

SOCIO-ECONOMIC CHANGES IN THE MUN RIVER BASIN 1900 - 1970

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I Introduction

1. Scope and history

The Mun River Basin includes all the basins of the Mun's tributaries, for example, Chi River, Phong River, Pao River, Yang River, Seybai River and the like. These areas are called by a geographic name Aeng Khorat or the Khorat Basin. They make up the majority of the Khorat Plateau. At present it is the Northeastern Thailand. In the former times, before the development of the communication and transportation between this region and the inner cities, this region was geographically isolated from other parts of Siam. The communication and transportation between this region and other parts of Siam were impeded by very many obstacles including the high chains of mountains which separate this region from other parts of Siam. In addition, the route between Nakhon Ratchasima and Saraburi, which is the nearest way to get connected with the inner cities, is full of malaria and the route itself is difficult to make use of. It was forbidden even for the bull carts. There was scarcity of accommodation on this route. Considering the difficulty of communication as mentioned here above, we can understand that the economy of the Khorat Plateau remained more auto sufficient than that of other parts of Siam in the same period. The volume of exchange with other region, especially with Bangkok, was very small. Consequently, the impact of the opening of the country of Siam (Bowring Treaty 1855), introducing Siamese economy into the world's capitalism has little effect on this part of the country when compared to other parts of the country, although the dynasty in Bangkok has expanded its power to cover almost totally this part of the country. The change in communication and transportation which took place for the first time with the construction of the railway connecting Bangkok to Nakhon Ratchasima which completed in 1900 brought about many changes in this region, economically, socially and politically. This paper is aimed at studying economic changes.

2. The scope of the study

2.1 Geographical scope

The area covers the Mun River Basin, starting from the Upper Mun River Basin which covers Nakhon Ratchasima, Buriram and Chaiyaphum provinces, to the Lower Mun River Basin, which cover Surin, Si Saket and Ubon Ratchathani provinces. Also included are the basins of the several tributaries of the Mun

River which cover Khon Kaen, Kalasin, Maha Salakhm, Roi et, Yasothon and Amnat Charoen provinces. The economic changes took place in the Upper Mun River Basin first, having Nakhon Ratchasima as the center of the changes. The conditions making it possible for Nakhon Ratchasima to become the center of the changes are as follows.

1) The Upper Mun River Basin with Nakhon Ratchasima as center had always been the gateway of exchanges between the whole Khorat Plateau and Bangkok, even before the existence of the railway. The commercial growth which took place slightly after the Bowring treaty also took place in this area more distinctly than in any other part of the region. It is also the case for the penetration of the administrative power from Bangkok into this part of the country, which also happened a little before the advent of the railway. This also helped focus the trading route to Nakhon Ratchasima.

2) The railway Bangkok - Nakhon Ratchasima had its terminal in Nakhon Ratchasima and it remained like this for a long time. Later on, through the reign of King Rama VI, the railway was extended to reach Buriram only. Buriram is still part of the Upper Mun River Basin.

Therefore the economic changes in the Mun River Basin and the Khorat Plateau as a whole, resulting from the railway, took place in the Upper Mun River Basin first and then extend to the rest of the plateau.

2.2 The time scope

The time scope of this paper is between 1900 and 1970. The choice of the time is based on the fact that the year 1900 is the year when the railroad reached Nakhon Ratchasima and remained there for quite a long time, all along the reign of King Rama V. It was not until 1930 that the railway reached Ubon Ratchathani, where it is the last province before the Mun River joins the Mekhong River.

The economic changes in the Mun River Basin, resulting from the existence of the railway has been continuing since 1900. It started from the Upper Mun River Basin with Nakhon Ratchasima as its center. The economic changes have continued and expanded in areas incessantly together with the extension of the railway down to the Lower Mun River Basin.

The influence of the railway on the economy of the Mun River Basin terminated in 1970, when the Thai government started the construction of roads between 1963 and 1970. The major characteristic of this project is the project of road construction for the North East which had only one cycle of roads between Nakhon Ratchasima and Ubon Ratchathani and went up north to Roi-et, Maha Sarakhm before it joined the friendship road heading for Khon Kaen, Udon and Nongkhai. The financial aid from the United states for this project might be explained by the fact that the United states was in the cold war and felt their obligation to protect Thailand from communist invasion.

In 1970, we see the birth of new transportation in the Mun River Basin and in the Khorat Plateau. This transportation is based on roads. Trucks can penetrate to the remote areas that the train can never reach. With this new transportation, They do not need to wait like they did with the train. From now

on the economy of the Khorat Plateau has taken on new form which is a complete change when compared to what it was in the past. This is the same kind of changes as that which occurred with the event of the railway in 1900. From that time on, the economic system of the Mun River Basin and the Khorat Plateau has gradually merged with the other parts of Siam, together with other aspects of the culture.

II Economic Condition before 1900

1. Self Sufficient Econom

1.1 production

The production in the Mun River Basin before the existence of the railroad in 1900 was aimed at satisfying the need of the household. The products involved items necessary for daily life. There was little dependence on the products from outside the community. The production is based on the usefulness of the products rather than their market value. Therefore there are variety of products but the number of each kind of product is not high. This is because they are not aimed at supplying the market. They were produced only in an adequate amount for the consumption in the family and for sharing in the community.

The main occupation of the people in the Mun River Basin is rice farming. From the geographical characteristics, riverside basins and plain along the Mun River and its tributaries, there are many parts which are appropriate for rice farming. The rice farming is dependent on the rain because the purpose of the production is to satisfy their own need. Therefore the attempt to introduce new technique, such as irrigation, fertilizers, weed killer etc. is not successful. The tools and equipment used for farming are mostly produced locally with the available materials, except for some iron parts of the tools which were not made in every village. For example, hoes, spades, sickles, the blade of the plough. These tools were bartered with the blacksmith villages, such as the village of the *Suwei (Kui, Koei)* at Ban Tadob, Muang District, Si saket province. (23)

In addition to rice farming, there are some other agricultural professions which made it possible to be self-sufficient. For example, plantation of food crops, rice, beans, cucumber, sesame and corn etc. There were also the products for consumption, such as cotton, Khram (blue tint used for coloring clothes). There were both vegetable gardening and fruit gardening. There were perennial and deciduous tree crops. One of the most important plant that can be found in every village is bamboo which is used for making various devices, small size to big size like some parts of the house. Apart from this, there is cattle raising especially oxen or buffaloes. The Mun River Basin and the Khorat Plateau are the most important producers for the labor force of the oxen and buffaloes which they use for rice farming in the central plain in the middle of Siam, after the extension of the cultivation land for the rice farming resulting from Bowring treaty in 1855.

For the villages along the riversides, such as the Mun River, the Chi River and other tributaries of these rivers, the people also have professions involving fresh water fishing. Their catches were bartered against other products from far

away villages. The fishing tools were simple, such as *nets, ton, tum* and *li*. (very rudimentary tools made of bamboo) The aim of fishing is only to feed the member of the family and to share with other people in the community. There might be the remaining fish to make pickled fish and dried fish, to share with needy neighbors or to barter against rice in the time of difficulty, lack of rains or floods.

