Improving the Relevance and Feasibility of Agriculture and Rural Development Operations: How Economic Analyses Can Help

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ABSTRACT

Agriculture can be an engine of growth for rural Asia, but igniting growth that is inclusive of rural areas and people has proven difficult. The lackluster performance of agriculture and rural regions shows in the mixed results by donors, including the Asian Development Bank (ADB). Assessments of economic analysis in ADB’s operations also stress that doing “the right things” to support agriculture and rural development (ARD), done “the right way”, can improve project relevance and feasibility. The paper reviews how ADB has changed the way it addresses rural problems through investment projects, and whether economic analysis has informed design. A macro–meso–micro conceptual framework is proposed to understand how agriculture and rural areas interact with the economy; and to show how use of country growth diagnostics can help structure agriculture and rural development sector problems and identify their causes and binding constraints. Using stakeholder and accountability relationship analysis, the paper considers ways to better understand transformation and transaction costs that help to inform project design. The conceptual and analytical frameworks are intended to help practitioners prioritize sector development needs and content (the right things) and design feasible approaches (the right way). This includes avoiding overly complex project designs in any one project even if a sector plans calls for integrated and multicomponent programs. The paper emphasizes the need for up-front economic sector work as essential to understanding context and government plans, hence project content and design, and as the basis for project economic analysis.
I. INTRODUCTION

Agriculture can be an engine of growth for rural Asia, but igniting growth that is inclusive of rural areas and people has proven difficult (Mellor 1999). Despite rising yield and production, rural living standards and growth rates lag behind urban areas and industrial sectors (ADB 2000, Butzer et al. 2003). Persisting policy biases against agriculture, partly met expectations of incentive-improving policies, and shortfalls in institutional performance and infrastructure investment means much remains to be done to accelerate agricultural and rural development (ERD 20041).

The lackluster performance of agriculture and rural regions shows in the mixed results by donors, including the Asian Development Bank (ADB). An evaluation of ADB’s operations showed that only 40% of agriculture projects were rated as “generally successful”, 48% were “partly successful”, and 12% were “unsuccessful” (OED 1995). In response to this mixed performance, ADB’s support for agriculture and rural development has addressed the lessons learned and has changed its approach in various ways. Various studies suggest that systematic analysis of context and problems, their causes, and prioritizing solutions can help address complex problems and improve the prospects for relevant interventions and impact (Tripp and Wooley 1989, Saldanha and Whittle 1998, Hausman et al. 2004). Assessments of the economic analysis in ADB’s recent operations also stress that doing “the right things” to support agriculture and rural development (ARD), done “the right way”, has the potential to improve relevance and feasibility of projects (ADB 2003 and ERD 2004).

ADB’s guidelines for project analysis are also clear that “project proposals should be derived from the context of broader development objectives” (ADB 1997). At the macro and sector levels, analysis should emphasize how the project relates to broader development and sectoral strategies, the policy environment, the sectoral policy context, and the priority of the project against public investment needs. So, the guidelines provide the basis for an analysis that extends beyond the rate of return. How to go about this in a way that informs design and analysis needs systematic sector and context specific analysis.

This paper begins by reviewing how ADB has changed the way it addresses rural problems through investment projects, and whether economic analysis has informed project design and feasibility. The paper considers a simple conceptual framework on how agriculture and rural areas interact with the economy, and how use of countrywide growth diagnostics can help to more clearly structure problems and their causes and so identify binding constraints. In turn, relevant policy changes and priority investments can be identified. Next, the paper considers how analysis of transformation and transaction costs can help to inform program

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1 The potential for agriculture and rural development as a force of inclusive growth and sustained poverty reduction and remaining constraints are discussed in Bolt (2004).
design using accountability relationship concepts. The analytical frameworks intend to help practitioners prioritize sector development needs and content (the right things) and design feasible approaches (the right way). The paper stresses the need for up-front sector analysis as essential to informing program content and design and is the basis for project economic analysis.

II. ADB’S EXPERIENCE IN ANALYZING AGRICULTURE AND RURAL PROBLEMS AND SOLUTIONS

A. How have ADB-Supported ARD Projects Changed Over Time?

ADB has supported ARD as a core area of its operations. Past support through investments and reforms include infrastructure, farm production, and strengthening support services. A review of ARD projects over the past 30 years also shows evidence of significant shifts in content and approach.

ADB’s projects throughout the 1970s and 1980s included infrastructure projects such as irrigation schemes, roads, rural power, and public markets. Investments in state-owned agro-production and processing facilities were common, as were commodity-specific projects, integrated rural development projects, and support services. Despite the variety of projects, infrastructure to support agricultural production was a focus of investments in the 1970s.

From the 1980s, projects continued to support production at a general farm or commodity-specific level, broad-based rural development, and support services. In response to concerns that investment in public enterprises crowded out the private sector, there was a shift away from investment in state-owned agro-production and processing facilities. Investment projects in the 1980s and 1990s also dealt with economic transformations arising from progressive industrialization, and population pressure on land and water. There was a shift away from new irrigation infrastructure, partly because of the scarcity of land.

Before the 1980s institutional capacity building was largely addressed by training government providers. Delivery was usually concerned with the immediate needs of project implementation, rather than developing institutions. Through the 1990s more focus was provided to resource management, including coastal resources, water, land, forests, and user rights. Such projects represented a shift toward institutional development that expanded through the 1990s.

Operational approaches have also shifted over the past 30 years. Government agencies as direct providers of goods and services were more common in the early 1970s, with government direct management amounting to 80% of the total base costs of ADB investment.

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2 This paper focuses on investment operations. Further discussion and examples of policy issues related to agriculture and rural development can be found in Economic Analysis of Policy Based Operations: Key Dimensions (ADB 2003).
3 See Appendix 3 for the range of support provided to ARD by ADB.
4 This assessment is based on a review of content and approach of 60 projects selected from three time periods covering the last 30 years: 1973–1980, 1981–1990, and 1990 to present (i.e., 20 projects per decade). See Appendix 3 for a list of projects reviewed.
operations. In the 1970s, for example, line agencies were directly involved in providing technology, credit, and extension, and governments were often involved in marketing and agribusiness processing. Services managed by a centralized bureaucracy that copy organizational form and structure in a one-size-fits-all approach were the norm. Development approaches largely addressed supply-side issues, which although relevant for commodities may misread the market for higher value and niche products.

But evaluations of completed projects from this period show that government-driven approaches to projects compromised sustainability, due to lack of relevance of solutions to local problems, lack of ownership by local governments and communities, and lack of incentives to keep project costs low (OED 1995).

The shift toward participatory and community-oriented approaches, so-called “bottom-up” approaches, started in the mid-1980s. Through the 1990s, ADB expanded support for projects focusing on institutions, such as community development and mobilization. Projects started to include local service development, community-driven development, and capacity building using participatory approaches. In a departure from the 1970s, some projects from the 1990s onwards also do not predefine the scope of investment. These represent new operational approaches, such as facilities that finance small-scale livelihood improvements, or microfinance to help start borrower-selected enterprises.

