993	1994	1995	1996	1997
Total export value	2404.0	2087.1	2580.7	2985.2	4054.3	5448.9	7255.8	8900.0
Of which Agr. prod.	783.2	628.0	827.6	919.7	1280.2	1745.8	1990.0	2250.0
% of total	32.58	30.09	32.07	30.81	31.58	32.04	27.43	25.28

• Source : Statistical data – General Statistics Office

TABLE 05. STRUCTURE OF EXPORT RICE IN THE WORLD

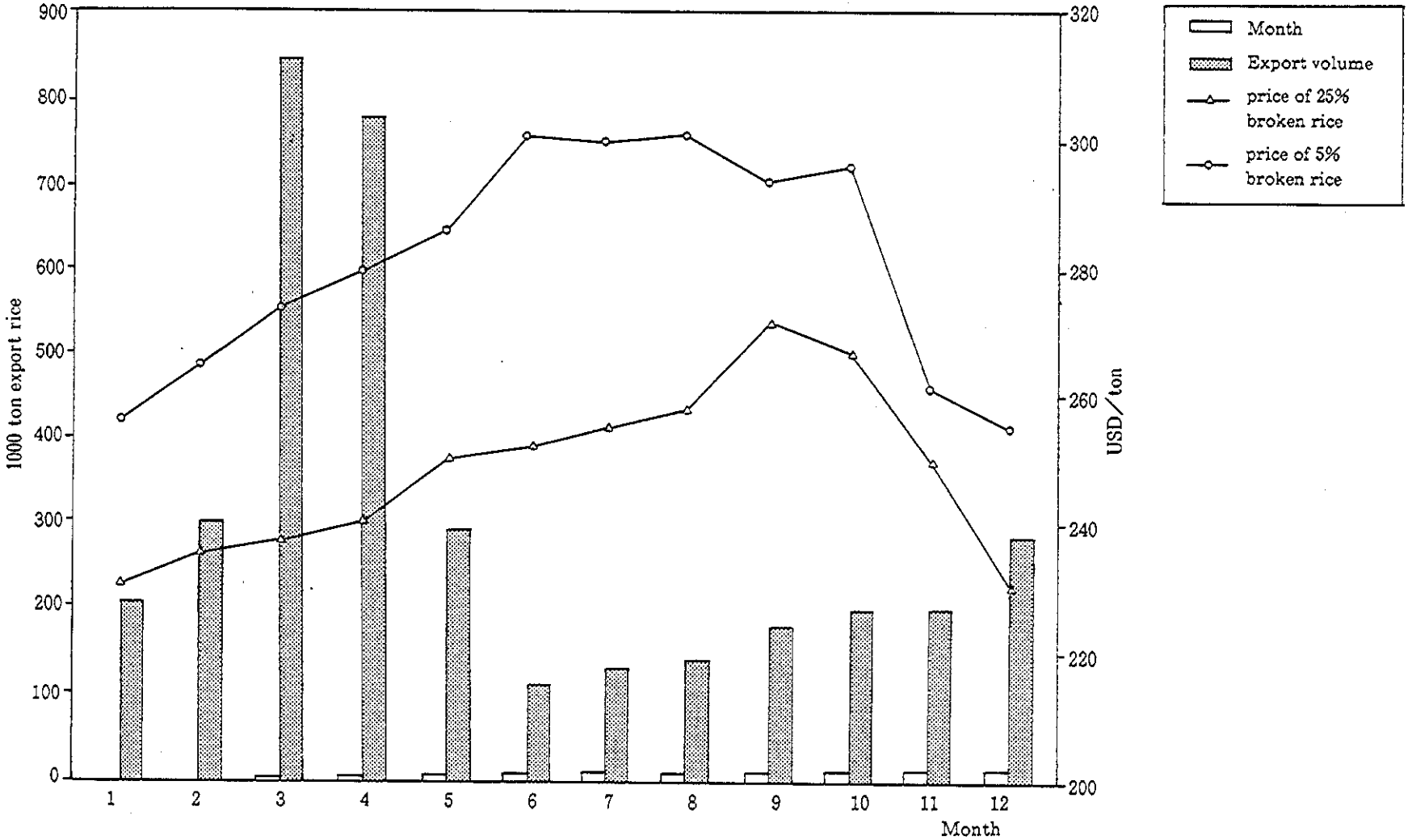
Unit : %

Area	1991	1992	1993	1994	1995	1996	1997
Total	100	100	100	100	100	100	100
Asia	33.81	39.2	33.7	34.01	68.47	62.4	33.0
Africa	22.32	37.87	27.9	15.49	14.85	9.89	46.0
Europe & Middle East	6.65	9.04	10.85	2.17	1.87	16.62	13.0
America	36.22	–	–27.47	48.30	14.8	11.04	8.00
Oceania	–			–	0.01	0.01	–

• Source: Ministry of Trade 1998

Sheet 1 Chart 2

Graph of rice prices and volume of export in 1998



Sheet 1 Chart 3

Price comparative graph for exports of Viet Nam & Thailand

9

To Strengthen the Service Institutions Supporting Agriculture and Rural Areas

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Background

After over ten years of implementation of renovating policies on agricultural management, Viet Nam considers the countryside as a key and agriculture as a "booming point" of development. Agricultural production has gained quite comprehensive successes. The growth rate of agricultural production has been high for a long period. It's about 4.3 percent per year, higher than the growth rates of other countries in the region and the rest of the world. Food production increased quickly from 19 million tons in 1988 to 32 million tons in 1998. The volume of Exported rice reached 3.7 million tons in 1998, ranking second in the rice exporting market of the world, after Thailand. The export turnover of agricultural products has increased 21% per year and average income increased about 1.5 times compared to 1988. Accommodation, rural transportation, education and health-care facilities, and the living conditions of the rural people have been improved gradually. Viet Nam's countryside has seen significant changes. These successes are great and of profound significance for Viet Nam as it attempts to overcome the socio-economic crisis and to stabilize the society. These create prerequisites regarded as "basic stone" for entering the period of industrialization and modernization of the country.

Among the great successes of agriculture gained in recent years during the "doimoi" period, there is the significant contribution of service institutions supporting agriculture.

The successes of the "doimoi" policies have been summed up and affirmed. Viet Nam is showing willingness to continue the renovation process in which more attention will be paid to agricultural and rural development in line with the directions of industrialization, modernization, cooperativization, and democracy.

In order to strengthen the renovation process, Viet Nam's agriculture should shift quickly to commodity-oriented production under market mechanisms oriented by the State to achieve the goals of richer people, strong country, and just society.

