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KOBE UNIVERSITY

AGRICULTURAL PRODUCTION IN VIETNAM AND ITS DEVELOPMENT TOWARDS THE YEAR 2000

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ABSTRACT

Agriculture importantly defines Viet Nam's society and economy. Eighty percent of 73 million Vietnamese live in rural areas of which 70 percent rely exclusively on agricultural pursuit.

Food crops account for about 50 percent of agricultural output. The next largest component is livestock at 22 percent. Industrial crops and aquatic products are increasing importance. Processing and other post harvest activities add to the sector's direct contribution to employment and gross domestic product.

Rice production for domestic consumption is dominant farm activity. Paddy rice occupies 6.5 million hectares of land under food cultivation. Rice production in 1994 amounted to 23.4 million tons, compared to only 11.6 million tons in 1980. This dramatic improvement in paddy production has meant that Viet Nam is no longer a major importer of rice but, rather, the third largest rice exporter in the world.

Other food crops include fruits, vegetable, maize, sweet potatoes and cassava. Important industrial crops include coffee, tea, rubber, groundnuts, jute, sugarcane, soybean, coconut, cotton, and mulberry. In 1994 approximately 1.4 million hectares of land were devoted to industrial crops. Coffee and tea plantations are ready well established and sugarcane plantations are expanding and rubber plantations now cover more than 250.000 hectares of land, but yield are low due to a high proportion of trees being immature or too old. Industrial crops are being encouraged by the government as a way of diversifying the economic base of the Central Highland and as substitute for shifting cultivation.

Buffalo, cattle, pigs and poultry are main components of the livestock subsector. Pork represent about 75 percent of total meat production in Viet Nam.

Fishery and aqua culture become a major subsector of agriculture. Production from marine and inland fisheries exceeded 1.2 million metric tons in 1994, a 50 percent increase over the production in 1985.

Forestry is another important dimension of agriculture sector. About 19 million of Viet Nam's 33 million hectares are classified as forest land. Only about half of the designated forest land is still covered by forests. They contain about 525 million cubic meters of standing stemwood.

The final subsector of agriculture is water resource management with purposes of irrigation, drainage, and flood control. Approximately half of the cultivated land in Viet Nam is irrigated or subject to some kind of water control.

Agricultural development and rural development are viewed as interdependent building blocks for modernization and industrialization of Viet Nam.

The goals for the agricultural sector are the following:

- food security
- rapidly improving income and poverty reduction
- natural resource management on long term sustainable basis.

The Government will strengthen agricultural research capacity and extension service to disseminate new technologies and techniques.

Increased agricultural productivity through the adoption or innovation of new technology and techniques will contribute to food security, improved rural incomes and poverty reduction, and more environmentally - sustainable production methods.

By the year 2000 :

Food crop production is expected to be 30 - 32 million tons, of which about 26 million tons will be paddy. The area under industrial crop production will expand with strong increases in cotton, mulberry, sugarcane, rubber, coffee and tea production. Livestock production is expected to reach 2 million tons of dressed meat from livestock

population of 20 million pigs, 4.5 million cattle, 3.1 million buffaloes and 200 million poultry.

Fisheries production is expected to reach 1.6 million tons of which 600.000 tons will be accounted for by aqua culture.

The forest cover is expected to improve from 28 percent to above 40 percent. This will result from production of existing forest and creating new forest through reforestation. The growing demand for forest products will be met by harvesting on a sustainable basis. Practices destructive of forest will be discouraged through employment alternatives and greater participation in forestry management by those who live in or near forests.

The overall objective of water resource management is to ensure that the irrigation and drainage systems allow for 6 million hectares of intensive, high yield rice production and 1 million hectares of irrigated land for vegetable, fruit and industrial crops.

Natural resource management concerns pervade the agricultural sector for it is clear that the current practice in many areas are incompatible with even minimal environmental standards. Deforestation, soil erosion and degradation, drought and flooding, unwarranted use of fertilizers and pesticides, destructive fishing practices and many other problems serious environmental challenges. Population growth of 2.1 percent a year creates problems as does acute poverty in region of the country.

