THE INSTITUTIONAL FRAMEWORK FOR EFFECTIVE RURAL ROAD MANAGEMENT : REPLICABILITY OF "BANGLADESH MODEL" IN OTHER DEVELOPING COUNTRIES

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abstract: "Well planned" transport infrastructure intervention can have profound positive socio-economic effect on rural population. Sound institutional framework is a prerequisite for administering such interventions. The paper elaborated the Special Purpose Road Agency model adopted in Bangladesh for rural road management. The paper discusses Bangladesh's attempts to overcome the disadvantages of such model. The Bangladesh's model of institutional framework for rural road management is replicable in other country situations as well. But some factors needs to be analysed carefully before adopting such model in other countries.

1. INTRODUCTION

About three-quarters of the population in developing countries live in rural areas. Adequate, reliable and economic means of transport are a prerequisite for their overall development and to provide access to different facilities so that rural residents can carry out basic, economic and life-enriching activities. In a variety of ways, transport has an impact on productive activity (Creightney, 1993). It can play an enormous catalytic role in boosting agricultural production by lowering input prices hence production costs; improving access to credit; facilitating technological diffusion; lowering marketing costs hence improving the producers share of consumer price; and increasing land under cultivation.

Several empirical studies in the 80s and in the early part of the 90s examined the effect of improved transport infrastructure on the socio-economic development of developing countries and supported the hypothesis that transportation infrastructure and services are critical for productive activity (Creightney, 1995). One such study was conducted in Bangladesh in order to assess the effect of rural infrastructure improvement on the growth of income and alleviation of poverty in a developing economy (Ahmed and Hossain, 1990). One important finding of this study was that infrastructure could boost household's income by 33 percent. Small farmers gather a major share of the income rise from the increased production of crops, wages and livestock and fisheries. Therefore, there is sufficient

evidence to support the hypothesis that a "well planned" transport infrastructure intervention can have profound positive socio-economic effect.

Such an intervention can be achieved through (World Bank, 1995a):

(i) Development and maintenance of local transport infrastructure;
(ii) Interventions promoting rural transport services;
(iii) Use of intermediate means of transport; and
(iv) Provision of facilities which reduce transport needs.

Efficient and timely delivery of the above are contingent upon a sound institutional framework for rural road management. This paper is a case study of the characteristics of institutional framework for effective rural road management in Bangladesh. It also examines the replicability of "Bangladesh Model" in other developing countries.

The contextual factors which are relevant in this case study are: (i) **socio-economic condition of the country**: includes relative wealth and level of socio-economic development which affects the financing of rural transport infrastructures from donors and the concerned government; the tax-base and willingness to pay taxes for infrastructure improvements; and developmental objectives; (ii) **perception of the policy makers on the importance of rural transport infrastructures**: includes the understanding of the policy makers of the intricate issues of rural transport and their interrelation with overall development of the country; and (iii) **central government and local government structures**: includes central and local government structures, their interrelationship and level of devaluation of responsibilities.

2. THE PAST SITUATION

Bangladesh consists of flat alluvial plains criss-crossed by a large number of rivers and water courses including some of the world's largest rivers, is extremely flat and low-lying. It has a largely agrarian economy with an extremely low per capita Gross National Product (GNP) calculated at some US$220. More than four-fifths of the population of Bangladesh lives in rural areas. Agriculture continues to contribute the largest share to the national economy (37.6%) compared to other sectors like manufacturing (9.8%) (Bangladesh Bureau of Statistics, 1992). In addition the agriculture census of 1983-84 showed that about 56.5 percent of rural households were effectively landless.

To address these development problems, the government in its latest Perspective Plan (1995-2010) has fixed the following goals (Planning Commission of Bangladesh, 1995): (i) Poverty alleviation; (ii) Productive employment generation; (iii) Income growth; and (iv) Human resource development.

Programmes and institutions for the rural development of Bangladesh began with the *Comilla Model* in the 1960s. This was perhaps the first comprehensive planning approach undertaken for rural development in Bangladesh. There were four components in *Comilla Model* of rural development: (i) Two-tier cooperatives; (ii) Rural Works Programme; (iii) Thana Irrigation Plan; and (iv) Thana Training and Development Centre. The *Comilla Model* is still, theoretically, the rural development strategy of the government. The Rural Works Programme (RWP) started in 1963-64 and aimed primarily to provide employment to the rural unemployed and under-employed and, at the same time, building much needed rural infrastructure. The RWP achieved this limited objective and provided valuable support the agricultural development needed at that time (Bangladesh Planning Commission, 1984).

In the 70s, the *Comilla Model* was moulded into the concept of area development with small pilot projects being initiated in different locations. These were expanded into integrated multi-sectoral development programmes in defined geographic locations with specific interventions in different sectors. However, all these approaches emphasized agricultural development through the development of physical infrastructure and a number of shortcomings emerged principally because these projects failed to focus on the alleviation of rural poverty. As a result, a 1984 Strategy Paper on rural development of the government re-defined the concept of the rural development as (Bangladesh Planning Commission, 1984):

> *Rural development would mean improvement in the quality of life of the rural people and the process would involve development of both economic and social sectors; the former with infrastructure, production, employment and income and the latter with education, health, sanitation, family planning etc. The programme will interact with each other and produce combined effect on the improvement of the rural life in totality.* (Bangladesh Planning Commission, 1984, p. 41)

