


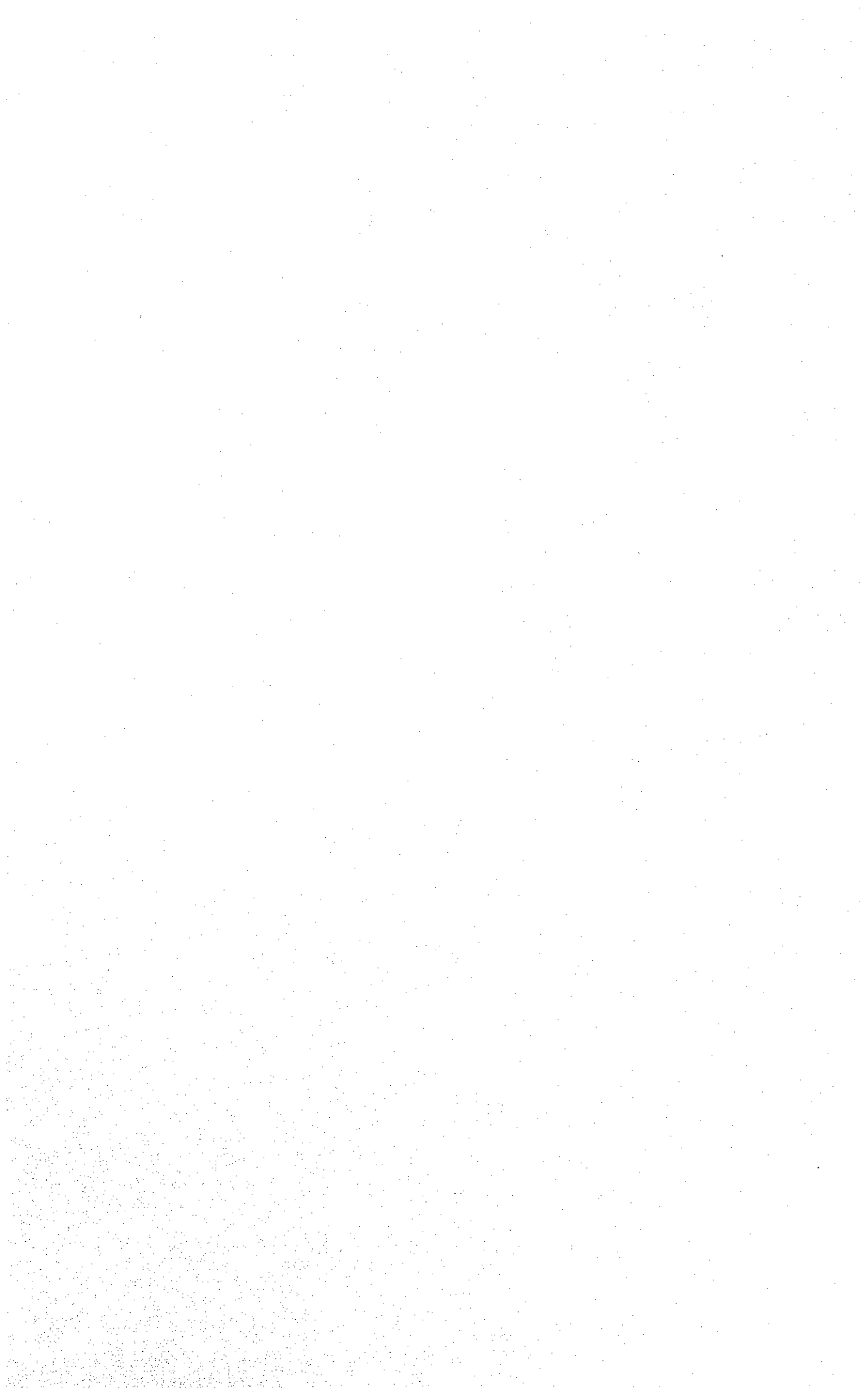
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**BASIC DESIGN STUDY REPORT
ON
THE CONSTRUCTION PROJECT
FOR
THE AGRICULTURAL
REGIONAL COOPERATIVE TRAINING CENTER
IN
THE KINGDOM OF THAILAND**

DECEMBER, 1984

JAPAN INTERNATIONAL COOPERATION AGENCY

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84-105



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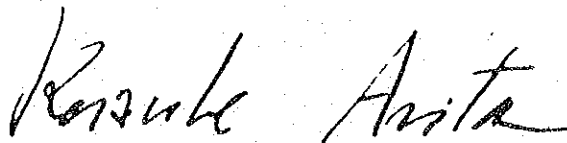
PREFACE

In response to the request of the Government of the Kingdom of Thailand, the Government of Japan decided to conduct a Basic Design Study on the Construction Project for the Agricultural Regional Cooperative Training Center and entrusted the study to the Japan International Cooperation Agency (JICA). JICA sent to Thailand a study team headed by Mr. Yoshiyuki INOUE, Deputy Director, Department of Agricultural Cooperatives, Bureau of Agricultural Economics, Ministry of Agriculture, Forestry and Fisheries from September 2 to 18, 1984. The team had discussions with the officials concerned of the Government of Thailand and conducted a field survey in Nakorn Ratchasima. After the team returned to Japan, further studies were made and the present Report has been prepared.

I hope that this Report will serve for the development of the Project and contribute to the promotion of friendly relations between our two countries.

I wish to express my deep appreciation to the officials concerned of the Government of the Kingdom of Thailand for their close cooperation extended to team.

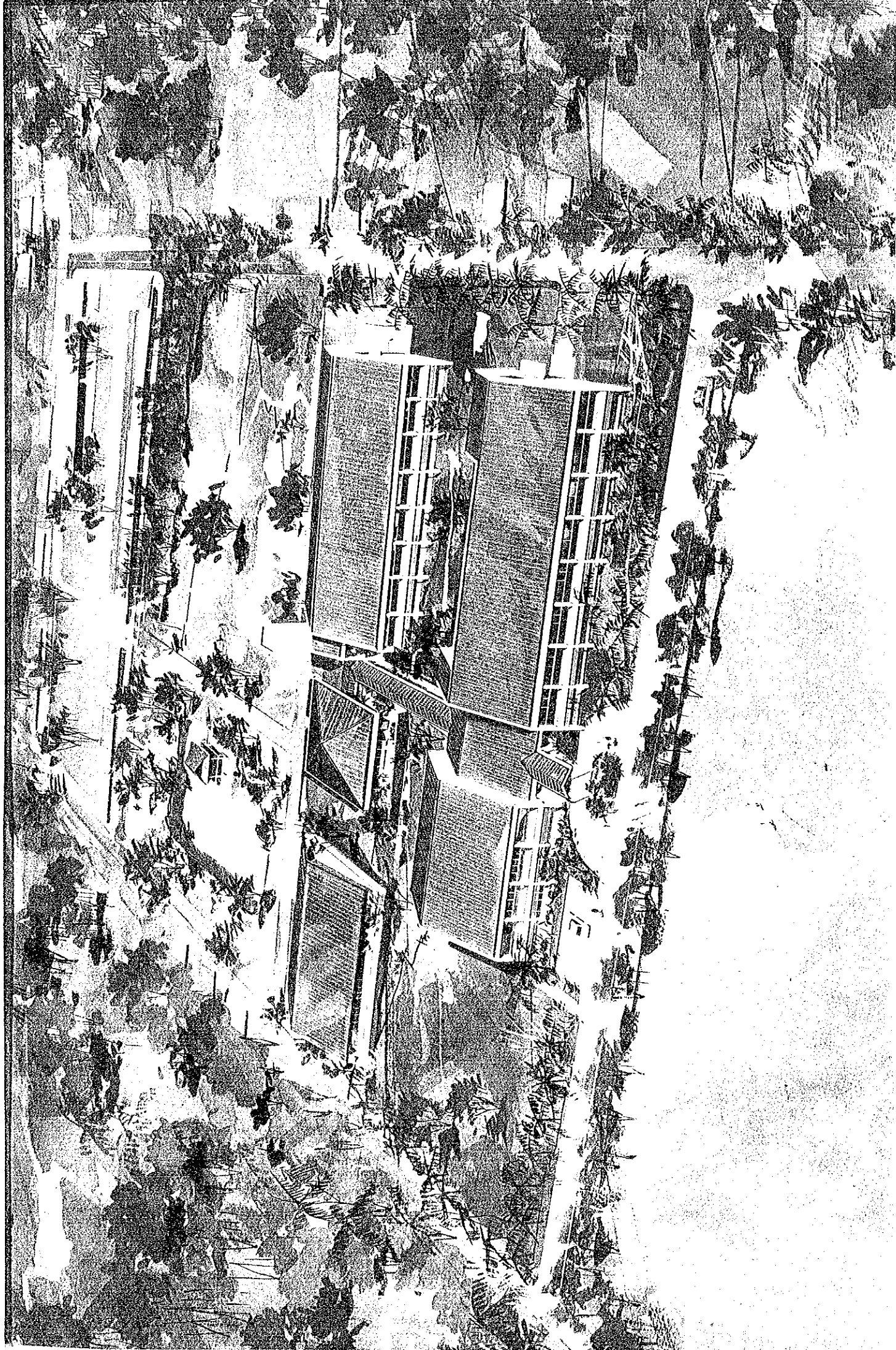
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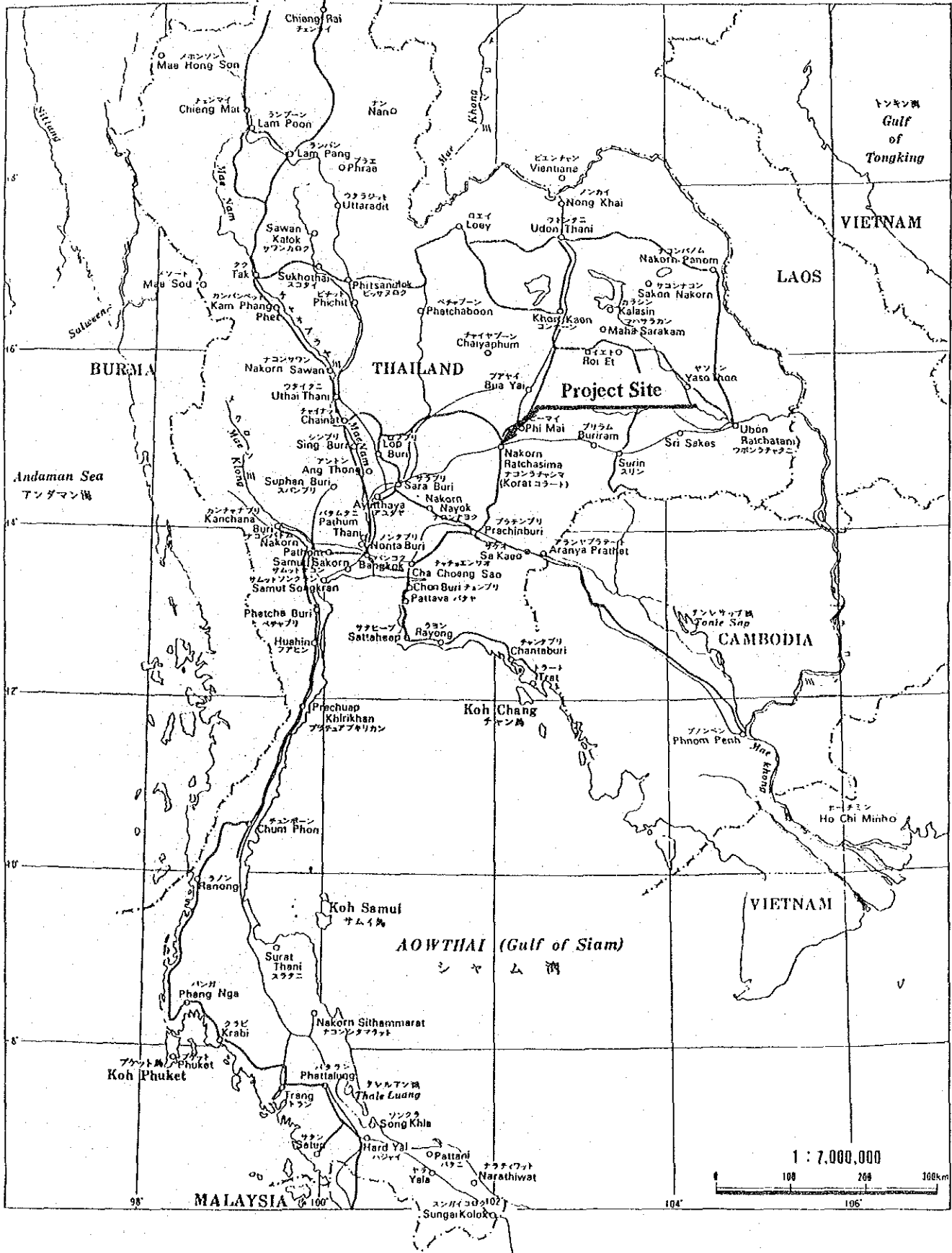
Keisuke ARITA