Despite critiques of the complexity of integrated rural development projects of the 1970s (Ruttan 1975), it appears that such projects continue under the guise of the new wave of livelihood and community development projects, especially where all cross-cutting issues, even though important, and perhaps relevant to an overall sector plan, must all be seen to be explicitly included in projects. Such approaches make it more difficult to design feasible, implementable projects, which may address the right things, but not always the right way.

Whether the shifts have emerged from analyses to a specific operation, or whether solutions are merely following trends is hard to determine. For example, community-driven development is more responsive to local needs, but how these needs are reconciled with government plans and systems is not always clear. Recent evaluations of participatory approaches suggest that even new participatory and bottom-up approaches do not always address some of the old problems (ADB 2004c).

Despite such added complexities and uncertainties, optimism often shows up in ex ante project economic, specifically internal rate of return, analyses. Where this is the case the question arises as to whether the economic analysis helped the project design, or is the analysis an oversimplification of the real situation. Conversely, it begs the question as to whether economic analysis and project design addressed the demand side of the equation, or was it assumed “the market will clear”?

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5 Process-type investment projects involving community-driven development where the beneficiaries identify, plan, and often implement small investment that might be known in form and type ahead of time, but final choices and quantities are decided by project participants and stakeholders during implementation.
B. Has Economic Analysis Informed Project Design and Feasibility?

Cost–benefit analyses of proposed projects often report “robust” economic returns, but analyses of completed projects show much lower rates of return. Rates of return of postevaluated projects between 1990 and 1994 were lower in 74% of projects. During the same period, 20% of projects were rated as highly successful or successful, 19% generally successful, 35% partly successful, and 25% unsuccessful. For partly successful and unsuccessful projects, the assumptions underlying the prospective analyses were not realistic, resulting in either higher costs or lower benefits in the actual project.

The differences in ex ante and ex post results raise significant questions in the role of, at least, economic analysis in project design and feasibility: what is the purpose of economic analysis in ADB’s ARD projects, has it helped inform design and feasibility, and if not, how can it better inform design? A clue to answering this question is to look at how economic analysis is used in loan documents. Reviews of recent RRPs show that the economic analysis of projects focuses on cost-benefit analysis, especially the rate of return, and overlook broader sector issues and context (ERD 2002 and ADB 2003). This narrow focus does not provide useful information especially when the cost-benefit analysis is not supported with discussion of the assumptions on which it is based, especially how products reach markets and whether markets demand the products supplied.

An example of questionable analysis is using indicative farm models to estimate the financial and economic rates of return, which are then multiplied up to give a projectwide rate of return. Among the many problems with this approach is whether models show realistic costs to a diverse group of farmers. For example, can a single model represent costs, returns, and risks that farmers at different levels of commercialization and rural enterprises may face? A further question is whether newly commercializing farmers know how and can respond to markets. Such concerns may be discussed in the sector analysis, but the way they are used in the economic evaluation is not always clear.

In projects covering many sectors and components, such as process-type livelihood and rural development projects that offer a menu of options to beneficiaries, the chances of overlooking an important externality are high, especially if the project’s context is not well understood. It is common that assumptions are borrowed from previous projects without assessing if they are relevant, casting doubt on how well the analysis represents the sector’s and producers’ circumstances. When institutional capacity and support service distribution and access are unclear, or if farmers’ ability and incentives to respond are not really known, a single indicative farm model cannot be expected to realistically predict farm performance.

Qualitative descriptions used for justifying process and institutional development projects may practically have to be relied upon but are also of limited use for predicting the magnitude of outcomes. A qualitative description of an institution’s functions may not allow an informed comparison of public and private efficiency, and may overestimate the administrative and technical capacity. Qualitative assessments need to be backed up with analysis on how the input delivery and output transformation process will work. This includes use of at least descriptive, monitorable statistics on key performance indicators to facilitate comparison of delivery mechanisms during implementation.
Irrespective of whether a rate of return can or cannot be calculated, a key consideration in appraising any project is the fiscal impact. ADB has financed projects such as rural roads, rural power, agricultural research, and extension services, which have the characteristics of public goods that do not generate revenue or are partly revenue-generating. Concern over the fiscal impact of projects was one of several reasons for giving more attention to public expenditure reviews as a prerequisite to the appraisal and financing of projects (others included allocative and operational efficiency). Issues such as the impact on the fiscal position of recipient governments are recognized in ADB as needed for a project's financial and economic evaluation, but reviews of projects find that such analyses are usually not included (ADB 2003).

The usefulness of the project economic analysis depends on having credible information on supply chains and demand, cost and benefit streams arising from problems that raise costs and lower revenues and, conversely, solutions that cut costs and raise revenues to the main stakeholders including beneficiaries and governments. To get good information, a project's economic appraisal must be preceded by analysis of sector and subsector issues, the stakeholders and regions to be targeted, how they interact with the broader economy, and constraints to efficient input–output transformations and market transactions. When such information and analysis is available, opportunities to improve the situation can be identified and their feasibility better assessed.

III. SECTOR PROBLEM DIAGNOSIS TO INFORM OPERATIONAL DESIGN

The discussion so far points to a need for improving analysis of economic context, key problems, and their causes, as the basis for explaining how solutions are expected to work and for whom, even if an economic rate of return that reflects the complexities of projects figure cannot be practically computed. Emphasis on the sector analysis is key to addressing such concerns. Such analysis does not have to be based on original primary data and in fact should use secondary data to the extent possible to reduce research costs. But the analyst needs to be sure existing studies and results are, if necessary, reorganized to help understand the problems that need to be adressed.

The importance of up-front sector analysis is not new and has been stressed by enduring works on economic analysis of agriculture projects (Gittinger 1984 and wider assessments of the role of rate of return analysis in projects (Devarajan et al. 1997). Such works indicate that sector analysis is the basis to informing the “without-project” situation. The analysis of “with-project” solutions must then show how and why it will solve identified problems. In this way sector analysis provides the basis for informing current development problems and needs, and guides design and the feasibility analysis. This section revisits the calls for sector diagnostics to inform project design and feasibility using a macro–meso–micro perspective, in essence how rural areas and people link to the economy, in conjunction with the principles of growth and problem diagnostics to help identify the right things to do, and a transaction costs perspective in conjunction with analysis of accountability relationships to identify the right way to do them.
A. A Conceptual Framework

Practitioners are familiar with the many issues that face rural people—from the physical to the socioeconomic environment that shape their behavior and response. So initially, the analysis needs to picture the broader environment and systems in which producers and consumers operate.