The family handicrafts in the villagers in the Mun River Basin which was the most widespread was cotton spinning and silk weaving and silk worm rearing. The planting of mulberry and the silk production in the Mun River Basin was very well known. Apart from satisfying the local need, they also produced for sales in other communities. As for the cotton handicraft, we can say that it was only for the local need. The exchange was made only inside the same community. The cotton handicrafts in the Upper Mun River Basin have almost totally collapsed after the birth of the railroad to Nakhon Ratchasima. As for the silk, it was product which had been in a wider scope of exchange when compared to other products because the production was more widespread, more expensive and cost little in transportation because of the light weight. It could be carried even in the difficult area where communication was in existent. After the family and local consumption, silk was usually sold to middlemen who took it to supply other regions.(1)

Apart from these activities, there were blacksmith, salt farming and pottery. These three sorts of production could not be carried out in every village. Only a few villages are specialized in each of the activity. The raw materials were not available in every village as well. For example, the salt farming had to be done by collecting salt from the salt- mold and put it in a wooden rail in which straw was scattered to collect the salty soil. Water was poured in to let of flow along the rails. The product obtained at this stage is the very strong liquid salt. This liquid is then boiled until it dried up and they obtain the salt. This is the Sinthao Salt. (21) These products were used in the family as well as for exchanging with the products from other villages. This is form of local commerce in the self sufficient economy.

1.2 The Commerce

The commerce in the Mun River Basin before the advent of the railroad could be divided into two categories : The commerce carried out by the local merchant who was called *Nai Hoy* and the commerce carried out by the Chinese merchandise.

1) The commerce by the local merchandise

Because of the great variety of products resulting from the self sufficient economy, the number of each product is then limited. The products were produced only sufficiently for the local need. But sometimes there was shortage of some kinds of products and excess in some other products after home consumption. Therefore the exchange occurred inside the village or between villages. The exchange is in the form of barter for example, rice against salt, fermented fish against salt, cotton against rice.

This form of commerce is the exchange among villages or communities that are not very far apart. The journeys were done on foot with the charges on the shoulders or by carts pulled by oxen. The journeys did not take very long, from 2 to 10 days.

The exchange under this form gave more security to the people who lived in the Mun River Basin. They did not have to be afraid of shortages that might become major crisis. This form of trade is based on interdependence and assistance among the people of the same family. Both parties are related to each other at the same time. This form of trade is at the same time giving, borrowing, buying and selling and assistance is also hidden in this form of trade.

The trade by local merchandise includes long distance trade done by Nai Hoy. This form of trade was done in connection with the remote areas. For example, the trade with the central plain, Cambodia, the left bank of the Mekhong River and Burma. Most of it is the trade with the central plains especially the trade of buffaloes, which had close relation with the extension of the rice planting areas in the Chao Phraya River Basin after the signature of Bowring in 1855. The labor force of the buffaloes and oxen that was used in the central plain came principally from the Khorat Plateau.

Because the terrain of the Mun River Basin and the Khorat plateau are appropriate for the draught animals, therefore we can find draught animal raising everywhere. The procedure of Nai Hoy to carry out his trade was to herd the animals on foot to the central plain after the harvest season. They return to the village when it is the new season for rice growing. The trade of the draught animals in this way was appropriate for the stage of communication at that time. Because the animals could walk by themselves. (7) This procedure of trade had very little to do with the railroad, even when the railroad reached Nakhon Ratchasima. The trade of cattle still continued by herding them on foot. The cattle grazed along the way. It was safe and economical. The products were spread to market in an adequate manner. This was the first trade that brought the money system directly to the village. This was also the first trading procedure that involved the local Nai Hoy and brought him in contact directly with the people of the central plain. It is the procedure of trade that happened before all other form of trade. It also lasted longer than any other trade procedure in the Khorat Plateau. That is since the Bowring treaty 1855 up to the time of transportation by truck in 1970, totaling more than 100 years.

2) The trade of the Chinese merchandise

Although the Mun River Basin does not have resources or important business that could attract the Chinese to come to invest massively like in other parts of Siam, a certain number of Chinese have come to settle down in the Mun River Basin, temporarily or permanently. These Chinese did not stake out their land for agriculture but they concentrated on trading business.

There are two different types of Chinese businesses as follow : They were middlemen who brought the finished products to the Upper Mun River Basin in the proximity of Nakhon Ratchasima. Then they collected the local products, silk, animal hides, coirns, lac and Rew etc. They took these products down to

Bangkok. The second type includes small merchandise who do business between the cities and Nakhon Ratchasima. They took the finished goods from Bangkok which the first group had brought from Bangkok to distribute to the people in the areas around Nakhon Ratchasima. In 1852, the governor of Yasothorn contacted Nakhon Ratchasima for business and invited the Chinese to come to do business in Yasothorn for the first time. (35) It means that in the other communities bigger than Yasothorn, there were already Chinese who were doing business.

These Chinese people played the role of approaching the market to the production areas of the Mun River Basin. This brought about better circulation of money. The trade done by the Chinese is basically different from that of the local merchant, Nai Hoy, that is the Chinese would live on their business and did not do any agricultural activities so as to be self-sufficient. Whereas the Nai Hoy would do trading business only because it is part of life in the self-sufficient business. The Nai Hoy would do business only when the rice farming season is over or when there is special need for it in case of shortage. Therefore apart from the Nai Hoy for the cattle in the region, the Chinese are the first ones who made the system of production for commerce known to the people living in the Mun River Basin. This type of commerce by the Chinese would be very much more animated after the Bowring treaty and the advent of the railroad.

2. The communication in the Mun River Basin before the advent of the railroad

Owing to the fact that the growth of production for the market is always going together with the growth of communication. If there is no appropriate communication, the growth of the production remains limited. The Upper Mun River Basin is the center for communication with many different cities in the Khorat Plateau and Bangkok's areas. Therefore the communication lines that will be mentioned here are divided into two categories. The road between Nakhon Ratchasima and Bangkok and the roads linking Nakhon Ratchasima to the outer cities which are as far away as the Cambodian border and the cities along the Mekhong River.

2.1 *The communication between Bangkok and Nakhon Ratchasima*

The road between Bangkok and the cities along the Mun River has to go through the mountain barriers that surround the Khorat Plateau. Therefore the communication between Bangkok and Nakhon Ratchasima has to face with the mountains. The mountain passes that are commonly used are the Dong Phya fai in Saraburi and the Tago pass in Prachin Buri.

The Dong Phya Fai pass made it possible to travel from Bangkok by boat to disembark in Saraburi and then travel on the land to pass the Dong Phya Fai in Saraburi. To get pass the Dong Phya Fai we had to use the oxen to carry the load because we can't use the cart pulled by oxen because of the terrain that is too steep in some places. James McCarthy came to survey and made a map for the first time in 1884. He told about the journey across the Dong Phya Fai as follows :
...The distance between Saraburi and Khorat there is nothing very interesting excepted the Dong Phya Fai forest which is well known for the areas plagued with

different diseases. During the construction of the railroad, hundreds of Chinese were killed and many more before the completion of the construction... (31)

The road of Dong Phya Fai is the shortest route and the most difficult as well. It takes about 10 days to travel from Khorat to kaeng khoy. Therefore before the advent of the railroad this route was not very frequently used, excepted that there is the urgent business or the travel without major luggage. For most of the merchandise, they preferred the Tago pass.

