INSTITUTIONAL ANALYSIS OF RURAL ROAD MAINTENANCE PROBLEMS IN BANGLADESH

DECENTRALIZATION: FINANCE AND MANAGEMENT PROJECT

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ABBREVIATIONS AND ACRONYMS

ARD	Associates in Rural Development
BDG	Government of Bangladesh
BRAC	Bangladesh Rural Advancement Committee
DFM	Decentralization: Finance and Management
IAD	institutional analysis and design
LGEB	Local Government Engineering Bureau
USAID	U.S. Agency for International Development

I. EXECUTIVE SUMMARY

In recent years, development practitioners have increasingly stressed the importance of institutions in successful development projects. Institutions appear to be the "missing link" between substantial physical investments (e.g., irrigation works, roads, and agricultural research) and their sustainable use by local people. AID and other donors have not ignored the importance of institutions in the success of development projects, but have focused on moderately effective strategies like institution-building, participation, and community development. All 3 strategies have met with mixed results in improving the success of development projects and their sustainability, and the pressing need to apply new approaches to the institutional dimensions of development projects remains.

Institutional analysis and design (IAD) is a more promising framework for addressing these development issues. It differs from earlier strategies in its emphasis on incentives and tasks. Specifically, 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:

- people usually have good reasons for taking or not taking certain actions, and
- once understood, those reasons can often be altered by changing the factors that comprise a given structure of incentives and disincentives thereby changing behavior and outcomes.

Institution-building and organizational analysis emphasized strengthening an entire organization (or subunit) through training, increased resource flows, improved management protocols, etc. The assumption was that increased capacity would lead to increased production. Unfortunately, as many project evaluations show, and as expressed in the recent "Maloney Report," the training was good, but no change in organizational performance seems to have occurred.* The problem with this approach is its failure to address the incentives question of why the key personnel involved in producing a good or service would choose to use their skills in the course of that activity. It is through incentives that people choose to adopt behaviors, and

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*Clarence Maloney and Mahfuzar Rahman, Evaluation of Training Component: Feeder (Zilla) Roads Maintenance and Improvement Project (FRMIP), 1983-1988 (Bangladesh: Wilbur Smith Associates, July 1988).

stable, strong incentives encourage behaviors to become reliably recurrent, that is, institutionalized, as the term is conventionally used.

The infrastructure of rural roads in Bangladesh is an area where the IAD approach could be effective. These roads obviously suffer from inadequate maintenance, but the reasons for their deterioration, and steps needed to improve their maintenance are unclear. They are desired and valued, but not sustained. An IAD approach would seek to discover the various incentives and disincentives that determine the key actions people take (or fail to take) which affect the sustainability of rural roads. It would ask if roads were being underfunded or abused, or if poor maintenance practices were occurring. It would also ask what incentives lead people to make choices that result in road deterioration and how such rational choices are made.

Once these questions are answered, the analysis would focus on the question of what produced these structures of incentives. If it were found that local residents would not pay for roads because they were poorly located and not worth paying for, it would be necessary to determine what background factors explained why undesirable roads were being designed. Perhaps the answer would be that the rules governing road-selection allow uninformed people, distant from a locality, to select the roads. If that were the case, it might be possible to change the rules. If not, new incentives might be developed for those who select roads to learn more about local needs. Alternatively, making local elected officials responsible for selecting roads might lead to more desired roads. In sum, IAD approaches the problem of infrastructure maintenance by analyzing:

- the structure of incentives and disincentives that affect behavior critical to a desired outcome, and
- the background or contextual factors determining that structure.

The first level of analysis is best addressed through empirical research on what incentives and disincentives affect behavior and why. The second level can usually be approached by analyzing:

- key characteristic of the desired good and technology used to produce it,
- key characteristics of the local community of users and local environment, and
- key provisions in the nominal and actual rules of human interaction that apply to the good.

Once these background or contextual factors are understood, one can assess whether and how the incentives structure may be altered to change behavior and increase or improve production of the desired good or service. This report reviews this second level of analysis in detail and outlines a comprehensive protocol for performing research on incentives, disincentives, and their effects on behavior.

The DFM project believes IAD will be a useful analytical framework to apply to rural road sustainability in Bangladesh. When a good is widely desired but not produced, it is usually because perverse incentives block the conversion of desires into results. This report is directed toward the effort to determine what that incentive structure is, how it might be altered, and how AID might contribute to that process. The 3 appendices present a detailed review of the institutional analysis and design framework and briefly discuss how this framework might be related to the overall decentralization effort in Bangladesh.

II. INTRODUCTION

Throughout the world, people and communities deal with the shortfall between desired and achieved outcomes. In some instances, this disjunction is straightforward and occurs because of specific reasons, such as natural disasters, ineffective technology, or simple shortages of resources. However, there seems to be a second class of disappointments which are harder to explain. In such cases, the natural environment can be dealt with, technology exists (or seems available) to "do the job," and there <u>are</u> resources available to support the task. Nevertheless, the task is not accomplished, desired outcomes are not achieved, and human beings suffer. People wonder why and the apparent senselessness of these events provokes frustration, anger, cynicism, and, at times, surrender.

Many human problems seem to fall in this category, including:

- tragedies of the commons where critical natural resources are destroyed in a seemingly obvious destructive race to consume them;
- deterioration of costly irrigation systems when simple maintenance procedures by the users who depend on them could save them; and
- deterioration of feeder and connector roads which are critical to rural trade and services, when attention to relatively simple maintenance would preserve them.

In each case, most observers can see that a community depending on a resource will be worse off if the resource is not conserved, a technology (a set of procedures) exists or could be developed that would be effective in solving the problem, and the cost is within reach of local or national resources, either through self-taxation or labor contribution. The fact that, in spite of these plausible solutions, nothing is done to prevent the loss seems inexplicable. Perhaps more to the point, it seems intolerable.

It is clear that assuring sustained use of rural infrastructure (roads, flood control structures, irrigation systems, bridgework, etc.) is a major challenge to third world governments. It is also clear that a massive investment in infrastructure is needed to sustain rural development and continue to bring nations together, and that investment must not be prematurely lost through poor maintenance.

While the problem is obvious, the solutions have been elusive. Even though the engineering questions may be amenable

to conventional analytical and technical methods, the ability to finance, deliver, and sustain those solutions has been unavailable. Several recent USAID studies of project impacts, including a summary of the "lessons of experience" in rural roads, agree on the conspicuous weakness--institutions.

Institutions are human-designed, organizational arrangements that allow (at times by requiring) people to work together to produce and protect complex goods. Production of goods which involve teamwork, shared finance, use of limited natural resources, and control of abusive uses requires carefully coordinated 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, labor, and restrained consumption. Institutions are mechanisms, created by rules (injunctions about behavior that prohibit, require, and permit actions), that make production of these complex goods possible. Without rules that enforce limited use of common pasturelands, rotation of prime areas among fisherman, compulsory maintenance of irrigation channels, and coordinated and limited use of water aquifers, the sustained availability of even critically needed goods would be hard to achieve.

Road maintenance is one of these goods. All who use a road might prefer that it be maintained, but who would volunteer to pay for it? Nearly all might be willing to voluntarily restrain their usage of it, but just one self-centered (or merely ignorant) abusive user could render their restraint meaningless. Even if many are willing to pay their fair share of maintenance cost, assuming "free-riders" do not use the road and spoil the commitment of the majority, the arrangement is still problematic. Finally, assuring that those hired to maintain the road actually do the necessary work is, itself, a challenging task. Somehow, one must find mechanisms to organize coordinated human behavior to solve these problems.

Several of these problems are associated with the fact that roads are, effectively, goods shared in common. Because they are shared in common and are vulnerable in certain circumstances to destructive over-consumption, their survival can be problematic. Collectives of people must together <u>fund</u> and <u>maintain</u> a road, and must together <u>regulate</u> their use of it, or it will be lost. Because access to a road is difficult to regulate, the incentive to pay for it is not always clear. Similarly, if there is open-access to the road, mechanisms to regulate its use are not always easily available. Therein lies the problem. In technical terminology, rural roads can be considered human-created "common pool" resources, and thus, sustained viability requires institutional arrangements (rules) to control the resulting problems.

Bangladesh has made a commitment to maintaining type B feeder roads and rural roads with the assistance of the upazilas, the present local units of self-government. Yet, as recent USAID studies have shown, there is very little maintenance of these roads. Why is this the case? How can this problem be conceptualized and analyzed so a constructive, effective strategy can be developed to increase the likelihood of these roads being maintained and sustained for a longer life span? These questions are addressed in the following section on IAD.

III. INSTITUTIONAL ANALYSIS AND DESIGN

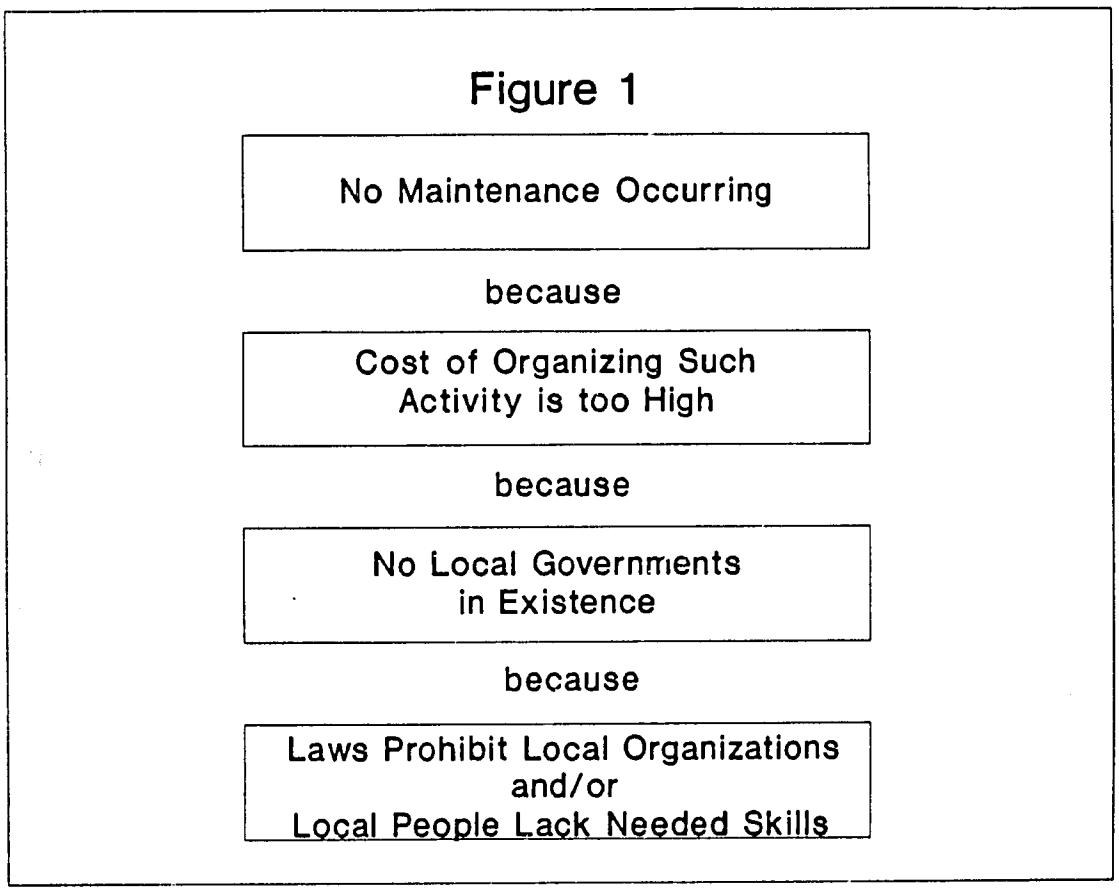
IAD grew out of an attempt to understand situations in which current institutional arrangements are ineffective in maintaining common pool resources. IAD has 2 primary tenants or working hypotheses, the first of which is that outcomes are quite explicable, and are the result of human choices made for entirely understandable reasons. Unfortunately, these individual choices (which are not necessarily greedy, selfish, rapaciously individualistic, or otherwise ethically defective) can result in collective behaviors which lead to long-term loss for the community as a whole. The second primary working hypothesis is that the reasons behind these choices can frequently be manipulated, once the structure of the choice-making situation is understood, and can alter both individual behaviors and collective outcomes. The reasons are manipulated by altering the incentives and disincentives available to the people who are making the choices.

