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Local Revenue Administration Project

**Metropolitan Studies Program
Maxwell School of Citizenship and Public Affairs
Syracuse University**

ZILLA ROADS/LOCAL FINANCE PROJECT

INTERIM REPORT No. 2

TOLL ROADS AS A ZILLA PARISHAD REVENUE

SOURCE: A CASE STUDY

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PREFACE

This paper, the second in a series of interim reports issued through the Bangladesh Zilla Roads/Local Finance Project, considers a revenue mobilization technique seldom used by local governments in Bangladesh or, for that matter, local governments throughout the developing world. While tolls are sometimes used on national highways, their use on rural roads is very limited. At the same time there is widespread recognition that the costs of maintaining the rural transportation system are substantial and increasing.

Although the paper focuses on the rural toll road system in Sylhet District, Bangladesh, it also considers more generally the principles that ought to underlie the pricing of roads at any site. The paper examines the Sylhet case in light of these principles from which are derived a set of recommendations.

Tolls do not provide the panacea for financing rural road maintenance, but the results do indicate that in Sylhet, at least, toll revenues have amounted to about one-fifth of the monies spent on maintaining the toll roads. It is, therefore, a revenue source that should be seriously considered by local government revenue administrators.

I would like to acknowledge the full cooperation provided by Sylhet Zilla Parishad officials in May 1982. Especially noteworthy is the assistance of Mr. Kazi Farid Ahmed, Zilla Parishad Secretary; Mr. A.M. Abdullah Choudhury, District Engineer; and Mr. Bashir Uddin Ahmed, Assistant Executive Engineer and Acting Executive Engineer. Mr. Mohammad Faizullah, then Director of the National Institute of Local Government, also provided considerable insight into the Sylhet toll road experience since he was Deputy Commissioner of Sylhet District at the time the tolls were instituted. Any errors found herein are, however, my own responsibility.

The Local Finance Project is one component of the Bangladesh Zilla Roads Maintenance and Improvement Project (Project Number 388-0056) and is intended to increase the capacity of local governments in Bangladesh to mobilize and effectively administer financial resources. While a Final report will be issued at the close of the project, these interim reports are being released as the analysis occurs. It must be emphasized that any findings and conclusions contained herein are provisional and may be altered by the time the integrated Final Report is issued (scheduled for September 1983). The work is supported by the United States Agency for International Development, Washington, D.C. under Cooperative Agreement (AID/DSAN-CA-0198). The views and interpretations in this publication are my own and should not be attributed to the United States Agency for International Development.

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TOLL ROADS AS A ZILLA PARISHAD REVENUE SOURCE:
A CASE STUDY

Larry Schroeder

The vast majority of zilla parishad (ZP) revenues comes from sources over which the ZP has no discretion. For example, in FY 1980-81 between 70 and 95 percent of total revenues in Faridpur, Rangpur and Sylhet Zilla Parishads were derived from either central government grants or the immovable property transfer tax--neither of which is directly controllable by the ZP.¹ The remaining revenues were obtained from such sources as rent and profits on zilla parishad-owned facilities, fees, interest, and tolls on ferry ghats, roads and bridges. It is to these activities that the ZP must turn if revenues are to be increased in the short-run.

Since transportation is the primary public service provided by zilla parishads, it is reasonable to look to this activity to see if there is a potential for additional revenues. We feel there is. This paper outlines the general issues to be considered when setting tolls on roads and describes in some detail the toll road experiences of the Sylhet Zilla Parishad, apparently the only district in the nation currently using this revenue source.²

¹Larry Schroeder and Maniruzzaman, "Local Government Structure in Bangladesh," Interim Report No. 1, Local Revenue Administration Project, Metropolitan Studies Program, The Maxwell School (Syracuse, NY: Syracuse University, 1982).

²Tolls on roads have been used in the past in some districts, e.g., Faridpur, Dhaka and Nymansingh, but have since been abandoned. It has not been possible to determine why this abandonment occurred.

We begin by outlining the theoretical principles that underlie a well-designed toll road system. The second section describes the Sylhet system including the auction techniques the District uses to grant franchises to toll road operators. The concluding section makes several recommendations concerning the use of toll roads to raise revenues while maintaining a reasonably efficient and equitable fare structure.

THEORETICAL GUIDELINES IN DESIGNING ROAD USER CHARGES

A toll road is a form of benefit financing; that is, it is a technique whereby the beneficiaries of a government service help pay the costs of providing that service. There are several issues that should be considered when designing or evaluating a toll road system.¹ Among these issues are the efficiency and equity implications of tolls, and administrative issues including which roads are good candidates for toll imposition. We consider each in turn.