The most serious ecological problem has been deforestation, a problem shared by other countries in the region. Investment priorities for the forestry sector include regreening of barren hill and reforestation of mangrove forests.

Greater investment is needed in natural resource management for the protection of water, soils, forests, coastal wetlands and offshore resource. Economic prosperity and protection of the natural environment are mutually reinforcing objectives, but immediate concerns for food and shelter contribute to environmental degradation. Poverty alleviation must complement regulatory and other measures designated to protect the environment.

The agricultural sector is vital to the well being of Viet Nam. Progress in improving the performance of the agricultural sector is central to food security and poverty reduction, which are among our most pressing concerns. We will only succeed in doubling per capital incomes in Viet Nam this decade if rural development and industrial and urban growth are linked in a mutually supporting manner.

I. INTRODUCTION

Viet Nam is a tropical country with 73 million inhabitants in an area of 326.000 km^2. The economy of the country is based mainly on agriculture, of which rice production ranks its first place. Promoting its production has an important role not only in food self sufficient for the population but also in exports, which contribute to foreign exchange earning.

Beside rice production, maize, cassava, sweet potato, groundnut, soybean, sugarcane, tea, coffee, rubber and fruits are important crops. Traditional farming based on an integrated system of rice, vegetable, root crops, livestock, poultry especially ducks, and fish has been impressively established.

The country is a process of rebuilding its natural resources after war specially in the forest sector which was very much damaged by the effects of the war, by commercial logging, by slash and burn cultivation and by deforestation for charcoal and firewood.

The livestock sector is one of most important sectors. It role includes production of animal protein, provision of draught power for agriculture, supplier of organic fertilizer and a means of saving.

Success has been made in the agricultural sector is crucial to the achievement of the national goals. That success depends upon the efficient mobilization of the rural population in the development effort. This in turn, depends on an efficient system of organization at the farm level, appropriate incentives to produce, timely supply of inputs an the provision of infrastructure and technology.

The agricultural sector, which in addition to crops and livestock production includes the forestry, fisheries and water resources subsectors is vital to the well-being of Viet Nam. More than 70% of the labor force is employed in the sector and it defines the

livelihoods of more than 10 million Vietnamese households. It also accounts for more than a third of Viet Nam's Gross Domestic Product. Progress in improving the performance of the agricultural sector is central to food security and poverty reduction, which are among our most pressing concerns. We will only succeed in doubling, or more, per capita incomes in Viet Nam this decade and in subsequent decades if rural development and industrial and urban growth are linked in a mutually supporting manner. Further, only in this way will we succeed in regionally balanced growth that is sustainable. Serious environmental and natural resource management issues surround the agricultural sector that, unless addressed on a priority basis, threaten long term and perhaps irreversible costs.

II. MAIN FEATURES OF THE AGRICULTURAL PRODUCTION

Agriculture importantly defines Viet Nam's society and economy. Eighty percent of 73 million Vietnamese live in rural areas, of which 70 percent rely exclusively on agricultural pursuits.

Food crops (including rice, maize, cassava, other grains and tuber crops) account for about 50 percent of agricultural output: the next largest component is livestock at 22 percent. As in the case of livestock production, industrial crops and aquatic products are of increasing importance. Processing and other post harvest activities add to the sector's direct contribution to employment and gross domestic product.

Rice production for domestic consumption is dominant farm activity. Paddy rice occupies 6.5 million hectares of the 9 million hectares of land under food cultivation. Paddy production in 1994 amounted to 23.4 million tons, compared to only 11.6 million tons in 1980. The increase in rice production reflects the benefits of the renovation process that began in 1981 and intensified after 1988. Reliance on "household economy", rather than collective, has resulted in both a considerable increase in yields and in the area under cultivation. Average paddy yields have increased from about 2.1 tons per hectare in 1980 to 3.6 tons per hectare in 1994, and land under paddy cultivation increased by 600,000 hectares. This dramatic improvement in paddy production has meant that Viet Nam is no longer a major importer of rice but, rather, the third largest exporter in the world (Table 1).