As before the development of strategy for rural development in 1984 the emphasis was only on the development of rural infrastructures to support agriculture development there was no systematic approach in the planning and development of rural transport infrastructure. As a result, Bangladesh like most of the developing countries :

(i) had no rural transport infrastructure development strategy;
(i) experienced incoherent rural transport infrastructure development;
(ii) had majority of the roads were in poor condition;
(iii) had no clear focal point for coordination at central government level;
(iv) had no clear maintenance strategy;
(v) saw too much decision making at the central government level; and
(vi) had unsustainable arrangements for long-term management and maintenance; and
(vii) had no systematic approach for the development of transport services in the rural areas especially Non-motorised Transport (NMT)

Due to the lack of Rural Transport Infrastructure Strategy a piece-meal approach was taken to ameliorate the rural transport problems in Bangladesh. Interventions was ad-hoc and those were not based on the analysis of transport needs of rural people for performing domestic, economic and social needs. This leads to an incoherent rural transport infrastructure development. Due to an overriding focus on "agriculture development", social justice took a back seat. Physical infrastructure interventions for "agriculture development" benefited the rich farmers who had access to the means of production. Due to top-down approach in planning there was no participation on the part of the rural population in the development of the infrastructure and therefore the those did not represent the hopes and aspirations of the community. As a result the community was reluctant to share the responsibility for its maintenance. On the other hand due to inadequate institutional responsibility there was a lack of accountability.

The problem of institutional framework for effective rural road management was apparent to the policy makers for a long time. It particularly came into limelight during the formulation of the Rural Development Strategy in the early 80s, a part of which was devoted to strategy for rural infrastructure development. The strategy critically evaluated

the effectiveness of the *Comilla Approach* and advocated for coherent approach in rural transport infrastructure development in line with the strategy recommended for rural development.

As the majority of the population of Bangladesh live in rural areas and as there are sufficient evidence to prove the hypothesis that "well planned" transport infrastructure intervention can have profound positive socio-economic effect on rural population, the country in general and the rural population in particular would have suffered if the problem was un-addressed. Especially the rural poor who were not benefited due to overriding focus on agriculture development would have suffered considerably.

3. KEY INSTITUTIONAL REFORMS

3.1 Development of a Rural Infrastructure Strategy

Understanding of the policy makers on the importance of rural roads leads to the development of the Strategy for Rural Development in 1984 which provided a valid framework for rural transport infrastructure development. A recent review of this 1984 strategy by the International Development agency (IDA) and the government prior to the formulation of a new Rural Infrastructure Strategy can be attributable to the increased understanding on the part of the policy makers on the importance of rural roads. The review confirmed the soundness of 1984 approach and only proposed some "fine tuning". This modified approach provides a framework within which the government and donors can join together to build a more sustainable rural transport infrastructure in Bangladesh. The study concluded that only 30% of the physical targets set in 1984 strategy could be achieved. It recommend putting more emphasis on community participation in planning, implementation and monitoring; improved use of local resources for rural infrastructure development; developing complementary links between road and water transport; an increased role for the private sector; and institutional strengthening of the organization responsible for rural infrastructure - the Local Government Engineering Department (LGED) (World Bank, 1996b). The study underscored the current levels of foreign and domestic funding taking into consideration the positive correlation between improved infrastructure and socio-economic benefits in rural areas of Bangladesh.

3.2 Development of a Focal Agency in Bangladesh for Rural Infrastructure

In most of the developing countries planning, financing and management of rural roads are handled by more than one agency. For example, there are many agencies dealing with rural roads in India - Public Works Departments; Rural Engineering Organizations; Panchayat Raj; Village Samities; Revenue Authorities etc. (Ministry of Shipping and Transport, 1984; Kapila, 1989). The Road Plan of India (1981-2001) recognized that this diversification of activities had resulted in unplanned construction and neglected maintenance (Ministry of Shipping and Transport, 1984). The plan recommended bringing the whole gamut of activities under one banner and suggested the creation of a rural engineering organization in each state to deal with all types of rural road planning, construction and maintenance. Even in a country where one single agency is responsible for rural roads it may not have the technical capacity to deal with its mandate. For example, in a recently conducted study on Cambodia it is concluded that although the Ministry of Rural Development was responsible for rural roads it lacked the institutional and technical capability to meet its responsibilities with rural roads (Edmonds, 1996).

The road network system in Bangladesh is functionally classified into seven categories (Table 1). In Bangladesh, a "two-tier model" as elaborated in World Bank (1995a) is in place for management of roads with responsibility of main and rural roads rests with two different agencies - Roads and Highways Department (RHD) under the Roads and Railways Division of the Ministry of Communications shoulders responsibility of national and arterial roads while LGED under the Local Government Division (LGD) of the Ministry of LGRD&C is responsible for feeder and rural roads (Table 1). The inherent advantages of one agency responsible for rural roads - LGED in the case of Bangladesh - are: (i) it can ensure a consistent planning and financing framework; (ii) it provides a focal point for road financing, planning and management; (iii) it is a source of technical and management advice to all concerned; and (iv) can ensure local input in planning. Under this institutional framework there exists one unified civil service which ensures sufficient scope for career development of professional staff. This type of organizational arrangements also enhances employee morale; protects them from political exploitation; ensures the transferability of positions between local and central level with parity of conditions of service among the assignments. Disadvantages of such special purpose rural road agency are: decisions taken at the Headquarters levels therefore remote from users. If the users are at all involved in the decision making process they are only consulted without any participatory input; and such arrangement hampers decentralization and cost-sharing (Heggie, 1996). Later in this section it is elaborated how these disadvantages were overcome in Bangladesh.