Viet Nam employs a multi-sector economic policy in which the producer, especially, the farming household, is an economic autonomous unit. The household is increasingly in need of absorbing more technical and technological advances, of input services such as materials, funds, and of output services such as marketing of agricultural goods. In order to satisfy such needs, the roles of the service institutions supporting agriculture should be strengthened

in terms of many aspects, such as organizational structure, operating practice and quality of service.

Supporting services to agriculture and the countryside consist of assists from State-owned enterprises, cooperatives, and communitieies to help farmers smooth production for higher and higher efficiency.

Concerning Viet Nam, because the country suffered severely from the long period of war, the governmental must support agriculture, and the rural areas and farmers play a very important role. This support from the government can be done in two ways:

- To create a legal environment for the operations of the service system. This includes laws, bylaws, ordinances, directions, resolutions, and policies of the Party, the State, the Government, and guidelines of ministries (or line ministries) regarding production, management, R & D of sciences and technologies, agricultural extension, and marketing of agricultural products.

  In recent years, the State has issued many important policies. Though not enough, these policies have had positive effects on agricultural production and the living conditions of rural people. These can be listed up as follows: the policy of development of the economy with multi-sectors, the in which the farming household is considered as the economic autonomous unit, the policy of renovation of the co-operatives and State-owned enterprises shifting the function from managing production to be the service unit, the Land Law, the Tax Law on Agricultural Land, the policy of free circulation of agricultural products, the policy of poverty alleviation and hunger eradication, and so on.

- On the economic front, direct support from the State creates favorable conditions for the service institutions supporting farmers. This support includes infrastructure improvement, training farmers on knowledge and production experiences, credit services, and input services for production.

  The State has issued policies on credit for agriculture, on subsidies for agricultural products, and establishment of a fund for price stabilization, and other financial supports. The State's policies have had positive effects on creating momentum for development, utilizing rationally natural and human resources, and bringing the full potential of each locality into play. These have also been able to strengthen the service bodies supporting agriculture and rural areas. Services supporting agriculture and rural areas are a hot issue in both the short run and long run to ensure quick development but at the same time allowing sustainable ecological agriculture.

The service institutions supporting agriculture and rural areas are diversified, but in this paper we would like to mention only three kinds. The first includes institutions relating to research and dissemination of scientific, technological advances. The second includes institutions concerned with agricultural, and rural credit, and the third is agricultural

cooperatives.

Part one

The system of the scientific and technological research institutions and the dissemination of technical and technological advances

I. The System of the Scientific and Technological Research Institutions

Most of the scientific and technological research institutions belonging to the Ministry of Agriculture and Rural Development have responsibilities to carry out research and the dissemination of technical and technological advances to farmers contributing to agricultural and rural development

1. Block of institutions in the system

- The system of scientific and technological research institutions supported by the State budget

By March 1998, there were 24 research institutions, 9 research centers, and 1 center for information pertaining to the MARD. This system consists of a total of over 200 faculties and departments and apart from these, there are a hundred centers and stations doing research and experiments located throughout the country. The total staff of these agricultural research institutions is about 4,923 persons.

- The system of education and training institutions

The MARD has two universities (The Forestry University and The Water Conservancy University), two colleges for managing cadres, 13 high technical schools and 25 schools for training technical workers with a total staff of 4,025 persons. There are 19 professors, 45 associate professors, 3 Ph.Ds., and 204 persons having associate doctors and master's degrees. Along with these institutions of the MARD, there are 4 agricultural and forestry universities, two agricultural faculties belonging to Can Tho and Tay Nguyen University, and some high technical schools in provinces.

- The scientific research institutions of the specific branches

There are 3 institutions of planing and projection related to three sectors (agriculture, forestry, and irrigation) which play an important role in the scientific and technological activities of the branches. There are also others such as the Technical Center for Forest Protection, the Technical Center for Plant Protection, the Center for scare and valuable animals, and National Parks.

- The research institutions belonging to cooperations

Some big cooperations have their own research bodies, such as the research institutes for coffee, tea, vegetables and fruit, rubber, institutes of post harvest technology, research centers for poultry, cotton, bees, and others.

- The research institutions belonging to provinces

There are many centers and stations doing research, experiments, and application of new techniques and technology in provinces across the country.

2. The research staff

The total working staff in the field of agriculture and rural development is approximately 331,000 qualified persons, of which 211,000 pertain to agriculture, 80,000 to forestry and 40,000 to irrigation. The number of staff members holding high technical and post-graduate degrees accounts for about 7.18% including 63 professors, 152 associate professors, 29 Ph.Ds, 254 associate doctors and masters, and 22,800 bachelors. Compared with the total number of qualified staff of the country, this sector (agricultural, forestry, fishery and water resources) accounts for 11.25% of persons holding post graduate degrees, 2.85% of those holding undergraduate degrees, 2.34% of those holding high technical degrees, and 14% of technical workers. In the agricultural sector, among every 21 persons holding a degree ranging from high technical degrees up, there are 10 persons taking part in scientific and technological research activities.

3. The weaknesses of the system of scientific research institutions

There is still no strong unity and cooperation among the research institutions of the system. The distribution of research institutions across the country is not rational. 70% of the institutions are located in Hanoi while there are only a few are in the other parts of the country, such as in the mountainous areas of the North and the Central Coast of the North and the South. The assignment of key tasks and responsibilities for each research institution is not so clear and concrete. Many activities overlap among institutions. Cooperation, exchange of research results among scientific research bodies, training centers and extension departments are poor.

II. The System of Institutions Transferring Science - Technology Advances (the Extension System)

According to Decision No.13 of the Government dated March 3,1993, there are two kinds of extension institutions: State institutions and voluntary institutions in the agricultural

(including forestry and fishery) extension system.

The State agricultural extension institutions are organized as a system from the central level to the local level. At the central level, there is the Department for Agriculture and Forestry Extension belonging to the MARD. Regarding fishery extension, there is a section in charge belonging to the Department of Fish Breeding of the Ministry of Fishery. Each province has a Center for Agricultural Extension. At the district level the Agricultural Extension Station belonging to the Center is also established, and there are extension workers in communes.

The voluntary extension system consists of agricultural extension divisions pertaining to scientific research institutions, training centers, mass organizations, and/or private enterprises that would like to take part in extension activities.

1. State agricultural extension

The Department of Agricultural and Forestry Extension belonging to the Ministry of Agriculture and Rural Development was established. There are 2,800 extension staff members in the system throughout the country. At the provincial level, all provinces have extension centers and in the districts, 377 extension stations (accounting for 70% of all districts) were founded. 80% of the communes have extension workers. There are the following types of extension organizations belonging to the provincial extension center:

- District extension stations
- Multi-district extension stations
- Commune extension
- Multi-commune extension.

