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Maintenance Work with Emphasis on Road Network**

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FINANCING AND INSTITUTIONALISATION OF MAINTENANCE WORK
WITH EMPHASIS ON ROAD NETWORK

BY

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LIST OF ABBREVIATIONS

DFIO	District Project Implementation Office
FFW	Food for Work
GB	Government of Bangladesh
GS	Government of Switzerland
ID	Institutional Analysis and Design
IDP	Infrastructure Development Project
LGD	Local Government Division
LGER	Local Government Engineering Bureau
MLGRD&C	Ministry of Local Government, Rural Development and Co-operatives
NGO	Non-government Organisation
NORAD	Norwegian Agency for Development
NRD	Noakhali Rural Development
MRR	Ministry of Relief and Rehabilitation
RESP	Rural Employment Sector Programme
SDU	Swedish International Development Agency
SFWP	Special Public Works Programme
USAID	US Agency for International Development
UF	Union Parishad
ZP	Zila Parishad
UZP	Upazila Parishad
WFP	World Food Programme

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**Financing and Institutionalisation of
Maintenance work with emphasis on rural Road network**

1. INTRODUCTION

- 1.1. Bangladesh being overwhelmingly rural, its progress is dependent on the development of its rural areas. Investment in rural infrastructures such as roads, flood control structures, irrigation system, bridge work, etc. is needed to sustain rural development, continue to bring all its parts together and maintain easy and cheap communication. Feeder and connector roads, for example, are critical to rural trade and services. Actually development of rural road network is symptomatic of broader infrastructure development. Yet assuring sustained use of these infrastructure is major challenge to the third world governments. Rural infrastructures made through investment of considerable amount of money deteriorate shortly thereafter because of poor maintenance decreasing benefits associated with infrastructure investment. This should not be allowed because a community depending on a resource will be worse off if the resource is not conserved, a technology or a set of procedures exists or can be developed that will be effective in solving the problem and the cost is within reach of local and national resources either through self-taxation, labour contribution or other ways. The fact that, in spite of these plausible solutions, nothing tangible is done to prevent the loss seems inexplicable. As these infrastructures are public or community goods, their maintenance, protection and financing should be the responsibility of the community and as such some mechanism should be evolved for the purpose. In recent years, development practitioners have increasingly stressed the importance of institutions for maintenance work in successful development projects.
- 1.2. In the rural Bangladesh, agriculture is the main avenue for absorption of rural labour force. But its capacity is already exhausted and there is huge unemployment in rural areas because of low land-man ratio. Development and maintenance of infrastructures in the rural areas of the country will generate employment and income for the rural poor and help mitigating the rural unemployment or at least stop further deterioration of the situation. With such intension in view, Government of Bangladesh are putting effort in the direction. Maintenance of rural infrastructures specially the road network have therefore, been made an important component of activities of many Rural Development projects. The Third Five Year Plan also called for significant investment in the rural road system.

2. BACKGROUND

- 2.1. As great majority (85%) of the population of the country live in the rural areas, Government of Bangladesh put great emphasis on improvement of rural infrastructures from early sixties under rural works and other programme aiming at improved rural economic and social life. A recent survey reveals that the present rural network of roads in Bangladesh totals a length of approximately 1,26,600 Kms. of type R1, R2 & R3 roads. It is quite clear how gigantic is the task of maintaining this vast network of roads under great resource constraints. The problem of maintenance of rural infrastructures is aggravated due to the following reasons:-
- Absence or inadequate maintenance work in the past has rendered (or is rendering) a considerable length of the rural roads in a state of unuseability requiring rehabilitation or sometimes even reconstruction of the old roads.
 - This restricted access to rural community hinders development of economic activities almost in all sectors of rural life: education, trade and commerce, health services, etc.
- 2.2. It would not perhaps be unfair to say that concept of maintenance in Bangladesh is still at the formative stage requiring lot of efforts to formulate a nation-wide policy which will serve teeming millions in rural Bangladesh. The emphasis or urgency with which new infrastructures are being built in the rural areas is much higher than the degree of attention given to their regular maintenance. As a result the functional utility of these infrastructures is gradually being reduced causing recurring expense of reconstruction/ rehabilitation. Delayed efforts of maintenance becomes much costlier compared to what would have been the cost for timely maintenance. But unfortunately the constraints of resources do not make it possible to take up all roads for maintenance simultaneously. This situation calls for the necessity of external resources for planning & implementing the maintenance programmes. Many international donors have taken active interest & are assisting the Government of Bangladesh in the matter.
3. Dimensions or Types of present Rural Infrastructure Maintenance

