

CHAPTER II

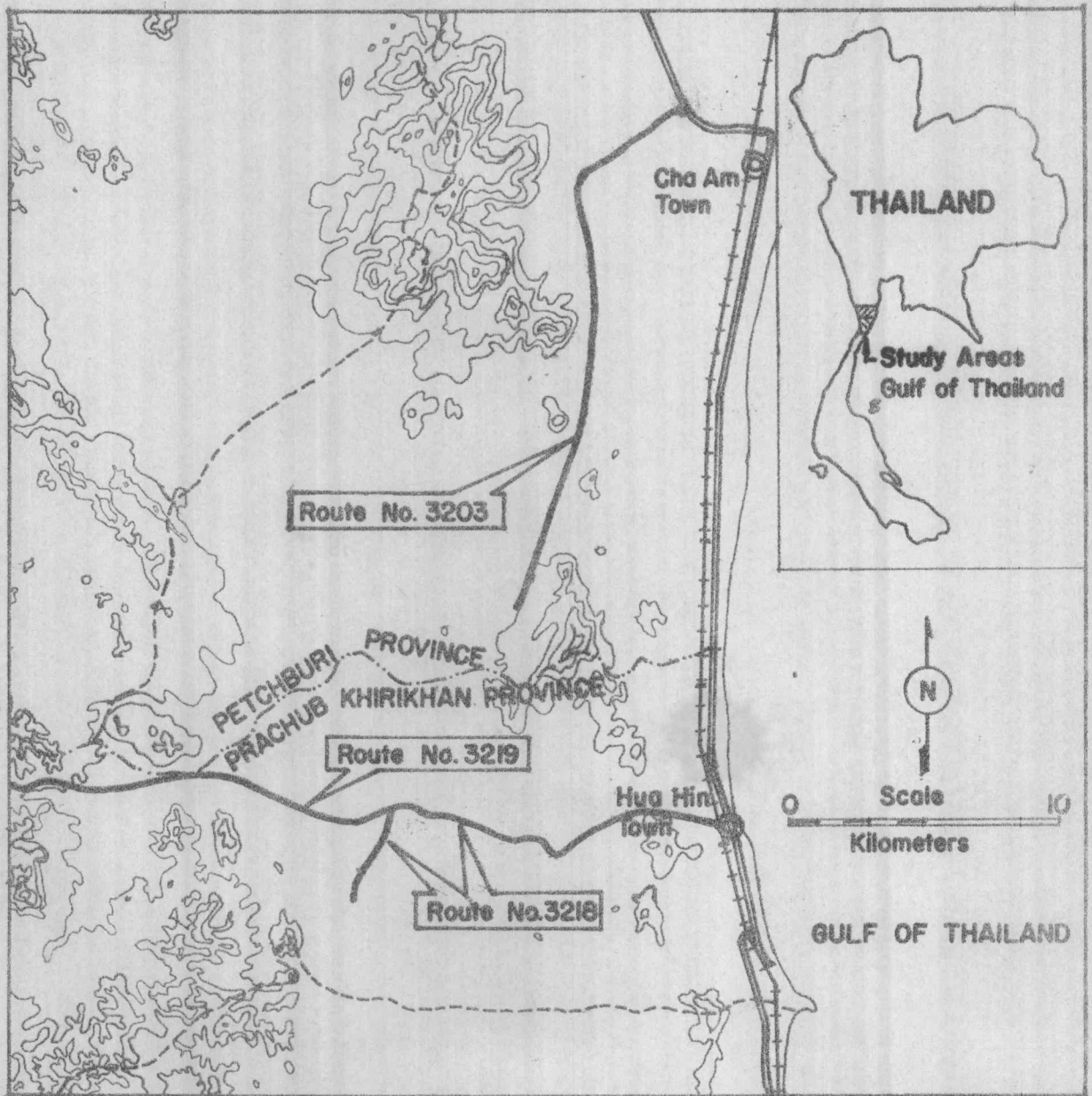
AREAS OF STUDY

Location and History of the Feeder Roads

Two feeder roads, the Huptapong and Hua Hin-Nong Plub roads, in the southwestern part of Central Thailand were selected as study routes for this research. As shown in Fig. 1, their eastern termini are about 30 km apart on the Southern highway. Each road penetrates westerly from the main highway to provide access to the land to the west which was previously inaccessible.

