ASIAN DEVELOPMENT BANK
Independent Evaluation Department

SPECIAL EVALUATION STUDY

ON

ASIAN DEVELOPMENT BANK'S CONTRIBUTION TO INCLUSIVE DEVELOPMENT THROUGH ASSISTANCE FOR RURAL ROADS

In this electronic file, the report is followed by Management's response, and the Board of Directors' Development Effectiveness Committee (DEC) Chair's summary of a discussion of the report by DEC.

Evaluation Study

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Asian Development Bank's Contribution to Inclusive Development through Assistance for Rural Roads

Independent Evaluation Department

Asian Development Bank

CURRENCY EQUIVALENTS
(as of 30 September 2009)

Currency Unit	–	pound sterling (£)
£1.00	=	$1.5961
$1.00	=	£0.6265
Currency Unit	–	Nepalese rupee/s (NRe/NRs)
NRe1.00	=	$0.0129
$1.00	=	NRs76.9680
Currency Unit	–	peso (PhP)
PhP1.00	=	$0.0209
$1.00	=	PhP47.6225
Currency Unit	–	dong (D)
D1.00	=	$ 0.000056
$1.00	=	D17,840.50

ABBREVIATIONS

ADB	–	Asian Development Bank
ADF	–	Asian Development Fund
ARCP	–	Agrarian Reform Communities Project
CBO	–	community-based organization
CHARM	–	Cordillera Highland Agricultural Resources Management
DMC	–	developing member country
DMF	–	design and monitoring framework
EPRS	–	Enhanced Poverty Reduction Strategy
FGD	–	focus group discussion
FMR	–	farm-to-market road
HFH	–	households with female head
HIV/AIDS	–	human immunodeficiency virus/acquired immune deficiency syndrome
HMH	–	households with male head
ID	–	inclusive development
IED	–	Independent Evaluation Department
JFPR	–	Japan Fund for Poverty Reduction
LGU	–	local government unit
LTSF	–	long-term strategic framework
M&E	–	monitoring and evaluation
NGO	–	nongovernment organization
O&M	–	operation and maintenance
PCR	–	project completion report
PDOT	–	provincial department of transport
PPP	–	public-private partnership
PPTA	–	project preparatory technical assistance
PRISP	–	Provincial Road Improvement Sector Project
PRS	–	Poverty Reduction Strategy
RIDP	–	Rural Infrastructure Development Project

RISP	–	Rural Infrastructure Sector Project
RM	–	resident mission
RNDP	–	Road Network Development Project
SES	–	special evaluation study
TA	–	technical assistance
TCR	–	technical assistance completion report
VCA	–	value chain analysis
VDC	–	village development committee
VOC	–	vehicle operating cost
VRA	–	Viet Nam Road Administration
WSS	–	water supply and sanitation

NOTE

In this report, "$" refers to US dollars.

KEYWORDS

adb, asian development bank, contribution, development effectiveness, economic opportunities, inclusive development, inclusive growth, ied, independent evaluation department, institutional development opportunities, road maintenance mechanism, ses, special evaluation study, social development opportunities, sustaining project benefits, rural infrastructure, value chain analysis

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The guidelines formally adopted by the Independent Evaluation Department (IED) on avoiding conflict of interest in its independent evaluations were observed in the preparation of this report. B. Basnyat, K. Dagupen, J. Idemne, R. Kanbur, T. McGrath, M. Morales, A. Rijk, and D. Tagarino were the consultants. To the knowledge of the management of IED, there was no conflict of interest of the persons preparing, reviewing, or approving the report.

APPENDIXES

SUPPLEMENTARY APPENDIXES (available on request)

Attachment: Management Response
DEC Chair Summary

EXECUTIVE SUMMARY

The notion of inclusive development (ID) has been embedded in one form or another in the operations of the Asian Development Bank (ADB) since its establishment, and ADB has provided assistance to developing member countries (DMCs) toward that end through policy dialogue and development interventions. The interventions have also evolved over time, and various options have been tried. Inclusiveness has featured prominently in ADB's Strategy 2020, as well as in the Asian Development Fund (ADF) X framework. While ID has not been an explicit focus in its operations, ADB has tried to address inclusiveness through a number of policies, strategies, and initiatives. "ADB's Strategy 2020: The Long-Term Strategic Framework 2008–2020" states that ADB's corporate vision will continue to be "An Asia and Pacific Region Free of Poverty," and its mission will be to help its DMCs reduce poverty and improve living conditions and quality of life for the people. Strategy 2020 has adopted inclusive growth as one of the three development agendas, which is expected to (i) create and expand economic opportunities, and (ii) broaden access to such opportunities. An implicit assumption is that inclusive growth leads to ID, where poor, marginalized, and vulnerable groups of the society will also benefit.

One of the several ways by which ADB has contributed to ID is through assistance for rural infrastructure as a major part of agricultural and natural resources operations, largely dominated by rural roads, so as to improve access to markets and services on the expectation that such access would open up new economic and social opportunities. Rural road-associated interventions account for nearly three fourths of ADB's assistance for rural infrastructure. Although there have been researches directed at assessing the impact of rural roads on poverty, ADB's contribution to ID has not been systematically evaluated and reported, except for progress in reducing income poverty. It is also recognized that ADB assistance has had limited contribution toward alleviating non-income poverty. The evaluation of the Long-Term Strategic Framework 2001–2015 had concluded that ADB's achievement in inclusive social development was low. Moreover, the intricate relationship between inclusive growth and ID in ADB operations is not fully clear.

Purpose

Given the emphasis of Strategy 2020 on rural infrastructure—rural roads, and inclusiveness, the purpose of the special evaluation study (SES) is to contribute to greater understanding of the contribution of rural roads to ID. The SES attempted to address four specific questions: (i) what are the key economic, environmental, institutional, and social contributions to ID that resulted from rural roads? (ii) what are the key constraints to ID through rural roads? (iii) how sustainable are the mechanisms for the operation and maintenance (O&M) of rural roads? and (iv) what supporting measures and policies are needed to fully capture the ID potential of rural road-associated projects? The SES explored performance of a sample of rural roads portfolio of ADB during 1996–2007 to identify lessons for similar future operations to ensure greater development effectiveness. Rural roads included both roads connecting villages and district headquarters and farm-to-market roads (FMRs).

Methodology and Data

Inclusive Development. Based on a comprehensive literature review, inclusive growth is narrowly defined as economic growth that is accompanied by lower income inequality, so that the increment of income accrues disproportionately to those with lower incomes. It is objective, quantifiable, and measurable over time. ID, however, has more of a subjective and qualitative

nature, and refers to the improvement of the distribution of the increase in well-being. For ID, direction of changes in economic and social structures, improvements in institutions and the environment are assessed but difficult to quantify. Inclusive growth is necessary, but is not a sufficient condition for ID, which has a wider focus. The SES adopted a working definition of ID: "equitable access to, and utilization of, economic, social, institutional and environmental opportunities and services aimed at improving quality of life." As such, ID deals with improving the lives of all members of society, particularly the poor, the marginalized, and the vulnerable groups.

Methods and Data. The methodology for the SES comprised both desk research and field study. The desk research (i) reviewed internal and external literature on ID and ADB's rural roads portfolio; (ii) analyzed performance ratings by completion reports (self-evaluation) on rural road lending, and technical assistance (TA) projects prepared by operations departments; and (iii) reviewed the design and monitoring frameworks (DMF) of the sample projects to determine the quality of ID statements, monitoring indicators, and amenability to monitoring and evaluation. The desk work also included interviews and discussions with ADB staff. The field work focused primarily on (i) household surveys to qualitatively assess before and after project changes in project locations in terms of economic, social, institutional, and environment areas; (ii) interviews with government officials, private sector representatives, and other stakeholders; and (iii) focus group discussion in the project sites. The field survey covered 1401 households, 73 focus group discussions, 33 value chain analysis, and 136 key informants in the six sample projects in three DMCs (Nepal, Philippines and Viet Nam).The information gathered was then triangulated and analyzed further to come up with key findings.

Case Studies. To assess the contribution to ID, the SES included six projects, two from each of the three case study countries—Nepal, Philippines, and Viet Nam. Nepal represented a fragile and postconflict situation, the Philippines represented an economy with moderate growth, and Viet Nam was considered as a rapidly developing economy. The SES selected one project that had been completed a few years ago, and another that is either recently completed or is nearing completion. All three countries have had significant investment in rural or FMRs. The projects covered by the SES are the Rural Infrastructure Development Project (RIDP) and Road Network Development Project (RNDP) in Nepal, the Cordillera Highland Agricultural Resources Management (CHARM) Project and the Agrarian Reform Communities Project (ARCP) in the Philippines, and the Rural Infrastructure Sector Project (RISP) and Provincial Roads Improvement Sector Project (PRISP) in Viet Nam. Some of the projects had other components, but the SES focused on rural roads. The projects were selected after consultations with the resident missions and concerned project staff. The opinion of project staff at ADB, as well as in the respective project agencies was taken into account in selecting the case study roads in each project because ID was not explicitly stated in the project documents. Given the emphasis on ID in this study, efforts were made to ensure that the selected sites (roads) had implications for women, ethnic groups, and/or the poor and other disadvantaged sections of the population to be served by the respective project roads.

Methodological Limitations. Each of the three countries had unique attributes; therefore, the survey instruments had to be adapted to local conditions. Attempts were made to collect relevant data/information to explain ADB's contribution to ID. While the overall approach was consistent in methodology and framework adopted, intercountry variations required the SES to take a unique approach to data collection in each country. The type of rural road assistance also varied between and among projects and countries. Rural roads or FMRs ranged from black-topped roads to seasonal earthen roads and, in some cases, were segments of longer roads. The household survey results for the case studies are based on small samples; hence, the results

should be interpreted with caution. The case study results reflect status at the time of evaluation, and conditions may change over time, depending on internal and external environments. Furthermore, as indicated earlier, while some of the case study projects examined had other development interventions, the SES focused on documenting contribution to ID. Detailed gender analysis as such was not carried out. Finally, data limitation did not permit with and without comparisons.

Key Findings

Portfolio Analysis. Assistance for rural roads has largely been through explicit road development projects, rural infrastructure projects or integrated projects in which rural roads were a component of a package of development interventions. In particular, the latter approach has gone through a number of development paradigms such as integrated rural development, community development, participatory rural development, and area-based approach to poverty reduction; but in all those approaches, rural roads usually constituted a significant investment. Between 1996 and 2007, ADB approved 53 projects in 13 DMCs and provided a little over $3 billion assistance. Nearly 77% of the funding went to the Southeast and South Asia regions. Asian Development Fund (ADF) resources accounted for 79% of the projects, and 58% of the total approved funds. Distribution by sector shows that transport and communication and multisector absorbed 45% and 34% of total loan resources approved for rural road-associated projects, respectively. An average ADF project was much smaller than the project funded with ordinary capital resources—$40 million vs $105 million. The approval of rural road-associated projects peaked in 2002 and 2003, but varied significantly annually. Ten DMCs received 16 grants worth $190.4 million, and three countries (Afghanistan, Bangladesh, and Nepal) absorbed 82% of the total grants. ADF (31%), the Japan Fund for Poverty Reduction (30%), and the United Kingdom (30%) were leading grant providers. In addition, 18 countries received $38.63 million in TA funds and supported 40 project preparatory and 22 project advisory services. The Japan Special Fund alone provided 55% of the total TA resources. The analysis revealed that not all rural road-associated projects were designed to contribute to ID. However, a significant proportion of portfolio had some ID related components. Most of the projects had provisions for improvement or rehabilitating of existing rural roads.

Project DMF Analysis. The analysis of project DMFs shows that project loans, TAs, and grants addressed inclusiveness in the project designs in various ways. The analysis revealed that the 53 loan projects had employed altogether 707 indicators in DMFs, but only 45% of the indicators were monitorable. None of the reviewed projects had established an explicit set of ID-related indicators at baseline that could have been monitored during project implementation and after completion.

The review of project documents suggested that there were attempts to focus on creating opportunities that would make the rural poor share in, and contribute to, growth of local economy to a large extent. The majority of the projects recognized that assistance for rural roads, including various aspects of rural road improvement or development (e.g., capacity building, institutional development, reforms in road management and policies, and systems and procedures for road operation and maintenance) would result in increased economic opportunities and enhanced access to social services, such as education and health. A number of projects combined assistance to rural roads with other component features that aim to ensure access to economic and social opportunities such as credit, skills development and training, water supply and sanitation, literacy centers, and health facilities, among others. Finally, in some projects, the adoption of decentralized, demand-driven, and community-based approaches in the project designs also provided for empowerment in that the project

beneficiaries participated in the development process that addressed their own needs. While these initiatives were considered important from the perspective of ID, the size and scale of interventions of other enabling factors and their sequencing were deemed inadequate. In most cases, the add-on components were only piloted but hardly scaled up; as a result, their contribution to ID remained limited. There was more emphasis on improving access but less on utilizing the infrastructure.

Review of Project Completion Reports (PCRs). At the end of June 2009, of the 53 rural road-associated projects approved during 1996–2007, 15 loan PCRs and 13 TA completion reports (TCRs) had been prepared. The PCRs highlighted economic impact due to improved connectivity, such as increased production, employment, investment, and income to the local people. Additional benefits cited include improved transport services; reduced vehicle operating costs; more choices in consumer goods; and improved access to health, education, and water supply and sanitation. However, none of the PCRs reported progress toward ID, particularly for disadvantaged groups such as ethnic minorities, households with female head (HFH), and the poor. An assessment of the TA completion reports, however, indicated some evidence in support of creating awareness and capacity building for participatory approaches adopted in project planning and management. Furthermore, 23 of 53 loan projects reviewed in this study had completed their implementation, with extensions averaging 22 months. The reasons associated with the delays included one or more of the following: (i) procurement and/or unfamiliarity with related ADB procedure, including preparation of bid documents; (ii) consultant recruitment and mobilization; (iii) problems in civil works, and construction contractor issues; (iv) inadequate government financing or cofinancing arrangements; (v) lengthy government approval procedures; (vi) poor covenant compliance; (vii) change in scope and design of the project; (viii) decentralization issues; (ix) problems related to disbursement and the imprest account; (x) inadequate capacity of executing and/or implementing agencies; (xi) political crisis or worsening law and order situation; and (xii) safeguard-related issues. Despite the implementation delays, only 3 of the 15 projects had cost overruns by less than 6% while remaining had cost savings between 6.9% and 29.7%. The results imply that project cost at appraisal may have been overestimated or in some countries, project cost savings may have come been due to the effect of exchange rate fluctuations. Interestingly, 4 of 15 loans had economic internal rate of return higher at completion compared to appraisal estimates, while the remaining 11 had lower values. Overall, 13 of the 15 (87%) projects were rated successful by the PCRs and 9 of the 13 TAs (69%) were rated successful based on the review of TCRs. The PCRs and TCRs ratings reflect overall performance but not necessarily of the ID related components.

Case Study Findings

Economic Opportunities. Evidence from the case studies suggests that the project roads improved access for geographically disadvantaged people to major roads and markets; catalyzed opportunities for enhancing production, linkage to employment centers and marketing agents; and helped increase household income and expenditure, thereby enhancing the quality of life. The contribution of rural roads or FMRs in creating economic opportunities, however, varied significantly across the case study projects. For example, 19% of the respondent households in RIDP (Nepal) benefited from employment during construction, while only 6% of the households in RNDP obtained such benefit. The difference was largely associated with the nature of road work—construction in the case of RIDP and rehabilitation in the context of RNDP. During civil works (construction or rehabilitation), several people in local communities including ethnic minorities, the poor, and members of HFH were engaged primarily as unskilled workers, to perform heavy manual work. The roads reduced travel time, in all cases, and time saving

ranged from 20% to 80%; while costs of travel and the transport of goods in selected cases went down by 10% to 60%. Transportation costs reduced by 10% for rice in PRISP, 15% for coconut in RISP, 25% for fruits in ARCP, and 20% in CHARM for vegetables, but no savings in RNDP. Similarly, in CHARM project areas, 68% of the respondents reported increase in cultivated area and increase in crop production while a net decrease was reported by RIDP respondents. Income before and after road improvement also changed significantly and increased by 40% in RIDP, and 21% in RNDP, but increases were primarily due to income from remittances rather than increase in productivity. In fact, the share of farm income in total household income declined from 22% to 17% in RIDP. Increase in income also led to increase in household expenditure leading to consumption of modern goods and services. In CHARM area, 22% of respondents improved their housing, 15% had access to potable water, 31% shifted from kerosene to electricity or liquefied petroleum gas for energy, and 17% had improved toilets. Improved roads also led to substantial increase in land prices which ranged from 30% in RIDP to more than eight-fold in ARCP, depending on proximity to commercial centers. The marketing costs also declined for farmers due to presence of more buyers and better prices, particularly in RISP, PRISP, and ARCP areas.

While the overall development has been somewhat encouraging in all projects, the results highlight that the disadvantaged groups have benefited to a lesser extent than the rest of the population. In RISP, ethnic minority respondent households earned 46% less than Kinh/Chinese, the poor earned 53% less than nonpoor households, and HFHs earned 7% less than those with male heads. In RNDP, ethnic minorities realized less than 10% increase in income from farming compared to 20%–30% increase experienced by nonethnic households.

Factors such as (i) population base; (ii) local security environment, proximity of project roads to major roads, employment centers, and markets; (iii) type of construction or rehabilitation; (iv) availability of transport services; and (v) prevailing road conditions influenced road utilization. In most of the road corridors, both backward and forward linkages are weak, and very little progress was achieved in adding value to the agricultural production, with only a few anecdotal evidence found in the Philippines (coconut and yam) and Viet Nam (cassava and bamboo shoots). The disadvantaged households tend to be producers of agricultural commodities in small quantities and are reluctant to travel farther to market their produce because transportation costs are prohibitive. Although improved rural roads would entail lower transportation costs, cost savings does not necessarily get shared with rural producers and households as found in the case of Nepal due to syndicate system controlling vehicle movement on project roads. Starting with the impact of rural roads, particularly on disadvantaged groups, could be negative as it results in increased imports into the rural areas and displace local production. In hill areas of the three countries, there has been some enterprise diversification from cereal to vegetable crops, but scaling up of diversified commodities has been limited due to constraints such as lack of storage, and efficient transport services and marketing systems. Vegetable farmers, in particular, have at times suffered from a glut in the market and, hence, incurred losses. In general, major beneficiaries of improved roads have been farmers with large holdings, transport owners and operators, and traders who have derived proportionately greater benefits from the project roads compared with ethnic minorities, the poor, and HFH. Significant economic opportunities due to project roads are yet to evolve for the disadvantaged groups.

Social Development Opportunities. Improved access due to project roads has made the rural people, including disadvantaged groups, significantly mobile. The bicycle ownership in RNDP, for example, increased from 49% of the respondent households to 84% and as a result children particularly girls are able to commute to school and adults are able to go to markets on

bicycles. Similarly, motorcycle ownership in PRISP increased from 50% to 80% after the road improvement, and children are able to commute longer distance to higher secondary schools and adults are able to market their produce easily. Overall, there are significant improvements in social interaction within and across different ethnic groups in several communities. For example, rural people in the mid-hills of Nepal have come out from geographical exclusion and isolation and are able to interact and integrate with wider society. The ethnic people in the Cordillera region in the Philippines and in the northern hills of Viet Nam have increased opportunity to integrate with the rest of society. Local people are increasingly participating in community-based organizations and community development activities. The project roads have also been successful in increasing access to social services such as education and health. Children, in particular, are able to travel to and from their schools safely without the fear of snake bites and muddy trails. The elderly population and pregnant women have been the greatest beneficiaries because they can reach health service centers in a shorter time. In Viet Nam, economically better-off households are able to send their children for secondary and tertiary education to relatively farther places—parents ferry their children on their motorbikes or children travel longer distances using public transport. Schoolchildren are also able to enhance their education by accessing web-based educational materials at internet outlets on the roadside in Viet Nam.

While improved roads facilitated travel to school and saved time, the SES did not find evidence to suggest that improved road had increased school enrolments. The finding is not surprising as most of the case study roads are rehabilitation of existing roads and are already servicing schools in the local communities. Moreover, schools in all communities have been in place prior to road improvements. Social development opportunities, however, are relatively limited in the corridors of high traffic volume roads of Nepal and Viet Nam, where people tend to travel more for economic than for social reasons. On the other hand, a steady increase in the number of accidents due to lack of adequate road safety measures and the presence of alcohol consumption outlets, particularly along the busy project roads, have begun to worry local residents. In some cases, for example in Viet Nam, the respondents perceived that the improved roads had led to some undesirable social problems such as thefts, human Immunodeficiency virus/acquired immune deficiency syndrome, and prostitution.

Institutional Development Opportunities. Improved roads have resulted in more frequent travel by staff from service delivery institutions and nongovernment organizations, subject to travel budgets. For example, in RISP, the number of provincial delegations to Commune Peoples Committee has increased by 50%. Similarly, in RNDP areas, there are now twice as many microfinance agents servicing their clients along the road corridors. Also, in the case of RNDP, 72% of the respondents have membership in at least one community-based organizations following road improvement in comparison to 44% earlier. Similarly, rural residents are able to travel to district headquarters for administrative and legal requirements, particularly in ARCP and RIDP areas.

The benefits have accrued more to the relatively more educated, economically well-off, and influential people than to the disadvantaged groups. Affordability remains a major concern for the latter groups; consequently, they are unable to use the roads despite the improved access. Lack of adequate funds for road maintenance work has remained a significant challenge in most of the road corridors. Traditionally, budgetary allocation from parent departments has been a major source of funds for any maintenance work. There is one exception—ARCP has developed a unique contractual arrangement between the Department of Agrarian Reform and the local government units (LGUs), which ensures that roads are maintained for at least 5 years after completion. While this may not be adequate, it is certainly a good start in improving project ownership, and accountability in operating and maintaining rural

roads. In Nepal, the dominance of transport entrepreneurs' associations in controlling traffic and vehicle movement remains a big challenge in ensuring proper utilization of infrastructure and an underlying mechanism for eventual sustainability. From ID perspective, not all disadvantaged groups are accessible by project roads because most of the roads were preexisting and were rehabilitated under ADB support.