Tago pass is the road connecting Nangrong District in Buriram and Krabin Buri District in Prachin Buri. This route is more excursive than the other route. However the state of the road is better and it was possible to travel by cart pulled by oxen. Even though they had to lift the cart over the rocks at some very difficult spots. Another advantage is that there were not as many sicknesses as on the other route. It took 16 days to travel from Nakhon Ratchasima to Prachin Buri by this route. Most of the merchants using this route were the cattle merchants who usually herded lots of cattle together. Apart from these merchants, those who used Tago pass were those who traveled leisurely without hurrying or the travelers with a lot of burden to carry.

2.2 The communication between Nakhon Ratchasima and other communities

The major means of transport inside the Khorat Plateau was the bull cart. Although there are a lot of rivers, the Mun, the Chi, the Mekhong and the tributaries of these rivers, these waterways are different from most of the rivers in other parts of the country. There are plenty of rapids and islets being serious obstacles for the fluvial communication. Furthermore, the level of the water is high only for 1 - 2 months of the rainy season. Therefore it was possible to make use of fluvial transportation between Tha Chang in Nakhon Ratchasima and Ubon Ratchathani only for 2 months per year. The rest of the year, people had to resort to the transportation by carts.

Because Nakhon Ratchasima is the main market, buying and selling products to other markets in the region, even some of the products were shipped to the French Indochina across the Mekhong River, especially after the advent of the railroad Bangkok - Nakhon Ratchasima. Therefore, important commercial routes in the region converged to Nakhon Ratchasima and the carts played an important part as means of transportation in the region.

The draught animals for the carts were oxen. Buffaloes were rarely used as draught animals for carts because the buffaloes are not resistant to dry and hot climate. So they are not as appropriate to job as the oxen are. The climate of the region has always been the hottest and the most arid. The trading convoy usually set off in the dry season after the harvest of rice. The manufacture of carts was also one of the most important economic activities in the self-sufficient economy.

III Economic changes after 1900

1. The Railroad Bangkok - Nakhon Ratchasima

The construction of the railroad Bangkok - Nakhon Ratchasima started in 1891, to be completed and opened for the first time on the 21st December 1900.

The total length was 265 kilometers (32). His Majesty the King Rama V traveled to Nakhon Ratchasima to preside over the opening ceremony. This was the first railroad of Siam and that was the first time that the King of Siam ever stepped on the land of Khorat Plateau.

The major purpose of the railway to Nakhon Ratchasima was to encourage and put in place the administration of all the communities on the plateau. One reason that backs up this statement is that the natural resources were not as plentiful as in such other parts of Siam as the North, the South and the East. Therefore the reason that pushed the government to invest such a large sum of money to build the first railway to the Northeast could not be anything other than political motivation. In spite of the fact that there is limitation in quantity of the products in the Upper Mun River Basin and the surrounding regions, the government planned to stimulate the production by introducing the production for the market. These products will be carried by train and reduce the deficit of the railroad. (8)

Table 1. Showing different stages of accomplishment of the railway.

Nakhon Ratchasima - Ubon Ratchathani	Date	Distance(km)
Bangkok-Nakhon Ratchasima	21 December 1900	265.00
Nakhon Ratchasima- Thachang	1 November 1922	21.56
Thachang- Buriram	1 April 1925	90.67
Buriram- Surin	1 May 1926	43.73
Surin- Huaythaptan	1 May 1927	71.75
Huaythapthan- Si Saket	1 August 1928	33.59
Si Saket-Ubon Ratchathani	1 April 1930	60.01
Nakhon Ratchasima - Khon Kaen	Date	Distance(km)
Nakhon Ratchasima - Non Wat	1 March 1919	28.79
Non Wat - Bua Yai	1 March 1931	50.50
Bua Yai - Khon Kaen	1 April 1933	104.22

Source : (29)

The government in Bangkok realized the importance of Nakhon Ratchasima as the center of commercial exchange between the numerous

communities in the plateau and Bangkok. The role of the government in encouraging economic activities is double-folded ; The first role consisted of increasing production for the market. The second role was that the government would encourage the exchange of products between the communities in the Mun River Basin and Bangkok, rather than between these communities and the French colonies. The effort in what concerns the second role made Nakhon Ratchasima the center of commerce between the communities in Khorat Plateau and Bangkok. Especially when the government had the project of building the railway to Nakhon Ratchasima and after the advent of the railway, both efforts of the government were closely related and can be carried out together.

Since the government expanded its administration to the Mun River Basin, the activities that Bangkok undertook in this areas were aimed at economic reinforcement. For example, the crime suppression and the settlement of social order made it safer for the people who carried out commercial activities. The abolition of slavery gave rise to free labor force. Workers could freely travel to find jobs without having to be under the patronage of anybody. It was possible to encourage production for the market. The roads were made safer. The role of the government in these economic changes were very welcome by the Chinese merchants in the Mun River Basin. The government itself also helped the Chinese to be able to run their business conveniently and safely. There is a lot of evidence of cooperation between the Chinese merchants and the government authorities, both individually and collectively. For example, the name list of the people who made contribution to supply food to the telegraph line workers in 1885. (2) The government even gave permission for the Chinese who run business in the Mun River Basin and who had conflicts about debts to choose either Chinese or Thai tribunal to settle their conflicts. (3) We can also see from the name list of the people who made contribution to organize the food hall for the government officials accompanying His Majesty the King when His Majesty came to Nakhon Ratchasima in 1900 to preside over the opening ceremony of the railway to Nakhon Ratchasima. (4)

The railway to Nakhon Ratchasima which was opened to the train traffic in 1900 not only facilitated the transportation of goods but also made it possible for the government to initiated various projects aiming at encouraging the production for the market. There were many government projects that were carried out in the Mun River Basin after the advent of the railway, for example the work of the Silk Technique Department, the intervention of the veterinarians of fight against the contagious disease of the draught animals, and the diverse work of the authorities of the Ministry of Agriculture in the Upper Mun River Basin. These activities of the government helped propagate knowledge of agriculture as well as the ways leading to the commercial production. It is difficult to estimate whether the effort of the government ended up with success or failure. Some of the work could not be assessed concretely. Some did not yield any result in short term. However these activities of the government made changes to the way of thinking, standard value of production and consumption, and some of the lifestyle

in correspondence with the new economic system which was coming into the region with the advent of the railway to Nakhon Ratchasima in 1900.