Efficiency Effects

On purely economic grounds probably the strongest case for road user fees is with respect to economic efficiency. Under this principle scarce resources are most efficiently allocated when the user of resource is required to pay the additional costs associated with its use. This is, of course, the principle that underlies the use of prices as the allocative

¹Probably the most complete discussion of road user charges as applied to developing countries is found in A.A. Walters, The Economics of Road User Charges (Baltimore: Johns Hopkins Press, 1968). No attempt has been made here to replicate the detail of analysis found in that source.

mechanism throughout an economy. The question, then, is whether or not the technique can be applied to the case of roads.

In fact, user charges can be used to efficiently allocate road services. Efficient allocation requires that the user pay the additional or marginal cost associated with his use of the road. There are only two types of costs that are of concern when applying user fees to existing roads--the marginal maintenance expenditures attributable to the additional user and any congestion caused by that additional user.¹ Thus for economic efficiency, governments should concentrate on only marginal maintenance costs and the external costs imposed on other users of an additional vehicle pass over the road.

Since we are concerned here with zilla roads located in non-urban areas, congestion is not likely to be a problem. While toll roads must have sufficient traffic to justify the costs of imposing a toll (discussed in more detail below), traffic levels on zilla roads are unlikely to be so great as to impede the flow of additional vehicles. In such cases the marginal congestion cost is zero; therefore, the following focuses on marginal maintenance costs.

Marginal maintenance costs are the incremental costs attributable to additional traffic, so maintenance costs that do not vary according to road usage are irrelevant to efficiency. This means that user charges will not necessarily cover the entire annual cost of maintaining a road. Likewise,

¹The only other positive marginal cost associated with road traffic is the private cost borne by the user himself. But since the user bears these costs privately they will be included in the user's decision process and, therefore, need not be a public policy concern.

past construction costs of a road are not relevant in the determination of costs to be covered by user fees. These costs must, instead, be covered by some other source of revenue.¹

Unfortunately, there is little good data on the marginal costs associated with different types of traffic on different types of roads. For all-weather, hard-surfaced roads, it may be that the additional maintenance costs associated with added traffic is zero; that is, that there would have to be a maintenance program carried out in any case and it would involve no more expense if an average of 100 vehicles used the road per day than if 10 vehicles did so. This might be appropriate for some roads in Bangladesh where the greatest single cause of road maintenance needs is the weather.

Still, for some road surfaces, maintenance needs will increase with the volume of traffic. Hard-surface roads are least prone to additional maintenance costs as traffic level increases (or, more formally, the marginal maintenance cost is lowest for paved roads). These incremental costs are likely to be greater for gravel roads and even higher for earthen roads. Thus an efficient toll road system that includes all surface types should levy higher fees on less permanent road surfaces.

Unfortunately, data concerning these functional relationships are difficult to obtain and even more difficult to interpret. Interpretation is complicated by the fact that actual maintenance expenditure on a roadway may have been determined principally by revenue availability rather

¹These arguments are covered much more fully in Walters, The Economics of Road User Charges, Chapter IV.

than on the basis of what should have been spent to keep the road in good repair.

Soberman, using annual maintenance costs of roads in Venezuela in 1960, found that maintenance spending per kilometer of road per vehicle was 20 times greater for gravel roads than for paved surfaces and that earth road maintenance was 60 times greater than for paved roads.¹ Similar findings regarding maintenance costs (in this instance based on engineering norms rather than actual expenditures) were obtained by Nanjundappa.² He estimated that 1966 maintenance expenditure per vehicle kilometer in India would be 20 times greater for water bound macadam (apparently similar to gravel) than for cement paved surfaces and that earthen-surfaces require 33.5 times the amount of maintenance spending per vehicle kilometer than do the cement roads. These estimates, while somewhat dated, add credence to the suggestion that differential rates be charged on toll roads depending upon the type of road surface.

The type of vehicle using the road might also determine the amount of damage to the road surface. This would suggest differential fees depending upon vehicle type. There apparently is scant evidence of this effect, however. Indeed, for highways designed to carry heavily-loaded vehicles,

¹Richard M. Soberman, "Economic Analysis of Highway Design in Developing Countries," Highway Research Record No. 115, publication 1337, Highway Research Board, Washington, D.C., 1966 as cited in Walters, The Economics of Road User Charges, p. 169.

²D.M. Nanjundappa, Road User Taxation and Road Finance in Indian Economy, Jawaharlal Nehru Memorial Institute of Development Studies, Bombay, 1973. Interestingly, the estimates shown there also indicate that maintenance on bituminous paved surfaces is four times greater than that per vehicle kilometer for cement paved roads.

the general conclusion seems to be that there is no differential effect on maintenance needs brought on by small or large vehicles.¹ The same is not true for overloaded vehicles. In fact, Walters indicates that one vehicle with a 50 percent overload on an axle causes greater damage than 1,000 vehicles that are properly loaded.²

Zilla roads are often only essentially a single lane so that one or both vehicles have to pull onto the shoulder when they meet. Thus, large vehicles (5-7 ton trucks or large passenger coaches) are likely to create more damage to the road system than would passenger cars and much more so than motorcycles or motorized rickshaws. In this case, differential tolls levied on different types of vehicles would be justified under an efficient toll system.