President

Japan International Cooperation Agency



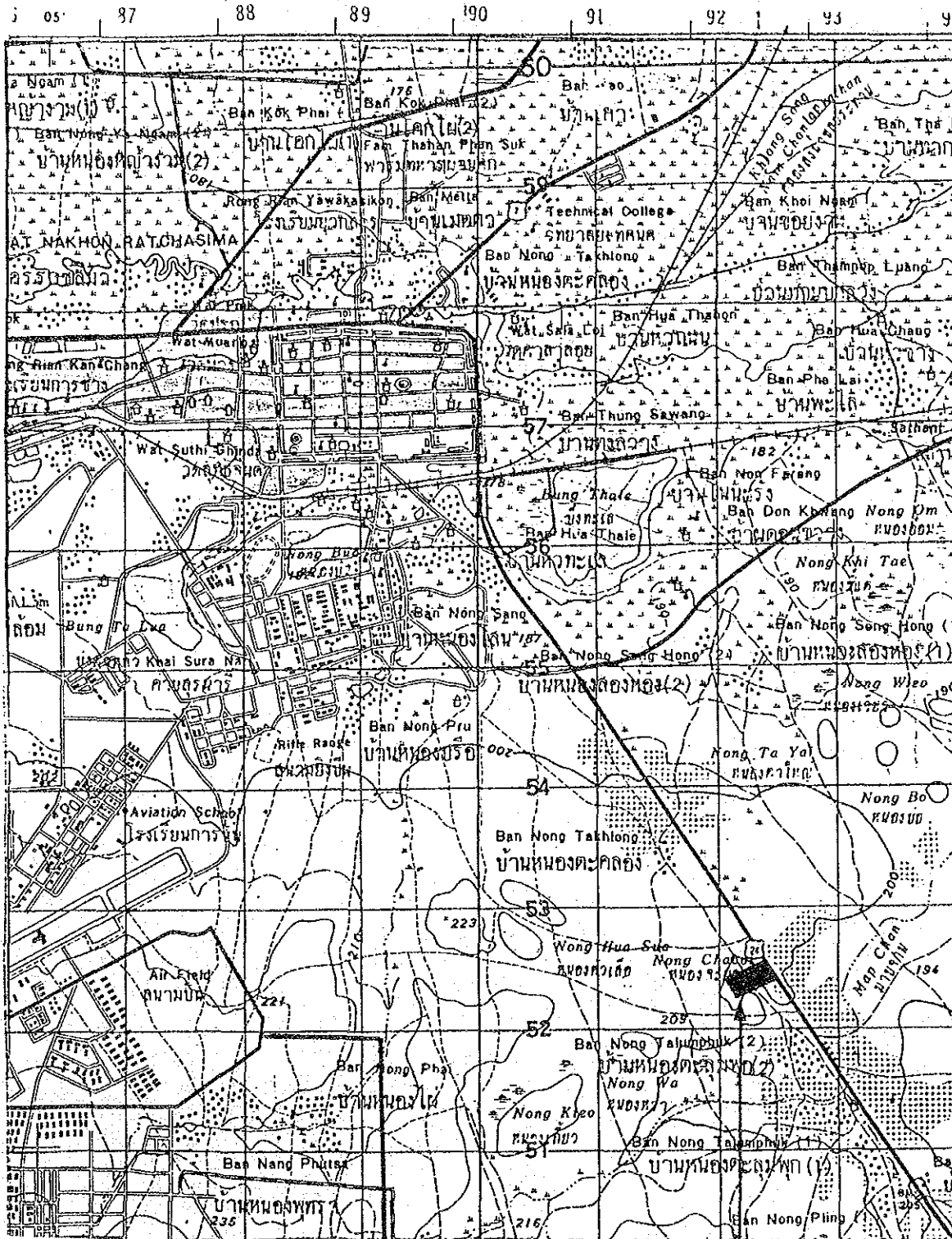
Map of Thailand



Location Map

Nakhon Ratchasima

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Project Site

SUMMARY

The economy and society of the Kingdom of Thailand are founded on agriculture as the base industry. Starting in the 1960's the Government promoted an industrialization policy in an attempt to achieve high economic growth, and recently faced various problems as byproducts of the high growth, including regional inequity in economic and social terms between the urban and agricultural areas, and deterioration of forest resources due to the rapid expansion of agricultural land.

The government of Thailand shifted from the "High Growth" to the "Stable Growth" policy to correct these conditions, and established the eradication of poverty in rural regions and the structural improvement of agriculture and industry as the major policies in its Fifth Five Year National Economic and Social Development Plan.

Since agricultural cooperatives were first founded in 1916, the Government has provided various types of assistance to foster and organize agricultural cooperatives as the basic unit of the agricultural policy, which has had a gradual effect so far. Cooperative their activities and the participation rate of farmers remains low. At the same time, the government of Thailand has requested assistance from foreign governments and organizations to strengthen and foster the organization of cooperatives.

The Government of Japan received a request for assistance in formulating a development plan for agricultural cooperative organizations, followed by a request for technical assistance and a Grant Aid for implementing the plan.

This project aimed at, according to the request, the construction of a Regional Cooperative Training Center for developing and fostering agricultural cooperatives which will serve as the basis of agricultural and village development and farmers' welfare in eight provinces of the Northeast, which is recognized as the poorest region in Thailand.

The center, upon completion, will provide training for the government staff of the Cooperatives Promotion Department (CPD), agricultural cooperative staff and members at the rate of 6,000 - 7,000 persons annually, and is expected to help vitalize and organize the agricultural cooperatives which have had a low participation rate and a poor record of activities, and thereby improve farmers' bargaining power and to accelerate the modernization of agricultural technology.

The proposed site for the Center is located in the suburb of Nakhon Ratchasima, a gateway to the Northeast of Thailand, which is 256 Km. away from Bangkok. The land of the site is flat, approximately 1 ha. and reserved within CPD's Regional Engineering Center (REC) site which is approximately 8 ha. As for the infrastructure, the site has easy access to electricity and telephone as some existing facilities are there, but well drilling is needed for water supply. Site clearance work, i.e. relocation of the existing REC office and trees, is also needed.

The Center will consist of an administration and classroom building (office, conference rooms, classrooms and library), an auditorium, a dormitory, a canteen and a workshop. Major equipment will be included for audio-visuals, teaching, agricultural machine training and mobile unit training.

These facilities, which will be mainly structured with reinforced concrete and a steel frame roof, will have the approximate total floor area of 4,160 square meters including the covered way and hall.

The construction schedule for the Center is estimated to be 3.5 months for final design work, 2.5 months for the tender and contract procedure, and 9 months for construction after the Exchange of Notes is concluded by both governments for the Grant Aid extended by the government of Japan.

The responsible party in planning and implementing the project on the Thai side is the CPD of the Ministry of Agriculture and Cooperatives.

The Center will be operated, maintained and managed by 50 staff consisting of instructors and administrative staff under the supervision of CPD, supported with the instruction and cooperation of six technical experts from Japan for the promotion of the cooperative movement. Operating and maintenance costs for the Center are estimated to be 2,845,000 baht per year.

The Agricultural Cooperative Training Center Project is intended to develop and foster agricultural cooperatives which are expected to play an important part in improving the agricultural structure, which is a major social and economic policy in Thailand. It is therefore very meaningful and beneficial that the project be implemented with Grant Aid and technical assistance from the government of Japan.

For the smooth operation of the Center, allocation of the adequate budget by the Thai government is essential. Also for the efficient usage of the Center, a training schedule suitable to the facilities, the recruitment of full time teaching staff, and development of training materials are important.

CONTENTS

	<u>Page</u>
SUMMARY	i
CHAPTER 1 INTRODUCTION	1
CHAPTER 2 BACKGROUND OF PROJECT	3
2-1 Present State of Thai Agriculture and Its Problems	3
2-2 The Fifth National Economic and Social Development Plan..	14
2-3 Present State of Agricultural Cooperatives	18
2-4 Promotion of Agricultural Cooperatives	27
CHAPTER 3 BASIC SCHEME FOR PROJECT	35
3-1 Objectives of the Project	35
3-2 Functions of Regional Training Center	35
3-3 Target of Training	37
3-4 Training Courses	38
3-5 Trainers	39
3-6 Training Courses	40
3-7 Training Schedule	41
3-8 Organization and Staff Distribution at the Center.....	43
3-9 Necessary Facilities	44
3-10 Technical Cooperation	46
CHAPTER 4 GENERAL DESCRIPTION OF PROPOSED SITE	49
4-1 Proposed Site	49
4-2 General Description of the Site	49
4-3 Natural Conditions	50
4-4 Infrastructure Situation	50
4-5 Construction Conditions	52

	<u>Page</u>
CHAPTER 5 BASIC DESIGN	53
5-1 Design Policy	53
5-2 Site Plan	54
5-3 Layout Plan	55
5-4 Architectural Design	58
5-5 Structural Design	63
5-6 Mechanical and Plumbing Design	65
5-7 Electrical Design	67
5-8 Main Building Materials Plan	70
5-9 Equipment	72
5-10 Furniture	74
5-11 Basic Design Drawing	75
 CHAPTER 6 ORGANIZATION FOR PROJECT IMPLEMENTATION	 83
6-1 Executive Body	83
6-2 Construction Plan	83
6-3 Scope of Work	85
6-4 Implementation Schedule	86
6-5 Operation and Maintenance Plan	87
6-6 Procurement	90
 CHAPTER 7 PROJECT EVALUATION	 91
 CHAPTER 8 CONCLUSION AND RECOMMENDATIONS	 93
 APPENDIX	
I Basic Design Survey	A-1
II Confirmation of Basic Design	A-9
III Other Information	A-13

CHAPTER 1

INTRODUCTION

CHAPTER 1 INTRODUCTION

The economy of the Kingdom of Thailand was built on the foundation of an agricultural structure based on rice production which endured until the 2nd World War. Since 1960, the diversification of agriculture and industrial development have had considerable success.

Industrialization increased with the National Economic and Social Development Five Year Plans (NESDP), effected 4 times since 1961, and high growth and increased exports and employment have been realized. On the other hand, regional inequity in economic and social terms between the Bangkok metropolitan area and other agricultural areas and deterioration of forest resources due to the rapid expansion of agricultural area, among other things, have resulted.

The Government of Thailand shifted its policy from "High Growth" to "Stable Growth" so as to resolve these problems. The Fifth Five Year Plan, which started in 1981, offered a solution to poverty in rural areas and the structural improvement of agriculture and industry.

Among the policies, reorganization of the agricultural structure by means of agricultural cooperative activity is emphasized, and the government of Thailand requested the government of Japan for technical assistance in 1983. In response, the government of Japan dispatched a team to study the implementation of the Project-type Technical Cooperation for the Agricultural Cooperatives Promotion Project in June 1984, and have concluded the R/D to perform 5 years of Technical Cooperation on July 6 1984.

Together with the request for the above technical assistance, the government of Thailand has planned and asked for the Grant Aid from the government of Japan for the establishment of the Central Agricultural Cooperatives Training Center and Regional Training Center which aims to train executive members, full time staff and the regional staff of the agricultural cooperatives and Cooperative Promotion Department (CPD), who organize, administrate and manage the cooperatives.

By request, the government of Japan decided to implement the study of the Project, and sent, through Japan International Cooperation Agency (JICA), a basic design survey team for 17 days, from September 2, 1984 to September 18, 1984, for a feasibility study and investigation concerning the basic design for the project to establish an Agricultural Regional Cooperative Training Center (referred to as the "Center") in Nakhon Ratchasima in Northeast Thailand.

This basic design report includes the background, purposes and detail of the project evaluation prepared on the basis of discussion with the personnel in charge from the Government of Thailand and an analysis of materials obtained from the field survey.

CHAPTER 2

BACKGROUND OF PROJECT

CHAPTER 2 BACKGROUND OF PROJECT

2-1 Present State of Thai Agriculture and Its Problems

2-1-1 Present State of Thai Agriculture

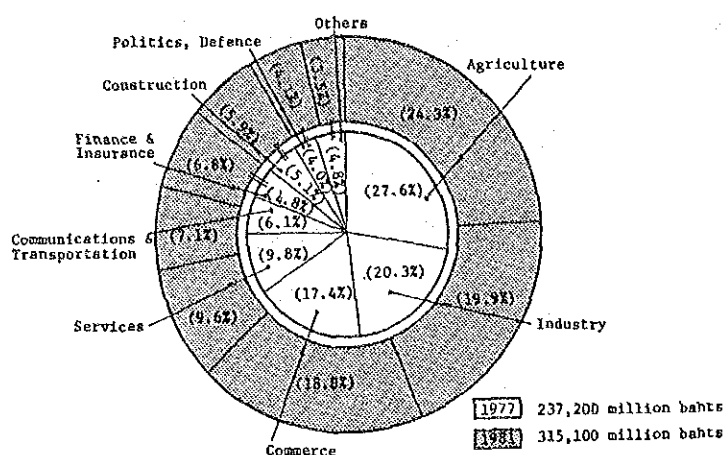
Agriculture, forestry and fishery in Thailand represented 24.2 % of the total Gross Domestic Products (GDP) and 71 % of the total employment in 1981, and so are positioned as the basic industries in the country.

In particular, rice exports represent 15-20 % of total exports, and is the largest export industry. Other agricultural products such as cassava, maize, sugar and rubber are major export commodities and constitute the largest source of income supporting the economy of Thailand. Agriculture, forestry and fishery products represent 49 % of the total export value, and exceed 60 % when agricultural processed goods such as sugar, canned pineapples, etc. are included.

Agricultural production is generally not yet mechanized, still using manual or cattle power, with a relatively small area of operation. However, a favorable environment of high temperatures and humidity together with cheap labor costs produce agricultural products having a strong competitive position in the world market. At the same time, agricultural product yield depends on the climate, and particularly, on rainfall. Also, since these products are international commodities traded in severe competition, export prices are affected by the supply in world markets. Altogether, agriculture is not a particularly stable industry.

Thailand is comprised of 514,000 square km. of land which is 1.4 times the amount in Japan, and since Thailand has less mountainous land than Japan, the amount of agricultural land is 36.6 %, higher than Japan by 14.4 %. Cultivated areas have increased by 78 %, from 10,560,000 ha. in 1961 to 18,820,000 ha. in 1980. Expansion of agricultural land at this rate has damaged the ecological balance, becoming a serious problem.

Figure 2-1 GDP & Its Composition Ratio



Source: Economic Outlook of Thailand 1982-1983.

Table 2-1 Export of Major Agricultural and Marine Products

(Unit: million bahts, %)

	1980		1981		81/80
	Amount	Ratio	Amount	Ratio	
Total Export Amount	133,197	100	153,115	100	15.0
I. Agricultural and Marine Products and Their Finished Products	74,466	55.9	92,469	60.4	24.2
1. Agricultural and Marine Products	64,812	48.7	79,944	49.0	15.6
1) Rice	19,508	14.7	26,355	17.2	35.1
2) Tapioka	14,887	11.2	16,428	10.7	10.4
3) Natural Rubber	12,351	9.3	10,533	6.9	-14.7
4) Meize	7,201	5.4	8,252	5.4	14.6
5) Frozen Shrimp	1,958	1.5	2,143	1.4	8.9
6) Others	8,907	6.6	11,244	7.3	26.2
2. Agricultural and Marine Finished Products	9,654	7.2	17,525	11.4	81.5
1) Sugar	2,975	2.2	9,572	6.3	221.7
2) Marine Canned Article	1,697	1.3	2,142	1.4	26.2
3) Canned Pineapple	1,432	1.1	2,038	1.3	-18.1
4) Others	3,550	2.6	3,773	2.4	6.3
II. Mineral	15,047	11.3	10,828	7.1	-28.0
III. Industrial Products	43,684	32.8	49,818	32.5	14.0

Source: Custom Statistics of Thailand. 1981 is quick report.

Table 2-2 Land Utilization Situation

1979			1978		
(1,000 ha)	Area	Ratio	(1,000 rai)	Area	Ratio
Total	51,400	100 %	Agricultural Land	116,441	100 %
Agricultural Land	17,950	34.9%	Rice Field	73,270	62.9%
Forest	16,330	31.8%	Orchard & Rubber Plantation	10,425	9.0%
Others	16,589	32.3%	Cultivated Land	23,759	20.4%
			Others	8,987	7.7%

Source: Production Yearbook, FAO 1980

Source: Agricultural Statistics of Thailand 1979/80

The number of agricultural households increased by 28 %, from 3,450,000 in 1961 to 4,410,000 in 1980, and the area of holdings per household increased from 3.1 ha. to 4.27 ha. during the same period.

