

JAPAN INTERNATIONAL COOPERATION AGENCY
THE SOCIALIST REPUBLIC OF VIET NAM
MINISTRY OF EDUCATION AND TRAINING

**BASIC DESIGN STUDY REPORT
ON
THE PROJECT FOR IMPROVEMENT
OF
THE DIVISION OF AGRICULTURAL SCIENCES
CAN THO UNIVERSITY
IN
THE SOCIALIST REPUBLIC OF VIET NAM**

DECEMBER 1993

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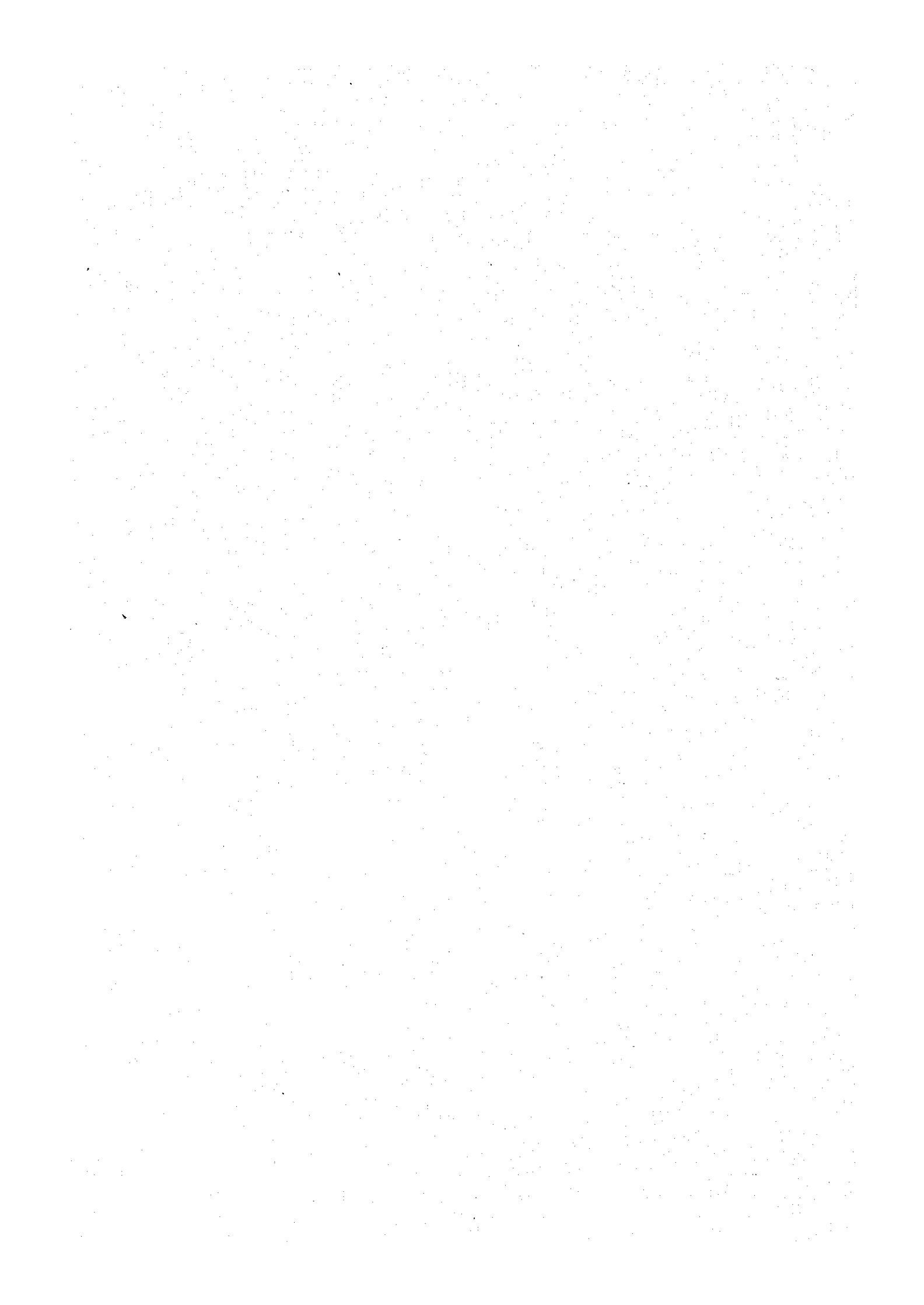
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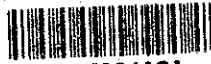
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KUME SEKKEI Co., Ltd.



PREFACE

In response to a request from the Government of the Socialist Republic of Viet Nam, the Government of Japan decided to conduct a basic design study on the Project for Improvement of the Division of Agricultural Sciences, Can Tho University and entrusted the study to the Japan International Cooperation Agency (JICA).

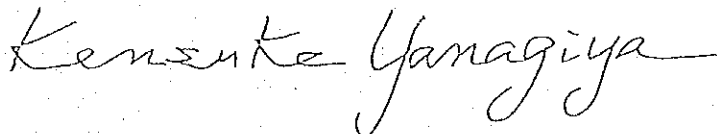
JICA sent to Viet Nam a study team headed by Yoshikatsu Nakamura, Director, First Basic Design Study Division, Grant Aid Study and Design Department, JICA and constituted by members of Kume Sekkei Co., Ltd. from July 22 to August 14, 1993.

The team held discussions with the officials concerned of the Government of Viet Nam, and conducted a field study at the study area. After the team returned to Japan, further studies were made. Then, a mission was sent to Viet Nam in order to discuss a draft report, and as this result, the present report was finalized.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of the Socialist Republic of Viet Nam for their close cooperation extended to the teams.

December, 1993



Kensuke Yanagiya

President

Japan International Cooperation Agency

December, 1993

Mr. Kensuke Yanagiya
President
Japan International Cooperation Agency
Tokyo, Japan

Letter of Transmittal

We are pleased to submit to you the basic design study report on the Project for Improvement of the Division of Agricultural Sciences, Can Tho University in the Socialist Republic of Viet Nam.

This study was conducted by Kume Sekkei Co., Ltd., under a contract to JICA, during the period July 19, 1993 to December 10, 1993. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of Viet Nam and formulated the most appropriate basic design for the project under Japan's grant aid scheme.

We wish to take this opportunity to express our sincere gratitude to the officials concerned of JICA, the Ministry of Foreign Affairs and the Ministry of Education. We would also like to express our gratitude to the officials concerned of the Ministry of Education and Training, the Embassy of Japan in Viet Nam for their cooperation and assistance throughout our field survey.

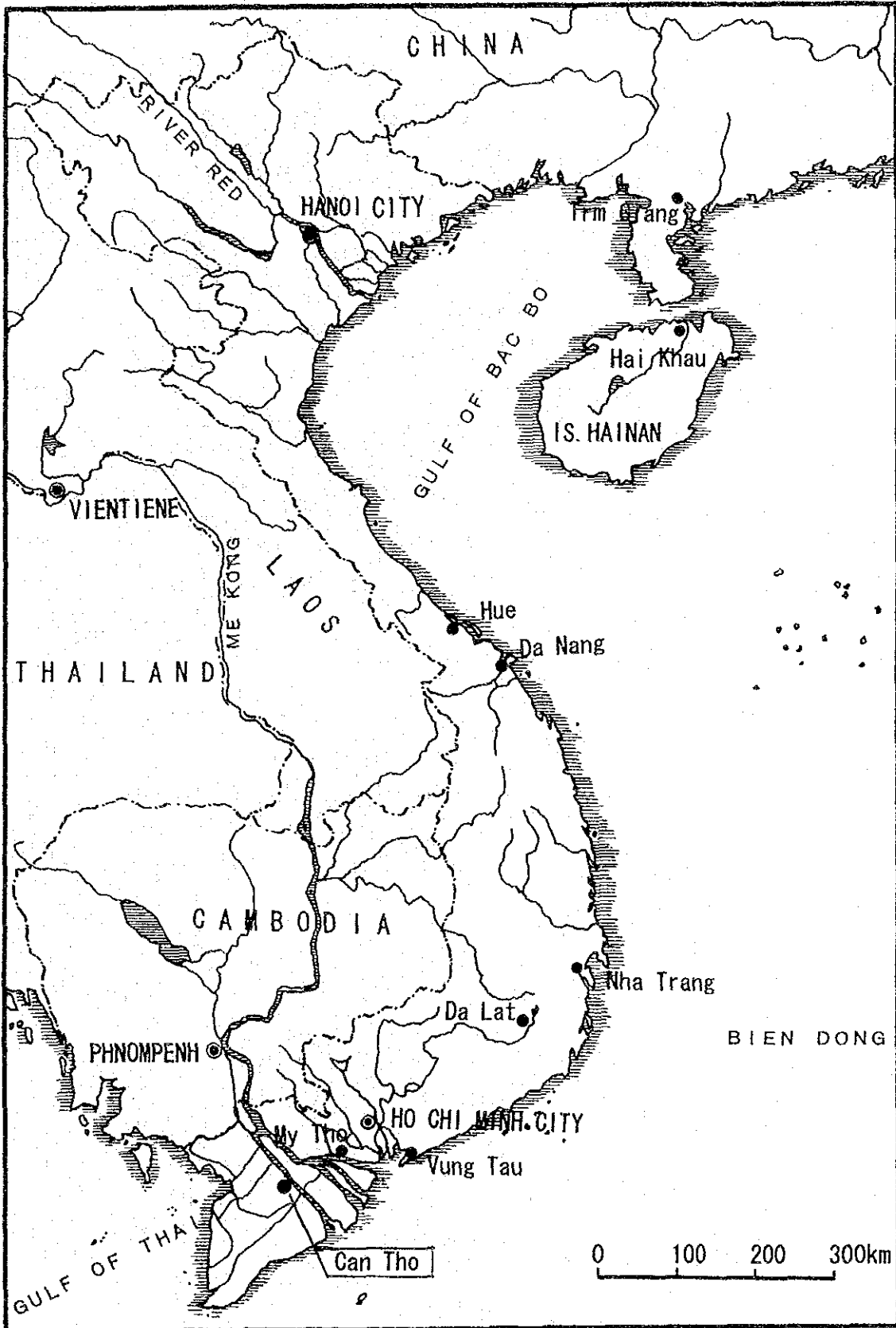
Finally, we hope that this report will contribute to further promotion of the project.

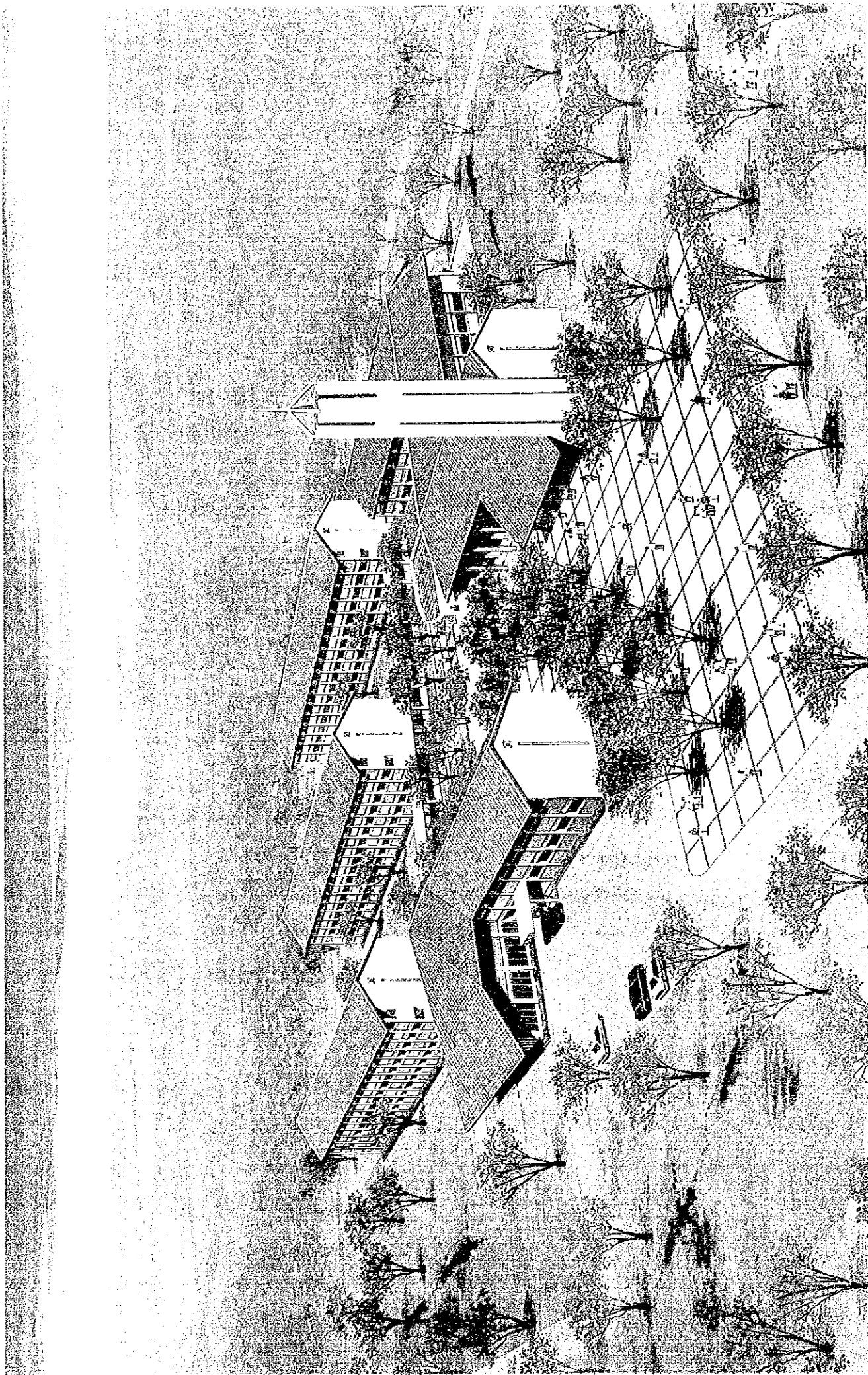
Very truly yours,



Osamu Matsumura
Project manager,
Basic design study team on the Project for
Improvement of the Division of
Agricultural Sciences,
Can Tho University
Kume Sekkei Co., Ltd.

