Assessing the Use of Project Distribution and Poverty Impact Analyses at the Asian Development Bank

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FOREWORD

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ABSTRACT

If done properly, distribution and poverty impact analyses could help assess who benefits from project activities and by how much, relative to other stakeholder groups that pay for the project inputs. The Asian Development Bank (ADB) has been applying these analyses after the approval of its Poverty Reduction Strategy in 1999. Different views have emerged on how these analyses have been used in ADB operations. This paper reviews ADB’s experience in conducting distribution and poverty impact analyses, particularly how these analyses have been applied, what has been done so far, and what are the recurring issues.
I. INTRODUCTION

Since the approval of the Poverty Reduction Strategy (PRS) in 1999 (ADB 1999), operations of the Asian Development Bank (ADB) have been oriented toward reducing poverty in the Asian and Pacific region. This has placed greater emphasis on strengthening economic analysis of investment projects to help improve project design. As a result, an estimation method covering both distribution and poverty impact analyses is currently used to assess net benefit distribution and poverty impact.

Initially, ADB’s Guidelines for the Economic Analysis of Projects (henceforth “Guidelines”; see ADB 1997) suggested a method for distribution and poverty impact analyses. The Handbook for Integrating Poverty Impact Assessment in the Economic Analysis of Projects (henceforth “Handbook”; see ADB 2001) further explained this method. ADB has been applying distribution and poverty impact analyses after the PRS approval. Different views have emerged on how this method is practiced in ADB operations.

This paper reviews ADB’s experience in conducting distribution and poverty impact analyses. It evaluates its application and documents what has been done so far and the recurring issues. The paper aims to promote learning and knowledge sharing among ADB staff.

This paper reviews 80 project documents covering the period 2000-2004, which applied some form of either distribution or poverty impact analyses or both. It also draws on the literature, especially Fujimura and Weiss (2000), the Guidelines (ADB 1997), the Handbook (ADB 2001), and Gajewski and Luppino (2004). These materials provide illustrations and clarify conceptual/methodological issues on distribution and poverty impact analyses. Section II provides an overview of the method. Section III discusses how distribution and poverty impact analyses have been applied in ADB as indicated in the Report and Recommendation of the President (RRP) documents. By referring to project cases, this review highlights how these practices are pursued. The last section summarizes the major findings.

II. THE PROJECT DISTRIBUTION AND POVERTY IMPACT ANALYSES METHOD

Distribution and poverty impact analyses show how benefits are dispersed. These analyses examine how different project designs or changes to related policies and institutional arrangements will affect the flow of net benefits to various stakeholders. Distribution and poverty impact analyses require thorough analysis of financial and economic cash flows for a given project. This calls for the accurate description of how inputs, costs, outputs, and benefits are identified and the corresponding values estimated.

1 Stakeholders, stakeholder groups, and beneficiary groups are used interchangeably in this paper.
Another key requirement is the proper identification of relevant stakeholders. This process can explain a project’s likely impact on the poor and on the groups that may gain or lose as a result of the project.

The Guidelines recommends a “generic” breakdown of stakeholder groups to guide in the disaggregation of net benefits of a project: the owners, those working in the operating entity, the government, the consumers of outputs, those providing material inputs, and lenders. The Handbook extends this general classification to include other things like poverty, gender, nationals/foreigners, and subregional projects.

A sequence of steps is followed to disaggregate net benefits. This involves calculating the difference between present values in economic and financial terms. Assessing a project’s poverty impact entails another step involving determination of poverty incidence. This extension requires more data and information beyond what is normally collected during project preparation and appraisal. The Handbook outlines the procedures in distribution and poverty impact analyses (see Box 1).

If done properly, distribution analysis could help assess who benefits from project activities and by how much, relative to other stakeholder groups that pay for the project inputs. Since many social service projects involve public spending but generate private benefits in return, it is important to examine whether the project will help intended beneficiaries (ADB 2003). In projects that require public sector provision, complementary financing by different stakeholders is usually warranted. Distribution analysis could then be used to assess if a project gives stakeholders good reason to participate.

Distribution analysis can also be used to evaluate how project-related pricing policies could affect the flow of net benefits. For example, in a water supply project, this analysis could assess the distributive impact of raising a tariff. Simulations can be done to further consider the effects of a single water tariff against a two-tier tariff to key beneficiaries, including the poor (Gajewski and Luppino 2004). This shows how stakeholders may gain or lose when a project is implemented. It also helps assess a project’s sustainability.