Other food crops include fruits, vegetables, maize, sweet potatoes and cassava. Although the extended latitude and altitude ranges encompassed by Viet Nam give it the potential to produce a wide variety of fruits and vegetables, altogether the account for little more than 10 percent of the value of total agricultural production.

Important industrial crops include coffee, tea, rubber, groundnuts, jute, sugarcane, soybean, coconut, cotton and mulberry. In 1994 approximately 1.4 million hectares of land were devoted to industrial crops. Coffee and tea plantations are already well established and sugarcane plantations are expanding and now cover 100,000 hectares. Rubber plantations cover more than 250,000 hectares of land, but yields are low due to a high proportion of trees being either immature or too old. Industrial crops are being encouraged by the government as a way of diversifying the economic base of the Central Highlands and as a substitute for shifting cultivation.

The livestock subsector is growing rapidly and now accounts for 22 percent of total agricultural output. Buffalo, dairy cattle, pigs and poultry are the main components of the livestock subsector. Pork represents about 75 percent of total meat production in Viet Nam. Better availability of feed has facilitated a 40 per cent increase in pork production during the past decade. Further, modern breeds of pigs are gradually supplementing the traditional breeds, this is resulting in learner, better quality meat and improved conversion ratios for feed stocks. However, pig farming is for the most part on a small scale (farmers mill their rice locally, retain the bran for feed use, and supplement this with part of their rice retention as well as household wastes). Meat consumption per capital is very low in Viet Nam, as it is the consumption of dairy products. Even so, 90 percent of the domestic demand for milk is met by imports (Table 2).

Fishery and aqua culture production has become a major subsector of agriculture. Production from marine and inland fisheries exceeded 1.2 million metric tons in 1994, a 50 per cent increase over the level in 1985 (Table 3).

Forestry is another important dimension of agricultural sector. About 19 million of Viet Nam's 33 million hectares are classified as forest land. Only about half of the designated forest land is still covered by forests. They contain about 525 million cubic meters of standing stemwood (Table 4).

The forest industries in Viet Nam use an estimated 3.0 million cubic meters of logs annually, and all are processed domestically. Processing standards are unfortunately poor and there is substantial wastage. In addition to lumber, plywood and veneer, approximately 100,000 tons of paper is produced annually.

The final subsector of agriculture is water resource management of purposes of irrigation, drainage and flood control. Approximately half of the cultivated land in Vietnam is irrigated or subject to some kind of water control.

Ninety percent of the land in the Red River delta is under irrigation or drainage, while in the Mekong Delta only 20 - 30 percent is under irrigation or drainage. The former system is old, designed to hold back monsoon floods and drain off excess waters in the wet season and to provide irrigation in the dry season,. The Mekong delta system relies less on pumping station and more on main canals dikes. Extensions of the water resources management system during the past decade to provinces close to the Cambodian border have enabled 350,000 hectares of land to be shifted from single to double cropping. A further 238,000 hectares in other parts of the country have been properly drained for agricultural purposes.

III. THE RELATIVE IMPORTANCE OF THE AGRICULTURAL SECTOR

Vietnam is in transition from a centrally -planned, state-managed economy to a more market-based economy. It is also an economy in transition from traditional farming practices to more modern and diversified employment activities, including a rapidly growing urban and industrial dimension. As in the case of other countries experiencing fundamental change in their economic structure, the agricultural sector is declining in relative importance (Table 5).

These statistical trends, however, can be very misleading concerning the strategic role of agriculture. Because it is such pervasive factor for the livelihoods of so many Vietnamese households, the future performance of the sector will be the main influence on living standards. In fact, the share of employment accounted for by agriculture has not changed since 1986.

Agricultural growth, even at much slower rate than for the industrial and service sector, will be the mainstay for rising real wages, increasing employment and alleviating poverty.

IV. POTENTIALS

1. Paddy production

Increased paddy production depends upon the availability of unutilized land and/or the intensification of use of currently cultivated land.