LGED's predecessor Local Government Engineering Bureau (LGEB) came into being in 1984 under the Local Government Division (LGD) of the Ministry of LGRD&C from a small cell in LGD in 1960s and 1970s. LGEB became the Local Government Engineering Department (LGED) in 1992 to shoulder wider responsibility in terms of provisioning rural transport infrastructure. The scope of activities of LGED have gradually been enlarged due to the increasing demand. A recently conducted study for institutional strengthening of LGED unequivocally commented that LGED was an important actor in rural development and it was a considered successful and effective organization in the implementation of the task assigned. World Bank (1996b) and ISO, Swedish Management Group (1995) identified a number of positive institutional features of LGED. These are : team work - has clearly defined work objectives; professionalism - has highly qualified personnel and emphasis on upgrading of skills; decentralization - 90% of the staff are at the field level; leadership - the chief executive has a strong involvement in all development activities; informal decision making - has managed to considerably reduce the bureaucratic practice of processing decisions through different layers; sense of mission - pursuing the mission namely "serving the people at the grassroot"; and effective delivery channel - continuous emphasis on quick decision making and quality control.

Table 1: Road Network Classification

Category	Definition	Institution Responsible
National Highways	Road connecting national capital Dhaka with Divisional headquarters[1], and other important urban centres, ports, and international highways.	RHD
Regional Highways	Road connecting different regions with each other, which are not connected by national highways	RHD
Feeder Road Type - A	Road connecting the Thana Headquarters to the arterial road network	RHD
Feeder Road Type - B (FRB)	Road connecting Growth Centres (GC)[2] markets to the RHD network (FRA of arterial road) or to the Thana Headquarters	LGED
Rural Road 1 (RR1)	Road connecting the Union Headquarters/local markets with the Thana Headquarters or road system	LGED
Rural Road 2 (RR2)	Road connecting villages and farms to local market/Union Headquarters	LGED
Rural Road 3 (RR3)	Roads within villages	LGED

3.3 Community Participation in Rural Infrastructure Development in Bangladesh

The concept of community participation in infrastructure planning, implementation and maintenance has surfaced quite recently in Bangladesh. The concept arises from the need to maximize the impact of rural infrastructures. Development planners are increasingly concerned that infrastructure which does not represent the hopes and aspirations of the community will not be used by it and the community will be reluctant to share the responsibility for its maintenance. The process of involving the community in infrastructure planning, implementation and maintenance involves answering two basic questions: (i) why community participation?; and (ii) how community participation can be ensured?. Whilst the beneficial effect of involving communities in infrastructure development is accepted by all, modalities for involving them may vary widely. There are at least three schools of thought regarding these modalities (Jupp, 1995):

(i) Some believes that technical experts are capable enough to make all planning decisions and it is unrealistic to involve poor unskilled and uneducated people in the process. They think that if participation is considered at all, it should be limited to using the villagers as manual labor. But it can be seen that even infrastructure constructed in this way falls into disrepair and may be abandoned altogether if the location is inconvenient, the service is too expensive or inadequate.

(ii) Another school advocates using the people's representatives and selected technocrats and bureaucrats as a surrogate for community participation. But those

[1] Highest demarcated administrative units. The administrative hierarchy in Bangladesh in order of size is Division, District, Thana, Union and Mauza.

[2] Selected important rural markets which are the focal point for rural development where investments in rural economic and social infrastructure are concentrated. Out of some 8000 rural markets 2100 have been identified as Growth Centres (GC) markets.

who opposed this approach often argue that this is mere consultation in the name of participation. Its validity is also questioned on the grounds that representatives at different levels often fail to articulate the hopes and aspiration of all sections of end users.

(iii) The third school emphasizes the establishment of users committee and maintenance groups as means of consultation and participation. In this school of thought it is felt that by defining the roles and responsibilities of these committees and groups and clarifying the expectations of their participation and the operation and maintenance of the facilities the notion of community participation can be achieved with minimum technical assistance.

However, the effectiveness of community participation may depend on the following: (i) **socio-political situation of the community concerned** - For example in many communities women and the poorer sections of the society may be elbowed out of the decision making process. Similarly, due to the power structure of local elites one can not assume that someone from the community represents the hopes and aspiration of the whole community. Both of these cases are relevant in the Bangladesh context; (ii) **Institutional capacity of the organization concerned** - Does the organization which is responsible for the intervention have adequate organizational capacity for effective community consultation? If yes, to what extent?; and (iii) **Extent of the intervention** - To what extent the interventions will be made? What is the size of the geographical area and population to be covered?

Studies in Bangladesh have found that the end users of the infrastructure feel that they should be involved in the planning and decision making regarding public investments for their benefit (Jupp, 1995). Jupp (1995) suggested that this can only be achieved through small incremental steps towards change. Jupp (1995) suggested two approaches in this incremental process:

(i) **Information sharing approach**: This is a modest level of community participation. It involves the following steps: gearing up capacity to conduct information dissemination programmes; provision for quality control on information dissemination programmes; and identification of mechanisms for end users input. The risk of such an approach is that it is become an end in itself; and it is perceived that all the issues of community participation are being fully addressed through it; and

(ii) **Users Input Approach**: It takes community participation a step further. This approach suggests that facilitators should go out to the villages and markets and involve representative samples of end users in prioritization and design. This is regarded as too ambitious and will take time. The success of this approach depends on: the development of a pragmatic but effective methodology; the institutional capacity of the organization implementing users input approach; and the provision of quality control mechanism.