Farm income per household (national average) increased from BT 9,600 in 1975 to BT 23,200 in 1980, but there is remarkable regional difference; average income in the Northeast is only 35 % of that in Central Thailand. This is due to the smaller amount of cultivable land and the very low rate of irrigation in the Northeast region. This situation is the cause of poverty in the rural region, requiring the government to make corrective measures.

2-1-2 Description of the Region

Thailand is divided into 73 provinces for administration purposes and also divided into 4 regions for the sake of convenience. This division, established by the Ministry of Interior is not only into agricultural regions but also into other administrative regions, namely "North", "Northeast", "Central" and "South", which are now usually referred to when describing the general conditions of the country.

At the same time, the Ministry of Agriculture and Cooperatives divides Thailand into zones taking into account various factors such as soil condition, precipitation, temperature, and the transportation network, to group together villages with similar problems, thereby making it easier to strengthen the structure of agricultural villages.

General background for the 4 regions are given as follows:

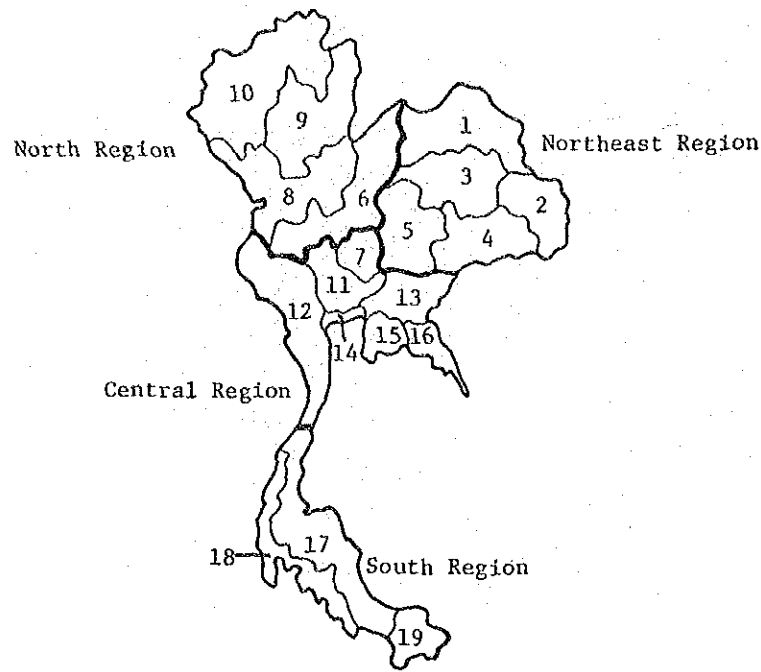


Figure 2-2 Map of Agro-Economic Zone of Thailand

Zone	Northeast Region	Zone	Central Region
1	Nakhon Phanom Sakon Nakhon Nong Khai Udon Thani Loei	11	Chai Nat Nakhon Nayok Nakhon Pathom Nonthaburi Pathum Thani
2	Yasothon Ubon Ratchathani		Ayutthaya Suphan Buri Singburi
3	Kalasin Khon Kaen Maha Sarakham Roi Et	12	Ang Thong Bangkok
4	Buri Ram Si Sa Ket Surin		Kanchanaburi Prachuap Khiri Khan Phetchaburi Ratchaburi
5	Chaiyaphum Nakhon Ratchasima	13	Chachoengsao Prachin Buri
6	Nakhon Sawan Phetchabun Uthai Thani	14	Samut Prakan Samut Sakhon Samut Songkhram
7	Lop Buri Sara Buri	15	Chon Buri Rayong
8	Kamphaeng Phet Tak Payao Phichit Phitsanulak	16	Chanthaburi Thrat
9	Nan Phrae Lampang Sukhothai Uttaradit Lampuri	17	Chumphon Nakhon Si Thammarat Phatthalung Songkhla Surat Thani
10	Chiengrai Chiengmai Mae Hong Son	18	Ranong Phanga Krabi Phuket Trang Satool
		19	Pathani Yala Narathiwat

NORTH THAILAND

The core city of the region is Chiang Mai, the third largest city in the country. The region has an inland climate, an annual mean temperature of 25 centigrade with an annual variation of 20 centigrade and annual rainfall of 1,300 mm. The region contains many mountainous areas and basins sporadically distributed along rivers, forming a complex topography. Rice, beans, peanuts, tobacco and cotton are produced in the region. Also, the low land in the northern part is one of the major maize producing areas. In recent years, fruits of temperate zones, such as oranges, pears, chestnuts and apples, as well as coffee, tea and stevia have been grown in the mountainous areas.

CENTRAL THAILAND

This region contains a plain extending over the delta of the Chao Phraya River, with fertile soil making it a major area of rice production. This region is irrigated at a relatively high rate, and maize, sugarcane and cassava are also grown in the region.

SOUTH THAILAND

This region forms part of the Malay Peninsula, with Hard Yai and Song Khra as the core cities. It has as much rainfall as 2,200 mm. annually, with a mean temperature of 27.4 centigrade. In this climate, rubber, rice, fruit, cocoa, coconut, coffee and palm trees are widely grown.

NORTHEAST THAILAND

Containing the core city, Khon Kaen, this region has an area of 170,218 square km. which corresponds to 33 % of Thailand's total land area. Nakhon Ratchasima is its gateway and is located on the Korat Plateau. This plateau descends toward the Mekong River flowing along the borders of Laos and Cambodia. The Mun and Chie rivers flow through the plateau and carry fertile soil to the Mekong River, leaving laterite soil which is not suitable for crop production.

Table 2-3 Classification and Features of Agricultural Areas in Thailand

Agricultural areas or districts	Area (in thousand km ²)		Population as of 1970 census (in thousand persons)	Geography & Vegetation		Classification by rice cropping		
	Old classification	New classification		Geography	Vegetation	1st classification (Kinds of rice)	2nd classification (Farming)	3rd classification (Commercialization)
I. Central area	184.2 <33.9>	(117.8) <22.9>	14,288 <41.5> (10,512)	Generally flat	Monsoon arid forest	Ordinary rice	Single crop Broadcast sowing: 44%	
① Central		(34.3)	(5,540)	Menam delta (up to 5 m above sea level)	Tropical rain forest Montane tropical rain forest Plain monsoon arid forest			Marketing of ordinary rice Marketing of ordinary rice, dry field crops and fruit Self-supply of rice and marketing of dry field crops
② East		(37.4)	(2,374)					
③ West		(46.1)	(2,694)					
④ Upper Menam		(666.6)	(3,676)	Flat land along the middle courses of River Menam (Up to 20 m above sea level)	Monsoon arid forest			Marketing of rice and dry field crops
II North	89.5 <17.4>	156.1 <30.4>	3,812 <11.1>	Montane zone (312 m above sea level at Chiang Mai)	Monsoon arid forest	Glutinous rice 90%	Double-cropping Broadcast sowing 0%	Self-supply of rice, marketing of tobacco, high-value vegetables and fruit
III North East area	170.0 <33.0>	170.0	12,025 <34.9>	Flat semi-highland (65% of the area is at the altitude of 100 - 200 m)	Monsoon arid forest, with scattered savanna	Glutinous rice 70%	Extensive farming Broadcast sowing 5%	Self-supply of rice, marketing of dry field crops and livestock
IV. South area	70.2 <13.7>	70.2	4,271 <12.4>	Montane zone and small plain along the seashore	Tropical rain forest	Ordinary rice	More area is occupied by three crops Broadcast sowing 40%	Rice is somewhat insufficient Marketing of rubber and fruit
	514.0		34,397			Glutinous rice 35%		

Note: Figures according to new classification in (), percentage of the national total in < > .

Source: JICA Thailand and Her Agriculture

The region has a continental climate, being surrounded by mountains on all sides, and is distant from the ocean. Annual rainfall has been decreasing since 1976, from 988 mm. in 1976 and 884 mm. in 1977 to 643 mm. in 1978, causing recurrent droughts. The annual mean temperature was 27.8 centigrade in 1979, with a large variation between 42.7 centigrade and 12.9 centigrade.

The soil is mainly red and sandy, and contains rock salt, sometimes bringing salt to the ground surface.

The region had a population of 15,621,248 (registered with the Ministry of Interior) as of December 31, 1981, representing approximately 33 % of the total population of 47,875,002.

The region contains 16 of the 73 provinces in Thailand as a whole. Khon Kaen is the center of public administration, education and culture in the region, and Nakhon Ratchasima (Korat) serves as a gateway to the region and is the second largest city after Bangkok.

In this region, agricultural households constitute around 80 % of the total, above the proportion in other regions, indicating a relatively high degree of dependency on agricultural activities. The region produces around 15 % of the total GDP, while having 33 % of the total population. Accordingly, GDP per capita in the region is less than a half of the national average, making it the poorest region in the country; national income per capita in the region is only 13.4 if that in the metropolitan area (Bangkok and Thonburi district) is set at 100.

Rice producing areas represented 85 % of the total cultivated area in the early 1960's, and have decreased to around 70 % (estimate) at present, due to the rapid increase of cash crops, such as maize and cassava, in the limited cultivatable areas where rice production is not possible.

Table 2-4 Regional Income per Person (1980 Nominal)

Region	Total (Million Baths)	Per Person		Ratio
		(Baths)	(U.S.\$)	
Metropolitan Area	223,713	43,423	2,121	100.0
East	84,409	25,130	1,227	57.9
West	61,628	19,199	938	44.2
Central	45,895	15,935	778	36.7
South	81,647	14,190	693	32.1
North	92,235	9,541	466	22.0
Northeast	95,403	5,806	284	13.4
Total	684,930	14,475	707	33.3

Source: NESDB (Gross Regional and Provincial Product 1980)

Table 2-5 Production Comparison of Single Cropping
Nonglutinous Rice and Glutinous Rice

(Unit: 1,000 ton)

Type of Rice	Total	Non Glutinous	Glutinous
Region			
Thailand	15,405 (271)	9,899 (294)	5,506 (237)
North	4,663 (371)	3,017 (343)	1,646 (439)
Northeast	5,749 (204)	1,905 (216)	3,844 (198)
Central	3,871 (322)	3,857 (322)	14 (338)
South	1,122 (275)	1,120 (275)	2 (242)

Source: Office of Agricultural Economics

Note: () shows per 1 rai = 0.16 ha amount. Unit: Kg

Table 2-6 Change of Forest Area

(Unit: 1,000 ha, %)

	Thailand		Northeast Region	
Total Land Area	5,133,110	(100.0)	168,850	(100.0)
Forest Area				
1950	299,104	(58.4)	104,350	(61.8)
1973	221,710	(43.2)	50,670	(30.0)
1975	208,836	(40.7)	45,758	(27.1)
1978	175,220	(34.1)	31,220	(18.5)
1981	160,603	(31.3)	26,847	(15.9)

Table 2-7 Change of Planted Area and Crops per Unit

		Planted Area (1,000 rai)			Crops per Unit Area (kg/rai)		
		Thailand	Northeast	Nakhon Ratchasima	Thailand	Northeast	Nakhon Ratchasima
Rice	1973	50,232	22,139	1,963	276	208	192
	1974	<u>47,821</u>	<u>20,635</u>	<u>1,866</u>	260	183	173
	1975	53,244	24,991	2,017	265	<u>213</u>	199
	1976	50,859	23,735	1,480	269	197	201
	1977	53,465	24,746	<u>2,313</u>	<u>231</u>	<u>143</u>	<u>107</u>
	1978	<u>58,410</u>	27,821	1,875	260	189	<u>207</u>
	1979	56,868	<u>29,086</u>	2,196	258	194	194
	1980	56,882	28,224	2,059	271	204	200
	1981	56,392	28,001	1,880	<u>279</u>	192	180
	Average	53,797	25,486	1,961	263	191	184
Fluctuation Ratio	19.68	33.16	22.79	18.25	36.65	54.35	
Maize	1973	<u>7,172</u>	<u>1,536</u>	990	326	297	223
	1974	7,749	1,874	1,044	323	295	266
	1975	8,200	2,143	975	349	<u>329</u>	279
	1976	8,029	2,587	<u>1,549</u>	333	288	267
	1977	7,534	1,859	807	<u>223</u>	<u>212</u>	<u>207</u>
	1978	8,661	2,048	1,067	322	272	244
	1979	9,529	2,437	1,085	300	276	266
	1980	8,960	2,267	<u>786</u>	335	322	<u>334</u>
	1981	<u>9,796</u>	<u>3,044</u>	1,298	<u>352</u>	319	270
	Average	8,403	2,199	1,068	318	290	262
Fluctuation Ratio	31.23	68.58	71.44	40.57	40.34	48.47	
Cassava	1973	<u>2,725</u>	<u>816</u>	<u>416</u>	<u>2,080</u>	<u>1,929</u>	<u>1,684</u>
	1974	3,000	1,185	492	2,080	1,970	1,984
	1975	3,715	1,585	684	2,180	2,193	2,083
	1976	4,373	2,117	712	<u>2,318</u>	<u>2,278</u>	2,259
	1977	5,293	3,021	1,068	2,237	2,146	2,179
	1978	7,282	4,584	1,567	2,246	2,116	2,127
	1979	5,286	3,396	1,445	2,100	2,047	1,984
	1980	7,250	4,535	1,671	2,281	2,207	<u>2,316</u>
	1981	<u>7,940</u>	<u>4,738</u>	<u>2,084</u>	2,235	2,120	1,975
	Average	5,207	2,886	1,127	2,195	2,112	2,066
Fluctuation Ratio	100.15	135.90	148.00	10.84	16.52	30.59	

Source: Office of Agricultural Economics "Agricultural Statistics of Thailand"

Fluctuation Ratio = (Highest Value - Lowest Value) ÷ Average Value

Rice production in the region is characterized by 1) glutinous rice representing 70 % of total production, 2) yield per unit area being the lowest of all regions, namely around 204 kg/rai, or 80 % of the national average of 271 kg.per rai (in 1980), due to unfavorable climatic conditions, i.e. low rainfall and large yealy variation in rainfall, poor soil fertility as a result of only a small area having alluvial soil along rivers. In addition, there is little irrigation in the region, and parts of rice paddies become muddy during the rainy season causing considerable damage to the crop although the region generally has little rainfall.

As stated in Table 2-8, the proportion of the irrigated area in the paddy field area represents only 7%. Stability of livelihood based on steady agricultural productivity will depend on overcoming these unfavorable natural conditions. Therefore, it is expected that the cooperative activities of farmers, especially those in this region, will be promoted and fostered.