Route No. 3203, the Huptapong feeder road, was originally an earth track. It was rebuilt with soil aggregate in 1969, and the northernmost segment of 8 km was provided with a bituminous surface in 1973. The remaining 9 km is still soil aggregate of about 8 meters width. The whole length of 17 km is situated entirely in Cha-Am District, Petchaburi Province. It runs from the Southern highway, at a point 5 km north of the Cha Am District seat, to Don Ma Kok Village in the southern part of Cha Am District. The road passes directly through five villages: Huptapong, Nong Yao, Ang Hin, Nong Klao Nok, and Don Ma Kok. There are another 45 km of distributor roads running from the Huptapong feeder road into nearby villages. Most of these roads were built gradually from district finances as earth track roads, and some of them have been recently reconstructed from provincial

Fig. 1 – Locations of the Huptapong Feeder Road and the Hua Hin – Nong Plub Feeder Road



- ==== Highway
- Study Feeder Road
- +—+—+—+— Railway
- Provincial Boundary
- District Boundary
- ⊙ District Town

finances as soil aggregate roads. The former earth track roads could be used only in the dry season. The centroid of the area served by this road is approximately 160 km from Bangkok on the Southern highway travelling along the Thonburi-Pak Tho Highway, thence via the Petchaburi town ¹ by-pass.

Route No. 3218 and its continuation, No. 3219, runs from Hua Hin to Nong Plub with an extension to Rong Rian Walai, 4 km away from Nong Plub Village. The total length of this road is about 31 km; it is situated entirely in Hua Hin District, Prachub Khirikhan Province. Prior to construction of an earth track in 1963, there was no defined road. In 1969, the earth track was rebuilt as a soil aggregate road. The road can be divided into two sections: (1) the eastern portion of 13.6 km from Hua Hin town through Nong Khon and on to Nong Tapow (a branch from Nong Tapow runs southerly a distance of 5.2 km to Huei Mongkhon) and (2) the western section of 17.4 km from Nong Tapow through Huei Pak Ngam and Nong Plub to Walai Village. In 1974, the first 5 km west from Hua Hin were paved, leaving the rest as a laterite road about 8 meters wide. Another 60 km of ARD and District feeder roads serve scattered villages in the area. The condition of ARD roads is generally fairly good, but the District roads can be used only in the dry season as they are mostly earth tracks. The centroid of the area of influence is approximately 195 km from Bangkok along the Southern highway.

¹

In Thailand, the provincial capital takes the same name as the province.

The alignments of these two feeder roads are of fair design, but the condition of the surfaces is rather bad. They become corrugated and rutted in the dry season and have large boggy areas during the wet season. The roads have been regraded from time to time by maintenance crews of the Highway Department. After regrading, the roads remain in fair condition for the next few months.

Areas of Influence

There are many concepts to be considered in defining the area of influence. One is the area of influence which existed in a particular year with respect to a track, or a laterite, or a paved road. By arbitrarily specifying a distance from the center line of the road, the area of influence in this concept could be measured easily from an aerial map if one were available. A second concept is the potential or maximum area of influence; this could be ascertained by considering the distance to be travelled via the nearest branching roadway or track, with regard for the natural topography and physical features. Under the second concept, the influenced area would be greater than if an arbitrary division or a specific distance from the feeder road were selected. The second concept also takes into consideration of the whole local road system serving the area. One measure of the "degree of development" is the ratio of the currently developed area to the maximum area of influence.