At the central level, the Department of Agricultural and Forestry Extension is the top institution to monitor and inspect all agricultural and forestry extension activities throughout the country. The Department has the following functions:

- Building the policies, goals and strategy for the development of extension.
- Supervising the implementation of development policies and programs.
- Designing development projects.
- Supervising extension activities and transferring technical and technological advances.

At the provincial level, the provincial extension centers, which are operated in line with the national extension system, have responsibilities to set up the goals and policies on extension for their provinces. The transfer of technical and technological advances are mainly implemented through the district extension centers, agricultural scientific centers and enter prises. The extension activities are carried out mainly by the district extension stations and commune extension workers.

2. The extension system of scientific research and training institutions

Most of the scientific and training institutions carry out extension activities aimed at linking research and training with production through transferring and dissemination of technical and technological advances.

3. The extension bodies of mass organizations

Mass organizations and professional associations also take part in extension activities according to their specific field. For instance, the Garden Association of Viet Nam implements extension activities through the program "VAC" (Garden - Pond - Cage); the Viet Nam Women Union conducts the program "women help each other to improve the household economy", and so on. In addition, some associations and centers have been set up voluntarily by scientists for dissemination and transfer of technical and technological advances to farmers.

4. Agricultural extension by enterprises

Production and trading enterprises at the central or local levels engage in some appropriate extension activities servicing peasants to increase the production of raw materials for these enterprises, such as the Viet Nam Coffee Company, Viet Nam Tea Company, the General Breeding Company, Cotton Company, Lamson Sugar Company, and Song Hau Agricultural Enterprise.

In general, the extension forms are diversified, and are suitable with the current conditions and situation.

The transferring process of technical advances to farmers are organized under the following steps:

- Setting up of demonstration sites
- Organizing field study tours and visits of the demonstration sites
- Carrying out training for farmers and extension workers on the necessary knowledge and experiences
- Providing information, advice and suggestions on problems which are of interest to farmers
- Providing services such as credit, seeds, fertilizers, and technical assistance about plant protection and veterinary sciences, processing, and marketing of the agricultural products
- The funds for extension activities are provided from many sources, such as the State budget, international projects, NGOs and contributions from various enterprises and localities.

5. The weaknesses of agricultural extension

- The funds for extension is very limited, and it is much lower than what demanded.
- In 30% of the districts and 20% of the communes extension organizations have not been set up yet. The extension program at the district level is not common and the socialization of extension is still limited.
- The mountainous and remote areas have not received enough attention. Middle-income and poor households are not much concerned by agricultural extension.
- The local extension workers are not well trained; they are also not encouraged properly by materials and other incentives

6. Research and extension activities

Research and extension have contributed significantly to agricultural development in the following aspects:

6.1. In scientific research activities

- The high-yield varieties and species, which have been produced, are the result of research, selection and hybridizing.
- Studying and transferring comprehensive technical and technological advances lead to increases in the crop yield and animal productivity in line with the model of intensive and commodity production.
- Researching theory basis and proposing solutions contributed to speeding up of the process of agricultural diversification.

6.2. In the activities of agricultural extension and transfer of technical and technological advances

Some good results were gained from the implementation of many agricultural extension programs, such as:

- The program of changing crop patterns.
- The agricultural extension program of employing highbred yield varieties (rice, maize, cotton, sugarcane) and animal species (pig, cow, chicken, and so on)

Over the past ten years, agricultural extension activities have played a great role in grain production such as: the application of methods of intensive farming and exploitation of land potential including reclamation of new land and increasing the rate of land rotation. Economic effectiveness is increased by using new plant varieties with high yield and good quality, employing new technical practices of intensive farming, agricultural diversification, and decreasing loses in the post-harvesting process.

Part two

The system of credit institutions serving agriculture and rural areas

Since the ordinance on banking was passed, the Government has issued policies and mechanisms on agricultural as well as rural credit in order to design, establish, and firmly develop the factors of the rural financial market.

There are three main rural financial institutions in Viet Nam. They are: the Vietnam Bank for Agriculture and Rural Development (VARDB), the Vietnam Bank for the Poor (VBP), and the People's Credit Fund (PCF).

I. The Viet Nam Bank for Agriculture and Rural Development

This bank was formerly named the Bank for Vietnamese Agricultural Development, which was formed under the Decree No. 53/HDBT dated 26th March 1988 by the Council of Ministers (now the Government). In 1990 it was renamed the Viet Nam Bank for Agriculture, and in 1996 it's nome was again changed to the Viet Nam Bank for Agriculture and Rural Development.

The organizational structure and operational regulations of the Viet Nam Bank for Agriculture and Rural Development were approved by the Governor of the State Bank of Viet Nam on November 22nd, 1997. Under these regulations, the VBARD is a special kind of State-owned enterprise (SOE) which has self-determining rights regarding its finance, self-responsibility on the results of its business as well as on maintaining and developing its capital.

The VBARD is of a nationwide network from the central to local levels. So far, it has 1,322 transactional agents and branches at all levels: provincial, city, district, inter-district, commune, and inter-commune with a total 22,000 staff menbers who have been trained in the banking profession.

The VBARD has a large clientele including 7 million farming poor households, 3,300 State-owned enterprises, 8,000 economic organizations such as cooperatives, and 1,000 stock companies. The bank is also conducting credit transactions with 22 banks abroad and 20 foreign banks with branches in Viet Nam; the VBARD is also establishing ties as an agent for nearly 500 foreign banks and international banks.

The registered capital of the VBARD is to serve socio-economic development in rural areas. Since 1996, when it was renamed as Viet Nam Bank for Agriculture and Rural Development, until now, the bank has achieved the following remarkable results.

	1996	1997	1998
Assets Total (billion VND)	23,830	26,510	31,789
Increase in comparison to the previous year	31.5%	11.25%	29%
Mobilized Funds			
Total (billion VND)	22,069	23,304	25,313
Increase in comparison to the previous year	30.4%	5.6%	30%
Outstanding Loan			
Total (billion VND)	18,735	21,918	23,437
Increase in comparison to the previous year	32%	17%	21.8%

The salient point in the past three years (1996, 1997, 1998) was that the VBARD made efforts to lend to poor households; it had outstanding loans of nearly 3,000 billion VND with nearly 2 million farming households. Besides this, the bank also lent 7,000 billion VND to enterprises buying agricultural products from farmers to partially contribute to keeping the prices of agricultural products stable, which benefited farmers. The VBARD also conducted several lending programs such as: heightening the foundation of the houses by building them on stakes in the Mekong River Delta with an amount of more than 200 billion VND, lending the amount of 3,000 billion VND to overcome natural disasters, and other programs (for example sugar-cane development, rural transportation, electricity, safe water in rural areas, etc).