MAP OF VIET NAM





THE DIVISION OF AGRICULTURAL SCIENCES, CAN THO UNIVERSITY
IN THE SOCIALIST REPUBLIC OF VIET NAM

KUME SEKKEI Co., Ltd.
DECEMBER 1993

SUMMARY

Since Viet Nam's uniformity of country in 1975, the Government of the Socialist Republic of Viet Nam has been implementing a series of state development plans to promote the country's socio-economic development. In 1986, the Government introduced a market economy through its *doi moi* policy and has since made steady reform efforts in all other areas as well. As a result, Viet Nam is receiving attention as the most promising country in Asia for future development. In 1992, the Vietnamese economy, led by the agricultural sector, made extremely smooth progress, recording a real GDP growth rate of 8.3%. In order to sustain this economic growth, there is a need to produce new type of manpowers.

To solve and meet this need, the Ministry of Education and Training (MOET) planned the educational improvement goals and begun to reform educational systems practically. The first objective is to provide education for the development of excellent human resources which can become the driving force for sustainable economic development. There is a need to shift from social science theory to more concrete practical education and technical training. In this light, an urgent need is to improve educational materials and curriculum, expand laboratories and other facilities, and re-educate the instructors in this area. However, there are difficulties in existing technical condition and financial allocation, the Government of Viet Nam is expecting for assistance from foreign countries.

Can Tho University was established in Can Tho, a central city in the Mekong Delta, in 1966. The Mekong Delta has more granaries than anywhere else in Asia, making the development of its agriculture an important factor in the support of Viet Nam's economic development. The Division of Agriculture was set up in 1968 with requests from Mekong peoples, which has contributed to the development of regional agriculture. However, the superannuation of facilities and shortage of educational research equipment and materials have obstructed their activities.

Under these circumstances, the Government of Viet Nam has proposed a plan for the improvement of the Division of Agricultural Sciences, Can Tho University and made requests to the Government of Japan for grant aid for the implementation of these plans as one link in its policy to provide large-scale

improvements to the existing universities which provide the necessary education to achieve successful reforms.

In response to this request by the Government of Viet Nam, JICA dispatched the Preliminary Study Team between 5 and 24 April 1993 to confirm the content of the request and investigate the necessity and validity of cooperation for these improvement plans. The team concluded that the implementation of these plans through grant aid was valid, but that it was necessary to give due consideration to the following matters.

1. Implementing assistance to the three high-priority departments.
 - 1) Agronomy (basic technology for increased production of agricultural goods)
 - 2) Animal Husbandry & Veterinary Medicine (in order to respond to the increased intake of animal protein)
 - 3) Food Technology (in order to respond to the increased demands of the food processing industry)
2. The requested facilities remain the same as in the 1975 plan and do not meet the demands for current educational and research activities. Therefore, thorough investigation and consideration is necessary.
3. The requested equipment seems to the entire Division of Agriculture and includes most precision equipment for research. Accordingly, this will be reduced to the three departments noted above and limited to educational purposes which are easy to maintain and manage.

Based on the results of the preliminary study, the Government of Japan decided to implement a basic design study which is necessary for the actual implementation of these expansion plans, and JICA dispatched a Basic Design Study Team to Viet Nam between 22 July 1993 and 14 August 1993.

Based on these study results, analyses and investigations were conducted in Japan and a basic design was formulated. JICA then dispatched the Basic Design Study Team to Viet Nam to explain the basic design study report (draft final) from 8 through 17 November 1993.

Can Tho University is located in the city of Can Tho, approximately 176km southwest of Ho Chi Minh city, a journey of about four hours by car. Campus II (Cai-Khe campus) is located 2.5km west of city centre and has an area of 87 ha. Several one-story old faculty buildings are spreaded at the campus which were built before 1975, however, relatively new buildings are located in the centre of the campus.

The building site of this project is in this central area and an advantageous location accessible to the nearby auditorium, central library, and classroom building. The site has a total area of 36,800m² in sufficient size to locate facilities of this project and presently used to grow eucalyptus trees or as a livestock grazing pasture. Supply of water, power and telephone lines are provided already, however, capacity of transformer and trunk cable is not enough for total demand of this project so that it may need upgrade.

Also grading of site, clearing of some trees and additional telephone lines connection works are required. The scale of those works to be done by Viet Nam side is rather small and capable to implement on time.

The facilities and equipment whose construction / provision have been decided in the Basic Design are as follows :

• Content of Facilities

Phase-I	Sub-total	3,405 m ²
- Administration Bldg. : Reinforced Concrete (2-story) Dean's Office, Board Room, Faculty Admin. Office., Faculty Library, etc.		1,226 m ²
- Common Lecture Bldg. : Reinforced Concrete (2-story) Small Lecture Rooms (8), Medium Lecture Rooms (4), Large Lecture Room (1), Seminar Rooms (3), Elec. Room, Pump Rm., etc.		2,179 m ²
Phase-II	Sub-total	6,480 m ²
- Laboratory Bldg.-1 : Reinforced Concrete (3-story) Various Labs for Agronomy, Dept. Head's Office, Dept. Admin. Office, Computer Room, etc.		2,160 m ²
- Laboratory Bldg.-2 : Reinforced Concrete (3-story) Various Labs for Food Sciences and Crop Science, Dept. Head's Office, Dept. Admin. Office, Computer Room, etc.		2,160 m ²
- Laboratory Bldg.-3 : Reinforced Concrete (3-story) Various Labs for Animal Husbandry and Vet. Medicine, Dept. Head's Office, Dept. Admin. Office, Computer Room, etc.		2,160 m ²
	Total	9,885 m ²

• Content of Equipment

Phase-I	
- Equipment for Common Use	1 lot
Phase-II	
- Equipment for Common Use	1 lot
- Equipment for Dept. of Agronomy	1 lot
- Equipment for Dept. of Animal Husbandry and Vet. Medicine	1 lot
- Equipment for Dept. of Food Sciences and Technology	1 lot

In view of the facility sizes and the required construction periods, it has been decided that project implementation in two phases will be the most appropriate. In the first phase, the administration and common lecture buildings will be constructed and related equipment for common use will be provided. In the second phase, three laboratory buildings will be constructed and related equipment for common use and education will be provided. The required construction periods will be approximately 10 months for the first phase, approximately 12 months for the second phase and totally 18 months approximately including overlap period.

The Viet Nam's project implementing body is the Ministry of Education and Training, whose Vice-Minister has general control over the project.

The operational structure of Can Tho University consists from education and training section, management section and enterprise section under the rectorate with a rector and three deputy rectors. Also the University Science Committee, an equivalent to the university council in Japan, has been organized. The University has presently 826 staffs including 584 of academic staffs, 126 of assistants, 116 for management section and others. However, presently at the University, there is a shortage of teachers at or beyond the master degree, therefore a training scheme has been planned for improvement.

The implementation of this project is expected to have the following effects.

(1) Practical Development of Human Resources

Introducing a market economy through doi-moi, the economic conditions in Viet Nam continue to improve at an astonishing rate, year by year. To sustain this economic growth, there is a need to produce a sufficient number of excellent human resources every year. In particular, there is an urgent

need to practical manpower in order that they understand market principles and can absorb both theory and modern technology.

This plan will make it possible to achieve higher levels of technical education than in the past by improving the experimental facilities and equipment in the Faculty of Agricultural Sciences. Producing 144 graduates every year, this project is expected for the practical development of human resources through experimental and practical study in an optimal educational environment.

(2) Promotion of New Agriculture in the Mekong Delta

The Mekong Delta has the largest number of granaries in Asia and great potential for development. The agriculture of this region has reached a level at which it now supports the Vietnamese economy. Almost all of the students of the Faculty of Agricultural Sciences at Can Tho University are from this delta region and stay in the region after graduation, striving to promote growth in the agricultural sector.

There is great expectation that the students trained at these facilities intend not only to improve the productivity of the region, but also to contribute to the promotion of new agriculture by taking a scientific approach to integrating agriculture, animal husbandry and food technology.

(3) Promotion of Modernized Higher Education

This project is a serious attempt to expand the university, creating strong hopes from all sides for its success. The use of the laboratory facilities and educational equipment and materials provided by this plan and the implementation of the previously mentioned practical education could be seen as a test case for Viet Nam.

The expectations for this plan extend beyond improvement of the physical environment to include soft reforms such as the revision of syllabus, curriculum, textbooks and educational materials as well as the improvement of laboratory teaching methods and research guidance.

(4) Promotion of Agricultural Development in the Mekong River Region

Development plans for the Mekong River are necessary both in terms of assistance to the three Indochinese countries and the development of the greater Indochina region. Can Tho University is located in the fan-shaped region at the mouth of the Mekong River and plays a distinctive role in the development of its agriculture. In light of the Mekong Delta, the Faculty of Agricultural Sciences has conducted academic activities related to lowland and highland agriculture.

The activities to be carried out at the planned facilities are expected to play an important role in the future implementation of agricultural development in the river region. There is hope that through cooperation between international organizations and organizations in the surrounding countries which aim to develop this region, there will be growth beyond national borders in the areas of education, research and expansion.

This project, therefore, will play an extremely important role to assist the quality improvement of higher education which is currently being promoted by the Government of Viet Nam and by fostering a large number of highly capable manpower who are required for sustaining the economic growth to stabilize the public welfare. In conclusion, the implementation of this project with the grant aid of the Government of Japan will have a significant meaning for both countries. The facilities to be constructed under the project will prove extremely useful to achieve the maximum effect of the technical transfer if the technical cooperation will be also implemented by the Government of Japan.

This project should, therefore, have a far reaching effect on education in Viet Nam with substantial effects on Viet Nam's socio-economic development through agricultural promotion.

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LIST OF ABBREVIATIONS

(Alphabetical Order)

CU	Can Tho University
FINNIDA	Finish International Development Agency
IDA	International Development Association
IDRC	International Development Research Centre (Canada)
IRRI	International Rice Research Institute (Philippines)
IST	In-Service-Training
JICA	Japan International Cooperation Agency
JOCV	Japan Overseas Cooperation Volunteers
MD	Mekong Delta
MOET	Ministry of Education and Training
OJT	On the Job Training
SARC	Swedish Agent for Research Cooperation with Developing Countries
SIDA	Swedish International Development Authority
SPC	State Planning Committee
UNDP	United Nations Development Programme
UNESCO	United Nations Education, Scientific and cultural Organization
VND	Viet Nam Dong
WB	World Bank

CHAPTER 1 INTRODUCTION

CHAPTER 1 INTRODUCTION

In 1986, the Government of the Socialist Republic of Viet Nam introduced a market economy through its *doi moi* policy and has since made steady reform efforts in all other areas as well. In order to achieve sustainable economic development, Viet Nam recognizes the need to make improvements in the productivity of the agricultural sector which supports industrial development. In addition, other serious issues including the annual population increase of 2.1%, food shortage, and an unprepared labor force estimated at seven million need to be addressed. Until these issues are resolved, the stability of public welfare is an impossible hope. There is a need to channel the excess labor force into production through a diversification of agriculture and to steadily increase productivity in an environmentally sound manner. To achieve this, first priority should be given to education, research and extension in these areas.

Various reforms are being promoted in educational policy. The literacy rate in Viet Nam is 88% and educational incentives are high, but as the nation shifts toward a market economy, there is an urgent need to provide education for the development of excellent human resources which can become the driving force for economic development. There is a need to shift from social science theory to more concrete practical education and technical training. In this light, there is an urgent need to improve educational materials and curriculum, expand laboratories and other facilities and reeducate the teaching staff who provide the actual leadership in this area.

Amid these reform efforts, the Government of Viet Nam has proposed a plan for the Improvement of Division of Agricultural Sciences, the Can Tho University and made requests to the Government of Japan for grant aid for the implementation of these plans as one link in its policy to provide large-scale improvements to the existing universities which provide the necessary education to achieve successful reforms.

In this light, the Government of Japan implemented technical cooperation for the Can Tho University, Faculty of Agriculture from 1970 until the release of Saigon in 1975. In 1974, the Government of Japan received a request from the Government of the Republic of Viet Nam (South Vietnam) and decided to conduct a basic study of its plans. In response, the Japan International Cooperation

Agency (JICA) dispatched a study team to Viet Nam. The study report was completed and entitled Development Report and Masterplan for Faculty of Agriculture. However, due to the collapse of South Vietnam following the unification between north and south in 1976, the plan was never implemented. The content of the current request is based on the plans from 1975, making it a second request for the same plan.

In response to this request by the Government of Viet Nam, JICA dispatched the Grant Aid Preliminary Study Team led by Yoshikatsu Nakamura (Director, First Basic Design Study Division, Grant Aid Study and Design Department, Japan International Cooperation Agency) between 5 April 1993 and 24 April 1993 to confirm the content of the request and investigate the necessity and validity of cooperation for these improvement plans.

The preliminary study team organized the results of its investigation under the title Preliminary Study Report on Project for Improvement of the Can Tho University Division of Agriculture. In this report, it was determined that the implementation of these plans through grant aid was valid, but that it was necessary to give consideration due to the following matters.

1. Implementing assistance to the three high-priority faculties within the Division of Agriculture.
 - 1) Agronomy (basic technology for increased production of agricultural goods)
 - 2) Animal Husbandry & Veterinary Medicine (in order to respond to the increased intake of animal protein)
 - 3) Food Technology (in order to respond to the increased demands of the food processing industry)
2. The requested facilities remain the same as in the 1975 plan and do not meet the demands for current educational and research activities. Therefore, thorough investigation and consideration is necessary.
3. The machinery and materials list attached to the request applies to the entire Division of Agriculture and includes advanced machinery and materials for research. Accordingly, this will be reduced to the three faculties noted above and limited to educational machinery and materials which are easy to maintain and manage.

Based on the results of the preliminary study, the Government of Japan decided to implement a basic design study which is necessary for the actual implementation these improvement plans. In response, JICA dispatched a Basic Design Study Team led by Yoshikatsu Nakamura (Director, First Basic Design Study Division, Grant Aid Study and Design Department, Japan International Cooperation Agency,) to Viet Nam for 24 days between 22 July 1993 and 14 August 1993.