Some methods of altering incentives and disincentives might include changing the overt rewards and costs for various actions, changing the costs of alternative strategies by giving participants new authority or new resources to facilitate joint actions, increasing the information available to participants, and introducing new participants into the decision-making process. If the choice structure is well understood, such changes can work to redefine rational behavior for individuals making decisions. Changes in incentives and disincentives can alter the behavior which develops around resource systems and, if properly designed and implemented, can work to alter the outcomes associated with that system. IAD is, briefly put, the process by which one may analyze the incentives in a decision structure that explain the undesirable outcomes being achieved and suggest ways of altering them to bring about more desired outcomes.

For example, assume that there is a rural road which is in a desirable location for a group of users, has been engineered well enough to stand up to local environmental conditions and normal use, and there is a reasonable level of maintenance needed for it to survive. Assume also that local persons (i.e., the users) are responsible for maintenance. However, little or no maintenance is occurring. This would seem irrational, given the assumptions that the road is valuable to the users. Upon further investigation, it is found that people are indeed willing to maintain the road, but lack any local organizations to manage this task. Under this circumstance, previous IAD (as well as theory) suggests that prohibitively high transaction costs prevent the local dwellers from organizing among themselves to raise money or organize local labor to perform necessary maintenance. In this case, the lack of local organizations should also be explored. The reason simply may be that the community has weak local organizational skills, or because

national legal provisions effectively prohibit them. IAD would then suggest how that constraint might be altered to bring about local organization. Figure 1 presents the relationships schematically.

In this example, to understand a particular behavior, 3 steps of causal analysis are necessary. To alter the behavior under consideration, laws (and the real-world working rules related to them) must be changed and/or new skills must be transferred to local users. Once these changes are made, given the assumptions of utility of the road to users, tractable maintenance costs, and all other things being equal, maintenance should occur. Perhaps more importantly, maintenance by the local users should occur without the need for ongoing central microsupervision. The latter is costly, exceeds the capacity of most governments, and has not been found to be particularly effective.



IAD is thus a diagnostic procedure that analyzes the structure of a given situation and suggests what incentives and disincentives within that situation explain behavior which leads to certain outcomes. IAD can be broken down into 2 stages:

- the structure of a "decision situation" (incentives and disincentives to take certain actions); and
- the underlying factors that explain the existence of these incentives or 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 laws, develop new local skills, etc.). The following section will discuss each level of analysis by presenting and developing the conceptual framework utilized by IAD.

IV. TWO LEVELS OF ANALYSIS

A. Decision Situations

While individuals can often imagine alternatives to their actual living conditions, the actions they must take in the course of any day must be rooted in these actual conditions. Thus, most people can recall situations where they might have wanted to take one set of actions, but actual circumstances gave them no alternative but to take another. Pushing in order to reach the head of a disorderly line, driving faster than one would prefer to avoid being crowded by traffic speeding close behind, and rapidly drawing down water in an aquifer because everyone else is doing it are all examples of situations in which people choose behavior that makes them and their neighbors worse off as a whole, but which they believe necessary for short-term survival. Were the situation different (i.e., were the line orderly, traffic laws enforced, or agreements to limit water consumption in place and observed), individuals might choose different personal behavior which would lead to better collective outcomes.

A "decision structure" occurs anytime 2 or more persons are faced with a set of potential actions that jointly produce outcomes affecting themselves and, potentially, others. The famous "prisoners' dilemma" is a classic example of a decision situation. In it, several persons (prisoners, interrogators, prosecutors, and a judge) are faced with choices which jointly (i.e., contingent on the choices the others make) produce an outcome. Manipulating the structure of this dilemma (i.e., the prisoners can communicate and reach agreements, there exists a crime-boss who will enforce silence among them, etc.) substantially changes expected behaviors by the prisoners and leaves them better off. Short of such changes, however, they appear to end up worse off than if they had each pursued survival under adverse conditions.

In order to fully survey and include the factors that create a decision structure, a 7-part protocol has been developed. When applied in research on natural and man-made, common-pool resource systems (pasture lands, fisheries, irrigation systems), and in game-theory analysis, the protocol has been shown to provide a comprehensive survey of necessary and sufficient factors to describe and analyze most decision situations. The protocol includes the:

- number and key characteristics of participants in the decision situation;
- number and key characteristics of positions or roles which participants may hold;

- various actions which are available to participants and how these vary at different stages in the decision situation;

- extent to which various participants have unilateral, shared, or limited control over actions to be chosen at each stage of the decision situation;

- various outcomes which may be affected by this decision situation, and how they are linked to the various actions participants may take;

- information which participants have about this decision situation; and

- benefits and costs which are likely to be assigned given various actions and outcomes.

To help explain this method of analysis, namely, the decision to develop a road improvement program in a rural area, a hypothetical case will be considered. In this scenario, the participants are limited to local and regional administrative officials. Their only role here is as bureaucrats, and their actions are controlled by general parameters established by a national planning commission. They are to identify roads that fit certain guidelines and to include or exclude them as roads for improvement, and choose which of the authorized roads are to be improved, on the basis of engineering cost and local priority. The persons making these choices have unlimited authority (control) in selecting these roads, but only according to these general criteria. The only outcome available to them is whether or not authorized roads may be improved. The only data they have access to is from established survey maps and any information they may have acquired during travel in the districts or in connection with people they interacted with professionally and socially. Finally, their benefits are limited and awarded for successful completion of their task, as well as any informal side payments they may receive from individuals who wish particular authorized roads to be higher on the priority list. Penalties are invoked by the bureau when there is a deviation from the plan or a road is selected where engineering problems occur.

In this scenario, one would expect roads to be selected that fit the central plan, are reasonably easily engineered, and reflect the desires of other professional personnel and prominent local persons. Any synergistic impact on local development would depend on the quality of the central plan (which is produced by another decision structure one could analyze) and chance. Particular responsiveness to the needs of local marginal- or low-income residents would probably also be a matter of chance. Local incentive to maintain roads would vary with the quality of

the central plan, chance, and the resources and interest which local influential people might have in maintaining reliable roads.

One might expect different results to occur if this decision structure is modified to introduce such elements as:

- locally elected officials included in the choice process;
- a flexible option, locally generated road plan;
- a local, working electoral system;
- rewards for site-selectors based on such measures as gross road usage or net economic growth;
- effective mobilization of otherwise generally disorganized groups, such as farmers, women, and poor persons; and
- ample publicity about road selection criteria and time of meetings to make such choices, etc.

IAD attempts to isolate these factors as they apply to any given critical action. Once the incentives/disincentives structure is understood, one may turn to a second level of analysis which assesses the background factors which produced the structure. This level helps to indicate what may be manipulated to alter the incentive/disincentive structure.

B. Contextual Analysis

Of course, decision situations do not exist in a vacuum. The incentives and disincentives people face are produced by rules and physical conditions established by other persons (and at times by the laws of nature). By analyzing these circumstances, the analyst and practitioner can determine how to intervene in the decision situation in order to change behaviors and, thus, outcomes. This method of analysis has been defined as the contextual level of analysis. It can be analyzed by dividing it into 3 parts:

- physical attributes of the good;
- formal rules governing choices available to participants in the decision situation; and
- the community and economic environment in which the decision occurs.

Study of public organizations and programs over the last several decades has suggested that several characteristics of goods are important in understanding whether or not a given institutional arrangement will create incentives to successfully produce them. For example, common pool resources, as noted above, are goods characterized by rivalrous consumption and access which is difficult to limit. For these goods (common pasture lands, fisheries, non-toll highways), unless users can develop mechanisms to measure the status of the resource, agree to limit their consumption, and enforce these limits, problems of overuse will frequently occur. If they are not encouraged to meet, discuss, and inform themselves of the goods' condition, as well as restrict usage, such self regulation is made less likely, and overuse tends to occur. Thus, certain institutional arrangements (venues to discuss, mechanisms to gather and share reliable information, legal authority to set limits on use) are important because of the characteristics of a good. These institutional arrangements create incentive structures. Without the incentives discussed above, people tend to consume and overuse, while with the incentives, they tend to restrain their consumption of a good.

Community characteristics can add further depth to this analysis. For example, severe asymmetries in wealth or power can make institutional provisions for restrained access or shared costs meaningless. Severe poverty might mean participants cannot afford to take a long-term perspective (i.e., any restraint in consumption might mean starvation). Great wealth might allow some to violate the rules with impunity. Thus, given certain physical and community characteristics of a desired good, a specified set of institutional arrangements might be likely to encourage production of a good through the incentives and disincentives it creates.

Together, these factors quite literally create a decision situation. Individually or together, they <u>may</u> be able to be manipulated enough to alter the decision situation, and thus, alter the behavior produced by it. Each analytical issue within this level of analysis is reviewed in depth in Appendix A. In doing a contextual analysis, subjects would be explored, and their variables would be used to explain the incentives and disincentives applying to the decision which they produced. With an understanding of what behaviors are necessary to reach a desired outcome, the analyst may be able to recommend which elements of the contextual analysis to alter in order to change the decision situation and bring about different behaviors and outcomes. Below, the conceptual tools of the IAD method are discussed.