Table 2-8 Irrigation Area (1981)

	A (1,000 rai) Paddy Field	B (1,000 rai) Irrigated Area	B/A Ratio (%)
Thailand	73,523	20,254	27.5
Region			
North	16,795	4,427	26.4
Central	15,559	11,573	74.4
South	4,986	1,707	34.2
Northeast	36,183	2,547	7.0
Province of North-east			
Nakhon Phanom	1,278	83	6.5
Loei	490	33	6.7
Sakon Nakhon	1,895	328	17.3
Nong Khai	1,385	87	6.3
Udon Thani	3,183	113	3.5
Yasothon	1,171	19	1.6
Ubon Rachathani	3,978	151	3.8
Kalasin	1,410	215	15.2
Khon Kaen	2,815	231	8.2
Maha Sarakhan	1,881	117	6.2
Roi Et	2,802	269	9.6
Buri Ram	3,089	111	3.6
Sisa Ket	2,685	91	3.4
Surin	2,837	122	4.3
Chaiyaphum	1,619	89	5.5
Nakhon Ratchasima	3,666	490	13.4

Source: Office of Agricultural Economic "Agricultural Statistics of Thailand".

2-1-3 Problems

With these general characteristics, the agriculture of Thailand has the following problems:

- (1) Deterioration of land resources, particularly forest areas, has increased due to the expansion of agricultural land after 1960, and was accompanied with an increase in natural disasters. At the same time, the expansion of agricultural land has reached its limit, so that productivity of land and labor has to be improved to support the increasing population.
- (2) To improve productivity, capital investment in irrigation, soil improvement, plant breeding, fertilizer and mechanization is required, and such investment must be made effectively and equally to all farmers. At present, however, the organization receiving such investment is inadequate and development of appropriate organizations such as agricultural cooperatives is needed.
- (3) Due to uneven condition of land and natural conditions along with public investment, the Central region, particularly the fertile Menam Delta, has received much benefit from agricultural development, while the North and Northeast regions have lagged behind in such development. As a result, poverty in these lagging regions has become a serious political challenge, and correcting the regional differences is a goal of the Fifth Five Year National Economic and Social Development Plan.

2-2 The Fifth National Economic and Social Development Plan

The economy of Thailand has achieved steady growth since the First National Economic and Social Development Plan was implemented in 1961. The progress in terms of the average annual growth rate of the Gross Domestic Products (GDP) is shown below:

1st Plan	1961-1966	7.3 %
2nd Plan	1966-1971	7.2 %
3rd Plan	1971-1976	6.2 %
4th Plan	1976-1981	7.4 %
5th Plan	1981-1986	6.6 % (target)

Table 2-9 GNP & GDP

GNP (Million Bahts)	1978	1979	1980	1981	1982
Gross National Products (Nominal)	464,550	546,449	672,440	764,379	834,588
Gross National Products (Actual)	257,043	269,897	284,573	298,284	310,839
- Ditto -, Actual Growth Rate (%)	9.1	5.0	5.4	4.8	4.2
Gross Domestic Products (Nominal)	469,952	556,240	684,930	786,166	858,370
Gross Domestic Products (Actual)	261,097	276,907	292,852	311,270	324,290
- Ditto -, Actual Growth Rate (%)	10.1	6.1	5.8	6.3	4.2
GNP per Person (Nominal) (Bahts)	10,300	11,843	14,255	16,096	17,212
GNP per Person (Actual) (Bahts)	5,699	5,849	6,033	6,330	

GDP of Industries (Nominal) (Million Bahts)	1979	1980	1981	1982	Gross In-crease Rate(%)	
					1981	1982
Agro-Forestry/Fishery	147,076	173,806	187,886	177,152	6.8	0.1
Mining	12,614	14,493	13,373	15,703	Δ3.3	Δ0.2
Manufacturing	109,740	134,515	158,272	177,146	6.4	5.8
Construction	29,240	39,865	42,008	44,821	Δ6.5	1.4
Electricity/Water Supply	6,075	6,284	10,743	12,353	13.8	7.8
Transportation/Communications	37,844	45,261	57,281	68,683	7.4	8.6
Whole Sale/Retail	102,853	128,731	150,293	167,605	6.0	3.1
Finance/Real Estate	31,396	41,891	52,025	61,182	10.2	11.9
Housing	6,297	7,378	8,411	9,874	4.9	4.3
Administration/Defense	21,623	28,263	30,645	37,032	6.2	4.7
Services	51,482	64,443	75,229	86,819	9.7	6.1
Gross Domestic Products	556,240	684,930	786,166	858,370	6.3	4.2

Source: Bank of Thailand Quarterly Bulletin.

The high growth rate was achieved by the conversion of the economic structure from the monocultural economy based on paddy production to the semi-industrialized economy hinged on industrial development and agricultural diversification. At the same time, rapid industrialization created the following problems to be solved.

- i) Deterioration of the economy and financial position
- ii) Deterioration of land resources, water resources, forest and fishery resources due to uncontrolled development
- iii) Congestion and environmental deterioration of the metropolitan area of Bangkok due to the excessive concentration of social stock and economic activity
- iv) Social disorder due to the widened difference in regional incomes.

Under the circumstances, in October 1981, the government of Thailand started implementation of the Fifth National Economic and Social Development Five Year Plan. In this plan, the Government used the slogan of "ECONOMIC PROGRESS WITH NATIONAL HARMONY" and the following major plan objectives were established:

- (1) Reconstruction of the economy and public finance
- (2) Optimization of economic structure and improvement of economic efficiency
- (3) Development of social structure and spreading of social services
- (4) Eradication of poverty in undeveloped regions
- (5) Efforts toward economic development and national security
- (6) Reform of the public administration system and redistribution of economic wealth

In particular, the improvement of the agricultural structure was recognized as the basic policy for all objectives, described as follows:

"The structural improvement plan for the agricultural sector contains other purposes as well: to enable farmers to sell their products at higher and more appropriate prices, to achieve equality among

producers, to encourage changes in form of land ownership, to strengthen the ability and bargaining power of farmers through agricultural cooperatives activities, to increase know-how in various fields by the further spreading of social services, to develop agro-industry in villages to enable farmers without land to gain income during the off-season."

For the actual target, production growth in agricultural sector is set at 4.7 % per year for grain, 5.4 % for fishery and 0.3 % for forestry. The following targets are established for the productivity of major crops:

Table 2-10 Production Target of Crops

	Production(kg/rai)		per Year Increase (%)
	1981	1986	
Rice	290	336	3.0
Single Cropping	272	312	2.8
Double Cropping	550	600	1.7
Rubber	66	130	9.7
Maize	309	420	6.3
Sugar Cane	6.8	7.7	2.5
Tobacco	152	172	2.5
Mang Bean	100	130	5.4
Sorghum	192	241	4.7
Castor Bean	140	150	1.4
Soybean	150	229	8.9
Peanut	186	208	2.4
Cotton	191	250	5.6

Source: The 5th National Economic and Social Development Plan

Also, the growth target for paddy productivity has been established for each region.

Table 2-11 Rice Production Target

	(Unit: kg/rai)			
	Single Cropping		Double Cropping	
	1981	1986	1981	1986
Northeast	224	293	500	500
South	285	290	480	480
Central	302	320	564	625
North	343	355	490	490

Source: The 5th NESDP

To achieve the above targets, acid sulphate soil, 2.3 million rai in the Central region, will be improved. Also, irrigation will be provided in unirrigated areas, at the rate of 1 million rai per year in the Northeast and South regions and the rate of 0.5 million rai per year in the Central region.

To expand agricultural finance, agricultural loans are planned to increase at an annual rate of 11.7 %, to reach around BT 64,700 million in 1986.

Table 2-12 Agricultural Credit Expansion Target

	1982 (estimate)	1986	Average Growth Rate per Year 1982 ~ 1986 (%)
a. Government's banks			
1) Number of agricultural households (million)	2.2	2.6	5.1
2) Amount of loans (million baht)	15,800	26,500	13.8
3) Amount of loans per household (baht)	7,200	9,900	8.3
b. Commercial banks			
1) Direct loans to farmers (million baht)	14,600	21,800	10.5
2) Loans for agri-businesses (million baht)	11,200	16,400	10.0
Sub-Total	25,800	38,200	10.3
Total Loans Extended	41,600	64,700	11.7

Source: The 5th NESDP

2-3 Present State of Agricultural Cooperatives

The following gives a general view of the Agricultural Cooperatives, the basic element of the Plan for Agricultural Structure Improvement which is the policy emphasized in the 5th National Economic and Social Development 5 Year Plan.

2-3-1 Agricultural Cooperatives

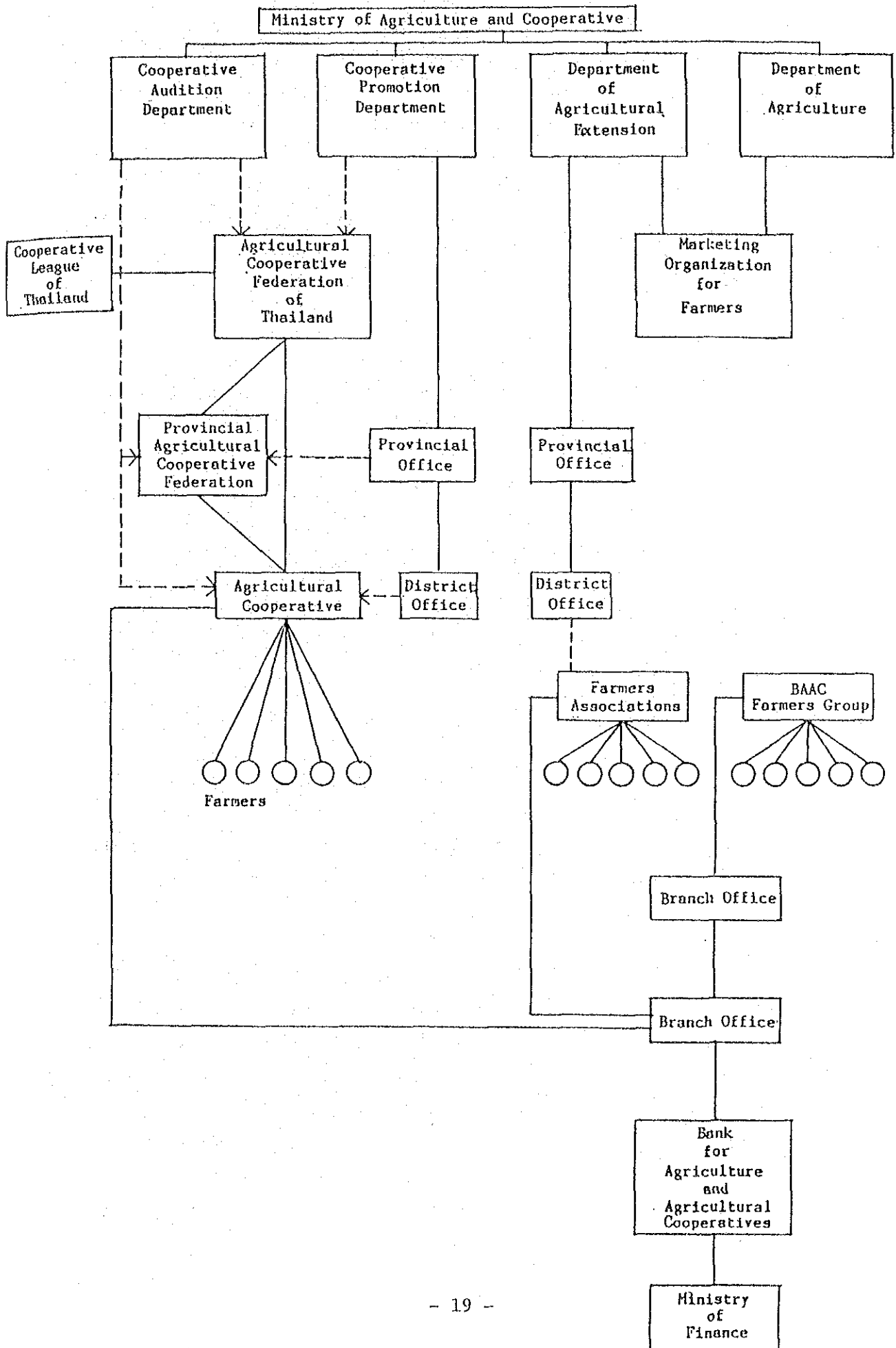
Agricultural cooperative activities in Thailand have a 68 year history, beginning when 16 farmers in Phitsanulok province organized a regional credit cooperative in 1916. In 1968, the New Cooperative Act was promulgated, and agricultural cooperatives were authorized to carry out sales activities in addition to credit services, mainly at the district level. As of 1984, there are about 1,000 cooperatives nationwide, having a membership of around 820,000 farmers (19 % of all farmers in the Country).

Similar to Japan, agricultural cooperatives are organized in basically 3 strata. The unit agricultural cooperatives as the basic organizations, are on the county level. They act comprehensively through the execution of such activities as marketing of agricultural products and procurement of equipment and materials, in addition to credit activities to meet the needs of their members.

On the provincial level are the Provincial Federations, which admit unit cooperatives as their members and meet their needs. But federation activities are limited to rice processing at present, and there are no provincial federations in some provinces.

In Bangkok, there is the Agricultural Cooperatives Federation of Thailand (ACFT) with provincial federations and unit cooperatives as members. It is chiefly engaged in supplemental activities concerned with marketing of agricultural products and the supply of equipment and materials.

Figure 2-3 Farmer's Organizations and Affiliated Organizations' Structure



The official organization controlling the agricultural cooperatives is the Cooperatives Promotion Department (CPD) of the Ministry of Agriculture and Cooperatives. The Cooperatives Auditing Department (CAD) of the Ministry is auditing the agricultural cooperatives.

Under the supervision of CAD, a nationwide associated organization, the Cooperative League of Thailand (CLT) is formed by 6 federations such as the Saving and Credit Cooperative and Consumers Cooperative, in addition to the agricultural cooperatives, as its members.
(cf. figure 2-3)

2-3-2 Problems of Agricultural Cooperatives

(1) Lack of Agricultural Financing Fund

In the agricultural regions in Thailand, private financing prevails such as in borrowing from merchants, rice milling undertakers, district bosses, relatives, acquaintances, etc. Full scale systematic financing developed in the 1970's. Since before the Second World War, there have been many credit associations through which governmental funds were channeled to farmers, but the amount of these funds has been very small compared with that of private finance.

Farmers thought of the borrowing from the credit associations as "alms" from the government, being slightly conscious of repayment. Many cooperatives became disorganized or closed after distributing the funds from the Government to the members. This caused a failure in the effective use of systematic financing.