In conclusion, the goal of efficiency in a toll road system can be attained only via a toll structure that reflects the marginal costs due to the additional vehicle using the road. There are, however, other goals to be considered when designing a toll system.

Equity Considerations

The efficiency criterion provides at least one equity-based justification for the use of tolls. This justification is that equity is attained when those benefiting from a good or service bear the costs of its provisions.

¹ Highway Cost Allocation Study, Supplementary Report, House Document, No. 124, 89th Congress, 1st Session, Washington, D.C., 1965, cited in Walters, The Economics of Road User Charges, p. 171. Vehicles in the United States are, nevertheless, taxed in accordance to the load weight they are licensed to carry.

² Walters, The Economics of Road User Charges, p. 168.

Another equity principle often relied upon in evaluating public decisions is the ability-to-pay principal. Under this principle those with greater ability to bear the cost of the service should pay more than those with lesser ability.

There are potential problems with this criterion, especially as it relates to the goals of efficiency and administrative costs. First, the ability-to-pay principal may conflict with efficiency, e.g., under the benefit principle whoever benefits from the service, no matter what their income or ability to pay, should pay the marginal cost of the service. Furthermore, in order to satisfy the ability-to-pay criterion it would be necessary to separate users according to their income or wealth status and charge those with greater resources a higher user fee. To do so effectively would, unfortunately, be administratively difficult.

Even though it might not be possible to tailor user charges in accord with the ability-to-pay principle, an evaluation of a potential toll system should include some investigation of its distributional effects. While equity considerations should not dominate the determination of tolls, there should be recognition of the distributional consequences of any proposed user charge system.

Revenue and Administrative Considerations

In addition to efficiency and equity considerations one must recognize the administrative costs and potential net revenues possible from a toll road. Since the focus here is on the use of toll roads to generate revenues to help offset at least some of the maintenance costs associated with road services, it is useful to have some idea of the extent of these maintenance needs.

Unfortunately, there is no good evidence concerning costs of proper road maintenance in Bangladesh. Current practices appear to be devoid of good maintenance procedures.¹ The current strategy seems to be one of building a road, allowing it to deteriorate over time and then rebuilding it as soon as possible after it becomes impassible. Although maintenance is unlikely to halt deterioration completely, it can slow the deterioration process such that the large capital costs associated with rebuilding roads are delayed.

One rule-of-thumb concerning maintenance of a capital construction project in Bangladesh is that from 10-20 percent of initial costs are likely to be expended annually if the project is to be properly maintained.² The higher percentage is associated with less permanent (katcha) projects including earthen roads.

Circular Six issued by the Ministry of Local Governments provides some construction cost estimates for rural roads in Bangladesh (Table 1). For zilla roads the 10-20 percent maintenance cost rule-of-thumb would imply that for each mile of pucca road approximately Tk. 60,000 would have to be raised annually for maintenance purposes while Tk. 10,000 would be needed to maintain a mile of katcha road (using the 20 percent rule). Given the extensive road system in at least some zilla parishads, these maintenance

¹The lack of road maintenance capabilities, at least in Faridpur District, is emphasized in Louis Berger International, Inc., and Rahman and Associated, Ltd., Rural Roads Study, Final Report (East Orange, NJ: 1979), pp. VI-33-36.

²From an interview with Mr. Quamrul Islam Siddique, Superintending Engineer, Works Programme, Ministry of Local Government.

TABLE 1
ESTIMATED ROAD AND BRIDGE CONSTRUCTION COSTS

	<u>Katcha</u>	<u>Pucca</u>	<u>Bridges & Culverts</u>
Zilla Roads	Tk. 50,000/mi.	Tk. 600,000/mi.	Tk. 8,000/running ft.
Thana Roads	Tk. 40,000/mi.	NA	Tk. 6,000/running ft.
Union Roads	Tk. 30,000/mi.	NA	Tk. 5,000/running ft.

SOURCE: Ministry of Local Government, Rural Development and Cooperatives,
"Circular No. 6 of 1981-82, Rural Works Programme" (Dacca:
undated).

expenditures would require Tk. 9,580,000 in Sylhet and a massive Tk. 29,950,000 in Rangpur with its nearly 2,500 miles of zilla roads.

Although tolls cannot be expected to mobilize all of these resources, this financing mechanism can generate a portion of the needed revenues. Since zilla parishads contain numerous roads that are potential candidates for tolls, the question arises as to which roads should be included in the system. Two criteria should be satisfied before roads are chosen for toll imposition.

First, it is necessary that the road handle sufficient traffic to provide revenues in excess of the costs of administering the toll collection process. In the absence of this demand, a toll system operated directly by the zilla parishad would result in a drain of revenues rather than as a resource mobilization technique. Similarly, where the toll system is operated by a private franchise holder, no bidders would be forthcoming on the road since a bidder's operating costs would be greater than the revenues derived.