In Bangladesh the effectiveness of community participation in rural infrastructure planning, implementation and maintenance has already been recognized. Rural communities are increasingly being involved for these purposes. For rural infrastructure development, LGED has embarked on an "information sharing approach" with a long term view of adopting "users input approach". In this regard, institutional constraints are progressively being identified and removed. Institutional capacity is being enhanced through reorganization - for example, some staff are being trained as community organizers. Staff at all levels are being

motivated for this purpose as well. Recently, in the planning of a multilateral donor assisted rural infrastructure development project communities were successfully involved (**Box 1**). Communities were also involved successfully in designing the project components while they are being involved for implementation as well.

Box 1 : Community Participation in Infrastructure Development : A Myth has been Made Reality!

In the preparation of the IDA/Swiss Agency for Development and Cooperation (SDC) assisted Rural Roads and Markets Improvement and Maintenance Project (RRMIMP-II) emphasis has been given on the participatory approach to rural infrastructure development. A particular study (Jupp, 1995) was conducted to look into the aspects of participation under the project. Under RRMIMP-II participatory approach has been adopted for pre-selection of FRBs, Growth Centre (GC) markets and *ghats* for improvements under the project. The process involves group discussion at Thana level with representatives of each Union (as well as relevant government officials) to identify and rank local priorities for improvement. Considering the huge area covered under the project, community participation aspects have been made practical and manageable. The following paragraphs in brief discuss the "participatory approach" adopted for the selection of FRBs, GC markets and *ghats* under the project.

Selection of FRBs, GCs and ghats

- Step 1: Initially an inventory of all FRBs, GCs in the project area was prepared. A list of 'possible' investment schemes was prepared excluding those already developed under different investment schemes.
- Step 2: Using the list of 'possible' schemes as starting point, participatory meetings were organized in each of the 97 project Thanas attended by local representatives including Union Council members and NGOs. The meeting discussed the schemes and reached a consensus and ranked their priorities for FRBs and GCs. In the meeting consensus and decision were reached though open debate The meeting also identified the priority ghats for improvement.
- Step 3: The locally prioritized FRBs and GCs were used to prepare a list of 'probable' FRBs and GCs to be taken up for improvement.
- Step 4: The final list of selected FRBs was made on the basis of the economic appraisal. The final lists of the GCs and ghats were derived from the short-list based on locally identified priorities.
- Step 5: The Thana Development Coordination Committee (TDCC)s were subsequently requested to confirm their agreement with the selection of investment schemes.

3.4 Maintenance of Rural Infrastructure in Bangladesh

3.4.1 Present Scenario in Rural Infrastructure Maintenance

Maintenance of the rural infrastructure is a prerequisite, *inter alia*, to protect and maximize returns on the investment. Like many other developing countries, Bangladesh in the past has not paid attention to planned road maintenance. It is now widely accepted that in developing countries the main problem of rural road maintenance is not technical but financial and management (Kapila, 1989). Bangladesh's lack of a maintenance initiative was mainly due to its poor maintenance culture coupled with an unsound macro economic

situation in the 80s. In the recent years initiatives had been taken for planned road maintenance - both routine and periodic. Considering the historical trend, rural infrastructure expenditure started to rise sharply in the early 90s and this coincided with a sharp rise in project-aid as well. Understanding the implications of non-maintenance of the planned infrastructure, LGED arranged two seminar/workshop - one in 1989 and the other in 1992 - in order to apprise different actors related to rural infrastructure development about the emerging danger of non-maintenance. These initiatives was instrumental in breaking the poor maintenance culture of rural roads in Bangladesh.

Figure 1 shows the resources requirement of planned maintenance of rural roads in Bangladesh. It can be seen that in the FY1996-97 an amount of Taka 1451 million (US$36 million) is required for rural road maintenance in Bangladesh. Similar figure for FY2003-2004 will be Taka 2303 million (US$58 million). An analysis shows that in FY1996-97 resource requirement for maintenance is closely matched with the resources available - Tk. 1300 million (World Bank, 1996a)