2. The expansion of the communication within the region

After the railway to Nakhon Ratchasima was opened in 1900, we saw development of the roads connecting important communities in Laos to Nakhon Ratchasima, and also to other communities in the plateau itself. In the same way, the number of people who used these roads to transport goods to the railway also increased, including the labors from different communities in the Khorat plateau who wanted to take the train in Nakhon Ratchasima to sell their labor force in the inner circle. (34) The better communication affected and increased the commercial exchange, as well as the volume of traveling of the people. The people could travel to a larger place to earn their living. The limitation of the professions of the people became larger and did not have to remain in the same region or in the near by areas. The better communication had very great effect on the gathering of the goods to supply the market in Bangkok. It also facilitated the distribution of finished products that came with the train. These products could reach the communities in the Mun River Basin and others.

From the report of the railway opening in 1900, we could see the number of wagons used for the goods and passengers which were numbered as follows : 38 passenger wagons and 211 freight wagons. (32)

The sales of the train tickets in different stations in the Upper Mun River Basin, from Pak Chong station to Khorat station, in the first five years of the railway service, 1901 - 1905 were as follows :

1901	The total tickets sold	=	111,520
1902	The total tickets sold	=	158,221
1903	The total tickets sold	=	171,060
1904	The total tickets sold	=	199,020
1905	The total tickets sold	=	188,046 (9, 10, 11)

The expansion of the communication infrastructure facilitated not only the circulation of merchandise but also the ideas, standard values and tastes. There might not be very much evidence about the development of the communication. But the effect of the communication expansion reflected the fact that the development was much wider than what the remains of the evidence could tell. The social effect of the development that can be seen was that the wider limit of the people's lift. In 1901, only one year after the opening of the railway, we could see that the income of the railway came from *...the Laotians who came back from the rice planting used the railway more than the previous year...*

(13) There was a lot of evidence which told about the people from different communities in Monthon Udon, Monthon Isan and also the communities of Khorat who came to the inner circle to be employed in the rice field, under the surveillance of Nai Hoy during the journey. They went in group from 17 - 120 people. They took the train in Nakhon Ratchasima. (34)

Table 2 Weight of the freight sent to and from Nakhon Ratchasima by train, 1901 - 1918. (in Tons)

	1901	1902	1903	1915	1918
Export	18,873	28,983	27,994	28,580	73,927
Import	3,692	4,275	5,548	9,075	17,372

Source : CMH., Report of the railway service of Siam in 1901, 1902, 1903, 1905, and 1918.

3. The commercial development

The weight of freight according to the table 2 did not include live animals especially pigs which were exported massively from the Mun River Basin. These live animals were counted by heads and not by weight, as it was the case for the other goods.

The kinds of goods exported from the Mun River Basin were mostly agricultural and forestry products. For example, rice paddy, wood, charcoal, animal hide, horns and silk. Therefore the goods exported weighed more than those imported because the weight of the exported freights was great but the value was little. The imported goods were the ready-made goods packed in cases. The weight was not high but the value was. There were great variety of products for great number of people.

The increased volume and variety of goods had interaction with the effort to shift the production from home production to the market orientated production so that the people could afford to buy the finished products coming in with the railway. The train brought the market for the agricultural and forestry products nearer to the Mun River Basin. It also brought the Mun River Basin to become part of the market for the finished products from the foreign industry as well. The goods imported and exported from these areas were not limited to Nakhon Ratchasima and its vicinity the commercial development expanded to the Laotian communities far away. For example, the region of Roi-et in 1912, regarding the silk production, the Chinese took the silk fibers to sell in Nakhon Ratchasima at the price of 28 - 420 baht per Hab. Regarding the pig raising, the pork sold in Nakhon Ratchasima cost 23 - 25 baht per Hab. This latter was considered as one of yielding goods. There were other goods such as animal hides, buffalo s and ox s horns, crude lac. These goods were taken to Nakhon Ratchasima by the merchants of Roi-et in great quantities at the time. At that period, the cotton fields were not exploited in Roi-et because the Chinese merchants imported cotton yarn from abroad. The people found that it was more convenient to weave clothes from the yarn rather than to plant cotton and spin it into yarn before weaving. (6)

The development of profession involving commerce

The increased volume of exchange of goods between the Mun River Basin and Bangkok raised the number of people involved in commercial business, transportation business and labor forces.

More Chinese have settled down in the Mun River Basin after the Bowring treaty in 1855. These Chinese came to run businesses. They bought local products and forestry product and sold them in Bangkok. They took the finished products from Bangkok and sold them in the communities in the Mun River Basin. Nakhon Ratchasima was the center of regional commerce. From the report of the *Phuk pi* (Chinese tax), and the note of James McCarthy in 1884, it was mentioned in both reports that there were about one thousand Chinese, who mostly were in Nakhon Raychasima itself and outer commercial communities, They were middlemen who carried out the exchange between Bangkok and the Mun River Basin. They were ready to assume their role when the railway came to existence. (32)

Table 3 The number of population in the Khorat Plateau, 1919.

Region	Thai	Chinese	Indian	Burmese	Cambo dian	Japanese	The white	Total
Khorat	573,473	4,175	71	55	13,306	2	2	591,084
Ubon	917,675	882	6	5	57,893	-	17	976,478
Roi-et	695,264	515	22	212	1,554	-	-	697,567
Udon	826,083	654	10	218	8	-	15	826,988
Total	3,012,495	6,226	109	490	72,761	2	34	3,092,117

Source : S.Y.B. Vol.8, p.26.

From the table 3, we can see the increase in the number of the Chinese merchants which coincided with the economic and commercial growth in the Mun River Basin. Most of these Chinese people settled down in towns which could be considered as centers of exchange in the region. They also lived in the sub-centers further away. Nakhon Ratchasima was the center of many different kinds of commercial businesses. It was also the biggest concentration of the Chinese in the region. These Chinese were ready both in amount of capital, the known-how of the management and also the close friendship that existed between them and the authorities.

Apart from the Chinese, they were also a certain number of villagers that were drawn into the circle of commercial business. These villagers were sometimes the people who sold the labor force in the business run by the Chinese. The transportation business between Nakhon Ratchasima and the outer communities was also an important business which involved the labor force of the villagers in the Mun River Basin. Because the communication lines in the region which connected with the railway were the roads for carts, which were considered

as the state highways at that time, the economic activities for the people who owned carts were then stimulated and became very animated. The people who were had free time when it was out of the growing season would take their carts to do some transportation between the railway and the outer communities, including Isan and Udon. This is important occupation which could make money for the people. For example, regarding the occupation of the people in Klang District of Nakhon Ratchasima in 1906, we could enumerate rice farming, orchard plantation, resin collecting, salt farming, pig raising and transportation by carts. (28)

The profession of cart transportation was only a complementary occupation. The main occupation remained rice farming. The reason why there was a great deal of transportation was that apart from the fact that the villagers have finished with their work on the rice farm, the waterway communication routes were unpracticable because of lack of water. The crossing of the ponds or swamps were easy especially the cart route also had to pass in the rice field of the people.