The basic design study conducted on site included the following activities.

- 1) Confirmation of the content and conditions related to the request from Viet Nam.
- 2) Study of the groups implementing the improvement plan and related organizations.
- 3) Confirmation of the content of the projects for the improvement plan.
- 4) Investigation of proposed construction site and study of conditions for improvement of related infrastructure.
- 5) Investigation of functions and scale of facilities and technical matters related to construction.
- 6) Study of similar facilities for reference purposes and survey of machinery and materials.
- 7) Consultations with various government authorities involved with construction.
- 8) Study of project implementation schedule and budget measures of Viet Nam.
- 9) Data collection for calculating project expenses.

Based on the above studies and consultations with the relevant authorities in Viet Nam, the study team organized consultation records which included points of mutual agreement and other basic matters concerning project content, implementing organizations, construction sites, the scope of construction to be borne by the governments of each countries and other matters. On 2 August 1993, these records were examined and the Minutes of Discussions was exchanged by Prof. Dr. Tran Van Nhung, Director of the International Cooperation Division, Ministry of Education and Training, and Yoshikatsu Nakamura, leader of the team.

Based on these study results, analyses and investigations were conducted in Japan and a basic design was formulated.

JICA then dispatched the Basic Design Study Team led by Mr. Akira Chiba (Assistant Director, Grant Aid Division, Economic Cooperation Bureau, Ministry of Foreign Affairs) to Viet Nam to explain the basic design report (draft final) over ten days from 8 through 17 November 1993.

The study team confirmed the content of the basic design with the relevant authorities from Viet Nam and organized records of the consultations on the basic design report (draft final) which included points of mutual agreement between the two nations. On 11 November 1993, these records were examined and the Minutes of Discussions was exchanged by Prof. Dr. Tran Van Nhung, Director of the International Cooperation Division, the Ministry of Education and Training, and Mr. Akira Chiba, leader of the team.

This report contains the above results.

The end of this report includes data on the organization of the team staff, study itinerary, list of main persons interviewed, copies of the Minutes of Discussions and other materials.

CHAPTER 2 BACKGROUND OF THE PROJECT

CHAPTER 2. BACKGROUND OF THE PROJECT

2-1. Background of the Project

2-1-1. General National Situation

Viet Nam is located on the eastern tip of the Indochinese Peninsula and covers an area of 331,688 square km (about 87% the size of Japan). The country stretches out 1,650 km north and south in an S pattern and has an average width of about 150 km, giving it a long, narrow shape. The neighboring countries include China to the north and Laos and Cambodia to the west. The eastern and southern sides face the Gulf of Tongkin, South China Sea and the Sea of Siam, giving the country a coastline which extends 3,260 km.

Due to the length of the country north and south, the climate is greatly dependent on the region. There are subtropical regions in the north and tropical monsoon regions in the south. The northern region experiences four seasons and cold winter with continued light rain due to the influence of central Asia. The southern regions have rainy seasons and dry seasons with temperatures remaining virtually fixed year round. Influenced by the monsoons in the southwest, there is a great amount of rainfall between May and September. Typhoons come five or six times a year and strike regions in both the north and the south.

Vietnamese (Kinh tribe) make up 89% of the ethnic population and are concentrated in the flat regions of the country which occupy only 28% of the total land. There are other ethnic groups, including about a million Chinese (concentrated in the southern regions), about 710,000 Khmer (Mekong Delta region) and about 80,000 Cham (mid-coastal regions). In the mountain regions, which account for 72% of the land, 54 minority ethnic groups are scattered and living in underpopulated conditions.

Buddhism and Catholicism account for 80% and 9% of the religious followers, respectively. Situated in the southern tip of the Chinese cultural sphere, Viet Nam has been greatly influenced by the geopolitics of China. Confucianism, Buddhism and Taoism have effected Viet Nam in the same way they have effected Japan.

In this respect, the Vietnamese and Japanese sense of ethics and ways of thinking are similar in many ways. On the other hand, there remains a great western European influence due to the rule of France from the 19th century.

Table 2-1-1. Summary Data

Country name	Socialist Republic of Viet Nam	Independence day	2 July 1976 (unification of north and south)
Area	331,689 square km (87% the size of Japan)	Population	64,411,668 (April 1989) 1)
Official language	Vietnamese	Religion	Buddhism, Confucianism, Taoism, Catholic
Ethnic groups	Vietnamese 85-90% Chinese 3% Others	Exchange rate against the U.S. dollar	1\$ = 10,550dong (VND) 2)
G N P	\$15.2 billion (according to the World Bank, 1990)	Per capita GNP	\$230 (according to the World Bank, 1990)

- 1) 70.73 million according to October 1992 estimates by the United Nations
- 2) End of June 1993

The new constitution was amended by the National Assembly in 1992 and officially announced on 18 April. At this time, the *doi moi* policy which had been advanced since 1986 was legally recognized. This policy recognizes the leadership role of the Communist Party, but divides the party and the state and separates the Government into three powers. A shift toward private management, capitalist management and other market economic methods has been recognized and long-term rights, inheritance and transfers of land have been permitted.

2-1-2. Population Increase and Employment Issues

The rate of population increase has been officially announced to be 2.13%. This high rate of increase is expected to have further impact on the economy of Viet Nam in the future. While the Government is promoting a family plan in order to keep population growth within 1.7%, the United Nations is predicting a real growth rate of 2.5%. The flat regions have already become overpopulated and agriculture is absorbing a greater labor force than is necessary.

The creation of employment has become a serious issue. Between 1991 and 1995, jobs were needed for a population of 7.57 million. This consisted of 1.7 million new entrants to the labor market, 180,000 laborers returning from overseas work, 500,000 military personnel returning from Cambodia and an agriculture surplus population of about 5 million from labor intensive agriculture. Social problems resulting from the influx of people to the cities are already surfacing.

In order to resolve these issues, the Government enacted a new land distribution policy which is designed to move a large percentage of the surplus labor force from areas of high population density to plateau regions in which there is a shortage of labor or to absorb this population through non-agricultural occupations. However, the issue of supplying food to regions deep in the mountains and the shortage of technology for farming, valuable goods and produce in plateau regions have become impediments to the materialization of the settlement plans. Despite the high literacy rate, the government estimates that only 25% to 30% of the agricultural labor force has the intellectual flexibility to absorb new technology, making the education and training in this regard a matter of urgency.

2-1-3. Economic Conditions

As a result of the *doi moi* policy enacted in 1986, efforts have been made to reduce the fiscal deficit, implement an interest rate policy, employ a floating exchange rate system and implement other policies. These efforts have begun to produce results. In 1987, abnormal climatic conditions and other influences led to an unavoidable recession. Since 1988, however, there have been steady signs of recovery through efforts to introduce market economic principles into the public sector and to implement deregulation measures in the non-governmental sector based on the *doi moi* policy line. These trends are particularly intense in agriculture, the principle industry of the nation. Despite the impact on Viet Nam following the transition of the former Soviet Union, it has been able to escape this critical situation by further promoting the shift to a market economy and improving relations with its neighboring Asian countries.

In 1992, the Vietnamese economy, led by the agricultural sector, made extremely smooth progress, recording a real GDP growth rate of 8.3%. The agriculture and forestries industries, which account for 38.2% of the GDP, grew 6.3% in comparison with the previous year. Blessed by favorable weather conditions, the

agriculture sector recorded large-scale yields in rice production. Food production increased by 9.2% over the previous year to 24 million tons (unhulled rice), reaching record-high levels. Rice has already increased 88.7% over the previous year, reaching 1.95 million tons. In addition, cotton, coffee and gum also showed smooth progress as a result of a government promotion policy.

Influenced by the expansion of petroleum production, the industrial sector showed a healthy increase of 8.0% over the previous year. The governmental sector, which accounts for 71.1% of the total industrial production, continued to expand, increasing 19.2% over the previous year. The non-governmental sector also showed excellent results, increasing 6.8% over the previous year. Petroleum production was the driving force of the industrial sector, increasing 39.5% over the previous year to 5.52 million tons.

In contrast to the continued growth in the principle financial industries which form the core of the public sector, growth was sluggish in the consumer financial industry which includes a large portion of private-sector businesses. This is thought to be the result of small private businesses being at a disadvantage in comparison to government businesses in terms of capital procurement and obtaining permission and approval. These businesses are also effected by the influx of competing products from the surrounding countries.

Table 2-1-3. Principle Economic Indices

(1989 prices, Unit: 1 billion VND, %)

	1991	Growth over previous year	1992	Growth over previous year
G D P	26,832	6.0	30,988	8.3
Material production	18,001	4.6	19,499	8.0
Mining	5,557	9.9	6,256	12.6
Construction	1,080	5.2	1,125	4.2
Agriculture and Forestries	11,135	2.2	11,539	6.3
Others	223	2.7	711	3.1
Service	9,808	8.3	3,589	8.6
Transportation	632	6.7	713	5.5
Trade	3,226	4.9	3,589	6.1
Finance	469	21.8	713	24.9
Government-Related Industry	2,662	8.1	3,394	9.7
Housing-Tourism	2,619	10.7	3,132	8.0

Note : The figures for 1992 are estimates

Source : Viet Nam Chamber of Commerce

Inflation has decreased to 14% from last year's 67% easing the nation's foremost concern. The exchange rate between the dollar and the dong has also shown a healthy upward trend, reaching 10,550 dong to the US dollar at the end of 1992.

Viet Nam has been moving toward a market economy, enabling it to achieve high growth in 1992. Furthermore, the Government is making efforts to build an infrastructure for promoting *doi moi* policy through such measures as privatizing state businesses and improving basic methods for the promotion of a market economy.

2-1-4. Production Structure

Agriculture accounts for a large portion of the Vietnamese economy and employs about 70% of the total labor force. The northern part of the Red River Delta and the southern part of the Mekong Delta are the main agriculture production regions and primarily produce rice, mostly for two times and in some regions three times a year. As a result of various reform efforts designed to stimulate production incentives for farmers, there has been steady growth in food production. However, adjustments in the agriculture base were made late and shortages in good seedling, fertilizer, agricultural chemicals and other necessities as well as drought, flooding, typhoons and other natural disasters have exerted a great impact on production and created unstable conditions.

In addition, vegetables, fruits and other garden products are produced in the suburban regions of major cities. In the central and mountain regions of the country, there are state farms producing sugarcane, coffee, tea, gum and other tropical goods for industry.

Viet Nam is also making great efforts to develop other industries, including marine products, forestries and mining. Blessed with a long coastline, the country has an abundance of marine resources. Its precious export goods consist of prawns, squid and other seafood. Viet Nam is also blessed with anthracite, mineral phosphate, chrome, tin and an abundance of other rare mineral resources. However, due to shortages of the capital and technology necessary for development as well as inflation and other factors, the country lags behind and has not yet realized its full potential.

Amid these conditions, in 1986, the Bach Ho oil fields, which were advanced through a merger with the former Soviet Union began full operation, making Viet Nam an important petroleum exporting country in 1990. Currently, the petroleum and natural gas industries are the country's main source for generating foreign capital. The entrance into Viet Nam of Western petroleum companies is expected to make it possible to produce over 10 million tons of petroleum by the end of 1990.

Recently, Viet Nam has attracted the attention of its neighbors as a promising country for investment. This attraction stems from an excellent, large and inexpensive labor force and unprecedented natural resources. There is a strong possibility that Viet Nam will maintain its relatively high economic growth rate and enter the Asia-Pacific economic sphere.

However, while Viet Nam has sufficient capacity in terms of two factors of production, natural resources and labor, it is clearly lacking in capital. The shortage of resources for economic development stem from the economic embargo by the West as a result of the Cambodian invasion and the sharp decline in assistance from the former Soviet Union, traditionally Viet Nam's largest donor country.

In order to escape this shortage of capital, it is important to maintain the self-help efforts promoted by the *doi moi* policy through which the national financial deficit is to be reduced and the industrial structure is to be transformed. At the same time, it is necessary that there is a continuous investment of economic development capital from foreign countries.

Since the law on foreign investment went into effect in 1988, there has been a rapid advance of foreign capital into Viet Nam. However, this investment has been largely limited to such industries as tourism, textile processing and agriculture, forestries and fisheries processing. The major issue now is the expansion of investment in the basic industries which is necessary for long-term economic development. This is because social infrastructure is insufficient and an investment environment for attracting basic industries through foreign capital has not established.

Accordingly, the speed of economic development in Viet Nam will probably be relative to how rapidly assistance from foreign Government or international

organizations increases in such areas as infrastructure. Unless this assistance is implemented rapidly and foreign capital financing begins at an early stage, it will be difficult for Viet Nam to overcome the population increase and unemployment through self-help efforts alone.

2-1-5. Assistance Trends

Economic cooperation for Viet Nam has traditionally been provided in the form of development assistance from the former Soviet Union and the Eastern Europe. In the energy sector, large-scale projects including the construction of large power plants and off-shore development of petroleum in the south, have been implemented. In the agricultural sector, annual contributions have included 1-1.5 million tons of fertilizer, about 10,000 tons of pesticides, tractors or other machinery and materials. In terms of technical cooperation, about 3,000 engineers from the former Soviet Union were dispatched to Viet Nam and a total of over 170,000 Vietnamese were educated and trained in the former Soviet Union. In the past 40 years, 3,600 research students and 21,000 university students were received and most of the Master and Ph. D. recipients were educated in the former Soviet Union. Assistance amounted to 800 million dollars in 1960, 1 billion dollars in 1983 and 1.8 billion dollars in 1986.

In addition to these, the economic assistance and military assistance which offset the trade balance of the former Soviet Union were implemented. However, as a result of the economic instability and changes in diplomatic policy of the former Soviet Union, the amount of assistance has been largely reduced. The countries of the Eastern Europe have followed suit.

At the same time, the Cambodian issue has become an obstacle to contributions by the major donor countries of the West and except for Sweden and Finland, emergency assistance has been stopped. The same trend can be found among international organizations. The World Bank Group and the Asian Development Bank stopped implementing assistance in 1979 and the European Community (EC) has not implemented any concrete assistance since deciding to implement humanitarian assistance in 1991. United Nations Development Programme (UNDP), United Nations Children's Fund (UNICEF), United Nations High Commissioner for Refugees (UNHCR), World Food Program (WFP) and other

major international organizations have implemented relatively small amounts of assistance.