The <u>physical/technical attributes of the good</u> determine its vulnerability to erosion, the extent to which the good can be jointly consumed by many persons, and the ease with which it is

possible to exclude persons from use of the good once it has been produced. The technological attributes of the good are a product of the technology used to produce and maintain a flow of benefits from a resource or facility. These attributes include such things as the level of training required to operate the technology, the extent to which users of a good must be involved in the production process, the difficulty of monitoring the operation and evaluating the outputs of the production process, and the capital intensity of the technology and its reliability.

The institutional arrangements are the rules in operation in a given situation. These rules can be grouped into 2 general categories. The first specifies:

- who may use the good;
- when, how, with what obligations they may use it;
- who enforces the rules; and
- who settles disputes arising from the enforcement of these rules.

The second category specifies which groups of people are authorized to make the first set of rules, change them, and adjudicate disputes arising over jurisdiction over rule-making and enforcing. The rules that structure individual decision-making include formal rules found in statutes as well as rules deriving from customary law and local habits.

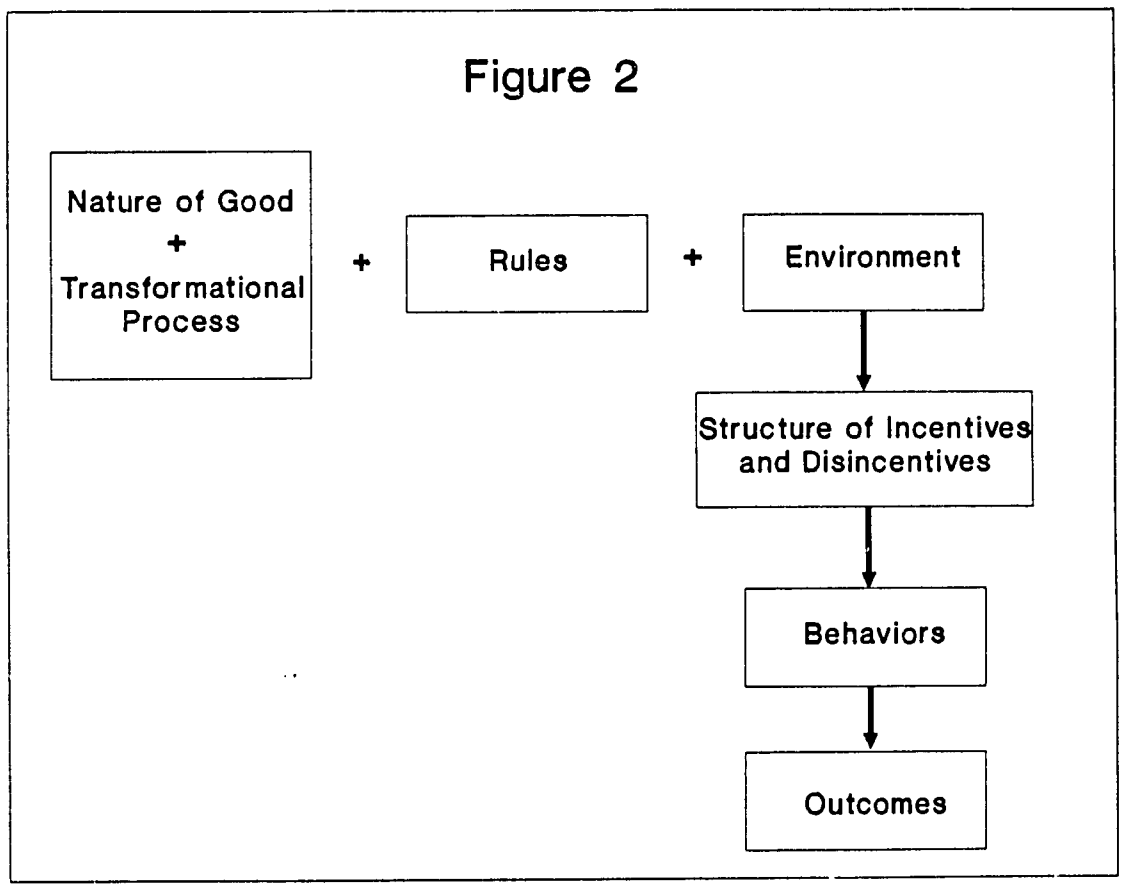
Cultural and community environment includes aspects of human culture and circumstances that are of direct relevance to the analysis, e.g., the general belief system from which locally-generated rules have developed, local history (the extent to which it has been possible to maintain relationships of reciprocity among all the groups of people who are constructing, using, and maintaining a joint facility), the distribution of income and the type of economy maintained by the community being studied, and the organizational capacity of local institutions.

The decision situation is a structure of incentives and disincentives, produced by the above 3 conceptual tools, within which people attempt to satisfy their needs and protect their interests. This tool engenders behaviors which lead to outcomes.

Outcomes are the current condition of the resource or facility, the extent of its utilization, and the distribution of costs and benefits. Other related outcomes of interest include the degree of harmony, the level of economic activity, and the general quality of life in the community of interest. In this analysis, of course, the major concern is the sustainable use of

the good. The diagram in Figure 2 represents this framework for IAD.

When used to evaluate the fit between a desired outcome and a given set of institutional arrangements, the results of IAD can indicate whether the arrangement will be likely to successfully produce the desired good. At times, it can suggest alternative arrangements to change unsatisfactory predictions or situations. It must be noted, however, that IAD is a diagnostic and not a panacea. It cannot solve all problems of undesired outcomes because some conditions are beyond the realm of manipulable policy, not technically feasible, or so inconsistent with public interests that no arrangement (short of despotism) can bring them about. However, IAD is still useful in such situations to help clarify the existing conditions.



V. ROAD MAINTENANCE IN BANGLADESH

A. The Problem

In using IAD, one does not work in a vacuum. IAD only makes sense with regard to the likelihood of certain actors taking specific actions. In analyzing the challenge of sustaining rural roads in Bangladesh, it must be first established what actions should occur to sustain roads. This is a more complex task than it may appear to be at first glance, for although a sustainable and usable road is conceptually a single entity, several complementary activities need to occur if that road is to survive.

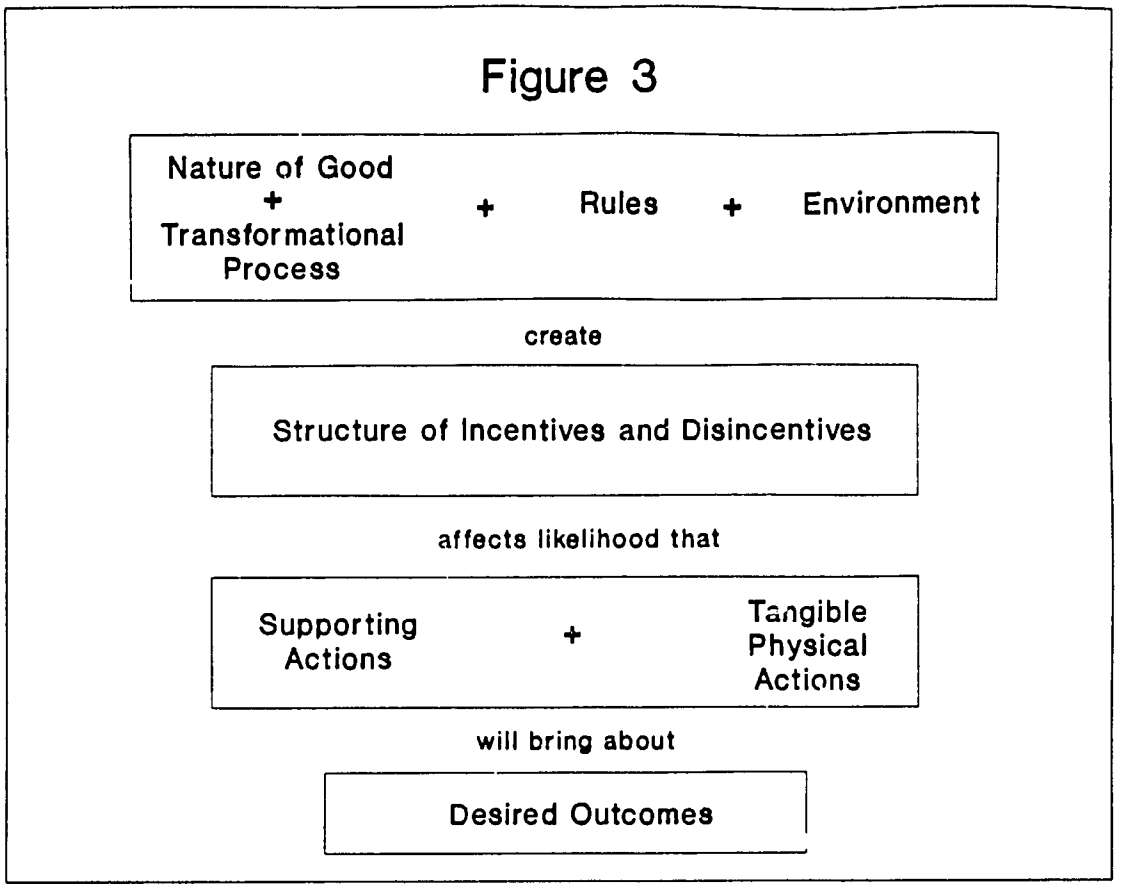
These activities can be subdivided into:

- key physical activities (human beings are actively transforming physical entities or regulating other human behavior which affects those entities); and
- supporting, antecedent actions.

In the case of rural roads, these activities would include maintenance/production and use-regulation as key physical actions, and the establishment of funding, location of improvements, selection of maintenance procedures, and definition of use-rules as key antecedent actions.

The incentive structures (decision structures) which apply to each of these activities must be explored. As noted already, this requires a general analysis of the nature of the good and transformed technology (i.e., rural roads and their maintenance), the pertinent characteristics of the community and environment, and the rules or institutional arrangements which apply to each activity. Thus, the likelihood that persons will indeed carry out these actions, or the reasons why they are failing to do so, can be assessed. Figure 3 presents the incentive structure as an abstract institutional model.

Analysis through this method can proceed either from the outcomes back to the incentive structures, and then to the contextual level of analysis, or in the opposite direction. When there is a clear policy and programmatic history, it is helpful to use this history to target priority issues that should be explored. These issues can be used to examine the various pertinent decision situations, and then to move back to contextual analysis to evaluate the options and prospective for reform. This strategy is recommended for IAD of the problem of sustaining rural roads in Bangladesh.



A brief review of sustaining rural roads in Bangladesh suggests there are 15 issues which may need close review when doing an IAD of this sector.