The area of influence of a feeder road in this research is defined as the group of villages, or a particular land

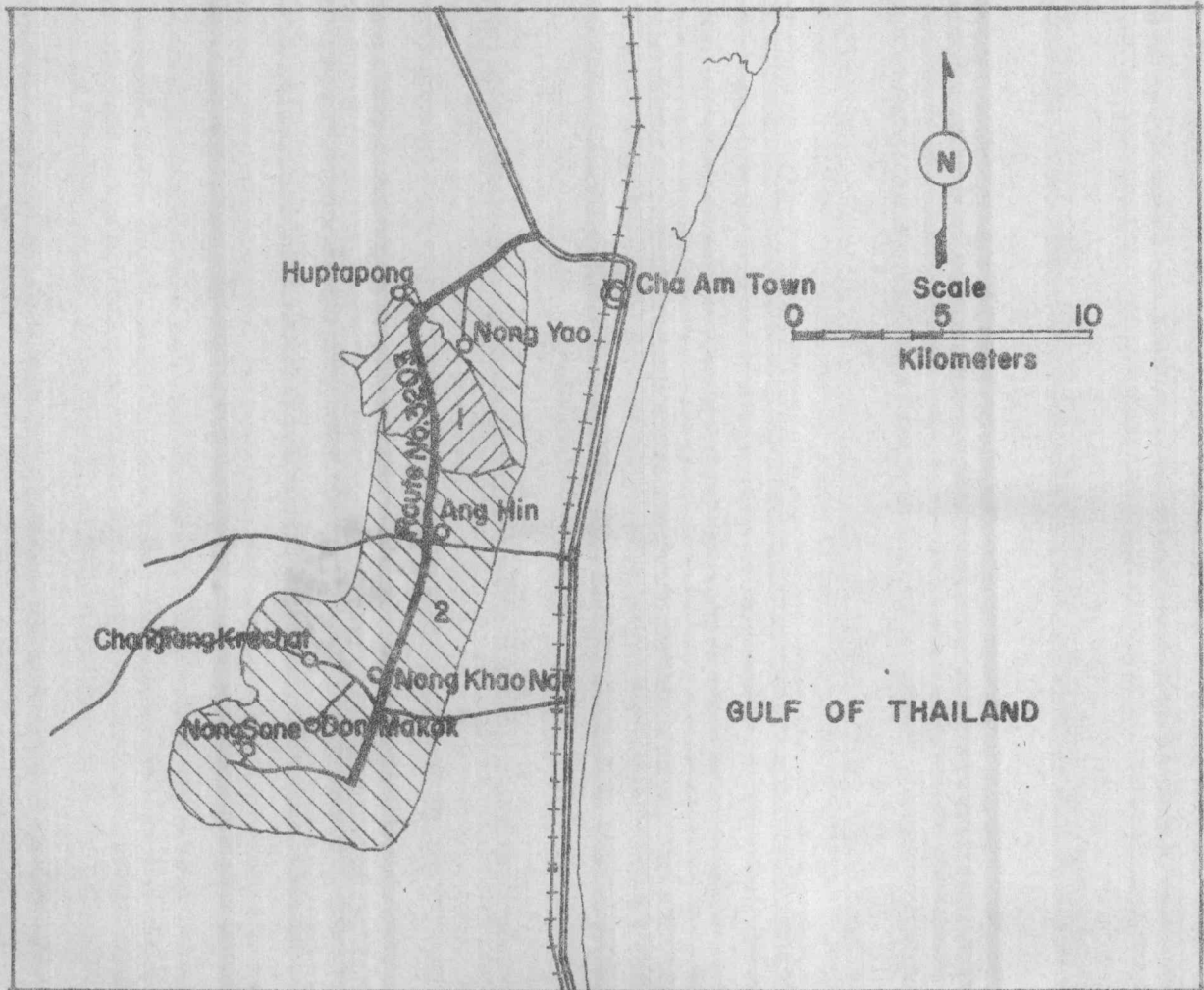
development project, which is served by that feeder road. As aerial photographs for this region are not available, the closest approach that could be used was to consider the areas whose villages use the study feeder roads. The two study areas in this research have spur roads which run from the feeder roads to villages and to farms as shown in Figs. 2 and 3. Distant villages on some link roads that are accessible by other feeder roads were considered to be not within the area of influence of the study roads.