Environmental Opportunities and Issues. In the Philippines' Cordillera region, traditional practices by ethnic groups in natural resource management has ensured that cropping areas are managed properly without significant alterations to biodiversity. Although it is indirectly related, local environmental groups have expressed alarm over the excessive use of chemical fertilizers and pesticides in Viet Nam, which have residual effects and occur as part of the runoff in waterways. Furthermore, the concept of labor-intensive and environment-friendly roads (also referred to as green roads) has had limited success due to labor shortage in local areas, high transaction costs in issuing contracts, public pressure to complete the road sooner than the expected date, and budgetary restrictions to spend funds within a given fiscal year. As a result, several roads were completed with the use of heavy machinery and outside labor and contractors. Common environmental challenges observed in the project road corridors include soil erosion and dust pollution (resulting in respiratory infections) in Nepal hills, and unmanaged garbage disposal and noise pollution in Viet Nam and the Philippines. Interestingly, 94% of the ethnic respondents in Nepal felt that improved roads have led to negative consequences, including migration of able bodied people from local communities. Similarly, 43% of respondents in RISP road corridors thought that there was more garbage problem due to increase traffic on project roads.

Key Constraints to Inclusive Development

A number of key constraints to ID were identified in the SES: (i) low participation of local stakeholders, particularly of disadvantaged groups, in all stages of the project cycle and hence a low level of ownership of the process and infrastructure; (ii) inadequate attention paid to appropriate sequencing and inclusion of project components; (iii) no complementary infrastructure to strengthen potential development opportunities due to roads; (iv) control of traffic volume due to the dominance of transport entrepreneurs operating in the road corridors; (v) deterioration in local governance, security threats, and political interference in movement and business operations; (vi) low economic base of goods and services produced locally; (vii) identification of disadvantaged groups and targeting for their needs; and (viii) weak backward and forward linkages to enhance economic opportunities. An overwhelming majority of the roads supported by ADB assistance were preexisting roads targeted for improvements and, hence, had no effect on local people, particularly those who are geographically isolated and belong to disadvantaged communities. Decisions to include the roads for improvement tended to be based on a top-down approach in many cases. A number of projects had components that were implemented as separate subprojects and had no direct linkages to rural roads. Similarly, improved road conditions need to be coupled with other infrastructure such as energy, irrigation and water supply, markets, storage, and processing facilities; as well as market information systems, and producers' organizations. In Nepal, transport entrepreneurs' associations have limited the provision of transport services. Security and political situations have prevented projects from fully contributing to ID. For example, in the hills of Nepal, ID opportunities have been limited due to the low volume of agricultural production and high out-migration, leaving little incentive to invest locally in productive assets. Projects have attempted to serve the disadvantaged communities, but many of them are still isolated due to geographical and social exclusion in the three case study countries. Finally, backward and forward linkages are limited due to the production of traditional crops, largely grown to ensure food security; and

small landholdings, fragmented land distribution, and lack of incentives to invest in promoting required linkages.

Sustainability of Mechanisms for Operation and Maintenance of Rural Roads

The mechanisms for financing O&M costs in all six case study projects are weak and sustaining them is a challenge. This is partly due to the preconceived notion that roads are public goods and the government is responsible for their maintenance. It also means the lack of adaptation of an asset management principle. In all but two cases, roads are fully dependent on government allocations for road maintenance. In Nepal, RIDP roads collect road user's charges from vehicles plying on the road. The amount collected is used for road maintenance. However, it is grossly inadequate to meet the requirements (covers less than 2% of total requirements). In the Agrarian Reform Communities Project of the Philippines, the Department of Agrarian Reform has entered into a contract with LGUs and has provided support on the condition that the LGU would be responsible for road maintenance for at least 5 years after the project is completed. It is, however, argued that the maintenance requirements within the first 5 years are minimal and would not pose a significant burden. This has served as an incentive for road maintenance; grants given to LGUs would be converted to loans—a condition most LGUs have tried hard to avoid. Thus, LGUs generate their own resources from means other than road user charges. No road user charges have been introduced in any other projects. In many communities, particularly those in remote areas, introducing road user charges may not be feasible due to low affordability by local people in absence of viable income generating opportunities.

Supporting Measures to Capture the Inclusive Development Potential

The findings from the SES highlight four key measures needed to capture the ID potential. First, based on local socioeconomic development plan, rural roads improvement or construction need to be considered in conjunction with other complementary and supporting provision that would address most, if not all, of the constraints outlined earlier. ID requires an approach based on government's local area development comprising relevant infrastructure and support services along with capacity development for local institutions and communities, particularly the vulnerable ones. Second, ID would require that the communities, particularly the disadvantaged groups, be at the forefront at all stages in the project cycle: from planning to implementation to evaluation. Therefore, the relevant communities need to be identified and targeted. Third, adequate emphasis is required in nurturing and developing the necessary backward and forward linkages including value chain links for local production systems (with potential for diversifying into marketable commodities) and ensuring food security. Fourth, because an area-based approach requires a more complex project design and coordination, relevant components need to be appropriately sequenced and adequately resourced.

Overall Performance Evaluation from ID Perspective

ADB assistance to rural roads in supporting ID is rated *partly successful* based on progress made in providing access to disadvantaged groups into mainstream socioeconomic development by the sample rural road-associated projects. The gaps remain wide and a more systematic effort is required to achieve long-term sustainable ID. The SES suggests that ADB assistance through rural roads has been ID- *relevant* at the lower end of the scale. Not all rural roads were designed for ID, but the case study roads were selected based on their strategic importance to the local population, including the disadvantaged groups. The projects, however, did not specifically target the disadvantaged population and assumed that improving access

would lead to greater use. Most of the roads were preexisting roads and had not necessarily reached core group of ultra poor and vulnerable households. In addition, projects emphasized improving access but most of them lacked an enabling environment for fully exploiting economic, social, institutional, and environmental opportunities.

The evaluation rates the assistance to be ID-*effective* because most of the projects were able to achieve the intended outputs, including a modest increase in outputs, reduction in transportation costs, and participation of disadvantaged groups (ethnic minorities, households with female heads and the poor) into mainstream economic and social development. Results suggest that when rural roads are part of an area development program as demonstrated by ARCP in the Philippines, they are likely to be more ID-*effective*. Similarly, small and household level traditional economic activities and low affordability due to low income limits usage of roads by the poor and disadvantaged groups, thereby limiting ID-effectiveness. On the other hand, ADB assistance for ID rated *less efficient* based on the average 22 months' project implementation delays and reduced expected benefits from the roads reflected by low usage. Despite the strategic importance of rural roads and high enthusiasm of local people and local governments in looking after rural roads, weak institutional capacity, and lack of a sustainable mechanism for O&M collectively suggest a *less likely sustainable* rating for ADB assistance.

The likely impact on ID has been rated *modest* on the basis of available evidence. Backward and forward linkages and an enabling environment for harnessing economic, social, institutional, and environmental opportunities are yet to emerge in most of the road corridors. At present, economic opportunities are very much limited, except for an increase in primary production, and both backward and forward linkages are yet to develop to ensure sustainable development. The roads have facilitated access to social services and institutions, but their utilization remains far below the potential due to lack of an enabling environment for economic and social development. A sustainable mechanism for road O&M, complemented by socioeconomic development opportunities through a mix of targeted and general intervention programs, will be required to maximize the ID impact of investments in rural roads.

Overall, the sample projects are rated *partly successful* from ID perspective largely due to the *less efficient* and *less likely sustainable* ratings. However, the ratings should be interpreted with caution as it does not reflect the performance of other components and entire projects. Performance ratings may go up if the rural roads are properly maintained and ensuing benefits enhanced.

Lessons and Implications

There are lessons and implications for improvements in project design, implementation, and ensuring and enhancing the sustainability of project benefits. First, rural roads may be necessary but not sufficient for ID. An adequate enabling environment in terms of complementary investments and support services is required to ensure ID. Developing adequate synergy between investment in rural roads and other support services and development interventions is important. Among other things, the services may include ensuring access to and use of technology, finance, market information, reliable transport service management, and meaningful livelihood opportunities. Second, targeted intervention is needed to mainstream disadvantaged groups who may be the landless, the poor, ethnic minority, or women. This may require investments in improving foot trails, bridges, and culverts; along with the provision of roads, where relevant. Third, while there is merit in supporting environmentally-friendly (labor intensive and least using heavy equipments) roads, it may not be feasible in all instances, as they are largely governed by public support and expectations and local labor

situations. The project designs need to have adequate flexibility so that the infrastructure can be completed on time to meet public expectations. Fourth, road safety measures are often overlooked in rural road-associated project designs. Preventing accidents is as important for rural roads as for provincial roads or highways. Fifth, it is important that roads are maintained regularly, but this would be possible only when a viable mechanism and funding arrangements are established and managed under tripartite arrangements—local beneficiaries, and local governments with the participation of private sectors. Transparency and participatory approach in fund management will ensure ownership and sustainability of project roads. Sixth, rural roads have significant implications for disadvantaged groups; therefore, the project DMF should contain specific, measurable, achievable, relevant, and time-bound indicators to report (i) progress on ID encompassing, not only access but also utilization, and (ii) progress of disadvantaged groups in exploiting economic, social, institutional, and environmental opportunities. This would call for a well-designed baseline study at the project preparatory technical assistance stage. Seventh, successful project implementation requires that, consultants are selected and counterpart funds for the first year of project implementation are approved before the loan effectiveness. Eighth, it is important that during project implementation, results should be evaluated, measured, and reported; and the projects designs are kept flexible for adjustment based on these results. Ninth, projects need to have a well-defined sustainability framework in which arrangements for infrastructure maintenance; mechanism for removal of barriers to road usage; and capacity development for local civil, nongovernment, and government organizations is strengthened to ensure sustainability and enhancement of project benefits. The findings and lessons are consistent with previous ADB evaluation studies and provide further information for a better understanding of rural road's contribution to inclusive development.

Recommendations for Consideration

The following recommendations are made for consideration by Management in pursuing ID through rural roads in the future.

Recommendation	Responsibility	Timing
(i) **Rural roads may be necessary, but not sufficient, condition for inclusive development. Promote inclusive development in rural road-associated projects' design by:** (a) ensuring that they fit within an agreed sector road map, (b) sequencing project components including road safety based on local conditions, (c) adopting a targeted approach for socially and economically disadvantaged groups, (d) encouraging government to adopt a holistic approach for creating economic, social, institutional, and environmental opportunities; and (e) making provision for flexibility where green roads are not feasible due to labor constraints (paras. 74–76, 86, 89).	Regional departments	From January 2010
(ii) **Sustainability of project benefits must be ensured. Emphasize both access and utilization of rural roads and the role of local governments, communities and private sector by:** (a) maintaining rural roads based on a sustainable road maintenance mechanism (i.e., following an asset management principle), (b) ensuring local government and communities ownership and private sector participation in road maintenance, and strengthening synergy with existing and new complementary	Regional departments	From January 2010

investments, support services and backward and forward linkages to enhance road utilization. (paras. 75, 77, 80-85, 87 and 89).		
(iii) **Progress toward inclusive development is necessary to demonstrate development effectiveness of rural road-associated projects. Strengthen results monitoring and evaluation systems in rural road-associated projects by:** (a) identifying ID-relevant result indicators for monitoring and evaluation; (b) conducting baseline studies at the project preparation stage covering ID-relevant data; (c) monitoring results during project implementation and after completion; and (d) evaluating progress and achievement on ID-relevant indicators at different intervals (paras. 80 and 93).	Regional departments	From January 2010

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I. INTRODUCTION

A. Background and Rationale

1. **Inclusive Development.** The notion of inclusive development (ID) has been embedded, in one form or another, in operations of the Asian Development Bank (ADB) since its establishment, and toward this end ADB has provided assistance to its developing member countries (DMCs) through policy dialogue and development assistance. These interventions have also evolved over time, and various options have been tried.[1] The second pillar of ADB's 1999 Poverty Reduction Strategy (PRS)[2] was inclusive social development, and it continued to be recognized in ADB's 2004 Enhanced Poverty Reduction Strategy (EPRS).[3] ID featured prominently in ADB's Long-Term Strategic Framework (LTSF) 2001–2015, Medium-Term Strategy (MTS) 2001–2005,[4] and MTS II 2006–2008.[5] Inclusiveness has also featured prominently in the Asian Development Fund (ADF) X[6] framework as well as ADB's Strategy 2020.[7] Strategy 2020 focuses on inclusive growth by (i) creating and expanding economic opportunities, and (ii) broadening access to those opportunities. Although Strategy 2020 does not specifically mention ID, its implications are inherent in the underlying assumption that inclusive growth leads to ID. Thus, ID will remain strategically relevant for ADB in the foreseeable future.

2. While ID has not been an explicit focus in its operations, ADB has tried to address the concept of inclusiveness through a number of policies, strategies, and initiatives.[8] ADB's LTSF 2001–2015 emphasized inclusive social development, including social support programs and policy, and reform agendas promoting equity and empowerment, especially for women and disadvantaged groups.[9] MTS emphasized pro-poor growth and MTS II stressed strengthening inclusiveness through (i) investments to support rural development (e.g., irrigation, rural infrastructure, and rural finance, etc.); and (ii) investment in key social development interventions to improve education and health outcomes, and support gender and equality. A recent evaluation study[10] noted that the overall assessment of the LTSF was *highly relevant*, while ADB's response and initial results were rated *medium* in all areas,[11] except inclusive social development (rated *low*). It appears that ADB's contribution to ID has not been systematically analyzed.

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[1] In his speech to the Board of Governors in 2004, former ADB President Tadeo Chino stated that ADB was established in 1966 to serve as the focal point for ID and regional cooperation in Asia and the Pacific. Available: http://www.adb.org/annualmeeting/2004/Speeches/chino_opening_address.html

[2] Available: http://www.adb.org/Documents/Policies/Poverty_Reduction/Poverty_Policy.pdf

[3] Available: http://www.adb.org/Documents/Policies/Poverty_Reduction/2004/prs-2004.pdf

[4] Available: http://www.adb.org/Documents/Policies/MTS/2001/mts.pdf

[5] Available: http://www.adb.org/Documents/Policies/MTS/2006/Medium-Term-Strategy-II.pdf

[6] Available: http://www.adb.org/Documents/Reports/ADF/X/default.asp?p=adfreprt

[7] ADB. 2008. *Strategy 2020: The Long-Term Strategic Framework of the Asian Development Bank 2008–2020*. Manila. LTSF 2008–2020 (or Strategy 2020) superseded LTSF 2001–2015.

[8] ADB. 1992. *Medium-Term Strategic Framework (1992–1995)*. Manila; ADB. 1992. *Medium-Term Strategic Framework (1995–1998)*. Manila; ADB. 1999. *Fighting Poverty in Asia and the Pacific: The Poverty Reduction Strategy*. Manila; ADB. 2004. *Enhancing the Fight Against Poverty in Asia and the Pacific: The Poverty Reduction Strategy of the Asian Development Bank*. Manila; and policy and strategy papers relating to capacity building, energy, forestry, indigenous peoples, information disclosure, inspection function, involuntary settlement, and population.

[9] ADB. 2001. *Social Protection Strategy*. Manila; ADB. 2001. *Gender Action Plan 2001–2003*. Manila; ADB. 2002. *Education Policy*. Manila; and ADB. 2005. *Development, Poverty and Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome: ADB's Strategic Response to a Growing Epidemic*. Manila.

[10] ADB. 2007. *Long-Term Strategic Framework: Lessons from Implementation (2001–2006)*. Manila.

[11] The LTSF strategic areas were sustainable economic growth, inclusive social development, and governance for effective policies and institutions.

3. **Rural Infrastructure.** The role of rural infrastructure in socioeconomic development is widely recognized in the literature and it is argued that it reinforces ID through economic growth, plus sharing the benefits to reduce poverty. Investments in infrastructure not only accelerate growth, but also have strong linkages with complementary inputs such as human capital, access to finance, and adoption of new technology.[12] The positive contribution of rural infrastructure has also been recognized in increased traffic and mobility; reduced transport costs; increased employment; saved travel time; increased land values; increased income; created income-generating opportunities; increased participation in marketing activities; and improved access to education, health, markets, social interaction, and water supply and sanitation (WSS).[13]Rural infrastructure has strengthened the foundation of agriculture, which sets the pace of economic growth in many DMCs.[14] It is also observed that rural infrastructure contributes to inclusive rural development in two ways: (i) it provides rural people with access to markets and basic services; and (ii) it influences rural economic growth and employment opportunities, and consequently incomes and social development.[15] The 2008 World Development Report[16] noted that public investment to expand access to rural infrastructure and services will be critical to reducing transaction costs and physical losses.

4. Being a first effort in ADB toward capturing ID through investment in rural infrastructure development, this special evaluation study (SES) was limited to rural roads, which has traditionally dominated ADB's rural infrastructure portfolio. The SES evaluated the contribution to ID as a result of ADB's assistance for rural roads in three DMCs, namely Nepal, Philippines, and Viet Nam. However, it did not evaluate other investments in rural infrastructure such as irrigation, water supply, and electricity. These are topics for future SES by the Independent Evaluation Department (IED).[17]

5. **Rural Roads.** The positive contribution of rural roads in reducing rural poverty has been well-documented. The pros and cons of different types of rural roads/connectivity have also been examined. Usually, rural road-associated projects are designed with the broad assumption that they would improve access, contribute to higher income, and ultimately reduce poverty. The vast body of literature clearly shows that there will be no growth and no significant poverty reduction without major infrastructure improvements. However, it is also clear that successful infrastructure interventions, such as rural roads, require complementary provisions, which tend to be context-specific. Previous studies have shown that past efforts to assess the impact of rural roads have been largely limited to establishing causal relationships with economic opportunities (including poverty reduction) and, in some cases, with access to services. Similarly, several studies have pointed out that rural roads in particular improved access to services, but the level of improvement in access and associated benefits have not been estimated. The contribution of rural roads to the local rural economy in ADB projects is not well-documented. Consequently, the contribution of ADB assistance to ID remains less clear.

6. **Inclusive Growth versus Inclusive Development.** Economic growth is tightly defined as an increase in real per capita income, while pro-poor growth is identified as that which also

[12] ADB, Japan Bank for International Cooperation, and World Bank. 2005. *Connecting East Asia: A New Framework for Infrastructure*. Washington, D.C.
[13] Kuhnle, R. 2005. *Rural Infrastructure Development and Poverty Reduction: Example of Bangladesh*. Tokyo: ADB Institute. Available: http://www.adbi.org/files/2005.07.08ccp.infrastructure.poverty.bangladesh.pdf
[14] Bhatia, M.S. 1999. Rural Infrastructure and Agricultural Growth. *Economic and Political Weekly*: A-43-A48.
[15] Fernando, N.A. 2008. *Rural Development Outcomes and Drivers: An Overview and Some Lessons.* Manila: ADB.
[16] World Bank. 2008. *World Development Report 2008: Agriculture for Development*, 133–134. Washington, D.C.
[17] IED was named the Operations Evaluation Department, or OED, until December 2008.

reduces income poverty. Development is not as precisely defined as growth, and is being used sometimes to refer to just economic growth, changes in economic structure of production, or improvements in social indicators. Economic growth, as well as pro-poor growth, is a necessary but not sufficient condition for ID. In analogy with the concepts of economic growth and economic development, inclusive growth is narrowly defined as growth that is accompanied by lower income inequality, so that the increment of income accrues disproportionately to those with lower incomes.[18] It is objective, quantifiable, and measurable over time. For inclusive growth, literacy rate and life expectancy are measurable indicators for human well-being and, together with per capita income, are combined in the human development index. The human development index relates to per capita and not to its distribution aspects. However, ID is not precisely defined. It has more of a subjective and qualitative nature, and refers to the improvement of the distribution of the increase in well-being. For ID, direction of changes in economic and social structures, improvements in institutions and environment are assessed but are difficult to quantify—for example, the case with empowerment and environmental protection. For these reasons, a distinction needs to be made between inclusive growth and ID The latter has a much wider focus and is the topic of this SES.[19]

7. **Working Definition of Inclusive Development.** ADB does not have a working definition of ID. However, Article 2 (ii) of the ADB Charter states that one of the six functions of ADB is "to utilize the resources at its disposal for financing development of DMCs in the region, giving priority to those regional, subregional, as well as national projects and programs which will contribute most effectively to the harmonious economic growth of the region as a whole, and having special regard to the needs of the smaller or less developed member countries in the region."[20] Obviously, the emphasis is on harmonious economic growth, which may imply ID. In the absence of an agreed-upon definition in the literature, the SES adopted a working definition for ID: "equitable access to, and utilization of, economic and social opportunities and services aimed at improving the quality of life." As such, ID deals with improving the lives of all members of society, particularly the poor, the marginalized, and vulnerable groups.

8. **Rationale for the Study.** The importance of rural roads is well-recognized within one of the five core areas of operations, i.e., infrastructure, in ADB's Strategy 2020.[21] While continued ADB investment in rural roads in DMCs is expected, it is important to understand how, and to what extent, do rural roads contribute to ID so that effective policies and enabling interventions can be incorporated into the project designs and emphasized during implementation. The findings from the study are expected to provide input to the DMCs in allocating resources to priority areas to ensure ID at the local, regional, and national levels.

B. Objectives and Scope

9. Built on previous studies, the SES aimed to assess the contribution of ADB assistance to ID through assistance for rural roads. The SES tried to address four specific questions:

[18] Kanbur, R., and G. Rauniyar. 2009. Inclusive Development, Rural Infrastructure, and Development Assistance. Evaluation Working Paper. IED, ADB: Manila. (draft)

[19] The Millennium Development Goals represent a decisive shift from the pure economic growth assessment of a country's performance because they bring dimensions other than income, such as distributional dimensions. For example, the goals on poverty and hunger halve the proportion of people whose income is less than $1 per day and who suffer from hunger, while most of the other goals also emphasize distributional improvements of non-income dimensions, or may be neutral (loss of biodiversity). Hence, the Millennium Development Goals may to a large extent represent inclusive development.

[20] Available: http://www.adb.org/Documents/Reports/Charter/chap01.asp

[21] ADB. 2008. *Strategy 2020: The Long-Term Strategic Framework of the Asian Development Bank 2008–2020*. Manila.

(i) What are the key economic, environmental, institutional, and social contributions to ID that can be attributed to rural roads?
(ii) What are the key constraints to ID through rural roads?
(iii) How sustainable are the mechanisms for operation and maintenance (O&M) of rural roads?
(iv) Which supporting measures and policies are required to fully capture the ID potential of rural road development projects?

10. The SES covered Nepal, Philippines, and Viet Nam.[22] Nepal represented the fragile and postconflict situation, and Viet Nam was considered a rapidly developing economy. The Philippines, selected initially to pilot-test the methodology for the SES, represented an economy with moderate growth. All three countries have had significant investment in rural or farm-to-market roads (FMRs). The SES included two representative projects from each country—one project that had been completed a few years ago, and another that was either recently completed or was nearing completion. The selected projects were the Rural Infrastructure Development Project (RIDP)[23] and the Road Network Development Project (RNDP)[24] in Nepal; the Cordillera Highland Agricultural Resource Management Project[25] and the Agrarian Reform Communities Project (ARCP)[26] in the Philippines; and the Rural Infrastructure Sector Project (RISP)[27] and the Provincial Roads Improvement Sector Project (PRISP)[28] in Viet Nam. Some of the projects had other components, but the SES focused only on rural roads and did not assess the contribution of irrigation, WSS, and market development interventions. The SES used the case study approach to project evaluation. It focused on contribution, rather than attribution, of ADB assistance to ID.