The most promising potential, however, is from intensified use of currently cultivated land based on one or more of the following four options:

1) Double cropping on what is now single-crop land; this would entail either replacing a single crop of rainy-season rice with two crops of winter/spring and summer/autumn rice, or combining rainy-season rice and summer/autumn rice, leaving the winter-season open for an upland crop;

2) Drainage improvement of flood protection to enhance yields from traditional crops;

3) Introduction of high-yielding, fertilizer-responsive varieties; and

4) More effective use of chemical fertilizers and pesticides on existing crops.

Paddy yields in Viet Nam average about 3.5 tons per hectare, which are low compared to those in South Korea (6.2t/ha) and China (5t/ha). If the yields in South Korea and China can be approximated, Viet Nam would experience a very considerable increase in paddy production. The introduction of hybrid rice varieties from South China are proving highly beneficial, especially in the Red River Delta area where there is very little unutilized or underutilized land. Rehabilitation of existing irrigation and drainage systems, greater intensification through fertilizers, and better storage facilities will be important measures. Inadequate drying, storage and other post-harvest facilities result in grain losses of up to 30 per cent. Improving the paddy yields of the poorer farmers, through greater access to credit and production inputs, would increase paddy output by about two million metric tons.

2. Other Crops and Industrial Crops

While the unutilized area suitable for paddy production is limited, there is still a good deal of land suitable for other crops and industrial crops. It is estimated that the total arable land in Viet Nam is over 11 million hectares, of which little more than 9 million is now cultivated or used for livestock grazing. Crop production is expected to increase in response to rising real incomes in Viet Nam, and in response to export markets. By the year 2000, food production per capita is anticipated to reach 366 kg compared to 357 kg in 1995. Crops such as maize and tuber crops could be expanded to meet greater demand in agro-processing industries and as feed stocks for the livestock industry.

Industrial crop production will continue to increase; some 400,000 hectares will likely be added to the 1.5 million hectares currently under cultivation for industrial crops. Silk production is proving to be highly profitable. Acreage for sugar cane, rubber, coffee and tea crops is expected to increase in an equally rapid manner. Cotton production is expected to expand significantly, in response to the needs of the rapidly growing textile industry. Only 7 per cent of Viet Nam's demand for cotton is met by domestic production. The Eastern Southern Region, the Central Highlands, and the Mekong Delta are considered to be well suited to cotton production.

3. Livestock Production

Increases in livestock production will likely be primarily in response to domestic demand for meat, poultry and milk products. The Government's objective is to double, or better, per capita incomes each decade and this would appear achievable during the 1990s. Better incomes will mean greater attention to nutrition, particularly to meat and other forms of protein. Consequently, the livestock population is forecast to jump sharply; by between 30-50 per cent in the case of pigs and dairy cattle.

Some expansion of the livestock population will occur parallel to improved paddy, maize, soybean and cassava production; small-scale producers will add to their livestock populations as land becomes more productive, since the opportunity cost of family labour is close to zero. However, low feed costs and high conversion factors (i.e., for every unit of feed stock, a high percentage of meat is produced) are critical to the financial success of the specialized livestock farming. For this form of farming, animal feed typically amounts to 68-80 per cent of the cost of production. While Viet Nam exports modest quantities of maize and cassava, it has a shortage of protein meals. If Viet Nam becomes an importer of energy feeds, their cost will rise sharply undercutting the competitiveness of the livestock industry. Thus attention to better breeds with higher conversion factors is important.

4. Fisheries and Aqua culture

Fish production is forecast to increase over the next five years to 1.6 million tons, primarily through an almost doubling of production from aqua culture. Inshore waters

are already heavily exploited and there is evidence of declining catch per unit of effort. Over fishing of species such as squid and shrimp is serious and regulations concerning fisheries management are difficult to enforce. The Government is endeavouring to promote fishing in offshore waters (greater than 50 meters in depth), where there is considerable potential for more intensive harvesting.

Weakness in infrastructure in support of the marine fishery must be resolved before the potential increase in harvest from offshore waters can be realized. Modern support facilities and services such as fishing ports and related facilities for ice, fuel and freshwater supplies are extremely limited. Post-harvest losses are in the order of 25-30 per cent . Most of the harvest is salted or dried, or processed into fish sauce, fish meal and other products. Only 20 per cent of marine fish is consumed fresh and another 20 per cent is processed for export.