<table>
<thead>
<tr>
<th>Box 1</th>
<th>STEPS IN DISTRIBUTION AND POVERTY IMPACT ANALYSES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1.</strong> Set out the annual financial data on the project showing inflows (revenue and loan receipts) and outflows (investment, operating costs, loan interest, and principal repayments and tax both on profits and purchased inputs) from the perspective of the project owners. This is sometimes termed a return to equity calculation at constant prices.</td>
<td></td>
</tr>
<tr>
<td><strong>Step 2.</strong> Discount each annual inflow and outflow to derive present values for each category and a net present value (NPV). Normally a 12 percent discount rate should be used for these calculations. The resulting NPV will be a financial NPV showing the income change for project owners. Also, there will be a gain to government from tax payments, and where subsidized loans are provided, a loss to lenders.</td>
<td></td>
</tr>
</tbody>
</table>

*continued.*
Step 3. Identify the economic value to be used for each project input/output category. The ratio between this economic value and the financial price for actual transactions is the conversion factor (CF) for the item concerned. Normally for distribution analysis, it is simpler to conduct economic appraisals in the domestic price numeraire (which means that income from the financial and economic calculations will then be in the same price units). If a world price numeraire is needed for the economic calculations, all financial data from steps 1 and 2 must be converted to world prices by multiplication by the standard conversion factor to carry out a consistent distribution analysis. Nonetheless, it is recommended that the domestic price numeraire be used consistently.

Step 4. Express all project items in economic terms. This can be done by applying CFs to revalue the financial data from step 1. If CFs are taken as constant over the project’s life, only the present value figures at step 2 need to be adjusted. For items for which there is no financial value at step 1 (for example, an environmental cost for which a project itself is not charged), their economic value, wherever estimated, should be entered directly in the economic benefit flows.

In practice, where a project analyst did not foresee the need for distribution analysis and has done the conventional economic analysis first, as would normally be the case for most project preparations before the wider application of distribution analysis, the analyst could work backward to arrive at financial benefit and cost streams using conversion factors and transfer payments.

Step 5. Allocate difference between financial and economic values to particular groups. These, plus the changes for project owners and others at step 2, give the income changes created by the project. The net benefits to different groups must sum to the economic NPV of the project, since this measures the total net benefits of the project. This can be seen as an identity: economic NPV = financial NPV + (economic NPV-financial NPV).

Note that where there is no financial revenue for the project agency, as in the case of road rehabilitation projects, net benefits still need to be distributed between different stakeholders.

Poverty Impact

A poverty focus requires that for each identifiable group affected by a project, the proportion of those who can be classified as poor be estimated.

Step 6. Estimate for each group affected by a project the proportion of net benefits that will go to those below the poverty line. Groups involved will vary between projects but will usually include consumers, workers, producers, government and the rest of the economy. For the government, what is required is an estimate of the counterfactual; i.e., what proportion of government expenditure diverted from other uses by the project under consideration would have otherwise benefited the poor. Similarly, if a project generates government income, a proportion of this will create benefits for the poor, which will be indirectly caused by the project concerned.

Step 7. Sum up all net benefits going to the poor and divide by the total net benefits (economic NPV). This result is termed the poverty impact ratio (PIR).

III. ADB PRACTICE IN DISTRIBUTION AND POVERTY IMPACT ANALYSES

A. Overview of Sample RRPs

A review of RRPs from 2000 to 2004 shows that distribution and/or poverty impact analysis has been done for about 80 public sector projects, or about 26% of the total (Table 1). Since 2000, there was an increase in the use of these techniques.

<table>
<thead>
<tr>
<th>YEAR</th>
<th>TOTAL NUMBER OF PROJECTS</th>
<th>NUMBER OF PROJECTS THAT APPLIED DISTRIBUTION AND POVERTY IMPACT ANALYSES</th>
<th>PERCENT SHARE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>70</td>
<td>6</td>
<td>8.6</td>
</tr>
<tr>
<td>2001</td>
<td>57</td>
<td>11</td>
<td>19.3</td>
</tr>
<tr>
<td>2002</td>
<td>67</td>
<td>22</td>
<td>32.8</td>
</tr>
<tr>
<td>2003</td>
<td>62</td>
<td>22</td>
<td>35.5</td>
</tr>
<tr>
<td>2004</td>
<td>58</td>
<td>19</td>
<td>32.8</td>
</tr>
<tr>
<td>Total</td>
<td>314</td>
<td>80</td>
<td>25.5</td>
</tr>
</tbody>
</table>

Distribution and poverty impact analyses are used more in transport and energy sectors (Table 2). These sectors account for 59% of the projects reviewed compared to about 20% of social infrastructure projects (education, health, water supply and sanitation, and urban development). Agriculture and natural resources projects were 16% of the total. The balance (5%) was projects in industry and trade, and other multisector projects. During the same period, distribution and poverty impact analyses were not applied in health sector projects. A maritime training project and its subsequent supplementary loan were the only projects that applied distribution analysis in the education sector. Appendix 1 carries the complete listing of projects reviewed.