Loans mainly served for the tasks of socio-economic development in rural areas as shown in following ratios:

Categorized by the economic fields	1996	1997	1998
For: Agriculture	66.5%	76.7%	52.53%
Forestry	0.41%	0.2%	1.53%
Fishery and salt production	5.22%	4.4%	1.72%
Trade and Services		7.9%	12.69%
Industry and construction	12.29%	2.3%	13.81%
Others	11.67%	8.5%	17.7%
Categorized by economic sectors			
State-owned enterprises	23%	27.3%	29.14%
Private enterprises		2.2%	2.95%
Cooperatives		0.3%	0.21%
Individuals and farm households	69.6%	57.2%	68.10%
Others		13%	1.6%
Categorized by economic regions			
Mountainous and Central Northern		11.90%	12.60%
Red River Delta		24.0%	17.05%
North Central Coast region		8.3%	9.40%
Central coast region		7.5%	8.60%
High Plateau		15.5%	7.50%
Southern North-East		24.3%	15.80%
Mekong River Delta			29.00%

Lending loans: The VBARD's lending in rural areas increased considerably in terms of both amount and targeted groups. Credit quality has been basically ensured (on average the overdue amount accounted for under 5%). Loans in rural areas accounted for more than 40% of all outstanding loans; also in terms of outstanding loans, annual growth rates were about 24 to 27%, which was higher than general growth rates. There were nearly 6 million households borrowing from the bank, accounting for nearly 50% of the total number of households in rural areas; poor households borrowed 1.66 million. By the end of 1997, total outstanding loans were about 36,000 billion VND.

Mobilizing funds:

The VBARD implement many appropriate measures for the mobilization of funds to increase the amount of loans. The bank employed various forms of fund mobilization, such as mobilizing it locally, which could meet about 60% of the all outstanding loans. The rest came from many other sources such as the transfer of the mobilized funds from urban to the rural areas, borrowing from international finance institutions, and guaranteeing enterprises so that they may borrow from abroad.

Credits met the various demands from economic sectors in rural areas. It was also directed at investment priorities in some focal development programs and was used a standby fund for unforeseen demands. Those programs are: lending to buy rice for export, coffee, cashew, and sugar cane programs, aquaculture development and offshore fishing, overcoming natural disasters, leveling up and building houses on the stakes in the Mekong River Delta, ets.

Interest rate policy:

The interest rate applying for rural areas is adjusted reasonably at each concrete step. From the beginning of 1998, the ceiling interest rate of lending has been equal both in urban and rural areas (for short-term loans: 1.2%/month, for medium-term and long-term loans: 1.25%/month). There has also been a preferential interest rate.

Clientele:

Farming households have been special clients who borrow and repay their loans fairly. Over the past ten years, overdue loans for these households have accounted for just approximately 4% of the total, which is much smaller than the figures of other borrowers. This fact shows that farming households were not only clients but also prestigious accompanying friends of the VBARD.

II. The Viet Nam Bank for the Poor (VBP)

This bank was established under decision No.525/TTg dated August 31st 1995 by the Prime Minister and the decision No. 230/QD-NH5 dated 1st Sept. 1995 by the Governor of the State Bank on transferring the Fund for Preferential Lending to the Poor from the VARDB to the VBP. The bank has formally been in operation since 1st Jan. 1996.

The VBP's operating objectives are to eradicate hunger and alleviate poverty not for the purpose of making profit. The bank has to maintain and develop its initial capital based on exploiting the sources of funds from aboard as well as domestic institutions and individuals, receiving credit from the State for the poor, and other funds that are permitted by the State to establish loanable funds for the poor.

The VBP lends directly for the purposes of production and doing business to households who have a labor force but are lacking funds. These households are provided loans without collateral to develop their production. They have to repay the loans with interest in accordance with the regulations issued by the Governor of the State Bank.

By the end of May 1998, the VBP achieved the following results:

1. Sources of Funds:

The total source of funds as planned at the end of 1998 was about 3,500 billion VND, of which:

- Registered capital provided by the State's budget was 700 billion VND which accounted for 26.5% of all funds.
- The VBARD contributed 1,140 billion VND which accounted for 48.72% of all funds.
- The State Bank of Viet Nam contributed 700 billion VND accounted for 26.5% of all funds.
- Viet Nam Foreign Trade Bank contributed 210 billion VND which accounted for 9% of all funds.
- The Hanoi Bank for Stock and Commercial Housing: 300 million VND
- Trust Fund: Total 216 billion VND, of which 180 billion VND came from the local budgets: Only for 1996 and 1997, this fund increased by 101 billion VND.
- The Abroad Trust Credit: IFAD organization sponsored 40 billion VND for poor households in the two provinces of Tuyen Quang and Ha Giang.
- Receiving technical assistance from Rabo Bank Holland: 400,000 USD.

The results of implementation of all sources of funds

By 31st December 1997 the bank had disbursed 2,340 billion VND, achieving 66.8% in comparison with the plan for 1997, but this figure increased by 19.5% in comparison with the same period of 1996.

By 31st May 1998 the bank had disbursed 2,640 billion VND, achieving 75.43% in comparison with the plan for that year.

In general, the domestic trust credit had not been fulfilled yet, and the implementation of the Abroad Trust Credit was very limited because the foreign partners did not agree with the subsidized interest rates policy.

2. Lending:

The VBP implements the method of direct lending to poor households for production and business in accordance with the list of eligible households that have been approved by the people's committee, or by the president of the management board at the VBP's district level. The selected households are chosen by assistant teams and saving teams from that commune.

The lending term is in line with the production cycle of each plant and animal, however it must be not longer than 3 years.

The maximum amount of loans cannot exceed 2.5 million VND for each household. For households who have already repaid previous loans but did not rise above the poverty line, they are no longer considered to be eligible clients of the VBP and the bank shifts its loan portfolios to lend to other households.

Besides the task of providing credit services for poor households under the regulations, the VBP does not carry out any other kinds of service.

- Over the two years of 1996 and 1997, 2,468 thousand transactions involving VBP loans to poor households took place worth a total amount of 3,184 billion VND. The sum repayed after two years was 927 billion VND. By 31st December 1997, there were 1,606 households with outstanding loans to the VBP worth 2,257 billion. There were 185 thousand assisting and saving teams borrowing loans.

- Overdue loans as of 31st December 1997 totaled 41 billion VND, accounting for 1.8% of all outstanding loans.

- In general, the loans are directly handed down to poor households, who are lacking capital for production, to correctly purchase materials and means of production. That has generated more jobs and increased their incomes, and they have been very pleased.