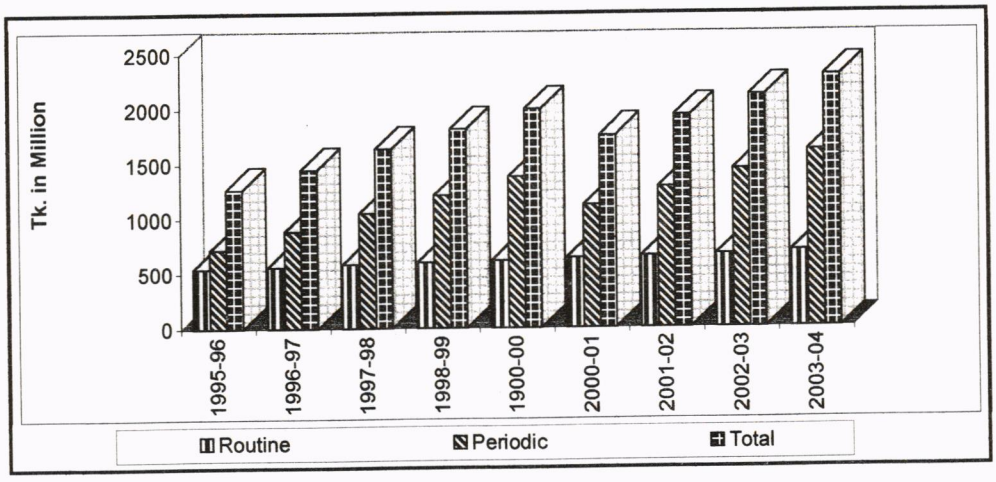

Figure 1 : Cost of Planned Maintenance of Rural Road Network under LGED

Figure 2 shows the historical trend of maintenance and improvement expenditure for rural roads in Bangladesh. It can be seen from Figure 2 that there is a substantial improvement in maintenance funding from the FY1992-93. In the FY1992-93, government for the first time allocated Taka 300 million (US$7.5 million) from its general tax revenue for the maintenance of rural transport infrastructure. In the subsequent years such allocation has gone up significantly - in the FY1993-94 Taka 400 million (US$10 million); in the FY1994-95 Taka 550 million (US$13.75 million); and in the FY1995-96 Taka 650 million (US$16.25 million). Improved macro economic situation[3] and improved understanding of the needs for planned maintenance of rural infrastructure is responsible for such a positive trend.

As a part of the "planned maintenance", a Rural Infrastructure Maintenance Cell (RIMC) has been set up by LGED in the early 90s. The RIMC has made considerable progress in establishing the framework for road maintenance by setting up a road inventory system, introducing national maintenance guidelines and establishing a training programme (Local

[3]Bangladesh is currently financing 40 percent of the expenditure of Annual Development Programme (ADP) from indigenous sources which was negligible few years ago (Chowdhury, 1995)

Government Engineering Department, 1995). The government with the assistance of ILO/UNDP already prepared Thana Base Maps - contain spatial information of administrative boundaries, physical infrastructure (including roads), educational institution, settlement pattern and other agriculture and socio-economic infrastructure - of all Thanas using Satellite Imagery, aerial photography, available topographic maps and ground truthing with the help of LGED staff at the Thana level. Acquisition of digital data from the Thana Base Maps using Geographic Information Systems (GIS) in different layers has also been completed. These spatial data with related attribute data collected by the RIMC in LGED is increasingly being used for planning and management of rural infrastructure including maintenance planning of rural roads. It is to be mentioned here that the importance of such data for effective rural roads management has been underscored in countries like India and Cambodia (Kadiyali, 1989; Edmonds, 1996).

The donors' role in rural infrastructure maintenance financing is less substantial and is limited to the maintenance of rural roads within the donor aided project period. A total of Taka 147 million (US$3.7 million) was spent under different donor assisted projects for rural road maintenance in the FY1995-96.

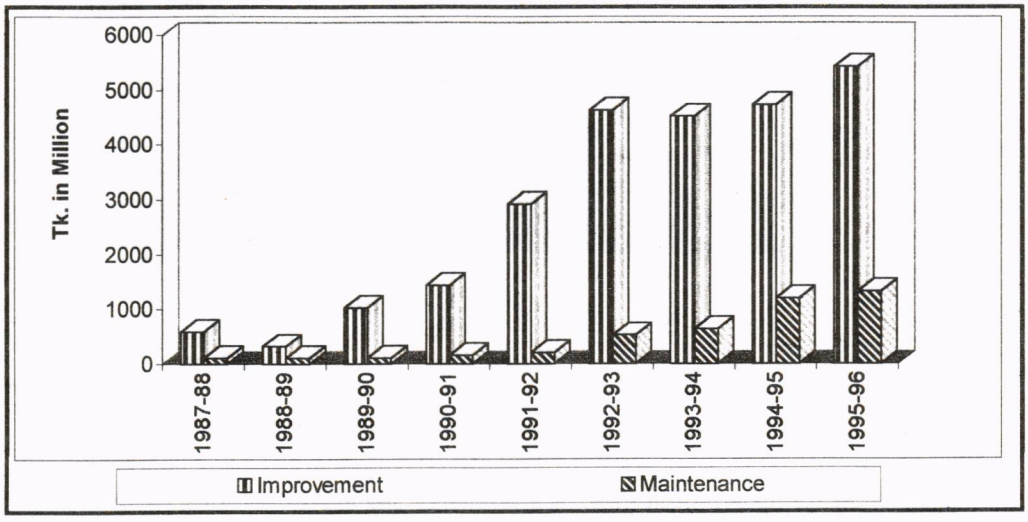

Figure 2 : Historical Trend of Maintenance and Improvement Expenditure

3.4.2 Opportunities and Constraints in Rural Road Maintenance Financing in Bangladesh

It has been seen earlier that there had been considerable improvement in financing rural roads maintenance since early 90s. Although currently the resource available for rural road maintenance is closely matched with the maintenance requirement, an analysis of the source of funding in 1996-97 shows that overwhelming portion of the funding is coming from the government's general tax revenue (50%) and from food-aid support of Canadian International Development Agency (CIDA) (35%).