- 3.1. A short description of the types of maintenance the rural infrastructures need will help understanding the issues of their financing and institutionalisation. The Maintenance of rural Infrastructures may be classified into four types.
- 3.2. **Routine Maintenance:** It consists of those activities whose purpose is to bring the infrastructure elements back to originally constructed condition as close as practicable. This is the day-to-day maintenance work of the infrastructures and continues throughout the year.
- 3.3. **PERIODIC (OR PREVENTIVE) MAINTENANCE:** This type of maintenance is usually taken up, as the name implies, periodically. Maintenance of Road structures, school & office building, markets, rehabilitation works & post-monsoon rehabilitation fall under this category. This is done in order to prevent further deterioration of the infrastructures.
- 3.4. **Emergency Maintenance**
- Natural Calamities like flood, cyclone, etc. sometimes calls for emergency maintenance work in order to bring back the infrastructures to their original useable position & special schemes are undertaken for this purpose on the approval of competent authority. Resources from the central Govt. and external sources through the donors, NGOs or UN bodies are taken and used to tackle the situation.
- 3.5. **Corrective Maintenance:** It includes primarily the installation of both lateral and cross embankments, drainage structures where these structures were inadequately designed or omitted during the original construction of the road (or other infrastructures). This category also includes resurfacing of paved surfaces and embankment protection. The purpose of the corrective maintenance is to bring the condition of the road to a point in which prevention is cost effective. Corrective maintenance would be undertaken only on those where the road embankment has been properly constructed and has stabilized at the required design height and width. Though this is, in practice, done under corrective maintenance, it is an improvement on the original design

and should in the fitness of things be regarded as an infrastructure improvement work and not the maintenance work.

4. Programmes of Financing of Rural Infrastructures in Bangladesh:

- 4.1.** Financing is an important aspect of the rural infrastructures maintenance problem. Money required for the purpose comes from one or more of the three sources - central government, local governments or donors. Central Government fund for the purpose is generally channelled through adoption of projects with or without collaboration of donors or through a system of grants to local governments. The ADP components of projects with money are generally given to the local governments for implementation under supervision and guidance of project directors. The district project implementation office with Executive Engineer as the head, for example, is responsible for planning, implementation and maintenance of the feeder road (Type B) and the Upazila Parishad with their engineering set up (and also the assistance from the technical assistance team) is responsible for the implementation of the divisible project components such as the development of the market in the growth centres, the promotion of manual irrigation activities, etc. The local governments with grants received from the central government and their own incomes make their own budget for expenditure under different items including the costs for maintenance of rural infrastructures within their respective jurisdictions. Thus Zila Parishads and Upazila Parishads are responsible for maintenance of their own roads and other physical infrastructures within their financial capabilities and central government circulars and guidance.
- 4.2.** In addition to above foreign donors and agencies in collaboration and co-operation with central and local governments are also contributing to such maintenance work under different programmes. Programmes of an important few of such agencies are discussed below:
- (a) **CARE :** The Rural Maintenance Programme (RMP) initiated by CARE in collaboration with Ministry of Relief and Rehabilitation (MRR) in 1984 is a year round programme for the maintenance of rural earthen roads. The Programme is financed by the Canadian International Development Agency (CIDA) and CARE-CANADA through wheat grant aid monetized by Government of Bangladesh (GOB). Union Parishads (UP) contribute 10% of the total

