



Chapter 6

CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions :

The study of sugar cane transportation to the mills within the western region implied in this research indicated the problems involved. All facts and figures presented herein concerning to the existing situations can provide guidelines for the future improvements of such transportation. Conclusions of the study can be summarized as follows:

6.1.1 The delivery of sugar cane from farms to the mills were performed by heavy trucks in which 85 percent were 10-wheel diesel engine ISUZU type model TWD 80 HJ, 10 percent were HINO type model KT 920, and the rest of 5 percent were NISSAN and JEEP types. The truck owners were local-people and made in-region trucks registration. In some period, the in-region trucks were not sufficient for cane delivery in order to match with the mills capacity, so the out region truck were hired. The operation of the trucks during the crushing period were carried on continuously all days and night. The service rates of transportation costs were made by the contract between the truck owners and the quotamen based on the suggestion of the Sugar Cane Plantation Association of the Seventh Part.

6.1.2 The realtime operation period of the 10-wheel cane trucks was about 6 months a year in which fully four months for cane delivery and the other two months for inventories transport. For the left of six months a year, most of these trucks would be parked in the garages.

The reason that the truck owners use their trucks to transport only cane for six months a year was due to the contract made with the banks in order to obtain the bank loans. Mostly, they promised to pay installment following the cane transportation each year and the trucks must be used for cane business only. If they use the trucks for other purposes it means that non-condition of the contract and the loan owners could call back their trucks. The reason why the truck owners prefer to buy their heavy trucks on condition to transport cane only, it may be said, was because they could gain enough money to pay for the truck installments of each season including the payment for the drivers, insurance, registration and other costs. For example, one truck was hired to transport cane in the radius of a hundred kilometres from sugar mill for only one round tripper day with the average payload of 20 tons and the transport cost of 100 Bahts per ton. So, the money earned per day would be 2,000 Bahts. For the cane crushing period of about 4 months or 120 days per season, would yield the income of 240,000 Bahts a year. This amount seemed rather high enough to pay for truck installments after other deduction. However, for the truck owner who bought the trucks with their own funds without any of constrain described above, they could certainly use the period after the the crushing season to transport stones, sands, laterites and other materials through out the year .

6.1.3 The haul roads in the study area could be classified into two main categories; farm roads and highways. The former shared a total length of 2704 kilometers which were about 80 percent of the total haulage distance in the region. These roads were unpaved surface and lack of engineering standards which result to very poor riding quality

and high maintenance costs. The Sugar Cane Plantation Association of the Seventh Part takes responsibility for the maintenance of these farm roads, and charges the money of about 1.0 baht per ton of cane from the cane owners. The later were the paved roads belonging to the Department of Highways, which shared the length of 400-500 kilometers or the remaining 20 percent of the total haulage length. At present, the highway route NO.323 which was the main line haul route for cane delivery, was being reconstructed to the 4-lane divided highway standard, in order to reduce traffic problems during the crushing period. The expected inauguration of this route will be early 1981.

6.1.4 The river crossing facilities serving the cane trucks from the west bank of Mae klong and Kwai Yai rivers excluding three reinforced concrete bridges were three ferries in which several truck carrier boats were operated. The average truck volume using each ferry range between 160-230 vehicle per day, with the fare charged rate of 23 bahts per truck. The average waiting time and travel time of the truck carrier boats were between 1.93-2.96 and 2.81-3.14 minutes respectively. This was the reason that caused cane trucks prefer using this facility instead of longer travelling to cross the bridges.

6.1.5 As obtained from interviews, the running speeds of a full loaded cane truck on the farm roads varied from 10-20 KPH and that on the growing fields were below 5 KPH, resulting from poor condition of the routes together with heavy load carried. This might be one reason that shorten the service life of the trucks and high fuel consumption rates. On the contrary, the space mean speeds of full loaded trucks on highways obtained from spot speed measurements at station I and

station II were 40 and 55 KPH, where as for the empty trucks the value were 48 and 71 KPH respectively. Thus, the average speeds of the trucks on paved roads could be valued at 54 KPH.

6.1.6 The average operating cost of the cane trucks at the traveling speed of 54 KPH in the financial basis obtained from the study was 6.6798 bahts per kilometre or 0.3400 baht per ton per kilometre compared to " 2.6096 " bahts per kilometre in VALENTINE LAURIE & DAVIES, R.O.P. (1977) consultant report. The difference of these two figures could be described by the following reasons : firstly, the average fuel consumption used in the study was only 2.58 Km per litre instead of that 4 Km per litre adopted by the consultants, and the fuel price in the study area was 2.56 bahts per litre higher than 2.36 bahts per litre used in the consultant's report, secondly, the oils consumption and oil prices used in the study and that in the report were distinguishly different, the consumption rate of 300 Km per litre at a price of 22.0 bahts per litre was costly than a rate of 450 Km per litre at a price of 15.0 bahts per litre used in the consultant's report. Finally, the service life of cane trucks were only 7 years with the annual travel distance of 30,000 kilometres very much lower than those 12 years and 50,000 kilometres used by that report, therefore, the depreciation and interest cost per kilometre were quite different from those computed by the consultant. Combining these effects, yielding the different in operating costs of the trucks in the two reports.

6.2 Recommendations for Further Study

6.2.1 The study of cane truck operating costs on each type of road surface for various operating speeds should be carried out, in order to compare the effects resulting from different road surface types. Results of the study will be an efficient measure for future improvement of the haul route networks dominating in the region.

6.2.2 There is a need for intensive study of other traffic delay cost resulting from the operation of cane trucks during crushing period, also delay of cane truck traffic themselves due to waiting time for unloading caused by unefficient loading process at the mills should be investigated. Furthermore, careful consideration should be paid to delay costs of traffic using truck carrier boats at ferries, in order that the possibility of construction new bridges could be assessed.

6.2.3 The cane truck accidents and breakdowns during the cane transportation periods are one of the important topics should be studied. Although not thoroughly scrutinized, some accidents and breakdowns were noticed during the conduct of this thesis. The objective of the recommendations should cover all occurrence of accidents and break down. Furthermore, the cost related to accidents and breakdowns should be analyzed.

6.2.4 A study should be made to investigate the possibility of using other transport vehicles to deliver sugar cane from farm to sugar mills, such as, trailers or semi-trailers. This is based on the reason that such vehicles have greater capacity than that the existing ones.

Thus, the transport costs and the physical failures of the haul routes could possibly be reduced.

6.2.5 From the study, it was found that most of cane trucks carried load only the trip from farm to the mills, but on the return trip, these trucks were empty, thus, there is a need to study the possibility of utilizing the return trip for other purposes.