Now the question is whether the government will be able to finance the increased future rural road maintenance requirement due to anticipated future improvement from its general tax revenue. It is also problematic what will happen when CIDA withdraws support for

routine maintenance of RR1s and RR2s. The existing opportunities regarding rural road maintenance in Bangladesh includes : (i) **Existence and use of labor-based maintenance techniques involving landless groups and in particular women** - Labor-based technology is being used for routine and periodic maintenance of rural roads. All maintenance works of rural roads are carried out by destitute women/landless labor groups called Labor Contracting Societies (LCS) except where there is a need for superior skill and equipment. Hence, there exists substantial savings in labor costs in rural road maintenance; (ii) **Absence of force account operation** - maintenance of rural roads in Bangladesh is being done by local contractor/LCS. In the absence of force account substantial efficiency has been achieved which results in a considerable savings of fund; (iii) **Allotment of considerable general tax revenue for rural road maintenance in recent years** - there is an increase of more than 100% allocation for maintenance from government's general tax revenue in the FY1995-96 of the amount allotted in the FY1992-93 when it was first introduced due to improved macro economic situation owing to structural adjustments; (iv) **Clear institutional responsibility for rural road maintenance** - LGED is solely responsible for planning and programming of rural road maintenance; (v) **Decentralized planning and management responsibility of rural road management given to LGED field offices**; (vi) **Involvement of local government bodies in road maintenance** - steps have already been taken to ensure participation of local government bodies, especially Union Councils in planning and programming of rural roads maintenance (Local Government Engineering Department, 1995; World Bank, 1995b); and (vii) **Steps already taken to augment local resources :** Several steps have already been initiated to augment local resources mobilization.

3.4.3 Existing and Potential Opportunities in Rural Road Maintenance Financing in Bangladesh

Local Resources Mobilization

Ratio of total taxes to gross domestic product in Bangladesh is consistently less than in other less developed countries. Bangladesh has a tax-GDP ratio of 7.1% far below the average of all developing countries (19.5%) (Chowdhury, 1995). In Asia alone the comparable figure is 14.9%. In rural Bangladesh the situation is even worse - urban households pay about two and half times more taxes on their income than their rural counterparts (Blair, 1989). The fact is that the local rich and influential people are unsurprisingly reluctant to be taxed. Blair (1989) argued that the rich and influential people are the worst tax evaders and defaulters. Local government bodies thus suffer from narrow tax base, insufficient attention from government and an inability to collect taxes. There are numerous opportunities in local resources mobilization but what is needed is collection efficiency and equity.

To overcome the aforementioned situation there is a need for a very strong political will, though it will be unwise politically for the government to go for quick reform. What is preferable is to go for incremental changes but with specific objectives. The following potential measures as a means to enhance the capacity of the Union Councils in rural road maintenance have been suggested:

(i) Blair (1989) reports that local bodies pay their matching contribution for different projects from the central government's grants fund. This system needs to be tightened up by making the local government pay their matching share from their collected revenue;

(ii) Government's grants could be used in order to pursue its policy objectives. For example, in addition to the normal grant, if the government match a dollar for an extra dollar spent on maintenance of rural roads this may encourage the local government to collect more taxes and on the other hand it will serve the purpose of much needed rural roads maintenance; and

(iii) Blair (1989) comments that even if the local government are interested in mobilizing local resources there is no real institutional structure through which it can collect and spend the same. The current staff strength of the Union Councils is not conducive enough for local resources mobilization and their spending. Steps may be taken to look into the staff requirements for the Union Councils.

General Tax Revenue

As discussed earlier, in Bangladesh, about half of the resources needed for maintenance of paved rural roads comes from the general tax revenue of the government. Although its increment since its onset in the FY1992-93 is encouraging, the question is whether the government will be able to continue financing the additional resources required for future maintenance in this way. The advantages of maintenance funding from the general tax revenue are that it conforms with the unified budget management and it is politically acceptable. On the other hand the disadvantages are : it does not represent users' cost; it is sensitive to macro economic situation of the country; not preferred by policy makers as it comes from the revenue budget rather than development budget.

Road Fund

Roads funds have been set up in several African countries in order to ensure a stable flow of funds for the operation and maintenance of road infrastructure (de Richecour & Heggie, 1995). The first road fund in Africa was set up in South Africa in 1935 and the remainder were established in the 80s and 90s (de Richecour & Heggie, 1995). These road funds derive their revenues from road users charges - mainly fuel levy, bridge and ferry tolls and an earmarked portion of other taxes and charges. The establishment of a road fund in Bangladesh may be an option to meet the increasing resource requirement for maintenance of rural roads. The advantages of establishment of road fund in Bangladesh are : it is easier for earmarking on the operation and maintenance of roads; logically more preferable as users paying for the infrastructure use; less chances of invasion in case of national emergency; less susceptible to macro economic fluctuations; and preferred by policy makers as it comes from the development budget. However, the disadvantages of road funds are: politically less acceptable as it could trigger protest from the users; introduces fiscal inflexibility; against the principle of unified budget management; in the case of road fund managed by "road board"[4] it needs specific legal provision; procedure for allocation may be cumbersome; and it many be difficult to assess the amount of fuel used by the road users since fuels are also used for irrigation pumps and mechanized river/water transport - a typical problem in Bangladesh.

3.5 Socio-Economic Benefit Monitoring and Evaluation (SEBM&E) of Developed Rural Infrastructure

Transport infrastructure investments are always considered as an avenue for socio-economic development in rural areas of developing countries. Transport infrastructure is

[4] a board which oversees management of road fund.

considered to have played an important role in socio-economic development of rural areas both directly - by providing immediate cash to small and landless farmers and rural wage laborers during the construction phase - and indirectly - by reducing cost and effort of transport and thus of marketing agricultural products; increasing farmgate price of the produce; facilitating access to rural people to modern inputs and to social and welfare services. Socio-Economic Benefit Monitoring and Evaluation (SEBM&E) involves collection of information relating to the delivery to, and use by, recipients of services and the resulting benefits (World Bank, 1996a). The evaluation of benefits of the ongoing interventions provides information to the managers as to whether the interventions are achieving their objectives. On the other hand, the evaluation of benefits of the completed projects provides lessons for the planning of future projects.