In each of these cases, it appears, upon preliminary analysis, that incentive structures may exist which bias behavior in ways that hinder sustained, viable roads. These structures are:

- maintaining accountability of funds;
- raising local revenue for road maintenance;
- locating road improvements in ways which correspond to local preferences;
- development of effective road maintenance technical packages;
- use of technically effective maintenance procedures;
- effective supervision of maintenance procedures;

- the choice by localities to maintain roads rather than have them rebuilt;
- capitalization of roads at levels proportionate to their rate of return;
- regulation of road usage to sustain road survival;
- willingness of local officials to spend local funds on road maintenance;
- use of locally available materials and skills in road maintenance;
- rationalized planning of local public works programs;
- improving and maintaining roads in ways which minimize externalized costs (i.e., to local farmers);
- developing and following economically efficient national road expenditure policies; and
- generating genuine widespread local support as a requirement for holding local office.

A formal IAD of the rural roads sector can help shed light on whether or not there are incentive structures which lead officials and citizens to act in ways which make resolution of these issues problematic and in turn lead to poorly maintained roads.

In addition to exploring these research issues, several possible reforms and reorganizations currently under discussion ought to be introduced hypothetically into the analysis of the institutional provisions, and thus, into alternative decision situation scenarios. These would include at least:

- introduction of an expanded role for the zila parishad;
- introduction of members of parliament into zila government through their seats on the zila parishad;
- possible changes in revenue systems at the upazila level, involving improved taxation of markets, possible expansion of user-fees for roads, etc.;
- introduction of improved financial-control systems, such as those developed in the FFW-CARE project;

- a strengthened monitoring and evaluation capability within the Ministry of Local Government;

- an expanded or reduced role for the district deputy commissioners in supervising technical and financial accountability;

- possible reorganizations of the magistrates, including separation from the district deputy commissioners' offices;

- introduction of various donor/local-revenue matching requirements for assistance with local maintenance costs;

- modification of engineering requirements in various donor-maintenance programs;

- increased technical authority allocations over general maintenances and/or maintenance-related donor programs to Local Government and Engineering Bureau (LGEB) or other technical offices; and

- other possible modifications of current Upazilas' responsibilities in road maintenance.

B. Interventions

It is, of course premature to suggest which interventions would be likely to resolve the institutional problems pertaining to rural roads in Bangladesh. The research to establish what those problems might be is not yet done. However, in a very preliminary way, the sorts of interventions which might be suggested can be outlined. Weak monitoring and evaluation capabilities at the center can be supported by grants that provide equipment, technical assistance, and incentive funds to support certain activities on an interim basis. An ineffective 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 programs in public awareness. Enforcement of road use regulations can be pursued through similar technical assistance and incentives or in the design of physical obstacles to prevent use by overly-heavy vehicles. Incentives can be created to spend local funds on maintenance as well as improved technical standards and supervision of maintenance by allocation of funds for capital improvement and relief projects. Coordinated, strengthened technical requirements for use in the various relief programs might be developed among the donor agencies once the negative impact of lower standards of work in those programs can be more

clearly demonstrated. Of course, ongoing policy dialogue should be pursued with the Government of Bangladesh (BDG) and donors concerning policies and procedures which are found to adversely affect road maintenance. 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 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. Since the most effective mix of interventions will be essential to achieving USAID goals in sustainability, incentives (increased resources and increased personnel ability) and more locally feasible BDG/donor procedures should be linked to reinforce overall incentive structures. This would certainly not exhaust the list of possible interventions, but is representative of how IAD might guide project design. The research will, no doubt, suggest additional options as specific incentive problems are uncovered.

The appendices to this report explain, in detail, each element of the contextual level of analysis and attempt to show how that analysis helps lend insights into the Bangladesh rural road sector.

APPENDIX A

Contextual Analysis

The list of concepts presented and discussed below is a working-list, and is not to be seen as complete. Diverse research from several disciplines has been drawn upon to develop this framework. No doubt, further research will suggest additional concepts which are useful in understanding how given institutional arrangements present incentives and disincentives for the production of any given good or service, and specifically how they might explain the problematic behavior indicated by a rapid reconnaissance of rural road maintenance in Bangladesh.

The Nature of a Good

When inquiring about the "nature of a good," one must try to analyze fairly constant features of a good that powerfully affect institutional options to protect, fund, and sustain the good. Key concepts used here include excludability, visibility of consumption, rivalrousness, robustness, divisibility, and degree of choice over consumption. Each of these will be discussed, and their implications for "institutional arrangements" will be tentatively explored.

Excludability is important because the accessibility of the good influences how resources may be raised to pay for its production, and to what extent and how difficult management of the good will be. For example, a good which is excludable (impossible to access without the consent of a manager) is one that can be paid for out of user fees. While questions of equality of access or general interest to be served by insuring wide access may still need to be answered, funding for the production and/or maintenance of the good can be assumed to be a tractable task. Alternatively, when the good is an open-access one, meaning limiting its use is either impossible or so costly as to be infeasible, then funding to sustain the good is likely to be a serious problem.

Imagination can and should be used in confronting access problems. For example, open-access roads could be left open, but user-fees could be collected by selling licenses to users which must be visibly displayed for policing agents. Given this potential solution, an important aspect of accessibility that should be pursued is the visibility of usage and/or availability of information on usage. Similarly, some openly accessible goods can be used only with technology or fuel controlled by a governing agent. Gasoline for use of automobiles or superhighways is an example. Taxing autos and trucks at the point of sale or taxing gasoline can be effective ways to circumvent the accessibility problem without investing in

tollbooths and highly restricted access systems. However, heavy use of human or man-powered vehicles presents a challenge, as access to this technology cannot be easily controlled. Thus, another aspect of excludability which should be considered regarding open-access goods is whether their use depends on access to another good that is not characterized by open-access.

As well as funding, non-excludability creates problems for managing the resource or good concerned, since erosive use patterns are less difficult to regulate when there are one or few portals through which all users must pass. If information on usage is hard to gather, the question of use management is made more difficult to answer. This is important, for when management is more difficult, and there are financial or other advantages in erosive or abusive uses, then the sustainability of the good or resource will probably be compromised. Ways to gather such information and restrict access must then be developed and institutionalized in order to overcome the incentive to behaviors which destroy the good or resource. This problem is doubly important, as its existence creates a disincentive for those responsible for maintenance (or other necessary activities to sustain a good or resource) to actually do the maintenance. Indeed, as they see the resource or good eroding before their eyes, their incentive is to accelerate their use and take out their income before the good is totally destroyed.

Other characteristics of the consumption of a good may help ease the difficulty of exclusion. One characteristic of a good which is related to excludability is the visibility of consumption of the good. If a good cannot be easily consumed in private, and/or if consumption is highly visible, it is easier to ensure that those who consume the good contribute to the upkeep of the facility producing it. Because a vehicle travelling on a road is visible to others, selling licenses that are to be publicly displayed on all vehicles using a road is, as noted above, one way of coping with the low excludability of road passages and raising revenue for support of a facility.

Successfully developing mechanisms which manage the resource in visible ways to encourage sustained availability of the good is critical to resolve perverse situations that encourage overuse. These mechanisms are essentially ones of governance, and require varying capacities (for information gathering, observation, policing, and punishment), depending upon excludability, and on another aspects of the nature of the good, such as its robustness. By the robustness, it is simply meant how well the good or service holds up under varying natural and human-produced usage conditions. In the case of rural roads in Bangladesh, robustness may be a serious problem. Developing improved technologies to build roads, more effective ways to regulate road usage, or massive sources of new funding are alternative solutions to low robustness. One example of a

solution to a robustness problem encountered in Bangladesh is the construction of permanent obstacles that limit access to light-weight bridges. If indeed this solution is effective in protecting the structures, then institutional arrangements which provide incentives for local authorities to construct these should be explored (i.e., supplementary funding for such structures, extra grants for maintenance when these are in-plan, etc.).

The rivalrousness of a good, resource, or service refers to the extent to which more than one person may simultaneously consume or use the good. This must be understood as a continuum rather than a category, as most goods or resources may be consumed by more than one person up to some point, after which "crowding" begins to occur. Beyond that point, more crowding reduces the value of the good still more. This question is important, as high-threshold goods which may be consumed before crowding occurs are goods where managerial control may be eased somewhat--all other things being equal.

Robustness, of course, is related to the impact of joint usage on a good. When crowding is a problem, citizens who might otherwise be willing to invest in the resource, service, or good might be expected to be less willing to do so unless they can see that appropriate management (either of demand for the good or of its supply) is occurring.

Degree of choice over consumption reflects the extent to which individuals living in a given community have any choice over their consumption of a good once it has been produced. When persons do not wish to consume a particular good or service but are forced to do so, it becomes a public bad, and resistance to the good can be expected. The classic example here is a predatory police force. A road which is costly to maintain and built where people do not wish it located, is similar. They may use it while it lasts, but will be unlikely to invest further (i.e.,in maintenance) in it.

Much infrastructure in developing countries was built without the participation of the persons who use it and who thus, at times, find it inappropriate for their needs. In cases where this infrastructure is critical to economic production in the area, as in the case of irrigation systems, residents have to use the improperly designed structure or farm elsewhere. Under these circumstances, an absence of enthusiasm for the upkeep of the system and high levels of conflict stem from an understandable desire to avoid the costs of maintaining a good which provides few benefits. Less conflict, but equally low levels of enthusiasm for upkeep are associated with improperly constructed roads. This may be applicable to many rural roads in Bangladesh.

Divisibility exists when the good, or resource or facility producing the good, can be easily divided into units. While they are both systems whose interconnections must be maintained, both roads and irrigation systems can be broken into sections that may have different features. Different sections of these systems may be constructed differently in order to accommodate local differences in terrain, rainfall levels, or differences in the ways the facilities are used in local production processes. Moreover, within boundaries dictated by physical conditions, communities may wish to establish further subdivisions of the facility in order to be better able to tailor the system more closely to their needs. Divisibility makes possible a more finely tuned correspondence between demand for a good, improvements of a good, and maintenance levels. It means people can more closely "pay for what they get" and "get what they pay for." It facilitates localized financing arrangements which can be more closely articulated to consumers' desires.

To illustrate this analytical process, a general and preliminary evaluation of the "nature of this good" and the specific rural roads challenge in Bangladesh will be discussed. Tentatively, the following preliminary propositions for further analysis are suggested:

- rural roads in Bangladesh are a common pool resource, characterized by generally open-access and a level of usage which has not yet reached crowding;
- rural roads in Bangladesh are extremely low on the question of robustness;
- usage of rural roads in Bangladesh is relatively visible;
- usage of rural roads in Bangladesh is generally dependent upon technology controlled by the users;
- rural roads in Bangladesh are moderately divisible from other road networks;
- rural roads in Bangladesh are of substantial value to diverse local persons, being used extensively for trade, to get to employment, etc.; and
- improvements made in rural roads in Bangladesh have often not reflected specific local priorities for usage.