- Proportions of loans for different sectors are as follows:
  + Agriculture: 84.4%
  + Salt and fisheries: 2.43%
  + Small-scale industry, small trading: 13.38%

- Categorized by geography:
  + To poor households in urban areas: 20%
  + To poor households in rural areas: 80%

3. The organizational system:

Up to now, the VBP has provincial branches in all 61 provinces, and city and district branches in more than 500 districts, townships nationwide.
Boards of management: There is a Management Board and a team of consultants in the Central level. At the provincial and the district levels, there are also boards of directors. The total number of representatives of Management Boards at all levels is 6,580 persons in which 735 persons are at the provincial level and 5,845 persons are at the district level.

All members of Management Boards, teams of consultants and representatives of Management Boards are holding more than one post, but they are willing to work for interests of the poor.

Operating Teams of Management: Under the regulation, for this bank the VBARD is in charge and nominates staffs to work at the VBPs from the central to the local level. The operative Teams of Management has tasks to consult, assist the Boards of Directors to formulate regulations and rules for the VBPs.

4. Some achievements in the VBPs' operations

The VBP has mobilized comprehensively the collective strength of agencies and branches from the central to the local levels. The bank promptly established a typical credit institution, initially formulating a system of credit policies to assist in funding for poor households. Despite of the short time, the VBP mobilized total funds of 2,341 billion VND, and particularly, by 31st May 1998 it was 2.640 trillion VND. The lending amount reached VND 3,184 billions; the repaid amount was 927 billion VND. The number of credit borrowing transactions were 2,648 thousand. The number of households that still had outstanding loans at the end of 1997 was 1.6 million, the average amount for outstanding loans for each household was 1.4 million VND. The bank's loans to more than 220.00 poor households help them to overcome the threshold of poverty, and others are on the way to leaving poverty behind.

The operations of the VBP have promptly gained economic effectiveness, reduced the costs of banking management, and reduced expenditures in social management.

The credit share of the VBP accounts for more than 50% of poor households. Poor farmers repay their debts quite well, and the overdue loans account for 1.82% (in general, the rate for agricultural loans is approximately 5.0%).

5. The remaining problems in VBP operations

- Management: The members of the Management Board, representatives of the Management Board, consultants and chief of inspectors are senior officers in the State's agencies, and they are not working solely in the bank (holding more than one posts) so they have little time to fully implement their tasks. Moreover, the VBP's operations are related to many agencies and levels so the Management Board cannot settle problems that are out of their control. The meetings of the Management Board never have more than half of the members attending, so their decisions and consultation functions for the State to design policy, manage, monitor as well as to formulate regulations are not brought into play effectively.

- Targeted groups

  + Applying and exercising the poverty line which decides eligibility for the bank's loans is very different among localities, and this results in many mistakes.
  + Providing loans to poor households has not yet been attached to agricultural, forestry, fishery extension for the poor so the effectiveness of loans is still low.
  + The supervising role of the representatives at various levels is not carried out effectively, as they are still not capable of preventing loans to wrong targets, and they are also not basing loans on loan demand and repaying ability of the households.
  + The credit amount: according to the current regulation, 2.5 million VND is the maximum

credit amount per household, and it is applied in the nationwide. But there have been many different opinions raised which need to be further discussed.

+ The lending term: the VBP conducts its lending mainly on the short-term but in some cases the duration is as long as three years. From 1st July 1997 now, the State Bank defined short-term lending as being not longer than 12 months; longer loans (over 12 months) are categorized as medium-term. However, classification for statistical purposes is done by the VBP at the district level. Thus, a contrary situation has emerged that has not been settled between the State Bank's regulations and the VBP, which does not have medium-term loans.

With the above-mentioned problems, different attitudes and opinions have emerged on the needs to maintain this VBP. Some people have said that the VBP is subsidized, the poor do not bring loans fully into play, repaying ability is low, and the management system is poor. There are mistakes during exercising of lending at local levels as well as wrongdoing. This group of opinions strongly focuses on the VBP's being subsidized and adventurous. They believe there is no need to maintain the bank. In contrast, others argue that there are many poor households in Viet Nam, the economic starting point of these people is very low, and their ability to borrow from commercial banks is very limited. Under some unexpected cases, they have to borrow loans from private enterprises but the interest rate is very high, so they end up continuing to be poor. That's why there is a need to maintain and strengthen the VBP. These people understand fully the problems in the VBP's operations. However, the solutions for solving these problems are needed so that suitable policies aiming at adjusting and consolidating the bank can be found, and the operations of this financial institution will become effective.

In our opinion, both of these points of view reflect the facts and are rational. This should be studied and reviewed, and suitable policies should be issued for the future.

Ⅲ. The People's Credit Fund

1. Transforming from credit cooperatives to the People's credit funds

In the period from 1956 to 1985, almost all of the communes in Viet Nam had credit cooperatives; the total number being 7,160 (3,960 in the North and 3,200 in the South).

During 30 years of operation, these credit cooperatives made a great contribution to implementing economic and financial policies in rural areas such as:

- Mobilizing idle money from people and lending for production and other activities in social life.
- Acting as agents to mobilize saving and providing loans from the State bank to farming households.
- By mobilizing idle funds and lending, it encouraged people and limited usury in rural

areas.

Since 1988 the renovation (doimoi) has been implemented; besides the former credit cooperatives, up to 500 new ones had also developed. By 1990 the total numbers of credit cooperatives had grown to 7,660.

However, the old mechanisms of credit cooperatives were no longer suitable and these ones were not transformed in a timely manner. They fell into a very difficult situation in which they could not afford to pay their debts, and as a result they had to close down.

When the Ordinance on Banking, Credit Cooperative, Financial Companies was issued in Oct. 1990, the State Bank judged that more than 6,000 credit cooperatives had to halt their operations because they were not meeting required conditions; more than 2,000 had to liquidate. During the same period, until June 1993, there were 62 licensed credit cooperatives nationwide under the new ordinance on banking. To some extent, the operation of these credit cooperatives achieved remarkable results. However, they could not overcome the characteristic of singleness, and a reasonable linkage among credit cooperatives had not been set up so there was much limitation in their operations.

Therefore, the Government has piloted a new model under decision No QD-390TTg by the Prime Minister regarding reforming credit cooperatives under the new model, the so-called People's Credit Fund.

The reformation of credit cooperatives under the model of the People's Credit Fund has diversified credit institution patterns in rural areas, and established a system of carrying business on money that has created intense interest among members.

2. Results of implementation of the pilot People's Credit Funds

The implementation of the process setting up the pilot People's Credit Fund (PCF) has been conducted in many phases. By the beginning of 1998, 53 of 61 provinces formed 977 grassroots PCFs, 21 regional PCFs, and a central-level PCF.