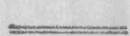
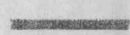
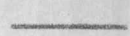
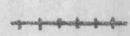




In this study, the remote areas served by these two feeder roads were divided into two categories: (a) project area and (b) non-project area. For the Huptapong road, these subdivisional areas are: (1) the Huptapong Rural Development Center (the ex-Israeli Project); and (2) the remainder of the whole area of influence of the Huptapong feeder road after subtracting the land represented by item (1). For the Hua Hin-Nong Plub road, the subdivisional areas are: (1) the Hua Hin Land Development Project (the ex-Australian Project); and (2) the remainder of the whole area of influence of the Hua Hin-Nong Plub feeder road after subtracting the land represented by item (1).

Background and General Description of the Study Areas

Even through the remote areas served by these two feeder roads are located in different provinces, the geographic, climatic, and socio-ethnic characteristics of the people who live in these areas are substantially similar. The two roads are only 30 km

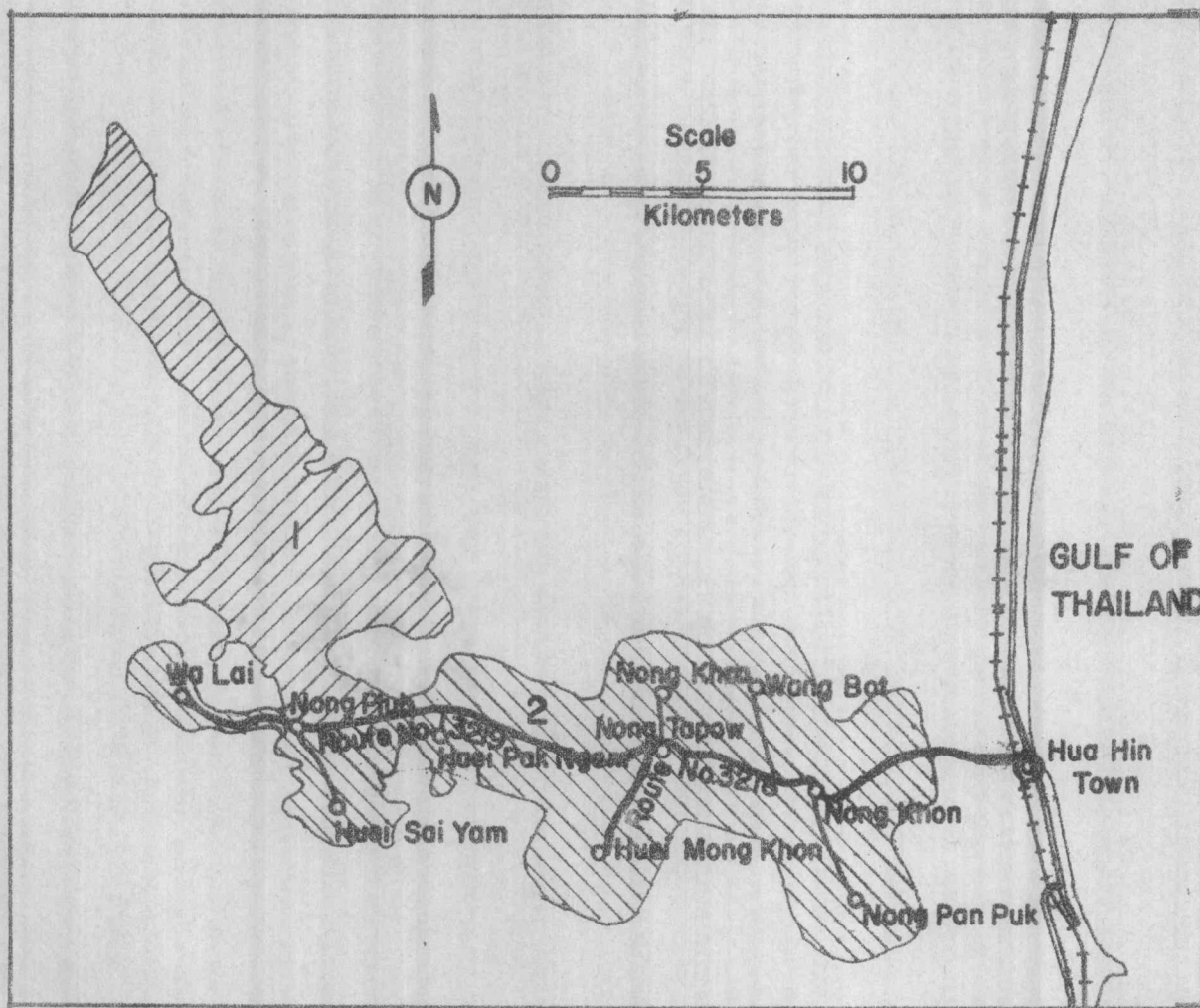
Fig.2 - Location of the Huptapong Feeder Road, and Showing the Study Areas in Cha Am District