Assuming this preliminary analysis is sustained, several working propositions about institutional arrangements may be set forth to illustrate how this analysis could be used:

- funding for rural roads must be based on some sort of tax levy or user fee;

- regulation of road usage must address itself to abusive use rather than simply restricting levels of normal usage;

- improved technologies of road building and maintenance should be explored;

- incentives for use of experimental methodologies in the field ought to be pursued, along with strong central support capacities for field responsibilities;

- localities have an incentive to assure themselves usable roads, but will follow the least costly alternative--incentives to assure locally funded road maintenance should be pursued (i.e., restricting availability of low local cost rebuilding programs);

- user fees (because of low technological prerequisites to use roads) cannot be expected alone to fund road maintenance; and

- road improvement decisions (i.e., location) must be substantially dependent upon local input.

These propositions are suggested by an early reconnaissance of the rural road situation in Bangladesh. They should be regarded as tentative starting points for future research.

Nature of the Transformation Needed to Produce the Good

While the nature of the good refers to rather fixed characteristics of that good once in-place, the nature of the transformational process refers to key characteristics involved in the production of that good. In the case of rural roads in Bangladesh, as noted in the body of this report, there appears to be 2 production processes which must be considered:

- physically manipulating objects to improve/maintain the road; and

- physically regulating human usage of the road to ensure its long-term viability.

Once it has been determined what general tasks the desired outcome requires, then attention should be given to analyzing the key characteristics of these activities, and how they relate to

institutional arrangements. For example, if an activity requires coproduction (shared efforts by professionals and client/service recipients) to occur, then institutional arrangements which allow minimal client input into the selection and evaluation of service personnel are likely to work against efficient production of the good or service. Or, for example, if the measurement of quality of production of the activity is an easy task (obvious to all, reliable, etc.), then less attention to immediate task supervision need be given. In this situation, the information problems typical of "tall" hierarchies are less of a problem, and relatively more centralized institutional systems can be used (which may have pay-offs in economies of scale). Alternatively, when evaluation of quality performance is hard to measure by anyone other than the ultimate user, or requires close, continuous observation during production, then institutional arrangements which allow for a more decentralized managerial system with very close supervision of performance of tasks may be needed. One alternative then might be the open market, which might be regarded as a "highly decentralized" system. Here, individual service deliverers or good producers will develop reputations, and dissatisfied communities or individual consumers will have the opportunity to contract with others.

At present, this conceptual framework suggests that 8 characteristics of the production process appear worth exploring. Not all of these will be applicable to all goods, services, or resources under consideration. They are a starting point, however, to guide analysis. To jump ahead for a moment, and to try to show how all these questions are pertinent, this appendix will give certain tentative answers to the organizational question of how, given these transformational characteristics, human institutions might be organized in order to improve the likelihood of sustainability of the good or service. Also, the appendix will explore whether there are alternative technologies of production available that might resolve problems when organizational change is not possible or is too costly to pursue. Eight aspects of technology of production are suggested below for exploration in the field.

Measurement Problems

Measurement problems arise as the result of the character of a good or character of the production process that creates it. While some goods (water) are easy to measure, others (community security or "reasonable" road passages) are very difficult. In these later cases, analysts must work with proxy measurers. This is important in assessing the actual condition of a good or service in a reliable and publicly acceptable way.

Other measurement problems arise in the context of efforts to judge the quality of a public facility being constructed or

maintained/when all aspects of the facility are not easily inspected. Whether or not the ground has been appropriately graded and packed may not be noticeable until premature erosion begins with the onset of heavy use or heavy rainfall. The appropriateness of design during road-building or improvement processes is likely to be difficult to judge once the work has been completed. Problems of quality assessment may be important in explaining less than optimal performance of both construction and maintenance responsibilities. Such problems suggest that monitoring should be scheduled throughout the process of construction or maintenance to ensure that substandard performance is more easily detected. The successful use of private companies for construction and maintenance work requires that effective means of measuring quality be developed.

If the measurement of quality of production of the activity is an easy task (obvious to all and reliable), then less attention to task supervision needs to be given. In this situation, as noted above, the information problems typical of "tall" hierarchies are less of a problem, and relatively more centralized structures can be used, which may have pay-offs in economies of scale. Alternatively, when evaluation of quality performance is hard to measure by anyone other than the ultimate user or requires close, continuous observation during production, a more decentralized or autonomous monitoring system that allows for very close supervision of performance of tasks may be needed.

Coproduction

As discussed above, some goods or services benefit greatly in production from a partner relationship between professionals and citizens. Roads, particularly earthen, rural roads, might be coproductive with regard to early troubleshooting for erosion of embankments or progressive damage to structures, and if spotted early, can be repaired at less cost. Labor-intensive maintenance strategies are not, in and of themselves, a coproductive activity. Coproduction means the client or citizen involved is needed as a partner by the goods producer or service deliverer in order to effectively produce the good. He can supply critical information or must take critical steps in the production process that no one else can supply or easily take. If "management" of road use is the service under consideration, then coproduction might be critical in order to extend to policing agents across the vast distances involved in roads. Most social science hypotheses regarding coproduction indicate that the greater the sense of ownership or control felt by recipients/clients, the greater will be the likelihood of coproduction actually occurring. A key question to ask in assessing current maintenance and management provision systems is whether there are key coproductive activities which the current system is not encouraging and, if so, what impact are these having?

Technical Reliability of Production Package

How technically reliable is the production package? When there seems little doubt (and positive evidence) that a package exists that is financially feasible and reliable in the field, some centralizing provisions may be appropriate. If not, decentralized strategies allowing for experimentation, adaptation to varying conditions, and learning should be considered. Technical packages for maintenance might be reliable according to various road materials, soil characteristics, use patterns, and weather patterns. Technical packages for use management (regulations and enforcement regarding sustained use) can be similarly evaluated. In asking this question of the production process, one should also be alerted to inquire about the consensus on technical questions and provisions (i.e., institutions) to spread and reinforce existing knowledge and/or generate new knowledge.

Externalities

Externalities are the benefits and costs for people that are incidental to the good or service's production process. In the case of road maintenance/management, disrupting a farmer's crop and disturbing his drainage (costs), or removing unwanted soil and improving drainage (benefits) are examples of externalities. Road maintenance is also disruptive for current users, and thus, is another spillover or externality.

What are the incidental impacts of road maintenance and management on persons in the area? These are important because they may explain resistance, ranging from passive neglect to open sabotage, to maintenance and management. They might also point the way to new sources of labor or revenue for maintenance, should there be important positive spillovers or ways of creating them. For example, in areas where animal traction is important but veterinary services are weak, use of animal traction in road work and careful attention to supporting veterinary services can provide spillovers of better care facilities for local dwellers' animals.

Economies of Scale

Economies of scale refer to the extent to which the production costs of a good or service can be raised or lowered by varying the scale on which the good is produced. These economies explain why countries often have only one sophisticated soil lab but many local road maintenance units. The presence of economies of scale (the cost per unit of construction declines as the number of constructed units increases) has often been taken to

imply that authorities at larger jurisdictions should be given the task of producing or contracting out for the production of a particular task. The absence of economies (the cost per unit of construction remains the same or declines as the number of constructed units increases) implies, on the other hand, that the good could be most economically produced by smaller jurisdictions.

Questions as to which authority should have jurisdiction in the production of a facility may best be resolved by breaking down the production process into the different types of tasks required to produce that facility. In many cases, all jurisdictions can optimally play some role in varying aspects of a major construction effort. Tasks that require very costly specialized equipment which would be infrequently used by a small community--such as machinery for processing the bitumen for hard surfaced roads, or personnel with highly specialized skills, such as civil engineers--are likely candidates for control by governments of larger jurisdictions (here, perhaps the zilla). It would make no sense for all communities to own equipment or employ persons needed only very irregularly. In many cases, highly specialized road-building equipment is owned by government-contracted, private companies. They can be employed by any government provided it can pay for the work. A more central government might employ people with the specialized skills needed to design, set specifications for, or inspect road work and make them available to local authorities either directly or on contract basis. Other aspects of the task of construction or maintenance involved here might draw upon personnel and equipment employed or owned by local authorities or provided by a local construction firm working on contract with a local government. The less-specialized equipment and personnel required for the construction or maintenance of earthen or gravel roads can be easily employed for other uses when not building roads for a local community.

The concept of a road network implies that roads all intersect with each other. Some type of coordination in planning is required. However, the necessity of coordination does not require that only one planning authority be involved. Determining economies of scale requires technical analysis. Analysts attempting to calculate the scale economy of a particular production task should keep in mind the fact that, regardless of its cost, inappropriate infrastructure is inefficient from the point of view of its users. The key idea here is to assign tasks to the particular organizational unit best-suited to perform it.

Capitalization

Beside economies and diseconomies of scale, what other flexibility (and rigidity) is built into the capital requirements required for the production process to occur? Aspects to consider include equipment necessary for the task--its cost, local availability, fragility, and supporting equipment or resources necessary for it (fuel, parts, etc.). Another idea to consider here is the materials used--are they locally available, what transformations do they require to be used, what is their cost, and so forth. In considering this aspect of the technology of production, it must be established what sorts of institutional support are necessary to meet these requirements. Of course, alternative technologies may exist which could produce the same final product. If the current technological or institutional arrangement does not work well, changes in technology or institutions ought to be considered. For example, mandating (or just using) a capital-intensive technology which requires support from the center for a locally funded and managed maintenance system may be asking for problems. Use of materials and resources which are available at the level responsible for the task simplifies the organizational problems involved. When the technology required to maintain a road cannot be proportioned to the organizational level responsible for that maintenance, altered maintenance systems need to be explored to change the type of technology required. The same reasoning applies to the technology used in usage management as well.

Skill Levels Required

Precisely the same questions asked regarding capitalization need to be asked regarding personnel skill levels required for maintenance and use management. The same reasons to consider this apply, as well as similar solutions.

Cost

In order to explore the impact of current and potential alternatives to institutional arrangements on maintenance, costs of the current and alternative viable maintenance/management technologies need to be assessed. The reason for this is obvious, and must be asked in order to make an intelligent assessment of the viability of current and potential organizational arrangements. Alternative funding arrangements might be required, given costs. Alternative technology might also be explored, such as different road designs (dirt, gravel, paved), to determine the impact on sustainability costs (management and maintenance).