Understanding the importance of SEBM&E activities LGED has included such activities in all of its transport infrastructure development projects. Currently SEBM&E is conducted in a variety of ways depending on the requirements of different donors in donor assisted infrastructure projects. Efforts are underway to fully implant these activities within LGED. A committee has been set up to look into these aspects and as per recommendation LGED is committed to make institutional arrangements to carry out such activities.

Several studies conducted under the auspices of different rural development projects concluded that the improved infrastructures in rural areas are having positive impact on the socio-economic development in the rural areas. Two such studies are worthwhile to mention. One of these studies was conducted under German government assisted Tangail Infrastructure Development Project (TIDP) (Ministry of Local Government Rural Development and Cooperatives, 1996). The study concludes that the infrastructure interventions are having immense impact on: (i) **Employment and Income** - not only created large number of direct employment due to project interventions but also indirect employment through quickly expanding transport business, newly established shops and workshops along improved roads and in the markets; (ii) **Transport rates** - reduces the transport charges of cargo (22.3%) and passengers (33.3%) within two and half years of the construction of the roads. Road users also increased by 110%. The number of NMTs and motorized vehicles also increased by 99% and 726% respectively; (iii) **Land Prices:** Land prices alongside the improved roads increased by 49% to 376%; and (iv) **Effect on Market Improvement**: upward changes in auction amount of the improved markets (16% increase in developed project markets compared to 6% unimproved markets in one year within the project area); daily market attendance (number of visitors went up by 25% for non-market days and 163% for market days); arrival of vehicles in the improved markets (on hat days 128% and 330% for non-motorized and motorized vehicles respectively; and on non-hat days 329% and 763% respectively for non-motorized and motorized vehicles respectively); and average turnover of the improved markets (increased by 21% compared to unimproved markets)

Another study was carried out by the World Bank assisted Rural Roads and Markets Improvement and Maintenance Project (RRMIMP) in the northern part of Bangladesh (Development Design Consultants Ltd., 1996). This study also confirms the positive socio-economic changes in the project area due to project interventions. Among other positive changes the study found that within the first year of completion of the project roads average unit transport costs of cargo and passengers had decreased by 48% and 69% respectively. It also reported that the income multiplier due to project intervention is 10 - i.e. one unit currency of direct income generation would boost the economy by generating total income of ten units of currency. The study found that cargo and passenger movements had jumped by upto 2.5 times after development of project roads. The study concluded that the overall

economic return from the road improvement investments was about 26% based on partial benefits of transport cost savings.

In Bangladesh, conventionally the private contractors are used for the execution of physical infrastructure schemes. But since early 80s Labor Contracting Societies (LCS) are being used as a new and innovative mode of construction and maintenance of physical infrastructure. The use of the LCS is considered as a landmark in targeting poverty alleviation directly with infrastructure development. The LCS are now engaged in different rural infrastructure development projects of LGED. The main objectives of the use of LCS for infrastructure development are to (Faizullah, 1995): (i) directly involve the landless groups in infrastructure construction and maintenance; (ii) provide employment and income opportunities for the landless groups; (iii) eliminate intermediaries for project construction and maintenance activities; and (iv) ensure fair wages to the laborers. Government is committed for continuous innovation in direct targeting of poverty alleviation with infrastructure development. LGED's experience with LCS is elaborated in Box 2.

Box 2 : Targeting Poverty Alleviation Directly to Infrastructure Development : the LCS Model

- LCS comprises of a group of 7-30 landless laborers who depend on manual labor as their main source of income and do not operate more than 0.5 acres of land. On an experimental basis LGED's experience of use of LCS as a new and innovative mode of construction in infrastructure development goes back to 1983-84. The LCS are now active in different rural infrastructure projects executed by LGED.

- Initially LCS' involvement was mainly limited to earthwork and pipe/culvert installation. Over the years involvement of LCS has been expanded and now LCS are involved with scores of construction and maintenance activities which includes earth work of road, embankment, canal etc.; pipe casting and culvert installation; earthwork and structure maintenance; tree plantation on roads, embankments and caretaking of trees; and other construction activities like Herring Bone Bond (HBB) bricks laying, box culvert construction etc. As the groups are gaining experience and showing good performance there is a plan to involve the groups in more specialized construction activities.

- Efforts are underway for formation of more women groups. Some of the infrastructure development projects already working with women groups such as EC assisted Rural Development Project - 8.

- The LCS are not only being trained on the technical issues of infrastructure development but also on other social issues like sanitation, nutrition, women's right, environmental awareness etc. The group members are motivated to spend their earnings on things like latrines, nutritious food, health care, children education etc.