Apart from the transportation by cart that have been mentioned here, there were villagers who sold their labor at the exchange spot. For example, the transfer of merchandise between the Nakhon Ratchasima and Ubon Ratchathani, in the season when water level is high, people use the Mun River for transportation for 2 months per year. The transportation by waterway were animated during the two months that the rivers were navigable. For example in 1905 Tha Chang which was a port in the Mun River the nearest to Nakhon Ratchasima there were about 40 ships belonging to the merchants waiting in the port. The hiring of a boat with the crew and laborers from the Isan to Nakhon Ratchasima for a return trip the hirer had to pay 320 baht. The stay in Tha Chang was only 8 days. In case of overstay, the hirer had to pay 21 *Ats* () 10 *Bias* () per person. There were at least 8 employee per ship. The goods from Isan came by ship. But the goods from Udon came by cart. The areas of Nakhon Ratchasima was the center where the goods from Isan and Udon areas were sent to. (5)

Owing to the development of commerce in the Mun River Basin after the advent of the railway, a certain number of villagers were drawn towards the commerce and money, both partially and completely. After the advent of the railway, not only the number of merchants increased but also the kinds of businesses became more numerous. The size of business also increased. This change drew the villagers who were not acquainted with money towards the new economic system, both directly and indirectly.

4. The change of the rice production

Rice farming had been the occupation of the people longtime before. Even before the advent of the railway, the villagers were all accustomed to rice farming which was their major occupation. But the production of rice before the advent of the railway before 1900 were the production aimed at self - sustenance. The commercial exchange was done only to compensate for the loss or to feed the people in urban communities where there was no rice production of their own. The transportation of rice was limited to the areas not too far away because if the expedition is for an area too far off, it might not be worth the transportation fee. In the Mun River Basin, there were production areas not far away from the

railroad, or from these areas the transportation to the railway was not very difficult. For example, the areas not too far away from the Mun River and its tributaries, the transportation was done during the high tide season.

In 1926, the railway had been serving up to Surin for less than one year but the economic change in the area were so rapid that the people could almost adapt themselves. Alongside the opened railroad, if it is a community as important as Tambon, we could see the barns for rice storage everywhere. There were merchants from Khorat to buy rice to send back in such quantity that they had to work at night to load. There were companies in Khorat that settled storage houses for the farmers living along the railway. They even anticipated the arrival of the railway so that they could immediately make use of their installation to load the products on the train when the railway reached that area. For example, when the railway served Surin but the rails were laid up to Huay Thap Than which is located at about 30 kilometers from Si Saket. People began building the barn in Si Saket. (21)

In 1925, the rice was sold at good prices. There were people who got rich in Surin and had as much savings as 4000 - 5000 baht. Many more people were farming, which was not the case when they planted rice just for consumption. All this was the result of the improvement in communication. But in the region itself, when the rice was abundant, the cost of living also went up. The price rice in 1925 went up as much as 4 times. Another factor which made the rice business prosperous was the small size rice - mills. At that time, there were rice mills in almost all the provinces in the region. The rice business brought about development as far as Ubon Ratchathani although the railway reached only Surin. The rice made its way to the railway by waterway communication. (21)

The fluvial navigation in the Mun River and its tributaries in 1926 was very animated because the Mun and the Chi Rivers had high level for a longer time than other rivers. The fluvial navigation was possible for the whole 3 months. The rice products from Roi-et came mostly by boat along the Chi River that joins the Mun River in the East of Ubon. The transportation could continue until Surin by the Mun River. There were many people involved in fluvial transportation but they asked a lot of money for freight transportation. If it was a little cheaper than transport by cart, people would be willing to use the fluvial transportation. One of the transport businessman made as much as 30,000 baht profit in 1926 alone. (21)

1) The small size irrigation system

Because the farmers had a better opportunity to sell their rice, the product with which they have been familiar for a long time, the farmers made greater effort to increase their products so that the excess could be sold. There was clear evidence of change of technique in farming of the farmers. They tried to introduce the small size irrigation system in rice farming to compensate for the lack of water and to supply water to the remote areas. Upland rice also needed a lot of water because the water does not remain in the rice field. That is to say the farmers had to close in the water by shutting the dike. After the advent of the railway, the farmer were very enthusiastic in closing the dike to deviate water into

their rice field. The closing of the dikes was encouraged by Bangkok. The agricultural officials in the areas in cooperation with the merchants and the farmers.

The dikes were barriers made of earth built on the tributaries of the Mun River so that the water of the uphill is high enough to be sent to the rice field in order to have enough water for the rice to grow. The technique in building the dikes at the beginning when the train arrived in Nakhon Ratchasima was based on the use of natural product. Because the iron and cement were not widely spread. For example, the closing of the dike at Huay Ta Odd, near Ban Krahae in the Non Lao District, Nakhon Ratchasima Province in 1919. It was the triple ridged dike. The middle one is 12 meters thick, 1 meter above the bank. The second ridge has both sides, it is 3 meters thick, the height was at the level of the bank. The total thickness of this dike is 18 meters. Huai Ta Odd is the tributary of Lam Choeng Krai. When the water in Lam Choeng Krai comes into this pond it continued its course to join Klong Jork, which was completely useless for rice farming. When we closed up the dike, 17 villages can profit from the water, covering the rice farming land of about 3,000 Rai. (14)

Owing to the fact that the construction technique still relied on the old methods, the dikes were not very strong and often broke. Some of them needed repairing very frequently. The dike were built to close in water at the spot where the quantity of water to be held in could not be too important. They could not be built on the Mun River because they could never have resisted the current. One dike could serve about 2,000 - 3,000 Rai of rice field, depending on the size of the dike. (15)

Before the advent of the railway to Nakhon Ratchasima, we could not find a lot of evidence of using dikes to help in rice farming. But after the advent of the railway, rice became the most important export of the region. The dikes played an important role in rice farming in the Upper Mun River Basin, especially in the areas where the transportation to the railway was convenient. For example, rice farming in Phanchana District (Dan Khun Thod) in 1912, the water shortage was not such a severe problem because most water came from the dikes. There were only a few rice fields which depended totally on the rain. (16) Therefore in the year of scanty rain, the people close the dike to make water flow to their farmlands. This way of using the dike was very popular among the farmer in Nakhon Ratchasima regions. Apart from contributing in work force to close up the dike, some districts donated money up to 10,000 baht. (17) The closing of important and public dike had to be done with the coordination of the authorities of the state. Sometime the government authorities could not satisfy the need of the people in time. The villagers used to employ the Chinese to do the closing which cost 2,000 baht. (17)

The shifting of the rice farming from the farming to feed the community to the farming for commerce has increased gradually. We can see from the increase in number of the dikes in table 4.

Table 4 The number of dikes in the Upper Mun River Basin after the advent of the railway in 1912 and 1920.