A brief and preliminary review of the rural roads sustainability problem in Bangladesh, vis-a-vis these transformational characteristics, suggests the following as preliminary findings for further research:

- reliability of measurement--the ability to measure quality of road work is not clear; some respondents believe it is a simple and straightforward process, but others express concern over the reliability of supervision of labor-intensive maintenance methods; problems in use-rule enforcement seem high, as there are few (if any) facilities to weigh vehicles; proxy measurements are needed;

- coproduction--maintenance and use-regulation, particularly of dirt roads, are highly coproductive;

- technical reliability--a reliable technical package for road maintenance and improvement does not appear agreed upon, nor does there appear to be agreement on tolerable load levels, except at the most general level;

- externalities--there appears to be substantial negative externalities derived from road improvement and maintenance, particularly for farmers whose property boarders roads; use-rule enforcement does not appear to be associated with externalities;

- economies of scale--very preliminary analysis does not make clear what economies of scale may apply to road maintenance; this may be, in part, because of the uncertainty over technical packages, the emphasis hitherto on labor-intensive maintenance procedures, or the overall lack of experience in road maintenance in Bangladesh; enforcement of use-rules seems to have no appreciable economy of scale;

- capitalization--capital requirements for labor-intensive maintenance of dirt roads are low; for "pucca" roads they are higher; enforcement requirements vary with accessibility of low-cost vehicles, with surrogates being a key factor;

- skills--skill requirements for labor-intensive maintenance of dirt roads are low; for "pucca" roads they are higher; local skills should suffice for enforcement needs; and

- cost--cost requirements are under intensive debate among respondents, varying with initial quality of a road, natural (weather) wear and tear, carrying

capacity and frequency of maintenance; enforcement should present no onerous recurrent cost problems;

Were these very preliminary observations sustained, they would suggest several propositions regarding institutional arrangements for road sustenance in Bangladesh:

- centrally funded and managed research on measurement of road maintenance and improvement practices and various technical packages of road maintenance procedures and their costs ought to be pursued;

- there are no substantial advantages in centralized enforcement of use-rules, either from the perspective of cost, economies of scale, technical reliability, capital or skill levels required, or in considering the value of coproduction in enforcement;

- local experimentation with various maintenance packages might be usefully encouraged, particularly if coupled with a central research and development program to assess results;

- pending results of central research on maintenance and improvement practices, such factors as coproduction, existing externalities, divisibility of road segments, and apparent limited economies of scale suggest that placing road maintenance and improvement decisions at the local level is appropriate; and

- local funding of road maintenance responsibilities is sensible if no clear evidence of significant economies of scale are developed from research on new maintenance packages, if clearer cost figures are developed for maintenance alternatives and made known to localities, and if localities have the authority and resources to enforce road use rules.

Community and Environmental Characteristics

The characteristics of the community and environment in which these goods are to be produced can strongly affect the actual workings of institutional arrangements. In this respect, they can be considered as the third critical contextual factor in this analysis. For example, if an enforcement regime was dependent upon broadly-based observation and input to abate erosive uses of the good or service, and if there were a lack of common understandings about the actions which need to be taken and abated, or a lack of common agreement as to the value or

merit of extending the life of the resource, or if there were severe inequalities where potential informants might be deterred by their vulnerability to sanctions by others, the regime would probably fail. In addition, even when none of the above conditions applied, if there were patterns of severe local social or ethnic conflict by users of the good, resource, or service, then usage and enforcement regimes would have to take these into account. These remedies might include measures to insure that policing personnel were seen as neutral, and/or measures to prohibit certain usages which are sources of irritation between the 2 groups (i.e., one group driving at high speeds through another's residential areas), or, indeed, segregated use regulations (by hours, days, etc.).

Other environmental factors which may impinge upon the realm of possible institutional solutions might include:

- the existence of working institutions of conflict resolution in the area which could be integrated into the several regimes involved in the good, resource, or service;

- importance of the good in the existing local economy patterns of resource flows into and out of an area which might affect the ability and/or willingness of local users to take on serious maintenance and management responsibilities (i.e., they might lack discretionary resources for these responsibilities, or carry an expectation from prior experience that the central government will eventually do this); or

- the existence of prerequisites to specified institutional arrangements.

Regarding the last, for example, analysts might explore how well-developed the prerequisites are for private-enterprise institutions to operate in a local area--financial, conflict resolution, wholesaling, and labor-mobilizing institutions might all be seen as preconditions to successful private sector-oriented maintenance regimes. Finally, local economic capacity ought to be considered as well.

The question of environment is one where the IAD model should probably look to further thought and development. However, from what has been noted above, 7 general areas of inquiry in the field are suggested, particularly as this model pertains to rural road sustainability:

- level of common understandings regarding the purpose, nature, and key characteristics of the resource, good, or service;

- level of agreement regarding the value of the resource, good, or service;
- distribution and level of resources of users;
- importance of the good in the local economy;
- existence in the area of working institutions of conflict resolution;
- level of conflict among users independent of resource-, good-, or service-related issues;
- level and type of resource flows into and out of the resource-user area; and
- existence of prerequisites for selected institutional arrangements regarding resource, good, or service.

Level of Common Understanding

Common understandings are an essential prerequisite for many common property and/or public good situations to survive. These types of goods must generally be regulated and/or financed through some sort of rule-based (institutional) set of relationships if they are to be sustained, and enforcement is usually, in part, dependent on self-regulated behavior. Thus, common understandings as to the purpose or purposes of the good, service, or resource; the requirements for its survival or sustainability; and the operating meaning of current rules regulating it might be expected to be positively associated with effective regimes. When there is disagreement as to what the rules are or ought to be, then the predictability of the necessary behavior by users to be willing to restrain their use is likely to breakdown. Of course, all users might agree that the rule is "take what you can as soon as you can," and this would damage sustainability as well. Thus, some level of common understanding can be seen as probably necessary but certainly not sufficient to sustain a common or public good, service, or resource over extended usage. Furthermore, existence of arenas or media through which communication and discussion of these issues might occur, as well as their accessibility and/or use, might also be hypothesized as likely to encourage (or at least make possible) development of such common understandings. It is unclear what level of common understanding regarding roads, and their appropriate use and care, exists among members of local Bangladeshi communities.

Level of Agreement About Values

It seems likely that local users could share a common understanding about the empirical dimensions of a good, service, or resource, and which rules are in use, but still experience difficulty in sustaining an effective use or maintenance regime because of value disagreements. If users disagree regarding the value of the good or resource, value placed on various priorities of use, or value of the regime governing the resource, good, or service, then, once again, resource sustainability under their control alone ought to be questioned. Particularly regarding the last, if the rules governing the resource, good, or service are questioned on grounds of fairness or moral correctness, then the consensus necessary for those rules to be effective will probably break down. Authorities will either have to invest heavily in enforcement mechanisms, or develop new, more legitimate rules and/or ways of adopting rules. In fact, at times all these options may be unreachable, and in those circumstances, local sustainability is simply problematic. Here, some sort of central mechanism may be needed. The status and reputation of the still-young upazilla system is not yet clear.

Level and Distribution of Resources Among Users

The level of resources available among users is important to establish what level of maintenance might reasonably be expected for them to contribute. It is also important in evaluating their potential to conform to various usage regulation, to utilize more and less-erosive usage technologies, and participate in common-endeavor usage and/or maintenance regimes.

Distribution of resources is also important. For example, severe inequalities among users might make enforcement regimes more difficult, as the very poor might be unable to conform to lower-impact usage rules, and the very rich might be able to ignore those rules with impunity. Alternatively, if very wealthy users are greatly dependent on resource/good/service survival, they might be interested and able to expend extraordinary amounts (resources or influence) to insure the good is sustained. Who is using the good and how important it is to them is necessary to anticipate or explain the impact of distribution of wealth or sustainability. These questions, given well-known research on the Bangladesh rural political economy from the Bangladesh Rural Advancement Committee's (BRAC) The Net, may be very important in understanding the problem of rural road sustainability, and in doing something about it.

Importance of the Good in the Local Economy

What role does the good, service, or resource play in the local economy? Is it critical to the production or marketing of an economic mainstay? What proportion of the local population depends in some way on this good? Are there any substitutes available for the good? These issues are important in assessing the likelihood of local involvement in maintaining or protecting a given good, service, or resource. One assumption would be that the greater the importance of a good or service, the more willingness there would be to invest in protecting it. One might add, however, that the greater the dependency on the given good, the more conflict there might develop over how to regulate and/or maintain the good, and that more attention must then be paid to easing concerns about continued availability of that good as institutional arrangements develop and evolve. Recent research by BIDS and IFPRI suggests roads are extremely important in the local economy. How well that is understood by local users and to what extent they are able to articulate that value is not clear.

Existence of Working Institutions of Conflict Resolution

Decentralization does not, certainly, mean anarchy. Methods of ordering relationships among decentralized units of governance and administration, regulating their relationships with citizens, and assuring compliance with national standards and priorities are still needed. Of course, if hierarchical relationships and direct centralized control over such key functions as personnel, budget, and operations are reimposed, the decentralization, so recently pursued, is probably a dead letter before it has really begun. The idea, articulated by Montesquieu and developed by Tocqueville, of ordering and regulating these affairs through rules of law enforced by judicial process is a method of maintaining order without destroying decentralization. Law is the medium through which such regulations, relationships, and priorities are defined. Courts are the mechanism, when specific regulations are violated or when conflicts develop, by which ordered relationships are reestablished. Once reestablished, courts may withdraw to allow local administration to continue. By awarding limited authority to enforce specific ordering and coordinating measures to an institution outside the chain of command, and requiring third parties to bring grievances to these organizations for them to act, preemption of the space the decentralized authority needs to survive is minimized. Certainly, then, the availability, viability, and reputation of such organizations, or existence of organizations with the potential to develop into them, is important to evaluate the possibility of local responsibility in any area. They are most needed to keep the decentralized arrangements from becoming corrupt. They also can prevent an enforcement mechanism from

turning into a new centralized authority. The availability of such organizations in rural Bangladesh is problematic.

Level of Conflict Among Users Independent of Resource, Good, or Service-Related Issues

It is only prudent to assume conflict will develop among users of any scarce and costly resource. Abating potential abuses, regulating erosive uses, allocating maintenance and repair costs, allocating limited "use-units," etc., will generate conflict. Use rules, procedures to define these rules, and mechanisms to enforce them must be designed with these in mind, and operate in ways which maximize local legitimacy. However, when serious conflict on any ground exists among users independent of (and probably prior to provision of) the resource, good, or service, maintenance and usage regimes can be threatened by factors the users may not be able to abate--indeed they may be destroyed in the local conflict.

Ethnicity, class, caste, religion, race, historical military conflict, and so forth, can all be involved. When such conflict does exist, then usage rules might need to be modified to:

- control uses particularly likely to cause additional problems between the groups; and
- minimize co-user contact by members of conflicting groups, or perhaps to establish dual delivery or access systems.

Often the last option will be fought by some on strict economic-physical grounds. But these grounds implicitly assume a social harmony that does not exist in many situations. It is not clear how widespread a problem this might be in rural Bangladesh. Research such as BRAC's The Net suggests it may be evident in some areas.