Aqua culture has the greatest potential. Shrimp, crab and fish farming for export has proven highly profitable, encouraging further investment. There is a great deal of scope for more, given that only half of the estimated one million hectares of water resources (tidal expanses, straits, bays, lakes, rivers, ponds and low lying fields) suitable for aqua culture are currently being used. New aquatic species are being introduced, with success. Processing facilities are inadequate, however, and other problems include environmental and disease constraints.

Brackish water shrimp culture has been widely developed in the coastal provinces of the Mekong Delta. As a result of the high profitability of successful operation, extensive cultivation systems (e.g. shrimp/salt bed rotations, shrimp/rice systems and shrimp/mangrove forest systems) have been transformed into much more intensive shrimp cultivation. A combination of a considerable expansion of cultivated area, deforestation of mangrove areas, increasing inputs of feeds and chemicals, excessive use of underground water for pond irrigation resulted in a major outbreak of shrimp disease which decimated large areas of ponds. To overcome these problem and achieve the potential of aqua culture, changes are required, among other, in disease diagnostic capability, disease-free species and rehabilitation of mangrove area.

5. Forest Products

The forestry potential of Viet Nam depends in large measure on effective management of the natural resources. The natural forest are capable of rapid regeneration (10 -25 years), are commercially attractive for a range of end uses, and are vital components of the ecosystems. They are the most important source of logs and will remain so well into the next century. Silvicultural practices are relatively advanced. However, there is a high wastage of logs due to lack of sawmilling equipment, marketing problem and other factors. The four pulp mills in Viet Nam operate below capacity.

The potential from planted forest trees is more limited, especially since land with fertile soils and gentle topography competes with crop and livestock production. Pines and eucalyptus are the dominant species in planted forests, but increasingly Acacia and other species of higher commercial value are being used. An intensified effort is needed to identify species of the natural broad-leaved forests that combine high commercial value with high rates of survival following reforestation.

In addition to expansion of the forestry through reforestation and more efficient use of the current harvest, higher value -added activities offer potential. There is strong demand in the region for quality veneer and plywood, and the furniture industry is a growing component.

Non-wood forest products, such as bamboo and rattan, are also important. Four tree-based non-wood forest products have considerable potential for expansion: cinnamon, pine resin; cashew nuts, and anise seeds. Viet Nam's cinnamon bark is highly valued. Harvesting of pine resine, cashew nuts and anise seeds is labour intensive, offering employment opportunities in disadvantaged regions.

6. Food Processing and Other Agro-Industries

Modernization and diversification of agricultural sector is fundamental to rural development, but it is also true that rural development is fundamental to the agricultural sector. Farm households that can participate in non-farm activities normally have much better living standards than those wholly dependent on agriculture. The co-existence of non-farm activities will help reduce the serious underemployment experienced in the agricultural sector.

Rural development based on small-scale enterprise will be stimulate by rising real farm incomes and, in many cases, will be financed by the increased savings this improvement in farm incomes affords. A more prosperous farm community will generate a surge in demand for consumer goods and services, and local small-scale enterprises are well situated to respond to this demand.

Food processing and other agro-industries add to the symbiotic relationship between rural development and modernization and diversification of the agricultural sector.

7. Agriculture Development toward the year 2000

Agricultural development and rural development are viewed as interdependent building blocks for modernization and industrialization of Viet Nam.

The goals for the agricultural sector are the following:

- food security
- rapidly improving income and poverty reduction
- natural resource management on long term sustainable basis.

The Government will strengthen agricultural research capacity and extension service to disseminate new technologies and techniques.

Increased agricultural productivity through the adoption or innovation of new technology and techniques will contribute to food security, improved rural incomes and poverty reduction, and more environmentally - sustainable production methods.