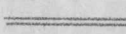
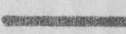
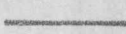
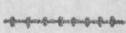






-  Highway
-  Study Feeder Road
-  Feeder Road
-  Railway
-  The Huptapong Rural Development Center
-  The Remainder of the whole Area of Influence of the Huptapong Feeder Road After Subtracting the land Represented by Item 1
-  District Town
-  Village

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Fig. 3 — Location of the Hua Hin — Nong Plub Feeder Road, and Showing the Study Areas in Hua Hin District



-  Highway
-  Study Feeder Road
-  Feeder Road
-  Railway
-  The Hua Hin Land Development Project
-  The Remainder of the whole Area of Influence of the Hua Hin - Nong Plub Feeder Road After Subtracting the Land Represented by Item 1
-  District Town
-  Village

apart and the majority of the settlers were born there; some migrated from the Central Region of Thailand. Both roads pass through agricultural land, mostly producing upland crops with some vegetables and fruit trees. The harvested area of upland crops in Hua Hin and Cha Am between 1973 and 1975 is shown in Table 1. With the exception of the Dole (Thailand) pineapple plantation and cannery, situated at km 25 from Hua Hin on the Nong Plub road, there has been very little industrial development in the vicinity of either study road. Neither of these remote areas are significantly influenced by the presence of the mainline railway which parallels the Southern highway in this area.

The Huptapong Rural Development Center (the ex-Israeli Project)

The project is located 5 km west of the Southern highway and can be reached via the Huptapong feeder road; the Project Center is 10 km from the District town of Cha Am. Its purpose was to assist farmers in the general area who, because soil conditions were not good and there was a lack of water for cultivation, had had to migrate every 3 or 4 years. Therefore, a block of 10,000 rai of Government land, which had been officially reserved as forest, was expropriated by His Majesty the King, and was planned by the Cooperative Promotion Department to provide in the final stage 25 rai of land for each settlement family. The farmers selected to settle in the project area were to utilize the allotted land without payment of rental charges, and would be given title deeds to that land if the farmer maintained good