Level and Type of Resource Flows Into and Out of the Resource/Good/Service User-Area

What resources, in general terms, are being transferred into and out of the user area? What are they being spent on? A high level of resource transferral out of the area suggests 2 things. First, there may be, realistically speaking, little left locally to allocate to the good, resource, or service system. Second, it also suggests, depending on the national budgetary situation and national policy directions, that some resources may exist that can be held in the area and redirected into local responsibilities and spending.

The level and type of resources flowing into the user area are important for similar reasons. For example, resources already committed to the area in support of the service/good/resource through centralized structures might be redirected to decentralized agencies. Resources directed into the area in support of <u>other</u> goods, services, or resources might also be redirected, in cases of larger-scale decentralization. It is reasonable to expect that funds from the second category will be more difficult to capture than the first.

Resource flows are also important to evaluate for social-psychological reasons. For example, large-scale flows out of an area may have led to feelings of local powerlessness, which can become self-fulfilling prophecies even when the resource flows have been reversed. Similarly large-scale reverse flows, coupled with paternalistic maintenance and usage regimes, could be expected to lead to local passivity which is equally hard to change, even when authority and resources have been clearly devolved.

<u>Existence of Prerequisites for Various Institutional Arrangements</u>

The specific questions asked under this topic will vary according to the institutional arrangement in question. If one is analyzing the operation of the existing institutional arrangements, one would obviously pursue a different set of questions than if one is exploring the prerequisites for a specific possible alternative set of institutions.

If one is analyzing, for example, the prerequisites for a conventional, hierarchical maintenance/use regime, then a national command and control network will be important. This might include effective communications and transportation networks, an efficient and effective mechanism to disburse and account for national funds, an efficient and effective mechanism to assure quality control at the delivery level, and an effective national personnel system. Alternatively, in a decentralized and public system, one must be concerned with whether local systems exist to perform these feedback, fiscal, quality control, and personnel systems functions, or whether back-up or linking mechanisms exist to allow national systems to assist local officers in performing these functions. In decentralized systems, one must also be concerned with the existence of a structure of law defining the authorizations, obligations, and limits of these local authorities, and whether or not institutions (such as courts of law) exist to apply these regulating structures. It is regarding these questions, that the concerns of the old institution-building approach apply.

If one is considering the development of private-sector actors, such as individual entrepreneurs, partnerships, and corporations, to take on functions for maintenance or usage regimes, then the same set of questions needs to be asked again, particularly as they pertain to the institutions and authorizations available to private entities. Prerequisites for significant private-sector involvement in these functions include:

- banks to hold and disburse funds;
- structures to raise equity capital;
- legal authorization to incorporate, engage in contracts, hire personnel, and hold real estate and capital property;
- legal definition of liabilities and prerogatives; and
- institutions authorized to interpret and apply those definitions.

Since mixed regimes (private and public/official) will probably characterize many of these arrangements, the prerequisites will usually include fiscal, feedback, personnel, quality control, and conflict management arrangements for both types of institutions simultaneously. These issues are often seized upon by central governments and donors for interventions, particularly in training. Training is an appealing intervention--it is not usually politically controversial, trainees usually enjoy it, it is easily blueprinted and managed, and easily externalized to contractors. It can, as well, resolve important weaknesses. However, training alone, without reference to other contextual factors, usually is insufficient to alter incentive structures enough to alter an outcome. It must generally be coupled with other interventions to be successful.

Thus, key research topics for exploring the community/ environmental contest of rural road maintenance would include:

- the extent to which rural Bangladeshis share common understandings of the durability and maintenance needs of rural roads;
- the extent to which rural Bangladeshis share appraisal of rural decision-making institutions;
- the extent to which asymmetry in resource distribution leads to poor maintenance and abusive uses of rural roads;

- the importance of rural roads to the local economies, the extent to which local people understand these roles and the extent to which beneficiaries are politically empowered;

- the conflict resolution entities which exist as effective, working entities in the rural areas;

- the conflicts which exist among users independent of road use;

- the terms under which resources are flowing into and out of rural areas for road maintenance, and by whom; and

- the organizational weaknesses which exist among institutions with key responsibilities in the road maintenance process and the reasons for these weaknesses.

This preliminary agenda of questions should be carefully evaluated by further research to assure it is pertinent to the Bangladeshi situation. Once a final agenda is established, research can be completed, and the implications of these issues for rural road maintenance can be assessed.

Rules or Institutional Arrangements

The institutional or rules dimension is the focus of IAD. This approach assumes that the other components of the analytical framework (the characteristics of the good, characteristics of the technology applied to produce the good, and environment) are generally relatively more difficult to manipulate than the framework of rules that structure the relationships among human beings producing, consuming, and paying for a given good, service, or resource. For example, in situations where a public good is desired, whose consumption cannot be rationed, rules providing for some sort of collective financing must be used to pay for it, as it will not be provided by market mechanisms. Similarly, common-pool resources pose problems of possible crowding and/or consumption because of the difficulty of regulating access to this type of good. In this case again, markets will fail because they will work as incentives to milk the resource until it is overused. Therefore, rules that apportion shares which are consistent with sustainable yield must be devised.

The key point of this model is the rules of access, distribution, acceptable action, and payoff which are likely to sustain collective or public goals will vary with the characteristics of the good or services involved, the technology

utilized, and so forth. When public officials and analysts believe that the desired outcomes regarding any good or service are not being reached, one likely explanation is that the rules in use regarding that good (which include the possibility that there are no rules in use) are disjunctive with regard to the nature of the good and the policy goals desired. Indeed, a strong working hypothesis in the DFM project for unsatisfactory policy outcomes in many third world settings is that the rules lead to over-centralized institutions and from them flow disjunctive and counter-productive policies. Similar reasoning may be behind the Bangladeshi decision to decentralize road maintenance.

The section on institutions is probably the most complex and conceptually difficult of the 5 components of IAD. This is for several reasons, including:

- institutions cannot be understood or analyzed unless they are considered as "configuration"--i.e., one cannot understand their behavior by looking at only one rule at a time;

- little formal reasoning and analysis has as yet been performed concerning institutions as configurations of rules, thus the concepts developed to encompass the configuration of rules are often unfamiliar and therefore awkward to use;

- institutions for this purpose must be understood in a more legal than sociological sense--they are regimes that structure peoples' options regarding a given choice or set of choices, and are composed of rules that are usually devised by several authoritative, rule-defining bodies; they are not necessarily characterized by shared domain, personnel, or dogma as the sociologist understands them to be; the latter would be referred to as organizations whose role in a given situation will be evaluated in the section on environment in this appendix; and

- the rule-based dimension of the analysis (or regime) exists at 2 levels, each of which must be analyzed: 1) the operating rules which determine the choices, costs, limits, etc., which day-to-day participants face regarding a given good, resource, or service, and work to structure the visible outcomes; and 2) the "rules about rules" that work as a primary determinant for which operating rules are chosen--study of this second level is critical for analytical interventions and purposes, in order to address problematic situations in a fundamental way

(i.e., to address not just problematic policy, but the processes which generate those policies).

At each level of analysis, answers to 7 questions about rules are sought. These include:

- position rules that specify a set of positions and how many participants hold each position--who is involved in this regime?
- boundary rules that specify how participants are chosen to hold these positions and how participants leave these positions--how do they become involved?
- scope rules that specify the set of outcomes that may be affected--what are the limits on the effects of their actions?
- authority rules that specify the set of actions assigned to a position at a particular node--what actions, bearing in mind scope rules, may people take?
- aggregation rules that specify the decision function to be used at a particular node to map actions into intermediate or final outcomes--what must they do for those actions to be legitimate (what requirements of due process must be met)?
- information rules that authorize channels of communication among participants in positions and specify the language and form in which communication will take place--who may/must they inform of their actions, and in what form?
- payoff rules that prescribe how benefits and costs are to be distributed to participants in positions--what rewards and punishments do participants in the regime receive, and through what process?

While analysis of such issues as the nature of the good and technology provide some critical general guidelines in assessing which institutional arrangements are critical to produce a given good, they do not exhaust the issues which need to be addressed. An institutional arrangement, for example, may reflect the coproductiveness of a given good by providing for public participation in personnel and program selection, but also include a reward structure which discourages accountability of fund, training of competent personnel, use of effective procedural protocols, and honest reporting of results. In this case, ineffective performance would hardly be a surprise, and the

institutional arrangements which cause it to occur must be assessed.

Because such procedural problems are theoretically myriad, initial reconnaissance of the policy/program area is important to target attention to potential problem areas. An overall initial review of the apparent problem areas in the production of a good is thus necessary to develop an appropriate starting agenda of specific institutional arrangements to analyze.

In the case of rural road maintenance in Bangladesh, 15 issues are indicated for focused attention in analyzing the rule structures. These were reviewed in Section V of this report. The way institutional arrangements contribute to incentive structures regarding each of these issues needs to be assessed.

To apply the institutional framework to a given real-world policy problem, the analyst must first determine which and how many regimes must be analyzed to include all key elements of the problem. With regard to rural and feeder roads in Bangladesh, for example, there would appear to be 5 regimes requiring analysis:

- the regime regarding use, including:
  --rules determining who may use the road, what they must do in order to use it, what limits are placed on their usage, what benefits and costs they incur by various uses of the road; and
  --whatever rules that determine how rules regulating use are established, including who issues those rules, what they must do to hold such authority, what they may do in this role, what procedures must be followed for their decisions to be authoritative, what limits are placed on their decisions, how those decisions must be promulgated, and how benefits and costs are distributed to these role occupants;

- the enforcement regime, etc.;

- the maintenance regime, etc.;

- the location-improvement regime, etc.; and

- the financing regime, etc.

Choice of these 5 regimes for study is based on USAID's concern with the general problem of road deterioration, and the evidence of existing reports and studies from Bangladesh that indicate at least 5 problems may be contributing to it. Roads may be deteriorating because rules encourage or allow erosive uses of the road (usage regime). Alternatively, road-use rules may be sound, but existing rules regarding enforcement may mean

there are too few, weak, or corrupt enforcers attempting to police those usage rules (enforcement regimes). In addition, maintenance rules may work in such a way that insufficient, inappropriate, overly expensive, or hard to supervise maintenance is occurring (maintenance regimes). Or, financing rules may not provide the authority or incentive for local officials to raise the funds (or in-kind contributions) necessary to provide maintenance, or may not assure these funds are actually spent on the appropriate purpose. Finally, rules which locate and improve roads may operate so that unwanted or poorly located roads, or roads too costly for maintenance are being built (improvement/location regimes).