- wage bill paid to the maintenance workers. The maintenance is done under supervision of CARE and respective Upazila and Union Parishads on 15 miles of earthen road in each selected union by 15 destitute women receiving a daily cash salary of Tk. 16 (previously Tk. 12) per head. The goals of RMP thus are to maintain a network of earthen farm to market roads and provide permanent employment to destitute rural women. CARE completed implementation of RMP employing 60,105 rural destitute women in 4007 unions by June 1987 and will cover all unions of the country.
- (b) Rural Employment Sector Programme (RESP). Sponsored by SIDA and NORAD it is active in greater Faridpur District for maintenance of rural roads under supervision of Upazila Parishads throughout the year by destitute women - 10 to 20 women per union with the criteria of 0.8 Km. of road per head. RESP maintenance labour groups in a particular union take up all roads simultaneously and routine maintenance continues throughout the year. Number and group size is dependent on the length of a particular road. Upazila Parishad shares 10% of the cost of maintenance. It also generates employment & income for the destitute women.
- (c) Noakhali Integrated Rural Development Programme (NIRDP). Sponsored by DANIDA it is concentrated in 15 Upazilas of greater Noakhali District and looks after maintenance work of different rural physical infrastructures including the rural road maintenance work under supervision of Upazila and Union Parishads. Usually 16-20 Kms. of road are taken up in a union which pays a lump sum of Tk. 2000 if a single group is recruited in it and Tk. 3800 only if two groups are recruited in it, 15-30 destitute women are recruited - each for repair of 45 m. of road in each working day on a daily salary of Tk. 16.
- (d) WFP (World Food Programme): Under this programme rural infrastructure maintenance, construction and improvement work is undertaken by Upazila and Union Parishads in different unions of the country. Payment is made in terms of wheat/rice at the rate of about 50 seers per 1000 cft of earth

work. Food budget of MRR for this work in 1987-88 was 605000 metric tons.

- (e) **Special Public Works Programme (SPWP):** From 1979 to June 1985, SDC supported the SPWP initiated by GOB in co-operation with ILO/UNDP. It operated in four old districts of Dhaka, Jessore, Rajshahi and Sylhet and helped building and maintaining, interalia, infrastructure assets in these four old districts. But it discontinued after June 1985 due to some major deficiencies in project and financial management.
- (f) **Intensive Rural Works Programme (IRWP):** It was started in 1982 and helped developing, interalia, rural infrastructures. After four years, it was replaced in June 1986 with a follow-on project, RESP having two components- (a) an infrastructure development programme and production and (b) Employment programme.
- (g) **The USAID Sponsored Zila Road Maintenance and Improvement Project (ZRMIP).** Started in 1982 with an initial three years period but subsequently extended up to 1989-90 under the name Feeder Road Maintenance and Improvement Project with additional budget of Tk. 45 crore shares of GOB and USAID being 21% and 29% respectively. It helped to improve rural access by institutionalising routine farm to market road maintenance at the Zila Parishad level of local government and refine maintenance system and to complete study for transfer of this function of road maintenance from Zila Parishad to Upazila Parishad subsequently.
- (h) **Rural Infrastructure Development Project (RIDP) :**
This is a joint enterprise between GOB and GOS to be under-taken this year and completed in four years period in seven upazilas of Manikgonj Zila for creation and maintenance of rural physical infrastructures including rural roads and thereby boosting up of agricultural production and improvement of distribution of agricultural and other products. The total cost of the project is Tk 20 crores to be shared by GOB (21%) and GOS (29%).

- 4.3. Maintenance of rural infrastructures as obvious from above discussions, has been carried out so far through Local Public bodies since mid or early sixties, but with very limited resources.

To start with the recent past, the situation was that under the Rural Works Programme, the work of development and maintenance of rural infrastructures was undertaken by all the Local Public Bodies (Local Governments) both in the urban and rural areas. But inspite of Government instructions to give importance or priorities to infrastructure maintenance work under Rural Works Programme, actually nothing appreciable was done in this respect and their maintenance work was neglected. Resources were mostly used for development of these infrastructures. The government ideas and instructions were misconceived. The result was that most of these infrastructures subsequently called or are calling for rehabilitation or reconstruction at the cost of huge amount of money which could have been avoided through regular routine maintenance.