The second criterion also relates to the demand for the road but focuses on the price elasticity of demand. Toll roads will be most successful in mobilizing resources if the demand is inelastic. This will occur if there is no good alternative route between the points connected by the toll road. It is also crucial that users cannot avoid passing the toll gate while still using a portion of the road.

In summary, when contemplating the establishment of a toll road system, some study should be given to its efficiency, equity-revenue and administrative implications. The remainder of this paper examines how one

particular toll road system was established and how the system measures up against these criteria.

THE SYLHET DISTRICT TOLL ROAD SYSTEM

The Fourth Schedule of The Local Government Ordinance, 1976 allows zilla parishads or union parishads to levy "tolls on roads, bridges and ferries." Section 60 of the Ordinance requires that zilla parishads obtain permission from the Divisional Commissioner to impose these fees. While nearly all zilla parishads have taken advantage of their right to levy tolls on ferries, the same is not the case for roads.

On October 1, 1975, the District Engineer of Sylhet District sent a memo to the Commissioner, Chittagong Division (the division in which Sylhet District is located) requesting approval of tolls on four district roads and included a proposed set of rates. The memo suggests that the rates were constructed after consulting with the Department of Roads and Highways. Six months later, on April 5, 1976 the Commissioner responded by disapproving the request.

This defeat did not, however, stop the ZP from trying again and by July 1977 approval was granted to establish tolls on four roads with auctions for the right to operate toll franchises to be held in September 1977. The FY 1977-78 auction provided the winning bidder the right to collect tolls for the eight-month period, November 1977-June 1978. Since then annual auctions have been held in May or June with the franchise right granted for the following July 1 - June 30 fiscal year.

In reviewing the history of toll road administration in Sylhet it is instructive to observe the types of roads selected for tolls, the toll rate

schedule, how the auctions are administered, the revenue yield from this activity and administrative aspects of the toll collection system.

Road Characteristics

Table 2 shows the principal characteristics of the toll roads in Sylhet. Three have been operated continuously as toll roads since their inception in 1977. The four roads included in the original configuration were chosen primarily because of their specialized nature--each connects a stone quarry to a national highway or other road. This specialized usage provides for an especially inelastic demand for the route since stones constitute a primary raw material for construction in Sylhet District and in each case there is no alternative land passage to the quarry available. Thus the addition of a relatively small toll is unlikely to decrease usage of the road to any significant degree. Furthermore, choice of these four initial roads may have been politically advantageous since there would probably be less opposition to tolls on roads used by large truck traffic than on roads used primarily by the "common citizen".

Tolls were later placed on the Moulvi Bazar--Shamsher Nagar Road. Its choice was also based on the economic/administrative principle that toll roads are most likely to be successful if there is a high demand for the route--in this case it is the shortest route from a major railway station to a highly populated area.

The Sherpur-Biznaghat road was converted to tolls in 1980. The demand for this road is based on the fact that it connects a popular bazaar to a thana.

Each of toll roads is an all-season bituminous highway, assuring a year-round demand for its use. The 1981-82 toll roads system of 38 miles

TABLE 2
THE SYLHET TOLL ROAD SYSTEM

<u>Road</u>	<u>Length (miles)</u>	<u>Principal Economic Activity Concerning The Road</u>	<u>Tolls Established</u>
Tamabeel-Jaflong	3	Stone Quarry	1977-78
Shaibhag-Kanaighat ^a	3	Stone Quarry	1977-78
Sari-Gowa Inghat	8	Stone Quarry	1977-78
Sylhet-Badaghat	3	Stone Quarry	1977-78
Moulvi Bazar- Shamsher-Nagar	12	Railroad Station	1978-79
Sherpur-Biznaghat	12	Bazaar	1980-81

^aDiscontinued as toll road in 1981-82.

SOURCE: Sylhet Zilla Parishad records.

constitutes about 35 percent of the total bituminous surfaced roadway of the Sylhet Zilla Parishad road system.¹

Statutory Tolls

There has been only one change in the toll schedule since their inception in 1977 (Table 3). The original schedule provided for no distinction among the several types of trucks that travel over zilla roads. If larger vehicles cause greater maintenance costs, such a fee structure was inefficient; furthermore, it resulted in a differentially higher relative tariff on smaller vehicles which might be deemed inequitable.

This aspect of the fee schedule was altered in 1978-79 with larger vehicles charged higher rates. Whether or not the revised schedule comes closer to one that reflects the variable maintenance costs associated with road usage cannot be answered here. For all-surface roads it seems unlikely that there would be a doubling in maintenance costs between the 3 and 5 and 5 and 7 ton capacity trucks. Likewise, buses (especially if full-sized coaches) are likely to cause as much damage to road surfaces as the smaller sized trucks. Thus, inefficiencies in the pricing structure may still exist.