Every five years, the UNDP cooperates with recipient countries to enact country by country plans and build structures for the creation and implementation of a master plan achieve their success. In its third country by country plans (1987-1991), the UNDP implemented cooperation for the building of a structure for the enactment and implementation of a concrete master plan in the assistance areas shown in table 2-1-5. According to this plan, about 113 million dollars have been disbursed, making Viet Nam the fourth largest UNDP recipient of assistance in Asia and the fifth in the world. The areas of assistance outlined in the fourth country by country plans which are currently being implemented (1992-1996) are shown in the same table.

Table 2-1-5. Main UNDP Assistance Areas

Third country by country plans (1987-1991)	Fourth country by country plans (1992-1996)
1) Increased production of food products	1) Promotion of economic reforms
2) Securing basic human needs	2) Strengthening and maintaining economic growth
3) Development of natural resources	3) Development of human resources
4) Improvement in efficiency of investment	4) Promotion of sustainable growth which gives consideration to the environment and advancement of immigration policy
5) Promotion of trade	

Source : UNDP report

In promoting the *doi moi* policy amid these numerous economic difficulties, the Government of Viet Nam has increasing expectations for assistance from Japan and the other Western countries. In recognition of the fact that assisting the open economic policies of Viet Nam is linked to the stability of lives in Indochina and the Asia-Pacific region, donor countries and international organizations are preparing to restart their economic cooperation at an early stage.

2-2. Outline of the Relevant Sectors

2-2-1. Current Conditions and Issues in the Agricultural Sector

The economy of Viet Nam has traditionally been based on agriculture, particularly rice farming. In 1991, agriculture accounted for 48% of the gross national product and 72% of the labor force, indicating its importance.

However, agriculture remained depressed for a long period due to the destruction of the land caused by the fighting up until the unification of the north and south and due to the subsequent policies which gave priority to heavy industry. The agriculture policy at that time centered around cooperative agriculture which is viewed as a comprehensive production company and the Government controlled the supply of materials (fertilizer, agricultural chemicals, machinery and materials, feed and other items) for agriculture and purchased the goods at government prices. Since the *doi moi* policy of 1986, the distribution of land to farmers has been promoted. Unused land on state farms has been distributed and family farm management has been encouraged, showing a positive change in conditions. This has stimulated the desire of farmers to produce. The large-scale advances in the production of rice have been particularly noticeable. Food shortages continued until 1988, at which time Viet Nam imported 900,000 tons worth of food. In the following year, however, Viet Nam reopened rice exports to become the third largest export country in the world in 1989.

The undulating landscape of Viet Nam stretches out long from north to south and its 15 rivers, including two large rivers, provide abundant sources of water for farming. Across this landscape, there are a variety of agricultural regions, ranging from the tropical agriculture typical of southern and southeastern Asia to the subtropical agriculture found in the north. According to 1984 statistics, there are 7 million ha of land used for agriculture and 2.8 million ha which can be converted into farmland. The arable land is concentrated in the northern and southern deltas and the plains along the central coast. The Mekong Delta in the south accounts for about 36% of the total arable land while the Red River Delta accounts for about 12%, representing nearly half of the total arable land in the country.

Table 2-2-1-1. Comparative Table of Harvest in Vietnam and Neighbours (1986)

(t/ha)

	Vietnam	China (Adjacent Province)			Philippines	Thailand	Indonesia	Myanmar
		Guangxi	Guangdong	Yunnan				
Rice	2.8	3.9	4.6	4.2	2.7	2.1	4.0	3.1
Maze	1.4	1.9	3.2	2.8	1.1	2.4	1.9	-
Cassava	9.1	-	-	-	7.9	12.7	13.3	-
Soybean	0.8	0.7	1.2	1.5	-	1.3	1.0	-
Peanut	0.9	1.2	1.5	1.0	0.9	1.4	1.6	1.1
Cotton	0.4	0.3	0.2	0.2	0.3	0.4	-	-
Jute	2.1	3.9	2.0	1.5	-	1.1	1.0	1.0
Sugar Cane	39.7	47.9	38.4	60.2	49.0	47.0	85.0	-
Tobacco	0.9	1.1	1.4	1.6	0.9	1.0	-	-

Looking at growth in the production of major agricultural goods between 1986 and 1991, rice increased about 21.4%, corn increased 14.4%, soybeans decreased 9.6%, peanuts decreased 0.5%, cotton decreased 40%, tobacco decreased 15.2%, tea increased 13% and rubber increased 20%. Since the *doi moi* policy, emphasis has been put on agriculture and as a result, Viet Nam has increased production, becoming self-sufficient for rice and even exporting it. In addition, the production of tea, rubber, coffee and other goods by state farms has increased greatly as a result of protectionist policy. However, the low yield for other crops and low productivity of the arable land is thought to provide little incentive for basic agriculture and to be inadequate for the improvement of produce other than rice.

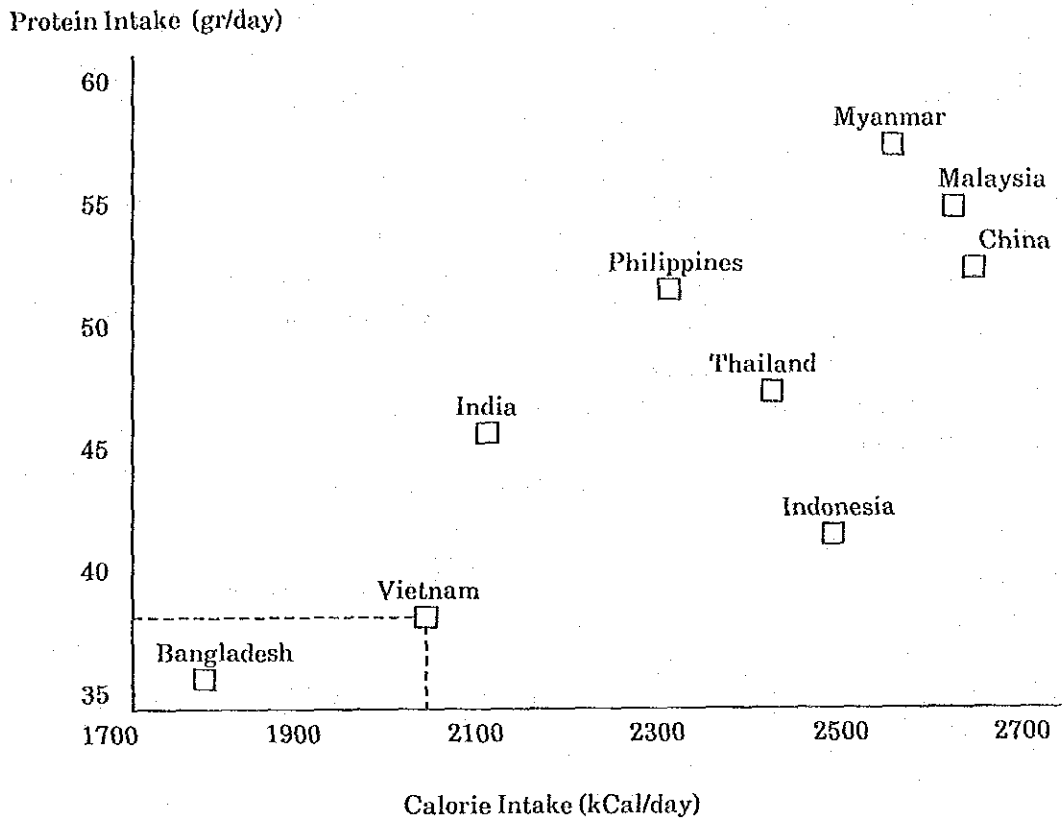
The Government of Viet Nam has increased the amount of arable land by 19% in comparison with the 10 years up to 1986 through agricultural development and the establishment of settlements, but on the new farms, the cultivation of special crops and fruit trees are being promoted. The recently developed rice paddies appear to have offset the worn out land, but have not opened up arable land which can be used for the expansion of grain production. As a result of the current increase in crop yield, it is estimated that the food supply has become sufficient enough to cover the increase in population.

Table. 2-2-1-2. Physical Restriction and Measure of Agricultural Land Expansion

Restriction	Facts and Measures
Erosion of Mountains (rain and wind)	- Deforestation for land expansion by state migration policy - Land desolation by collecting firewood and slash-and-burn agriculture
	Measure : to develop environmental conservation
Inferior Soil Condition (deterioration)	- Erosion of nutrient substances from topsoil - Deterioration of soil nutrient by multiple cropping
	Measure : to apply adequate farming and organic fertilizer or manure
Acidity and Salinity of Mekong Delta Soil	- Sulphate substances in soil come into acid sulphate by sea water in dry season
	Measure : to improve soil by drain and rinse to utilize land for shrimp / fish farm or forestry
Seasonal Flood and Water Shortage in (Mekong Delta)	- Frequent calamities by flooding on paddy land - Seasonal drought in dry season
	Measure : to apply variety of floating rice to improve irrigation and drainage system
Frequent Occurrence of Vermis	- Damages by vermins, parasitic insects and germs - Complete area destruction by inadequate or belated treatment
	Measure : to apply adequate insecticide and soil sterilization to provide and improve of data collection system

The amount of grain supplied per person is a low 200 kg which does not leave enough to supply feed for the cattle. The growth in beef production falls far below the growth in grain production. This lack of food in relation to the population increase is supplemented by fish farming. The development goal is to increase the amount of production to 340kg per person, emphasizing the need for improvement in production as shown in table 2-3-1-3.

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The World Bank estimates that the population is increasing at an annual rate of 2.5%, but the rate of increase in farming villages is about 1.7%. The plain regions are already overpopulated and agriculture in particular has absorbed a greater labor force than necessary. Farms are extremely small and even during busy season, it is difficult to find employment. For example, it is estimated that in the Red River Delta region, there is an absolute surplus labor force of 45-50% in agriculture.

The agriculture of Viet Nam is shifting from cooperative farms toward family managed farms which have higher incentives and great potential for development. Excluding rice cultivation, however, land productivity remains low and is not yet enough to support the industrial and mineral development needed for sustainable growth. The food shortage and lack of nutrition resulting from the population increase have become issues of urgency. Efforts are being made to move the surplus population in agriculture to underpopulated regions, expand farms and take other concrete measures. However, Viet Nam lacks the research

and development technology for taking measures to develop new agriculture for upland farming and special crafts in the new regions, diversify and improve agriculture in the delta regions, and improve acidic soil and convert land which is not suited for agriculture into fish farming, cash crops and tree planting. Farmers have not received enough education to enable them to absorb these new technologies, making research and development, education, training and the dissemination of knowledge important issues.

2-2-2. Educational Policy Issues

Issues related to educational policy include improvement in the content of education, correction of the disparity between regions, and insufficiency of educational materials. In order to develop an excellent labor force which will become the driving force for economic development in a market economy, there is a need to shift from sociological theory to more concrete, practical education and technical training. To accomplish this, there are a number of important matters including the improvement of educational materials and curriculum, establishment of more laboratories and other facilities and the re-training of teachers who do the actual teaching.

The literacy rate in Viet Nam is 88% overall and 91.1% among laborers, exceeding the average for Association of South East Asian Nations (ASEAN) countries. As shown in the chart, the rate of attendance at the elementary school level is as high as 85% (actual graduation rate is 72.3%) although it has been reported to be below 50% in reality. These rates are reported to be about 20% among the minority ethnic groups in the mountainous regions.

Table 2-2-2-1. Percentages of School Attendance and Actual Graduation

	Attendance	Dropout	Graduation
Higher	15%	12.5%	13.1%
Secondary	43%	27.5%	31.2%
Basic	85%	15.0%	72.3%

Source : Education in Vietnam 1945-1991

Education in Viet Nam is based on the 5-4-3 system with university entrance at 18 years of age as in Japan. The number of years of university education varies by field of study with medicine requiring six years, engineering five years, economics and agriculture four to four and a half years and teacher education five years. In addition, there are provincial teacher colleges in each province which operate on a three-year system.

There are a total of 105 post-secondary institutions across the country consisting of 60 universities and 45 colleges. These are divided into six different groups according to area of specialty. Another classification is given to two schools which cover a wide range of fields. Can Tho University is one of these. In addition, there are 28 other schools held by the Ministry of State, Ministry of the Interior and other government bodies which are not included in these figures. The division of competent authorities for each of these universities is also complex and bears a relationship to the fields of responsibility. As shown in the chart, the Ministry of Education and Training has jurisdiction over 39 schools while the Ministry of Health and the Ministry of Culture and Communications control nine schools. However, under these current conditions, the relations between universities are ineffective and the promotion of reform is likely to take some time. As a result, universities other than those related to health, culture and military matters are likely to eventually shift under the jurisdiction of the Ministry of Education and Training.

Tale 2-2-2-2. Universities and Competent Ministries (1991)

	Moest	Health	Culture	Law	Finance	Const	Bank	Forest	Trans	W Res	Total
1. Universities Education	16			1							17
2. Industries Engineering	7					2			1	1	11
3. Agriculture Forestry	5							1			6
4. Economics	5				1		2				8
5. Medicine Gim.		8									8
6. Art Culture	1		7								8
Others	2										2
Total	36	8	7	1	1	2	2	1	1	1	60

The Government has begun to address the following five items as measures for organizing the complex system, integrating the current higher educational institutions into a network and obtaining the greatest results from its investment in education.

1. To organize the current academic research facilities into a concrete network, systemize educational and training methods according to this network and promote the effective use of all of these facilities.
2. To clearly define the functions and aims of each scholastic research facility.
3. To promote a training program aimed at "brain work."
4. To stimulate creativity and ambition in the scholastic sphere, especially in the area of student's specialties.
5. To build a base for scholarly exchange and international assistance.

The annual budget for education and training is allotted by the central government (Ministry of Education and Training and competent authorities) and regional governments. Nearly the entire budget for high school education and vocational training is apportioned by the Ministry of Finance and approved by the National Assembly. However, 80% of the general education budget (elementary

school, junior high school, and high school) is distributed by the regional governments (provincial and regional). The proportion of the total educational budget which is distributed by the central government is only 4.4%.