Provinces	1912	1920
Nakhon Ratchasima	294	503
Buriram	172	101
Chaiyaphum	38	103
Total	504	707

Source : (15)

The effort to increase rice product by the farmers in the Mun River Basin after the advent of the railway was done in a continuous and active manner. The most important factor in farming is water. The desire of the farmers to use the water from the dikes went on very ardently. Some of the farmers had conflicts with others about the use of water in farming, many people depending on the same source of water for farming. The people downstream the dike usually found themselves at a disadvantage and complained, because the dike up-stream stored too much water for their own use. When the rice planting season came, the peasants usually had conflict about water. (18) For example, in Lam Boriboon of Muang District of Nakhon Ratchasima from Tambon Buddha to Tambon Jorhor, there were several dozens of dikes that the farmer used for irrigating their farms. (19) From the enthusiasm of the people to increase the rice product, some of the farmers spent their own money to build or to repair old dikes and then require the ownership, when water reaches the rice field, the owner have to pay. (19)

The technique used to bring water from the rivers and canals to water the rice field of the people also comprised the water mill. But the use of water mill was not as widespread as the dike. The water mill was used only when there is no possibility to build a dike. Jantuek District was one of the region where people resorted to the water mill because they had to use the water from Lam Takhong and the government dose not allow the closure of waterway by dikes. This is because this course of water goes through the city of Nakhon Ratchasima. (16)

Not all the dikes are the same size and therefore they yield different output. For example, the dike at Huay Kong Kaeng in Non Lao District supplied water to the rice fields of 800 Rai. (20) The dike at Lam Sa Thaed in Bua Yai District supplied water to an area as large as 13,000 Rai (20) and in Bua Yai there are the greatest number of dikes. (see table 5)

The effort to introduce new techniques into the rice farming in order to increase the yield was not something completely new for the peasants in the middle plain and other regions of Siam at that time. But for the peasants in the Mun River Basin and the Khorat Plateau, it was a great change for the people to shift from planting for their own consumption to production for the market.

Table 5 The number of dikes in the Upper Mun River Basin, classified by districts in 1920.

Nakhon Ratchasima		Buriram		Chaiyaphum	
District	Quantity	District	Quantity	District	Quantity
Muang	55	Muang	31	Muang	22
Phimai	37	Nangrong	60	Jaturat	52
Non Wat	65	Phut Thai Song	3	Phak Pang	29
Pakthongchai	98	Taloong	7		
Dan Khun Tod	67				
Krathok	19				
Soong Neon	6				
Jantheuk	35				
Non Lao	7				
Bua Yai	114				
10 Districts	503	4 Districts	101	3 Districts	103

Source : (20)

2) The expansion of the areas for rice farming

The introduction of small size irrigation into rice farming not only increase the cultivable areas but also made it possible to find new lands. And the irrigation also made old rice fields more fertile yield more products. All the land is rich with agriculture. The forests that could be transformed into rice fields would be staked out by the people who would ask for permission to transform them into rice fields. The people who owned farmlands where communication with the railway was made easy would become financially stable. (20)

Table 6 Surface of the rice farming areas in Nakhon Ratchasima region in 1911 and 1912. (Area in Rai)

year	Old farmland	New farmland	Total
1911	433,402	3,175	436,577
1912	437,019	97,915	534,934
+ more - less	+ 3,617	+ 94,740	+ 98,357

Source : (17)

Until 1912, 12 years after the advent of the railway to Nakhon Ratchasima, we could see that there was important expansion of the rice fields in the areas of Nakhon Ratchasima, when compared to the year 1882 when the fee levied on rice farming showed the figure of only 73,841 Rai. In 1911 and 1912 the rice farming areas expanded according the table 6.

When we compare the number of exploitation permit which allowed the farmers to create new farmland during the 3 years, 1910 to 1912 we could see that the number of these exploitation permits increased every year. They were as follows :

In 1910, the documents issued were for	930 Rai
In 1911, the documents issued were for	2,094 Rai
In 1912, the documents issued were for	5,123 Rai

From the increase of the title deed or exploitation permit, we could see that the land in Nakhon Ratchasima increased in value and people wanted to own the land. Consequently, the number of legal conflicts about the land submitted to the juridical settlement also increased every year. We can see that from the list of cases brought to Nakhon Ratchasima court :

In 1910 the number of court cases was 40.

In 1911 the number of court cases was 54.

In 1912 the number of court cases was 87. (17)

The money economy came to stimulate the people in the Mun River and incited them to produce for commerce, although the areas are far from the railway. If the fluvial transportation is possible, the people will resort to this type of transportation at least once or twice a year, using the Krasaeng ship. Later on there were the pinnace pulled by the motor boat to transport the paddy to supply the rice mill and to be forwarded to Bangkok by the railway. In 1929, when the railway was opened between Nakhon Ratchasima and Non Wat station, there was Chinese merchants who set up a rice mill in Khon Kaen in 1928. In 1929, this rice mill turned out the product for 41,644 Haps from the Non Wat station to be sold in Bangkok. The rice transport from Khon Kaen to the Non Wat station, the distance being 154 kilometers. They had to resort to transportation by truck. In the same year, during the rainy season, the owner of the mill sent 12,484 Haps from Khon Kaen to Ubon Ratchathani by boat which had to go more than 300 kilometers, so that They could load it on the train in Ubon Ratchathani and sent down to Bangkok. (33)

The railway that had been extended along the Mun River from Nakhon Ratchasima to Buriram, Surin, Si Saket and Ubon Ratchathani incite the people to increase the areas of lands for growing rice for business. The Mun River and its tributaries facilitated the transportation of rice to the railway in the season of high tide. Especially the Chi River and its tributaries which are very long and pass through large areas. From Khon Kaen through Maha Sarakham, Kalasin, Roi-et, Yasothorn and Ubon Ratchathani. The Chinese merchants played a role of middlemen to do business with Nai Hoy, the small local merchants who bought rice from villagers. For example the merchants from Artsamart District in Roi-et sent their paddy to be sold in Ubon Ratchathani. They used the pinnace pulled

by the motor boat. The merchants in Artsamart District had two storage houses, one in the District itself and the other in Chi Lown village. This village is situated on the Chi River and was the favorite port of the merchants in Artsamart District. In the merchants used both storage houses to store rice. The framers brought their products to either places. The big transportation took place when the boat in anchored at the port of Chi Lown village. Merchants would hire carts to transport rice from the district to be loaded on the ship on the Chi River. They made at least one or two journeys a year to Ubon Ratchathani, during the time of hide tide. The merchants himself might be also with the convoy. (30)

3) The migration in search of fertile rice fields ()

fertile rice field or beautiful rice field refer to the rice field which turned out high products. The rice grew well, the land was fertile and the water is plentiful. The market economy and monetary economy were the cause of migration of the people in the Mun River Basin in its different forms.

3.1) The farmers wanted to increase the rice growing surface in order to increase the yield so that he could sell to the market. The old rice field could not be enlarged in order to increase the yield. The exodus is not because of the insufficiency of the rice to feed themselves. But because it is not enough to have the excess for the market. This showed the change of economy to the monetary economy that reached the village where the communication with the railway is convenient. For example, the Mun, Chi, Phong, Pao, Yang, Seybai River Basin where the Klasaeng ship was means of transportation for the rice trade. Along these rivers the monetary economy inspired the villages who were eager to do business but they were limited by the surface for farming. They had capital and labor force but could not enlarge the rice growing surface. The barren lands were all made into rice fields to grow rice for the big ships.