The road price scheme shown in Table 3 indicates that the same charges are placed on all highways, regardless of their length. The longest roads are four times longer than the shortest ones and are likely to require greater total expenditures to maintain. This constitutes another inefficiency in the road pricing system. The single toll structure may

¹Sylhet currently has 110.14 miles of bituminous highway, 28 miles of gravel surface roads and 412.29 miles of katcha road in its 550.43 miles of roadway.

TABLE 3
SYLHET TOLL STRUCTURE

<u>Type Vehicle</u>	<u>Tolls</u>	
	<u>1977-78</u>	<u>1978-79 -- 1981-82</u>
7 Ton Truck	Tk. 5	Tk. 20
5 Ton Truck	5	10
3 Ton Truck	5	5
Buses	3	3
All other motorized vehicles	1	1

Exempted: Zilla parishad vehicles, defense vehicles, magistrates vehicles, emergency vehicles, and relief department goods vehicles.

SOURCE: Sylhet Zilla Parishad records.

have been devised for administrative ease or there may have been concern for equity. The shortest routes are those serving stone quarry sites. Constant rates for all roads means that the per mile toll on the user of a quarry road is greater than that on the user of a road serving a broader cross-section of the population, i.e., those who use the routes to and from the railway station or the bazaar.

Equity probably also played a part in the potentially inefficient practice of charging buses less than even the smallest trucks. It is the user of the transport services who is likely to bear the bulk of the ultimate burden of the toll (if the demand for transportation is price inelastic, which would be the case when there are no good alternative routes). If bus riders are perceived to have lesser ability-to-pay than the users of products transported by trucks, the lower tolls on buses would tend to satisfy the ability principle of equity.

Finally, it may be that political pressures played a great part in determining the toll structure ultimately levied. Bus owners may constitute a more effective lobby group than truck owners.¹ Since bus users may constitute a broader spectrum of citizens, the political pressures may be greater than that applied by truck owners/users.

While we have no road usage data to compute the effective tax rates associated with the truck tolls, the effective excise tax associated with

¹While the Sybhet Zilla Parishad has considered other roads as potential sites for tolls, they received considerable pressure from lobbying groups. It was the bus owners who were mentioned specifically in this regard lending strength to the hypothesis suggested above. The principal argument is that the users are already paying other taxes and fees associated with vehicle usage therefore additional user charges are unfair.

buses (at least on one road) is small. The Sari-Gowainghat Road is used by buses that usually travel to the Sylhet Paurashava. Large buses have a capacity of from 40-45 persons (and casual observation suggests they are usually operated at least at full capacity). The bus fare from Gowainghat to Sylhet is currently Tk. 11 per rider. A toll of Tk. 3 per bus results in an effective excise tax rate of only 0.6 percent--- certainly not an onerous rate.¹

The Auction

The auction process used by the Sylhet Zilla Parishad is an interesting institution in its own right (and does not differ substantially from the process used to allocate ferry ghat franchises). The auction consists of verbal bidding and allows raising previous bids. There are, however, certain special features of this procedure. First, the local government retains the right to refuse any winning bid. The decision rule followed in Sylhet is to reject any winning bid that is not at least as great as the previous year's winning bid. Second, the local government may decide to reject the winning bid on a franchise and then hold a subsequent auction. If the winning bid at this later auction is less than the prior winning bid, the previous winner has the right of first refusal, i.e., he can obtain the franchise (at the level of his earlier winning bid) even though he was not the winner in the subsequent auction. Apparently there is no limit to the number of auctions held.

¹ Estimated under the assumption that 42 passengers constitute the average level of usage in these buses and that all passengers pay Tk. 11 per trip.

Payment for the franchise can be made in installments, although a downpayment on the day of the auction is required. If the accepted bid is greater than Tk. 100,000, a 30 percent downpayment is required with the balance payable in two installments during the two months following the auction. For winning bids less than Tk. 100,000, a 50 percent downpayment is necessary with the remainder payable in two installments during the following two months.

The bidding process, if efficient, should result in no excess profits to the winning bidder. A necessary condition for this is to occur that there be a sufficient number of bidders in each auction. Table 4 displays the number of bidders participating in each auction for each of the Sylhet roads during the period 1977-1981.¹ For the cases in which there was more than one auction held, the number of bidders at each auction is shown. In no case was the winner of an earlier auction granted the franchise suggesting that the option of allowing for subsequent auctions has been successful in extracting additional economic profits from the potential bidders.

The number of bidders has ranged from zero (in two cases) to as many as ten. Obviously, when a new toll franchise is offered neither the potential bidders nor the government is likely to have much information regarding appropriate bids. This may explain why, except for the Tamabeel-Jaflong Road in 1977-78, more than a single auction was used in the first year of a toll road's operation.

¹Sylhet Zilla Parishad records include the names of individual bidders and the amounts each bid.

