

## CHAPTER 1

## INTRODUCTION



## Background of the Research

The Royal Thai Government annually invests large amounts of money in the construction and improvement of rural roads which link villages to market towns and provide facilities for travelling in the rural areas. The main benefits expected of these village and feeder roads are stimulation of agricultural development, enhanced accessibility of farmers to markets, reduced transportation cost, saving of travel time, reduction of accidents and increased comfort and convenience in travelling. Other than these benefits, indirect or social development benefits can occur simultaneously. These may take the form of increased business and commercial activity and improved educational facilities. Thailand is an agricultural country; agriculture will continue for some time to be a major factor in the development of its economy. For subsistence farmers, the opportunity to improve the level of efficiency of their farming and to market cash crops can only come through improved accessibility for the needed inputs of better seeds, fertilizer, agricultural advice, etc., and accessibility to markets for their surplus production.

As accessibility is directly dependent upon the availability of adequate roads, the condition of these roads, and the presence of suitable vehicles, it is desirable to study the relationships between transportation and agriculture in areas along typical rural roads. The route from Ban Khai to Ban Bung is one of a large number of feeder roads that are typical of those in the agricultural regions in Thailand. It is a farm-to-market road that was considered by the Department of Highways, (T.P.O' SULLIVAN & PARTNERS, 1967) to be needed for developing a portion of the eastern area of Thailand.

In March 1961, in a study on roads for agriculture for the National Economic Development Board, G.H. Bacon reported the following.

"Development of the coastal road through Chonburi, Sri Racha, Sattahip, Rayong and Chantaburi to Trad has resulted in rapid deforestation of the provinces on the east side of the Gulf of Thailand. The land is flat or undulating until it rises to the mountainous watershed which is the boundary with Cambodia. The soils are generally light, here and there extremely fertile but mostly not easy to manage under annual crops. Rainfall is only moderate along the coastal flats but is plentiful in the hinterland. Sugarcane and cassava are the cash crops of Chonburi, with fruit and rubber becoming dominant towards the south. Properly managed, the Southeast

could become the richest agricultural area of Thailand. Badly managed it could become a desert of *Imperata cylindrica*. Feeder roads could undoubtedly expedite the development (destruction) of the area but, except for construction of the short-cut from Rayong to Chonburi, it is clear that a road programme should not be encouraged except as part of a development plan covering land use and land tenure. Given a good development plan, Southeast Thailand could quickly solve any population-pressure problems of the Northeast and the Chao Phya Plain and could make a greatly increased contribution to the country's economy."

The present research is an attempt to evaluate how transportation is related to the business of the affected farmers in their farming operations, and their relationships to the community of suppliers and purchasers of farming necessities. The study has also attempted to compare the results of this project with the findings of other researchers: PUMKHEM (1975); WINIYAKUL (1975); and LANSDELL (1976).

PUMKHEM (1975) found that the Saraburi-Lomsak Highway has played an important role in increases of cultivated area and agricultural production in the influenced area, as did WINIYAKUL (1975) in his study of two feeder roads in western Thailand: the Huptapong and HuaHin-Nong Plub roads. WINIYAKUL (1975) tried to find a relationship amongst numerous

factors. He knew that the study feeder roads seemed generally to affect such parameters as accessibility, availability of transport by hired vehicle, and trip-rates of the farmers. Distance from house to farm seemed to have no effect on actual agricultural outputs. Vehicle availability and accessibility appeared not to affect production problems, but inaccessibility affected marketing problems. Recent research conducted by LANSDELL (1976) developed many interesting results from study of a part of the Mun-Chi river basin. He found that isolation was not a significant factor in economic or agricultural development. The changes observed were found to be due to actions of the farmers, merchants, and the Government.

It is seen that different study areas have produced a variety of results. These may have depended on the environment of each area. The answer to the question: "What are the findings for this particular study area?," is the goal of the present research.

#### Objectives of the Research

Tertiary roads, or farm-to-market roads, generally branch out from secondary roads to enable farmers to transport their farm products to markets or to move farm-inputs to the cultivated area. It is believed that better roads will

increase the efficiency of transport and result in a reduction of transportation cost. Consequently, the ultimate cost of goods and services should tend to be lower. A new route or an improved road can sometimes induce or effect an increase in agricultural production or cause extension of the growing area. Such roads can affect agricultural development in a region. ✓

The objectives of this study were to investigate the role of the Ban Khai - Ban Bung feeder road in the agricultural development of the area in which it is located and to study the accessibility of farm folk to transportation for both themselves and their goods. Also studied are the problems of transportation, and farming procedure. An evaluation of existing transport activities of local residents and the types and movements of the vehicles which serve their needs was an important objective of this research.

#### ✓ Sources of Data

Data for the study were gathered from many sources. The main body of data came from interviews of farmers in the study area. These took place at the farms and at village centers. The information obtained comprises details of agriculture and transportation for the last agricultural year. The selection of farmers to be interviewed was randomly chosen. ✓  
A field survey of traffic on the route was made at a roadside





census point for traffic volume counting to investigate the daily traffic pattern. Some data were obtained from Government offices that are concerned with the study area. Agricultural production and cultivation data were available from the Agricultural Extension Department of the Ministry of Agriculture and Cooperatives. Information pertaining to the existing road and the traffic volumes measured in the past were obtained from the Highway Department; the National Statistics Office provided statistical records of vehicle registration for the two study Changwads\* Rayong and Chonburi.