3.6 Development of Transport Services in Rural Areas

IMT/ NMT has got recognition recently as an effective means of transport services in rural areas of developing countries. Limitations of conventional transport in addressing the transport demand of rural population is well recognized now. Two main factors are identified as responsible for the underdevelopment and underutilisation of IMT/NMTs; firstly, the attitude of policy makers which was heavily biased towards the construction of motorized transport infrastructure and neglecting the simpler and cheaper means of transport and secondly, the customs and lifestyles of rural society which mitigated against the adaptation of newer technologies (Riverson and Carapetis, 1991; Kaira, 1983). Riverson and Carapetis (1991) also argued that introduction of IMT would require clear

understanding by the government and local officials of the policy issues involved and a clear commitment to pursue solutions to local situations. Howe (1994) in the context of Africa proposed two avenues for enhancing the supply and use of NMT; firstly, mass production of NMTs for the poor; and, secondly, change in investing practice (not only for physical infrastructure) of the development banks and organizations so that they could intervene directly in low-cost mobility and access enhancements. It is now widely accepted now that the role of the government should be as a facilitator of the low-cost means of transport rather than their provider.

The importance of NMT in the context of Bangladesh has also been examined in a recent study (Ahmed, Carapetis and Taylor, 1995). The conclusions of the study, *inter alia*, include : NMT has an enormous potential in addressing the transport related problems of the rural population of Bangladesh; impact of NMT on the activity-travel patterns of the rural population is not as straightforward as commonly perceived; and any intervention to increase mobility of the rural population in a particular area of a developing country using IMT/NMTs needs, *inter alia,* careful investigation of the social, cultural, economic and geographical factors related to use of IMT/NMTs of the area concerned.

In light of the above, steps have already been taken for improvement of NMT in Bangladesh. NMT improvement is one of the sub-components in a World Bank assisted rural infrastructure development project (RRMIMP-II). A NGO will be involved for the implementation of the sub-component considering the limited institutional capacity of the government in the implementation of such type of intervention to enhance rural mobility. The main features of the sub-component is described in Box 3.

Box 3 : Government-NGO Partnership in Rural Transport Services Development: The New Challenge

A pilot programme has been initiated to improve NMT under the World Bank assisted RRMIMP-II. The sub-project is designed in such a way that the NGO will join hands with the government in order to enhance mobility of the rural population through improvement of NMT in two areas of Bangladesh - differ considerably in geographical, cultural and transport characteristics terms. The main features of the sub-project are :

- The strategy of the programme will be to learn from the past failures and will adopt a approach that will maximize the chances of success;
- The programme will not attempt development of "vastly technical improved NMT" rather it will focus on improvements to the design of specific aspects of the existing NMT based on input from the NMT operators;
- LGED will sub-contract the implementation of the programme to an NGO;
- The programme will work from the start together with its target groups and any intervention will be participatory in nature;
- The programme will emphasize the promotion and dissemination of the improved designs within the project area and other parts of the country and the provision will be made for credit to the rural poor for purchasing of improved designs;
- There is an limited provision of technical assistance to support the NGO in technical and socio-economic aspects;
- Role of LGED will only to carefully monitor the overall progress, performance, and impact of the programme.

3.7 Improvement of Financial Capability of Local Government Bodies and Cost-sharing in Infrastructure Development

Strong local government institutions is a prerequisite for effective rural transport infrastructure management but availability of local resources is of equally important. Although Bangladesh has experienced frequent policy reversals on local government structures which created considerable problems in pinpointing institutional responsibility for rural transport infrastructure management local bodies now play an increasing role in the management, planning and implementation of rural roads. More often than not local government institutions are sharing costs for building rural transport infrastructures. A far greater role can be played by local government bodies in rural transport infrastructure management if their financial capability is enhanced. Measures have already been taken to augment their financial capability. Measures are already taken to augment the financial capability of the Union Councils. These includes: (i) reducing central government's share of market lease revenue and allowing this amount to go directly to Union Council; (ii) diverting half of the land-transfer-tax revenue now going to District Councils to Union Councils; (iii) increasing lease value threshold for Union Council managed markets; (iv) introducing more transparent procedure for market leasing in order to reduce collusion in market leasing; and (v) enhancing unit toll rates for developed markets. These measures are expected to have raised the revenue of the Union Councils substantially. It is expected that once the financial capability of the Union Councils is enhanced their role in rural road management will be substantial. Several studies are being planned to look in-depth about the potential opportunities that exist for augmentation of local resources.

4. THE LESSONS LEARNED

The principal lessons learned from this case are : (i) a single purpose rural road agency is more effective than a road agency with multiple purpose - management of rural as well as national and arterial roads. As rural transport infrastrucutre are constructed with multiplicity of objectives in a developing country two-tier model - one agency dealing with main roads and other dealing with rural roads - is more logical; (ii) perceived disadvantages of a single purpose road agency can be overcome thorough the adoptation of different measures; (iii) a strong local government is prerequisite for effective rural transport infrastructure management - which can share responsibility with the central government. As different countries may have different local government structures, institutional reform process can proceed taking into consideration the structures in place; (iv) NGO's can play a vital role where the public sector has limitations in administering interventions; and (v) government and donors partnership and understanding is vital for carrying out the reforms.

These lessons are replicable in other country situations as well. But following factors are (i) socio-economic condition of the country - countries with different socio-economic conditions are bound to have different institutional arrangements as the development objectives may vary; (ii) perception of the policy makers on the importance of rural roads - perception of the policy makers on the importance of rural transport infrastructure may also influence the institutional arrangement for rural road management; and (iii) central and local government structures - countries with different central and/or local government structures will have different institutional arrangements. Like, countries with federal and state government systems will have different institutional arrangements for rural transport infrastructure management compared with a country like Bangladesh with unified system of government.

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