Figure 1 presents a conceptual framework linking rural households as producers to rural and nonrural consumers and the economy. Macro factors such as interest rates, exchange rates, and trade policy fundamentally influence micro agents that feedback to reflect their aggregate performance. Meso factors, such as infrastructure, institutions, and incentives, are the means by which agriculture and rural regions interact with the economy, both in a facilitative and constraining way. Macro and meso factors, including markets, condition the response of micro agents embedded in the system, such as farm and nonfarm rural enterprises and rural households as consumers.

A country's geography—its natural resource endowments such as land and water resources, and physical features including climate and geographic location relative to markets—determines its production potential. Physical factors can be better managed for better
sustainability and productivity using technology, but the basic resource stock is finite. Investments can expand producers' physical resource stock and productivity. But many macro- and meso-level issues are beyond the physical constraints facing rural producers and so are also beyond technocratic solutions.

Macro influences and policies can fundamentally influence aggregate food price levels and subsidies to agriculture that, in turn, affect farm incomes. Trade policies, for example, are central to determining border prices, improving market access and structure. Fiscal policy and sector spending choices are also important to spending for support services. Similarly, changes in agricultural output prices relative to nonagricultural prices change the terms of trade for agriculture. Such changes in macro level conditions and policy feed through the meso level to influence household and enterprise behavior and response.

Key meso level channels and factors that further influence household and enterprise response include incentives, institutions, and infrastructure. Incentives include prices, transaction costs, profits, wages, and risks such as information asymmetries, unclear property rights, and corruption. Institutions set the "rules of the game", and include public and private organizations, and formal arrangements that influence the enabling environment. Institutions also include informal customs, norms, and behavior. The existence, access to, and efficiency of institutions that handle property rights affect the cost to producers of securing land rights. Similarly, the cost of finance is influenced by access to formal and informal financial institutions and their efficiency. Access to information and services also affects the ability to access market opportunities at reasonable cost and so affects the ability of producers to respond, innovate, and diversify. Infrastructure includes roads, railways, waterways, electricity, and telecommunications and other information technology helping to overcome geographical isolation from markets and information exchange. Input-related public infrastructure includes irrigation and pumping works. As discussed below, though, the effects of incentives, institutions, and infrastructure are not always distinct and relationships can become blurred.

Given the external macro and meso environment out of their control, and the resources under their control and internal to the enterprise, producers decide on what and how to produce. Outputs from farm production are then either consumed on-farm or sold off-farm, again relying on meso-level factors to reach markets. The aggregate micro response influences the macro economy. Each of the influences depicted in Figure 1 will affect sector growth. The question is, which problems are most important, that is, which ones define the binding constraint, the core problem that unless removed will not allow resources and production to move toward their potential, and how can we practically identify them? The analytical challenge is to specify problems, identify which ones matter, understand their causes, and identify what can be done to feasibly solve them.

B. Identifying Binding Constraints to Determine Relevant Solutions

An approach to problem identification is already established in ADB as part of the Project Performance Management System. Use of the macro–meso–micro conceptual framework

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6 See Saldhana et al. (1998).
outlined in Figure 1 is consistent with the problem tree approach. Strengthening the link between the logic of the macro–meso–micro framework and problem-solving diagnostics starts with a clear problem–cause diagnostic process.

The problem analysis can be structured in a way that focuses on key problems, helps identify the binding constraints, and provides the basis for a solution that gets the biggest bang for the buck (Hausman et al. 2004). Figure 2 lays out the key problems and probable causes in problem trees from an ARD perspective. Following the approach of Figure 2 will improve problem tree analysis.

1. **Identify Problems**

The starting point is to identify the problems facing rural producers and consumers at the micro level in the center of Figure 1. Relevant to a rural setting, DFID (2005) refers to this as a poverty and livelihood strategy analysis, which aims to understand livelihood strategies of the rural poor.

Understanding meso-level factors including incentives, institutions, and infrastructure will help explain rural production and consumption decisions and related markets. To analyze the meso level factors that affect markets, OED (2005) adapts the DFID livelihoods framework to identify which factors enable or constrain access to assets and access to markets, institutions, and services as instrumental to the transforming and transacting process. The framework suggests, first, a focus on markets and how their coordination and exchange systems affect livelihoods. The broad macro context in which micro and meso factors are embedded also needs to be analyzed to identify specific macro problems that explain meso and micro level outcomes.

To further simplify the problem identification step, Hausman et al. (2004) identify key causes of lower growth: low returns to investment; low private appropriability of the returns generated; and low access to finance. As shown in Figure 2 most meso and macro problems can be categorized under these three problems.

Figure 2 shows sources of information and analytical tools on agriculture and rural regions that help to identify problems. Only well-defined problems with clear symptoms and supporting evidence should be considered for subsequent steps. Unclear problems need further investigation and evaluation. Analyses at each level identify problems and symptoms.

2. **Rank Problems**

Problems should be prioritized. This helps avoid taking on too many problems in one operation and provides focus to further analysis. Prioritization criteria should be clear. Examples include numbers of people affected; the commodity's importance to the country and farmers

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7 In their formal treatment, Hausman et al. (2004) identified the following root cause of low country growth: micro risks (corruption and crime); macro risks (financial or fiscal crisis); lack of research and development and too little “self-discovery”; externalities, spillovers, coordination failures; high tax rates or inefficient tax structure; insufficient infrastructure, high transport, telecommunications or shipping costs; too little banking competition, high spreads; high country risk; and unattractive conditions for foreign direct investment.
Figure 2
Agriculture and Rural Development Problem Tree

Farm, nonfarm productivity, incomes, employment, and growth depend on private returns and costs

Low returns, ability to appropriate returns

High cost of finance

Poor incentives

Weak institutions

Insufficient infrastructure

Poor rural finance

Bad national finance

- High tax rates
- Distorted markets
- Labor market rigidities
- Distorted service provider incentives
- Corruption, other micro risks
- Macro risks

- Missing markets
- Poor property rights, contracts
- Low service coverage, quality
- Weak accountability relationships

- Lack of connectivity infrastructure
- High transport, power, telecoms, shipping costs

- Lack of formal familiarity with agriculture among financial institutions
- Low outreach, lack of access to financial institutions
- High informal sector interest rates

- High perceived sector risk by formal banks
- Unattractive investment conditions

- Price policy, enterprise profit/loss analyses
- Labor market analysis
- Transaction cost assessments
- Investment climate indicators

- Value chain analyses
- Sector expenditure reviews
- Institutional and fiduciary assessments
- Service user satisfaction
- Investment climate indicators

- Transport cost, system assessments
- Rural power system assessments
- Irrigation network, organization assessments
- Investment climate indicators

- Costs of borrowing
- Costs of lending
- Rural investment climate indicators

- Interest rates
- Overall investment climate indicators
for food, sales, or export purposes; the severity of the problem such as impact on incomes; and the frequency of the problem. Problems also need to be understood from different stakeholder perspectives. Problems and priorities may be similar at the policymaking and community level despite the different perspectives. Then the exercise is one of regrouping problems and finding common ground for priorities of government and policymakers’ interests and local communities’ interests.