C. Organization of the Report

11. The SES is organized into six sections. Section II describes the methodology adopted for the study and data used in the analysis. It attempts to summarize various interpretations of the meaning of ID first, and then outlines the concept of value chain analysis (VCA) and discusses a conceptual framework for the study. The section also describes what comprised ADB's rural road-associated portfolio; explains sample selection methods for country, project, and site selection; and concludes with a brief discussion of data characteristics and analysis, as well as methodological limitations. Section III presents ADB assistance in the form of rural roads in DMCs, summarizes evidence from the completed project completion reports (PCRs), past evaluation studies, and an assessment of inclusiveness in ADB's rural road-associated project design and monitoring framework (DMF). Section IV gives a synopsis of case study projects in the three countries, and Section V presents the assessment of the performance of

[22] Originally, the SES planned to include Bangladesh but because of the national and union council elections, the field work could not be undertaken. Therefore, IED decided to limit the study to only three countries.
[23] ADB. 1996. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to Nepal for the Rural Infrastructure Development Project*. Manila.
[24] ADB. 2001. *Report and Recommendation of the President on a Proposed Loan to Nepal for the Road Network Development Project*. Manila.
[25] ADB. 1995. *Report and Recommendation of the President on Proposed Loans to the Philippines for the Cordillera Highland Agricultural Resource Management Project*. Manila.
[26] ADB. 1998. *Report and Recommendation of the President on a Proposed Loan to the Philippines for the Agrarian Reform Communities Project*. Manila.
[27] ADB. 1997. *Report and Recommendation of the President on a Proposed Loan to the Socialist Republic of Viet Nam for the Rural Infrastructure Sector Project*. Manila.
[28] ADB. 2001. *Report and Recommendation of the President on a Proposed Loan to the Socialist Republic of Viet Nam for the Provincial Roads Improvement Sector Project*. Manila.

the selected projects from ID perspective. The final section gives the key lessons and recommendations.

II. METHODOLOGY AND DATA

A. A Conceptual Framework

12. The SES comprised both desk research and field study. The desk research (i) reviewed internal ADB external literature on ID and ADB's rural roads portfolio; (ii) analyzed performance ratings reported in completion reports (self-evaluation) of rural road-associated lending and technical assistance projects prepared by operations departments; and (iii) reviewed DMF of 53 loan projects to determine the quality of ID statements and monitoring indicators. The desk work also included interviews and discussions with ADB staff. The field work focused primarily on (i) household surveys to assess before and after project changes in terms of economic, social, institutional, and environmental opportunities; (ii) interviews with government officials and other stakeholders; and (iii) focus group discussions (FGDs) in the project sites. The information gathered was then triangulated and analyzed further to come up with key findings.

13. The methodology for the SES focused on understanding the factors that drive ID (rather than measuring the magnitude). Because of the focus on ID in the SES, typical road impact assessment tools such as traffic movements, vehicle operating costs (VOCs), and freight and passenger prices were deemed insufficient. These traditional assessment tools were considered not of much use to many rural roads or FMRs because of low traffic volumes and services. Moreover, the traditional tools could not capture many social, institutional, and environmental interactions important for ID. The SES applied the Logic Model (Appendix 2, Figure A2) as the framework for assessing ADB's contribution to ID. The model highlights the four key dimensions of potential contributions—economic, social, institutional, and environmental—and demonstrates relevant linkages across inputs (relevance), outputs (efficiency), outcomes (effectiveness), and impact (ID). The emphasis was on both access to and utilization of rural roads for improving the socioeconomic well-being of the rural population served by the project roads. The economic opportunities in the study context included market development, increased income at the household level, lower consumer prices, development of new businesses, and opportunities for new investments in the project intervention area. Higher income was expected to come from increase in productivity and volume of production, lower unit costs, lower marketing margins, and added revenues from processing activities. It was assumed that improved roads would enable access to, and utilization of, infrastructure service institutions and legal services; and also promote sustainable production technologies and reduced pollution levels. Furthermore, improved roads would lead to better access to and use of education, health, and other social services.

B. Portfolio of Rural Road-Associated Assistance Projects

14. The SES reviewed ADB projects approved between 1996 and 2007[29] to enlist relevant loan, TA, and grant projects with a significant share of rural road-associated interventions for (i) the analysis of inclusiveness in the project designs, and (ii) short-listing as potential projects for case studies. In all, 53 loan, 62 TA, and 16 grant projects were identified for inclusion in the study. The portfolio comprised both completed and ongoing projects and covered four relevant sectors—agriculture and natural resources; law, economic management, and public policy; multisector; and transport and communications. The analysis focused on the distribution of

[29] The SES began in 2008 and the cutoff date for the analysis was December 2007.

projects by amount, type of funding, and project implementation delays; and distribution of ADB investment was analyzed by sector, country, and region. The list of rural road-associated projects was used to identify completed projects and projects with completion reports. It was also used as a basis for identifying projects for case studies.

C. Case Studies

15. **Country and Project Selection.** Countries and projects were selected on the basis of maturity of the rural road-dominated portfolio, geophysical conditions, and level of economic development. Initially, four countries were selected for the SES—two Southeast Asian and two South Asian—but due to the election and political environment at the time of the fieldwork, only one South Asian country was included. The SES covered Nepal, Philippines, and Viet Nam. Nepal represented a postconflict DMC, the Philippines represented an economy with modest economic growth, and Viet Nam represented an economy with rapid growth.[30] In each country, two rural road development projects with different socioeconomic and geographic settings were identified from a list of relevant projects. The final list of participating projects (para. 10) was based on consultation with the concerned resident missions.

16. **Site (Road) Selection.** The project sites were identified in consultation with the resident missions and the concerned project staff. The opinion of the project staff was considered important from ID perspective because project designs did not explicitly address ID agenda. Efforts were made to ensure that the selected sites (roads) would have implications for women, ethnic groups, and the poor and other disadvantaged population. The list of sites covered by the SES appears in Appendix 2. Field work for the SES covered three points—head, middle, and tail—of each road segment so as to capture variations in benefits accruing to the communities served by the roads.

17. **Sampling.** The SES is based on 33 VCAs, a survey of 1,401 households, 74 FGDs, and 136 key informant interviews for the six case study projects in three DMCs (Appendix 2). VCAs were conducted for key commodities with potential for commercialization. Household surveys covered randomly selected households within a 5-kilometer (km) radius of the respective road segments. FGDs were conducted with groups of local people who have a stake in the concerned road segment in the sample. Interviews were held with local community leaders, business persons, traders, and transport operators. Wherever relevant, an effort was made to maximize representation of the poor, ethnic minorities, women, and other disadvantaged groups in the household survey, FGDs, and interviews.

18. **Data Collection and Analysis.** The case studies obtained information and data such as (i) access to and utilization of different modes of transport by different types of beneficiaries (who are on the road and for what purpose); (ii) savings in time, transportation, and transaction costs for each distinct group of users and beneficiaries; (iii) increase and/or change in economic activity due to improved roads; (iv) changes in local trade of major produce (inputs and outputs), consumption goods, and services; (v) permanent and temporary changes in employment (quantity and quality); (vi) changes in the organization and utilization of economic, institutional, and social services (extension, credit, markets, education, health centers, community organizations, local government organizations, etc.); (vii) distribution of economic (changes in household incomes) and social benefits to the different groups served by the road (entrepreneurs, farmers, ethnic minorities, landless families, females, families with female head, civil servants, etc.); and (viii) changes in the incidence of poverty and social behavior. Data was

[30] IED obtained concurrence from the respective resident missions on the conduct of the SES.

disaggregated to the extent possible to distinguish the contributions by gender and ethnic minorities. Instructions and comprehensive checklists for data collection were used to develop a detailed methodology, tools, and specification of the outputs, taking into account site-specific situations, but uniformity in approach and analysis was pursued.

19. **Value Chain Analysis.** The SES examined the effectiveness and economic contribution of ADB assistance by adopting a participatory VCA.[31] Value chain refers to the full range of activities that are required to bring a product or service from conception, through the different phases of production, up to delivery to consumers, and disposal after use. The VCA mapped out key actors and activities in the value chain of a specific commodity or product and documented contributions, risks, and benefits accruing to each group of actors. The selected commodity was cash crops produced in commercial quantities in the case study areas. The (participatory) VCA provided information on matters such as (i) how products are produced and reached the final customer; (ii) who were the actors/players in the chain, what were the economic and social relationships and interactions among them, what was their share in value addition and profits in the chain, and what was the key determinant for this distribution; (iii) how has road improvement changed the value chain and/or has it had an impact on its actors, in positive as well as negative sense; and (iv) how was this value chain likely to change further over time and how would actors be affected, and what would be the key determinants for this change? In addition, wherever possible, changes in margins and incomes for the various actors, along the chain were quantified.

D. Methodological Limitations

20. Each of the three countries in the SES had unique attributes; hence, the survey instruments had to be adapted to local conditions. The overall approach was consistent in the methodology and tools adopted, but intercountry variations required a unique approach to field-work in each country. The type of rural road assistance also varied across the projects and countries. Rural roads or FMRs ranged from black-topped roads to seasonal earthen roads and in some cases were segments of longer roads. The case study results reflect status at the time of evaluation and may change in the future depending on changes in development opportunities, condition of roads, and deployment of other intervention measures. The results of the household survey are based on small samples; hence, the results should be interpreted with caution. Furthermore, as indicated earlier, while some of the case study projects examined may have had other development interventions, the SES focused only on documenting contribution rather than attribution of rural roads to ID. Detailed gender analysis, as such, was not carried out. Finally, data limitation did not permit with or without comparisons.

III. ASSISTANCE FOR RURAL ROADS

A. ADB Policies and Strategies

21. In the past, inclusive growth had focused on measures for reducing poverty, rather than emphasizing the broader concept of ID. Fernando (2008, footnote 15) proposed to broaden the focus for ID by emphasizing (i) increased opportunities for the poor to gainfully employ themselves, and improve their quality of life; (ii) improved ability of poor households to take

[31] A value chain is a string of individuals, businesses, or collaborating players who work together to satisfy market demands for specific products or services. It is a concept from business management that was first described and popularized by Michael Porter in his 1985 best-seller, *Competitive Advantage: Creating and Sustaining Superior Performance*. Analytical approach to a VCA has been extensively discussed in *Making Value Chains Work Better for the Poor, Market for the Poor* (Available: http://www.markets4poor.org/?name=event &op=viewDetailNews&id=443), and Kaplinksy, R. and Morris, M., *A Handbook for Value Chain Analysis* (mimeo).

advantage of the opportunities; (iii) enhanced access of low-income households to adequate health services; (iv) special well-designed and targeted programs for rural people, including women, to enable them to participate actively in development; (v) improved governance; and (vi) effective social safety net programs to address the issue of the poorest, and the most vulnerable groups in rural areas, particularly, women. While ID has not been an explicit focus in its operations, ADB has generally addressed the notion of inclusiveness through its policies, strategies, and initiatives.

22. ADB's PRS (footnote 2), the Medium-Term Strategy,[32] and Strategy 2020 (footnote 7) all imply that economic growth must be accompanied by a comprehensive program for social development that puts people first and empowers the weaker groups in society (particularly women and children, minority groups, the extremely poor in the rural areas, and those pushed below the poverty line by natural and human-made disasters) to gain equitable access to assets and opportunities. ID in the LTSF context also involves strengthening the participation of people directly and indirectly affected (stakeholders) by ADB interventions, from the preparation to the implementation stage of projects to ensure the relevance of programs and projects. Specific areas focus on human development, targeting basic social services such as education and health to the poor, eliminating gender bias, and encouraging civil society to participate in social development programs. Strategy 2020 reiterates ADB's support for inclusive growth through investments in infrastructure that connects the poor with markets, and increases their access to basic productive assets such as education, WSS, and other economic resources such as credit. Inclusiveness of development interventions featured also prominently in the ADF X framework. In Medium-Term Strategy II,[33] strengthening inclusiveness was a strategic priority and was focused on the following interventions: (i) support to rural development, such as irrigation, rural infrastructure, and rural finance; and (ii) key social development programs such as education, health, and gender equality. Specifically, rural roads have been cited as one of the most effective forms of investments for reducing rural poverty, and represent an area where ADB should focus.

23. Comparatively few road projects approved before the mid-1990s included components to address road safety, even though evaluations frequently found that road accidents increased due to the heavier volume of traffic and increased driving speeds. Furthermore, the greatest uncertainty associated with road projects was over maintenance because of lack of funding, which affected sustainability.[34] Hence, O&M for roads has become an important component of ADB support for the road sector through strengthening the road design capabilities of local institutions, financing the procurement of maintenance equipment, capacity building for O&M, policy reform for cost recovery, creation of road funds, and increasing the role of the private sector (including road users and beneficiaries) in road development and maintenance. Overall, the significant lack of systematic and appropriate road maintenance in developing countries is considered mainly the result of lack of funds; weak institutional capacity; and inadequate systems for monitoring conditions of roads, assessing maintenance needs, and prioritization.

24. In response to the report of the Task Force on Improving Project Quality, a framework for mainstreaming participatory development processes in ADB operations was introduced in 1996. The purpose was to enhance ownership among beneficiaries and local governments, and encourage greater beneficiary participation in all aspects of the project cycle. Subsequently, rural development projects were designed and implemented through participatory or bottom-up

[32] ADB. 2001. *Medium-Term Strategy (2001–2005)*. Manila.
[33] ADB. 2006. *Medium-Term Strategy II (2006–2008)*. Manila.
[34] ADB. 2006. *Learning from Successful Road Projects.* Manila.

approaches, which involved (i) beneficiary consultation and participatory planning, (ii) community development support, (iii) engagement of nongovernment organizations (NGOs), (iv) local government involvement, and (v) private sector participation. This framework became relevant for rural road development interventions, and has the potential for supporting the institutional dimensions of ID.

25. Under the EPRS, poverty reduction shifted from being project-based to having a country assistance focus. The implication is that each project does not need to target the poor, or be designed and configured to benefit poor communities directly; and that poverty reduction should be monitored as an integral part of the country strategy and program, rather than at the level of individual projects. An assessment was made of how ADB's roads and railways projects in the People's Republic of China addressed poverty reduction by considering seven benchmarks, and distinguishing projects approved before the PRS and after the PRS was approved, and after the EPRS was approved in 2004. Despite the change in policy, the SES did not find an indication that the projects were being designed and monitored differently from a poverty perspective before and after implementation of the PRS.[35]

B. Analysis of Rural Roads Portfolio

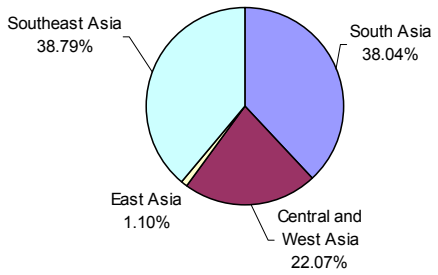
26. Rural roads account for nearly three fourths of ADB assistance for rural infrastructure development. Assistance for rural roads has largely been through explicit road development projects, or projects in which rural roads were a component of a package of development interventions. In particular, the latter approach has gone through a number of development paradigms such as integrated rural development, community development, participatory rural development, and area-based approach to poverty reduction. In all those approaches, rural roads usually constituted a significant investment. ADB assistance to DMCs has been in the form of loans, grants, and TAs. The level of funding in each area is briefly discussed in this section. Relevant supporting data are in Tables A3.1–A3.14 in Appendix 3.

27. **Loans.** ADB's rural road-associated infrastructure development assistance between 1996 and 2007 amounted to slightly over $3 billion, which funded 53 projects in 13 DMCs. Pakistan alone accounted for one fifth of total assistance, closely followed by India (19.3%), Indonesia (14.6%), and Viet Nam (13.4%) (Table A3.1). Figure 1 depicts the regional distribution of the project funds and suggests that the Southeast and South Asia regions received 38.79% and 38.04% of total funds, respectively. The Central and West region got 22.07% of funds, the East Asia region had the smallest share (1.10%), and the Pacific region had none. The Southeast region accounted for 23 of the 53 projects (43%), followed by 16 in South Asia (30%), 13 in Central and West region (25%), and 1 in East Asia (2%). Interestingly, Table A3.2 shows that ADF financed 79% of the projects (58% of total funds), and the remaining 21% received ordinary capital resources funds (42% of the resources). Distribution by sector (Figure 2 and Table A3.3 and A3.4) shows that transport and communications had 16 projects worth $1.35 billion; followed by 16 multisector rural development ($1.03 billion); 15 agriculture and natural resources ($508.5 million); and 1 law, economic management, and public policy project ($120 million). While rural roads were a major focus in these projects, assistance was also provided for rural markets communication, processing facilities, and other support services (Table A3.5).

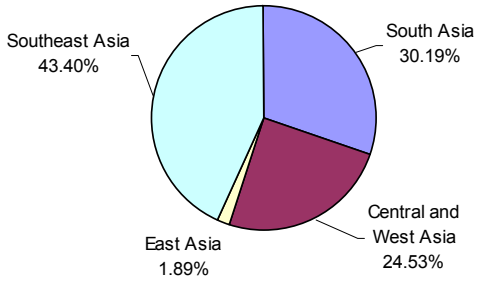
[35] ADB. 2007. *Assessment of How ADB Roads and Railway Projects Addressed Poverty Reduction.* Manila.

Figure 1: Regional Distribution of Rural Road-Associated Loan Projects, 1996–2007

By Amount of Funding



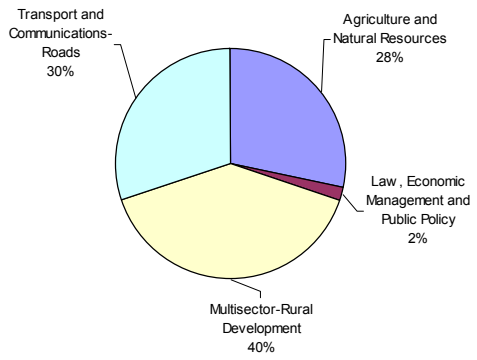
By Number of Projects



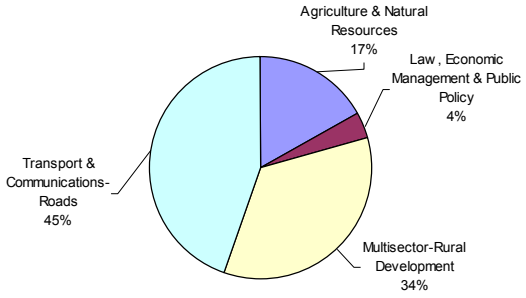
Source: Appendix 3, Table A3.1.

Figure 2: Distribution of Rural Road-Associated Loan Projects by Sector

Share of Total Number of ADB Projects on Rural Roads, 1996–2007



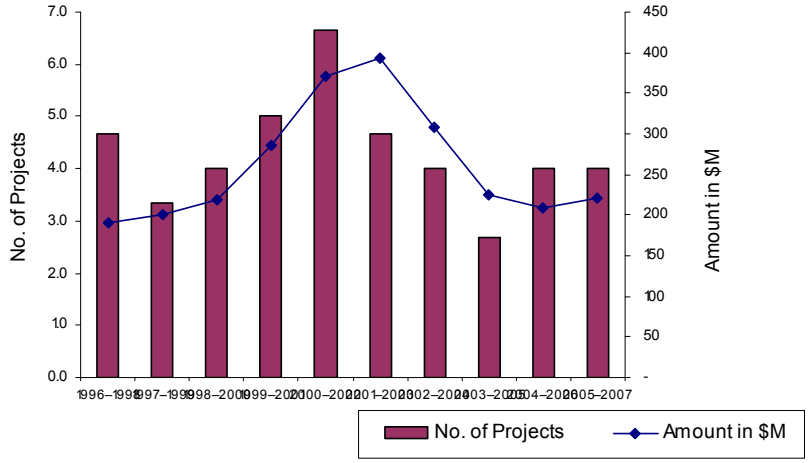
Share of Total Number of ADB Projects on Rural Roads, 1996–2007



ADB = Asian Development Bank.
Source: Appendix 3, Table A3.4.

28. Loan size varied considerably across projects, countries, and sectors (Tables A3.2 and A3.3). An average loan based on ADF and ordinary capital resources was about $40 million and $105 million, respectively. Annual approval of project approvals by ADB fluctuated considerably, but approval was somewhat smoother on the basis of a 3-year average (Figure 3).The largest number of approvals occurred between 2002 and 2003. All projects had rural roads, but several of them also had other components such as rural markets, support services, value-addition, and rural communication facilities (Table A3.6).

Figure 3: Approval of Rural Road-Associated Loan Projects in ADB, 1996–2007
(3-Year Average)



M = million, No. = number.
Source: Appendix 3, Table A3.6.

29. **Grants.** ADB provided $190.4 million (Figure 4a) for 16 grant projects in 10 DMCs between 1996 and 2007. Nearly 83% of the grant funds were used by three countries—Bangladesh, Afghanistan, and Nepal (Table A3.7). Grant funds were received from various sources (Figure 4b): $60 million from ADF IX funds for two projects, $57.23 million from the Japan Fund for Poverty Reduction (JFPR) for 12 projects, $56.70 million from the United Kingdom for one project, $15 million from Kuwait for one project, and $1.50 million from Norway and Finland for one project (Table A3.8). Half of the grant projects were multisectoral; three belonged to agriculture and natural resources, and five to roads and highways. Between 2000 and 2007, 15 ADB loan projects also received grants from various development partners (Table A3.9). In all, $32.7 million was allocated from ADF IX, and $171.46 million from other bilateral and multilateral sources.