The majority of the state budget is allotted for the salaries of teachers and scholarship money of students. The expenses for textbooks, experimental equipment and materials, facility maintenance and other items which directly support education are extremely limited. The percentage of students receiving scholarship for their university education fell from 78% in 1988 to 49% in 1989. The salaries for teachers is extremely low, making it almost impossible for them to survive without a side job. In this light, the quality of higher education has dropped in general since the 1980s, making improvements necessary in all areas.

Table. 2-2-2-3. Transition of Actual Expenditure of MOET

(Unit : Million VDN)

	1988	1989	1990	1991	1992
Ordinary					
1) Salary	42,586	n.a.	n.a.	288,000	303,000
2) Scholarship	5,545	n.a.	n.a.	68,000	102,000
3) Others*1	141,749	n.a.	n.a.	664,000	1,556,000
(Sub-Total)	(189,880)	(542,951)	(865,305)	(1,020,000)	(1,961,000)
Capital					
1) Const.	7,579	3,592	11,408	80,000	103,000
2) Equip.	664	608	1,092	4,000	15,000
(Sub-Total)	(8,243)	(4,200)	(12,500)	(84,000)	(118,000)
(Total)	198,123	547,151	877,805	1,104,000	2,079,000
GDP	21,393,120	22,077,700	23,446,500	28,623,000	30,988,000
GDP ratio	0.93	2.48	3.74	3.86	6.71

*1 Expenditure for repair / maintenance of facilities and equipments

Source : MOET

Until perestroika, the greatest amount of foreign assistance in the educational field came from the former Soviet Union, and the majority of human resources development came in the form of improvement of facilities and supply of scholarship money. Instructors continue to be dispatched from Council for Mutual Economic Assistance (COMECON) countries, Vietnamese teachers continue to

study overseas and many students still remain abroad. As a result of the discontinuation of assistance accompanying the collapse of the former Soviet Union and due to the necessity for re-education of the people trained in COMECON countries under *doi moi*, the Government of Viet Nam is rapidly deepening its relations with advanced countries of western Europe.

Assistance from the OECD countries has been concentrated in the improvement of facilities, contribution of scholarship, dispatch of specialists to universities and research institutions and the sponsorship of seminars. France, Germany and Italy have been particularly active in these areas. The United Kingdom, Sweden and Australia have implemented cooperation for the development of human resources while Singapore, Malaysia, Thailand, the Republic of Korea, China and other neighboring countries have begun mainly to contribute scholarship. In terms of international organizations, the UNDP has implemented assistance in the areas of human resources development and planning for education and training while the World Bank plans to open up loans for the improvement of elementary education. The ADB is considering the implementation of loans for junior high school education and UNICEF has made disbursements for the "Education for All" program. The Ministry of Education and Training has begun to make efforts to improve education based on these international contributions.

2-3. State Development Program

2-3-1. Outline of the State Development Program

The Viet Nam economic program began in 1960 when the first five-year program (1960-1965) outlined a policy giving priority to heavy industry. However, this program was discontinued as violence intensified in the north and Viet Nam was only able to achieve a very low growth rate. The second program (1976-1980) was delayed 10 years, beginning the year in which north and south Vietnam unified. This program promoted socialism in the south in addition to nationalization and collective organization in the economic sector, but the depressions made during socialization and the freeze on assistance from the West invited an economic crisis. Reflecting on these experiences, Viet Nam initiated economic reforms in 1979 and, under its third economic program (1980-1985), changed directions toward a realistic plan based on agricultural development and the production of consumer's goods. At the same time, Viet Nam began to liberalize its markets, expanding production and making it possible to achieve the goals of the program.

The fourth program (1986-1990) was initiated at the same time the *doi moi* policy was adopted. This program aimed to increase production through concentrated investment in priority areas such as food, consumables and export goods. Furthermore, while honoring its state managed businesses, Viet Nam strongly encouraged private sector and other forms of economic management, taking a major step forward in the direction of a free market system. As a result of these efforts, inflation eased, harvested good rice, foreign investment increased and the country began to see brighter prospects in general. However, as conditions became turbulent in the former Soviet Union and the Eastern Europe, assistance was cut off and although goals for the increase in food production and the production of petroleum were reached, other sectors performed rather low.

Table 2-3-1-1. Targeted Years and Indices by the 7th National Congress

	1990	1995	2000
Population (mill)	67.6	73.2	80~81
Labours (mill)	32.7	37.4	42.0
Ratio in GDP (%)			
Agriculture	50.6	48.0	42.0
Industry	20.2	22.0	28.0
Accumulation Rate (%)	2.9	4.2~8.6	13~20
Compositions (%)			
Saving	8.1	14~18	23~30
Consumption	91.9	82~86	70~77
Trade Ratio in GDP (%)	14.0	24~26	27~30

Since 1991, there has been a shift toward a policy of maintaining provisional goals for the five-year period while each year indicating only the main goals within the framework of task for the following year. The principle behind this policy is to create economic, political and social stability through nationwide implementation of *doi moi* and to make investments toward rapid development afterward. The goal is to lift social productivity and economic efficiency and to increase the income per capita at least double by the end of the program. The 13 tasks outlined in the program are shown in the table 2-3-1-3. In the initial planning period, the goal for growth in agricultural production was set high. Growth in industrial production is expected from the middle half of this period. Until 1995, government-led investment is to be implemented. Following this period, there is expected to be an increase in the participation of private-sector investment, including that from foreign investors.

Until growth is reached in the industrial sector, the expectations of the Government of Viet Nam for growth in the agriculture sector remain high. This growth is given highest priority among the development goals shown in the same table. The Government aims to drive away social instability through stable supplies and domestic reserves of food and to further strengthen exports in an aim to stabilize income from foreign currency. In terms of animal husbandry, the Government intends to expand fertilizer production and improve the strains of fertilizer in order to raise the quantity and quality of processed meat products to a level at which they can be exported. In addition to increasing the production of tea, mulberries (silkworm breeding), cotton and other products to be used in

Table 2-3-1-2. Development Goals from the Seventh Congress of the Communist Party

1) Inflationary countermeasures	To reduce current double-digit inflation to single-digit inflation.
2) Food Production	To produce 25 million tons of food (340kg per person) in order to resolve the domestic food issue and secure state reserves, livestock feed and food exports (1 to 1.5 million tons per year).
3) Development of animal husbandry and meat processing	To lift the level of livestock production to 30% that of all agricultural production by expanding the production of feed, developing better breeds of livestock, developing chemicals, and improving production of meat products for export.
4) Industrial goods - Tea - Mulberries - Cotton	To expand tea fields to 95 thousand ha, produce 54 thousand tons of dried tea and export 5.4 million dollars worth. To construct modern processing factories, expand mulberry fields from 15 thousand to 35 thousand ha and lift the level of production from 420 tons to 2,000 tons in order to promote silkworm cultivation. To expand cotton fields from 12,800ha to 50,000ha and increase production from 9,000 tons to 45,000 tons.
5) Afforestation	To develop 3 million ha of the 9.6 million ha of barren hills into three regions of 1 million ha each for thick forests, reforestation and dispersed forests according to the 5-year plan for afforestation.
6) Power supply	To expand the power supply in central and southern Viet Nam to meet 90% of demand, improve the power network in northern Viet Nam and export 1 to 5 billion kw to China.
7) Employment	To create employment opportunities for 4 million people and increase the yearly income of the government in order to prevent social problems and other negative influences from arising.
8) Recovery of state economic sector	To reorganize conditions to enable state businesses to play a leadership role and assist in the realization of technical reforms and economic efficiency as the foundation of the economy and to enable the Government to provide appropriate management for the free market economy.
9) Socio-economic development of mountain regions	To improve social infrastructure and achieve annual growth of 4.5% for cottage industries and special crops. To aim at 250-270kg per person in annual food supplies, 200,000 tons of tea leaf production, and the production of 60,000 tons of coffee and 1,000 tons of silk for export.
10) Improvement of education and training	To create an educational system which meets the aims of socio-economic reforms and implement training in order to lift the level of education and develop the capacity of the people. To revise the goals and content of the educational system and aim at a new labor force structure which is able to adapt to the process of socio-economic development.
11) Health	To establish local clinics, expand health services and produce and supply pharmaceuticals in order to improve family planning maternal and pediatric health and to counteract contagious diseases and malaria.
12) Government science and technology policy	To implement 30 survey and research projects in an aim to formulate policy on such matters as socialist theory, Ho Chi Minh concepts, socio-economic reform, petroleum and gas development, oceanography, environmentalism, security and national defense.
13) Renovation (<i>doi moi</i>) of government administrative structure	To organize and make intentional decisions on the structure of the nation, reform the administrative management system and the civil servant employment system and take other measures in order to secure a modern administrative system which correctly observes the rules of a socialist democracy.

industry and raising the added value of secondary processed goods, the Government is hoping to spur overall growth in industry through the promotion of the processing industry.

In these development processes aimed at a market economy, the development of creative, intelligent human resources which are capable of absorbing the needed technology has become an urgent issue, making it necessary to aim at the formation of a new type of labor force and improve the system of education and training.

2-3-2. Educational Improvement Goals

The Government of Viet Nam has further promoted the shift toward a market economy resulting from the *doi moi* policy of 1986. In order to achieve the development goals for the year 2000 as shown in table 2-3-1-1, large scale educational reforms have become necessary. These development goals aim to improve the system of education and training by revising the aims and purposes of the educational system and developing a new type of labor force which is capable of responding the socio-economic development process.

The details of these goals are shown in table 2-3-1-2, where they are indicated as the improvement goals of the Ministry of Education and Training. In short, these goals consist of the expansion of primary and secondary education, the correction of regional disparities, the improvement of textbooks, curriculum, facilities and other factors contributing to the educational environment, and the reform and qualitative improvement of educational content aimed at adjusting to the market economy. Concrete policies and aims, however, have not yet been set. These are currently being enacted by the Ministry of Education and Training through the cooperation of UNESCO and other international organizations.

In order to implement concrete plans aimed at improvement goals, there is a need for sufficient budgetary support. However, the annual budget of the Ministry of Education and Training is about 3.9% of the GDP (1991), reflecting a lack of funds in comparison with the level in neighboring countries. Although the economy of Viet Nam is improving, it will take a long time before the state budget invested in educational development will bring returns in terms of production activity. For

this reason, the Government of Viet Nam is hoping for assistance from foreign countries.

Table 2-3-2. Educational Improvement Goals for the Year 2000

Goal	Content
(1) Education for All	<ol style="list-style-type: none"> 1) To provide elementary school education to all children by the year 2000. 2) To provide junior high school education in city areas and economically developed regions. 3) Improve the literacy rate (15-35 year olds).
(2) Expansion of vocational training	To strengthen the development of the labor force to meet the demands of a market economy and to adjust the training content in order to create a balance in the supply of laborers for each occupation.
(3) Restructuring of university education	To refocus the content of education on the demands of a market economy in order to develop human resources which are capable of conducting scientific research and development in the industrial sector and conducting surveys, analyses and proposing solutions in economic areas.
(4) Reexamining educational facilities	To shift the emphasis of education from its traditional theoretical focus to a more practical approach and increase the number of schools which can provide high-level specialist education. Similarly, to consider the restructuring of universities and establish regional research centers.
(5) Investigation of a school management system	To shift some schools to semi-private or private institutions and provide a higher level of education through the collection of lesson fees.
(6) Improvement in the content and methods of education	Make improvements in textbooks and curriculum in order to meet the needs of a market economy.
(7) Promotion of education for ethnic minorities and people in the mountain regions.	To examine special policies for providing education to ethnic minorities and people in the mountain regions in order to develop human resources which are capable of participating in the development of these regions.
(8) Improvement of facilities	To improve current superannuated educational facilities and increase the number of laboratories etc. according to order of importance.

Source: Ministry of Education and Training

2-4. Outline of the Request

2-4-1. Background of the Request

Although Viet Nam is blessed with abundant natural resources, it has been unable to achieve economic development due to the 30 years of war involving France and the United States, the depression of socialism accompanying the transition of the former Soviet Union, enormous military expense stemming from the invasion of Cambodia and other factors. However, Viet Nam has begun to obtain results from the economic reforms (*doi moi* policy) initiated in 1986 and the Government continues to make efforts to introduce market economic measures. As a result, Viet Nam is receiving attention as the most promising country in Asia for future development.

In order to shift toward a market economic system and achieve sustainable economic development through *doi moi*, Viet Nam has come to the conclusion that it needs to improve production in the agricultural sector which provides support for industrial development. The rapid population increase and food shortage have become particularly serious issues and the unemployment issue is directly linked to social instability, making resolution of these issues essential to achieving political stability. In order to incorporate the surplus labor force into production through the diversification of agriculture and to steadily increase productivity in a manner which gives consideration to the environment, top priority must be given to education, research and extension in these areas. The Mekong Delta has more granaries than anywhere else in the world, making the development of its agriculture an important factor in the support of Viet Nam's economic development. In comparison to agriculture in the Red River Delta in the north, which is greatly influenced by typhoons, flooding and other natural disasters, the Mekong Delta in the south has more possibility for stable agricultural development.

Can Tho University was established in Can Tho, a central city in the Mekong Delta, in 1966. The university set up the Division of Agriculture in 1968, which has contributed to the development of regional agriculture. However, the superannuation of facilities and shortage of educational research equipment and materials have obstructed educational research, motivating the Government of Viet Nam to enact plans for the improvement of the Can Tho University, Division of Agriculture. In order to implement these plans, requests have been made for

grant aid from the Government of Japan. In response to this request, the Government of Japan dispatched a preliminary study team to Viet Nam for a 20-day period between 5 April 1993 and 24 April 1993 and confirmed the content of the request.

From 1970 until Saigon was released in 1975, the Government of Japan implemented technical assistance to the Can Tho University Division of Agriculture. In 1974, the Government of Japan responded to a request from what was then the Government of South Vietnam by deciding to implement a basic design study and dispatch a study team from JICA. The study report was assembled under the title "Development Report and Masterplan for Faculty of Agriculture, Can Tho University," but these plans interrupted as the Government of South Vietnam dissolved following the unification of the north and south in 1976. The content of the current request is based on the 1975 plans, making it a new request for the same plan.