B. Observations and Issues

A review of these projects yielded the following observations: (i) limited applicability of distribution and poverty impact analyses; (ii) inaccurate identification of stakeholder groups; (iii) nonstatement of assumptions and parameters used; and (iv) lack of proper explanation of stakeholder issues and significance of the poverty impact ratio. Summarized in Box 2 are statistics on the applications of distribution and poverty impact analyses.
### Table 2
**Composition of Reviewed Projects by Sector**

<table>
<thead>
<tr>
<th>SECTORS</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>TOTAL</th>
<th>PERCENT SHARE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture and Natural Resources</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>13</td>
<td>16.3</td>
</tr>
<tr>
<td>Transport and Communications</td>
<td>3</td>
<td>5</td>
<td>6</td>
<td>8</td>
<td>9</td>
<td>31</td>
<td>38.8</td>
</tr>
<tr>
<td>Energy</td>
<td>1</td>
<td>2</td>
<td>6</td>
<td>5</td>
<td>2</td>
<td>16</td>
<td>20.0</td>
</tr>
<tr>
<td>Water Supply, Sanitation, and Waste Management</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>9</td>
<td>11.3</td>
</tr>
<tr>
<td>Education</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>2.5</td>
</tr>
<tr>
<td>Industry and Trade</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1.3</td>
</tr>
<tr>
<td>Multisector of which: Urban development</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>8</td>
<td>10.0</td>
</tr>
<tr>
<td>Others</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Total</td>
<td>6</td>
<td>11</td>
<td>22</td>
<td>22</td>
<td>19</td>
<td>80</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Sources: Loan, technical assistance, grant, and equity approvals databases.

### Box 2
**Findings from the Review of Project Documents**

About 26% of the projects explicitly include either distribution or poverty impact analysis, or both. Excluding program lending, about 30% of public sector projects apply distribution and/or poverty impact analysis.

About 16% of projects show only the distribution analysis.

About 18% of projects indicate only the PIR estimates without a corresponding distribution analysis.

About 39% of projects employ a “generic” set of stakeholder groups.

About 46% of projects do not explicitly specify the assumptions and parameters used.
1. Analyses Confined to Selected Sectors

Distribution and poverty impact analyses appear to have limited practical use. Since these analyses depend on costs and benefit streams, they are mostly confined to infrastructure projects such as energy and transport and communications. Arguably, energy and transport and communications sectors help the poor least. It may be harder to trace the full distribution effects in these sectors since many beneficiaries are intermediate rather than final users (Fujimura and Weiss 2000). The benefits from these types of projects are too diffused over a wide range of beneficiaries to make substantial, direct impact on poverty alleviation efforts.

In contrast, social sector projects, such as health and education, have a more focused impact when it comes to directing resources to the poor. These types of projects do not lend themselves easily to distribution and poverty analyses since benefit and cost streams are seldom estimated. But to better understand project incidence, an analytical tool must provide a broader perspective and coverage of sectors.

This major limitation highlights the fact that distribution and poverty impact analyses depend on the quality of financial and economic cash flow analyses. If economic and financial cash flows and NPV analysis are done poorly, these analyses could not be expected to provide a clear understanding of project incidence, and the corresponding results would be meaningless.

Significant variations in the quality of cash flows and rate of return analysis have been noted across ADB projects. A retrospective analysis, Economic Analysis in 2002: A Retrospective (the Retrospective; see ADB 2003) found that the rate of return analysis in a few project proposals was not appropriately used as an analytical methodology. Major shortcomings were found in benefit identification, attribution, and valuation. Adjusting financial to economic prices is usually done, but can still be done better. The Retrospective also noted other shortcomings in benefit valuation as in several energy projects where the valuation of willingness-to-pay was not based on a demand analysis.