In seventies, the situation was no better and no continuity was maintained of the maintenance work. In eighties, special projects/programmes noted above have initiated specific measures in this behalf, classified kinds of maintenance and set standards. But this is in a very limited scale and covers also limited geographical areas and hence-meagre in comparison with the gigantic tasks to be accomplished, A total need assesment for the country's rural infrastructure maintenance has not yet been done. This, therefore, obviously calls for a research and documentation on a priority and professional basis.

- 4.4. From the above discussions, it is obvious that the money made available for maintenance of rural infrastructure through various channels is too meagre to meet the needs. If the rural physical infrastructures including rural roads sector is to be maintained, either costs must be lowered through more appropriate road network components or resources should be enhanced as per as possible from all the three sources - central government, local government and donors or both. Projections of future infrastructure maintenance costs depend crucially on assumptions concerning the size and

composition of the infrastructure network as well as the amounts and combinations of inputs necessary to carry out adequate maintenance. Moreover future maintenance costs and the effectiveness of the effort will depend on infrastructure maintenance equipment which itself involves costs to maintain. Maintenance and maintenance equipment at the local level is apparently quite deficient. Any additional cost necessary to improve this situation should also be included in a full evaluation of future rural maintenance cost requirements. Under the present resource constraints, several alternatives may also be considered: certain less important planned infrastructure improvement may be deferred, maintenance on economically less viable infrastructure may be halted with available funds used to maintain only more important infrastructures, use of roads most liable to damage during rainy season may be restricted to certain vehicles only, or if capital resources are available, roads that do not require maintenance should be built.

- 4.5. Internal funds for infrastructure maintenance work can be derived locally or from the central Government and external funds from donors. Given the desire for decentralisation in Bangladesh the local governments will be given the responsibility for maintenance of this work but the resources available to carry out this work is very meagre. Hence sources of their revenue should be broad-based.

In the short run, availability of local resources will depend on the revenue productivity of the fishery and market auctions. The auctions apparently have considerable scope for increasing the amount of revenues mobilized locally, but these improvements will be possible only from increased competition in the bidding process and improved information flows on potential returns to bidders obtaining franchises.

More significant policy changes will be necessary if the revenue base at the local level is to expand. Improved business tax performance requires first that Upazilas are aware of this potential levy and that incentives exist for it to be imposed. Further revenue enhancement would require alterations in its narrow base and low rates, as well as improvements in

the administration of the tax. Three possible ways for additional local revenue efforts are suggested here: a cinema tax piggy-backed to the current central government tax; some form of transport-linked tax or fee; and the non-political aspects of land tax feasibility. However, each of these initiatives would face considerable technical and political constraints to impose and, therefore, should not be viewed as a feasible short-term solution to the problem of financing rural road recurrent costs.

On the revenue side, there might be a scope for greater resource mobilization. If GOB revenue mobilization is increased, greater resources could flow for maintenance purposes; the grant system can be altered to increase incentives for local resource mobilization; the market auction process might be revised to increase competitiveness; or new resource mobilization instruments could be developed to increase the availability of maintenance funds at the local level. Since revenue-enhancement policies commonly take much longer to implement than cost-cutting initiatives it is most reasonable to consider them as longer-term goals (except, perhaps, alteration in the grant mechanism).

- 4.6. The issues discussed above have implications for the donors. The long term maintenance financing issues need to be considered seriously when any development project including rural infrastructure projects, is contemplated. These considerations should take place within the broader macro context of availability of long term financing of recurrent costs. It is just as important to consider the institutionalisation of any maintenance efforts included in the donor-funded projects so that the flow of benefits can be sustained. Indeed one possible strategy may be to design rural infrastructure projects that contain both maintenance and improvement components so that maintenance enhancement efforts in the project continue longer than the improvement component .