In the 997 PCFs, 641,701 members were enrolled with a registered capital of 153,149 billion VND, working capital was 1,857 billion VND, total mobilized funding was 1,189 billion VND, and total outstanding loans was 1,613 billion VND. The figure on assets minus liabilities in a financial balance sheet was shown as 38,343 billion VND.

The regional PCF is a union of PCFs that are established and operated within one province. In the total of 21 regional PCFs, there have been 2,209 members with total funds of 359 billion VND, of which:

Registered capital: 19 billion VND

Total mobilized funds: 63 billion VND

Borrowing funds: 141 billion VND

Total outstanding loans: 255 billion VND

and the figure on total assets minus liabilities in balance sheets was: 3.5 billion VND.

The central PCF (CPCF) was established in August 1995. Up to now, it has 788 members. Total funds are of 319 billion, of which:

Registered capital: 112 billion VND (of which 80 billion is from the State budget)

Mobilized capital: 27 billion VND

Borrowing funds: 123 million VND

Funds which circulates in the system: 5.5 billion VND

Others: 50 billion VND

Total outstanding loans: 258 billion VND.

Assets minus liabilities: 10.2 billion VND.

3. General judgments on the results of PCF operation

- The guideline on establishing pilot PCFs is to meet the desire of the people, especially in rural areas. They consistently agree and voluntarily participate in its activities. In the system of PCFs, from the central to local levels, each level is an independent legal unit, acting under the principle of self-determination and self-responsibility, which is initially creating an assistant linkage. Mobilizing funds and outstanding loans are continuously increasing, contributing to development process of production, and raising the quality of living for members of the PCFs

- Training staff contingent at the local level (more than 7,000) are beginning to be familiar with the credit profession and monetary and other banking services.

- PCF establishment has met the demand and objectives of mobilizing and lending funds locally with lending of trillions of VND for the purpose of developing production of its members. It also contributes to the process of restructuring production, restoring and further developing professions, creating more jobs, eradicating hunger and alleviating poverty, and restricting usury in rural areas.

4. Many emerging problems need to be solved

4.1. The organizational model: the PCF system has not been fully formed yet, both in terms of structure and the operational mechanism. At present, the PCFs are only providing loans (mainly from the top down) but the function of harmonizing funds among the PCFs as well as capability and the operational mechanism are still not enough to ensure the PCF system's working correctly and effectively.

The system also does not have either close linkages among itself or a chief representative

for the whole system that maintains contact with the Government and the State Bank as well as NGOs inside and outside of Viet Nam.

4.2. Quality of operation

4.2.1. PCFs (at the local level). There are many PCFs, which are purely doing business, departing far from its objective of assisting each other in the community.

The operating scale of some PCFs is still small, with low registered capital (under 100 million VND), and especially for some PCFs it is smaller than 50 million VND. After one or two years in operation, outstanding loans are just about 200-300 million VND. These small-scale PCFs are in the Central, the mountainous Northern, and the High plateau provinces.

Preparation and evaluation before lending of the PCFs are done poorly, and as a result overdue loans are of an increasing tendency. In some PCFs overdue loans are more numerous than the ones regulated in the regulations.

The regulation and rules of the PCF are not executed strictly, consequently people have do not receive a bias against PCFs because of the collapse of credit cooperatives in the past.

Security measures for keeping funds do not receive enough attention. In some PCFs they do not have safes so that at the end of working days, the cashier has to carry money with him/her back home.

The financial result is poor, 39% of the PCFs give a dividend of registered capital lower than the interest earning on the demand deposit. Therefore, it really does not attract the PCF's members to invest.

There are some limitations on management. Some PCFs do not have their own regulation; the relationship between the board of directors and the manager is not clearly defined. Internal inspection is carried out poorly.

4.2.2 Regional PCFs (RPCFs): The tasks and functions regulated in the license have not fully implemented. 11 of 20 regional PCFs have a registered capital of under 1 billion VND. In some RPCFs, borrowing funds are larger than the mobilizing funds.

There are 6/9 RPCFs which have outstanding loans lower than 10 billion VND. RPCF' operation still depends on the State Bank in terms of staffing and material premises.

- The Central PCF (CPCF): Heavy tasks and functions are handed to CPCF but the Central PCF can only provide funds to the PCFs at the local level and initially to harmonize funds among the PCFs. The other task of supervising the use of funds is still out of the central

PCF's control. The registered capital of the CPCF is not high, particularly the part made up of contributions from the different levels of PCFs. These contributions account for only 10.6 % of the total registered capital of the CPCF. Mobilizing funds are also low, accounting for 8.4% of total funds. The objective of supporting and assisting PCF members has not received proper attention. The dividend from capital contribution is as low as 50% of the interest earned on the demand deposit.

4.3. The causes of the above-mentioned problems

- The local authorities view the PCF as an institution that is formed by the State Bank, so they do not help or assist it continuously. However, in some localities they view the PCF as a financial institutionof the commune and their deep involvement constrains the operation and development of the PCF.

- Unreasonable policies and mechanisms such as the profit tax (which is as high as 45% of profit earned) exist. There is no policy on assistance when the PCF faces bad debt caused by natural disasters such as flood, drought, etc.

- In some provinces and cities, the branches of the State Bank do not implement their tasks to consult authorities to monitor the PCFs. The management role of agencies concerned with PCFs is not clearly defined.

4.4. The emerging issues

Judging from the facts and the results of PCF operations, many conflicting opinions have emerged. One side has raised such arguments regarding the low effectiveness of the PCF, disadvantages of depositors in terms of interest rates, incapablility of management boards at all levels, pessimistic prospectives, etc. This side claims that what is needed is focus on developing commercial banks of the State, especially the Viet Nam Bank for Agriculture and Rural Development. On the other hand, the opposite party says that at the present and in coming years loans from commercial banks will only meet about 50% of borrowing demands. That's why we need to consolidate and further develop the PCF as a channel that provides more loans to farming households in both aspects of supplementing loans for commercial banks and preventing usury in rural areas.

With the above-mentioned situations, in early of June 1998 the Government made a decision that halted the expansion of PCF's in order to review and sum up the implementation of pilot PCFs; this is a foundation for better adjusting and consolidating the system of PCFs.

Part three

The services for agriculture and rural areas from the agricultural cooperatives

The agricultural cooperative has been set up since 1955 in the North and 1977 in the South. Although there was 20-years difference with respect to the timing of the establishment of the cooperatives in the North and the South, the standpoint, policies, steps of establishment, managing mechanism, and the mode of operation stayed the same.

After a short time of piloting, the establishment of the cooperatives became a movement. The cooperatives at a low level completed their establishment within only 2-3 years. 4-5 years later the cooperatives at a high level were also basically set up. The cooperation here meant the same with collectivization.