2. Shortcomings Noted in Stakeholder Analysis

The present paper reveals two weaknesses in stakeholder analysis. First, stakeholder groups are identified and categorized almost routinely during the distribution analysis. About 39% of the project documents reviewed employ a “generic” set of stakeholder groups: consumers, labor (hired workers in the project), and government/economy. This “generic set”, as set out in the Guidelines and the Handbook, is meant to be a guide. These generic stakeholder groups or other loosely defined aggregates seems to provide a convenient “pro-forma” presentation at the expense of coming up with a meaningful analysis.

A distribution analysis should be able to cover a more diverse and relevant set of stakeholder groups. A more location-specific disaggregation of beneficiaries could provide better insights on project incidence. Since the level of disaggregation is subjective, careful identification would prevent arbitrary categorization of beneficiaries and omission of other relevant stakeholders.
The second concern pertains to the generally weak analysis and reporting of stakeholders’ issues. Specific stakeholder issues are not properly explained, although there are a few good cases noted in the review. For example, BAN: Road Network Improvement and Maintenance Project II and the PHI: Electricity Market and Transmission Development Project discussed stakeholders’ issues. Similarly, Phase 1 of the BAN: Road Network Improvement and Maintenance Project provided an excellent presentation on market situations that help show how benefits could possibly accrue to stakeholders.

Assessment of issues specific to each stakeholder group is vital in understanding the profile, composition, and constraints faced by stakeholders. These issues show how different groups, including the poor, can possibly be affected by a project, especially which stakeholders will gain or lose when the project is implemented. A politically strong stakeholder group that would shoulder a large burden of the project’s costs (and would get little or no benefit at all) may try to stop the project or change its design once it is implemented. Analysis of this type could help decisionmakers in assessing a proposed project’s likelihood of success and the risks associated with it. Mitigation measures could then be considered to improve project design features.

3. Need to Clearly State Assumptions and Parameters

Clearly stating the underlying assumptions and parameters provide the basis for project incidence. These help explain distributional effects even under varied assumptions and parameters. In the case of PIRs, these figures are highly sensitive to changes in relevant parameters and assumptions such as the proportions of the poor for each stakeholder group. A difficult step in estimating the PIR is separating benefits and costs that go exclusively to the poor. These estimates require setting up plausible assumptions, based on project-specific information.

The analyses shown in the documents are not supported by systematic presentation of assumptions and parameters. Only about 54% of projects stated their assumptions. In most of the documents, it is difficult to establish the basis of distribution and poverty impact analyses since the relevant details and information are not shown. Most of this information is relegated to the supplementary appendix portions of the RRPs. Thus, assumptions and parameters used could not be easily found and validated. The coherence of the distribution and poverty impact analyses has been severely affected in the process. One exception is the PRC: Ganzhou-Longway Railway Project, which clearly presented the assumptions used in estimating the PIR.

An uneven quality of distribution and poverty impact analyses was observed in the projects. A recurring problem is describing a “distribution analysis” that considered gross benefits and output rather than net benefits. This practice does not follow the method described in the Guidelines and the Handbook. Some claimed that a distribution analysis was carried out even though the analysis was not presented even in the appendices.
4. Need to Properly Explain the Significance of PIR

Some documents tend to highlight a particular analysis. For example, about 16% of RRP shows only the distribution analysis, while about 18% of projects show only the PIR. Since poverty impact assessment is a logical extension of distribution analysis, one would expect to see the corresponding distribution analysis. The practice of showing only the PIR estimates seems to suggest that more weight is attached to the PIR to support claims of a project’s pro-poor impacts.

Based on early experiences at ADB, the Handbook suggested care in interpreting PIRs. The following concerns that were raised in the Handbook are still relevant: (i) some may hastily interpret the PIR as a summary indicator for poverty impact, in the same way that the economic internal rate of return (EIRR) is a summary indicator for project economic viability, which should not be the case; (ii) the PIR, by itself, is merely the proportion of the NPV accruing to the poor against the total project NPV and does not inform poverty impact ranking or the efficiency of poverty reduction among alternative project designs; and (iii) the PIR is often an uncertain point estimate that needs sensible judgment to avoid its mechanical application.

This review found ambiguity in the way the PIR is interpreted to support pro-poor interventions. Most of the RRP with poverty impact analyses provided only a general statement on the estimated PIR figure by simply stating the percentage of a proposed project’s net economic benefits that would accrue to the poor. In some others, these documents only showed the derived PIR figures without explaining their significance. These practices do not help to show the link between the investment components and poverty alleviation in the target areas.