The migration in this case, the people went along the rivers and their tributaries. The commercial routes of Nai Hoy made it possible for the information and ways of earning a living of the people increased more quickly. They could obtain information about where to find fertile and cheap land, the possibility to expand to growing surface. All this is aimed at developing the production to the commercial purpose. People would go massively to the land where they thought would be suitable. (24) The migration included the immigration into a village to do rice business with out farming. For example, Nai Hoy Wae of Ban Nong Khae, Thai Charoen Sub - District, Yasothorn province, migrated from Yasothorn province to buy rice in the area of Seybai River. Then with the klasaeng ship, brought the rice to sell to the rice mills in Ubon Ratchathani. (27)

3.2) The old farmlands were sold to rich farmers who paid for them with a lot of money. This was because there was production for the market. They sold their farmlands and migrated to the further away area where there was little influence of the money system. The new farmlands are cheaper and there were more space to turn into new farmlands, although the value is smaller. In this case, it is the migration to escape from the money system to go to the self - sufficient economic system that they were accustomed to.

3.3) The migration from the village to the cities and change from agricultural professions to business or service professions. This type of migration fell into two categories.

Firstly, the migration took place because the people wanted to sell their services or do small business in town. For example, the families of Ban Klajai of Patiew District, Yasothorn province. They migrated to Sri Chiangmai District in Nongkhai province. They came to work as drivers. They sold the labor. Some of them set up a small restaurant. (25)

Secondly, the migration took place because the people wanted to have a liberal profession. They had to invest more money and had to use more skill in commercial management than the people in the first category. For example, the people from Ban Beung Kae, Maha Chanachai District, Yasothorn Province. They migrated in 1933 - 1934. A number of these people went to do business in Udon. There was a lot of land because at that time the land was not expensive. After the second world war, the land was much more expensive and they sold their land to make business at hotel, Samlo(tricycle) rentals, pig farming, auto-repair shop and commercial business. The investment came from the sale of the rice field in their village. (26)

IV Conclusion

The railway began to affect the economy of the Mun River Basin from 1900 on. It started in the Upper Mun River Basin, with Nakhon Ratchasima as the center. The economic change took place among many other changes, such as social, cultural, political and Government changes. These changes intensified in its context and in its areas following the extension of the railway which extended to reach farther areas. The change took place in a very long span of time until the road infrastructure made it possible to connect Bangkok directly to the outer cities in 1970.

Since 1937, there has been very wide use of motor vehicles in the Mun River Basin. Motor vehicles became the means of transportation of goods and people connecting the big communities farther away to the railway and the rice mills. These vehicles came to play important roles together with the carts which had existed long before. But the motor vehicles can go farther in a shorter time. They can also carry more load and more passengers. The limitation is the state of the road, the sand, water barriers especially in the rainy season. The cart could go anywhere except in the mountain and the sea.

Owing to the property of the motor vehicles which allowed more freight and passengers, and also the rapidity of the journey, the motor vehicles became more appropriate as means of transportation and linked the important communities farther away like Ubon - Yasothorn, Ubon - Amnat Charoen. They are used both as freight and passenger transport vehicles. The limitation was the fact that the motor vehicle can not go into small roads and everywhere like the cart. Therefore the role of the motor vehicle at the beginning was to reinforce the role of the railway, making the circulation of merchandise and passengers go farther and quicker with bigger volume. The roles were distinctly

distributed among motor vehicles, carts and ships in the Mun River and its tributaries.

The railway played an important role in all aspects, economic, social and political aspects in a long term since 1900. Carts, motor ship and motor vehicles played complementary role in the recent years. The changes that occurred took very long time, from 1900 through 1970. When the roads linked directly Bangkok to different communities in the Mun River Basin, which allowed transportation of freight and passengers to be done more widely in space and time, trucks being able to access more remote areas than trains, we can say that another great change of the same magnitude has occurred since 1970. However, the influence of the railway on the Mun River Basin was certainly greater than what the remain of the evidence could tell us.

References

(The following abbreviations are used in the list below.)

CMH: documents (jotmaaihet)