Throughout the country, by and large, this cooperative model existed for more than 30 years. During this period, the State and farmers made a great effort for consolidating, reorganizing, and improving the cooperatives but the cooperative, movement still came to deadlock. In 1981, Decision No.100 on contracting between the cooperative and the farmer as well as the group of farmers in terms of final products, which was issued by the Central committee of Viet Nam Communist Party, was regarded as the breaking point in stopping the cooperative collapse.

In 1988, Solution No.10 of the Politburo of the Viet Nam Communist Party on renovating the economic management in the agricultural sector, which is an important landmark, created a new period of agricultural and rural development, i.e., a period of comprehensively renovating agricultural management. The resolution has created the motives for fully agricultural development. After Resolution No.10 many laws, decisions, and directions have been issued to affirm the continuous renovation of the policies of the Party and the State. The main contents of the policies are: the farming household is considered as an autonomous economic unit and the continued renovatation of cooperatives and state-owned enterprises based on the great potential and durability of a household economy. In addition, principles must be properly implemented in such a way that ensures the voluntary, democracy, and mutual benefits of farmers in the process of establishment, management, and development of the cooperative economy. The Law on Cooperatives was approved by the Assembly of the Socialist Republic of Viet Nam in 1996. It has been implemented from January 1st, 1997.

I. The Transformation of the Former Cooperatives to the New Form in Accordance with the Law on Cooperatives.

During the two years of 1997-1998, thanks to the implementation of the Law on Cooperatives,

many pilot cooperatives were made by localities aiming to expand the new cooperative movement by transforming the former cooperatives to new ones which mainly function as a service for farmers. By the end of 1998, the transformation of the cooperatives was completed in some provinces such as Hanoi, Ha Tay, Nam Dinh, Ha Nam, Ninh Binh, Hung Yen, and Hai Duong. Other provinces are still in the process of forming pilots, such as Thanh Hoa, Nghe An, Vinh Phuc, Bac Ninh, Quang Nam, and Binh Dinh. The transforming process has not been uniform regarding the size and quality.

According to reports from the provinces, at the beginning of 1999, more than 8,000 former cooperatives had been transformed into new cooperatives with the main function of providing services. After the transformation, the cooperative managing board is re-organized, staffs are reduced, the structure and quality of staffs are improved suitably with their new function of providing service, subsidies are abolished, and is implemented self-economic accounting. The salaries of the cooperative managing board come from the earnings of the service activities. The fund, capital, infrastructure, and technical equipment of the cooperatives are strengthened and better managed. The funds of the cooperatives come from many sources: the former cooperatives, contributions from the cooperative members, loans from banks, and others. All of these are the initial funds for the new cooperative operations.

The result is that the new cooperatives have been playing their roles in the agricultural and rural development by doing services for farmers and building and improving the rural infrastructure. Many services done by the cooperatives are more effective than by private enterprises or individuals, such as in the areas of irrigation, pet and plant disease protection, animal veterinary services, and so on. According to the results of a survey, the services provided by the new cooperatives are convenient and the price is lower than the prices charged by other traders in the same area.

Along with doing services, which are of an economic sense, many cooperatives also play a positive role in the building of a "new countryside" in areas such as infrastructure construction, human resource development, and other social welfare activities (for instance, social justice and security) in rural areas. Some new cooperatives in Thanh Hoa province, such as Nga Thanh, Nga Yen, Dan Ly, and Xuan Thinh (Trieu Son), have given in advance items need for production (fertilizers, pesticides, and so on) to poor farmers so they can develop their production, and these should be repaid after the harvest season without interest. Many poor and privileged households have been given prioritiy to borrow loans or take part in the service activities, which are suitable with their abilities, in order to help them increase their incomes as well as stabilize their everyday living.

It is worty noting that another result of the establishment of the new cooperatives is that the functions of the local authorities and of the cooperative managing board are clearly determined. In many new cooperatives there are stock funds contributed by the cooperative

members. The roles of both the managing board and farmers are strengthened in terms of both management and use of the funds. The principle of democracy in the cooperative is better implemented.

These positive results are not common, but they open the way to solve the problems of the old style of cooperatives which still exist in many places.

The transformation of the former cooperatives in line with the Law on Cooperatives is a difficult process and takes a long time. In some newly transformed cooperatives, many difficulties and weaknesses in providing service for farmers have appeared, as follows:

- Most of the new cooperatives do not have enough funds and technical equipment to implement their services. The shortage of funds in some cooperatives is serious, such as in the Nga Son and Trieu Son districts of Thanh Hoa province. The contributed fund from the farmers in Nga Son is 19.9 million VND and 3.4 million VND in Trieu Son. The percentage of the contributed fund from the farmers in Ngason and Trieuson is 46% and 21%, respectively, of all funds. With these limited funds, the new cooperatives cannot expand their activities. The new cooperatives in Hanoi have faced the same situation. The cooperative in Dong Hoi (Dong Anh) has 375 ha of cultivated land and 1549 households but in 1998 this cooperative had only 174 million VND of working capital. Thus their services cannot meet the farmers' demands. The services such as seed supply, irrigation, and plant protection are mainly done by private enterprises.

There are 351 newly transformed cooperatives in Haiduong and Hungyen provinces, of which 257 cooperatives have funds contributed by the farmers; 84 cooperatives do not. In general, the working capital of the new cooperatives in these two provinces meets only 26% of the total demand for services during the production season.

- The shortage of cadres who have experience and managing skills for doing business is another problem. About 4-5% of the cadres of the managing boards in Thanhhoa province hold bachelor degree and 46-49% have secondary school certificates. The remaining 50% have received only lower education and have not been trained yet. That is why after transformation many cooperatives are confused; they do not know how to do business best. Some just exist in a form, while others perform inefficiently, even suffering from losses.
- Many newly transformed cooperatives, due to poor performance, have a low income. At the present, most of the cooperatives can focus on only two services: irrigation and plant protection. Other services are done by the farmers themselves or by private enterprises and individuals. Another thing to underline here is none of the new cooperatives can do marketing for the agricultural products of the people (in general) and of the cooperative members (in particular).

The main income of the new cooperatives comes from performing irrigation services;

more precisely, the cooperatives get a certain percentage of the commission for collection of irrigation fees which are fixed by the Government. In order to get income, the cooperatives have to reduce irrigation contract areas with the irrigation stations or increase fees for internal fields' irrigation, which easily leads to corruption.

The economic efficiency of the new cooperatives is low and not uniform. There are not many transformed cooperatives with the high economic efficiency. The conclusion can be drawn here is that the cooperative transformed movement has developed quickly but is not stable and did not follow the Law.