Also, there are project documents that tried to compare PIR with national poverty or income indicators. The comparisons, which were not enough to provide sufficient information on a project’s poverty impact, include:

(i) A PIR higher than the poverty incidence ratio indicates that the poor households will benefit more from a project than with other stakeholder groups;

(ii) A PIR higher than the poor’s proportion to gross domestic product would give a project a positive poverty impact; and

(iii) A PIR when compared with urban poor’s income share confirms a project’s pro-poor impact.

The plausibility of comparing a PIR figure with a poverty or income indicator is not clear, although comparative interpretations of poverty impacts were implied in the Handbook.

This review shows that the PIR estimates could be open to various interpretations. The reason could be that there is insufficient guidance on how to make the PIR operationally relevant. The need to present a PIR and to demonstrate that the proposed intervention or operation is indeed “pro-poor” seems to be done at the expense of coming up with a coherent, systematic, and sensible analysis.
IV. CONCLUSION

A careful application of the estimation method should include the following: (i) establishing sound economic and financial cash flows; (ii) more attention to stakeholder analysis to identify and aggregate stakeholder groups; and (iii) better explanation of stakeholders’ issues. Also, this method needs a systematic specification of assumptions and parameters. These underscore the stringent requirements of this method before its full potential as an analytical tool could be fully realized.

This review also shows that this method can only be applied to projects in selected sectors. Together with the deficiencies noted in both distribution and poverty impact analyses including the manner in which the PIR is being interpreted, this review shows that the application of this method in ADB operations needs to be undertaken more conscientiously.

Distribution and poverty impact assessment is not the only method available for evaluating project incidence. There are others that are also applicable, depending on the nature of the project. ADB could explore other ways to assess project incidence or distributional impacts. The following methods may also be worth considering: (i) benefit incidence analysis; and (ii) qualitative analysis of channels of effects and transmission.

Benefit incidence analysis shows who benefits from public services and describes how government spending affects the welfare of different groups of people. This type of analysis combines the cost of providing public services with information on their use to generate distributions of the benefit of government spending (Demery 2003).

Benefit incidence analysis involves identifying the beneficiaries of broad categories of government expenditure, for example, in primary and secondary education, and disaggregating these by income group. Household data on consumption of public goods are combined with information on budget allocations for public spending to determine a unit subsidy per person. Household usage of the service is then aggregated across key social groups to impute the pattern and distribution of service provision (ADB 2005).

A qualitative analysis of channels of effects and transmission—in the form of a Poverty Impact Assessment Matrix—has long been used by ADB for policy-based lending to guide ex ante analysis of poverty impacts of policy changes. In this type of analysis, the focus is on assessing how benefits are filtered or transmitted to various stakeholders. This entails understanding channels of effect through which these stakeholders are affected, including access to project inputs and outputs. These channels include access to labor and product markets, and the effects of wages and producer and consumer price changes in markets; access to use of assets; access to public services; and access to transfers.

Setting out the assumptions needed to transmit or distribute the benefits among stakeholders is critically important. One should be able to assess how realistic these assumptions are. As in policy analysis, it is necessary to be aware that the longer the chain of assumptions required, the less likely the envisaged poverty impact will be (Bolt et al. 2003). Assessing alternatives that are likely to be effective and sustainable in increasing the stakeholder groups’ access to employment, markets, resources, and services should also be considered.
APPENDIX
SECTORAL CLASSIFICATION OF PROJECT REPORTS REVIEWED

Agriculture and Natural Resources

PRC: Yellow River Flood Management (Sector) Project (August 2001)
VIE: 2nd Red River Basin Sector Project (October 2001)
ETM: Hera Port Fisheries Facilities Rehabilitation Project (October 2001)
INO: Poor Farmers’ Income Improvement Through Innovation Project (July 2002)
PRC: Songhua River Flood Management Sector Project (August 2002)
BAN: Jamuna-Meghna River Erosion Mitigation Project (October 2002)
AZE: Flood Mitigation Project (November 2003)
INO: Participatory Irrigation Sector Project (November 2003)
LAO: Northern Community-Managed Irrigation Sector Project (June 2004)
NEP: Decentralized Rural Infrastructure and Livelihood Project (September 2004)
NEP: Community-Managed Irrigated Agriculture Sector Project (October 2004)
PAK: Sustainable Livelihoods in Barani Areas Project (November 2004)

Education

TUV: Maritime Training Project (September 2002)
TUV: Maritime Training Project (Supplementary Loan) (July 2004)