TABLE 4

NUMBER OF AUCTIONS AND BIDDERS ON SYLHET TOLL ROADS

Toll Road	Fiscal Year									
	1977-78		1978-79		1979-80		1980-81		1981-82	
	Number Auctions	Number Bidders								
Tamabeel-Jaflong	1	5	2	4,7	1	8	1	10	4	1,4,0,8
Shaibhag-Kanaighat	3	3,5,4	1	5	1	9	1	8	--	a
Sari-Gowainghat	2	7,5	1	3	1	7	1	6	2	7,5
Sylhet-Badaghat	3	2,0,6	1	7	1	9	1	7	2	6,5
Moulvi Bazar-Shamsher Nagar		b	2	5,5	1	8	1	8	1	5
Sherpur-Biznaghat		b		b		b	3	3,6,2	1	4

^aNo one was willing to bid more than the previous year's winning bid and no subsequent auction was held.

^bNo franchise issued.

SOURCE: Sylhet Zilla Parishad records.

A question might be raised concerning the reasonableness of "de-franchising" a road after having earned revenues from it for several years, as occurred in 1981-82 on the Shibhag-Kanaighat Road. While revenue maximization implies that any bid greater than zero should be accepted, the criterion is deemed politically inappropriate in Sylhet. The reasoning given by Zilla Parishad officials is that revenue maximization can result in unfair treatment of the public. Even if the winning bid is very small, the franchise holder is allowed to collect tolls which, officials feel, may greatly exceed the amount paid for the franchise. It is felt that this would be unfair as well as, politically unpopular. Thus revenues are sacrificed in favor of political acceptance.

Revenue Yield

Table 5 shows the amounts of revenues collected for FY 1977-78 through FY 1981-82 as well as the annual rates of revenue growth for each toll road. The overall growth rate is impressive with the 1977-78 toll system (which included only four roads and an eight month franchise) revenues of Tk. 28.5 (thousand) increasing nearly fourteen-fold to Tk. 395.5 (thousand) in 1981-82. While the 1980-81 amount of Tk. 357.0 thousand was still only 3.6 percent of total own-source revenues, it did help offset some of the maintenance expenditures required on these roads.

The pattern of revenue growth on individual roads is also of interest and probably reflects the experimental nature of the bidding system. Initial winning bids were always considerably below that obtained during the second year of operation. Some roads, e.g., Tamabeel-Jaflong and Sylhet-Badaghat, continued to derive quite large percentage increases over

TABLE 5

TOTAL REVENUES AND REVENUE GROWTH FROM SYLHET TOLL ROADS
(taka amounts in thousands)

Toll Road	Fiscal Year								
	1977-78	1978-79		1979-80		1980-81		1981-82	
	Total in Taka	Total in Taka	Percent Increase						
Tamabeel-Jaflong	17.0	64.0	276	114.0	78	209.0	83	220.0	5
Shaibhag-Hanaighat	3.5	14.0	400	13.5	11	34.5	122	---a	---
Sari-Gowainghat	6.5	10.0	54	10.7	7	15.5	45	16.0	3
Sylhet-Badaghat	1.5	2.0	73	14.0	438	27.0	93	30.0	11
Moulvi Bazar-Shamsher	---a	10.0	---	30.1	300	37.5	24	74.5	99
Sherpur-Biznaghat	---a	---a	---	---a	---	33.5	---	55.0	64
TOTAL	28.5	100.6	253	184.3	832	357.0	94	395.5	11

^aNo franchise issued.

SOURCE: Sylhet Zilla Parishad records.

several years while the rate of revenue growth on others dropped off fairly rapidly.

Given that the toll rates remained unchanged after 1978-79, the only source of revenue growth to toll road franchise holders was increased traffic. Data in the Statistical Pocket Book of Bangladesh indicate that the total number of road vehicles in the country increased by 13.3 percent between 1977 and 1978 with a further increase of 9.9 percent the following year.¹ While the number of trips over Sylhet toll roads could, of course, have increased at a more rapid rate, the growth in vehicles suggests that, in the absence of rate changes, annual revenue growth exceeding 12-15 percent should not be anticipated once competition among bidders exhausts abnormal profits. That is, the growth rates during the first several years of operation of the toll roads were probably abnormally high and will not be replicated unless and until toll rates are increased.

Some indication that the auction system is, in fact, competitive can be gained by examining the time series of auction winners. Since the inception of the system there has been only one instance (Shaibhag-Kanaighat road between 1979-80 and 1980-81) of the holder of a franchise retaining that franchise in the following year. While this may mean that franchise winners overestimated revenues, it suggests that the

¹Bangladesh Bureau of Statistics, Statistical Pocketbook of Bangladesh, 1980 (Dacca: 1982), pp. 634-5. Interestingly, data on the number of registered vehicles showed an increase of only 6.2 percent between FY 1977 and FY 1978. See Bangladesh Bureau of Statistics, 1980 Statistical Yearbook of Bangladesh (Dacca: 1981), p. 516.

system is not one in which the same franchise holder obtains long-term and nearly exclusive rights to a road.¹

An associated issue is the extent to which the revenues helped defray the road maintenance costs. Although maintenance spending may be influenced by revenue availability, actual annual expenditures on road maintenance are of interest.² Maintenance spending in Sylhet is shown in Table 6 disaggregated both by time period and road.