Table 1 - Harvested Area (rai)¹ of Upland Crops in Hua Hin and
Cha Am

Upland crops	Hua Hin			Cha Am		
	1973	1974	1975	1973	1974	1975
Maize	6,300	4,580	4,280	2,000	2,150	
Pineapple	3,710 ²	22,500	31,750	850	950	
Castor seed	2,800	4,460	1,750	1,993	2,350	
Soyabean	1,500	400	280	40	65	
Paddy	1,220	1,280	1,325	150	150	
Ground nut	1,082	550	370	250	345	NA
Sugarcane	850	7,250	12,800	5,000	8,000	
Cassava	450	450	350	1,200	1,350	
Watermelon	350	640	535	200	200	
Black gram	240	-	-	380	520	
Sweet potato	135	120	80	2,100	2,100	
Others	405	38	79	15	22	
Total	19,042	42,268	53,599	14,178	18,202	NA

¹
One rai = 0.4 acre = 0.16 hectare

²
Excluding Dole and Thai Pineapple Company.

³
NA = Not available

Source: District Offices, Cha Am and Hua Hin.

behaviour and actively pursued the pertinent objectives of the project.

The project area was surveyed and it was found that 6,500 rai of the land consisted of soil having very low fertility, soil that would be unsuitable for planting any kind of crop; this had to be left as forest. Another 3,500 rai of poor and fair soil randomly arrayed was suitable for cultivation, but would require water for irrigation; this could be drawn from the Petchaburi-Hua Hin Canal. Water for human consumption was to be supplied from subsurface wells. An area of 500 rai was reserved for a Project Center which is now called the "Huptapong Rural Development Center". It was established as an agricultural experiment and demonstration center. In 1974 there were three agronomists, one economist, and 58 non-professional civil servants working on the project. Farm implements owned by the project are a bull-dozer, three farm tractors, and six general-service working vehicles.

The objectives of the Center are to train agricultural advisors, to train farmers in forms of agriculture which are suitable for that area, to study and conduct research on plants which can grow in a sandy soil with limited amounts of water, and to develop the processing of agricultural production. In 1963, farmers within the project area were supported by loans from His Majesty the King who also asked that irrigation facilities be developed for the project. In 1966, the Project Center was established. The 500 rai of Project Center land was divided into

four areas: three equal areas of 125 rai each were for vegetable and crop plant experiments using sprinkler irrigation, surface irrigation, and natural rainfall; the remainder was used for the project office and housing (50 rai) and 75 rai for planting other crops. Meanwhile, a five-year technical cooperation contract between the Thai and Israeli Governments was signed on August 19, 1966. Two families were settled each on 25 rai plots as a sample for experimenting with actual farming; 7 rai were to be used for irrigated crops (due to an inadequate supply of water, this was subsequently reduced to $1\frac{1}{2}$ rai per family) and 18 rai would depend on natural rainfall. Loans of 10,000 baht without interest were made by the Ministry of National Development to each of the first two families. Following satisfactory operation of the sample farms by the two experimental families, the project was really begun in 1968; 128 families were selected to settle on approximately 1,000 rai of land, having 7-rai allotments per family. In 1971, 134 families in the project established a cooperative called "Huptapong Agricultural Cooperative, Ltd." In 1972, approximately 2800 rai of virgin land were distributed to the 134 families, 18 rai each. This was in addition to the previously allotted 7 rai, thus making a total of 25 rai per family. In 1973, more irrigation water was supplied to the farms, adding $1\frac{1}{2}$ rai of land to the previously irrigated $1\frac{1}{2}$ rai, making a total irrigated area of 3 rai per family, thus reaching the full apportionment of irrigated land. The number of members increased gradually every month. Another 450 rai of virgin land was

distributed to the adult sons of the members in 15-rai allotments, and 7 rai each to 5 new members in March 1975.

The Thai Government has allocated a budget of 12-million baht to the Huptapong Project over the last 11 years (1965-1975). The Israeli Government has donated another 350,000 baht worth of agricultural implements, three scholarships, and a total of ten specialists to deal with the project.