R.: -th Reign

M.: Ekasan Krasuang Mahathai

N.: Ekasan Krasuang Nakhornban

YT.: Ekasan Krasuang Yothathikan

KK.: Ekasan Krasuang Khamanakhom

KS.: Ekasan Krasuang Kasetrathikan

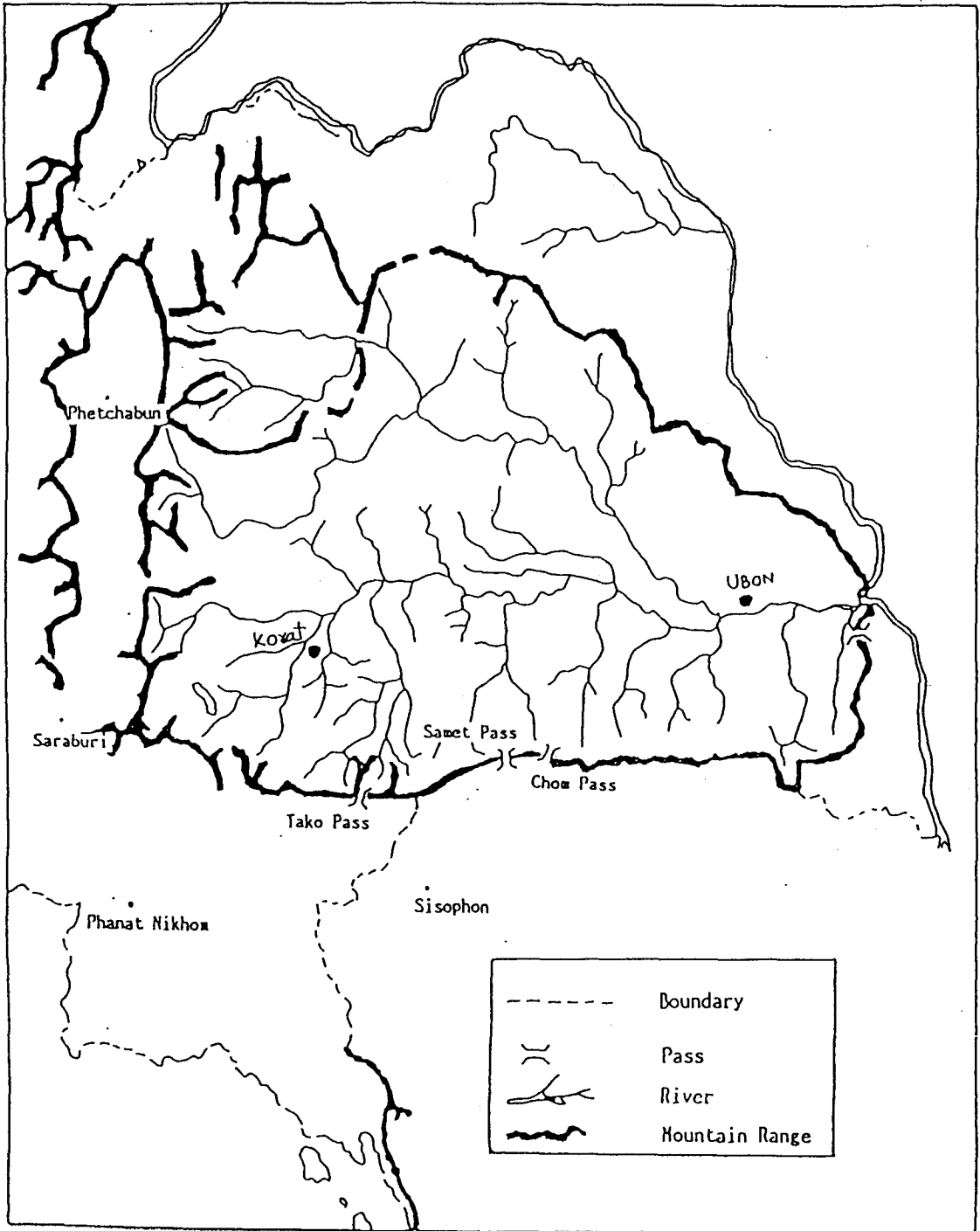
SB.: Ekasan Suanbuk-khon

S.Y.B.: Statistical Year Book of the Kingdom of Siam.

RS.: Rattanakosin Era (R.S. + 1781 = A.D. for the months of January, February and March, and R.S. + 1782 = A.D. for the others)

1. CMH., R.V M.2.14/13. Phraphromaphibarn went on Inspection tour in the region of Nakhon Ratchasima. R.S. 115. (1896)
2. CMH., R.V M.2.12k/4. Notice of Nakhon Ratchasima. R.S.104. (1885)
3. CMH., R.V M.2.14/66. Krommameun Damrong made an Inspection tour to Nakhon Ratchasima. R.S.115. (1896)
4. CMH., R.V M.46/6. Report on Management and Construction of Nakhon Ratchasima. R.S.119. (1900)
5. CMH., R.V 2.14/16. Report on Nakhon Ratchasima Region. R.S.124. (1905)
6. CMH., R.VI M.20/4. Report of Public Administration of Rio- et. R.S.131. (1912)
7. CMH., R.VI N.19/35. The minutes of the meeting Samuhathesaphibarn. B.E.2467. (1924)
8. CMH., R.V YT.5.6/1. Nakhon Ratchasima Railway. 1889.
9. CMH., R.V YT.5.6/47. Report of the Management Division [6th]. R.S.121. (1902)
10. CMH., R.V YT.5.6/48. Report of Management Division [7th]. R.S.122. (1903)
11. CMH., R.V YT.5.1/52. Report of the Management Division [9th]. R.S.124. (1905)
12. CMH., R.VI KK. Yearly Report of Railway Department) 1918.
13. CMH., KS.1/182. The Department of Railway 's Report on the Railway Exploitation) R.S.120. (1901)
14. CMH., KS.13/1476. Nakhon Ratchasima Region. 1919.

15. CMH., KS.13/1112. Thesa Nakhon Ratchasima Region. R.S.131. (1912)
16. CMH., KS.13/743. Nakhon Ratchasima 's Region Presenting the Report on the Inspection. R.S.131. (1912)
17. CMH., KS.13/735. Nakhon Ratchasima's Report by Agriculture Division. 1912.
18. CMH., KS.1.2/83. Nakhon Ratchasima's Report on Rice Farming Inspection. 1922.
19. CMH., KS.1/1967. Nakhon Ratchasima's Report by Luang Chalathomphitak. 1921.
20. CMH., KS.1/2954. Nakhon Ratchasima's Report by Agriculture Division. 1921.
21. CMH., SB. 2.47/69. Report on Inspection of Isan and Nakhon Ratchasima. B.E.2469. (1926)
22. Thailand, Ministry of Finance. *Statistical Year Book of the Kingdom of Siam*. Vol.8 : The Department of General Statistics, 1913, p.26.
23. Interview, *Mr. Dee Boonsom*, 56 years of age, Ban Tadob, Muang District, Si Saket Province, Nov. 27, 1993.
24. Interview, *Mr. Nula Chinlapha*, 81 years of age, Ban Phok, Thai Charoen Sub-district, Yasothorn Province, Nov. 1, 1993.
25. Interview, *Mr. Thong Luluang*, 52 years of age, Ban Krajai, Pa-tiew District, Yasothorn Province, Oct. 27, 1993.
26. Interview, *Mr. Sang Boontham*, 74 years of age, Ban Beung Kae, Maha Chanachai District, Yasothorn Province, Oct. 27, 1993.
27. Interview, *Mr. Sri Janthasing*, 68 years of age, Ban Nong Kae, Thai Charoen Sub-district, Yasothorn Province, Nov. 22, 1993.
28. Damrong Rachanuphap, Krom Phraya (Prince), *Ruang Thiawthitangtang Phakthi 4 Waduy Thiaw Monthon Nakhon Ratchasima Monthon Udon lae Monthon Roi-et*. (Places to visit, 4th Region : Nakhon Ratchasima, Udon and Rio-et Region) Bangkok : Sophon Phiphattanakom Publishing, 1923, pp. 3 - 4.
29. State Railway of Thailand, *Ruang KarnRotsai*. (Railway Story) Bangkok : Railway Publishing, 1914, pp. 241 - 244.
30. Kor Sawadiphanich, *Isan Mua Wan Warn*. (Isan of Yesterday) Bangkok : Ruankaew PUBLISHING, 1990, p. 27.
31. James McCarthy, *Surveying and Exploring in Siam*. (Translated by Captain Sumalee Veeravong) *Warasarn Phaenthi*. (July 1981 - June 1983) : pp. 68-70.
32. Silapakorn Department, *Ruam Ruang Muang Nakhon Ratchasima*. (Collection of Nakhon Ratchasima Stories) Bangkok : Prajak Wittaya Publication, 1968, pp. 117 - 118.
33. Karl C. Zimmerman, *Siam Rural Economic Survey 1930 - 1931*. Bangkok : Foundation for Sociological and Humanity Science Book Project, 1982, p. 29.
34. Thaweesilp Seubwattana, *Karn Khluanyai Rang ngarn Isarn kao su suanklang nai-adit* (Labour Migration to the Center in the Past) *Thamasart*. 3 (September 1982) : pp.56-65.
35. Term Wipharkpojanakit, *Prawatisart Isan 1*. (History of Isan, Book 1) Bangkok : Social Science Association, 1972, p.51.



Rivers, Mountain Ranges, and Passes in the Northeast

Source: Adapted from "phaen thi maenam samkhan lae sakha nai phak tawan-ak Chiang nua" [Map of Important Rivers and Tributaries in the Northeast] cited by Sapsorn [1982: 12]. The original is in Thailand Krasuang Saksathikan (Ministry of Education) *Boep Rian Phumisat Prathet Sayam* [A Textbook of Geography of Siam] (Bangkok: Akson Niti, 1925).