Analysis of the rules which might create these day-to-day states of affairs is necessary to see which need alteration. Similarly, the rules which work to create these rules must be explored so that new inappropriate rules of maintenance, etc., are not generated all over again. Or, put another way, the following must be examined:

- the day-to-day rules to help explain why roads are or are not maintained particularly well, efficiently, and effectively; and

- the "rules about rules" to help explain why the day-to-day rules were generated.

Understanding these regimes requires research at multiple levels, as the rules which work together to create any given regime are defined, promulgated, and enforced simultaneously by several levels of government. In other words, the maintenance regime is regulated in its day-to-day affairs by rules defined and promulgated by several different organizations. Research must be carried out by (or at least about) those organizations to conclusively describe the regime. This research, of course, should explore both what those day to day rules of maintenance are, and what rules regulate/empower/limit/reward those who make those rules. There will be, in effect, a description of rules regarding maintenance which will be derived from several different organizations--perhaps a local council regarding priorities, an engineering department of a national ministry regarding standards, a civil service regarding personnel procedures, or a treasury regarding revenues. These rules, together, are the regime of road maintenance at the operational or day-to-day level. The second level, or rules about rules, is the analysis of who these actors are who create this regime, and the rights, limits, or payoffs they face in generating these rules.

APPENDIX B

Structure of Incentives and Disincentives

This, of course, is the "pay-off" of IAD: given the analysis so far pursued, how would human beings be likely to behave? Of course, certain assumptions about human behavior are made here which are consistent with the largest body of contemporary research in organization theory. These emphasize the "satisfying" model of behavior developed in the Simon school of organizational analysis. The assumptions view people as actors who must always make choices with limited information, are moderately risk averse, and attempting to remain at least as well-off as they have been hitherto. These assumptions may be varied, of course (i.e., rational maximizers or altruistic sacrificers), but contemporary research suggests to those working in IAD that these are the most useful assumptions.

In analyzing a structure of incentives and disincentives, the analyst is essentially making predictions (or, after the fact, seeking explanations) about the behavior of typical individuals.

A 7-part agenda of research has been developed by Professor Elinor Ostrom to ensure all information pertinent to analyzing a given incentive/disincentive structure has been included (see Section V). The information to fill out this protocol is derived from the 3 empirical and analytical exercises which will have been already completed:

- key characteristics of the good or service;
- nature of the community of producers and users; and
- institutional (rule) arrangements that apply to the good concerned.

Once the protocol has been reviewed, then the analyst asks the key questions: how would key actors involved here behave given the assumption about human behavior already made and given this structure of incentives and disincentives? Would this behavior be likely to lead to completion of the task (production of the good or service) here under study? What outcome would be likely to arise? In many cases, of course, one is evaluating a working system, so actual outcomes work as a check on one's analysis. When predictions of behavior suggest that undesired outcomes will occur, then the analyst considers how the incentive/disincentive structure may be altered--by changing the rules, environment, or technology used to produce the good in question.

APPENDIX C

IAD and Decentralization in Bangladesh

IAD

How is IAD pertinent to (and, one hopes, useful in) understanding and assisting decentralization in Bangladesh? This brief appendix will explore this question as well as make some early observations regarding the current status and circumstances of decentralization in Bangladesh.

IAD is a method of analyzing the likelihood that a given task or activity will occur, and whether or not it is likely to reoccur on a repeated and reliable basis. It organizes its analysis around the search for the incentives and disincentives for persons who have responsibilities for the production, provision, and protection of (or who can otherwise affect) a given good or service, to take key actions necessary for that good or service to be produced, provided, or protected.

IAD differs from conventional organizational analysis and so-called institution-building strategies in its emphases on:

- a specific task or activity;
- the actors involved; and
- the incentives and disincentives which apply to them in this task.

Earlier organization-oriented approaches focused instead on entire organizations and their general capabilities. The working assumptions of this approach were that organizational goals reflected system goals, individual behavior within organizations was consistent with organizational goals, and success in completing the discreet tasks involved in producing the desired outputs varied in response primarily due to effective internal management. Given these assumptions, when organizational performance lagged, specialists focused on the idea of organizational deficiencies and responded to them with training, increased resource flows, and improved management procedures. The relatively low success such strategies had in engendering increased performance from these organizations is believed here to be because of the tendency of the approach to spread these interventions too broadly, entirely ignore the question of whether or not the individuals actually responsible for adopting new techniques had any real incentive to do so, and ignore the internal and external incentive structures to the organization which applied to the tasks necessary to purchase the desired output. It is hypothesized that the frequency with which reports

on such interventions have found that "the training was good, but unfortunately there is little or no evidence that any change in organizational performance occurred because of it," is directly related to "blurred" interventions (organization rather than task-focused), and to inattention to the incentives/disincentives individuals face in changing their routines and practices or in completing any given task.

Decentralization

Much of the worldwide interest (this is no exaggeration, as any survey of real-world and academic activity in this area makes clear) in decentralization grows from an implicit, ad hoc form of IAD which concerned persons have experienced.

Practitioners, officials, and academics everywhere have been frustrated with the apparent ineffectiveness of highly centralized development strategies and organizations. The litany of problems with centralization bears remarkable similarity throughout the world--from the Philippines to Sri Lanka, from Bangladesh to Ghana, from Kenya to India, from Peru to China, and elsewhere, people in the field have found that centralized structures seem to impede completing several tasks or activities which appear necessary for rural development to get moving. While exact phrasing varies, most come down to these concerns:

- highly centralized planning and management systems lack the ability to flexibly learn from, adapt to, and apply the lessons of the field;

- highly centralized planning and management systems are ineffective in encouraging cross-sectoral coordination of field personnel, and in encouraging them to respond to specific local conditions, needs, and opportunities;

- highly centralized planning and management systems appear unable to stimulate or well-manage locally generated development programs and revenues; and

- highly centralized planning and management systems tend to concentrate wealth, influence, and power among a small elite class.

IAD can help explain why centralized systems seem so regularly to fall afoul of these problems. For example, the well-known tendency of hierarchical organizations to leak information as it goes upward and to require general policies and procedures for managerial needs help explain the lack of ability of such organizations to learn from and respond to the field.

The control of evaluation and promotion of field personnel by sectoral ministries, and the technical focus of their personnel, indicates that field personnel are naturally oriented "upward" in planning and priority setting, rather than outward to other field personnel or local dwellers. Their technical focus impedes cross sectoral learning, programming, and action. The tendency of highly centralized systems to preemptively determine individual programming and project management decisions, in turn, provides local residents with a powerful disincentive to invest time or money in development activities. Finally, human beings everywhere appear to use power to protect their needs and interests. LDC officials seem no different, and centralized bureaucracies, where few if any "checking" organizations exist, are powerful systems to centralize and apportion wealth and opportunity.

This brief "seat-of-the-pants" application of IAD helps to explain exactly why centralized development systems have been found often to be ineffective. This is useful because the same analysis, once disentangled from idiosyncratic conditions and details, can be used to point out what changes in organization, planning, and management need to be made to resolve these perverse incentives and thereby alter this pattern of performance.

As Dennis Rondinelli has well and frequently pointed out, decentralization is a generic concept--exactly <u>how</u>, <u>when</u>, and to <u>what extent</u> should authority and responsibility be redistributed from the center when performance wanes? Answers to these questions are lacking. Or, posing the question in a different way--if there are perverse incentive structures which work to reduce the likelihood that actions conducive to rural development will occur, exactly how can these structures be altered to change this situation? Posed this way the answer is not to decentralize or centralize, but is more refined and contingent upon analysis of specific incentives and disincentives for specific actions.

A review along these lines of the 4 problems cited above using the analytical framework of IAD would lead to several propositions:

- when development activities are dealing with great uncertainty in technology and theory (i.e., what is the nature of a problem and how can it be addressed), multiple, flat organizational arrangements will probably provide fewer disincentives to desirable actions (adaptation, learning, and application) than single, hierarchical systems will provide;

- when local conditions, needs, and preferences vary greatly, multiple, flat organizational arrangements

will probably provide fewer disincentives to local adaptation than single hierarchical systems will provide;

- when local finance, expertise, labor, and general cooperation are necessary for a development activity to succeed, locally accountable organizations will provide more incentives for these activities than hierarchically accountable organizations; and

- when redistribution of wealth and power from a single center is desired, multiple, flat and locally accountable organizations will be more likely to provide disincentives for further concentration than single, hierarchical, and centrally directed systems will provide.

Each proposition is derived from comparing the incentive system necessary to accomplish a given task with the known incentive/disincentive biases of existing organizational designs. They also are derived from the general implications of shifting accountability downward (to local electorates) rather than upward (to a hierarchical bureaucracy). Note that this analysis does not suggest that all activities be decentralized, nor that all be decentralized in the same way. For some activities, local devolution would be appropriate, but for others, delegation, deconcentration, or continued centralization is more appropriate.

This analysis is, of course, a very artificial one, and is for example purposes. In the real world, one would need to inquire about such additional factors as the externalities involved in a given activity, its divisibility from other activities and systems, economies and diseconomies of scale involved, whether or not it is coproductive, and capital and skill requirements involved. However, it is hoped that the example analysis has served 3 purposes to:

- explain why centralization is a problem vis-a-vis certain developmental activities because of the incentive structures associated with it versus the behavior needed to achieve the desired good;

- explain how specific institutional changes can be chosen to alter these incentive structures, increase desired behaviors, and thus, production of desired goods; and

- illustrate how IAD differs from the earlier organizational analysis/institution- building approach in its stress on specific activities and incentives, rather than on building general organizational capabilities (the last being

important but not sufficient to achieve institutionalization of a given activity).

Decentralization in Bangladesh

There are many people working with USAID/Dhaka who have a greater data base on decentralization in Bangladesh than the author was able to gather in two-and-one-half short weeks in Dhaka. Any relative advantages are due only to the fact that the author looks at decentralization from an institutional/analytical perspective. Given that, several preliminary observations may be made:

- reorganization of sectoral officials to upazilla supervision is, in general, a positive step in altering the perverse incentive structures described above;

- it is not clear that a careful assessment of the characteristics of the various activities engaged in by them has occurred--thus, activities which might be expected to operate at greater efficiency and effectiveness and be more easily institutionalized at varying levels are lumped together;

- initiation of a locally elected system of local administration is, in general, a positive step;

- the effectiveness of the local electoral system and national policy initiatives to encourage effectiveness are unclear;

- the choice of activities placed under locally elected authorities does not clearly reflect an analysis of which authorities will flourish in that incentive structure as opposed to the ones which will probably not;

- intergovernmental 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; and

- how the local socioeconomic structure affects the operation of locally accountable administration should be explored--specifically, issues of severe asymmetries in wealth and power, 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.

The decentralization effort in Bangladesh is notable in several respects, specifically with regard to the extent of local authority over sectoral personnel and of local elections. However, important organizational, 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 might be addressed.