Figure 4a: Allocation of Grant Resources by DMCs on Rural Road-Associated Projects, 2002–2007
($190.4 million)

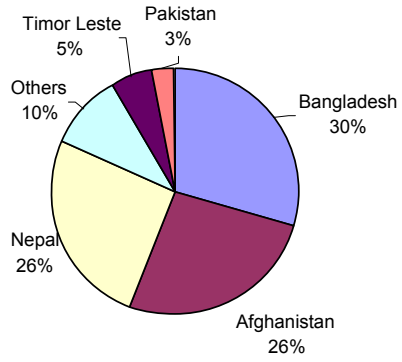
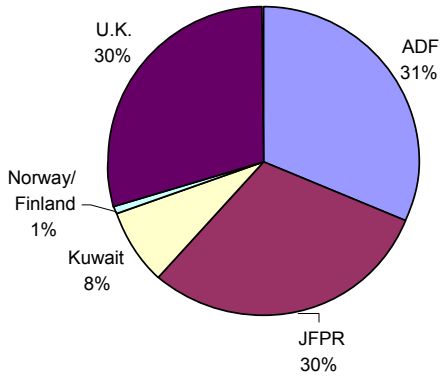


Figure 4b: Sources of Grant Funds for Rural Road-Associated Projects, 2002–2007



ADF = Asian Development Fund, DMC = developing member country, JFPR = Japan Fund for Poverty Reduction, UK = United Kingdom.
Source: Appendix 3, Tables A3.7 and A3.8.

30. **Technical Assistance.** Eighteen DMCs received $38.63 million in TA funds from ADB for supporting rural road-associated 62 project activities. The funding ranged from $0.15 million to $7.90 million. In all, between 1996 and 2007 (Table A3.10), the Southeast Asia region had the most number of projects (22) and obtained 46.4% of TA resources, followed by Central and West Asia (20 projects, $11.6 million), South Asia (16 projects, $7.5 million), Pacific (2 projects, $0.9 million), and East Asia (2 projects, $0.8 million). During the period under review, TA supported 44 project preparatory and 20 project advisory services. The TA funds were sourced from the Japan Special Fund (55.1%), ADB's internal resources (37.4%), and other sources (7.5%). A list of relevant TAs appears in Table A3.11). In addition, ADB also provided $1.6 million for three regional studies during 1997–2000 (Table A3.12).

31. **Implementation Delays**. As of 30 June 2009, 23 of the 53 loan projects reviewed had been closed. Interestingly, 21 of them required an average 22 months' extension (Table A3.13). Overall, an average of 2.7 months elapsed between loan approval and signing of the loan agreement, and 3.9 months between signing of the loan agreement and loan effectiveness. Only 2 of the 23 loan became effective within 3 months from signing the loan agreement. A review of closed loans suggests that the duration between loan approval and closing ranged from 2.7 years (Community and Local Government Support Sector Development Program, Loan 1677-INO) to 11 years (Bahawalpur Rural Development Project [Loan 1467-PAK]), with an average of 8.3 years (Table A3.14). The major reasons cited for the delays included (i) procurement and/or unfamiliarity with related ADB procedure, including preparation of bid documents (nine loans); (ii) consultant recruitment and mobilization (eight loans); (iii) problems in civil works, and construction contractor issues (seven loans); (iv) inadequate government or cofinancing arrangements (seven loans); (v) time-consuming government approval procedures (five loans); (vi) failure to comply with covenants (four loans); (vii) change in scope and design of the project (four loans); (viii) decentralization issues (four loans); (ix) disbursement- and imprest account-related problems (four loans); (x) inadequate capacity of executing and/or implementing agencies (four loans); (xi) political crisis or worsening law and

order situation (four loans); and (xii) safeguard issues (three loans).[36] Despite of the implementation delays, only 3 of the 15 projects had cost overruns by less than 6% while remaining had cost savings between 6.9% and 29.7%. The results imply that project cost at appraisal may have been overestimated or in some countries, project cost savings may have been due to the effect of exchange rate fluctuations. Interestingly, 4 of 15 loans had economic internal rate of return higher at completion compared to appraisal estimates, while the remaining 11 had lower values.

C. DMF analysis of Sample Rural Roads-Associated Projects

32. **Coverage.** The SES examined DMFs[37] or their precedent project frameworks contained in the reports and recommendations of the President (RRPs) for the relevant projects, TA reports, and grant documents. All 53 project loans,[38] 62 TAs,[39] and 16 grant-financed projects[40] that had assistance for rural roads and were approved during 1996–2007 were included in the assessment. The SES's logic model (Figure A2) that was conceptualized to assess the contribution of ADB assistance in rural roads to ID served as the framework of analysis.

33. **Results of Assessment: Goals (Impacts).** A comprehensive review of DMFs (Appendix 4) shows no explicit mention of ID in the statement of goals although the underlying dimensions of ID were present. The statement of goals in the DMFs centered mainly on poverty reduction and economic growth, and was aligned with the different governments' priorities, which also focused on poverty reduction, economic growth, and overall improvement in the living standards of poor people in the rural areas. For instance, Pakistan's project loans, TAs, and grants[41] focusing on poverty reduction cited consistency with the government's efforts to tackle poverty and human resources development. Pakistan, which had the most number of rural road-associated projects under review,[42] indicated in the RRPs that improving rural access roads would support the government's anti-poverty and social action programs. Indonesia's projects (e.g., Loan 2264-INO and TA 4872-INO)[43] cited macroeconomic goals in the DMFs in line with the government's infrastructure reforms for the Medium-Term Development Plan. Most loans, TAs, and grants have statements highlighting strong links between efforts for poverty

[36] Some of the loans had multiple reasons associated with delays in implementation.

[37] The following references were used in the analysis of the DMFs: Smith, K. 2006. *Quality in Design and Monitoring Frameworks*; ADB: Manila; and ADB. 2007. *Guidelines for Preparing a Design and Monitoring Framework*. Manila. ADB adopted the DMF in projects (loans and TAs) in 2005. Reference to DMFs in this paper includes project frameworks.

[38] These include project loans in the transport and communications-roads subsector (16); multisector (21); agriculture and natural resources (15); and law, economic management, and public policy (1). Out of the 53 project loans, 15 had grant components.

[39] These include 20 advisory TAs (12 of which were associated with loans) and 42 PPTAs (two of which were associated with loans).

[40] These include grants financed by the JFPR (12), ADF (2), Finland and Norway (1), and United Kingdom (1). One grant-financed project by the JFPR was provided with a supplementary funding by Kuwait.

[41] These are: (i) Loan 1531-PAK: Dera Ghazi Khan Rural Development Project, (ii) TA 2585-PAK: Dera Ghazi Khan Rural Development Project, (iii) Loan 1892-PAK: Road Sector Development Project, (iv) Loan 1928-PAK: Punjab Road Development Sector Project, (v) Loan 2234-PAK: Federally Administered Tribal Areas Rural Development Project, (vi) TA 3984-PAK: Preparing the Federally Administered Tribal Areas Rural Development Project, (vii) Grant 9067-PAK: Enhancing Road Improvement Benefits to Poor Communities in the North-West Frontier Province, and (viii) Grant 9092-PAK: Immediate Support to Poor and Vulnerable Households in Inaccessible Areas Devastated by the 2005 Earthquake.

[42] Pakistan had 10 rural roads projects during 1996–2007.

[43] ADB. 2006. *Report and Recommendation of the President to the Board of Directors on the Proposed Program Cluster, Loans, Technical Assistance Grant, and Administration of Grant to Indonesia for the Infrastructure Reform Sector Development Program*. Manila.

reduction and economic development through improved access to markets and greater employment opportunities for the poor. In assessing the DMFs, the SES found that the impacts (goals) focusing on poverty reduction and economic growth in the loans, TAs, and grants with assistance for rural roads were by nature consistent with the attainment of inclusive growth and ID. These intended goals were aligned with the priorities and plans of DMCs and ADB.

34. **Outcomes.** The intended outcomes (purpose) underscored the importance of assistance in rural roads as a means for achieving the long-term objective of the agriculture sector, transport system, and the nation as a whole. In various ways, the purposes mentioned in the DMFs of project loans and grants highlighted (i) enhancing the social and economic well-being of the poor, and (ii) improving the overall quality of life in the rural areas. The purpose of most TAs focused on building capacities and strengthening institutions, systems, and procedures to achieve the intended impacts.

35. **Outputs.** There was a slight increase in the number of outputs (components) from project loans that were approved in the early period (1996–2000) over those approved in recent years (2001–2007). The combination of components varied during the 11-year period under review, but the major components focused on the improvement of rural roads through civil works, rehabilitation and maintenance, institutional development, capacity building, and project support. For projects in the transport sector, components on strengthening road and traffic regulations, implementing road sector reforms, involving the private sector, and educating the people on the risks of sexually transmitted diseases and human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS) became more pronounced in 2001–2007. The adoption of participatory and community-driven development frameworks, the devolution of authority to local governments, and the involvement of NGOs and beneficiaries in project planning and implementation (e.g., O&M of rural roads), however, remain as key features in project designs. Similarly, the main components of TAs were capacity building, institutional strengthening, and project support. Some particular features included the conduct of feasibility studies in most project preparatory TAs (PPTAs), and assistance in policy, planning, and management in most advisory TAs, which generally contributed to capacity development in the rural roads subsector. Project grants included key components on O&M of rural roads, capacity building, assistance in livelihood opportunities, and support for project administration.

36. **Synthesis.** For project loans, slightly less than half of the indicators (performance targets) assessed were specific, measurable, achievable, relevant, and time-bound (SMART). Outputs had better indicators than did outcomes and impacts. Meanwhile, the project framework for most PPTAs were often preliminary (not parallel or at the same level). Most advisory TAs, particularly those associated with projects, were expected to support the achievement of the projects' performance targets. The project frameworks of grants appeared to have good indicators for intended impacts compared with outcomes and outputs. Project grants funded by the JFPR used separate matrixes to monitor deliverables and performance indicators.

37. The project characteristics incorporated in the design of loans, TAs, and grants show that the elements of inclusive growth—economic, social, institutional, and environmental—were addressed in various ways. On the economic dimension, project designs were clear that assistance for rural roads would improve access to employment opportunities through (i) the provision of jobs in construction and/or rehabilitation work, particularly unskilled and semi-skilled jobs; (ii) derived demand for labor due to the growth of on-farm and nonfarm activities, and (iii) increased mobility for local people seeking employment outside their communities. In addition, several projects envisaged improved access to markets, better prices for both producers and consumers, and increased household incomes. The provision for participatory

planning processes; decentralized decision making; cost-sharing arrangements in construction, as well as repair and maintenance; public-private partnerships; and establishment of road maintenance funds in selected project designs contributed toward the institutional dimension of ID.

38. Most of the project designs assumed that improved roads would contribute to better access to social services. However, several loans and TAs in the transport sector neither elaborated on this nor made provisions for specific interventions in the design components. Social safeguard measures associated with resettlement, land acquisition, and ethnic minorities were consistently included in the loans, TAs, and grants although many were observed more in recent approvals. Mainstreaming gender concerns was consistently emphasized in the preparation of gender action plans; inclusion of women in village decision-making committees; and provision of opportunities in work, skills development, and livelihood. The project design of a number of projects addressed the environmental dimension of ID by incorporating low-intensity technology, environment-friendly technical designs and standards, and planting of trees and vegetation on embankments to prevent soil erosion and landslides. The majority of the projects did not foresee negative environmental impacts in the long term, but nonetheless provided for environmental management and monitoring plans to ensure protection of environmentally sensitive areas as required by the safeguard policy.

39. **Summary.** The analysis of DMFs revealed that only 45% of the indicators were monitorable and none of the projects explicitly identified ID-related indicators. However, the review shows that project loans, TAs, and grants addressed inclusiveness in the project designs in various ways. There were attempts in their design to focus on creating opportunities that would make the rural poor share in and contribute to growth. Most projects recognized that assistance in rural roads, including various aspects of rural road improvement or development (e.g., O&M, capacity building, institutional development, reforms in road management and policies, and systems and procedures, etc.) would result in increased economic opportunities and enhanced access to social services such as education and health. Significantly, a number of projects combined assistance to rural roads with other component features that aimed to ensure access to economic and social opportunities such as credit, skills development and training, WSS, literacy centers, and health facilities, among others. Finally, the adoption of decentralized, demand-driven, and community-based approaches in the project designs were expected to benefit the project beneficiaries, who participated in the development process that addressed their own needs. While these initiatives were considered important from the perspective of ID, the size and scale of interventions of other enabling factors and their sequencing were deemed inadequate. In most cases, the add-on components were only being piloted but hardly scaled up. As a result, their contribution to ID remained limited. There was more emphasis on project designs to improve access, but less on utilization of the infrastructure. Furthermore, project designs focused more on achieving outputs and, as a result, had less focus on achieving outcomes and impact. This finding was supported by the fact that there was less clarity in sequencing project components and, often, social preparation was either assumed or accorded low priority.

D. Evidence from the Completion Reports

40. **Project Completion Reports.** As of 30 June 2009, 15 loan and 13 TA PCRs were available and IED plans to complete a project performance evaluation report for one project in 2009 (footnote 27). Table 1 summarizes the ratings for loan PCRs and shows that out of the 15 project loans with PCRs, one project was rated *highly successful*, 12 *successful*, and two *partly successful*. In general, the sample PCRs reported significant impacts toward achieving

economic growth and poverty reduction. Economic impacts were observed in increased employment opportunities, productivity, investments, and incomes. The PCRs noted that improved roads contributed to local economic development, with the increase in commercial farm and nonfarm enterprises, and activities in the project areas. Road improvements resulted in more frequent and more reliable transport services. Due to reduced VOCs, incomes increased for the road users and operators of buses, trucks, and commercial vehicles. Roads also reportedly improved mobility for local people and reduced travel time and costs when they searched for jobs. Consumers also benefited from high quality goods and competitive prices resulting from the high turnover of goods in growth center markets. Social impacts were noted in the improved access to social services such as education, health, and WSS facilities, thereby improving quality of life. The overall environmental impact of the projects was also reported to be positive. However, there were instances in which project benefits were not fully utilized because of weaknesses in institutional capacities and mechanisms for participation, and lack of human and financial resources and sense ownership. None of the PCRs reported progress toward ID and, hence, contribution of rural roads to ID could not be assessed based on PCRs. The success rate of evaluated projects based on PCR rating was 87%.

Table 1: Ratings of Completed ADB Projects Associated with Rural Roads 1996–2007

Project	Relevance	Effectiveness	Efficiency	Sustainability	Overall Rating
1. Cordillera Highland Agricultural Resource Management (Loans 1421- and 1422-PHI)	HR	E	E	LS	S
2. Rural Infrastructure Development Project (Loan 1450-NEP)	R	E	E	LS	S
3. Third Livestock Development Project (Loan 1461-NEP)	R	E	E	LS	S
4. North Central Province Rural Development Project (Loan 1462-SRI)	PR	LE	LE	LLS	PS
5. Bahawalpur Rural Development (Loan 1467-PAK)	R	E	E	LS	S
6. Dera Ghazi Khan Rural Development Project (Loan 1531-PAK)	R	E	E	LS	S
7. Rural Infrastructure Sector Project (Loan 1564-VIE)	HR	HE	E	LS	S
8. Southern Provincial Roads Improvement Project (Loan 1567-SRI)	HR	E	E	LLS	S
9. Third Rural Infrastructure Development Project (Loan 1581-BAN)	HR	HE	HE	LS	HS
10. Central Sulawesi Integrated Areas Development and Conservation (Loan 1605-INO)	HR	E	E	LS	S
11. Tea Development (Loan 1639-SRI)	R	E	E	LLS	PS
12. Community and Local Government Support Sector Development (Loan 1678-INO)	HR	HE	LE	LS	S
13. Community Empowerment for Rural Development (Loans 1765- and 1766-INO)	HR	E	E	LS	S
14. Rural Access Roads (Loan 1795-LAO)	HR	E	E	LLS	S
15. Road Rehabilitation (Loan 1819-TAJ)	HR	E	HE	LS	S

BAN= Bangladesh, E = effective/efficient, HR = highly relevant, HE = highly effective/highly efficient, HS = highly successful, LE = less effective/less efficient, LLS = less likely sustainable, LS = likely sustainable, INO = Indonesia, LAO = Lao People's Democratic Republic, NEP= Nepal, PAK= Pakistan, PHI = Philippines, PR = partly relevant, PS = partly successful, R = relevant, S = successful, SRI = Sri Lanka, TAJ = Tajikistan, VIE = Viet Nam.
Source: Various Asian Development Bank project completion reports.

41. **Technical Assistance Completion Reports**. As of 30 June 2009, 12 TA completion reports (TCRs) and one TA performance evaluation report were available.[44] The TCRs usually assign only overall ratings, but IED applied evaluation parameters and assigned applicable ratings based on the content analysis of the reports. The results suggest that two TAs were *highly successful*, seven *successful*, three *partly successful*, and one *unsuccessful* (Table 2). Three TAs[45] had limited impacts on rural roads improvement due to difficulties in meeting the desired outcomes. IED assessment of these reports indicates that 2 TAs were *highly relevant*, 10 *relevant*, and 1 could not be rated for relevance based on available information. Ten TAs were found to be *effective* and three *less effective*. On the efficiency parameter, 10 TAs rated *efficient* while 3 were *less efficient*. Nine TAs were considered *likely sustainable*, and four *unsustainable*. The TCRs indicated that the majority of TAs encouraged participatory approaches to project planning and management, capacity building, transport sector policy and strategy, policy dialogues, and improvement in the standards for rural road construction and maintenance. The success rate, based on IED assessment, was 69%.

Table 2: Ratings of ADB Technical Assistance Associated with Rural Roads 1996–2007

TA Name	Relevance	Effectiveness	Efficiency	Sustainability	Overall Rating
1. Third Livestock Development (TA 2851-NEP)	R	E[a]	E[a]	LS[a]	S
2. Road Infrastructure for Rural Development Project (TA 3070-LAO)	R	E	E	LS	HS
3. Capacity Building to Support Decentralized Administrative Systems (TA 3177-INO)[b]	NR	LE	E	US	PS
4. Performance Enhancement of Selected Frontline Services (TA 3210-VAN)	R	E	E	US[a]	PS
5. Financial Management System (TA 3518-INO)	R	LE	E	US[a]	PS
6. Strengthening Social and Environmental Management Capacity in the Department of Roads (TA 3557-LAO)	HR	E[a]	LE[a]	LS[a]	S
7. Institutional and Policy Support in Road Sector (TA 3602-TAJ)	R	E	LE[a]	LS	S
8. Rural Road Development Policy Framework (TA 3805-PHI)	R	E	E	LS	S
9. Passenger Transport Services Improvement (TA 4075-SRI)	R[a]	LE[a]	LE[a]	US	U
10. Rural Road Development Strategy (TA 4671-PRC)	R	E	E	LS[a]	S
11. Support for Infrastructure Development (TA 4728-INO)	HR	E	E	LS	S
12. Sustainable Rural Transport Services (TA 4806-PRC)	R	E	E[a]	LS[a]	S
13. Transport Sector Development Strategy (TA 4973-ARM)	R[a]	E[a]	E[a]	LS	HS

ARM= Armenia, BAN= Bangladesh, E = effective/efficient, HR= highly relevant, HS= highly successful, IED = Independent Evaluation Department, INO = Indonesia, LAO= Lao People's Democratic Republic, LE = less effective/less efficient, LS= likely sustainable, NEP= Nepal, NR= not rated, PAK= Pakistan, PHI= Philippines, PR=

[44] ADB. 2001. *Technical Assistance Completion Report on the Capacity Building to Support Decentralization Administrative Systems in Indonesia*. Manila.

[45] These are: (i) ADB. 2001. *Technical Assistance Completion Report on the Capacity Building to Support Decentralization Administrative Systems in Indonesia*. Manila; (ii) ADB. 2005. *Technical Assistance Completion Report on the Financial Management System in Indonesia*. Manila; and (iii) ADB. 2001. *Technical Assistance Completion Report on the Performance Enhancement of Selected Frontline Services in Vanuatu*. Manila.

partly relevant, PRC = People's Republic of China, PS= partly successful, R= relevant, S= successful, SES = special evaluation study, SRI= Sri Lanka, TA= technical assistance, TAJ= Tajikistan, TCR= technical assistance completion report, TPER= technical assistance performance evaluation report, US= unlikely sustainable, U = unsuccessful, VAN= Vanuatu, VIE= Viet Nam.
[a] The ratings determined by IED SES study team based on content analysis.
[b] Based on TCR and TPER ratings.
Source: Various TCRs and TPERs.

E. Evidence from Past Research and Evaluation Studies

42. Various attempts have been made to establish a link between rural infrastructure investment and poverty reduction or economic growth. A recent ADB study[46] on rural development found clear differences in the level and quality of rural development between countries that developed rural infrastructure and those that neglected to do so. Positive relationships between investment in rural infrastructure and income poverty have been reported in People's Republic of China; India; Indonesia; Taipei,China; and Viet Nam. In the Lao People's Democratic Republic, Warr[47] found that rural roads led to a decline in the incidence of rural poverty. Similar observations have been reported in other studies, e.g., World Bank in Bangladesh.[48] Some studies also found that investment in rural roads have led to improved access to social services. For example, time needed to reach the closest hospital in case of a serious injury declined by about three quarters of an hour and services such as pharmacies, shops, banks, and other government services improved in Viet Nam.[49] Improved rural roads also contributed to a 40% reduction in travel time in Viet Nam. Investments in rural roads are considered pro-poor, and the poor reportedly have benefited the most in Viet Nam and Bangladesh. In contrast, in the Philippines the benefits of the project interventions were disproportionately captured by the wealthier households, resulting in worse income distribution in the communities. In the transformation from manual to mechanized modes of production and transportation, the poor generally lose out, at least temporarily.

43. Many rural road-associated projects (like other infrastructure) have emphasized the role of participatory processes in planning and decision making. In response to the report of the Task Force on Improving Project Quality, a framework for mainstreaming participatory development processes in ADB operations was introduced in 1996 (para. 24) and it became very relevant for rural road development interventions. However, a SES on the effectiveness of the participatory approach[50] found no evidence that participatory involvement in identifying and implementing rural road projects had contributed to grassroots democracy, empowered beneficiaries in resource control and decision making; nor did it result in increased accountability or enhancement of ownership, and the old problem with sustainability remained. The reasons were the following: (i) the principal-agent relationships among policymakers, project providers, and beneficiaries did not alter—providers responded to the policymakers instead of to the beneficiaries; (ii) grant financing (as seen by beneficiaries) caused the conventional problem of sustainability to persist; (iii) project funds were controlled by policymakers, rather than by the beneficiaries and therefore, the latter had little bargaining power; and (iv) participatory

[46] ADB. 2008. *Rural Development Outcomes and Drivers: An Overview and Some Lessons*. Manila.
[47] Warr, P. 2005. Road Development and Poverty Reduction: The Case of Lao PDR. *ADB Institute Discussion Paper No. 25*. Tokyo.
[48] Khandker, S., Bakht, Z, and Koolwal, G. 2006. The Poverty Impact of Rural Roads: Evidence from Bangladesh*. World Bank Policy Research Working Paper*. Washington, D.C.
[49] De Walle, D. and D. Cratty. 2002. *Impact Evaluation of a Rural Road Rehabilitation Project.* World Bank. Washington, D.C.
[50] ADB. 2004. *Effectiveness of Participatory Approaches: Do the New Approaches Offer an Effective Solution to the Conventional Problems in Rural Development Projects?* Manila.

processes focused on information flow or delivery mechanisms instead of on the key issue of resource control.