The government established a cooperative bank in 1943, but the repayment ratio was still very low (said to be about 20 %). So it eventually dissolved the bank in 1966, and established the current BAAC (Bank for Agriculture and Agricultural Cooperatives). The BAAC has the important objective of financing farmers via the agricultural organizations, but the current state is that 70 % of financing is direct to farmers and little financing is done via the agricultural cooperatives. This restricts the credit activities, the major business of agricultural cooperatives. (cf. table 2-13)

Table 2-13 Transition of BAAC's Financing

(Unit: Million Bahts, %)

	Agricultural Coop.	Farmer's Group	Individual Farmer	Total
1976	2,173 (33.2)	533 (8.1)	3,849 (58.7)	6,555 (100.0)
1977	2,536 (34.0)	521 (7.0)	4,404 (59.0)	7,461 (100.0)
1978	3,008 (32.8)	482 (5.3)	5,680 (61.9)	9,170 (100.0)
1979	3,263 (30.6)	464 (4.3)	6,944 (65.1)	10,670 (100.0)
1980	3,614 (31.8)	415 (3.7)	7,317 (64.5)	11,346 (100.0)
1981	4,098 (30.5)	362 (2.7)	8,993 (66.8)	13,453 (100.0)
1982	4,156 (27.8)	330 (2.2)	10,454 (70.0)	14,940 (100.0)

Source: BAAC, "Annual Report"

Looking at the research results obtained up until now, such as the "Research for Agricultural Cooperatives Promotion Plan in Thailand", currently even the current members of agricultural cooperatives can borrow only 20 - 30 % of the total required for agriculture, and the rest must rely upon merchants residing in agricultural regions, who are also usurers. Consequently, farmers sell agricultural products, first to the merchants to repay their debts (at high interests). This causes the repayment of the debt to the agricultural cooperatives to be last. Naturally this results in a low collection rate of the loans provided by the cooperatives, and agricultural products are hardly ever put on the cooperatives' marketing route.

If the loan repayment ratio is low, the amount of the BAAC loan for the following year is reduced accordingly, so that the agricultural cooperatives are confronting such difficulty that their credit business can not break the vicious cycle. In addition, they can not greatly expand marketing activity which requires the fund to purchase agricultural products from the members and procurement activity requiring a procurement fund, if the credit business is in such a situation.

(2) Lack of Power in the Rice Collection System

There are three channels of rice distribution. The first is a route through merchants: the district merchants or rice milling undertakers buy unhulled rice directly from farmers and sell it after cleaning, directly or through brokers to wholesalers or exporters. This consists of 90 % of the total distribution, a very big stream.

The second is a route through a public cooperation called the Marketing Organization for Farmers (MOF) under the Department of Agricultural Extension (DAE). For the end purchase organizations, the Farmers' Groups, which were originally organized for technical diffusion in farming village units, are used.

The third is a route through the agricultural cooperatives using the unit cooperatives on the district level as a window. The rice milled by the provincial federations are sold by the ACFT (Agricultural Cooperative Federation of Thailand). This third route, started in 1980, is organized under an agreement between the ACFT and the BAAC to pay the amount of rice sold to the members of the cooperatives by BAAC branch offices against the unhulled rice receipt to be issued by the cooperatives.

The realization of the second and third routes has reinforced the rice collection systems. However, many operational problems still remain, and the actual amount handled is no more than about 10 % of the total distribution.

(3) Lack of Leaders and Staff

Research conducted by the CPD on 545 agricultural cooperatives selected throughout the nation found 2.86 staff members per cooperative on the average.

Table 2.14 lists the number of staff per job assignment in the 545 cooperatives subject to the research, amounting to 1,559 total staff in all cooperatives. The average number of staff, 2.86 per cooperative, is about 4 times of the 0.7 staff average found through research conducted by CLT a decade ago. Until recently, cooperatives with "nil staff" were also not rare.

Reviewing the number of staff per job assignment, the cooperatives with a manager represent 32 % of the total and those with a sub-manager, 28 %, together amounting to 60 %. Bookkeepers or accountants and credit personnel are assigned to nearly 60 % of all cooperatives, respectively. However, considering the routine nature of loan examinations, etc. for cooperatives, 60% is surely not sufficient. The number of personnel in charge of training related to agricultural technology is merely 8 in the 545 cooperatives, i.e. 1 person in 68 cooperatives.

Table 2-14 Employees of Agricultural Cooperatives

Classification	Number of Cooperatives	Person per Cooperatives
Manager	175	0.32
Assistant Manager	154	0.28
Accountant	319	0.59
Credit Officer	317	0.58
Extension Instructor	8	0.01
Clerical Staff	112	0.21
Others	474	0.87
Total	1,559	2.86

Source: CPD

(4) Low Participation Rate

As of September 30, 1983, the total number of unit cooperatives throughout the nation was 909 with 756,948 participants in total. Besides this, there are 3,816 farmers' groups amounting to 472,456 persons, organized originally for the diffusion of technology on the village level, although they are not cooperatives.

These farmers' group members are not admitted as members in the agricultural cooperatives, but they are scheduled to be admitted into the agricultural cooperatives under CPD control in the future.

The total number of agricultural households throughout Thailand is 4.53 million, so the membership rate of households in the agricultural cooperatives is approximately 16.7% on a nation-wide average, with a 27.1% membership rate if farmers' groups are also included.

Such participation rates vary greatly depending upon the region and farming system. The rate is low, for example, in the mountain zones in the Northeast, North and South regions and in that near Bangkok, while it is high in the "rice & vegetable fields" of the central plain, especially in the provinces of Sing Buri, Chai Nat, Suphan Buri, Uthai Thani and Ang Thong.

Many attempts have been made to attribute the low organization rate of agricultural cooperatives in the farming villages in Thailand to the low cooperative consciousness of farmers or the social nature of the nation. In fact, however, most farmers desire to enter the agricultural cooperatives, while the cooperatives substantially limit their admittance due to the limited nature of cooperative business dealings, especially in regard the shortage of lending funds.

Besides the foregoing 4 problems, since the agricultural cooperatives are now organized in units at the district level, an agricultural cooperative covers a wide range of areas, thus creating a large internal problem in that information and organizational power can not be sufficiently diffused so the education of the members is lacking.

2-3-3 Agricultural Cooperatives in Northeast Thailand

There were 294 agricultural cooperatives in Northeast Thailand as of 1983, amounting to 249,191 members, i.e. 13.5 % of the 1,840,184 total number of agricultural households. This is the lowest member rate in the country well below the 16.7 % of the nation-wide average member rate.

Of the 16 provinces in Northeast Thailand, the nation-wide average member rate for agricultural cooperatives is exceeded in only 5 provinces, Udon Thani at the top with 29.8 %, followed by Khon Kaen at 18.3 %, Sakon Nakhon at 17.7 %, Maha Sarakham at 17.3 % and Nakhon Ratchasima at 17.1 %. Sri Sa Ket and Nong Khai have 5.6 % and 5.8 % member rates respectively, which are fairly low, and attempts need to be made to foster organization of agricultural cooperatives. (cf. table 2-15)

Table 2-15 Organizing State of Farmers in Provinces in Northeast Region

Province	Number of Agricultural Households		Agricultural Cooperatives		Land Settlement Cooperatives		Total			Farmer's Group				
	A	B	No. of Coops	No. of Members	No. of Coops	No. of Members	No. of Coops	No. of Members	C/A (1977)	No. of Groups	No. of Members	D/A (1978)		
Nakhon Phanom	84,792	13	8,638	134	—	—	13	8,638	15.1	126	37	4,131	4.9	3.4
Loei	93,584	11	10,530	113	—	—	11	10,530	11.3	69	42	5,634	6.0	6.0
Sakon Nakhon	77,363	22	13,667	17.7	—	—	22	13,667	17.7	16.1	23	4,001	5.2	4.2
Nong Khai	153,411	14	8,887	5.8	—	—	14	8,887	5.8	4.2	41	4,988	3.3	4.3
Udon Thani	63,933	28	18,762	29.3	—	—	28	18,762	29.3	20.7	117	11,872	1.86	32.3
Yasothon	54,523	10	6,729	12.3	—	—	10	6,729	12.3	5.6	32	3,932	7.2	3.8
Ubon Rachathani	167,964	28	24,632	14.7	1	720	29	25,352	15.1	11.6	125	10,946	6.5	4.9
Kalasin	91,331	16	14,469	15.8	—	—	16	14,469	15.8	11.6	52	4,538	5.0	3.8
Khon Kaen	139,751	23	25,635	18.3	2	2,211	25	27,846	19.9	14.4	100	10,234	7.3	7.3
Maha Sarakhan	90,224	10	15,636	17.3	—	—	10	15,636	17.3	14.0	32	4,584	5.1	5.2
Roi Et	134,273	16	15,863	11.8	5	1,209	21	17,072	12.7	8.5	83	11,903	8.9	4.3
Buri Ram	124,711	20	13,768	11.0	1	1,143	21	14,911	12.0	10.0	53	9,015	7.2	5.8
Sisa Ket	138,285	18	7,678	5.6	—	—	18	7,678	5.6	8.6	87	16,886	1.22	8.2
Surin	121,414	14	16,481	13.6	8	2,100	22	18,581	15.3	9.2	70	10,096	8.3	4.4
Chaiyaphum	110,805	18	12,008	10.8	1	1,573	19	13,581	12.3	9.7	95	18,909	17.1	10.8
Nakhon Rachasima	193,820	27	33,075	17.1	6	3,421	33	36,496	18.8	15.2	103	20,504	10.6	4.4
(Mukdahan)	—	6	2,733	—	2	1,428	8	4,161	—	—	—	—	—	—
Northeast Total	1,840,184	294	249,191	13.5	26	13,805	320	262,996	14.3	11.0	1,092	152,173	8.3	6.4
Thailand	4,532,351	909	756,948	16.7	99	86,665	1,008	843,613	18.6	13.4	3,816	472,456	10.4	9.0

Source: Data for cooperatives from CPD, as of September 1983.
Data for farmer's group and number of agricultural house as of end of 1981.

2-4 Promotion of Agricultural Cooperatives

2-4-1 Present State

A Cooperatives Department was set up in 1920 within the Ministry of Agriculture as an organization for the promotion of agricultural cooperatives ; it became an independent ministry as the Ministry of Cooperatives in 1952. However, it was transferred to the Ministry of National Development when it was newly organized in 1963, then moved again changed to become two independent departments under the Ministry of Agriculture and Cooperatives in 1972, CPD and the Cooperative Auditing Department, in charge of all matters related to cooperatives. The Department promote and supervise 6 type of cooperatives including the Agricultural Cooperatives, Fishery Cooperatives and Land Development Cooperatives among others. (cf. figure 2-4)

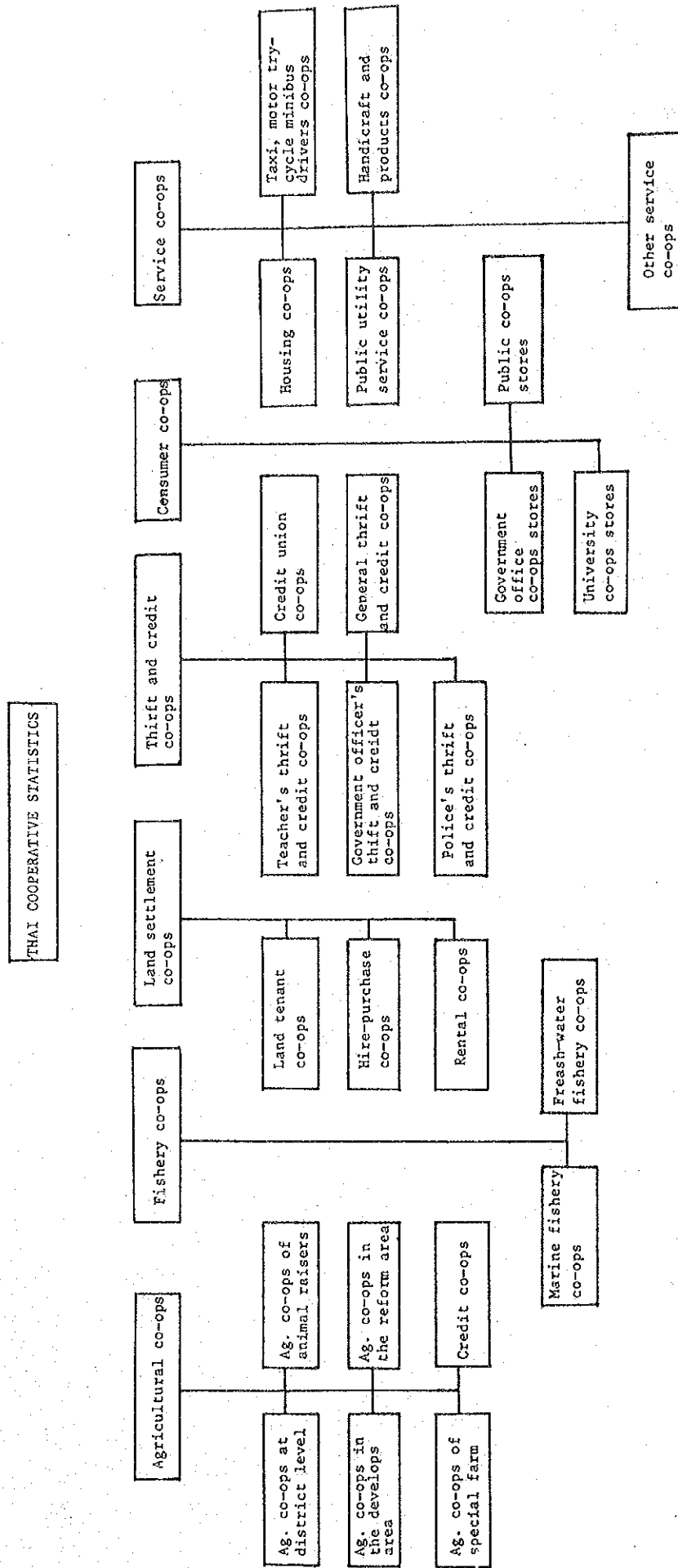
Figure 2-5 shows the organization chart of CPD.