This situation is caused by many reasons from both two sides: the cooperative, themselves on one side, and the state on the other side.

- On the cooperative side: The awareness of people of the new cooperatives is not clear. There is confusion in the way of transformation. Localities have paid more attention on quantity than on quality. There are shortcomings in the preparation of the cadres, material and technical bases, propaganda, and mobilization of the mass's strength. These lead to a situation in which the newly transformed cooperatives cannot operate after their inauguration. Some cooperatives have not correctly applied the regulated items of the Cooperatives Law; for example, many cooperative members have not contributed funds to the new cooperatives.

- On the state side: The role of the State is also not clear in the process of the cooperative transformation. There is no managing body from the central to the local level to guide the transforming process. Due to that, many problems which had been emerged during the transformed period were not summarized and solved. The shortage of cadres is severe, and there are no schools and funds for training and education. There are also many problems in the relationship between the new cooperatives and banks. The cooperatives are short of funds and it is difficult to get loans from the banks due to a lack of assets for mortgage. The establishment, improvement and expansion of the model for new cooperatives have not received much attention from the relevant institutions and sectors. Spontaneity in transforming cooperatives is still common in many localities. The review and summing up of cooperative transformation have been done in only few cases, and they are is not synchronized.

- Besides strengths and positive points, the Law on Cooperatives and other bylaws also have some weaknesses which need to be further studied for improvement and amendment in order to fit with present conditions and to create more favorable conditions for the implementation of the law in the countryside.

- Though having some weaknesses and difficulties, the tendency toward cooperative transformation is positive.

II. The Newly Founded Cooperatives

After the promulgation of the Law on Cooperatives, the tendency toward establishment of the new cooperatives with functions (of which one is providing services for farmers) has been developed. Particularly, in the Mekong River Delta, this tendency is of a large scale and scope, and rich with activity. At the beginning of 1999, there were 300 new agricultural cooperatives founded, mainly in the South. Some provinces in which many new cooperatives are being set up are An Giang, Vinh long, Tien Giang, Kien Giang, Dong Thap, Can Tho, and Long An. The operations of the new cooperatives are in accordance with the Law.

A unique characteristic of the newly founded cooperatives is independence based on the will of farmers, i.e., there is no pressure from outside. The newly founded cooperatives are much different from those cooperatives that were transformed from the old ones.

The good points of agricultural cooperatives which are newly established under the Law on Cooperatives are as follows:

- A new cooperative is a real economic autonomous unit established on the basis of the complete free will on the part of farming households conducting commodity production. They have capital, funds, production experience, and much more important, the willingness to cooperate to help each other in production development.
- The management board is compact and effective. The members of the management board are selected at the cooperative meeting by the members themselves, without any pressure from outside. The management board of the cooperative is a real representative of the interests of the members.
- The cooperative has assets and funds contributed by the cooperative members, and earnings received from performing services are used to build a cooperative fund, according to the point 40th of the Cooperative Law.
- The cooperative creates favorable conditions for farmers to more rationally use their human resources, capital, and experience together with others so they can stand stable in the market economy and develop their production in any situation and condition. When a landless and land-lacking farming household becomes a cooperative member, the cooperative gives it priority to take part in services, which are suitable with its abilities, in order to help it earn income and to improve living conditions. The new cooperative also takes part in preventing the transfer of land from the poor to the rich, which has often happened in the South in recent years.
- The cooperative conducts distribution according to labor contributed to ensure equality among members. There is no boss-hired laborer relationship in the cooperative like there is outside. The profit is distributed according to the stocks contributed by the household as well as labor and other contributions of the cooperative member.
- The cooperative contributes to social development in rural areas in such fields as education,

culture, and health care.

However, there are some shortcomings and weaknesses in the newly established cooperatives:

- Almost all of the new cooperatives have attracted middle and rich households, but not the poor who are landless and have little or no capital. Therefore, the objective of mutual help and affection is not well-established.
- The number of the new cooperatives is small compared to the total of farming households in each province and region.
- Programming and planning the development of a cooperative is not clear; services are still conducted at a small scale; and social economic effectiveness is not high.
- Another problem is the shortage of highly qualitative technical officers and managers who have thorough knowledge on doing business. The income of the cooperative members from performing services is much lower than those of private enterprises in the same area.
- They have a shortage of funds and material and technical bases, however the possibility of borrowing from banks and agencies of the State is limited.

Ⅲ. The Economically Cooperative Forms

The economically cooperative groups utilize a simple cooperation style among farming households and/or private enterprises, who contribute funds and labor together in order to perform services for households. Most of the groups having this form are of a small scale, limited scope, and with simple services. They are set up spontaneously by farmers or by related families and, generally speaking, they do not satisfy the criteria of the new cooperative according to the Cooperatives Law.

The cooperative groups in terms of agricultural services are set up across the country. By early 1999, there were 75,000 diverse groups; they were most common in the Mekong River Delta.

Although these groups are at a low level, simple, and of a small scale regarding cooperation in production and performing services, they do have the advantage knowing what suitable for most of the peasants. The group consists of only relatives and familiar households, which creates high unity, solidarity, and sympathy in doing the services and businesses. The management board is very small leading to low expenses. The services and business are flexible, and in addition to cooperative groups among rich households, there are also the ones for the medium and the poor households. Therefore this form can attract almost all of farming households in the area.

The weaknesses of these forms are poor economic-technical potential which causes difficulty in expanding services and business. Accounting management is very simple, and does not reflect the characteristics of an economic body. They have no legal status so that they can not get support from other institutions, particularly financial and banking institutions.

By and large, the economically cooperative group is only a transitional form from private farming households to cooperatives. It makes farmers familiar with the cooperative economy under the market mechanism. At present the economically cooperative groups are "seeds" for new cooperatives in the future, therefore they need support and guidance from state agencies at all levels.

Ⅳ. The Solutions

1. Study is needed for amendment and improvement of the Cooperatives Law to overcome the present shortcomings and weaknesses. Issuing bylaws, especially, the decisions and the directions of the government and agencies concerned regarding the agricultural cooperative.
2. A summing up the cooperative movement should be done in order to expand the successful models of the transforming cooperative and newly established cooperatives.
3. The model statutes of the cooperative have to express the main contents of the Cooperative Law, and be suitable with the capacity of the cadres and the level of investment of farmers at present.
4. Strengthening the role of the State should be undertaken in issuing decrees, drawing up policies supporting the new cooperatives (especially policies on supporting funds), training of cadres, building material and technical bases for the cooperatives, and strengthening management boards in line with the functions and responsibilities of cooperatives performing services to households in order to develop commodity production in the market economy with the ultimate goal of promoting industrialization and modernization.