In the Project area is a primary school, a temple, and a second-class health station. To date, there is no electric power service and the settled families have to drink rainwater that they store in tanks or big jars; they use irrigation water only for agricultural purposes.

The Remaining Area of Influence of the Huptapong Feeder Road

The remainder of the area of influence comprises the villages that are situated on both sides of the Huptapong feeder road. In this context, there are considered only those villages that have a convenient opportunity to use the Huptapong road. These villages are: Nong Yao in Khao Yai Sub-district; Nong Khao Nok, Don Ma Kok, Nong Sone, and Chang Tang Krachat in Huei Sai Nua Sub-district. There were 383 families comprising a total of 2698 people living in these five villages in 1975. Thus, these families average about seven persons in a family; males and females are nearly equal in number. The rate of growth of

residents in these villages during the last two years was 3.4 percent per year.

In 1974, there were three primary schools with 449 pupils and 16 teachers, the Petchburi Agricultural School with 168 students and 14 teachers, and a temple in the area of these five villages. In the past two years, the number of pupils in these five villages increased at 12 percent per year. The number of teachers increased at 10 percent per year. Meanwhile, the number of schools, temples, and health stations did not change.

The Hua Hin Land Development Project (the ex-Australian Project)

The project is located 27 km west of the Southern highway and is served by the Hua Hin-Nong Plub road. In 1969, it was requested by His Majesty the King that the Royal Thai Government investigate the site for a pilot land development project. The initial feasibility study was conducted by the Land Development Department on the site comprising 55,000 rai of an undeveloped valley in Prachuab Khirikhan and Petchaburi Provinces. This Government land had previously been officially reserved as forest, but it had been occupied by a number of landless farmers long before the project began. These settlers cut native forest trees for timber, charcoal production, and to clear the land to plant crops for their own consumption.

The objectives of this project are: (1) to make the most profitable use of the natural resources of the area; (2) to assist poor people who have no land by helping them earn a regular income; and (3) to promote a project that would require both self assistance and mutual cooperation with subsequent benefits for both the individuals and the community as a whole.

The project was initially planned to have 30,000 rai of pasture for livestock production on land which was classified as being unsuitable for crops. After study by the Australian Development Assistance Agency, it was recommended that the 30,000 rai of proposed pasture land would be better left as forest as the returns from beef production would be very low. Thus, the earlier aim of development of pasture was changed. Another block of 20,000 rai, which is nearer to the Hua Hin-Nong Plub feeder road was planned for agricultural production. An area of 500 rai was reserved for a Project Center to include the project office with staff housing and an agronomical experimentation facility. The Project Center acts as an intermediary between the farmers and the Governmental agencies by assisting the farmers within the project, studying and conducting research, and producing seedlings to support the project farmers and others in the vicinity. In 1974 there were 10 agronomists, 5 economists, 2 engineers, and 26 non-professional civil servants working on the project. Farming equipment that belongs to the project includes 14 farm tractors, 2 dump trucks, and 7 units of working vehicles.

The farmers selected to settle in the project area will be able to utilize that land for generations, but will not be given title deeds to the land. Payment of a nominal rental for the land, at the rate of 1 baht per rai per year, is made to the Provincial Management Organization. The settled farmers are also **required** to compensate the Government a total of 200 baht per rai for cutting trees and plowing the land. This is in partial compensation of the estimated cost to the Government of 300 baht per rai for this work; the farmers may repay their assesment without interest over a 12-year period. The project villages are served with some public utilities, such as: roads, **electricity**, water supply, etc. Every farmer in the project has to be a member of the Nong Plub Agricultural Cooperative Co. Ltd. (multipurpose cooperative), which is the market to which farmers can sell their agricultural products or buy seed, fertilizer, etc. Also, the cooperative serves as a bank at which farmers can deposit or borrow money.

This project actually commenced in April 1972. At first, 47 families were approved to be members; each occupied an area of 15 rai. In 1973, another 18 families were added giving a total of 65 families; each family was allocated 25 rai of land for crops and a housing site.