In 1979, CPD prepared the "Cooperative Promotion Plan" which has as its aim the following:

- (1) Improvement of the living standard and income of farmers, and promotion of agricultural villages
- (2) Increasing the role of cooperatives in achiving a stable supply and improved the quality of necessities, and keeping up commodity prices
- (3) Diffusion of public facilities to local communities
- (4) Introduction of thrift and saving to the public

In order to realize the above aims, the following have been carried out with the recognition that unity and alertness among farmers are possible through cooperatives:

Figure 2-4 Cooperatives under CPD



- (1) Organizing cooperatives in all counties and sub-counties
- (2) Setting up cooperatives responsible for the management of water supply and collection of water supply charges
- (3) Intensifying assistance for the sales promotion of primary agricultural products
- (4) Improvement of soil, irrigation and drainage systems
- (5) Training personnel needed to improve cooperative management
- (6) Establishing farmer assistance funds through cooperatives
- (7) Intensification of training for cooperative members, officers and the personnel in charge of CPD through the establishment of a training center for them

Of the above items, intensified training for new knowledge, technology and business practices has been provided by the Training Division of CPD for the personnel in charge of CPD, and members and officers of cooperatives have been in training courses and seminars held at the Central Cooperatives Training Center in Bangkok and the Regional Cooperatives Training Centers in 10 places throughout the country. (cf. figure 2-6, 2-7)

The Central Training Center, however, has only one lecture hall and class room with a floor area of 470 square meters for multi-purpose use adjacent to CLT facilities. Therefore, the Center has to use training centers owned by other organizations. Most audio visual equipment required for training in the Center is old and not sufficient. As is the situation with other training centers, a total of only 40 housing units for teaching staff are provided for the 10 regional centers.

The insufficiency in facilities and audio visual equipment as well as imperfect training methods and an inadequate number of instructors is causing slow progress.

Figure 2-5 Organizational Structure of CPD

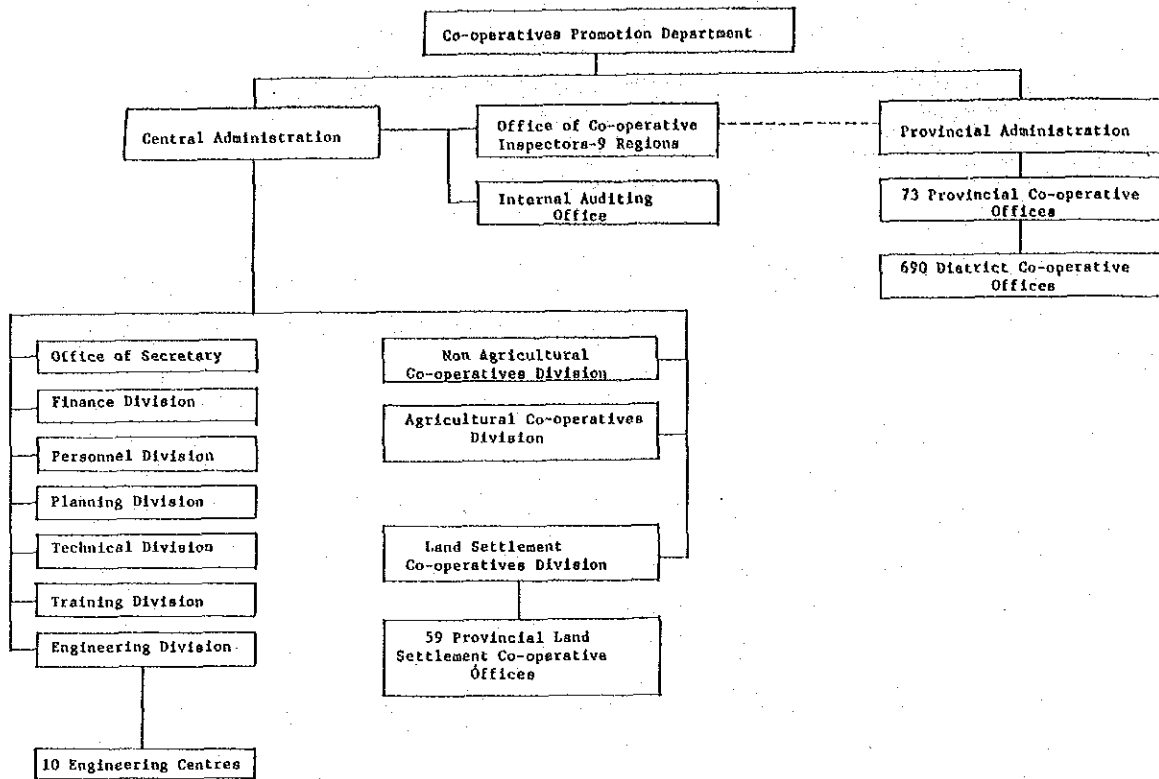
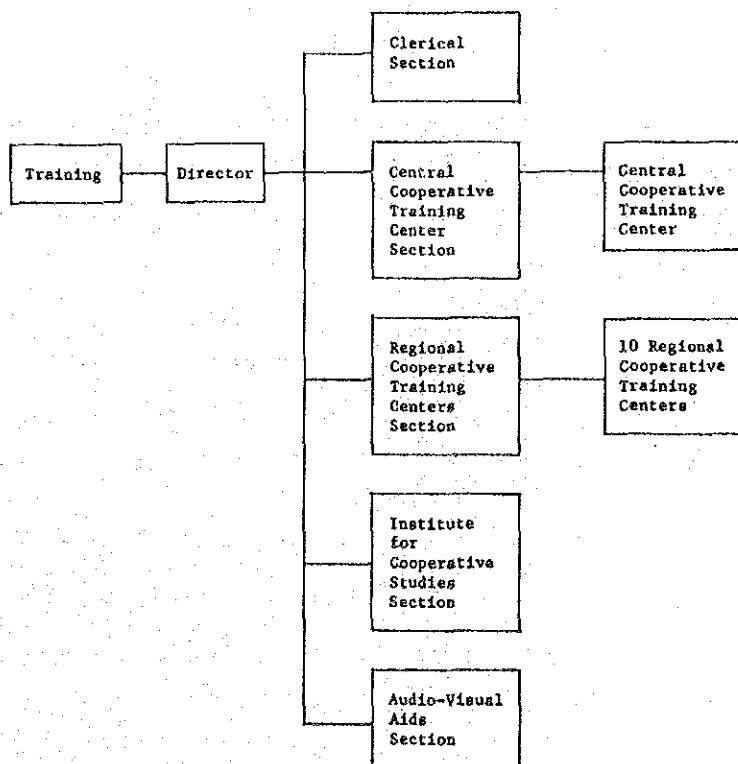


Figure 2-6 Organizational Structure of CPD Training Division



2-4-2 Agricultural Coopertatives in Northeast Thailand

The 3rd Regional Training Center is handling the training for 8 provinces in Northeast Thailand and is located in the Regional Engineering Center, which is the division of CPD responsible for providing the services for construction of irrigation channels and other agricultural infrastructure.

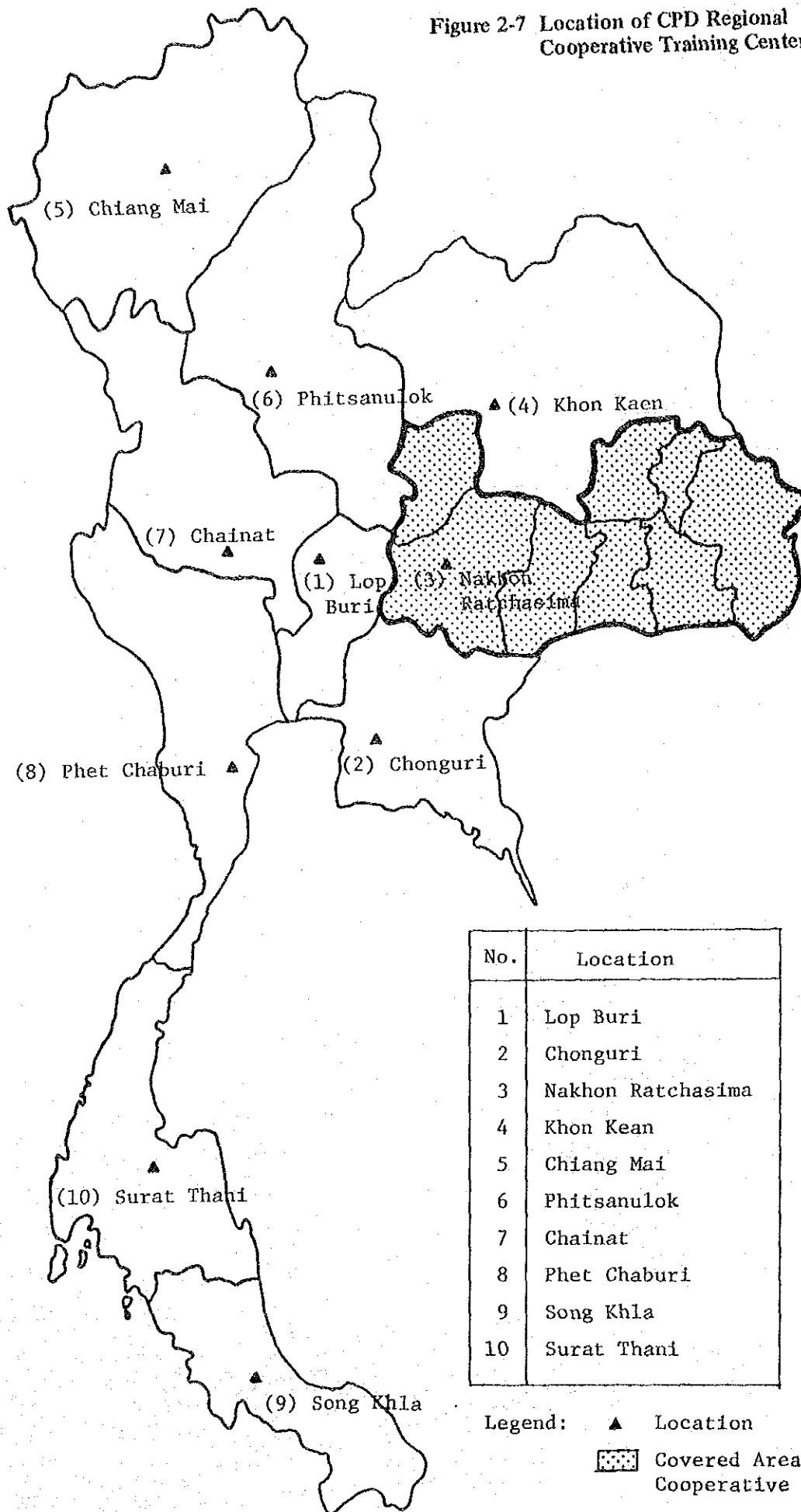
The training center does not have its own building and currently uses one of the residences of the instructors located within the premise of the Regional Engineering Center as its office to store the required equipment and tools for publication activities. Nine officers, including three instructors, are currently engaged in the work.

The center has to borrow space in schools, public facilities, temples and training centers of other organizations in Nakhon Ratchasima to carry out training activities, and use a mini-bus to do mobile training in the area.

The equipment owned by the center consists of is a mini-bus and a 16 mm movie projector, very little other equipment is available, nor is there a place or the tools to make materials necessary for full scale training activities.

Consequently, the setting up of annual training programs, the establishment of training methods, the development of training materials and training for instructors are all proving difficult. According to 1983 records, training was provided for about 1,000 trainees that year. Training has been provided for 3,000 trainees in 1984 so far.

Figure 2-7 Location of CPD Regional Cooperative Training Center



No.	Location
1	Lop Buri
2	Chonguri
3	Nakhon Ratchasima
4	Khon Kean
5	Chiang Mai
6	Phitsanulok
7	Chainat
8	Phet Chaburi
9	Song Khla
10	Surat Thani

Legend: ▲ Location

▨ Covered Area of 3rd regional Cooperative Training Center

2-4-3 Technical Cooperation

In 1979, the government of Thailand requested technical assistance from Japan, which has a long tradition of cooperative movements. In response, the government of Japan sent specialists to Thailand several times to give assistance in formulating the Agricultural Cooperative Promotion Plan.

Then, CPD proposed to putting emphasis on assistance to agricultural cooperatives in Northeast Thailand, the most underdeveloped region, which was made the target to help adjust the regional difference in poverty.

In July, 1984, both governments reached agreement on technical cooperation with five major agricultural cooperatives in the Nakhon Ratchasima province of the Northeast region. This cooperation has commenced. The proposed center will have the role of supporting and fostering technical cooperation in order to promote local agricultural cooperatives.

CHAPTER 3

BASIC SCHEME FOR PROJECT

CHAPTER 3 BASIC SCHEME FOR PROJECT

3-1 Objectives of the Project

The Project aims to establish a Regional Cooperative Training Center, in Nakhon Ratchasima, the central district in the south of Northeast Thailand, thereby to improve the ability of the CPD staff and the staff of the agricultural cooperatives, as well as to expand the existing training centers. The Project is therefore expected to increase the awareness of the farmers who form the backbone of agriculture in the poorest region, organize them, and thus vitalize cooperative activities.

At the same time, the Center is expected to serve as a model for other regional training centers. Furthermore, it is intended to establish a foundation for development of the agricultural cooperative training center as a whole, by increasing the relationship with the central training center.