Energy

TAJ: Power Rehabilitation Project (November 2000)
PRC: Shen-Da Power Transmission and Grid Rehabilitation Project (November 2001)
MLD: Outer Islands Electrification (Sector) Project (November 2001)
PRC: Hebei Zhangwan Pumped Storage Project (September 2002)
SRI: Power Sector Development Program (October 2002)
INO: Renewable Energy Development Sector Project (November 2002)
INO: Power Transmission Improvement Sector Project (November 2002)
PHI: Electricity Market and Transmission Development Project (November 2002)
TAJ/UZB: Regional Power Transmission Modernization Project (November 2002)
BHU: Rural Electrification and Network Expansion (September 2003)
IND: Assam Power Sector Development Program (November 2003)
PRC: Gansu Clean Energy Development Project (November 2003)
PRC: Coal Mine Methane Development Project (November 2004)
PRC: Liaoning Environmental Improvement Project (November 2004)
**Appendix**

**Sectoral Classification of Project Reports Reviewed**

**Industry and Trade**


**Multisector**

PHI: Infrastructure for Rural Productivity Enhancement Sector Project (October 2000)
PRC: Efficient Utilization of Agricultural Wastes Project (September 2002)
PAK: Sindh Rural Development Project (October 2002)
NEP: Urban and Environmental Improvement Project (November 2002)
INO: Neighborhood Upgrading and Shelter Sector Project (November 2003)
PHI: Development of Poor Urban Communities Sector Project (November 2003)
IND: Multisector Project for Infrastructure Rehabilitation in Jammu and Kashmir (December 2004)

**Transport and Communications**

PRC: Hefei-Xi’an Railway Project (July 2000)
UZB: Railway Modernization Project (October 2000)
TAJ: Road Rehabilitation Project (November 2000)
PRC: Ganzhou-Longyan Railway Project (September 2001)
KGZ: 3rd Road Rehabilitation Project (October 2001)
IND: West Bengal Corridor Development Project (November 2001)
NEP: Road Network Development Project (November 2001)
PAK: Road Sector Development Program (November 2001)
PRC: Southern Sichuan Roads Development Project (August 2002)
BAN: Road Network Improvement and Maintenance Project (September 2002)
PAK: Punjab Road Development Sector Project (October 2002)
BAN: Rural Infrastructure Improvement Project (November 2002)
IND: Madhya Pradesh State Roads Sector Development Program (November 2002)
LAO: Greater Mekong Subregion Northern Economic Corridor Project (November 2002)
PRC: Ningxia Roads Development Project (August 2003)
BAN: Road Network Improvement and Maintenance Project 2 (October 2003)
IND: Rural Roads Sector I Project (October 2003)
PAK: Balochistan Road Development Sector Project (October 2003)
PRC: Western Yunnan Roads Development Project (October 2003)
IND: National Highway Corridor (Sector) 1 Project (November 2003)
TAJ: Dushanbe-Kyrgyz Border Road Rehabilitation Project Phase 1 (November 2003)
PRC: Gansu Roads Development Project (November 2004)
PRC: Dali-Lijiang Railway Project (November 2004)
LAO: Roads for Rural Development Project (June 2004)
MON: Regional Road Development Project (June 2004)
PAK: North-West Frontier Province Roads Development Sector and Subregional Connectivity Project (October 2004)
AFG: Andkhoy-Qaisar Road Project (November 2004)
AFG: Regional Airports Rehabilitation Project Phase 1 (November 2004)
KGZ: Southern Transport Corridor Road Rehabilitation Project (November 2004)
IND: National Highway Sector 2 Project (December 2004)
Water Supply, Sanitation, and Waste Management

NEP: Melamchi Water Supply Project (November 2000)
VIE: 3rd Provincial Towns Water Supply and Sanitation Project (November 2001)
MON: Integrated Development of Basic Urban Services in Provincial Towns Project (July 2002)
PAK: Punjab Community Water Supply and Sanitation Sector Project (November 2002)
PRC: Harbin Water Supply Project (February 2003)
NEP: Community-Based Water Supply and Sanitation Sector Project (September 2003)
VIE: Central Region Urban Environmental Improvement Project (November 2003)

REFERENCES


### PUBLICATIONS FROM THE ECONOMICS AND RESEARCH DEPARTMENT

#### ERD TECHNICAL NOTE SERIES (TNS)
(Published in-house; Available through ADB Office of External Relations; Free of Charge)

<table>
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<th>Authors</th>
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