As a result of the preliminary study, the Government of Japan decided to implement a basic design study which is necessary for the materialization of these improvement plans. In July 1993, JICA dispatched a basic design study team to Viet Nam to conduct this study.

2-4-2. Content of the Request

The content of the request submitted by the Government of Viet Nam is based on the foresaid Development Report produced by JICA in 1975.

The current request concerns the Department of Agronomy and the Department of Animal Husbandry and Veterinary Medicine. Over the past 18 years since the 1975 report, the facilities have remained unfit for the activities of the two faculties. Furthermore, the requested equipment, a large quantity of them for advanced research, were designated for the entire Division of Agriculture and were too large volume for the requested facilities. In consideration of the country's economic situation, it was determined to be difficult to maintain and manage these facilities on this stage.

Accordingly, the preliminary study team concluded that while the expansion of facilities and equipment for the Can Tho University Division of Agriculture was

determined to be of great value to the Mekong Delta region, there is still a need to examine the request more thoroughly. It was also concluded that there is a need to give consideration to the demands of the region for the Department of Food Sciences and Technology.

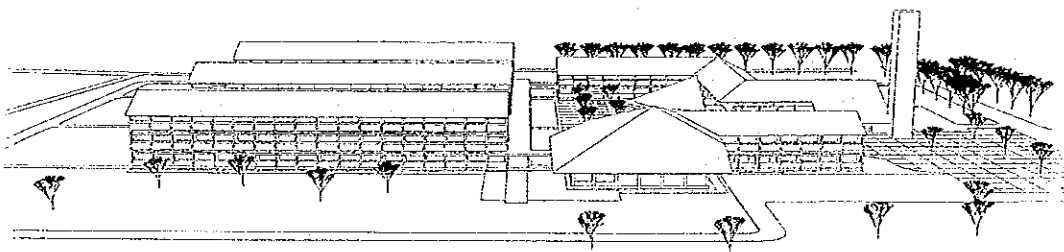
As a follow-up to the report of the preliminary study team, this basic design study team confirmed the content of the request from Viet Nam for the Department of Agronomy, Department of Animal Husbandry and Veterinary Medicine and the Department of Food Technology.

Table 2-4-2. Outline of the Request

Project Implementation Body	Ministry of Education and Training in Socialist Republic of Vietnam Can Tho University
Major Objectives and Activities	<ol style="list-style-type: none"> 1) Department of Agriculture : Improvement of basic education for increased yield technics of crops 2) Department of Animal Husbandry and Vet. Medicine : Improvement of basic education for countermeasure to tendency of increased animal protein intake 3) Department of Food Sciences and Technology : Improvement of basic education for increased demand from food processing industries
Project Site	Can Tho University Campus II (Cai-khe) Can Tho City, Can Tho Province
Contents of Requested Facilities	<ol style="list-style-type: none"> 1) Common Facility 2) Laboratory Building for Dept. of Agronomy 3) Laboratory Building for Dept. of Animal Husbandry and Vet. Medicine 4) Laboratory Building of Food Sciences and Technology
Contents of Requested Equipment	<p>Common Equipment Educational Equipment Audio Visual Equipment Basic Research Equipment</p>
Others	Mechanical / Electrical Facilities related to the project (Water Supply and Drainage, Electricity Supply, Telephone, etc.)

In terms of facilities, the team confirmed the requests of the university through discussions with the directors of each department and studied the content of activities and conditions related to the use of the current facilities. In terms of equipment, the group requested that each department provide a list showing an order of priority for the items requested. After confirming the content of activities and conditions related to the use of current facilities, the group studied the people in charge as well as the goals and other matters related to the use of equipment.

The details of these studies are noted in item 4-2-5.



CHAPTER 3 OUTLINE OF THE PROJECT AREA

CHAPTER 3. OUTLINE OF THE PROJECT AREA

3-1. Summary of the Mekong Delta

The total area of the Mekong Delta is 5.9 million hectares of which 67% (3.9 million ha) is located in Viet Nam. The remaining 33% (1.95 million ha) of Mekong Delta is located on the Cambodian side. The region was originally divided into 9 provinces, but with the splitting of two of them in 1990, that number has risen to the current 11 provinces.

Twenty-two percent of the entire population, or approximately 15 million people, reside within the region, with 84% of them living in agricultural villages. The average population density is 385 people per square kilometer and most of them are directly or indirectly involved in agriculture.

The Mekong Delta plays an important role in Viet Nam's agricultural production. Although the region only makes up 13% of the country's total area, it contains 38% of the country's arable land and is responsible for 48% of national production of food. The per capita food production of the region is 703kg, more than double the national average of 325 kg.

Table 3-1-1. General Indices of Mekong Delta

	(1991)			
	All Country	Red Delta	Mekong Delta	Can Tho Prov.
Area (km ²)	331,041	12,457	39,575	3,054
Population (mil)	69,306	13,518	15,221	1,739
Pop. Density (Psn/km ²)	209	1,085	385	569
Pop. Ratio in Village (%)	79	83	84	81
Production of Foodstuffs * (ton)	21,990	3,457	10,464	1,215
Cultivation Area (1,000ha)	7,448	1,263	2,846	325
Production of Foodstuffs Per Head (kg)	325	257	703	715

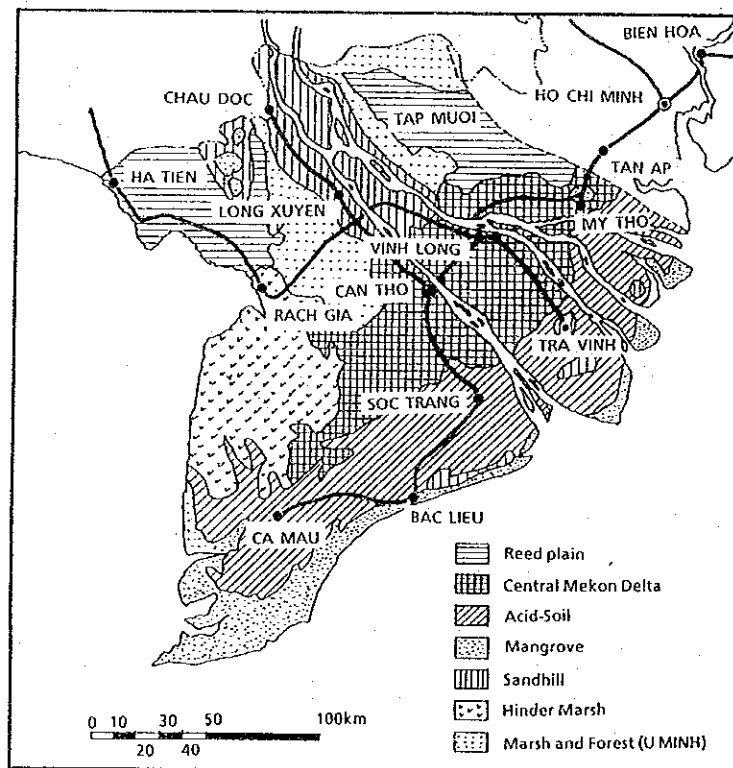
* in paddy equivalent

Source : Tabulated from data of Statistic Bureau in Vietnam

In the Mekong Delta, heightened agricultural incentives brought about by *doi moi* have started a move towards family managed farms. Comprehensive agricultural management, including animal husbandry and fish farming has begun to appear throughout the region.

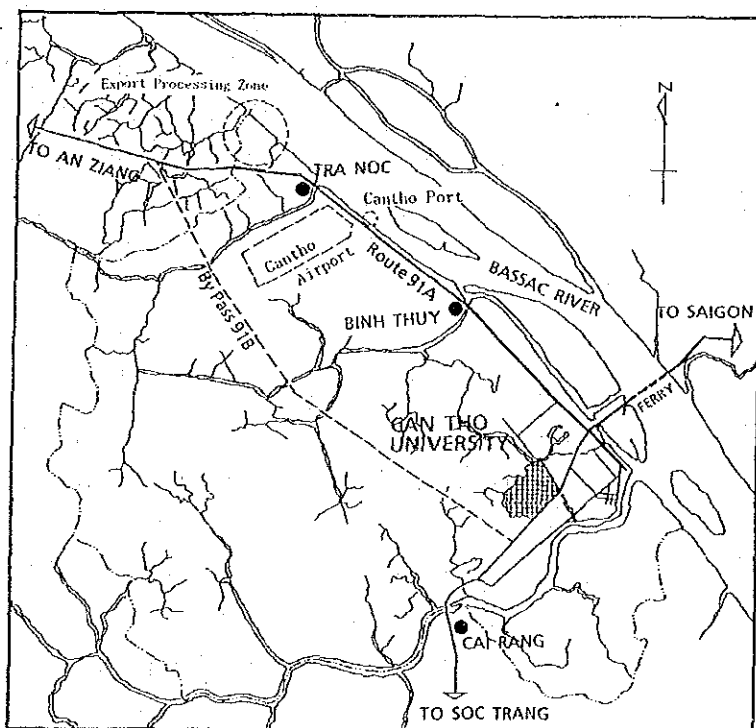
The dramatic changes in the flow of the Mekong River's waters have a decisive impact on the lives of animals and humans in the area. During the dry season the lack of rain and the accompanying lowering of the water level is aggravated by sea water that often flows up to 50 km inland. The result is a serious salinification and oxidization of the soil which causes decreases in agricultural production. In moderately affected areas, some measures have been put into effect to remedy this problem, but development of new agricultural methods to improve soil conditions and increase production remains high on the region's agenda. In the heavily oxidized areas, shrimp and fish are being cultivated, industrial crops are being planted and afforestation plans for the planting of eucalyptus and other trees are being advanced. The intensification of agriculture in the region has led to a worsening in the losses caused by pests (65 types) and plant diseases (45 types). Research and widespread use of crop protection and plant quarantine have become important issues.

Mekong Delta Soil Map



The Mekong river, one of the great rivers of the world, finds its source in China's Yunnan province, then flows south along the Thai-Laos border cutting through Cambodia to form the Mekong Delta. The waters of the river cover an area of 795,000 square km, with 72,300 square km located in Viet Nam. The total length of the Mekong River is 4,200 kilometers. Furthermore, the combined population of the Mekong basin which spans six countries is 214 million. In 1957, a Coordinating Committee for the lower Mekong basin and its mouth was formed with the purpose of promoting international development plans of the region. Soon after, this committee became involved in the water resource development of the six nation region as well as in tackling the problems of river traffic, tourism development, environmental management and resource protection. From the standpoint of the Plan for the General Development of Indochina, the Government of Japan also became actively involved in the region, launching the Greater Mekong Development Plan. In Viet Nam, Can Tho University is the base for these operations.

Can Tho Area Map



3-2. The Current Situation in Can Tho

Can Tho is the largest city in the Mekong Delta and is located roughly at its center. The population is officially reported to be 300,000, but other estimates place the urban population at 160,000. The city is very active and serves as a region for the accumulation of most of the agricultural products of the Mekong Delta, with rice being the primary crop. Historically, the city of Can Tho was constructed by the Chinese during the 17th century as a base for trade between Cambodia and the South China Sea. After the end of French rule, the city continued to prosper as the center of grain collection and the major port city in the western Mekong Delta.

Can Tho is located 175 km from the Ho Chi Minh City in the south along national highway route 91. A canal constructed under French rule cuts through the town with 43 bridges spanning its banks. As ferries are used to cross the Mekong's Tien (400m wide) and Hau (1,300m wide) tributaries, it takes four hours by car. If the plans to construct bridges across these two rivers are realized, the ties between Can Tho and Ho Chi Minh city will become much closer.

The river port is located 8 km from the city center. The amount of cargo that passes through this port annually is roughly 100,000 tons. With a water depth of 7.5 meters, ships of up to 10 thousand tons can dock at the port, but because of shallow depths of between 3.5 and 4.5 meters at the mouth of the river dredging must be undertaken to give these ships access to the port. In addition to the loading of the regions crops for transport, development of Can Tho as the intermediate point along the Singapore-Phnomh Penh shipping lane has also been forecasted. Presently, plans are being drawn up for the restoration of the port facilities, including an expansion of its annual cargo capacity to 2 million tons.

TraNoc airport is situated very close to Can Tho and is connected to Ho Chi Minh City by two weekly flights (as of August 1993). The flight time between the cities is 30 minutes. Plans are also underway to improve the airport facilities allowing an increase in the number of flights and a shortening of flight time.

The TraNoc Export Processing Zone has also been established with several food processing factories already operating, combining the abundant agricultural produce of the region with inexpensive labor. In Can Tho province, 150 ha have

been designated as an Export Processing Zone, with efforts being made to encourage light industry.

Can Tho's infrastructure, including electrical power, water supply and telephone installations cannot be called adequate. Loan cooperation from the Government of Japan (1971) made it possible to provide 33MW of electrical power through the TraNoc thermal power station and an additional 14MW of electricity from a reserve power generator. The western part of the delta receives a further 100MW of power through power transmission lines from the Trian hydro-electric power station (400MW). In 1991, however, this power station was forced to close due to lack of rain. Due to the influence of climatic conditions on energy supply, plans have been made to cut the power supply twice weekly between 07:00 and 16:00 during dry season.

Water supply is from 40,000-cubic m per day reservoirs located in the Bin Thuy district. The designated water pressure is 3.3 kg/square cm, but leaking water caused by worn-out pipes has reduced water pressure to 1-1.2 square cm. Water stoppages are also frequent, caused by broken down pressure pumps. The Government of France is in the process of implementing a water supply restoration project and a new reservoir will supply an additional 20,000 cubic m per day by 1995. The entire project should be completed in 1997, with an expected daily supply of 40,000 cubic meters.

An outdated telephone switching system is the main cause of the difficulties associated with calls made within Can Tho city limits. Long distance calls must be made directly at the telephone bureau. The telephone lines within Can Tho are now being upgraded and this should be completed within the year.