3-2 Functions of Regional Training Center

The Center will serve 8 provinces out of 16 in Northeast Thailand centering in Nakhon Ratchasima. Activities will include study at the Center and periodic tours of instruction using mobile units. Its functions are as follows:

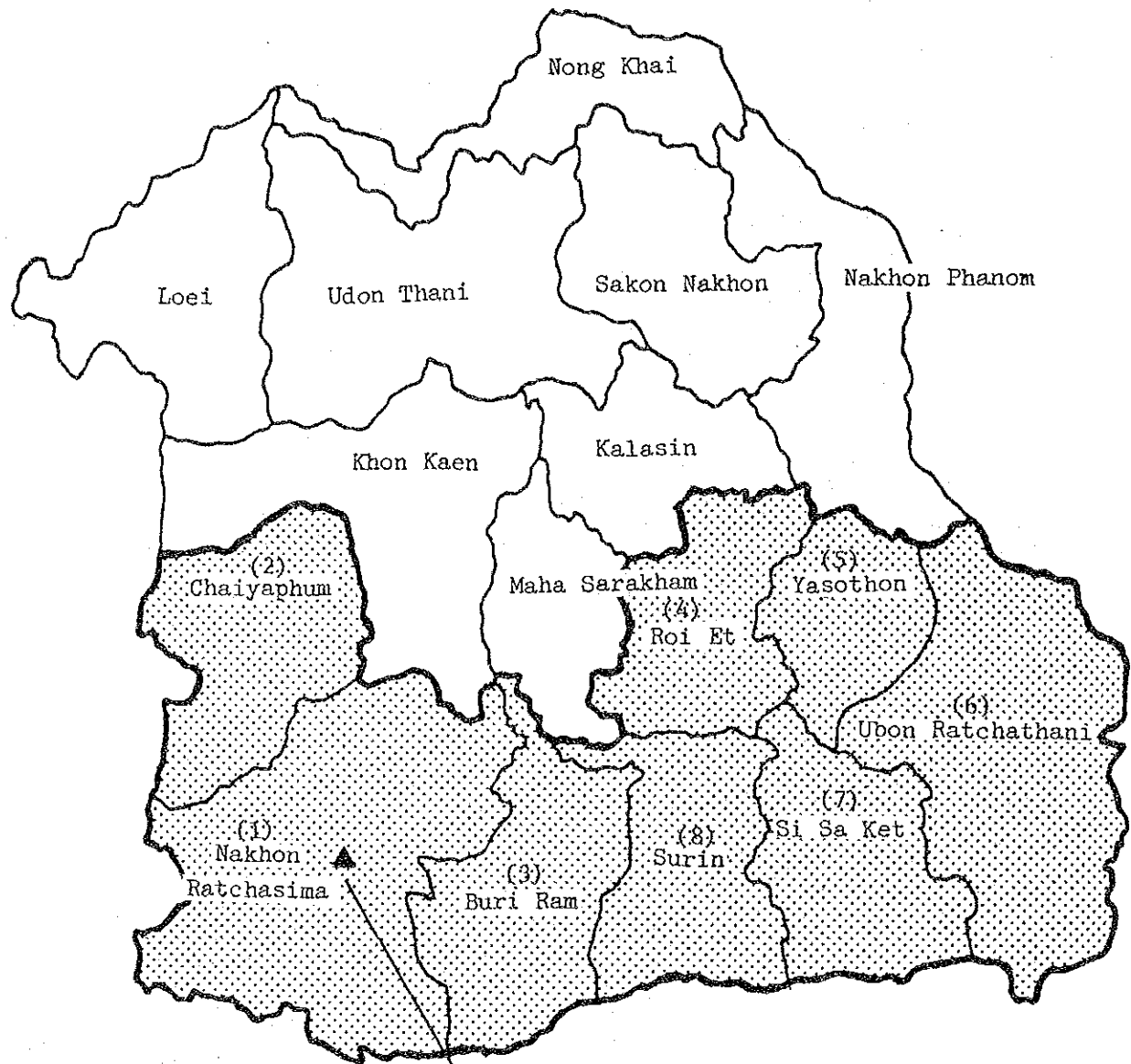
(1) Training Function

Training CPD officers and the agricultural cooperatives officers and members who will contribute to promoting and fostering the agricultural cooperatives

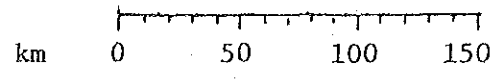
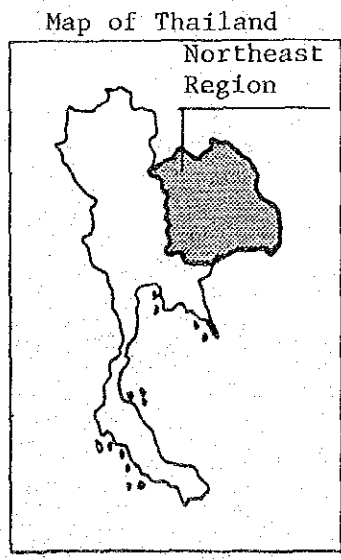
(2) Advertising Function

Providing the residents of the area and farmers in more distant areas with information related to the promotion of cooperatives

Figure 3-1 Target Provinces



Agricultural Cooperative Training Center



Target Provinces (cf. figure 3-1)

- (1) Nakhon Ratchasima
- (2) Chaiyaphum
- (3) Buri Ram
- (4) Roi Et
- (5) Yasothon
- (6) Ubon Ratchathani
- (7) Si Sa Ket
- (8) Surin

3-3 Target of Training

The training programs in the National Budgets of 1984 (October 1983 to September 1984) and 1987 were obtained from CPD. They were analyzed and used to categorize the trainees of the Center.

The number of officers of CPD and Cooperatives to be trained given in the table is more than the total personnel potentially available for training. This is partly because repeated training will be provided to help supplement their qualifications and educational level, and be maintain, and accumulative in its effect. Also, the same personnel will take different training courses.

Table 3-1 Prospective Trainee

Staff to be trained	Number of Trainees		Potential Trainee
	1984	1987	
1. CPD			
Provincial, District Staff	86	680	309
Cooperative Technicians	-	120	
Trainer	30	30	
2. Cooperative Staff			
Chairman	100	200	175
Committeemen	800	2,500	2,625
Staff	420	630	611
Group leader	1,400	1,800	
Cooperative member	7,420	9,520	152,625
3. Federation of Provincial Cooperatives			
committeemen, manager	75	120	
4. Other cooperatives			
committeemen, manager	120	300	1,700
5. Other organization	-	350	
6. General public	3,000	4,000	

Note: Figure made on May 1984 by CPD

3-4 Training Courses

Main curriculum of courses conducted in the Center is as follows:

Table 3-2 Curriculum

Organization	Trainers	Curriculum
CPD	Provincial District Officer	Identification of training need Training Techniques Preparation of training media Policy of cooperative promotion Policy of regional development Principal of saving, credit, booking Financial analysis
	Cooperative technician	Policy for cooperative development Principles & ideology of cooperatives Cooperative movement in Japan
	Trainer	Planning for training Development of training course Psychology of adults training
Agricultural Cooperatives	Chairman	Production Credit and marketing linkages of agricultural cooperatives Purchasing Business
	Committee men	Community development and institutes Principles of human serving in the communities Agricultural cooperative
	Staff	Cooperative laws and by-law Regulations in providing loans Credit activity of cooperatives Accounting
	Group leader	Role of chairmen and secretaries Leadership and cooperative spirit
	Member	Cooperative principles and ideology Rights and responsibilities of cooperative members Services of cooperatives and benefit to members Principle of engine Main problems of gasoline engine and how to repair

Organization	Trainers	Curriculum
Provincial Agricultural Cooperative Federation (PACF)	Committeemen Managers	Organization and management of PACF Role of CPD in promoting PACF Relationships between ACFT and PACF Responsibilities of committee and manager of PACF
Other Cooperatives	Committeemen	Policy of CPD in consumer cooperatives development Cooperatives and tax system

As seen above, the training curriculum consists of lectures with an emphasis on the theory of promoting agricultural cooperatives. Courses for officers and members of agricultural cooperatives include practical training for repairing agricultural tools and equipment. Training using audio-visual equipment needs to be the main component of prevail in the courses for people such as farmers, who need to be trained efficiently in a short ime, as most courses are now being conducted with an over-head projector as the main training tool.

3-5 Trainers

In 1984, 3,031 persons have been trained in lecture courses, and 10,420 persons by the mobile unit trainings. These training courses are conducted by full time trainers of the CPD regional training center and visiting trainers from CPD Headquarters, universities and other departments. This system will remain unchanged in the future; training for full time trainers is conducted at the central training center in Bangkok.

3-6 Training Courses

3-6-1 Courses Conducted at the Center

16 training courses are planned, and are classified in accordance with eligible organizations as follows:

Table 3-3 Course and Number of Trainees

Organization	Number of Course	Number of Trainees	Duration Week	Training per Year	Total Duration	Total Trainees
CPD	1	60	1	3	3	180
	2	50	1	10	10	500
	2	30	1	5	5	150
Agricultural Cooperatives	1	75	0.5	24	12	1800
	1	70	1	36	36	2500
	2	38	3	8	24	300
	2	38	1	8	8	300
	1	33	1	6	6	200
PACF	1	30	4	1	4	30
	1	30	0.5	4	2	120
	1	43	1	7	7	300
Other	1	43	1	7	7	300
	1	50	1	7	7	350
Total	16	-	-	-	120	6730

The duration of training is half a week for the committee men and managers of PACF and group leaders of agricultural cooperatives, three to four weeks for basic credit and accounting courses as well as training on agricultural machines, and one week for other courses. These short term training courses are designed to provide frequent training for a short term for as many persons as possible, and are designed for those who are at work and unsuited for long term courses. The number of trainees in a course ranges from 30 to 75.

(cf. table 3-3, Appendix III-2-2)

3-6-2 Courses Conducted by Mobile Units

Six courses are planned to train agricultural cooperatives members as well as new members and to promote and publicize the cooperative movement with a total of 13,520 trainees.

As these courses are conducted in the form of practical training by micro bus most of them are one to three day on-spot training, although 1 week is necessary for maintenance and repair of agricultural tools and equipment.

3-7 Training Schedule

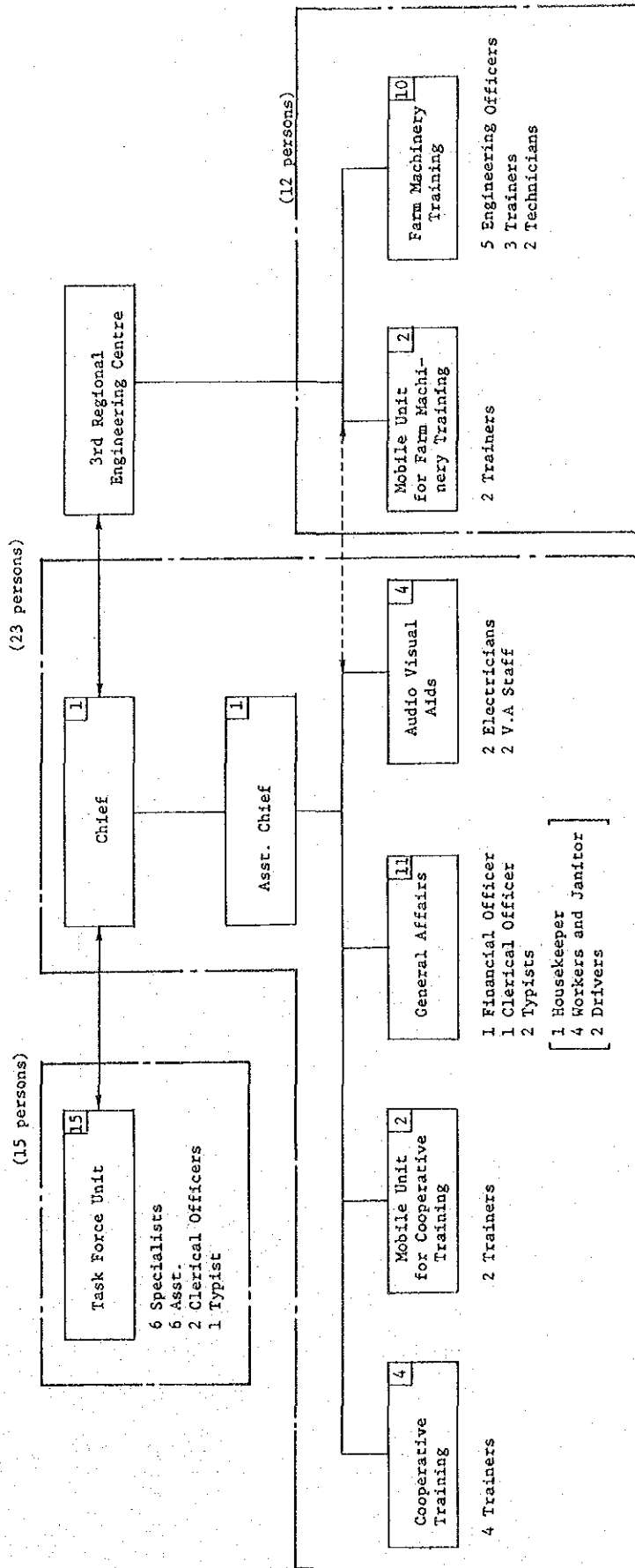
The annual training schedule is made up in relation to

- (1) government expenditures at the beginning and the end of the fiscal year (October to September),
- (2) farm work (cultivating season: October to December, planting season: June to September, off season: January to May).

Thus, most courses for CPD personnel will be given at the beginning of the year, with the intention of advertising the annual policies of the government, and most courses for cooperative personnel who constitute the largest the number of trainees will be given during the off-season between January and May.

In addition, more equal distribution of trainees per month (or week) and adjustment of the yearly schedule should be contemplated for efficient use of the facilities.

Figure 3-2 Administrative Organization of Agricultural Cooperative Training Centre (Nakom Ratchasima)



3-8 Organization and Staff Distribution at the Center

As seen in figure 3-2, the Center will be organized administratively into 3 large sections, namely:

- (1) The Administrative and Training Section with 23 staff, including the chief, who is responsible for general planning and implementation of training, development, compilation, maintenance and management of course materials, and operation and management of accommodation facilities,
- (2) The Task Force Unit, consisting of 15 staff, includes specialists and assistants responsible for development of methods of instruction and training for agricultural cooperatives and households including the necessary training materials, and for publicity on agricultural production.
- (3) The Engineering Section with 12 engineers, responsible for training related to agricultural tools and equipment and their repair, improvement of small scale irrigation facilities and farm roads. This section will be provided with assistance from engineers of the Engineering Center.

3-9 Necessary Facilities

Training Facilities

Groups of trainees can be divided into three categories depending on curriculum and group size: those with numbers of (1) below 43, (2) 70 and (3) 50 - 75 members, respectively. Each category will be continuously trained through out the year. (cf. figure 3-3)

Necessary facilities were allotted, although some adjustment of programs will need to be made due to overlapping of groups during some periods. It was concluded that a class room for 45 persons, 2 class rooms for 75 (the auditorium will serve as an additional classroom) and a library, as a supplementary facility to collect and store reference books and materials as well as to provide the trainees with a study room, were required.

Additionally, a workshop will be necessary to conduct the training courses on repair and usage, to restore and repair damaged tools and machines brought back by the mobile unit team, and as a facility to lend to the cooperatives.

Figure 3-3 Training Schedule and Size (1987)

Number of Trainees per Course	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Week Duration
50 - 75													31
70													36
Less than 43													57

Dormitory

Training will be provided in 1 week units in 8 provinces centering on Nakhon Ratchasima. The farthest place is 400 km distant from the Center, which makes it necessary for some trainees to stay at the Center. Therefore, a dormitory will be needed, as residential style training is expected to be effective, too.

According to the training schedule, the average number of trainees is 141 per day, for 23 weeks the number of trainees will exceed the average, although for 25 weeks the number ranges from 100 - 150. Accordingly, the dormitory will have the capacity for 130 trainees, taking into the account this attendance rate.
(cf. figure 3-4, table 3-4)

The canteen to be attached to the dormitory will have 130 seats, to be occupied by a total of 260 staff and trainees in double shifts at peak times.