44. ADB assistance to DMCs has been traditionally directed toward construction and rehabilitation of rural roads and their O&M, capacity building, and governance. Some experiences from ADB operations suggest that rural roads have resulted in better access to market and administrative and service centers, improved livelihood opportunities, lower VOCs, competitive markets, and a strengthened community self-help and village-based maintenance system. A review and synthesis of ADB experiences in inclusive growth and ID were summarized by Rauniyar and Kanbur.[51] While the emphasis has been on improving access, the evidence supporting the contribution of rural roads to ID is still largely anecdotal and undocumented. Furthermore, while a number of lessons have been derived from ADB operations, most of them remain to be incorporated into future project designs.

F. Key Informant Interviews

45. Interviews with selected ADB staff and other key informants pointed out that ADB's operations for rural roads contributed to (i) improved access to markets and administrative and social services; (ii) increased productivity; and (iii) lowered transport costs, reduced consumer prices, and increased output prices. The frequency of buyers' visits to production areas also increased and contributed to better prices for the producers. Better access to markets caused farmers to switch from subsistence farming to higher value agricultural product systems, and develop small-scale manufacturing, commercial, and service enterprises such as roadside shops, thereby increasing wage labor opportunities. Employment due to road construction and maintenance enabled the poor to escape debt cycles and move away from poverty. Benefits obtained from reduced VOCs, changes in transport modes, and increased efficiency were passed on from operators to users in the form of lower transport charges when there was competition among transport providers. However, improved delivery of social services still depended on the extent of other complementary programs such as health services and education. Actual demand and access to marketing networks depended largely on the size of the population and agricultural and other economic potential. Opportunities for increased commercialization were found to be greater for better-off households than for the poor and the very poor. Road improvements reportedly reduced the burden of basic household and productive tasks, such as collecting water and firewood.

46. Some interviewees acknowledged that ADB's experience had shown the potential benefits of community and beneficiary involvement in routine road maintenance, including involvement of labor contracting societies and NGOs. But when contributing free labor was mandatory, the poor were at a disadvantage because that left them less time for other income-earning activities. The respondents also noted that while improved roads increased mobility, they also exposed rural residents to increased risks associated with drug use and sex trade in nearby urban centers, and trafficking, particularly of young poor rural women. Most of the respondents believed that ADB addressed environmental impacts of roads satisfactorily with its environmental safeguard guidelines and environmental assessment before project implementation.

[51] Rauniyar, G. and R. Kanbur. 2009. Inclusive Growth and Inclusive Development: A Review and Synthesis of Asian Development Bank Literature. Evaluation Working Paper. ADB: Manila. (draft)

IV. PROJECT CASE STUDIES

A. Nepal

1. Loan 1450-NEP(SF): Rural Infrastructure Development Project

47. The Project aimed to reduce poverty in three hill districts[52] of Nepal by strengthening rural road networks and providing access to market centers and other basic support services. It had three components: (i) development of rural roads and related structures, (ii) village-level development support, and (iii) awareness campaigns for rural infrastructure development at the central and local levels. The Project was implemented by the Department of Local Infrastructure Development and Agricultural Road of the Ministry of Local Development. A key objective was to create local employment by adopting a labor-intensive and environment-friendly (LEF) approach. Total project cost was $15.6 million, of which ADB financed 68%. The PCR rated the Project as *successful* based on the criteria of relevance, effectiveness, efficiency, and sustainability.

48. For the SES project case study, the 91 km Baglung-Burtibang road was selected because it is considered an important road providing access to more than 200,000 people of 12 village development committees (VDCs).[53] The road links 7 of the 12 current growth centers and 13 of the 20 potential growth centers of Baglung district identified in the District Transport Master Plan. The Government has accorded high priority to this road in the Master Plan and it is envisaged to become part of the midhills highway.[54] The road, as designed is a dirt road, suitable for dry season travel needs.

49. Road construction was completed in 2005; but at the time of evaluation (even in dry season), the surface road condition was found less than satisfactory. The road was passable only by four-wheel-drive vehicles and with much difficulty. Use of heavy vehicles such as tractors, poor road alignments, inadequate drainage outlets, and lack of maintenance have been cited as major reasons for the poor conditions. Improvement of the road recently started as a priority with the assistance of the ADB-funded Decentralized Rural Infrastructure and Livelihood Project,[55] which has a provision for gravelling the first 25 km from Baglung Bazar, the district headquarters. The contribution of the road to ID was evaluated, keeping in mind that the road was opened to the public less than 3 years ago. Box 1 summarizes the major evaluation findings from the case study. A more detailed analysis appears in Appendix 5.

Box 1: Evaluation Findings for Baglung-Burtibang Road

The project road has been highly successful in removing geographical exclusion or local disparity in Baglung district. It has linked more than 47 VDCs of the district and, hence, has become a strategic road linking traditionally isolated communities to the district headquarters and public institutions. All types of households have reaped benefits in some form from the road, and these households include disadvantaged groups,[a] comprising HFH, the poor, and Dalits and Janajatis. However, the benefits are biased in favor of Brahmins/Chhetris, the non-poor, and HMH. Based on a labor-intensive and environment-friendly approach, the construction phase of the road employed an estimated 4.2 million person-days equivalent of employment opportunities. Overall, one in five households in the road corridor did benefit from employment during road construction, but 78% of them were employed as unskilled laborers. The business opportunities created by the road include the provision of transport

[52] Baglung, Kavre, and Tanahun districts.
[53] A VDC is the lowest administrative organ in Nepal. One VDC comprises several villages.
[54] The Government of Nepal has conceived a 1,700-km-long midhills highway, which will run more or less parallel to the existing East-West Highway located in the Terai, the plain bordering India.
[55] ADB. 2004. *Report and Recommendation of the President on a Proposed Loan and Technical Assistance Grant to Nepal for the Decentralized Rural Infrastructure and Livelihood Project*. Manila.

services, family-based tea stalls or small food outlets (100), automobile repair shops (3), and consumer goods stores. This resulted to more vehicles plying the route daily (50 to 60), and employment for drivers (155) and their assistants (50), and baggage porters (65) as well. The transport operators, however, are mostly from economically well-off households and based in Baglung Bazar.

While it cannot be said with certainty to what extent the road has contributed to increasing household income and expenditure, the results show that it has catalyzed factors contributing to household income and expenditure, although these are largely attributable to income from remittances and underlying lifestyle changes. For people using the road, travel time and transportation cost for goods have been reduced by 80% and 60%, respectively. In extreme cases for instance, residents of Burtibang saved 2 days of travel time because of the road. The use of transport on these roads is based on pressing needs and availability of cash to pay for transportation. Due to the small volume of household production, the majority of goods produced locally tend to be transported manually. Evidence supports some degree of enterprise diversification from the production of cereal crops to vegetable production in specific climatic pockets in the road corridors, well-served by availability of irrigation facilities. Since road construction, total area cultivated for potato increased by 10%, with productivity remaining stagnant. While potatoes are grown as a major cash crop and have the potential to expand, VCA suggests that both backward and forward linkages are underdeveloped and only a small volume of production is marketed. Hence, the direct economic contribution of the road is limited at present, but is expected to increase in the future as these linkages strengthen and develop over time, and subsistence agriculture is able to move toward partial and full commercialization with the support of an enabling environment. Meanwhile, investment opportunities were also opened because of the road. Land prices increased by 30% to 120%, and land ownership by 13%. Increases in household income and expenditure have been associated with nonfarm income, largely dominated by income from remittances.

With respect to contribution to social development, the road has facilitated increased participation (from 42% in 2005 to 72% in 2008) of disadvantaged groups in CBOs established for various purposes, but it has not been able to enhance much further access to and use of health and education services. For instance, only 38.5% of all respondents used the road regularly and 51% comes from the end of the road. Some of the key challenges local people face include service limitation due to a syndicate in the transport system, uncertainties for passengers traveling to and from intermediary points in the road and not knowing if they would get a seat, inadequate transportable goods on the return trip from Burtibang, irregular services, and a poor maintenance regime. The high rate of migration of able-bodied household members, uncertainties in availability and price of production inputs, lack of technical services are key constraints to local production systems. Local markets have increased in the road corridor especially at the junction of divergent roads, but that increase has led to substantial reduction in business opportunities for entrepreneurs operating prior to road construction. The number of traders dealing with agricultural produce has remained static despite market access opportunities. Finally, from an environmental perspective, the road is perceived to have resulted to negative environmental impact by 60% of total respondents and 94% of Janjanati respondents.

If ID is to become a reality and not just rhetoric in countries like Nepal, rural roads can only serve as a catalyst by facilitating access and, hence, is a necessary but not a sufficient condition. Sufficient condition would require that economic and social opportunities be created in parallel with infrastructure development. Furthermore, sustaining the conditions of rural roads is a major challenge and requires careful planning to avoid environmental degradation, and adequate resources for year-round provision of services. Current O&M practice on the project road is less likely to be sustainable. The case study also demonstrates that the LEF approach may not be practical when the demand for roads is excessively high and local labor supply is inadequate. In addition, the domination of the Transport Entrepreneurs' Association in syndicated operation of passenger vehicles has remained a bottleneck for introducing competition in transport services to benefit the population served by the road, including the poor, female heads, and ethnic minorities.

CBO = community-based organization, FGD = focus group discussion, HFH = households with female head, HMH = households with male head, ID = inclusive development, LEF = labor-intensive and environment- friendly, O&M = operation and maintenance, SES = special evaluation study, VCA = value chain analysis, VDC = village development committee.

[a] For the analysis of ID, this study focused on three factors—economic (poor/non-poor), social (caste/ethnicity), and gender (male and female heads of households). In Nepal, HFH are considered more deprived than those with male head. Dalits are usually poor, landless, and deprived. Brahmins and Chhetris are assumed to be relatively wealthy and influential and hold more power and authority than Dalits and Janajati groups. Ethnic groups are identified by their distinct language and culture. In terms of level of poverty, generally ethnic groups (*Janajati)* lie in between Brahmins/Chhetris and Dalits. Yet most of the Janajati groups are reported to be deprived. Not all Dalits or Janajati groups are poor; neither are all Brahmins/Chhetris rich.

Source: SES household surveys, FGDs and key informant interviews conducted in 2009.

2. Loan 1876-NEP(SF): Road Network Development Project

50. The Project aimed to improve transport efficiency and, thereby stimulate economic growth and job creation, leading to poverty reduction. The Project had several components and included maintenance of the East-West Highway (140 km), improvement of 165 km of roads to all-weather paved surface, and construction of a 96 km district headquarters access road. The Project was implemented by the Department of Roads under the Ministry of Transport. The Project was to use environment-friendly, labor-based construction methods, develop and implement performance-based maintenance on about 200–300 km of road network, and improve about 10 km of a cross-border access road. The Project was expected to (i) induce more efficient movement of goods and passengers, provide better access to income and employment opportunities and to education and health centers; (ii) improve public sector implementation and maintenance capacity in the road sector; (iii) support the development of private sector capabilities to carry out road improvement and maintenance by contract; (iv) improve road safety and axle-load control; and (v) provide community access and complementary facilities through a participatory approach leading to poverty reduction. ADB financed $46.0 million of the $69.5 million project cost. Initially, the Department for International Development had committed £9.6 million as cofinancing, but later it reduced its commitment to £5.5 million due to slow implementation progress. The Project was approved by ADB on 13 December 2001 and was originally planned for completion by 31 December 2007. The closing date was revised twice to 30 June 2009 due to delays associated with (i) loan effectiveness, (ii) mobilization of consultants and contractors, (iii) conflict and challenging security situation, (iv) Koshi river floods, (v) unavailability of fuel and construction materials, (vi) poor performance of some of the contractors, and (vii) weak monitoring of implementation by the Department of Roads. The Project received from ADB a certificate of exemplary contribution to improved performance for 3 years (2005–2007).

51. The Rangeli-Bardanga-Urlabari section of the Biratnagar-Bardanga-Urlabari road was selected for the SES case study. It represents 42 km of the 67 km road. The Biratnagar-Rangeli section of the road was not included due to high degree of urbanization and proximity to major commercial centers in eastern Nepal, Biratnagar. The road section is black-topped but has a distinct rural character and is primarily dominated by farming communities. It also serves as an alternate route to reach Biratnagar without going on the East-West Highway for people living south of Urlabari. The road[56] is very important to the Morang district because it is an old postal road running parallel to the East-West Highway, it serves an extensive highly productive farming area, and it is important for cross-border trade to India.[57] It serves about 40,000 households of 14 VDCs. Although the road section is located in the Terai region, the majority of the population are migrants from the hills who settled in the area in the past 40 years. The road is an improvement on an existing gravel road and was opened to the public in 2007. [58] The contribution of this road to ID has been evaluated based on key informant interviews, FGDs, local business surveys, VCA of a major commodity in the area (rice in this case), and a survey of 158 households located in three VDCs. Key evaluation findings are summarized in Box 2. Appendix 5 contains a detailed analysis of the findings.

[56] It is a feeder road that connects to the national East-West Highway and is also a part of strategic road network. East-West Highway is part of the Asian Highway AH2.
[57] The Indian border is about 4 km away from Bardanga and people have easy access across the boarder.
[58] Local disputes led to delayed completion of the 500 meter section of the road near Rangeli Bazar. The section was completed only in early 2009.

Box 2: Evaluation Findings for Rangeli-Badanga-Urlabari Road

The project road, which was graveled and passable year-round, was upgraded under the Project. Black-topping significantly improved the physical conditions and the road has become more user-friendly for travelers and transporters. The rehabilitated road was opened to the public about 2 years ago, and has been used extensively by local people. While the number of vehicles plying the road remains limited due to a transport syndicate system that controls the number of vehicles on the road and, hence traffic volume, it is heavily used by local people using bicycles. Bicycle ownership has increased from 49% in 2005 to 84% in 2008; and at present, several households own more than one bicycle. Notably, 83% of HFH and 42% of poor households were able to sell their produce using bicycles. Local people describe travel on the road as smooth and free from any roadside drainage problem. The road serves all household strata—rich and poor; Brahmins/Chhetris, Madhesis, Janajatis, and Dalits. Beneficiaries also include HFH. The road primarily services farming communities in the road corridor.

During road construction, the household survey revealed that only 5.7% of households were gainfully employed for the road work. Nonetheless, the road has facilitated movement of goods and reduced travel time for people by 40%. It has also facilitated movement of change agents such as NGO representatives, extension service staff, microfinance providers, and input suppliers. In addition, local transport operators have benefited from 40% reduction in their VOCs. However, residents claim and the entrepreneurs agree that the savings in VOCs have not been passed on to the road users, but have been capitalized by transport operators. Improvement of the road has also led to a substantial increase in the volume of cross-border informal trade, but there are no reliable estimates available. An informal estimate based on FGD with local residents suggests that the trade has at least doubled and has involved many more people than before. The traders are small petty traders who carry goods on their bicycles and make several trips in a day as the Indian border town is only 4 km away from Bardanga. The nature of the goods traded varies seasonally and is guided by cross-border price differences. The number of buses plying the route has increase by 43% (from 28 to 42).

Since the road opened, there has not been any marked increase in the number of businesses or traders, but ownerships have changed over time for some reasons. The current businesses have, however, been able to diversify the goods they sell and, hence, provide more choices for the consumers. Business opportunities are likely to increase over time as both backward and forward linkages strengthen and develop. Rice is the primary commodity along the road corridor and is transported to rice mills located in Duhab. The mills have 50% excess capacity to facilitate milling from either side of the border, thereby limiting further opportunity to expand rice milling facilities. However, truckers do not use the road for long distance hauling because the road is narrow, there are too many bicycles and speed bumps, and livestock graze along the roadside. Increased mobility has also meant that the beneficiaries in the road corridor have slowly started to diversify their income sources and expenditure patterns. Both household incomes and expenditures increased modestly by 21% and 14%, respectively, after the road was upgraded, although increase in income is associated more with remittances received by the households. Improved road conditions have also resulted in increased land purchase and sale transactions and pushed up land prices by as much as 75% between 2006 and 2008. Interestingly, land ownership also increased from 72% to 81%, with poorer household accounting more of the increment.

Since the improved road opened less than 3 years ago, its contribution to ID is still evolving. However, it has greatly facilitated access to health services for the local people. Children are able to reach school on bicycles with 45% more girls using it as means of school transport. Better roads have encouraged increased participation of all types of households in CBO activities by 21% with the Madhesi households posting the largest increase (35%) relative to the other ethnic groups. However, lack of a regular service, limited number of public vehicles plying the road (due to the syndicate system), and overloading and crowding in buses have discouraged local people from using public transport facilities. Thus, road use is below the desired level.

Evidence indicates that so far, the road has had limited contribution to socioeconomic development, but noise and dust pollution has significantly gone down according to 56% of household respondents. Very few tangible business opportunities have emerged, partly due to the low volume of traffic and control of vehicles by the syndicate system institutionalized by the transport entrepreneurs' association contrary to the 1992 Transport Management Act. The association has kept transport fares more or less at the same level as before road improvement. The road has, however, facilitated the movement of microfinance facilitators and contributed toward the promotion of finance service-based cooperative societies. In the absence of adequate road safety measures and lack of awareness, the number of accidents along the road corridor has increased substantially. However, since the road serves as an alternate route to the major business hub of Biratnagar, it offers significant development potential, particularly for cross-border trade and improving access to other major towns such as Urlabari and Rangeli. There is no evidence, however, that the labor-intensive and environment-friendly approach has been successful in the interest of the

population served by the road corridor. While the road is in a reasonably good condition, its economic life is likely to be short in the absence of adequate provision for O&M, The road has tremendous potential to further increase cross-border trade with India, and expands local economic and social activities. Evaluation findings suggest that integration of rural road construction or rehabilitation with relevant economic and social opportunities is necessary along with abolition of the transport operators' syndicate system so that the volume of trade and traffic can substantially increase and thereby benefit local people, including the disadvantaged groups.

CBO = community-based organization, FGD = focus group discussion, HFH = households with female head, ID = inclusive development, NGO = nongovernment organization, O&M = operation and maintenance, SES = special evaluation study, VOC = vehicle operating cost.
Source: SES household surveys, FGDs, and key informant interviews conducted in 2009.

B. Philippines

1. Loans 1421-PHI and 1422-PHI(SF): Cordillera Highland Agricultural Resource Management Project

52. The Cordillera Highland Agricultural Resources Management (CHARM) Project was a special project of the Philippine Department of Agriculture aimed at reducing poverty incidence from 70% to 25% after project completion, by increasing income from PhP21,200 in 1995 to PhP56,000 in 2006; and reducing the number of households below the poverty line from 33,000 to 12,000 over the same period. The immediate objectives were to (i) promote sustainable resource management practices, (ii) protect the environment and mitigate adverse development impacts, (iii) strengthen existing institutions, (iv) involve project beneficiaries in planning and implementation, and (v) improve beneficiaries' access to formal and nonformal credit. The project had four components: (i) rural infrastructure development, (ii) community mobilization and resource management, (iii) agricultural support services, and (iv) project management and coordination. ADB approved the Project in 1996 and the loan closed in 2005. ADB contributed $19.0 million of $31.88 million total project cost. The International Fund for Agricultural Development cofinanced the project and contributed $9.2 million. The Project closed 1.7 years after the original scheduled completion date; the delays were associated with consultant recruitment and mobilization, bureaucratic procedures, change in project scope, and decentralization issues. According to the PCR,[59] the Project was successful in reducing poverty in the Cordillera Administrative Region by increasing average household income by 66% against the target of 164%. With improved connectivity as a result of improvement of FMRs, combined with communal irrigation systems, households reportedly experienced more food security and had larger quantity of marketable surplus commodities.

53. The SES focused on assessing the contribution of rural roads to ID and covered six purposely selected roads supported by the Project in Abra, Benguet, and Mountain provinces. The roads in Benguet were chosen primarily due to its proximity to the La Trinidad Trading Post and Baguio City markets. In contrast, the basic motivation for road selection in Abra was to uncover how far-flung or remote *barangays* (villages) benefited from road improvements. Finally, the roads in Mountain Province were chosen based on a combination of remoteness and strategic location. For instance, the Bontoc-Guina-ang-Mainit Road is the second longest of the road segments and connects remote villages in the municipality. The Sadsadan-Curba-Longen-Pua Road is actually the shortest of the roads, and is a strategic link for vegetable marketing for the growers in Sadsadan.[60] The nature of project support varied across the six road segments

[59] ADB 2006. *Project Completion Report on the Cordillera Highland Agricultural Resource Management Project in the Philippines*. Manila.

[60] The selection included the Manabo-Boliney Provincial Road (19.40 km) serving three barangays (village), and the Maguyepyep-Bucloc Road (12.76 m) benefiting five barangays in Abra; the Ambongdolan-Cabcaben-Tuel in Tublay (9.29 km) serving Ambongdolan and Tuel barangays, the Monglo-Bayabas in Sablan road (5.66 km)

based on local needs identified by the barangays and the provincial authorities. One of the interesting peculiarities in the region is how roads are classified. There are roads that are considered municipal and provincial, but are rehabilitated and classified as FMRs as they provide the critical links in the movement of goods from farms to markets. The case study analysis utilized data collected in April and May 2009 from a survey of 300 households and 6 businesses, 12 VCAs, 18 FGDs, and 24 key informant interviews. The households were distributed along the head, middle, and tail sections of each road and highlighted inclusiveness aspects of the roads. The key informants included village council leaders, barangay officials, organization/farmer association leaders, and health and education workers. Box 3 gives a synopsis of the evaluation findings reported in Appendix 5.

Box 3: Evaluation Findings for Selected Road Sections in Abra, Benguet, and Mountain Provinces

The three project provinces (Abra, Benguet, and Mountain) are homes to disadvantaged poor and ethnic minority people in the Philippines.[a] The FMRs supported under the Project comprised only segments of national, provincial, or barangay roads, hence, the results do not necessarily provide definitive assessment of the contribution of solely project-supported roads to ID. However, it is important to note that without the project support; the utilization of existing roads would have been limited compared with postproject conditions. Hence, it is asserted that FMRs supported by the CHARM Project positively contributed to ID in the project areas.