Whatever the criteria used for prioritizing, the reason for selecting a few problems to address should be explained. This should also consider that context and situation is dynamic, meaning that priorities can change. The order in which problems should be addressed often matters, also requiring explanation.

3. Identify and Analyze Relationships between Problems and Causes

The next step is to identify the causes of highly ranked problems. The problem tree helps to organize key factors that affect productivity, incomes, and growth, providing a framework for analyzing relationships between problems and causes. The problem tree’s taxonomy helps in several ways. First, it ensures that the macro–meso–micro factors and their interactions are considered. Second, it provides focus to macro and meso factors that cause low returns, low ability to appropriate returns, and high cost of finance. Third, by identifying the highly ranked problems the problem tree helps analysts to focus on underlying causes of problems. Grouping problems helps to avoid “runaway” or unfocused problem trees and diluting analytical resources.

Box 1 provides an example of a private appropriability problem faced by tenant farmers in Punjab province in Pakistan. Although previous projects tried to improve productivity by technocratic means, the Sindh Rural Development Project recognized a need to first address low appropriability arising from prevailing institutional arrangements. This is a good example of how institutional and incentive issues are intertwined.

<table>
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<th>Box 1</th>
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<td><strong>LOW PRIVATE APPROPRIABILITY FOR SINDH TENANT FARMERS</strong></td>
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Analysis in the Sindh Rural Development Project initially focused on a sectorwide problem, namely the disincentive of current tenancy arrangements in the Sindh. By modifying the Sindh Tenancy Act, the cost sharing of inputs between landowners and tenants would be more fairly distributed. Without removing the key constraint of tenancy laws that favored landowners, investments such as improved agricultural technology and rural roads would not reach their potential. Lower costs for tenants are expected to increase adoption of improved technology and increased yields and revenues are expected to offset the additional cost burden to landowners. These assumptions were subsequently built into the cost benefit and distribution analysis.

4. Identify the Binding Constraint

A key outcome of the analysis of relationships between problem and causes should be to identify the core problem, i.e., the problem that is best tackled before other issues can be addressed, again the binding constraint. The problem tree and problem taxonomy provides
the basis for identifying the most important issues. For example, if low returns to investment are a problem is it because of the poor maintenance of physical infrastructure such as irrigation canals, limited access to technology, or high cost of reaching markets? Where infrastructure is reasonable but appropriability is poor, is it because of high taxes, poor enforceability of contracts, or unfamiliarity with market transactions? Where access to finance is limited or costly is it because providers are unfamiliar with lending to the sector or region, high cost of loan administration, or high cost of capital? Moving through the branches of the tree will help to focus on the most important problems.

To exemplify this, Box 2 describes a project that addresses falling incentives to producing sugar in Fiji by helping farm families shift to other livelihoods. Such a big change seemingly requires several constraints to be addressed at once. To some extent, incentive, institutional, and infrastructure constraints may indeed be significant and may need to be removed through reforms and investments.

**Box 2**

**Falling Price Incentives for Fiji Sugar**

In the Fiji Alternative Livelihoods Project the sector analysis began with an assessment of current sugar production and its prospects for the industry and employment should price incentives change in the event of expiration of EU preferential trade arrangements. Analysis of domestic and export markets followed to assess alternatives to sugar production, including an analysis of alternative commodity and product prospects, market structure, marketing channels, and related infrastructure. Other institutional issues analyzed included alternative government and nongovernment support services and market institutional arrangements needed to provide better access to markets, services, and employment. Here, the binding constraint identified was a potential change in the sugar price, which in turn required facilitating restructuring the agriculture sector including access to alternative livelihoods, markets, and strengthened support services.

Even if a range of problems and the need for a comprehensive and integrated sector plan is called for, this does not necessarily justify a similar approach in a project. Providing an apparently comprehensive package of project assistance that is beyond the capacity of governments to carry out is likely to lead to poor results. Similarly, when components are too loosely defined and their interactions not well described, project completion and post evaluations usually show lower returns, even though prospective rates of return were high. Such wholesale approaches to ARD may be appealing in their comprehensive coverage of problems, but can be difficult to implement and become part of the problem.

In such cases, careful sequencing of project components is needed that tackles the critical issues first, and then provides a sound foundation for subsequent steps. The analysis needs to identify which problem must be tackled first. For example, is infrastructure such as roads and ports needed first, or should farmers first learn how to produce alternative crops through improved extension services? Lack of physical access to markets at reasonable cost is often a binding constraint and helps to explain why roads, railways, and shipping are the first major development in “pioneer” or isolated areas.
5. Identify Solutions

The solution step follows the problem, and cause-effect analyses. Economic analysis is useful in the solution step. The key is to target the policy response and related investment needs closely to the source of the problem such as a market failure, institutional failure, or distortion. For problems that are clear and whose causes are supported with enough evidence, alternative solutions can be identified.

Again, first-best logic may not always be effective. For example, rapid removal of state market systems without an alternative can land governments in trouble because of the sudden removal of a major revenue source. A focus on constraints with few known adverse interactions helps to improve strategic choices and increases the chance of addressing key constraints. This approach also has the advantage of avoiding policy dogma without first considering the implications of a policy shift.

This thinking also applies to projects, which are also subject to the principle of second-best. That is, there is no assurance a single project will improve welfare, and welfare may not improve in the target area because of countervailing influences such as lack of complementary services, infrastructure, or policy distortions. Third, a large investment in one area and on one intervention, such as a large dam or irrigation scheme, can still underperform because of countervailing interactions external to the project. Thus making strategic choices may be easier said than done, especially if the influences on and by a project are unknown.

Even so, identifying interactions that affect welfare helps to avoid the potential contradictions and inefficiencies of “anything goes” and “wish list” approaches. Recognizing how the project complements other activities will help consider external effects and “internalize” them. But again, this does not justify a “spray-gun” approach and capacity to address complementary or multiple solutions must be considered: what is the right thing to do first, what follows, and how?

Identifying alternative solutions provides the basis for preappraising alternatives and identifying a possible role for ADB. Identifying solutions needs to consider more than content. It also needs to consider alternative approaches to transforming inputs to outputs, and identifying the alternative design that provides the greatest impact on welfare.

The problem–cause–solution analysis is also best applied using a step-by-step process that starts with country and sector analysis followed by project preparation and analysis to ensure that the project targets the right things. Appendix 1 outlines the key steps in a problem-solving analysis as applied to ADB’s economic and sector work and project preparation.

C. Identifying Feasible Approaches to Project Interventions

However, even if we identify the binding constraint, this in itself is not a guarantee for a successful solution. Tackling the binding constraint the right way, or feasibly, is also needed to achieve the intended outcome. Key considerations here are finding a way to tackle the constraint in a way that keeps the costs of producing and delivering goods and services to users as low as is technically possible, avoids coordination failures, and meets user demands.