By the year 2000 :

Food crop production is expected to be 30 - 32 million tons, of which about 26 million tons will be paddy. The area under industrial crop production will expand with strong increases in cotton, mulberry, sugarcane, rubber, coffee and tea production. Livestock production is expected to reach 2 million tons of dressed meat from livestock population of 20 million pigs, 4.5 million cattle, 3.1 million buffaloes and 200 million poultry.

Fisheries production is expected to reach 1.6 million tons of which 600.000 tons will be accounted for by aqua culture.

The forest cover is expected to improve from 28 percent to above 40 percent. This will result from production of existing forest and creating new forest through reforestation. The growing demand for forest products will be met by harvesting on a sustainable basis. Practices destructive of forest will be discouraged through employment alternatives and greater participation in forestry management by those who live in or near forests.

The overall objective of water resource management is to ensure that the irrigation and drainage systems allow for 6 million hectares of intensive, high yield rice production and 1 million hectares of irrigated land for vegetable, fruit and industrial crops.

8. Environmental Challenges

Natural resource management concerns pervade the agricultural sector for it is clear that the current practice in many areas are incompatible with even minimal environmental standards. Deforestation, soil erosion and degradation, drought and flooding, unwarranted use of fertilizers and pesticides, destructive fishing practices and many other problems serious environmental challenges. Population growth of 2.1 percent a year creates problems as does acute poverty in region of the country.

The most serious ecological problem has been deforestation, a problem shared by other countries in the region. Investment priorities for the forestry sector include regreening of barren hill and reforestation of mangrove forests.

Greater investment is needed in natural resource management for the protection of water, soils, forests, coastal wetlands and offshore resource. Economic prosperity and protection of the natural environment are mutually reinforcing objectives, but immediate concerns for food and shelter contribute to environmental degradation. Poverty alleviation must complement regulatory and other measures designated to protect the environment.

CONCLUSION

The agricultural sector is vital to the well being of Viet Nam. Progress in improving the performance of the agricultural sector is central to food security and poverty reduction, which are among our most pressing concerns. We will only succeed in doubling per capital incomes in Viet Nam this decade if rural development and industrial and urban growth are linked in a mutually supporting manner.

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Table 1: Average Paddy Production in Viet Nam

	1976-80	1981-88	1988-94
Total grain output (million tons)	13.3	17.6	22.2
Rice (million tons)	11.0	15.2	20.8
Average yield per crop (tons/ha)	2.0	2.6	3.2
Grain output (kgs / capita)	254	294	330

Table 2: Livestock and poultry production (thousand).

	1992	1993	1994
Pig	12,140	14,800	15,570
Cattle	3,151	3,330	3,460
Buffalo	2,885	2,960	2,970
Goat	312.3	353	370
Chicken	97,500	102,390	100,627
Duck	27,000	31,000	32,000
Sheep	3	3	-
Deer	12	12	-

Table 3: Aquatic Products Production (1000 tons).

	1988	1989	1990	1991	1992	1993	1994
Sea Products	622	651	672	712	730	750	800
Inland aquatic products	254	283	307	348	355	360	390
Total	876	934	979	1,060	1,085	1,110	1,190
Of Which:							
Sea shrimp	37	39	40	40	40	48	55
Inland Shrimp	28	31	33	36	40	50	60
Squid	23	24	27	40	31	-	-

Table 4: Forest and Forest land (million ha)

Forest class	With forest cover	Without forest cover	Total
Special use forests	0.7	0.2	0.9
Protection forests	2.4	3.3	5.7
Production forests	6.2	6.2	12.4
Total	9.3	9.7	19.0

Table 5: Sector Growth Rates and GDP shares.

	1990	1991	1992	1993	1994
GDP Growth	5.1	6.0	8.6	8.1	8.8
Agriculture	1.6	2.2	7.1	3.8	3.9
Industry	2.9	9.0	14.0	13.1	14.0
Services	10.8	8.3	7.0	9.2	10.2
Share of GDP by sector	100	100	100	100	100
Agriculture	40.7	39.2	38.6	37.1	35.4
Industry	22.7	23.1	24.2	25.4	26.6
Services	36.9	37.7	37.2	37.5	38.0

Seven ecological zones of Viet Nam