The author is impelled to comment on the unreasonableness of some of the agricultural production data obtained from the Agricultural Extension Department of the Ministry of Agriculture and Cooperatives. This may be due to mistakes having been incorporated at the original sources of the data: the District Agricultural Officers (Kaset Amphoe) or the Provincial Agricultural Officers (Kaset Changwad). Many figures seem to have come as the officers' opinions, not as a result of surveying or collecting information in the field. The author, of necessity, has used data for this study which incorporates unreasonable figures, though he sought to check with the original sources.

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\*Changwad is a province. In Thailand the provincial capital takes the name of the province.

This made the picture more confusing because the source data were again different from those issued by the Department. However, these data seem to be the only historical information available for studying crop production in the study area.

In a recently published report on Highway Planning in Thailand, the writer\* noted:

"A word of caution is necessary on the quality of statistical data. Data collection and compilation in Thailand is not well organized; consequently, many data are incomplete and often mutually inconsistent. Moreover, the Government frequently revises the past time series based on what it considers to be up-to-date information whose credibility is often not better than the original data. The result is that time series published by the Government at different times are not consistent with each other. For instance, some of the data now available from the National Economic Development Board and the Ministry of Agriculture are not necessarily consistent with the data used by AIT researchers in the past, though their sources have been the same. ... Specific figures for any particular years are frequently suspect, however."

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\* Park, Sei-Young (1976), Highway Planning in Thailand, An Inquiry into the Nature of Project Return; Doctoral thesis, Harvard University, Cambridge, Massachusetts. (Distributed to Thai Government officials through the World Bank).

### Expected Usefulness of the Research

This study should lead to a better understanding of the results gained from road construction or improvement through an agricultural area. Whilst the Ban Khai-Ban Bung feeder road is thought to be primarily a farm-to-market road, it has been observed that a large fraction of all vehicular trips are associated with the movement of people. An attempt was made to identify and quantify both the goods and person-trip requirements of this agricultural area. From such information can ultimately come guidance for determination of Governmental policies for improvement of very low standard roads.

### Literature Review

In the developing countries, it is believed that investment in highway construction and improvement can cause changes in economic and social development, particularly in the rural areas. New routes can open new areas for farming, marketing, commerce, and industry. There are numerous studies of the economic effects of highways in relation to the traversed area; the main purpose of these studies has been to try to understand how a new highway resulted in benefits to the nation. It is necessary that the Government know what the types and



magnitudes of benefit will be prior to investing large amounts of money in infrastructure projects.

Several different approaches have been used in economic impact studies. Some researchers have used the "before and after" method -- the analysis of a period prior to improvement of a highway which is then compared with the same parameters at a time after the completion of the improvement. The combination of cross-sectional and time-series analysis has also been used to detect the effects of change on an existing situation. Evaluation of such data can indicate the trends of economic events thought to be associated with the highway improvement. These methods need detailed data covering economic and social aspects of the area traversed by the highway during a time period spanning from before to after construction or improvement of the highway. Comparisons of production before improvement of a highway with that of the years after providing a new highway aid in understanding the benefits of the highway project. Other researchers have used comparisons between the study area and a datum or control area. That method involves a simultaneous comparison of the area affected by the highway improvement with an area that had similar characteristics but is thought not to be affected by the highway. Another way of approaching economic studies is that of applying statistical or mathematical techniques

using correlation analysis to analyze the data obtained from field surveys.

The following studies used various methods as described in detecting the effect of highway improvements on economic and social development.

KLANGBOONKRONG (1971) employed a combination of cross-sectional and time series analysis to determine the changes in economic and social development due to the opening of the Songkhla - Na Thawi feeder road. Evaluation of data was done for a period of seven years covering 1964 to 1970, a time period before the construction, during construction, and after its completion. Klangboonkrong chose 1964 as the base year, with an index equal to 100, and compared agricultural production and social development in the study area in the years after 1964 with the base-year data.

BONNEY (1964) described research conducted in Sabah (North Borneo) in 1960 - 1962 on the economic effects of road improvement. He developed a mathematical model to predict the expansion of agricultural acreage based on the hypothesis that the area of land used for export crops per mile of road is a function of: (1) quality of land; (2) distance from the main commercial center and market; and (3) standard of the road used.

Bonney's expression for total area (acres) of land cultivated per mile of road is:  $1015 U$ , where  $U$  represents the proportion of the total area served by the road that is cultivable for all crops. In metric units, this formula is  $2.55 U \text{ sq.km/km}$ . Bonney found that the influence of a road on land use extended about five miles from the road, the intensity of cultivation decreasing with outward distance.

WINIYAKUL (1976) measured the "degree of development" in two project areas compared to two non-project areas. His study areas were situated in western Thailand in Changwads Petchburi and Prachuab Kirikhan. The two project areas were large agricultural demonstration projects, one assisted by the Australian Government and the other by the Israeli Government. He used comparisons between each study area and a control area to determine the effect of each new feeder road.

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