Since 1977-78 was not a complete year for toll collections and since the 1981-82 spending data were still not complete at the time this information was collected, we have analyzed the average net return from these roads only for the years 1978-79 through 1980-81. Table 7 shows average annual expenditures and toll road revenues for the five roads that were operated throughout that three-year period. The entries show that in one case average revenues exceeded average maintenance costs; however, in another case (Moulvibazar--Shamsher-Nagar road on which substantial sums were spent in 1978-79) costs were much greater than revenues. Still, the overall average of twenty paisas revenue per taka of expenditures is not an insignificant aid in meeting these expenditures.

¹It is interesting to note that the Shaibhag-Kanaighat Road was the only instance in which the road was defranchised after having been toll status. This implies that the winner in one year overestimated road revenues for the following year and, after seeing the mistake he had made, decided to decrease his bid (as did all other potential bidders).

²It should also be recognized that there is a very fine line between what is termed maintenance and reconstruction of roads, especially in Bangladesh. See Schroeder and Maniruzzaman, Local Government Structure in Bangladesh.

TABLE 6
 AMOUNTS SPENT ON SYLHET TOLI ROADS
 (amounts in thousand taka)

Road	Fiscal Year				
	1977-78	1978-79	1979-80	1980-81	1981-82 ^a
Tamabeel-Jaflong	---	180.2	---	423.3	165.0
Saibhag-Kanaighat	116.8	---	343.3	---	---
Sari-Gowainghat	609.4	29.1	87.5	33.4	225.0
Sylhet-Badaghat	2.4	6.4	23.4	4.1	---
Moulvi Bazar-Shamsher Nagar	140.6	1,042.4 ^b	677.3	166.4	---
Sherpur-Biznaghat	177.8	15.9	193.3	50.4	---
TOTALS	1,047.0	1,274.0	3,123.7	627.7	390.0

^aBudgeted amounts for projects "taken-up".

^bThis amount probably represents substantial reconstruction of the road.

SOURCE: Sylhet Zilla Parishad records.

TABLE 7
 AVERAGE ANNUAL EXPENDITURES AND REVENUES
 FOR SYLHET TOLL ROADS, 1978-79 - 1980-81

<u>Road</u>	<u>1978-79 - 1980-81 Annual Averages</u>		
	<u>Expenditures</u>	<u>Revenues</u>	<u>Revenues as Percent of Expenditures</u>
Tamabeel-Jaflong	Tk. 201,162	Tk. 129,000	64.1%
Shaibhag-Kanaighat	114,077	21,333	18.7
Sari-Cowainghat	50,017	12,067	24.1
Sylhet Badaghat	11,318	14,533	128.4
Moulvi Bazar-Shamsher Nagar	612,024	25,867	4.2
TOTAL	988,598	202,800	20.5

SOURCE: Computed from Tables 5 and 6.

Administration of the Toll Roads¹

The operation of a toll road by the franchise winner is a rather simple affair--it involves stationing an employee on the roadside to stop all passing vehicles and collect the toll. This means that the only major expense in the toll collection process is employment of the toll-collector. In the case of the Sari-Gowainghat road the toll collector earns a salary of approximately Tk. 400-450 per month. Annualized this would result in labor expenses of around Tk. 5,000. The 1981-82 franchise fee of Tk. 16,000 on that road means the road will "break even" only if more than about Tk. 21,000 in tolls are collected.

Even though the zilla parishad need not spend anything to administer the road, there should be some policing of the system. For example, no toll schedule was observed at the toll station on the Sari-Gowainghat road, a violation of the rules regarding operations of toll roads.² Furthermore, the toll schedule given verbally at the road site did not correspond to the information provided by the zilla parishad. The tolls apparently being charged are: Tk. 3 for a micro bus; Tk. 6 for a large bus; Tk. 10 for a 3-ton truck; and Tk. 20 for both 5- and 7-ton trucks. When compared with Table 3 this suggests overcharging of 3- and 5-ton trucks as well as passenger buses. While the excess charges are not substantial, some administrative oversight should be considered by the zilla parishad to

¹The information here is not based on a full examination of the operation of all roads in the toll system in Sylhet. Instead, it is from a single brief visit to the Sari-Gowainghat Road; therefore, any conclusions must be very limited in terms of generalizability.