5. Institutionalisation of Rural Infrastructure Maintenance Work:

- 5.1. It was earlier discussed that rural infrastructure maintenance work to be effective, regular and continuous and to make the sustainable use of these infrastructures should be institutionalised. Institutions are

human designed organisational arrangements that allow people to work together to produce and protect complex goods. Production of goods which involve team work, shared finance, use of limited natural resources and control of abusive uses requires carefully co-ordinated human action if it is to continue for a prolonged period. For these goods people must be able to trust that others will share in contributions, labour and restrained consumption. Institutions are mechanisms created by rules that make production of these complex goods possible. Without rules that enforce limited use of common pasture-land, rotation of prime areas among fishermen, compulsory maintenance of irrigation channels, and co-ordinated and limited use of water aquifers, the sustained availability of even critically needed goods such as roads, bridges, culverts etc. would be hard to achieve. Institutions, therefore, provide the missing link between substantial physical investment in, say, rural physical infrastructures and their sustainable use by local people. The question then comes how appropriate institutions can be designed and created or existing institutions developed to suit the purpose. Institutional analysis and design (IAD) is a more promising framework for addressing this development issue. IAD is an analytical approach that attempts to describe the structure of incentives and disincentives which apply to the actions necessary to produce a good or complete a given task.

Its working hypotheses are based on the assumptions that:

- (i) people usually have good reasons for taking or not taking certain actions and
- (ii) once understood, those reasons can often be altered by changing the factors that comprise a given structure of incentives and disincentives thereby changing behaviour and out-come.

Institution - building and organisational analysis emphasize strengthening an entire organisation through training, increasing resource flows, improved management protocols, etc.

IAD is thus a diagnostic procedure that analyses the structure of given situation and suggests what incentives and disincentives within that

situation explain behaviour which leads to certain outcomes. IAD can be broken down in two stages:-

- (i) the structure of a decision making and
- (ii) the underlying factors that explain the existence of these incentives and disincentives.

The second stage of analysis often called the "contextual level of analysis is necessary to help determine what might be changed to alter the structure of the action, that is, to determine the possible interventions i.e. change in laws, develop new local skills, etc.

- 5.2. We may now examine the structures that prevailed or are prevailing in Bangladesh in order to handle development work including rural physical infrastructures and also how they may be refined and strengthened.

There were institutions such as Zila Parishads, Thana Parishads and Union Parishad to handle development, administrative and other work locally. The Government after study and investigation through a high-powered committee decentralised administration, planning and financial activities and devoluted authorities to these local institutions through making them people-oriented and elected. Thus elected local Governments at Zila, Upazila and Union levels have taken over all functions of locally-important development administration including maintenance of rural infrastructures. Thus officers dealing with these subjects are accountable to the respective Parishads which control or own such functions under the present decentralised set-up. Each category of parishad has at present got power, fund and budget to accomplish the work and task assigned to it.

Development and maintenance of locally important physical infrastructures are the responsibilities of the Local Institutions, Zila, Upazila or union parishads in accordance with the ownership of these structures by them. Thus improvement and maintenance of Zila Parishad roads are the responsibilities of the Zila parishads, those of the Upazila roads by the Upazila parishads & finally those of the Union by Union Parishad. And actually the divisible components of the centrally adopted projects, as we have

Seen earlier, are also given to the respective local parishads for implementation of their parts of the work. Decentralisation effort in Bangladesh is, therefore, notable in several respects specially with respect to the extent of local authority over sectoral personnel and local elections. However, important organisational, procedural and contextual issues need to be explored in order to see how the system can be fine-tuned and supported. Otherwise it is not clear that the new incentive structure should be expected to operate more effectively than the old in delivering rural development, IAD is a tool to determine what these issues might be and how they be addressed.

5.3. Research and investigation are necessary to suggest measures to resolve the institutional problems pertaining to development and maintenance of rural infrastructures. However, in a very preliminary way the following measures may be outlined for improvement of situation in this area:

- 1) As the crux of the problem for maintenance of rural infrastructures lies in great deficiency in resource flows and availability, dearth of technical capabilities and lack of initiatives and awareness among the members of the public and officials on the necessity of maintenance of these infrastructures for social benefits; sufficient measures, as noted earlier, should be taken for increased flows of resources for the purpose, secondly boosting up technical know through training and finally raising concientisation through education and communication.
- ii) An effective local government ability to articulate local preferences in planning priority assessment and management can be strengthened by combining training with planning requirements for participation in donor projects and by supporting programme in public awareness.
- iii) Enforcement of road use regulations can be pursued through technical assistance and incentives or in the design of physical obstacles to prevent use by overly-heavy vehicles.