1. **Transformation and Transaction Costs and Implications for Program Design**

   A feature of Figure 1 is that the interactions that occur between the macro–meso–micro levels condition the flow of goods and services, both private and public. For example, influences such as prices, rules of the game, and infrastructure affect the flow of resources to producers. Other conditioning influences then affect the way outputs flow to processors and consumers. In a private sector context and from a cost of doing business viewpoint, DFID (2005) explains that transformation costs are a key component of production, but that coordination problems, opportunism, and rent-seeking behavior also represent significant costs and risks.8

   The same transformation and transaction costs and risks can emerge in public programs that produce, facilitate, or regulate goods and services. As described in Section II, the shift in implementation arrangements from government to nongovernment channels suggests that alternative approaches are being taken, and so such transformation and transaction costs are being factored into programs.

   Coordination problems, opportunism, and rent-seeking are reasons why beneficiaries may not realize improved access and quality of services, the cause of which is often institutions-and incentives-related. Where poor services contribute to low returns, the problem with services should be analyzed and their causes found as the basis for improving supply and provision.

   The WDR 2004 reports that weak accountability relationships between actors (stakeholders) in service provision are a key cause of poor service (World Bank 2004). In contrast, good service is characterized by a frontline provider with access to resources, the capacity to provide the service, and the incentive to satisfy users. A centralized, supply-driven solution approach, even if it is the right priority and has relevant content, is not always a feasible approach.

   The reason that supply-driven approaches are often not feasible is similar to the reason suppliers in a private market who do not meet buyer requirements will later lose dissatisfied customers. Where services are highly centralized, information is usually controlled internally and flows upward, government dominates decision making, and the service providers feel accountable to their public paymasters. Government (as principal) and providers may be satisfied that a service is being delivered, but do not always consider whether beneficiaries are satisfied with services.

   Improving service provision accountability relationships become a way of improving incentives of governments and providers to respond to users.

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8 DFID (2005) describes transaction costs (coordination, opportunism, rent seeking) that affect goods and services markets are important where there are only a few players, markets are thin at critical stages of the supply chain, price and production risks are high due to production costs and large investment costs relative to income, and quality standards are important.
(1) Stakeholders and Accountability Relationships

To help analyze accountability relationships and provider incentives, WDR 2004 provides a useful framework. The framework represents the accountability relationships between the key stakeholders in service delivery and use, which helps to identify problems and causes in the service delivery chain, again which can be thought of as similar to the supply chain in agricultural markets. The key stakeholders in the chain are governments, industry associations and organizations, businesses, and individuals. Government is comprised of policymakers/politicians who set goals and strategies, and assign public resources to influence agents, individual households, and enterprises to meet these goals. Organizations, such as public line agencies, industry bodies, and contracted “frontline” providers including NGOs and private providers are proxy principals to households and enterprises. Households and enterprises—the users and intended beneficiaries of services—are citizens, clients, and agents.

The accountability relationship between stakeholders involves five features: delegation, finance, performance, information about performance, and enforceability. For example, farmers pay for water provided by an organization (delegation). The farmers form an opinion (information) about the provider based on the quality of the water supply (performance). If they are satisfied with the service, they may choose to pay the next installment of fees; if not, in the next water users’ meeting they may propose that the provider be replaced (enforceability).

The significance of the stakeholders and the five features of accountability is that they must all operate well for agents (users) to be satisfied with services; and for principals, through providers, to influence agents to meet policy and program goals. For example, while policymakers and politicians are responsible for setting goals and allocating resources to meet those goals, service clients as citizens can change their representatives who fail to perform. This requires that clients/citizens know about performance and enforceability mechanisms.

The relationship between policymakers and organizations and frontline providers can be considered a compact, where the state provides resources to line agencies and on to frontline service providers. Organizations and frontline providers are accountable to the state that collects information on performance and can enforce standards. Similarly, organizations such as line agencies manage frontline providers through management mechanisms. From citizens to politicians/policymakers is a long route of accountability. A shorter route is between citizens/clients (service users) and the provider, which can provide immediate feedback on service needs and satisfaction, providing client power.

Taking an example, will funding irrigation rehabilitation, operation, and maintenance yield the desired outcome of improved and sustained yields? Box 3 illustrates the issues that had to be addressed in Cambodian irrigation service institutions. Here, whether technically optimal yields and a “robust” rate of return will be realized depends on key institutional factors. The sector analysis and problem diagnosis was key to assessing prevailing implementation arrangements and alternative solutions. Analyzing accountability relationships between government, providers, and users/clients can help to improve provider incentives, input/output transformation, and so project feasibility and effectiveness.
The principal–agent problem is the problem of mechanism design and incomplete information, where an agent, such as a local government, acting on behalf of a principal, such as a central government department or donor, does not report crucial information to inform performance and decisions, and visa-versa, the principal does not provide useful information to help the agent improve performance and decisions. Keeping certain information provides one party or the other with greater control over a decision and/or a resource. In this context, participatory approaches are intended to overcome information asymmetries, but a key question is whether they overcome the conflicts over control.

**Section III**

**Sector Problem Diagnosis to Inform Operational Design**

**Box 3**

**Strengthening Irrigation Services for Cambodian Farmers**

Capacity of central and provincial government to provide support for O&M to irrigation farmers in Cambodia, even at the primary and secondary level, requires strengthening participatory approaches at the local level. The Cambodia Community Irrigation Sector Project aims to strengthen nongovernment service providers to help establish WUAs given government’s limited ability to do so, and arrangements for establishing provincial- and commune-level funds for O&M of primary and secondary works. In this way the project had to focus on alternative, local service provider/user mechanisms to address government failures.

**(II) Challenges in Improving Accountability Relationships**

But improving accountability relationships involves addressing the principal–agent problem and can be difficult for several reasons. Setting up strong accountability relationships requires addressing conflicts between collective and private objectives. This is a key challenge behind merging bottom-up planning with wider strategic and top-down planning. For example, some clients may have more power because of wealth and influence, and so services may not be fairly distributed. Similarly, interests of individuals or villages may not be in the collective interests of a wider area because of negative externalities, such as irrigation development that may create downstream water shortages in other communities. Nevertheless, comparing alternative means of services provision can help to identify improved arrangements. Box 4 provides an example of how weak government provision led to increased use of nongovernment service provision for Bangladesh’s livestock producers, which are key to improving the economic performance of the project.

**Box 4**

**Selecting Alternative Service Providers for Bangladesh Livestock Farmers**

On the surface the Bangladesh Participatory Livestock Development provides a greater range of production packages to livestock farmers through support services and credit and improving marketing facilities, and the economic impact focused on rate of return analysis of small technical packages to be offered to commercial producers to credit, services, and markets. But production potential was not being reached because of weak support services. So the key economic analysis issue was a relative assessment of government services and alternative service providers, and selection of service providers and infrastructure that can fulfill the potential of calculated rates of return, in other words how to make the identified enterprise viable.