The rural road improvements supported by the CHARM Project have benefited wider communities and served traditionally underserved, disadvantaged, and isolated communities, and linked them to key market and employment centers. Increased agricultural production and income opportunities improved the food security situation in the project areas. The roads facilitated improved access to markets and lowered transportation costs for people and marketable commodities. Travel time to market centers decreased by at least 20% and postharvest losses were significantly reduced, by up to half in some cases. A number of people found employment during the road rehabilitation work under the Project, mostly local residents. Seasonal employment was also prevalent especially during labor intensive stages of crop production according to 68% of respondents. Migrant farmers and workers find employment in the planting season especially given the increases in production and cultivated areas. For instance, green pepper yield increased by more than 100%, while the other crops registered varying production increments from 16% to 40%. Rice production increased by 16% which is important for food security particularly for poorer households.

Improved road connectivity created more efficient linkages to input and output markets, resulting in higher agricultural production through the adoption of improved farming practices and cultivation of idle land. For instance, the effective cropped area per household increased three-fold, from 0.41 ha to 1.23 ha. Meanwhile, 69% of respondents noted a rising trend in the volume of crop sale after road improvement. Sales improvements were attributed by 88% of the respondents to more frequent visits of producers to markets and the actual use of jeepney/transport services by 82% of respondents. The producers also benefited from lower input costs and higher farm gate prices for their produce, thereby increasing farm profitability. Additional economic benefits include improved market information and reduction in postharvest losses due to shorter transport and marketing time. Transportation cost savings amounted to PhP11.8 per km for moving agricultural produce, and PhP4.4 per km for travel to the nearest markets. Improved road conditions also shortened travel time per km traveled by 4.2 minutes. New business and investment opportunities emerged, particularly in food processing, trucking, and transport services. These opportunities benefited all relevant stakeholders and reduced marketing margins in favor of the producers. The impact of project roads on employment is assessed to be indirect, and through increased volume of production and marketable surplus. This is more pronounced in terms of longer hours and more number of days' engagement of household members (reduction in underemployment or full-time equivalent employment) rather than an increase in the number of people employed. Steady growth in the number of roadside consumer goods store and vehicle/motorcycle repair shops is also evident in a number of areas.

Business and investment opportunities, however, have been primarily in the areas of small-scale food processing, access to microcredit, trucking and transport services, and the entry of service providers such as mobile phone (cell sites) and cable operators. Income estimates before and after road improvement showed a

benefiting barangay Bayabas in Benguet Province; the Bontoc-Guina-ang-Mainit Road (14.46 km), which serves barangays Guina-ang, Dalican, and Mainit; and the Sadsadan-Curba-Longen-Pua Road (5.24 km) serving barangay Sadasadan and also is the gateway to other barangays in Mountain Province.

34% increase in real terms, and this is supported by the change in and quality of household assets and ownership. However, the respondents claimed that the expenditure pattern was also affected, as people purchase more on the basis of wants than of needs. The VCA shows improvements in backward linkages to production systems (inputs and credit) and forward linkages to markets (collectors and processors), leading to higher net returns to the farmers and lower cost structure for the processors. On a comparative basis, farmers gained most from the road improvement, followed by a small group of truckers and transport providers, and primary produce processors. However, investment in transport and processing was led mainly by larger and wealthier farmers and entrepreneurs who also provided credit for crop production, particularly cabbage, potatoes, and bell pepper.

The improvement in mobility, better transport services, and higher crop yields[b] collectively contributed to substantial reduction in poverty in the project areas. Households are able to produce additional quantity to sell in the marketplace and thus derive cash for other requirements. According to the participants in the FGDs, increased production at the household level also translated into a more reliable supply of seed for crops, buffer stock requirements, and opportunity to grace community events. Investments in trucking, for example, in Sadsadan (Mountain Province) resulted in the establishment of a truckers' association, which has led to mutually beneficial business relationships between truckers and farmers in moving farm produce to markets more efficiently and at a modest cost. At times of a vegetable glut in the market, truckers accept half of the existing freight costs and, in extreme cases, only the actual costs so that they can break even. This exemplifies a good practice in risk sharing.

A number of survey respondents stated that improved road conditions also resulted in a better quality of life, reflected by improved housing conditions, water supply, electricity, means of conveyance, and access to health, education, and cooperative organizations. One in six households converted their residences from temporary to semipermanent or permanent structures, 22% increased the number of rooms, 15% had improved water supply, 17% installed flush toilets, and 31% shifted from kerosene or wood to electricity or LPG as the primary energy source. Improvement in the quality of life was reflected by higher incomes resulting from improved road connectivity. Improved mobility has led to more frequent social interaction and increased participation in community activities. Elderly people are now able to travel to other places, including Manila to secure their citizenship certificates and other administrative documents from concerned agencies and participate in traditional community celebrations. In addition, the roads facilitated and increased the frequency of visits by local government leaders and support service agency staff.

The project roads facilitated access to social services, health, and education in particular. After the road improvements, 93% of respondents observed that visits of local people to health centers began to increase, in particular to seek medical attention for prenatal and postnatal care and child health. The common perception is that roads made travel to health services reliable. Similarly, children no longer have to walk in muddy trails and can walk to and from school safely based on the opinion of 83% of household respondents. However, school enrollment remains unaffected. Finally, 80% of respondents opined that road improvement was instrumental in improving social interactions which facilitated membership recruitment and community mobilization.

The absence of a reliable funding base for O&M is considered one of the key challenges to the sustainability of the roads. As different road segments tend to be funded by different agencies or funding sources, lack of coordination and concerted efforts is likely to lead to a deterioration of infrastructure. The sustainability of benefits derived from the project intervention[c] is therefore in question. While improved connectivity lifted up the total volume of agricultural production, incidences of a market glut have steadily increased and even depressed farm gate prices, adversely affecting the net income of the farming households. Due to lack of appropriate storage facilities in several areas, the postharvest losses incurred by affected producers have also increased. Anecdotal evidence of increased drug trafficking due to improved mobility was also reported in selected communities in Benguet.

Women also benefited from the improved roads, particularly in marketing their surplus production. They have now entered the mainstream marketing network, are running small enterprises or businesses, and are accessing health services. The risk-sharing arrangement in Mountain Province was a unique achievement under the Project. Social interaction, particularly among women and elderly people, was noticeable along with increased public participation in community development activities and organizations. Children feel safe in walking to and from school without worrying about snake bites and muddy trails. Roads also linked people in the road corridor to service delivery institutions and administrative offices. Overall, the roads are widely used by local people including ethnic minorities and the poor. However, availability of funds for O&M on a sustainable basis remains a major challenge to local barangays in keeping roads in good condition. In addition, there is substantial room for improving and strengthening the value chain of marketable commodities in the project area by involving private businesses and processors.

CHARM = Cordillera Highland Agricultural Resources Management, FGD = focus group discussion, FMR = farm-

to-market road, km = kilometer, LPG = liquefied petroleum gas, O&M = operation and maintenance.

[a] The household respondents in the three Cordillera provinces all belong to closely related indigenous peoples popularly known as the Igorots. They are grouped into ethnic or ethnolinguistic tribes such as the Tingguian in Abra, the Kankana-ey and Ibaloi in Benguet, and the Kankana-ey and Bontoc Kankana-ey in Mountain Province. The study looks closely into how these ethnic minority groups benefited from the identified road projects of CHARM. The poor comprise about 75% of the households in Mountain Province, 53% in Abra, and 27.3% in Benguet.

[b] Increase in crop yield is associated with adoption of improved seed varieties, as well as access to irrigation facilities.

[c] Under Philippine laws, maintenance of rural roads is the responsibility of the local government units, but the budget for road maintenance is usually taken from the 20% allocation for social services. This means that the O&M for roads has to compete with the demand for other social services.

Source: Household surveys, FGDs and key informant interviews conducted in 2009.

2. Loan 1667-PHI: Agrarian Reform Communities Project

54. The Project aimed to reduce poverty in 140 agrarian reform communities and reach 28,000 agrarian reform beneficiary households. It had four components: (i) project management and capacity building, (ii) rural infrastructure, (iii) development support, and (iv) land survey. Each component was expected to initiate impacts on production and productivity, and increase income to reduce the depth of poverty. The Department of Agrarian Reform (DAR) was the Executing Agency. ADB approved the Project in December 1998 and contributed $93.2 million of the total project cost of $168.85 million. The loan closed in December 2008, almost 3 years after its original completion schedule. Government budgetary uncertainties caused by delayed budget approvals, delayed accounts clearing by the local government units (LGUs), lack of timely funds flow, delays in constructing rural infrastructure projects, and capacity problems in some LGUs[61] collectively contributed to implementation delays.

55. For the SES, eight FMRs in Davao del Sur and Iloilo provinces were purposively identified in consultation with DAR staff.[62] The rating conditions based on the results of sustainability monitoring also played an important role in road selection.[63] It should be noted that the chosen roads were partly financed by LGUs and are now parts of longer roads. Two commodities for each road were selected for VCA in each road corridor based on (i) current production area, (ii) possibility for scaling up, (iii) involvement of a large number of residents, and (iv) consistency with priority programs of the National Government. Secondary data[64]

[61] The reasons for delays were cited in the Government's PCR and were confirmed with ADB staff. ADB's PCR is yet to be prepared.

[62] In Iloilo—(i) San Geronimo-Lipata-Seneres Circumferential Road is in the municipality of Barotac Viejo consisted of the concreting of the Junction National Road to San Geronimo Lipata Road (1.13 km), and the Señeres Road (1.30 km); (ii) Sitio Proper–Basinang FMR (2.65 km) is an all-weather road also in Barotac Viejo, with spot concreting in some critical areas; (iii) Poblacion-Misi Road (2.34 km) is in Lambunao, Iloilo; and (iv) Iloilo and Pughanan-Panuran Road(7.04 km), also in Lambunao, is a gravel road with spot concreting that stretches from Barangay Misi Junction all the way to Sitio Proper in Barangay Panuran. In Davao del Sur—(i) Hagonoy FMR (4.3 km) is a gravel road In the municipality of Hagonoy that connects the barangay to the center of the municipality; (ii) Poblacion-Sulongvalley Road (6.3 km) is a rehabilitated road in the municipality of Sulop that connects the community to the municipality's center; (iii) Sitio Katigbao–Baluntaya Road (2.7 km) is an all-weather road in the municipality of Don Marcelino that connects Baluntaya to the Don Marcelino–Mati Provincial Hi-way junction; and (iv) the National Hi-way to Sitio Patulangon Road (1.85 km) is also in Don Marcelino.

[63] One of the key features of the loan was the requirement of subproject agreements between DAR and the recipient LGUs, which mandated the establishment of a special trust fund for infrastructure maintenance after project completion. Under this, DAR was expected to conduct a periodic monitoring of LGU compliance in maintaining the road. Since the road was given as a grant, LGU noncompliance will lead to a conversion of the grant into a loan that will be recovered through a deduction in the annual revenue allocation of the concerned LGU.

[64] Secondary data sources included (i) project documents (feasibility studies, status reports, and other reports); (ii) internally generated reports of existing enterprises in the area; and (iii) data collected by relevant government

supplemented the primary data collected. The case study used data from a survey of 400 households, 8 FGDs, 10 VCAs, and 24 key informant interviews of beneficiaries in the road corridors. Secondary data[65] from published and unpublished sources supplemented the primary data collection effort. As per the 2006 monthly poverty threshold of the Philippines, at least 89% and 82% of the respondents from Iloilo and Davao del Sur, respectively, are considered poor. The rehabilitation of selected roads for the study was completed between 2002 and 2007. Box 4 gives a summary of the evaluation findings reported in Appendix 5 for the subject project case study.

Box 4: Evaluation Findings for Selected Project Road Segments in Iloilo and Davao del Sur Provinces

The household survey suggests that 47% and 62% of the respondents from Iloilo and Davao del Sur, respectively, belonged to the disadvantaged groups.[a] The ethnic minorities are concentrated in Davao del Sur (16%) and are predominantly the B'laan group who are migrants from Sarangani Province. The results show that road improvement under the Project facilitated efficient and more movement of goods and people in the project communities for all types of households. In all the areas where existing FMRs were improved, the improvement to some extent influenced the nature, volume, timing of availability, and quality of produce. The magnitude of the impact has varied depending on the area's specific conditions, institutional and market linkages, as well as social readiness of the community. About 92% and 76% of respondents, respectively from Davao del Sur and Iloilo, reported that market access through better product movements within and outside the community has increased because of better roads. Better access also has resulted in increasing crop production and diversification, which is attributed to the introduction of new technologies, farming practices, market information, and investments from private companies. Road works provided temporary employment to the members of 53% of household respondents. Travel time savings (almost 60%) generated by improved roads and more efficient transportation systems resulted in better quality products and reduced postharvest losses. This was evident in the cases of the rural roads in Hagonoy and Don Marcelino in Davao del Sur. Based on the survey, the proportion of people who walk and manually transport their goods went down from 35% to 8%. Additional benefits realized by the beneficiaries include reduction in postharvest losses, particularly for perishable commodities with high moisture content.

The study shows that the magnitude of benefits from the road varied considerably across the roads studied and was governed by social readiness in the communities, degree of vertical integration of different actors in the value chain, institutional arrangements, and size of the market at which the produce are sold. The VCA of key commodities shows that although farm production increased, very little progress has been made in adding value to the produce, implying that most of the benefits from improved transport services have gone to the transporters and middlemen in the marketplaces. Farmers tend to bring their produce to the marketplace, but grading and packing are largely done by the middlemen or traders for onward transport to the larger markets.

The entry of some private investments created new employment opportunities in the area. Private sector involvement introduced partnerships with local farmers in the form of lease arrangements, contract farming, profit sharing, and provision of credit facilities. Road improvements increased the value of land eightfold as in San Geronimo, Iloilo. Transport cost savings of 20% to 33% generated with road improvement have translated into better profit margins for farmers, but proportionately more to traders. However, there is no substantial evidence that transport savings translated into lower input prices. Anecdotal evidence suggests that the number of actors in the value chain increased after road improvement, and backward and forward linkages to agricultural production were strengthened for all types of households as demonstrated by women farmers in Lambunao. However, the extent of benefits was limited, suggesting that improved roads do not always guarantee higher income unless supported by allied services, including strengthening of market structure and increased efficiency in the value chain of the relevant commodity produced locally. When production arrangements are contractual in nature, benefits from road improvements largely accrue to the traders and larger businesses, rather than to the smallholders.

agencies, including historic production data, prices, pertinent laws, rules, and ordinances governing the conduct of business and support.

[65] Secondary data and other relevant database sources included (i) ADB project documents (feasibility studies, status reports, and other reports); (ii) internally generated reports of existing enterprises in the area; and (iii) data from applicable government agencies, both local and international, such as but not limited to historic production data, prices, pertinent laws, rules, ordinances governing the conduct of business and support.

In the social context, project roads allowed better access to and use of health services and education (schools) for the children. Health workers and government extension workers increased the frequency of their visits to the area, thus ensuring sustained health and social benefits to all members. Roads increased social interactions, which may have led to information dissemination and the 20% increase in organizational memberships. Likewise, roads paved the way for the entry of utilities (electricity and water) to the community. As a result, for instance, access to electrical/power supply and water services increased by 81% and 86% respectively in the case of Davao del Sur. The increasing role of women is also evident in the increase of membership in women's organizations and their role in marketing agricultural produce and decision making. The ethnic minorities, represented by the B'laan tribe, also benefited as they are able to market their products more frequently and in better form or quality. However, given that the volume of production still remains too small, they are yet to benefit from potential opportunities constrained by other factors.

According to 63% of the respondents, the visibility of local government agencies in the community increased, facilitating shorter response time and better services than before the road improvements. However, challenges remain in achieving production efficiency and equitable distribution of benefits, proper garbage disposal, minimizing noise pollution, maintaining social harmony between longtime residents and new settlers, and finding a stable mechanism to fund O&M of roads. While the improved roads through project assistance contributed to modest local economic growth, the benefits are skewed in favor of the non-poor, landowners, middlemen/traders, and nonethnic households. The poor households, in particular, have not benefited much from reduced transportation and input costs and instead have faced higher cost structures for purchased inputs. The ethnic minorities are far less integrated into the marketplace than their nonethnic counterparts. Moreover, limited progress in value addition through forward linkages has also meant that the opportunities to maximize incomes have not been fully exploited.

FGD = focus group discussion, FMR = farm–to-market road, ID = inclusive development, O&M = operation and maintenance, VCA = value chain analysis.
[a] This includes the landless, ethnic minority, and the handicapped.
Source: Household surveys, FGDs, and key informant interviews conducted in 2009.

C. Viet Nam

1. Loan 1564-VIE(SF): Rural Infrastructure Sector Project

56. The Project's overall objective was to enhance agricultural and off-farm production, improve personal incomes, improve access to markets and basic services, and reduce poverty through the improvement of basic infrastructure. It had three components: (i) rural civil works, (ii) project management, and (iii) assistance in subproject preparation. Activities included rehabilitating or building critical rural infrastructure such as roads between communes, and between communes and district centers, and alignments to link the national network with associated bridges and culverts; small-scale irrigation schemes; and rural water supplies for safe water and markets. The Project was executed by the Ministry of Agriculture and Rural Development and implemented by the 23 provincial peoples' committees of the 23 provinces. The Project was approved on 23 October 1997 and closed on 27 September 2005, with 9 months' delay. Total project cost was $151.06 million. ADB financed $94.58 million and Agence Française de Devéloppement funded $14.78 million. Rural roads alone accounted for $73.96 million, 49% of the total project cost. The PCR, which was circulated to the Board of Directors on 4 October 2006, rated the Project as *satisfactory*.

57. The SES covered 4 of the 23 project provinces—Ben Tre, Kon Tum, Quang Tri, and Lao Cai. In each province, one road segment was randomly selected from a list of completed rural roads.[66] In all four cases, the existing roads were widened and black-topped to facilitate vehicular movement. Improvement of the roads was completed between 2002 and 2004; hence,

[66] Phuoc Long-Thach Phu Dong in Ben Tre (15.5 km), Tan Canh-Mang Sang in Kon Tum (10 km), Route 68 Cho Can-Bo Ban in Quang Tri (23 Km), and Bac Ha-Simacai in Lao Cai (28 km).

they have been accessible for nearly 5 years. According to the provincial authorities, the local communes prioritized these roads for better connectivity to the major centers of economic activities. Reportedly, the roads have significantly reduced travel time and transportation costs and facilitated mainstreaming of ethnic minorities in various areas. The contribution of these roads to ID was evaluated using a case study approach involving a 200 household survey, 4 VCAs, 8 FGDs, and 18 key informant interviews. The survey covered 101 Kinh/Chinese (50.5%) and 99 ethnic minority households (49.5%).[67] Of the 200 households, 79 (39.5%) had a female head and 123 (61.5%) were classified as poor households. The SES also used relevant data from other sources.[68] Box 5 summarizes the key evaluation findings from this case study. Details are in Appendix 5.

Box 5: Evaluation Findings for Selected Rural Roads in Ben Tre, Kon Tum, Quang Tri, and Lao Cai Provinces

The project roads were highly instrumental in creating economic opportunities through increased production of primary produce in the road corridors, and have enabled producers to procure inputs and labor more efficiently. Transportation costs have decreased by 20%–50% depending on the location and nature of economic opportunities, and travel time was reduced by 40%–50%. Nearly 63% of the survey respondents agreed that the project roads increased employment or working hours of household members remarkably, and 61% thought that consumer prices fell substantially. Improved roads increased mobility for local people as shown by a 40% increase in the ownership of motorcycles in the road corridors.

The rural roads have provided opportunities for more number of traders and collectors, and encouraged them to locate or relocate in the road corridors. The roads facilitated more frequent visits by traders and collectors to the villages to procure goods. In one road corridor, the number of traders has increased from 4 to 15 leading to better prices for the producers. The result is increased marketing efficiency for both producers and traders/collectors. Improved road connectivity also led to more transparent market information and producers are able to get prices that are fairer than what they received before road improvements. The price differential between farm gate and markets decreased from 30% to 10%, thereby ensuring a larger margin for the producers. The roads also helped in establishing forward linkages for some commercial commodities such as cassava, which is now exported to other countries. Cassava producers have been able to increase crop yields by 20% due to access to better planting materials. Additional businesses emerged in the road corridors, such as input suppliers, retailers, food shops, restaurants, and internet gaming centers. The road improvements also have resulted in 30%–50% increase in land prices in the local areas depending on the proximity to the market and business centers.

Improved access to input suppliers reflected by more visits by the suppliers led to more use of fertilizer, farm chemicals, and improved seed, leading to higher crop yields and total production. About 63% of the survey respondents rely on input suppliers visiting the villages, and the same proportion has acquired improved production technologies. As a result, 62% of rice, 73% of vegetables and other annual crops, 86% of fruits and other perennial crops, 85% of livestock, and 78% of aquaculture and other nonfarm products in the market are sold by the producers. There are also indications that the roads have permitted local people to increase and diversify their income sources. For example, the livestock sector experienced substantial growth due to the improved connectivity. Agricultural processing business adding value to the primary production is yet to develop in the project areas. However, some indications of this have emerged in the project area. New traders have entered the market. They seek high quality peanut and motivate local producers to improve their harvesting and drying techniques. Similarly, economic use of coconut fibers in Ben Tre for handicraft production and export to the PRC has also provided impetus for local producers and created new jobs.

The road facilitated travel to schools, health centers, and other service delivery and community organizations. However, the roads were preexisting and, hence, did not contribute to increased school enrolments

[67] Ethnic categorization is based on the standard differentiation used by the Government and development partners in Viet Nam, broadly grouping the subjects as Kinh/Chinese and ethnic minority.

[68] Baseline and participatory rural appraisal surveys carried out under the project preparatory TA (PPTA); national surveys such as Viet Nam Household Living Standard Survey and National Census; provincial data and information from the Departments of Agriculture and Rural Development, Labor Invalids and Social Affairs, and Ethnic Minorities and Mountain Areas, surveys, participatory rural appraisals conducted during subproject identification and other studies undertaken in the area by the project components.

as revealed by 98% of the respondents that their children would have attended the school anyway. On the other hand, results suggest that a greater proportion of girls' (63%) were able to commute longer distance to lower and higher secondary schools with their parents on motorcycles. Similarly, less than 2% of the respondents would not have availed health services if roads were not improved.