²These rules are included in the Rules Under the Basic Democracies Order (Those Applicable to District Councils) (Dacca: 1978), p. 18.

insure that the paying public is not exploited by the franchise holder. For example, district personnel could be asked to stop at the toll site while engaged in their regular duties to insure that the correct toll schedule is posted in a prominent location. Violation of this provision should lead either to fines or cancellation of the lease as provided in Paragraph 41 of the Rules Under the Based Democracies Order (Those Applicable to District Councils).¹

CONCLUSIONS AND RECOMMENDATIONS

The Sylhet toll road system presents an interesting example of how a local government can raise revenues to aid in the financing of its primary service responsibility--the provision of road transportation. While one should not expect that this revenue source will cover all of the costs of maintaining zilla roads (indeed, to do so would likely result in an inefficient toll structure), the revenues from this source can aid in mobilizing zilla parishad resources without requiring changes in the current statutory revenue structure. It has not been possible to determine the feasibility of establishing toll roads in ZPs throughout the nation. Nevertheless, the first recommendation from this study is that:

1. Zilla parishads should investigate the possibility of imposing tolls on zilla roads. In choosing potential toll roads consideration should be given to roads for which there are few, if any, alternative routes and for which the demand is sufficiently great to allow a franchise holder to bear the administrative costs of collecting the tolls while earning a normal return on the investment made in the franchise.

¹Ibid., p. 20.

Although the Sylhet system might be replicated in other districts, some aspects of that system should be altered to attain a more efficient system while not substantially foregoing revenue yields or equity goals. There is no compelling reason, other than for administrative ease, to have the same tolls charged on all zilla toll roads regardless of length. Consideration should be given to differentially higher tolls attached to the use of longer roads since maintenance costs are obviously a function of road length.

Likewise, there should be serious study given to the differential levels of maintenance required for different types of vehicles. The tolls should reflect these differentials by imposing relatively higher rates on vehicles that cause greater damage to the roadbed and surface. This will likely result in higher fees levied on larger vehicles.

Finally, while toll rates need not be altered annually, some consideration should be given to raising the overall level of user fees. Inflation is obviously affecting the costs of maintaining roads; thus, such an increase is justified to cover marginal maintenance costs. Furthermore, constant user charges in the face of general inflation means that the effective excise tax rate levied on users of the system has been declining over time. Therefore:

2. The fee structure used should reflect the additional maintenance cost associated with vehicle usage of the road. This will result in a fee structure that levies differential charges depending upon the type of vehicle and length of the road as well as one that is periodically increased to reflect rising costs associated with road maintenance.

The auction technique for granting operating rights on toll roads is an especially effective way for a zilla parishad to mobilize resources

without having to employ additional labor to collect tolls or to police the system. The method leads to efficient allocation of resources, however, only if a reasonably large number of competitive bidders participate. New potential bidders will participate only if they are aware of possible profits they can earn from the franchise. If bidder collusion is observed, e.g., only three or four bidders are participating in the auctions or that the same persons continuously win the same franchises, steps should be taken to augment the pool of bidders. Improved publication of the date and time of the auction as well as more information regarding potential returns to bidders might encourage greater participation. In addition, the requirement of full payment within two months of the auction may act as a constraint on the number of bidders. This provision might be relaxed by allowing installment payments over a period of, say, four or six months.

The Sylhet Zilla Parishad refuses all bids in the event the winning bid is less than the previous year's total. This should be reconsidered since bidders face some uncertainty concerning the gross revenues to be earned from the franchise. In any one year the winning bidder may have overestimated the toll revenues in which case he and other bidders will lower their bids in the following year (especially if the toll rates are not increased). To remove all tolls means the zilla parishad is foregoing revenues that it otherwise could earn. While the "exploitation" argument presented in the text is a reasonable one on political and equity grounds, it should be modified to recognize the uncertainty in the bidding process. Therefore it is recommended that:

3. The auction process should be used to allocate toll road franchises. Franchises should be granted to winning bidders as long as the winning bid is no less than some

percentage, possibly 20 percent, below the winning bid from the previous year. The practice of using multiple auctions should be continued to insure that maximum revenues are generated from the road system. Finally, the zilla parishad should carefully examine the history of franchise winners and, if it is felt that collusion among bidders is occurring or that capital constraints are limiting the competitiveness of the process, steps should be taken to insure that the maximum number of participants are entering into the bidding process.

The Sylhet toll road system has experienced an extremely large rate of revenue growth over its short history. Without further expansion of the system or an increase in rates, however, this growth rate is likely to slow considerably since, without higher rates, increased traffic is the sole cause of growth in revenue. In order to mobilize additional resources from toll roads:

4. The district should examine its overall road system to determine if other toll roads are feasible. Likewise, an increase in the tolls charged are justified since the fees have remained constant over the past four years in the face of rising road maintenance costs.

While the franchising technique minimizes the day-to-day administrative details of operating the toll road system, some policing should be done to insure that the public is not being exploited by franchise winners. Thus:

5. Zilla parishad officials whose normal work load requires traveling throughout the district should be instructed to stop at toll booths to insure that correct toll schedules are posted in a prominent place and that the public is not being overcharged. Failure to observe these practices, after issuance of a warning, should result in either fines or defranchising of the owner.

By carrying out these recommendations, toll roads could develop into an efficient and yet reasonably equitable way for zilla parishads to realize additional revenues at relatively low administrative costs.