When services are provided free or at nominal charges, the voice and power of users to influence or control providers decreases. Applying market principles to public services is a way of improving the incentives of service providers to respond to users, and giving users enforcement power (World Bank 2004).

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9 The principal–agent problem is the problem of mechanism design and incomplete information, where an agent, such as a local government, acting on behalf of a principal, such as a central government department or donor, does not report crucial information to inform performance and decisions, and visa-versa, the principal does not provide useful information to help the agent improve performance and decisions. Keeping certain information provides one party or the other with greater control over a decision and/or a resource. In this context, participatory approaches are intended to overcome information asymmetries, but a key question is whether they overcome the conflicts over control.
(iii) **Look for the Short Route**

In assessing alternative approaches to service provision, a key consideration is that they shorten the route between the user/client and providers. This concept, depicted in Figure 3, was applied in the World Bank’s 2004 to 2007 Country Assistance Strategy for Indonesia, showing how local service provision can reduce the accountability path length and enhance delegation, finances, performance, information flows, and enforceability (World Bank 2004). Section II described how alternatives to central government provision include more local government provision, contracted nongovernment organizations, contracted private providers, community-based organizations, and in a few cases a move to market-based provision. Such alternative approaches are a response to institutional failures or underperformance in meeting local needs. Building analysis of accountability relationships into problem-solution diagnostics will further improve design of implementation arrangements.

2. **Implications for Design and Analysis of ARD Projects and a Caution**

   ![Figure 3: Actors, Accountability Relationships, and Routes](image)

   **(i) Information Sources**

   The conceptual basis of finding “the short route” in accountability relationships to raise the incentives of providers to respond to users is sound. Applying the concepts to inform design and provide information appraisal requires a range of analyses based on sector work. Basic information includes identifying public agency roles, functions, capacity, and budget to support service delivery, and identifying nongovernment alternatives. To assess the effectiveness of existing arrangements, analyses can be found in public expenditure reviews, institutional analyses and capacity assessments, and studies of service benefit incidence.
(II) Identify Project Actors

Such information identifies the policymakers and central government agencies, and so the likely executing agency, the right implementing agency, and who is best placed to be an effective frontline provider. This provides the basis for designing the project organization and accountability mechanisms. A complex organization chart with several intermediaries and top heavy decision-making arrangement is a signal that the input/output transformation is likely to be inefficient, and may be subject to leakages where there is poor governance or elite capture.

(iii) Implementation Arrangements and Institutional Consistency

Projects that dramatically change the way inputs are delivered need to be appraised for their consistency with existing arrangements and capacity. A change from direct government implementation to facilitation, or through decentralized service provision will need appraisal of the willingness and capacity of government and nongovernment support agencies, and the capacity and systems for local governments and communities to plan and implement small projects. Specific capacity building components are often needed to prepare communities and supporting agencies. Sustainability assessment should focus on whether a community-based approach is consistent with government policy and structure, funds flow mechanisms and information flows, and human resource and recurrent funding capacity. Box 5 provides an example of such issues faced in participatory irrigation on Indonesia.

<table>
<thead>
<tr>
<th>Box 5</th>
<th>Bringing Services Closer to Indonesian Irrigators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insufficient funding for irrigation O&amp;M and dissatisfied farmers paying user fees led to a series of policy changes that paved the way for control of funds collected by water use associations (WUAs) and decentralized service provision. Combined with a rapid centralizing government the Indonesia Participatory Irrigation Sector Project had to look at the capacity of newly decentralized local governments to support irrigation services, make arrangements for building capacity of WUAs and identify mechanisms for NGOs and private contractors to be vetted and hired by LGUs and WUA, including identifying the appropriate role of local government units given past tendency for direct government involvement in contracting.</td>
<td></td>
</tr>
</tbody>
</table>

(iv) A Caution

Despite the potential advantages of short route approaches and the establishment of the “community stake”, the effectiveness of community-driven development has yet to be established. Mansuri and Rao (2004) reviewed the World Bank’s portfolio of community-based projects, finding that such projects have improved community infrastructure, but the use of community participation in projects do not always target the poor, especially where there is project “capture” by elites. They also found that project quality tends to be worse in unequal communities. On the other hand domination by benevolent elites can have the opposite effect and improve the project dynamic, especially where they assume the role of a community champion. Also, locally planned and managed projects imply a de facto decentralized approach that may or may not be consistent with prevailing government policies and structures.
Bottom-up, short-route decentralized, and community-oriented approaches provide an alternative to overcoming top-down or simply underperforming public service institutions, but still present major challenges. The challenges include identifying feasible ways of improving “upward commitment” such as confidence by communities that submitting village development proposals is worthwhile and likely to be responded to. Similarly, “downward accountability” is needed by community leaders who are answerable to beneficiaries and not only to supervising bureaucrats, politicians, and policymakers. Poorly trained and inexperienced facilitators lower effectiveness and the ability to “upscale.” Mansuri and Rao (2004) also point out that a naïve application of concepts leads to poor design and implementation. For projects that develop services, it is important to understand the enabling environment, including the structure of service provision, stakeholders involved, and their accountability relationships.

IV. IMPLICATIONS FOR SECTOR AND OPERATIONS ANALYSIS

The rural problem is one of low productivity, low incomes, and underemployment. These basic features apply to rural areas in all developing Asian and Pacific economies. But the causes of problems vary dramatically and can be complex. Even if sector development plans call for integrated and internally consistent approaches, tackling complex problems with first-best and one-size-fits-all solutions at one extreme, and multicomponent solutions with internal inconsistencies at the other is unlikely to generate relevant or feasible operations. One way of improving the effectiveness of projects is to give sufficient up-front attention to identifying and diagnosing problems as the basis for solution relevance and feasibility.

Recent research on country growth diagnostics recommends that a successful growth strategy focuses on the most binding constraint (Rodrik 2004). This approach calls for understanding the causes of low returns to economic activity, low private appropriability, and high cost of finance. The approach helps as a way of organizing problems, their causes, and effects. This paper supports the view that causes can be grouped around weak incentives, poor institutions, lack of innovation, poor rural finance, and bad national finance. A step-by-step diagnostic process is needed that starts with identifying problems in how rural producers link to markets, analyzing their causes, and identifying which problem is most binding. In this way the context of problems is considered and prejudgment of a policy stance or investment need is avoided. Only after the problem and its context is understood, including the demand side of the equation, should solutions be considered, providing the basis for appraising alternative solutions through cost-benefit analysis. The analytical and monitoring process provides the basis for focused operational designs. And a reminder—one operation does not have to reflect all sector issues and all elements of a sector plan.