3-3. Outline of Can Tho University

3-3-1. Founding of Can Tho University

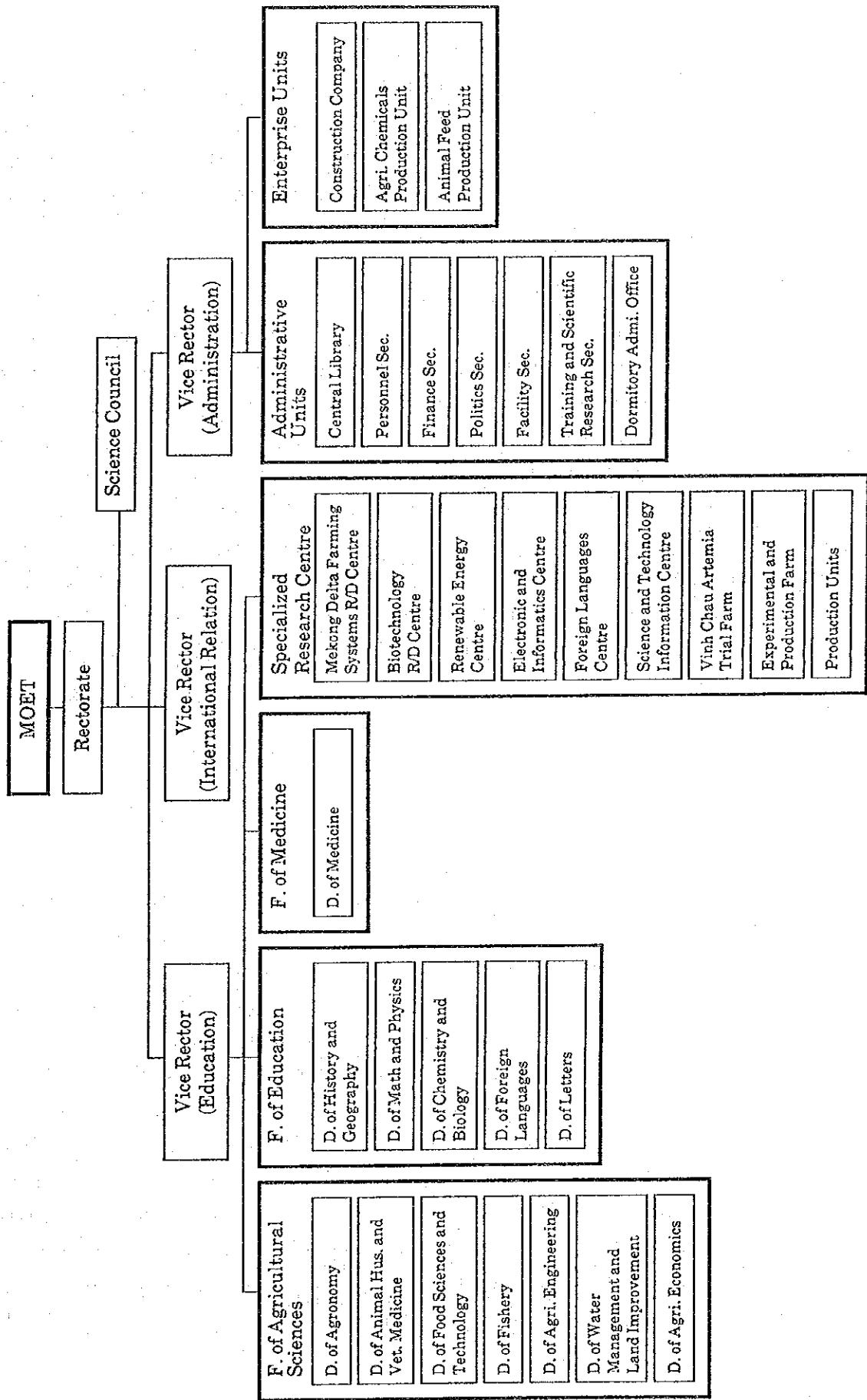
Can Tho University was founded in 1966 in response to the needs of the residents of the Mekong Delta. At the time of its establishment, it was the third largest university of what was then South Vietnam, following the national universities of Saigon and Hue. The university originally was made up of 4 departments covering the subjects of literature, education, science and law-economics. Two years after its foundation, the Division of Agriculture was also formed. A tremendous growth in the population of the area, a perception that the time had come for advanced study facilities and a fertile ground for the combination of education and research in fields such as agriculture were the main reasons behind the university's foundation.

At the time of its foundation, the university was located in the center of Can Tho (Khu Van-Hoa) in a remodelled 4-story building (currently campus III). With an increase in enrollment, the university received permission from the local government to build a dormitory for teaching staff in Cai Rang (currently campus I). This facility was also provisionally used for lectures. In 1969, in preparation for the construction of a permanent campus, 87 hectares were procured in Cai-Khe (currently campus II) and construction of the university was begun under the guidance of the newly formulated master plan. However, with the fall of Saigon in May of 1975, south and north Vietnam were unified and the development of Can Tho University was crippled, suffering the effects of the political reforms that took place in 1975, 1978, 1983, 1987 and extending to the present.

There have been links between Can Tho University and Japan since the school's establishment. On the occasion of the visit by Japan's representative group to the Asian Parliamentary Union (APU) in 1967, strong requests were made for financial assistance for the Division of Agriculture by the Government of South Vietnam, university authorities and provincial representatives. The Government of Japan responded that same year by implementing a basic survey of these requests. In 1969, the OTCA (present-day JICA) exchanged the R/D necessary for technical cooperation, which was implemented the following year in 1970.

The details concerning the technical assistance provided by Japan to the university were compiled in a comprehensive report published by JICA in June of

Fig. 3-3-2-1. Organization Chart of Can Tho University



1970. This assistance was completely cut off with the release of Saigon in 1975. This was the first large-scale example of international cooperation in the field of agricultural education and the high expectations for the project at that time were reflected in the cooperative spirit of the Ministry of Education and the OTCA and the high enthusiasm of the experts that were assembled by university professors for the technical cooperation project.

As mentioned previously, the Division of Agriculture was founded in 1968, in accordance with a master plan which called for construction of a second campus in Cai-Khe to serve as the main campus. Housing facilities for the staff were constructed and used temporarily as classrooms. The Government of South Vietnam later revealed to the technical cooperation team its desire to receive assistance from the Government of Japan for the construction of the main school. The content of these requests were compiled during the fourth trip of the guidance and survey mission of 1974. In the following year, 1975, the Government of Japan dispatched an survey mission and conducted a basic design survey. As a result of the unification of north and south Vietnam, however, the report was submitted but the facilities were never constructed.

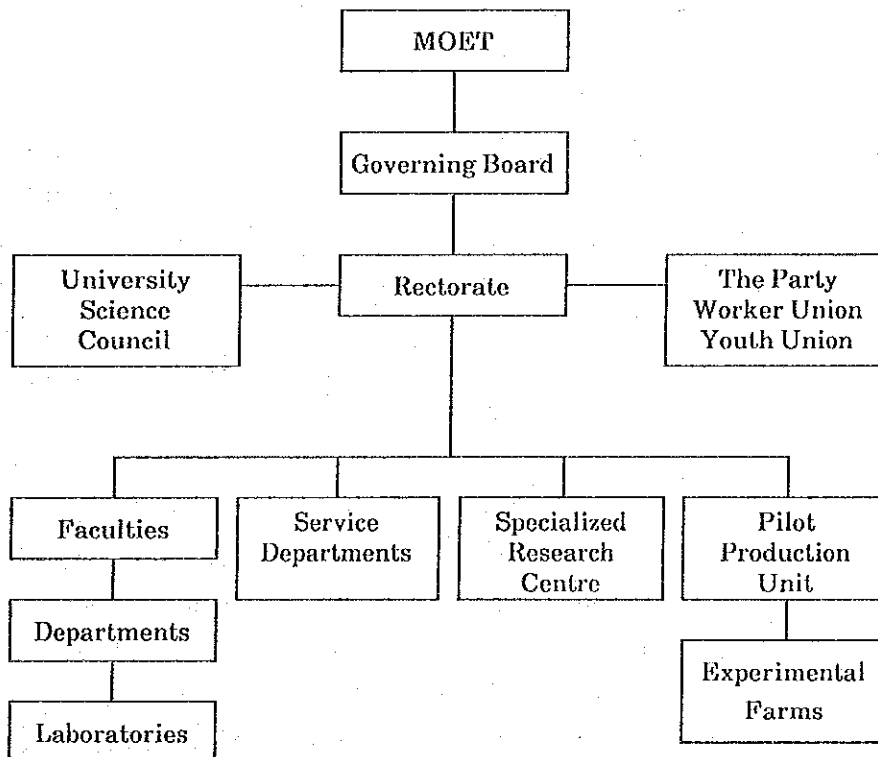
3-3-2. Activities of Can Tho University

(1) Organizational Structure

Can Tho University is a comprehensive institution under the jurisdiction of the Ministry of Education and Training. It is organized into three sections covering the subjects of education, administration and enterprise. The section of Education consists from the Division of Agriculture, the Division of Education and the Division of Medicine, in addition to this three, a fourth field of study added in 1990 by the establishment of the department of Electro Informatics. There are also ten affiliated research laboratories and training centers in which research and education are taking place. In the section of Administration, there are departments dealing with personnel, accounting, politics, facilities, libraries, training and science research, housing management and others. Finally, the section of enterprise produces some income for the university through its management of a construction company, poultry company, agri. chemicals production unit, animal feed production unit and the sale of pot plants.

Each academic department is organized by faculty, department and laboratory. However, this structure does not have the coherence of the Japanese university system, as there is no overriding organization to supervise these faculties. Although it is referred to in the minutes of the advanced report as the Division of Agriculture, there is no real organizational backing and, in fact, a representative (school dean) has not been elected. If the organizational titles are directly translated, it becomes clear that there are 14 faculties including the newly established Faculty of Electro Informatics. Currently every faculty or department operates with a great deal of independence, but the scale of these operations is quite small and the administration of the university is highly complicated. Plans to improve Can Tho University are now being considered by the Ministry of Education and Training, centering on the unification of individual areas of study with changing the titles from existing Faculties to Departments and the election of a dean to head each newly organized Faculty.

Fig. 3-3-2-2. Proposed New Structure of Can Tho University



For investigations and deliberations on the management, budget and other matters concerning the university, there is an organization called the University Science Council which is roughly equivalent to the Japanese university councils. The council is composed of 23 educators who meet to discuss important matters concerning the university. For urgent matters, only the upper members and related members are involved in discussions. The council's role is limited to consultation and all final decisions are restricted to the rector (university president).

(2) Number of Students

As of April of 1993, the number of regular students at Can Tho University was 4,490 divided among the three campuses. The table 3-3-2-3 provides a detailed accounting, but due to the lack of a fixed enrollment system in Viet Nam, there is a wide range in the number of students that enroll in specialty courses each year. In 1992, a great number of students enrolled in the Department of Food Technology, Department of English Literature, Department of Electronic Information and Department of Economics because of the job opportunities open to graduates in these fields.

Although the Department of Agronomy plays an important role in the development of the Mekong Delta region, the difficulties in finding employment since *doi moi* has caused the number of applicants to drop. According to figures from the Ministry of Education and Training, amongst a total of 1,500 applicants for admission in September of 1993, there were 210 who entered the Faculty of Agricultural Sciences (Department of Agronomy, Department of Animal Husbandry and Veterinary Medicine, Department of Food Technology, Department of Fisheries).

Apart from these programs, in the five provinces that make up the Mekong Delta region, eight In-Service-Training-Colleges have been established with approximately 2000 students receiving technical training necessary for the region. Can Tho University cooperates with these institutions in the development of curriculum and educational materials, the dispatch of teachers and the opening of laboratory facilities to these students during the summer holidays.

From 1993, these centers changed their names to Continuous Education Centers (CEC). The relationship with Can Tho University has also been strengthened, with the possibility of entering a specialist course offered at the university for those who have finished the basic two-year course. This program is very popular because the participants are able to study while working. The number of students involved has risen from 300 in 1992 to 1,401 in 1993.

Table 3-3-2-3. Number of Regular Student at Can Tho University (1992-93)

(Unit : Students)

Departments (Courses)	1st	2nd	3rd	4th	5th	6th	Total
Agricultural Sciences	(676)	(294)	(358)	(353)	(249)		(1,930)
1. Agronomy	12	17	21	14	22		86
2. Animal H. & Vet. Medicine	50	37	37	45	27		196
3. F. Sciences & Technology	112	54	43	30	45		284
4. Fisheries	Aquaculture	54	24	30	33	48	189
	Fisheries				38	32	70
5. Agri. Engineering	51	39	42	34	45		211
6. Agri. Civil Eng.	Irr. & Drainage	0	31	13	23	12	79
	Hydraulic Eng.	25	0	59	20	18	122
7. Agri. Economics	372	92	113	116			693
Education	(405)	(331)	(341)	(302)			(1,379)
1. Math & Physics	Mathematics	47	34	81	45		207
	Physics	27	25	44	36		132
2. Chem. & Biology	Chemistry	33	55	45	37		170
	Biology	32	20	23	13		88
3. Hist & Geography	History	28	27	16	30		101
	Geography	0	30	20	24		74
4. Foreign Language	English	163	58	54	49		324
	French	20	15	0	15		50
	Russian	13	13	0	7		33
5. Letters	42	54	58	46			200
Medicine	(93)	(141)	(127)	(83)	(131)	(112)	(687)
Medicine	93	141	127	83	131	112	687
Elec. & Informatics	366	128					494
Total	1,540	894	826	738	380	112	4,490

() shows number of Sub Total

Source : CU data

Table 3-3-2-4. Number of Student Enrollment (1993 - 94)

(Unit : Person)

	Subjects of Exam.	Scholarship Students	Private Students	Total
I. Educations				
1. Mathematics	A	28	32	60
2. Physics	A	24	26	50
3. Chemistry	A, B	28	32	60
4. Biology	B	14	16	30
5. Languages	C	30	35	65
6. History	C	24	26	50
7. Geography	A, B, C	24	26	50
8. English	D	30	57	87
9. Russian-English	D	5	3	8
10. French-English	D	13	17	30
		(220)	(270)	(490)
II. Medicine	B	30	120	150
III. Sciences				
1. Agricultural Engineering	A	60	120	180
2. Electronics & Informatics	A	50	180	230
3. Economics	A	60	180	240
4. Agricultural Sciences	B	80	130	210
		(250)	(610)	(860)
Total	-	500	1,000	1,500

Source : CU data

A : Mathematics, Chemistry, Physics

C : Literatures, History, Geography

B : Mathematics, Chemistry, Biology

D : Languages, Mathematics, Literatures

(3) Teaching Staff

The university teaching staff consists of 826 people, with 584 instructors and 126 teaching assistants. There are 116 staff in the section of Administration. In addition, there are two full professors and seven associate professors. In regards to academic qualifications, 12 staff members hold doctorates, 34 hold masters degrees and about 92% of the teachers have undergraduate degrees. The university staff is young, with 42% aged under 35. The majority of these are graduates of Can Tho University. A comparison with Hanoi Agricultural University reveals significant differences. Hanoi Agricultural University has 1,650 students, with 46 full and associate professors as well as 112 Ph.D. holders.