From the perspective of inclusiveness, ethnic minorities, HFH, and households of the poor also benefited from economic, social, and institutional development opportunities from the improved road connectivity, although to a lesser extent than the Kinh/Chinese households. Subsistence agricultural production is moving toward commercialization; and ethnic minorities, in particular, are actively participating in economic activities, including marketing and home-based small handicraft businesses. However, these disadvantaged groups have not benefited to the same level as their respective counterparts—the Kinh/Chinese, HMH, and non-poor households.[69] This is largely due to the lower resource endowments and skills base in households of disadvantaged groups. For example, expansion of cropped areas for coconut in Ben Tre, cassava in Kon Tum, and tram trees in Quang Tri mostly benefited only economically well-off households who were able to invest in land expansion or conversion and had access to capital. Survey data also confirms that farmers who had larger land plots invested in labor and technology and earned proportionately much more than the smallholders. It seems that improved roads served as stronger incentives for the well-off households. Transport operators and service providers in all four study provinces also were in economically well- off households. On the other hand, the poor and women, in particular, have benefited from fruit and vegetable production in Ben Tre, Kon Tum, and Quang Tri. None of the collectors or traders represented disadvantaged groups. A sustainable O&M system, road safety, cultivation on nonsustainable land, and limited carrying capacity of project roads have emerged as major challenges that need to be addressed. Concerns have also been raised about the environmental impact of the increased use of chemical fertilizers and farm chemicals. The participation of ethnic minorities in the project cycle has remained low compared with that of their Kinh/Chinese counterparts. The situation is party associated with the weak capacity of local authorities who have been slow in responding to the demands particularly of ethnic minorities.

Estimates based on available data suggest that rural roads alone accounted for 9.5% increase in income and 8.3% increase in expenditure. The income disparity was still wide between disadvantaged groups and ordinary people. For example, ethnic minority households earned 46% less than Kinh/Chinese households, poor earned 53% less than nonpoor households and households with female heads earned 7% less than those with male heads. Similarly, ethnic minority groups spent proportionately more on consumption groups.

FGD = focus group discussion, HFH = households with female head, HMH = households with male head, O&M = operation and maintenance, PRC = People's Republic of China.
Source: Household surveys, FGDs, and key informant interviews conducted in 2009.

2. Loan 1888-VIE: Provincial Road Improvement Sector Project

58. The Provincial Road Improvement Sector Project (PRISP) was expected to contribute to poverty reduction and economic growth by improving transport efficiency. It had six objectives: (i) improve the provincial road network on both social and economic grounds; (ii) provide improved access for the poor and disadvantaged groups living in rural communities; (iii) strengthen the asset management capacity and maintenance programs of Viet Nam Road Administration (VRA) and the provincial departments of transport (PDOTs); (iv) continue to strengthen VRA, and improve governance in the road subsector; (v) strengthen PDOT capacity to prepare, implement, and monitor resettlement and ethnic minority development plans; and (vi) promote private sector participation in delivery of road infrastructure and maintenance. The Project comprised (i) a program including an investment plan and policy framework to improve about 1,600 km of provincial roads in 18 northern provinces; (ii) assistance to project management unit No. 5 and the PDOTs to strengthen their capacity to prepare and implement improvements on and maintenance of provincial roads; (iii) development and introduction of an action plan to implement a road fund scheme; (iv) assistance to introduce new regulations and further strengthening of VRA; (v) assistance to implement and monitor resettlement and ethnic minority development plans; and (vi) consulting services for preparing, implementing, and

[69] IED estimates based on survey data suggest that rural roads increased the income of Kinh/Chinese by 11% compared with only an 8% increase among the ethnic minorities.

supervising civil works, preparing additional subprojects, and capacity building for the PDOTs. ADB financed 70% of the $100 million project cost from ADF resources. As per the latest project performance report, the Project closed on 30 June 2009 after a 30-month delay with two extensions.

59. Since the focus of the SES was on rural connectivity, eight roads in 4 of the 18 poor northern provinces (Vinh Phuc, Bac Giang, Tuyen Quang, and Yen Bai provinces) were randomly selected for the study.[70] The eight are all-weather black-topped roads and have been in operation for less than 2 years. They were constructed under the management of PDOTs. Their contribution to ID was evaluated using a case study approach involving a survey of 200 households, 9 VCAs, 26 FGDs, and 46 key informant interviews. The survey covered 72.5% Kinh/Chinese and 27.5% ethnic minority households,[71] 16% households with female head (HFHs), and 36% poor households. The SES also used relevant data from other sources.[72] The evaluation findings are summarized in Box 6. The detailed analysis is in Appendix 5.

Box 6: Evaluation Findings for Selected Rural Roads in Vinh Phuc, Bac Giang, Tuyen Quang, and Yen Bai provinces

The project roads were instrumental in facilitating access to markets, schools, health centers, and institutions for an overwhelming majority of the respondent households. The roads provided economic opportunities, through increased production and associated employment; and ability to travel more frequently to off-farm employment centers with 10% reduction in transportation costs, and 25%–50% reduction in travel time. Increased business opportunities were mostly through increased production and, hence, in the areas of marketing, and development of a services sector primarily dominated by roadside shops, beer outlets, restaurants, and consumer stores. Limited business opportunities also emerged in the production and construction sectors. In addition, there has been considerable diversification into livestock production, particularly by the poor households. However, the bulk of benefits from enterprise diversification has gone to the majority Kinh/Chinese rather than to ethnic minority households. Improved connectivity through project roads has also meant increased mainstreaming of ethnic households from barter to a market economy. Since the roads are recently rehabilitated, value-added business opportunities have been limited and are yet to emerge. Positive evidence, however, exists for cassava, which is dried and exported mostly to PRC. The VCA shows that producers' marketing margin has increased due to improved access and mobility as well as better market information system as a result of competition among the collectors/traders vying for products produced locally.

The ethnic minorities, HFH, and poor households have sold a large proportion of rice, vegetables, fruits, and other perennial crops; but a smaller proportion of other products compared with their respective counterparts. Livestock sale exhibited a similar pattern across all three socioeconomic groups. A majority of the survey respondents revealed that with improved road connectivity, they were able to produce and sell more high-value crops and nonfarm products. They also believed that, without road improvement, the volume of sale would have been smaller and they would have needed a longer travel time and incurred higher transportation costs. One third of the producers procured inputs at their homestead; the remaining two thirds procured them from suppliers in their own (53%) or other communes (14%). Without the project roads, 18% of them would have bought smaller quantities of inputs, while 81% would have still bought the same quantity but at a higher price and transportation costs. No significant differences were noted across the three socioeconomic groups.

Income and expenditure have increased due to a number of factors including improved connectivity, which

[70] Route 306 Lap Thach (9.6 km) and Route 307 Lap Thach (14.6 km) in Vinh Phuc; Route 284, Da Mai–Song Mai (7 km) and Route 289 in Bac Giang (19.1 km); Route 185 Yen Son-Dheim hoi (44.7 km) and Route 188 (27 km) in Tuyen Quang; and Route Mau A–Tan Nguyen (16.6 km) and Route Quy Mong–Dong An (7 km) in Yen Bai.

[71] Ethnic categorization is based on the standard differentiation used by the Government and development partners in Viet Nam, broadly grouping the subjects as Kinh/Chinese and ethnic minority.

[72] Baseline and participatory rural appraisal surveys carried out under the PPTA; national surveys such as Viet Nam Household Living Standard Survey and National Census; provincial data and information from the Departments of Agriculture and Rural Development, Labor Invalids and Social Affairs, and Ethnic Minorities and Mountain Areas, surveys, benefit monitoring and evaluation studies carried out by the Project, participatory rural appraisals conducted during subproject identification, and other studies conducted in the area for the project components.

has exposed consumers to an increasing variety of consumption goods. Quality of consumption as well has improved over the past 2 years. Overall, expenditure has kept pace with income increases, although the poor and ethnic minorities are lagging far behind compared with their non-poor and Kinh/Chinese counterparts. While roads have not necessarily increased enrollments in different schools, they have greatly facilitated mobility and save time and costs for children attending schools, and patients going to health stations and district hospitals for treatment. In addition, improved connectivity has mobilized production and institutions delivering social services to increase the frequency of their visits to communes, and provide guidance to local people on improved technology, management practices, and inputs when required. The local people, particularly women, have greatly benefited from the project roads as they are now able to meet more frequently with the people in their network, both for productive and social purposes. Increased frequency of events organized locally is an example of the direct contribution of roads to the local communities.

A number of challenges confront development assistance through the assistance for rural roads. Further improvement in equitable access to opportunities, services, and institutions and, hence, economic and social opportunities have the potential to be achieved for the local people, ethnic minorities, and the poor. Some of the major environmental problems local people face are dust and noise pollution according to 43% of respondents. Economic challenges ahead include increased scope for value addition to primary production systems and further reduction in marketing margins, to increase profit margins for the producers and price incentives for the consumers. At present, a concern is adequate funding and management of a project's O&M as some of the roads have started to exhibit symptoms of low quality maintenance due to the budgetary stress faced by PDOTs. Road safety remains another area that the provincial and local governments have to focus on. Excessive use of chemical fertilizer and farm chemicals to boost agricultural productivity has been highlighted as an emerging challenge for local people and the provincial government.

FGD = focus group discussion, HFH = households with female head, O&M = operation and maintenance, PDOT = provincial department of transport, PRC = People's Republic of China, VCA = value chain analysis.
Source: Household surveys, FGDs, and key informant interviews conducted in 2009.

V. PERFORMANCE ASSESSMENT OF CASE STUDY ROADS IN ADDRESSING INCLUSIVE DEVELOPMENT

60. **Overall Assessment.** The study assessed the performance of six case study project rural roads from ID dimensions and thus the ratings were based on ID and not for the entire projects. ADB assistance for rural roads in support of ID is rated *partly successful* based on progress made in integrating disadvantaged groups into mainstream socioeconomic development. The gaps, however, remain wide and a more systematic effort is required to achieve long-term sustainable ID. The rating should be interpreted with caution as most of the roads are at an early stage of operation. The SES suggests that ADB assistance through rural roads is relevant at the lower end of the scale. The rural roads were selected for their strategic importance to the local population, including disadvantaged groups. The projects, however, did not specifically target disadvantaged populations and assumed that improving access would lead to greater use. Likewise, most of the projects lacked an enabling environment for fully exploiting economic, social, institutional, and environmental opportunities. The evaluation rates the assistance to be "effective" because most of the projects were able to achieve the intended outputs, including a modest increase in outputs, reduction in transportation costs, and integration of disadvantaged groups into mainstream economic and social development. ADB assistance to ID is rated *less efficient* based on the average 22 months' project implementation delays and reduced expected benefits from the roads. Despite the strategic importance of rural roads and high enthusiasm of local people and local governments in looking after rural roads, weak institutional capacity and lack of a sustainable mechanism for O&M collectively suggest a *less likely sustainable* rating for ADB assistance. The likely impact on ID is rated *modest* based on available evidence. Backward and forward linkages and an enabling environment for harnessing economic, social, institutional, and environmental opportunities are yet to emerge in most of the road corridors. At present, economic opportunities are very much limited, except for an increase in primary production, and both backward and forward linkages are yet to develop to ensure sustainable development. The roads have facilitated access to social services and

institutions, but their utilization remains far below the development potential due to lack of an enabling environment for economic and social development. A sustainable mechanism for road O&M complemented by socioeconomic development opportunities, through a mix of targeted and general intervention program, is required to maximize the impact of investment in rural roads. Various opportunities due to roads are assessed in Appendix 5.

A. Relevance

61. From the perspective of ID, ADB project assistance associated with rural roads is rated *relevant* at the lower end of the scale. The analysis of project DMFs showed that all reviewed projects had some relevance to ID, at least in terms of reducing rural poverty. The general underlying assumption had been that improved access would lead to a better quality of life through increased income and employment (economic opportunities). The projects had a significant focus on creating employment during the construction or rehabilitation stages, but none on other complementary activities. Most of the projects had poverty and social assessment, as well as initial environmental assessment completed as a part of the project processing cycle. A number of project designs had provisions for at least some complementary activities such as access to finance, skills development, and off-farm opportunities. However, not all projects had equal emphasis on the four dimensions of ID, and project designs favored civil works over other activities. In addition, project designs paid limited attention to sequencing or positioning of various relevant components. Most of the projects focused on rehabilitating existing roads, with few exceptions, and hence, had limited focus on ID. In essence, the locations of the selected roads for improvement partly addressed the needs of the disadvantaged communities, but not necessarily the needs of the totally isolated and unconnected communities. Inclusion of ethnic minorities was by default due to the location of the roads, and no specific measures were adopted to ensure inclusion of the poor, ethnic minorities, and HFH on a sustainable basis. The project designs focused more on enhancing access but less on improving utilization of the roads to harness economic, social, institutional, and environmental opportunities.

62. All roads reviewed in this SES were found to be “relevant” to the respective government's national strategy and ADB' strategy of supporting infrastructure. The SES found that all case study roads were to some extent relevant to ID at project design, during implementation, and at evaluation. The roads were of high strategic importance in connecting several communities, particularly in Nepal and Viet Nam. In the Philippines, the focus was on rehabilitating small sections of longer roads at critical points. The project designs were relevant in all cases, with the exception of RIDP in Nepal, where designs focused solely on earthen road construction and did not adequately take into account drainage provisions and a viable option for road maintenance. Four of the six project roads—RIDP in Nepal, CHARM and ARCP in the Philippines, and RISP in Viet Nam—were assessed as directly “relevant” in improving access for the disadvantaged groups, specifically ethnic minorities, the poor, and members of HFH. The two other roads—RNDP in Nepal and PRISP in Viet Nam—were relevant for a wider farming population comprising the general population, without specific reference to disadvantaged groups. All projects had rightly identified national, provincial, or local institutions for road construction or rehabilitation at the time of project formulation. In all cases, however, the project design lacked a sustainable mechanism for road maintenance. As a result, the ownership was not clear among the road beneficiaries and institutions. In Viet Nam, it was often assumed that the national or provincial road departments would maintain the roads. However, those agencies had historical funding constraints to meet the demand.

63. The road projects assumed that improvement in access would lead to increased economic activities (production, employment, and business development), as well as social opportunities (health, education, and community development). In addition, improved road access was also expected to increase the frequency of contacts between the beneficiaries and service delivery and administrative institutions. While the assumptions were valid, a relevant enabling environment with required resources was lacking. As a result, modest gaps were found between access to and utilization of the project roads. The project designs should have paid due attention to road safety measures. For example, road accidents in PRISP (Viet Nam) and RNDP (Nepal) were associated with lack of awareness of the consequences of high speed driving, inadequate provision of speed breaks, particularly in the school areas, and nonenforcement of the use of helmets when riding motorcycles. Project designs should also have paid more attention to environmental degradation associated with the construction of RIDP in Nepal.

B. Effectiveness

64. ADB's contribution to ID through assistance for rural roads is provisionally rated *effective*. While ID was not the strategic goal of the ADB projects, improved road connectivity significantly helped the majority of the people in the road corridor in increasing their income and, to some extent, their employment (primarily through engagement in production and marketing activities). As the focus of the projects was on civil works, the executing and implementing agencies were appropriately identified and engaged. The beneficiaries included all strata of the local population—poor and nonpoor, ethnic and nonethnic, and households with male head (HMH) and HFH. In many instances, rural road connectivity resulted in integrating disadvantaged groups into market economies and improving social integration. The roads helped local people to access service delivery and administrative agencies in a shorter time, and improved the response time of those agencies to address local needs. Improved road conditions made it possible for more traders and collectors to visit villages or communes, and procure locally produced goods at relatively competitive prices. The roads were particularly effective in enabling the sick, the elderly, and pregnant women to quickly access health services; and enabling children to commute to their schools safely. However, local disadvantaged people have not been able to fully exploit the potential opportunities from the roads due to lack of other enabling factors such as efficient transport services, access to finance, market information, producers' organizations, and processing facilities. While several producers are able to diversify their production mix from solely subsistence crops to subsistence and cash crops, they also face depressed prices due to a glut in the market. The roads have been more effective for the better-off, the nonethnic groups, and HMH than for their respective counterparts.

65. Evidence from the study suggests that the project roads reviewed were effective in improving access to input and output markets, modern technologies and cultivation practices, capital for the majority of the intended beneficiaries, and also in connecting geographically isolated communities (including ethnic minorities) to market centers. The flow of traders or collectors to and from villages also significantly increased. As a result, total production as well as per hectare yields of marketable crops and livestock increased substantially, particularly in Viet Nam and the Philippines. The roads also contributed to a modest increase in cropped area in the Philippines and Viet Nam, largely due to the cultivation of barren lands. In Nepal, however, cropped area, productivity, and crop yields remained stagnant in the project areas. This is explained by the high out-migration of young people, leaving behind children and the elderly; high remittance incomes discouraging local people to engage in farming; and lack of irrigation. In all three countries, farmers were able to increase their net income where complementary

factors were available. While the projects roads improved access, their utilization by disadvantaged groups still remains far below the development potential.

66. Road improvements in ADB projects led to the increased use of tricycles in the Philippines; bicycles, jeepneys, and minibuses in Nepal; and motorcycles in the Philippines and Viet Nam. All conveyances contribute to significant reduction in travel time in all cases, and travel or transport cost in some cases. In all three countries, visits by extension agents, NGO staff, and administrative staff steadily increased, thereby facilitating improved communication between the local beneficiaries and institutions providing services. While non-poor, nonethnic minorities, and HMH derived disproportionately greater benefits, a large number of disadvantaged groups have successfully entered the marketplace, thus creating opportunities for themselves in different ways. Transportation cost savings are particularly realized by farmers and traders or collectors in CHARM (Philippines) and PRISP (Viet Nam) project road corridors in marketing their produce. The number and, hence, the choice of microfinance providers substantially increased, particularly in Nepal's RIDP and RNDP project road corridors. Similarly, improved roads significantly reduced the response time of service providers. However, smallholders have not benefited from the savings in transport costs associated with the procurement of inputs such as seeds, fertilizers, and farm chemicals.

67. Additional economic and business opportunities are still limited to roadside food stalls, grocery stores, and motorcycle repair shops. Similarly, no visible value-added opportunities have emerged except for cassava drying facilities in Viet Nam. While marketing margins have declined for most of the producers and traders, road usage by disadvantaged groups remains far below the potential. This is primarily associated with the small volume of production at the household level, lack of cash to pay for transportation, and the presence of shorter trails local people have used for years.

68. The project roads were effective in improving access to health, particularly for the elderly and pregnant mothers needing prenatal or postnatal care. Children benefited from improved access to schools, particularly in the Philippines. In Nepal and Viet Nam, schools are located within walking distance and, often, shortcuts are used in commuting to schools. In most of the communities served by the case study project roads, school enrollments remained unchanged but absenteeism significantly declined in the three countries. Improved road conditions facilitated movement of staff from service delivery institutions to reach their clients. However, such movement has been limited due to the respective agency's internal staffing and budgetary constraints. In Nepal, improved roads significantly contributed to the increase in the number of NGOs, particularly those engaged in microfinance delivery. The effectiveness of project roads would have been greater if complementary factors had been duly addressed together with road improvements. For example, in RIDP (Nepal), removal of the syndicate system operated by transport entrepreneurs, better road maintenance regime, and provision of bridges to allow vehicles to cross rivers would have contributed to increased traffic volumes and greater road use, and higher effectiveness. Efforts are also required to minimize noise and dust pollution, as well as provide a system of garbage removal. Additional measures are required for improving road safety and minimizing road accidents. The study shows that the labor-intensive environment-friendly approach adopted in construction or rehabilitation of rural roads has not been effective due to the unavailability of labor locally, difficulties in managing multiple contracts, and public pressure to complete the road sooner than planned.

C. Efficiency

69. The SES rates ADB's contribution to ID through assistance for rural roads as *less efficient*. Some factors that contributed to the assessment include project implementation delays, high transaction time and costs in contract management, control of vehicular movement, and limited economic opportunities in the road corridors. As stated earlier, average implementation delay of rural road-associated projects is 22 months and reasons for the delay include one or more of the following: (i) unfamiliarity with procurement and/or related ADB procedures, including preparation of bid documents; (ii) consultant recruitment and mobilization; (iii) problems in civil works, and construction contractor issues; (iv) inadequate government or cofinancing arrangements; (v) lengthy government approval procedures; (vi) failure to comply with covenants; (vii) change in scope and design of the project; (viii) decentralization issues; (ix) problems related to disbursement and the imprest account; (x) inadequate capacity of executing and/or implementing agencies; (xi) political crisis or worsening law and order situation; and (xii) safeguard-related issues. In addition, project components were not properly sequenced and, in most cases, all components were either implemented simultaneously or independently without due consideration to emerging needs during project implementation. However, since most of the project roads are existing roads, land acquisition was not a problem as in other major road projects.

70. In the case study roads, more or less similar constraints emerged during project implementation. There were delays in completing the roads, and the delays were associated with several factors including the ongoing conflict and challenging security situation at the time of road construction and rehabilitation, and recruitment and mobilization of consultants in Nepal; delayed budget approval, lack of timely flow of funds, construction delays, change in scope and decentralization issues, delays in recruiting and mobilizing consultants, capacity constraints in the Philippines; and consultant recruitment and mobilization, and counterpart fund release in Viet Nam. In Nepal's RIDP, Baglung-Burtibang road construction was begun during the conflict period, and completed when the conflict ended. The strategic importance of this road to local people played an important role in its completion despite the conflict. However, labor contract management issues surfaced several times.

D. Sustainability

71. Available evidence supports the conclusion that ADB's contribution to ID through assistance for rural roads is “less likely sustainable.” While in 15 PCRs completed for rural road-associated projects (Table 1), 1 project was rated *highly sustainable*, 10 *likely sustainable*, and 4 *less likely sustainable*, the evidence presented in favor of likely sustainability was weak. The strategic importance of project-supported roads servicing a larger population including disadvantaged groups but with restricted potential development opportunities in four dimensions (economic, social, institutional, and environmental) at evaluation time, and weak ownership demonstrated by local government and people in several cases collectively supported the rating assigned. Local contribution in cash or in kind and acceptance of road user charges in some cases are promising signs, but nowhere near what is required to sustain the project benefits. Substantial improvements in economic opportunities coupled with shared management of road infrastructure are required to sustain the project benefits. Despite the high enthusiasm of local people and local governments, the enabling environment for sustaining project benefits remained inadequate. It is also expected that the disadvantaged groups are more likely to be increasingly mainstreamed and integrated with the rest of the population only when utilization of roads through various opportunities is emphasized.

72. Performance varied widely across the six case study projects. Regular O&M costs were a persistent problem in all roads and, often, government allocation for O&M on average accounted for only one fifth of actual requirements, suggesting a huge resource gap. If roads are not regularly maintained, their economic life is likely to shorten with the pace of deterioration. In the three countries, budgetary allocation for construction or major rehabilitation takes precedence over minor or small-scale maintenance work. Experience shared by the implementing agencies suggests that the provision for O&M depends on clarity in ownership of the roads. Local FMRs often tend to be looked after better if these are owned by local governments (based on their major contributions) as demonstrated by proactive barangays and municipalities in the Philippines. At the same time, in some similar roads maintained by provincial authorities, local ownership is usually absent and, hence, it is always expected that such roads would be maintained by the respective authorities. The limited or complete absence of a mechanism for dedicated and adequate road maintenance funds poses a major challenge in sustaining project benefits.