Figure 3-4 Distribution of Trainees per Week (1987)

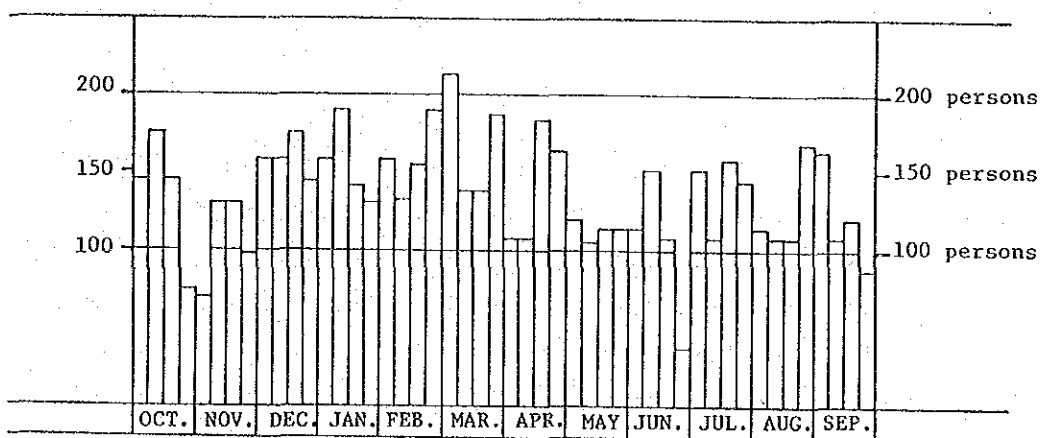


Table 3-4 Distribution of Number of Trainees per Day

Year	Total Trainee	Per Day Average	Maximum per Day	Trainees per Day			
				-100	100-150	151-200	201-
1987	6,739	141	213	5week	25week	17week	1week

Administrative Facilities

The division for administrating and operating these facilities will be divided into 3 main sections (cf. figure 3-2), and each will have an office accommodating 16, 15 and 12 persons, respectively. In addition, conference rooms will be needed for conferences and meetings held by or among these sections and for meetings regarding the development of training materials, investigation of training techniques, arrangement of data and materials obtained from agricultural villages and cooperatives, instruction to related cooperatives and for other matters necessary for operation of the Center. Further, a printing room for preparing training materials and a storage room for audio visual equipment are necessary.

3-10 Technical Cooperation

For technical cooperation (Project Type Technical Assistance "Agricultural Cooperatives Promotion Project in Thailand") which has a close connection to the establishment of the Center, an R/D was concluded in July 1984, and 6 experts were sent to Thailand in October 1984.

For this technical cooperation, a project is implemented at 5 model agricultural cooperatives selected in Nakhon Ratchasima province, and relating this project to the Center is important for promoting the project and integrating it with other activities.

3-10-1 Objectives of Technical Cooperation

The technical cooperation project is designed to expand and reinforce the organization and activities of agricultural cooperatives and to help in improving agricultural productivity in the region by means of cooperatives, promoting distribution of agricultural products, equipment and materials, organizing farmers, improving their bargaining power, and improving the social and economic welfare of cooperative members.

3-10-2 Details of Project

The technical assistance consists of a model project for five agricultural cooperatives in Nakhon Ratchasima province in the Northeast region, and assistance and advice on a CPD training plan based on the results of the model project.

In the model project, as a main part of the technical assistance, technology transfer is carried out through the following activities:

- (1) Guidance on farm management
Improvement of farm management mainly in production and sales planning of major agricultural products
- (2) Management of agricultural cooperatives
General management and techniques for agricultural cooperatives
- (3) Sales and purchasing activity
Reinforcing the collection and sales functions as well as the fertilizer and machinery purchasing activities of the agricultural cooperatives
- (4) Credit service
Reinforcing credit service by agricultural cooperatives
- (5) Education and Training
Organizational education and training for staff of CPD and agricultural cooperatives to promote the above (1) - (4) in an organic way

3-10-3 Model Project Agricultural Cooperatives

1. Pak Thong Chai Agricultural Cooperative
2. Muan Nakhon Ratchasima Agricultural Cooperative
3. Phimai Agricultural Cooperative
4. Khong Samaki Agricultural Cooperative
5. Chakkarat Agricultural Cooperative

CHAPTER 4

GENERAL DESCRIPTION OF PROPOSED SITE

CHAPTER 4 GENERAL DESCRIPTION OF PROPOSED SITE

4-1 Proposed Site

It is planned to establish the Center in Muang Nakhon Ratchasima (Korat), the capital of Nakhon Ratchasima province, approximately 256 km. northeast of Bangkok, located at 14°57' latitude North and 102°08' longitude East, at an altitude of 200 m.

The proposed site can be reached from Bangkok in approximately 4 hours by car, and is located along National Highway 24 about 5 km south of Muang Nakhon Ratchasima. The site has an area of around 1 ha, located within the approximately 8 ha. of the site of the CPD Regional Engineering Center (REC). (cf. Appendix III-3-1)

The Office of Accelerated Rural Development is just to the North and agricultural land surrounds the site. There are tapioca processing factories and light-industrial factories and no housing, restaurants or amusement areas seen along the road to the city of Nakhon Ratchasima.

4-2 General Description of the Site

The site of the REC (8 ha) is on flat land covered with tropical trees. The REC office, a garage for heavy construction equipment such as bulldozers, graders and tractors, a repair workshop and employees housing (accommodating about 70 families, 350 persons) are located around the site. In addition, there are 4 buildings owned by the Regional Cooperative Training Center (RCTC) and used as teaching staff quarters, and 1 building used as the RCTC office.

The REC office (a single story wooden building of 90 square meters) is located roughly in the center of the site, and will be relocated before the commencement of the project. (cf. Appendix III-3-2)

4-3 Natural Conditions

Nakhon Ratchasima has a tropical monsoon climate, with prevailing northeast winds during the dry season from November to February and southwest winds during the rainy season from June to October. The mean annual rainfall in the last 30 years has been 1,137 mm., with most of the rain between May and October. However, the roads neighboring the site are not flooded. The mean annual temperature in the last 25 years has been 26.2 degree centigrade and the mean annual humidity 74%.

In 1982, the maximum monthly temperature was 39.5 degree centigrades (March and May), and the minimum monthly temperature was 8.6 degrees centigrade (December), with daily variation ranging between 8 to 13 degrees centigrade.

The soil of the proposed site is a sand-mixed silt layer covered by gray podzol soil (forest soil with strong acidity, not suitable for cultivation). (cf. Appendix III-3-3,4,5,6)

4-4 Infrastructure Situation

a. Power Supply

There are 22 kv transmission lines along National Highway 24, which are branched and dropped to 380 / 220 v by pole mounted 50 kva transformers in the REC site, to be supplied through overhead lines to various facilities within the site. The voltage frequently fluctuates, and the capacity of the transformers is insufficient. Power cuts due to lightning sometimes occurs.

b. Telephone

There are main lines along National Highway 24, from which 1 line leads into the REC office building.

c. Water Supply

Ground water is pumped up through a well installed on the site (52 m deep with piping of 1 1/2 inches), by submerged pumps to an elevated tank (eight galvanized steel tanks with a capacity of 400 gallons each) mounted on a wooden tower, from which water is supplied to buildings by gravity. The supply only meets the demand of the REC facilities.

Water is turbid containing iron, zinc, carbon dioxide and solids. It may corrode iron and copper, and attention should be paid to materials for piping and water tanks. It is judged as suitable for drinking according to the local standard, while it is not drinkable according to the Japanese standard.

(cf. Appendix III-3-7)

d. Drainage

The sewage system is not completed. Sewage is treated through seepage tanks at each building, and general waste water is directly discharged to adjacent areas to the south. Rain water is collected in a temporary pond excavated for filling at the center of the REC site.

e. Gas Supply

A gas main line is not provided and each facility uses propane gas.

4-5 Construction Conditions

Many three to four story buildings are found in the city of Nakhon Ratchasima and quite a number of new buildings are under construction. Most of them have a reinforced concrete structure, with concrete or brick block walls.

Most construction materials are sent from Bangkok, but cement, aggregate and wooden materials are produced in Sara Buri, 160 kms. distant from Nakhon Ratchasima. Prices do not differ greatly from those in Bangkok.

No great difference is found in the skill of the laborers or in the quality and availability of equipment and material in the area as compared to Bangkok, (as long as buildings are limited three or four stories) as the two cities are situated not so far from each other.

Most skilled laborers and technicians are recruited in Bangkok and taken to Nakhon Ratchasima for construction projects.

CHAPTER 5

BASIC DESIGN

CHAPTER 5 BASIC DESIGN

5-1 Design Policy

The following points are adopted as policies for the design of this Project.

- (1) Since this Center will be established as the first regional cooperative training center in Thailand to be a model facility for other centers planned in various regions, its central and leading role is to be reflected in the design.
- (2) The design is to give full consideration to the climate, local life style and other factors peculiar to Thailand.
- (3) The operating and maintenance costs will be minimized by fully utilizing natural ventilation and lighting, and by using durable materials.
- (4) The design is to be economical and easy to construct with due consideration to the technology, materials and labor available in Thailand.
- (5) The construction materials are to be selected from materials available in Thailand, to facilitate easy repair and maintenance work after completion.
- (6) Standards for the design will comply with applicable laws and regulations in Thailand. Where no applicable standards are available, the facility shall be designed in accordance with the applicable laws and regulations in Japan.
- (7) In equipment and material plans, interchangeable equipment and material are to be used, taking into account the materials furnished by Japan under technical assistance, and at the same time, selecting those to suit the actual conditions in Thailand.

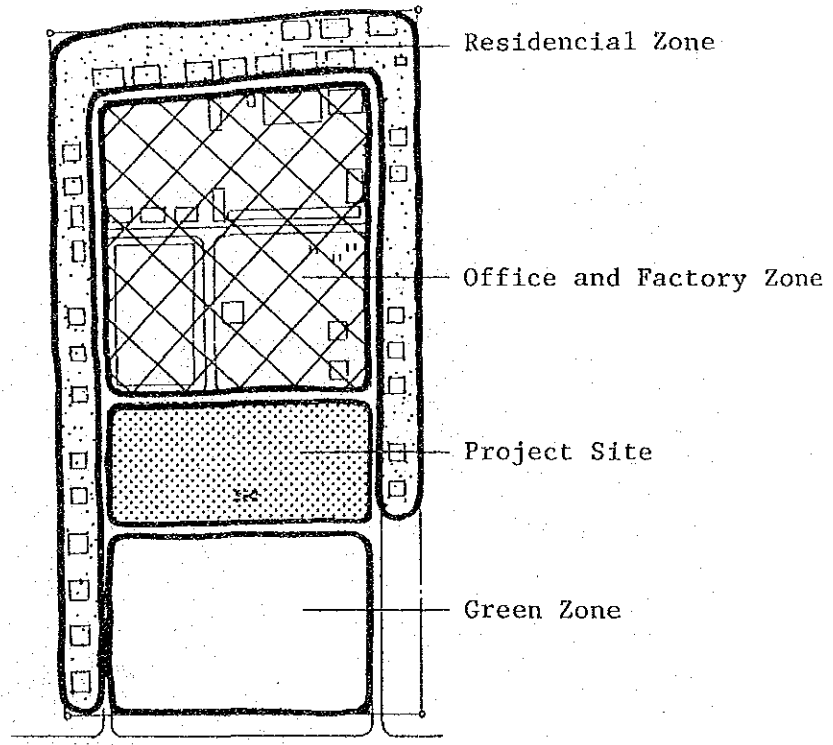
5-2 Site Plan

The proposed site, located on the site for the Regional Engineering Center (REC) under the control of CPD, has an excellent location along a main road (National Highway 24) and across from a soccer field.

The soccer field will be retained as a sports facility for CPD employees and their families who will be living on the site since there is no plan to construct any facility in that location.

The REC site master plan shows an arrangement with the staff quarters outside the circular road around the site and various facilities, including the office building and workshop on the inside.

Figure 5-1 REC Site Master Plan



5-3 Layout Plan

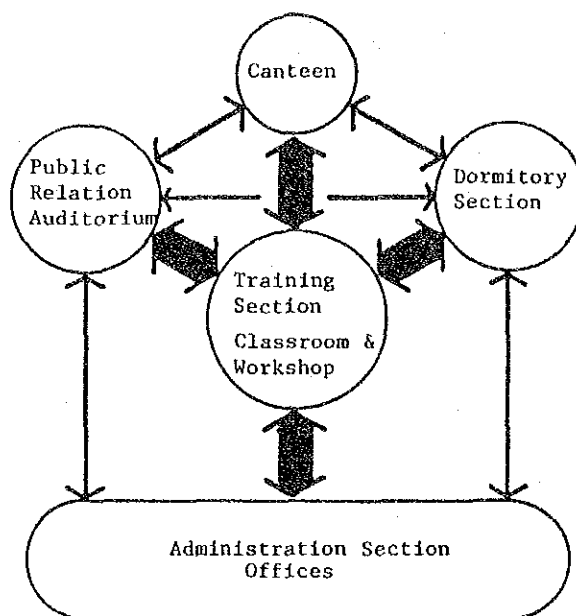
In the layout plan the proposed facilities are classified as follows in accordance with their functions:

Table 5-1 Facilities

Section	Function	Rooms
Administrative Section	Administration Planning of training Course material development Practice of asst. trainer	Offices Trainer's room Printing room Conference room
Training Section	CPD officer's training Cooperative officer's training Member's training	Class room Library Preparation room
Training Section (practice)	Training for agricultural machinery Training by Mobile Unit Repair of machinery Renting workshop to cooperatives Practice of agr. machinery	Workshop Mobile unit Field service
Public Relation Section	Public relation to trainees Assembly of cooperative members Publication to neighbouring farmers Publication to farmers	Auditorium Stage Projection room
Dormitory Section	Trainers lodging Trainees lodging	Trainers' room Trainees' room Laundry Night duty room Canteen Shop

The functional relations among the above facilities can be summarized in the following diagram:

Figure 5-2 Function of the Facilities



Taking into consideration the above factors, the facilities layout is planned as follows:

(1) Administrative Section

The administrative section, with administrative and servicing functions for the facilities, agricultural cooperatives and members in the area, and planning and researching functions for training, is arranged in one block and is easily approachable to visitors.

(2) Training Section

The training section is arranged on the 2nd floor of the administrative building, which is near the administrative section and is convenient to lecturers and for preparation of training materials, and away from visitors and the auditorium to avoid disturbance of the training.

(3) Auditorium

This is designed to be a multi-purpose hall as well as an area to be used for training. It can accommodate large meetings, such as cooperative meetings, information services for the neighboring farmers, general meetings of lodging trainees and recreational activities of the trainees at night. The auditorium is put in a location which is easily approachable from the outside and is convenient to the training section and dormitories.

(4) Workshop

The workshop, as a part of the training section, is isolated from other activities, since noise is generated by such jobs as disassembly, repair, assembly and adjustment of agricultural tools and equipment.

(5) Dormitory

The dormitory is located with easy access to the Administration section and Training section. The canteen is located at a key position where it can be easily utilized by the people in the dormitory classrooms, administration building and auditorium.

The facilities stated above are arranged as follows, taking into account the physical conditions, land shape and direction, etc.

Figure 5-3 Block Plan