The youth of the university staff and the lack of high-level professors are important issues involving the quality of education which need to be addressed. The following improvement measures will be taken:

- 1) Establishment of an accelerated study course as of September 1994 to educate staff holding master degrees.
- 2) Establishment of study-abroad programs to enable students to engage in short term study overseas or to pursue graduate degrees in foreign institutions.
- 3) To make efforts at technological improvement by exchanging researchers through research projects with foreign organizations.

By following the above policies, the plan is to raise the number of staff with masters degrees or higher to 30% by the year 2000.

Table 3-3-2-5. Staff Allocation in Can Tho University (1992-93)

(Unit : Persons)

	Teaching Staff						Non Teaching Staff			Total
	Prof	A.Prof	Dr.	M.A	Ins.	S.Total	Asst.	Admi.	S.Total	
1. Agri. Sciences	2	6	8	28	179	223 (83)	64 (37)	14 (5)	78 (42)	301 (125)
2. Education	0	1	4	6	218	229 (76)	18 (2)	14 (7)	32 (9)	261 (85)
3. Medicine	0	0	0	0	101	101 (77)	37 (37)	2 (0)	39 (37)	140 (114)
4. Special 1)	0	0	0	0	28	28 (7)	0 (0)	1 (0)	1 (0)	29 (7)
5. Scientific Res. Centre	0	0	0	0	3	3 (1)	7 (8)	10 (2)	17 (10)	20 (11)
6. Supporting	-	-	-	-	-	-	-	75(75)	75 (75)	75 (75)
Total	2	7	12	34	529	584(244)	126 (84)	116(5)	242(173)	826 (417)

1) Marxism, Leninism, Sports, etc.

Source : CU data

2) () shows number of staff ages under 35

(4) Educational Content

Since 1989, the educational curriculum of Can Tho University has been divided into a two-year basic education course and the specialized curriculum that follows. In some of the specialized courses, basics continue to be taught in the second year. However, since there is no division of general education, the Faculty of Education is responsible for administering the core curriculum to students in all departments. Therefore, for example, in the field of biochemistry, the same course that is offered to the 33 students who major in biochemistry, is offered to the other 1,500 students in the school as an introduction to chemistry, fulfilling a core curriculum requirement.

Persons wishing to enter the university must take an entrance examination, choosing from entrance tests A-D, depending on the division they wish to enter. The Faculty of Agricultural Sciences uses category B which covers mathematics, chemistry and biology as shown in table 3-3-2-4. Ten percent of those taking the entrance test are admitted, with a 10% drop-out rate on advanced tests in the specialized courses and a 10% failure rate on the graduation examination.

Table 3-3-2-5. Number of Dropout from Faculty of Agri. Sciences (1976 - 87)

(Unit : Students)

	Freshmen	Graduates	Dropout	Graduate Ratio
Agronomy	1,406	1,199	207	14.7%
Animal Hus. Vet. Medicine	1,056	937	119	11.3%
Food Sciences & Technology	356	289	67	18.8%
Agri. Civil Engineering	602	505	97	16.1%
In-Service Training	5,368	4,511	857	16.0%

Average : 15.4%

Source : CU data

The limit for years taken to complete the curriculum varies depending on the course. It must be completed within three years for the Faculty of Education and four and a half years (nine semesters) for the Faculty of Agricultural Sciences. The courses for the Dept. of Animal Husbandry and Veterinary

Medicine and Dept. of Agricultural Machinery must be completed within five years (10 semesters) and the Faculty of Medicine has a limit of 6 years or 12 semesters. The basic education curriculum requires 35 course credits for completion, while the specialized courses require between 35 and 40 course credits. The ratio between lecture time and practical applications is 8:2 in the basic education course and 7:3 in specialized fields. The education is largely lecture-based. The recommended ratio of 6:4 is not realized until the master degree course (established in 1993).

The low ratio of practical course work is due mainly to an overwhelming shortage of experimental facilities and the use of a socialist system which emphasizes theoretical discourse. Due to a lack of experiment devices, attempts to do practical experimentation cannot extend beyond very basic levels. In the Dept. of Food Sciences and Technology, the gap between studies at the university and practices at the actual production site becomes apparent as students engage in training programs at these factories.

Table 3-3-2-6. Ratio of Lecture / Lab. Work on Related Departments

(Unit : hours)

Department	Course	Lecture	Lab. Work	Total	Ratio
Agronomy (4.5 years)	General	1,490	355	1,845	8 : 2
	Specialized	1,500	240	1,740	9 : 1
	Master	1,020	940	1,960	5 : 5
Animal Hus Vet. Medicine (5 years)	General	1,585	350	1,939	8 : 2
	Specialized	1,749	475	2,224	8 : 2
	Master	620	385	1,005	6 : 4
		695	305	1,000	7 : 3
Food Sciences & Technology (4.5 years)	General	1,530	390	1,920	8 : 2
	Specialized	1,384	615	1,999	7 : 3
	Master				

Source : CU data

(5) Operating Finance

The central government budget for educational institutions is very low, causing these schools to supplement their operating expenses through independent income or financial assistance from local and foreign sources. The source of funds required for operating the universities are therefore quite varied. As shown in the table 3-3-2-7, four major sources account for Can Tho University's funding of a total budget which in 1992 was 16.2 billion dong (162 million Japanese yen).

According to detailed accounts, the money allocated annually by the Ministry of Education and Training to administrate the university is 6.9 million dong (60 million yen), accounting for 43% of the total operating costs of the school. A special budget was made available by the Ministry of Finance to cover expenses for approved construction projects and this accounted for six percent of the total budget. Independent income was raised by the university in the form of enrollment fees, business operations and guest house income. This income was 21% of the total earnings of the university, about 3.3 billion dong (33 million yen). Furthermore, foreign assistance acquired through joint research reached 8.2 billion dong or 49% of the total earnings of the school, much of it in the form of machinery and materials and assistance income.

Both the budget allotment from the central government as well as the university operating budget are rising each year. In 1993, the latter increased 40% to 9.665 billion dong. However 45% of this is earmarked for divisional education expenses, with 33% going to salaries and 32% to water, electricity and gas expenses. Other expenditures are seriously limited by these two factors which total 65% of the budget.

Research expenses are divided between the 13 faculties. The total is 335 million dong or four percent of the budget. This comes to only about 100,000 yen per faculty per year. For this reason, it is extremely difficult to buy the equipment and test drugs necessary for educational research.

Facility caretaking, maintenance, restoration and expansion are covered by the maintenance budget, nine percent of the total, and the equipment purchasing budget, seven percent of the total, accounting for a total of 1.55 billion dong. There is expected to be difficulty this year in the maintenance

Table 3-3-2-7. Annual Budget in Can Tho University (1988-93)

A. General Budget from MOET

(Unit: 1,000VND)

	1988	1989	1990	1991	1992	1993
Under Graduate programs	240,482	1,370,048	2,520,000	3,845,000	6,428,700	9,154,000
Scientific Research	4,681	9,502	20,000	60,000	125,000	335,000
Graduate Programs	0	1,012	8,000	3,500	134,200	136,000
Cambodian Student Program	0	9,841	10,956	22,570	32,950	40,000
Extra Budget for Under G. Programs	0	73,537	182,703	302,000	208,677	N.A.
Sub-Total (1)	245,163	1,463,940	2,741,659	4,233,070	6,929,527	9,665,000

B. Capital Budget from MOET

(Unit: 1,000VND)

	1988	1989	1990	1991	1992	1993
Construction	176,000	527,400	771,339	717,000	950,000	1,270,000
Equipment	15,000	46,600	50,000	60,000	0	100,000
Other Expenses	9,000	16,000	20,661	30,000	50,000	30,000
Sub-Total (2)	200,000	590,000	842,000	807,000	1,000,000	1,400,000
Total (1)+(2)	445,163	2,053,940	3,583,659	5,040,070	7,929,527	11,065,000

C. Benefits by University

(Unit: 1,000VND)

	1988	1989	1990	1991	1992	1993
Tuition Fee	239,265	769,272	1,280,000	1,840,305	1,683,164	NA
Production Benefit to University	35,186	91,000	110,000	342,562	188,396	NA
Production Benefit to Faculties	92,499	193,583	410,856	403,727	784,985	NA
Other Receipts	38,252	123,880	206,096	304,382	504,302	NA
Guest House Services (\$)	0 (\$8,950)	38,485 (\$9,318)	93,180 (\$13,139)	157,668 (\$18,231)	181,310 (\$49,638)	NA
Sub-Total (3)	405,202	1,216,220	2,100,132	3,053,644	3,342,157	NA

D. Benefits by International Cooperations

(Unit: 1,000VND)

	1988	1989	1990	1991	1992	1993
Equipment (\$)	44,249 \$49,214	291,260 \$67,735	2,346,040 \$234,604	2,931,252 \$244,271	3,969,590 \$396,959	NA
Cash (\$)	40,300 \$44,778	270,900 \$63,000	700,000 \$70,000	852,000 \$71,000	911,980 \$91,198	NA
Sub-Total (4)	84,594 \$93,992	562,160 \$130,735	3,046,040 \$304,604	3,783,252 \$315,271	4,881,570 \$488,157	NA
Total (3)+(4)	489,796	1,778,380	5,146,172	6,836,896	8,223,727	NA

Source: CU data

and upkeep of the 850,000 square meter campus and the 40,000 square meter floor space of the university's buildings with this year's budget.

The money needed for personnel salaries increased 14.8% to 2 billion dong over last years figures. This allots an average income of 21,600 yen per year for each of the university's 826 employees, making their living conditions extremely difficult.

As mentioned above, the independent income raised by the university fills some of the needs of the budget. University regulations fix the amount of this supplementary income that is passed on to employees. Twenty percent of the profits made through the research of any department or affiliated facility must be returned to the university, while 80% will be reinvested in the expansion of facilities or research budget of the department that produced them.

In order to supplement the limited budget that the government has set for education, there is a need to emphasize policies that allow universities to raise independent income. Many plans are now under consideration. In addition to the tuition fees raised from two-thirds of the student body, the establishment of language and training courses and the development of profit seeking research and production plants are planned. On university land, investment in the joint management of the Meko poultry company and a construction company has also taken place. However, profits have yet to be seen.

In order for the quality and scale of the education offered by Can Tho University to improve, an increase in support from the Ministry of Education and Training, independent supplementary income and foreign financial assistance will all be necessary.

3-3-3. Activities of the Three Departments

The condition of each faculty varies widely depending on the number of students and instructors and the facilities, equipment and materials in use.

- (1) The Department of Agronomy was established in 1968 and has the longest history of the three departments in the Faculty of Agricultural Sciences. It produced 1,560 graduates from its inception until 1991. (In 1992, the Faculty of Agriculture switched to a four and half year system. For this reason there were no graduates in 1992). The majority of the school's graduates are actively involved in agriculture throughout the Mekong Delta. The number of students in the school has decreased annually since the unification of north and south Vietnam, dropping from 280 in 1976 to only 12 in 1992.

There are 13 instructors in the school with academic qualifications above the master degree level. This gives the department a unique position at Can Tho university, where there are few academics. Research in the fields of plant disease prevention and plant breeding are firmly established because of the technical cooperation that took place between Japan and South Vietnam in the five-year period before unification. However, facilities and equipment have deteriorated and research based on collection and observation has become more common than basic research.

Activity in the extension of research findings takes place at 11 extension centers situated throughout the Mekong Delta region. Graduates of the agriculture course serve as instructors providing guidance to the local farmers. Particular attention is paid to the spread of Integrated Pest Management (IPM) through FAO.

Some equipment and materials have been supplied to the Soil Science course through joint research with Wageningen University of the Netherlands. With this, research on the oxidized soil of the Mekong Delta is actively being pursued. It has been judged that research methodology might take root in Viet Nam through the research methods and technological transfers that accompany joint research and the supply of facilities, equipment and materials.

- (2) The Department of Animal Husbandry and Veterinary Medicine was established in 1971 and has turned out 1,022 graduates. The number of students entering the school had shown a downward trend, but in the last ten years it has been about average in comparison with three courses in the faculty. There are presently 196 students enrolled in the faculty.

Seven of the 40 instructors in the department maintain an academic standing at or above master degree level and the majority of the instructors have bachelor degrees. With the enrollment rising, there is a need to raise the standard of the instructors.

Research themes are varied in this faculty, including physiology, genetics, nutrition and infectious disease research. However, because of deteriorating facilities and outdated instruments, satisfactory research results are not being obtained. Expectations based on this plan to expand research capabilities are high.

- (3) Established in 1971, the Department of Food Sciences and Technology has turned out 289 graduates. At the time of establishment, enrollment hovered at around 50 students, but in 1992 it rose sharply to 112. The enrollment figures are predicted to grow as job prospects for graduates become more favorable.

However, of the three, the department is in greatest demand, with educational equipment being extremely limited. The curriculum consists of a large percentage of practical experimentation and research, but because of a lack of laboratories, much of this has been switched to lecture courses held in communal classrooms. There are training programs that take place in food processing plants of Ho Chi Minh City, but with the rapid advance in factory technology, there has been a hollowing out of the education offered by the university.

Among 21 instructors, there are only two that hold masters degrees. In addition there is one instructor pursuing a doctorate and two pursuing master degrees in foreign universities. Two other instructors are presently in training programs overseas. With the completion of these facilities, it is forecasted that there will be five instructors who have at least a master degree level education. Sixteen of the present instructors are graduates of