Analyzing interactions between government and its organizations, service providers, and service users helps identify feasible approaches to transforming inputs to outputs, and helps to inform the design of project implementation arrangements. Such an analysis also improves ex ante cost-benefit analysis, especially for the new wave of “process-type” community-driven, multimenu, and capacity building operations with more uncertain outcomes.

The need for improved sector diagnostics leading to more relevant and feasible solutions is only the beginning of the operations cycle. Monitoring and evaluation (M&E) of response
and outcomes during implementation is also needed to further improve beneficiary response to solutions. Monitoring extends beyond surveillance for reporting purposes, and stresses the design and use of M&E systems as an internal project activity involving diagnostic studies and iterative field research to help project managers and stakeholders inform decision making and fine-tune design during implementation (Casley and Kumar 1987). The fine-tuning and management of process-type projects becomes an iterative process of detailed observation, data collection, and empirical testing, usually using statistical reasoning (Udry 2003). Used in these ways, M&E plays an important role in updating understanding of problems and helps improve institutional capacity.
APPENDIX 1
PROBLEM–SOLUTION ANALYSIS PROCESS AS APPLIED TO ADB’S OPERATIONS CYCLE

<table>
<thead>
<tr>
<th>Problem-solving Process</th>
<th>Sector-level Analysis</th>
<th>Project-level Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify problems</td>
<td>Describe sector</td>
<td>Validate problems and</td>
</tr>
<tr>
<td>Initial ranking of</td>
<td>Identify causes;</td>
<td>ranking from ESW</td>
</tr>
<tr>
<td>problems</td>
<td>analyze relationships</td>
<td></td>
</tr>
<tr>
<td></td>
<td>between problems and</td>
<td></td>
</tr>
<tr>
<td>Identify causes;</td>
<td></td>
<td>Validate causes and</td>
</tr>
<tr>
<td>analyze relationships</td>
<td></td>
<td>analyze relationships</td>
</tr>
<tr>
<td>between problems and</td>
<td></td>
<td>between specified</td>
</tr>
<tr>
<td>causes</td>
<td></td>
<td>problems and causes</td>
</tr>
<tr>
<td>Identify binding</td>
<td>Identify binding</td>
<td>Validate binding</td>
</tr>
<tr>
<td>constraint</td>
<td>constraint</td>
<td>constraint and establish</td>
</tr>
<tr>
<td></td>
<td>Preappraise alternative</td>
<td>project rationale</td>
</tr>
<tr>
<td>Identify solution</td>
<td>Preliminary</td>
<td>Select most feasible</td>
</tr>
<tr>
<td>alternatives</td>
<td>identification of</td>
<td>solution</td>
</tr>
<tr>
<td></td>
<td>alternative solutions,</td>
<td></td>
</tr>
<tr>
<td>Evaluate alternative</td>
<td>intervention concepts</td>
<td></td>
</tr>
<tr>
<td>solutions and select</td>
<td></td>
<td></td>
</tr>
<tr>
<td>most feasible solution</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Evaluate alternative</td>
<td></td>
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<td></td>
<td>solutions and select</td>
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<td></td>
<td>most feasible solution</td>
<td></td>
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<tr>
<td></td>
<td>Select most feasible</td>
<td></td>
</tr>
<tr>
<td></td>
<td>solution</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Detailed design of</td>
<td></td>
</tr>
<tr>
<td></td>
<td>project</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Final project appraisal</td>
<td></td>
</tr>
</tbody>
</table>
### ADB-supported Agriculture and Rural Development Project Types

<table>
<thead>
<tr>
<th>Type of Project or Project Component</th>
<th>Type of Project Input</th>
<th>Type of Project Output</th>
<th>Typical Benefits</th>
</tr>
</thead>
</table>
| Rainfed smallholder, agroforestry and estate production and processing | Establishment, extension or rehabilitation of state owned estates; new varieties and other improved technologies; install/upgrade processing facilities | Final private goods:  
- Unprocessed raw materials  
- Processed, value-added products through expanded area |  
- Increased production  
- Increased efficiency of resource use/ productivity of existing area  
- Increased quality  
- Lower risk/ production loss avoidance  
- Increased private incomes |
| Livestock and fisheries | Introduction of new stock and animal services; production and catch equipment, training, and marketing support | Final private goods:  
- Unprocessed raw materials  
- Processed, value-added products |  
- Increased production  
- Increased efficiency of resource use/ productivity  
- Increased quality  
- Lower risk/ production loss avoidance  
- Increased private incomes |
| Forestry  
Soil and water conservation | Timber production and processing; nonwood forest products; community common resource management; buffer zones and biodiversity conservation; channels and terracing schemes | Public and private goods and services:  
- Reclaimed land and improved watercourses  
- Improved management of existing forests  
- Expansion of forests |  
- Increased timber, fuelwoods and fodder, and nonwood products  
- Productive capacity loss avoided through conservation of watersheds  
- Siltation costs avoided  
- Reduced damage from downstream flooding  
- Increased private incomes |
| Irrigation schemes | Establishment, extension or rehabilitation of schemes; new crops and varieties; input supply; fodder for livestock; marketing | Nonfinal public goods and services:  
- Upgrading of existing schemes and management to reduce water losses  
- New or expanded schemes (dams and canals) to increase supply of water |  
- Associated final good benefits:  
- Increased production through expanded area  
- Increased efficiency/ productivity of existing area  
- Increased quality  
- Avoidance of crop loss  
- Increased private incomes |
<table>
<thead>
<tr>
<th>Type of Project or Project Component</th>
<th>Type of Project Input</th>
<th>Type of Project Output</th>
<th>Typical Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flood control</td>
<td>Civil works</td>
<td>Nonfinal public good:</td>
<td>Reduced flood hazard on land within the floodplain, up to the design standard of the flood controls including:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>● Drainage systems</td>
<td>● Avoidance of property damage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>● Embankments/dikes</td>
<td>● Avoidance of crop, livestock and income losses</td>
</tr>
<tr>
<td></td>
<td></td>
<td>● Platforms</td>
<td>● Avoidance of relocation costs</td>
</tr>
<tr>
<td>Rural electric power</td>
<td>Extend supply to villages, households and businesses, irrigation</td>
<td>Intermediate private good: low voltage electricity</td>
<td>● Resource cost savings (nonelectricity energy resources and costs are reduced)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>● Incremental power supplies</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>● Quality of life improvement</td>
</tr>
<tr>
<td>Rural and micro finance</td>
<td>Small-scale seasonal or development credit for agricultural production and agriprocessing (crops, livestock, fisheries, etc.)</td>
<td>Nonfinal good/service:</td>
<td>Associated final good benefits:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>● Cost of credit reduced</td>
<td>● Lower cost of credit leading to production cost savings</td>
</tr>
<tr>
<td></td>
<td></td>
<td>● New credit supplied to households</td>
<td>● Credit used to realize productivity increases and production-expanding inputs</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>● Increased incomes</td>
</tr>
<tr>
<td>Agricultural research, extension and market information</td>
<td>Farmer and extension worker training; extension systems; research on varieties of crops, livestock, fisheries</td>
<td>Nonfinal public service:</td>
<td>Associated final good benefits:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>● Increased supply and access to existing technical land market information</td>
<td>● Knowledge used to improve productivity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>● New and improved technical knowledge and market information supplied to farmers</td>
<td>● Increased ability to respond to market opportunities</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>● Increased incomes</td>
</tr>
<tr>
<td>Rural roads</td>
<td>Highway to secondary connections; farm-to-market roads; dirt to surfaced upgrades</td>
<td>Nonfinal public good:</td>
<td>● Reduced vehicle operating costs for existing and diverted traffic from same or alternative routes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>● Upgraded roads</td>
<td>● Generated traffic and accompanying incremental marketed production activity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>● New roads</td>
<td></td>
</tr>
<tr>
<td>TYPE OF PROJECT OR PROJECT COMPONENT</td>
<td>TYPE OF PROJECT INPUT</td>
<td>TYPE OF PROJECT OUTPUT</td>
<td>TYPICAL BENEFITS</td>
</tr>
<tr>
<td>------------------------------------</td>
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<td>------------------------</td>
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</tr>
</tbody>
</table>
| Village-level and small-scale infrastructure | Farm and market stores and sheds; fish and livestock cold stores; harbors/jetties; village-level service and works provision; local institution/organization building for collective action purposes | • Upgraded or new physical structures and facilities  
• Improved and more inclusive community services | • Reduced operating costs  
• New production and marketing activity  
• Better managed common property and community resources  
• Expanded service coverage  
• Increased productivity  
• More sustained resource use |
### APPENDIX 3