- iv) Incentives can be created to spend local funds on maintenance as well as improved technical standard and supervision of maintenance by allocation of funds for capital improvement and relief projects.
- v) Co-ordinated strengthened technical requirements for use in the various relief programmes may be developed among the donor agencies once the negative impact of lower standards of work in those programmes can be more clearly demonstrated. Even when policy dialogue does not lead to policy change, a central flexible field-oriented technical assistance capacity can help field personnel learn how to respond to complex and cumbersome central requirements. Similarly, research into improved road rural infrastructure design and maintenance practices can be encouraged by direct support by technical assistance or by incentives such as extra assistance for pilot or experimental methods.
- vi) More locally feasible GOB/Donor procedures should be linked to reinforce overall incentive structures.
- vii) Inter-governmental relations and the incentive structures which they create for local government have not been examined - specifically issues of monitoring and evaluation, revenue collection and distribution and enforcement of law and order need careful analysis to assure that they encourage incentive structures consistent with the performance of activities desired at the local level.
- viii) How the local socio-economic structure affects the operation of locally accountable administration should be explored - specifically, issues of severe asymmetries in wealth and local patterns of violence and intimidation need to be explored; their patterns may affect what is deemed best to leave to local units of administration.

- 5.4. The measures noted above are not exhaustive but representative of how IAD may help project design. The research will, no doubt, suggest additional options as specific incentive problems are uncovered.

6. Conclusion

- 6.1. Foregoing discussions lead to conclude that rural infrastructure maintenance specially rural road network is important because without adequate maintenance this structures in Bangladesh quickly deteriorate decreasing the benefits associated with infrastructure investment and increasing transportation cost in case of rural roads and finally requiring for the sake of maintaining continuity of rural socio-economic life their rehabilitation or reconstruction at huge costs which could have been avoided through regular maintenance work.
- 6.2. Finance is an important aspect of such maintenance problem because without money nothing can be done or achieved. Money comes from one or more of the three sources - the central government, local governments and donors. But the total flow for the purpose from all sources is too meagre to meet the need of maintenance work of rural infrastructures. Flow from all the three sources needs to be increased. Central Govt. should argue the allocations for the purpose and also encourage such maintenance work through structures of incentives and disincentives. Local governments - Zila Parishad, Upazila Parishad and Union Parishad through which the work is being done and which have been strengthened through recent decentralisation of administration and devolution of authority to them can augment their resources through increasing their own revenue by increased competition in the bidding process of the local fishery and market auctions and improved information flows on potential returns to bidders obtaining franchises, by expansion of the local revenue base of course on significant policy changes etc. Thus a cinema tax piggy-backed to the current central government tax, some form of transport-linked tax or fee and the non-political aspect of land tax may be few examples for such augmentation of Local government revenue. Of course their imposition will require prior feasibility study and hence

they may be regarded to be possible long-term sources for increasing their revenue. Finally at the time of contemplation of road projects in collaboration with foreign donors, both maintenance and improvement components should be designed in them such that maintenance enhancement efforts in them continue longer than the improvement component.

- 6.3. Maintenance work of the rural infrastructures needs to be institutionalised in order to make them effective, regular and continuous and, more important, to make their sustainable uses. Already this work is being done by local governments such as Zila Parishad, Upazila Parishad, Union Parishad which have been strengthened by the recent Central Government policy of decentralisation of administrative, development, planning and financial work to these institutions and devolution of authorities to them. However important organisational, procedural and contextual issues need to be explored in order to see how the system can be fine-tuned and supported. IAD is a proper frame work for addressing this development issue because it is an analytical approach that attempts to describe the structure of incentives and disincentives which apply to the actions necessary to produce a good or complete a given task. It (IAD) is, therefore, the tool to determine what these issues might be and how they be addressed.
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