Village No. 1, which was initially planned to comprise 100 families, was found to be limited by natural boundaries which reduced the number of farms to 84. Village No. 2 will comprise

about 60 families occupying a total of 1,500 rai. In 1975, the total area for cultivation was extended to 8,000 rai. It is proposed to increase this to 20,000 rai in one or two years; this will then constitute the full operation of Village Nos. 1 to 4, being the entire planned project area.

There have been more than ten Government agencies involved in this project. It has proved to be impossible to get the total amount of money that has been invested. However, the only money budgeted for this project in 1975 was 10.3-million baht by the Land Development Department. There are a primary school, a temple, and a second-class health station in the project area.

In 1969-1970, a socio-economic survey of settlers in the Hua Hin Land Development Project was conducted by the Land Development Department. A total 298 families were surveyed; the following conclusions were determined.

1. The majority of farmers (87 percent) were originally from Prachuab-Khirikhan or Petchaburi Provinces, 12 percent had migrated from the Central Region of Thailand, and 1 percent had migrated from the Northern or Northeastern Regions of Thailand.

2. Most of the farmers (51 percent) had resided within the limits of the project area for only 1 to 5 years, 26 percent had been in the project area for 6 to 10 years, and 23 percent had been there for more than 10 years.

3. It was stated that 78 percent of the families settled in the area for the purpose of farming, 18 percent for cutting

wood for charcoal production, and 4 percent for cutting timber for sale.

4. The preponderance (46 percent) of the families consisted of 4 to 6 persons, 25 percent of the families had 7 to 9 persons, 21 percent of the families had fewer than 3 persons, while 8 percent of the families had more than 9 persons. About half of the members of each family were capable of working in agricultural pursuits.

5. Previous experience in some agricultural enterprise was reported by 77 percent of the families; in addition, 4 percent had worked in charcoal production, 3 percent in business, 3 percent were civil servants, and 2 percent had been engaged in fishing.

6. The average net annual family income was 6,550 baht, of which 3,820 baht was derived from agriculture, the remainder coming from charcoal production and other activities. The average return from agricultural activity was at the rate of 270 baht per rai.

7. The average level of debt at the time of the survey was 3,160 baht, of which 36 percent of the farmers had borrowed from merchants, wealthy people, neighbours, or relatives; the highest rate of interest noted was 40 percent per annum. The Bank of Agriculture and Cooperatives provided loans for 30 percent of the farmers, using their land for a guarantee of repayment.

The Remaining Area of Influence of the Hua Hin-Nong Plub Feeder Road

The remainder of the study area comprises the villages that are situated in the vicinity of the Hua Hin-Nong Plub road.

Only villages that have ready access to this road were considered. These villages are: Nong Khon, Nong Tapow, Wang Bot, Nong Kra, Nong Pan Puk, and Huei Mong Khon in Hinlekfai Sub-district; and Huei Pak Ngam, Huei Sai Yam, and Walai in Nong Plub Sub-district. In 1973, there were altogether 1365 families comprising a total of 7900 persons living in these villages. This leads to an average of 5.7 persons per family, which is lower than that found for the families living in the area of influence of the Huptapong feeder road in Cha Am District. Males and females of the above six villages in Hinlekfai Sub-district are nearly equal in number, but the number of males exceeded that of females by 20 percent in the three villages in Nong Plub Sub-district. The rate of growth of residents in Hinlekfai Sub-district was 9.6 percent per year from 1971 to 1973, and 20 percent per year in Nong Plub Sub-district. These huge growths are the result of immigration of settlers from other places.

In 1974, there were four primary schools with 422 pupils and 17 teachers in the three villages in Nong Plub Sub-district. There were also six primary schools with 1,249 pupils and 43 teachers in the six villages in Hinlekfai Sub-district.