**LIST OF AGRICULTURE AND RURAL DEVELOPMENT PROJECTS**

<table>
<thead>
<tr>
<th>1973 to 1981</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRI: Gal Oya Sugar Industry</td>
</tr>
<tr>
<td>PHI: Angat-Magat Integrated Agricultural Development Project</td>
</tr>
<tr>
<td>KOR: Imjin Area Development Project</td>
</tr>
<tr>
<td>INO: Fiber Production and Processing Project</td>
</tr>
<tr>
<td>MYA: Rice Processing Industries Project</td>
</tr>
<tr>
<td>INO: Gohor Lama Palm Oil Processing Project</td>
</tr>
<tr>
<td>THA: Fisheries Development Project</td>
</tr>
<tr>
<td>PNG: East Sepik Rural Development Project</td>
</tr>
<tr>
<td>PHI: Second Davao Del Norte Irrigation Project</td>
</tr>
<tr>
<td>NEP: Sagarnath Forestry Development Project</td>
</tr>
<tr>
<td>SRI: Kirindi Oya Irrigation and Settlement</td>
</tr>
<tr>
<td>THA: Aquaculture Development Project</td>
</tr>
<tr>
<td>LAO: Forestry Development Project</td>
</tr>
<tr>
<td>PHI: Bukidnon Irrigation Project</td>
</tr>
<tr>
<td>NEP: Livestock Development Project</td>
</tr>
<tr>
<td>LAO: Casier Sud Pioneer Agricultural Project</td>
</tr>
<tr>
<td>BAN: Rubber Rehabilitation and Expansion Project</td>
</tr>
<tr>
<td>PAK: On-Farm Water Management Project</td>
</tr>
<tr>
<td>MAL: Farmers’ Organization Support Services Project</td>
</tr>
<tr>
<td>MAL: Sabah/Sarawak Fisheries Infrastructure</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1982 to 1990</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEP: Second Hill Irrigation Project</td>
</tr>
<tr>
<td>PAK: Sindh Livestock Development Project</td>
</tr>
<tr>
<td>PNG: Cape Rodney Smallholder Development Project</td>
</tr>
<tr>
<td>BAN: Ganges-Kobadak Irrigation Rehabilitation Project</td>
</tr>
<tr>
<td>SRI: Aquaculture Development Project</td>
</tr>
<tr>
<td>LAO: Second Forestry Development Project</td>
</tr>
<tr>
<td>INO: National Estate Crop Protection Project</td>
</tr>
<tr>
<td>MAL: Compensatory Forestry Sector Project</td>
</tr>
<tr>
<td>BHU: Chirang Hill Irrigation Project</td>
</tr>
<tr>
<td>NEP: Third Forestry Development Project</td>
</tr>
<tr>
<td>THA: Brackishwater Shrimp Culture Development Project</td>
</tr>
<tr>
<td>PAK: Cotton Development Project</td>
</tr>
<tr>
<td>MAL: Fisheries Research and Development</td>
</tr>
<tr>
<td>PAK: Chitral Area Development Project</td>
</tr>
<tr>
<td>BAN: Rural Infrastructure Development Project</td>
</tr>
<tr>
<td>INO: Nucleus Estate and Smallholder Cocoa/Coconut Project</td>
</tr>
<tr>
<td>NEP: Secondary Crops Development Project</td>
</tr>
<tr>
<td>PHI: Low Income Upland Communities</td>
</tr>
<tr>
<td>PAK: Second Barani Area Development Project</td>
</tr>
<tr>
<td>PHI: Second Palawan Integrated Area Development</td>
</tr>
</tbody>
</table>
APPENDIX 3. continued.

1991 to 2003

PNG: Agricultural Research and Extension Project
INO: Upland Farmer Development Project
MAL: Second Pahang Barat Integrated Agricultural Development
PRC: Yunnan-Simao Forestation and Sustainable Wood Utilization Project
CAM: Rural Infrastructure Improvement Project
LAO: Community-Managed Irrigation Sector Project
KAZ: Water Resources Management and Land Improvement Project
INO: Coral Reef Rehabilitation and Management Project
SRI: Coastal Resource Management Project
PRC: West Henan Agricultural Development Project
INO: Community Empowerment for Rural Development Project
UZB: Ak Altin Agricultural Development
CAM: Northwestern Rural Development Project
LAO: Smallholder Development Project
INO: Coral Reef Rehabilitation and Management Phase 2
INO: Poor Farmer’s Income Improvement through Innovation Project
NEP: Community Livestock Development Project
UZB: Grain Productivity Improvement
UZB: Amu Zang Irrigation Rehabilitation Project
INO: Participatory Irrigation Sector Project

ARD Projects Reviewed for Methods Approach

2002

INO: Poor Farmers’ Income Improvement through Innovation
LAO: Smallholder Development
PAK: Sindh Rural Development
TAJ: Agricultural Rehabilitation Sector Development Program
VIE: Phuoc Hoa Water Resources

2003

BAN: Second Participatory Livestock Development Project
CAM: Agriculture Sector Development Program
UZB: Grain Productivity Improvement Project
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