E. Impact

73. The evaluation suggests that the likely impact of the case study roads on ID would be modest in economic terms in the short to medium terms. Long-term impact would depend on the physical status of the roads, as well as local economic development opportunities. The ethnic minorities, HFH, and the poor are more likely to integrate and participate in market and service institutions as significant progress has been made under the six project case study roads. The institutional and environmental impacts are likely to be localized and would depend on the respective institutions' wider program of work supported by required resources. Private sector growth is likely to be slow and would be affected by the existence of backward and forward linkages. At present, these linkages are weak and limited in nature. Roads have served as a catalyst for ID, but they need to be supplemented by the necessary enabling economic, physical, institutional, and social environment along with a sustainable mechanism for road maintenance and road safety.

VI. LESSONS AND RECOMMENDATIONS

A. Lessons

1. Project Design

74. **Rural Roads May be a Necessary But Not Sufficient Condition for Inclusive Development.** The construction or rehabilitation of rural roads or FMRs certainly improves access to markets and, where relevant, to employment centers for all groups of people, including geographically isolated and disadvantaged community groups. However, access does not necessarily guarantee that the road would be extensively used by the communities, particularly the disadvantaged groups, unless relevant opportunities and an enabling environment are created simultaneously. Development interventions aimed at fostering ID need to take a holistic approach comprising but not limited to viable livelihood, sustainable management of natural resources, social services, community empowerment, market development, development of backward and forward linkages to local production systems, and private sector development. Where relevant, project designs need to explicitly recognize and include relevant disadvantaged groups, and efforts should be directed at mainstreaming such groups and promoting their integration with rest of the society. Initially, a targeted approach to local development may be necessary in certain instances. Furthermore, the development

potential of the proposed road corridors should also be analyzed so that appropriate interventions can be planned.

75. **Synergy Is Required in Development Interventions.** Rural roads serve as a catalyst for ID. Emphasis is needed not only for improving access but also promoting the use of roads by developing synergy among relevant development interventions. ID outcomes are likely to be better in projects where rural roads are complemented by other infrastructure and support services. CHARM and ARCP in the Philippines were implemented along this line. Greater use of roads is likely to lower transport costs for the movement of goods and people. Furthermore, a local area development approach has potential to contribute more to ID. Under this approach, all complementary development interventions are provided within the project framework. For example, RISP in Viet Nam would have had a greater contribution to ID had there been provisions for market development, irrigation, and support for developing institutional and support services in conjunction with rural roads.

76. **Labor-Intensive and Environment-Friendly Technologies[73] may not be Feasible for All Rural Roads.** The success of labor-intensive and environment-friendly technologies in rural road construction and rehabilitation depends on (i) public expectation, regarding how soon the proposed road is to be constructed or rehabilitated; (ii) pressure to disburse allocated budget within a fixed time; (iii) geo-ecological conditions of sites; and (iv) availability of adequate local labor. Often, there is public pressure to complete the road work in the shortest period, and bureaucratic pressure to disburse allocated funds within a given fiscal year. In addition, the size and scale of civil works requires skills and workers not available locally; thus, managing several smaller contracts becomes cumbersome and time-consuming. The project designs need to build the required flexibility in adopting sustainable technologies so that roads are completed within a specified time for the benefit of the target population. However, planned roads should be linked to other strategic roads properly. Experience from RIDP areas in Nepal shows that unplanned haphazard road network development under local community initiative, based solely on community demand, may cause soil erosion in the hills.

77. **Road Safety Measures Should be an Integral Part of Project Design.** Often the inherent belief is that road accidents occur mostly on highways, and rural roads are reasonably safe. Experience from RNDP in Nepal and PRISP in Viet Nam suggests that accidents do not depend on whether a road is classified as rural, provincial, or highway. Enforcement of accident prevention measures such as (i) use of helmets by motorcycle riders; (ii) speed breaks near areas of population concentration, schools, and markets; (iii) improvement of sharp bends along the road alignments; and (iv) general road safety measures and awareness of effective measures would go a long way in preventing accidents and deaths.

78. **A Stable Road Maintenance Fund is a Necessary Condition for Meeting Transport Needs.** Advance provision for a mechanism to repair and maintain rural roads after civil works are completed partly ensures that the roads remain in good operational conditions. ARCP in the Philippines had a provision for shared responsibility through (i) a contribution from the LGUs, and (ii) an agreement between DAR and LGUs for road maintenance up to 5 years after completion of civil works.[74] As a result, the roads are generally in good condition. On the other hand, due to lack of clarity in roles and responsibilities, road repair and maintenance have not been satisfactory in RIDP in Nepal and RISP in Viet Nam. This is partly due to the lack of

[73] Labor intensive and environmentally-friendly technologies call for minimum use of heavy equipments and maximum use of labor in road construction. These roads are also referred as “green roads.”

[74] While it is argued that the need for road maintenance is minimal during the first 5 years after road construction or rehabilitation, the SES considers the provision as a good start and better than doing nothing.

required funds to undertake necessary work, particularly when resource allocation is dependent on governments' regular budget. Most often it is assumed that governments would fund O&M costs after project completion, but this assumption does not hold in practice as relevant authorities tend to be underresourced. Therefore, a stable mechanism for road maintenance funds must be ensured through a combination of (i) community contribution in cash or in kind, (ii) dedicated budgetary allocations, and (iii) road user charges.

79. Local needs may require provision for alternate mode of access, other than rural roads. While need may exist, it may be difficult to justify investment in rural roads for sparsely populated and geographically isolated communities. Project designs should examine alternatives to rural roads. Some communities may be better off with fast trails, bridges, and boats.

80. **Where Relevant, Indicators Associated with Inclusive Development Should Be Presented in the Project DMF.** A review of indicators used in the 53 loan projects examined suggests that of the total 707 indicators used, only 45% are specific, measurable, achievable, relevant, and time-bound (SMART) and only 47% are time-bound. It would be difficult to track progress toward ID unless DMF indicators are all SMART ones. In projects where ID is envisaged, relevant measurable indicators to assess economic, social, institutional, and environmental opportunities should be clearly identified and benchmarks set so that progress toward achieving ID can be monitored and evaluated. In the absence of such baseline data, monitoring and evaluation (M&E) become difficult. The indicators, in addition, should reflect not only access but also use of the respective infrastructure by the intended beneficiaries. Rural roads have significant implications for disadvantaged groups; therefore, the project DMF should contain specific, measurable, achievable, relevant, and time-bound indicators to report (i) progress on ID encompassing, not only access but also utilization, and (ii) progress of disadvantaged groups in exploiting economic, social, institutional, and environmental opportunities. This would call for a well-designed baseline study at the project preparatory technical assistance stage. It is also important that during project implementation, results should be evaluated, measured and reported and the projects designs are kept flexible for adjustment based on these results.

2. Project Implementation

81. **Development Projects Based on Local Partnership in Implementation Are More Likely to Succeed Than Those Implemented Unilaterally by Government Agencies.** It is important that project implementation be based on a partnership approach with shared responsibility and benefits among all relevant stakeholders. This would be possible when the implementation process including procurement, contracting, and management is transparent to key stakeholders and efficient. In addition, due representation of disadvantaged groups in implementing project activities is important to ensure local ownership of the projects' outputs and outcomes. However, felt needs in capacity building for efficient implementation should be identified and addressed on time.

82. **Timely Recruitment of Consultants and Their Mobilization Are Important in Completing Projects on Time.** Delay in recruiting and mobilizing consultants at the start of projects is one of the key factors associated with delayed start-up of projects, resulting in one or more extension(s) of ADB rural road-associated projects. Even when advance action for the procurement of consulting services is planned, protracted government procedures and rules, and limited familiarity with ADB procurement guidelines by DMC partners result in start-up delays. ADB, in partnership with other development partners, may need to assist DMCs in

harmonizing their approval procedures. It is also important to provide executing and implementing agencies regular orientation and training on ADB's procurement procedures. The consultants need to be before the loan effectiveness.

83. **Assessment for Counterpart Funds Needs to Be Based on Local and National Capacity.** While borrowers tend to agree to provide specified counterpart funds as their contribution to the project costs, project implementation may suffer due to late release of funds or a significant reduction in budgetary allocations. ADB needs to ensure that (i) the commitments made by the borrowers are realistic, based on their track record and availability of resources; and (ii) allocations are made as per project requirements, and funds released on time so that activities can be undertaken as planned. Counterpart funds for the first year of project implementation are approved before the loan effectiveness.

3. Sustaining and Enhancing Project Benefits

84. **The Upkeep of Rural Infrastructure Requires a Mechanism That Ensures Resources for O&M after Project Completion Are Available When Needed.** The physical condition of rural roads tends to deteriorate after project completion when (i) required funds for O&M are not available, (ii) the institutional arrangement for road maintenance is not clear, or (iii) the quality of civil works is substandard. A mechanism based on partnership comprising the representation of stakeholders (including disadvantaged groups), local government, and district or provincial government is likely to address O&M issues by seeking assistance from relevant agencies, if required. Regular postproject monitoring jointly by ADB and executing agencies is also likely to contribute to improved road conditions.

85. **Rural Roads Have Potential to Become Viable When Barriers to Road Usage Are Minimized and an Enabling Environment Is Developed by Creating Opportunities.** Road use tends to increase with the emergence of opportunities in the road corridors as demonstrated by cassava trading in Viet Nam. Reducing barriers by introducing competition among transport service operators tends to benefit producers, traders, and consumers due to lower transportation and travel costs. However, when barriers are introduced with road improvement, as demonstrated by the dominance of the transport entrepreneurs' associations in Nepal, new opportunities, particularly economic ones, tend to emerge very slowly.

86. **Due to Weak Capacity Local Governments Have Been Slow in Responding to Needs, Particularly of Disadvantaged Groups.** Weak local government capacity has contributed to (i) inadequate targeting of the poor and other disadvantaged groups in the planning and resource management processes; (ii) lack of adequate community participation in planning, design, implementation, monitoring, and supervision; (iii) less effective public consultation resulting in lack of transparency in the decision-making processes and service delivery; and (iv) absence of an enabling environment and effective mechanisms to encourage the participation of local communities, especially the poor and ethnic minorities, to use, control, and monitor resources for socioeconomic development.

B. Recommendations

87. **Promote Inclusive Development in Rural Infrastructure Projects by Encouraging the Government to Adopt a Holistic Approach to Creating Opportunities.** ADB needs to ensure adequate social preparation before civil works start in rural infrastructure projects. Improving rural connectivity through roads alone is not sufficient. It should be complemented by

other support structures for creating economic, social, institutional, and environmental opportunities. The opportunities should include innovative methods of creating livelihood for local people as well as add value to primary production. The opportunities, however, would vary across locations, and would require unique solutions rather than a "one size fits all" approach. Similarly, the support structure may include other infrastructure (e.g., irrigation, drainage, markets, processing facilities, etc.) or services (e.g., finance, technology, transport services, marketing promotion, etc.). Due care is also required in identifying, supporting, and nurturing both backward and forward linkages associated with local economic development activities. Since some of the disadvantaged groups tend to be located in isolated pockets, a targeted approach to serve their needs may be necessary and should be incorporated into the project design. To achieve effective and efficient outcomes, there may be need to properly sequence the project components or interventions. In some cases, for instance, more efforts should be spent in promoting and nurturing backward and forward linkages. Additional efforts also need to be directed at improving the quality of infrastructure and services relevant to the respective development opportunities. Hence, there is a need for doing extensive investigations during the PPTA to select those subprojects which have adequate inclusiveness features or offer maximum possible contributions to inclusive development in economic, social, environmental and institutional areas. However, the proposed assistance for rural roads also needs to fit within agreed sector road map.

88. **Emphasize Both Access and Use to Ensure Viability and Sustainability in Rural Road- Associated Projects.** The project design should also consider the utilization of rural infrastructure (e.g., roads) while addressing improved access to infrastructure. Appropriate provisions must address barriers to infrastructure use. It is critical that projects be based on true partnerships with local communities so that ownership of the process and infrastructure rests with the communities rather than with the government agencies. ADB projects and subprojects should seek to raise the awareness of local communities, especially the poor and ethnic minorities, of their rights to inclusion, participation, and contribution in designing and planning subprojects. To the extent possible, local communities must benefit from employment opportunities during initial construction or rehabilitation, as well as during routine or periodic maintenance. In labor-deficit areas, project design should be flexible to allow employment of workers from outside the road corridors. Local authorities and infrastructure users' representatives should jointly supervise construction and rehabilitation. With support from the project, the community should be able to develop an effective O&M mechanism. ADB needs to take extra care in selecting rural roads for rehabilitation as some of them may not serve the strategic interest of local communities.

89. **Establish a Mechanism for Ensuring a Stable Maintenance Fund in Rural Road-Associated Projects.** The concept of infrastructure maintenance funds and a mechanism to operate such funds should be adopted for all types of infrastructure supported by ADB, including rural ones. The mechanism should be based on partnerships with local institutions, beneficiary groups, and the government and should have an incentive structure for community participation. Making regular provisions for matching grants is one of several options that have had successful outcomes. The mechanism, however, should be transparent to local stakeholders to ensure public trust and continued support in the foreseeable future.

90. **Include a Road Safety Component in Rural Road Projects.** ADB needs to ensure that all rural roads projects have a road safety component so that preventive measures can be adopted to minimize accidents and deaths. Such measures should be identified, in consultation with the local population. They may require both infrastructure design improvement, as well as

mass awareness campaigns in the local language/dialects, and enforcement of traffic regulations, including the compulsory use of helmets for motorcycle riders.

91. **Support Alternatives to Rural Roads based on Local Needs.** In addressing access for geographically, economically and socially isolated and disadvantaged groups, ADB needs to ensure they are linked by other means where rural roads are technically and economically not feasible. This may involve supporting trails, foot path, bridges, boats etc. instead of rural roads.

92. **Ensure Sustainability of Project Benefits.** ADB should emphasize that project benefits from rural roads are sustained and further enhanced over time. This can be achieved by (i) having the responsible agency undertake postproject monitoring and apply timely corrective measures, (ii) addressing required road maintenance on time, (iii) strengthening the capacity of local and higher level institutions, and (iv) promoting an environment conducive to creating socioeconomic development opportunities.

93. **Strengthen Systems for Results Monitoring and Evaluation in Rural Road-Associated Projects.** M&E of project results should be an integral part of project design with clearly identified and measurable indicators of achievement at different levels. The indicators must be reflected in the project DMF and should reflect relevant economic, social, institutional, and environmental opportunities and challenges reflecting potential impact on ID. ADB also needs to ensure that baseline studies are conducted at the project preparatory TA stage and benchmarks are identified at the start of the project. The baseline study should form the basis for monitoring progress and for M&E of the results of development interventions. The baseline study should also provide comparable data on groups without intervention. ADB also must ensure that the baseline data are available in soft form in user-friendly formats for comparison and analysis at the later stages of the projects, including postcompletion and evaluation.

BENEFITS OF RURAL ROADS

1. A number of studies have examined impact of rural roads as households and communities. Some of the examples are summarized in this appendix.

2. Garmendia et al.[1] contend that providing infrastructure such as rural roads lowers the unit cost of production and services, and expands market opportunities, thereby promoting economic growth. In India, Binswanger et al[2] found that investment in rural roads paved the way for financial institutions, and public infrastructure created greater fertilizer demand. In Viet Nam, De Walle and Cratty[3] found that rural roads significantly increased the availability of freight services in the project communes, but had little impact on passenger transport. However, time needed to reach the closest hospital, in case of serious injury, declined substantially. The poorest households realized the strongest impact. Warr[4] found that improved road access alone decreased rural poverty by 13%. In Bangladesh, Khandker et al[5] noted that investments in rural roads reduced poverty significantly through higher agricultural production, higher wages, lower input and transportation costs, higher output prices, and better education opportunities for children. The authors argued that rural road investments are pro-poor, and that the gains are proportionately higher for the poor than for the non-poor. Olsson (2006)[6] reported that road projects substantially improved local areas' access to the regional network and production, employment, trade, competition, incomes. Mobility increased substantially in all major sectors, and in new ones and among households.

3. One Asian Development Bank (ADB) study[7] highlighted that the economic benefits of rural road projects varied by income group. Improvements to the primary village network of paths, tracks, culverts, and access routes that reduce the burden of basic household and production tasks, as well as the increased availability of intermediate modes of transport with larger carrying capacity to collect water, firewood, etc., were likely to have a greater initial impact on the well-being of the poor, than improved availability of motorized transport services, which they do not or cannot afford to use. Cook et al,[8] on the other hand, rejected the hypothesis that the poor and the non-poor benefit proportionately. The authors argued that transport infrastructure has always been seen as a public good; thus, its benefits are available to all—poor or non-poor. A number of studies, however, supported the idea that labor-intensive rural public works have the potential to reach the poor through job creation and maintenance of rural

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1 Garmendia, C., A. Estache, and N. Shafik. 2004. Infrastructure Services in Developing Countries: Access, Quality, Costs, and Policy Reform. *World Bank Policy Research Paper*. Washington, D.C.

2 Binswanger, H.P., S.R. Khandker, and M.P. Rosenzweig. 1993. How Infrastructure and Financial Institutions Affect Agricultural Output and Investment in India*. Journal of Development Economics*: cited in IED/ADB. 2007. *Findings from Studies of Poverty Impacts of Road Projects.* Manila.

3 De Walle, D. and D. Cratty. 2002. *Impact Evaluation of a Rural Road Rehabilitation Project.* World Bank. Washington, D.C.

4 Warr, P. 2005. Road Development and Poverty Reduction: The Case of Lao PDR. *ADB Institute Discussion Paper No. 25*. Tokyo.

5 Khandker, S., Bakht, Z, and Koolwal, G. 2006. The Poverty Impact of Rural Roads: Evidence from Bangladesh*. World Bank Policy Research Working Paper*. Washington, D.C.

6 Olsson, J. 2006. *Responses to Change in Accessibility, Socio-economic Impacts of Road Investment: The Distributive Outcomes in Two Rural Peripheral Philippine Municipalities.* Department of Human Economic Geography, University of Gothenburg, Series B, No. 110. Gothenburg.

7 ADB. 2002. *Impact of Rural Roads on Poverty Reduction: A Case Study-Based Analysis.* Manila.

8 Cook C., T. Duncan, et al. ADB. 2005. *Assessing the Impact of Transport and Energy Infrastructure on Poverty Reduction.* Manila.

infrastructure if such works provide income to the poor and core labor standards are maintained.[9]

4. One of ADB's special evaluation studies[10] found that the real impacts of rural road improvement depended significantly on the locality. In remote and poorly endowed mountainous areas in northern Viet Nam and Yunnan, upgrading isolated rural roads that did not connect to major road networks was neither a necessary condition nor an effective measure for reducing poverty. The reasons included (i) insufficient farmland per capita, and adverse farming conditions; (ii) lack of private firms that would invest even after the upgrading of rural roads; and (iii) migration as the main strategy of households for escaping poverty. The study found that upgraded rural roads did not always attract private investors in mountainous areas where opportunities for high commercial agricultural growth were limited. A great majority of those living in such regions escaped poverty by migrating to more prosperous regions and working outside of agriculture, usually in manufacturing, construction, and services. In contrast, upgrading rural roads contributed significantly to poverty reduction in areas with high potential for commercial agriculture—i.e., where farmland was relatively abundant, the climate ideal, the water supplies sufficient, and the only key constraint was the lack of all-season roads. Furthermore, farmers would be willing and able to pay for infrastructure investment that brings them more benefits than costs if, for instance, long-term loans were available at low interest rates.

5. In the Lao People's Democratic Republic, Nakhavong[11] noted that people with capital were most able to benefit from the new opportunities created by rural infrastructure. Mu and De Walle[12] confirmed evidence of considerable differences in impact (heterogeneity) in Viet Nam, with poorer areas tending to have conditions favoring higher impacts. However, the impacts were also highly specific to location, community, and household factors. Similarly, Chowdhary and Torero[13] noted that paved rural roads created more nonfarm employment and income opportunities than nonpaved roads did; and positive complementarity effects were observed when more than one form of infrastructure was available. However, Escobal and Ponce[14] found that income expansion after rural road rehabilitation did not necessarily lead to increased consumption because rehabilitation often lacked regular maintenance. In another ADB

[9] Ravallion, M. 1991. Reaching the Rural Poor through Public Employment: Arguments, Evidence, and Lessons from South Asia. *The World Bank Research Observer* 6 (2): 153–175.; Munters, P. 2003. *Jobs or Machines. Comparative Analysis of Rural Roads Work in Cambodia*. Geneva; International Labour Organization (Available: http://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/documents/publication/wcms_ bk_pb_ 215 _en.pdf); ILO. 1996. *Construction and Maintenance of Rural Roads by the Public and Private Sectors.* Geneva: International Labour Organization. Available: http://www.ilo.org/public/english/employment/recon/eiip/ download/constr_maint. pdf).

[10] ADB. 2006. *Pathways Out of Rural Poverty and the Effectiveness of Poverty Targeting.* Manila.

[11] Nakhavong, S. 2006. *Impact of the Rural Access Road Network on Poverty Alleviation in the Lao PDR.* United Nations Development Programme. Vientiane.

[12] Mu, R., and D. De Walle. 2007. *Rural Roads and Poor Area Development in Viet Nam*. World Bank. Washington, D.C.

[13] Chowdbury, S., and M. Torero. 2005. *Urban-Rural Linkages in Bangladesh: Impact of Infrastructure and the Food Value Chain on the Livelihoods and Migration of Landless Households, Women and Girls in the Northwestern Region*. International Food Policy Research Institute, Washington, D.C. (mimeo), cited in IED/ADB. 2007. *Findings from Studies of Poverty Impacts of Road Projects*. Manila.

[14] Escobal, J., and C. Ponce. 2002. *The Benefits of Rural Roads: Enhancing Income Opportunities for the Rural Poor.* Available: http://www.grade.org.pe/Eventos/nip_conference/papers/Escobal-Rural%20Roads%20June.pdf.

study covering Indonesia, Philippines, and Sri Lanka, Hettige[15] concluded that improved roads increased general opportunities and provided the environment for buying and selling, particularly to visiting buyers, and created seasonal transit markets. However, since many poor farmers in the area were indebted to the intermediaries, they had little scope for deciding to whom to sell and at what price. Improved access to roads, therefore, did not necessarily result in better prices for poor farmers unless access was complemented by other enabling factors.

[15] Hettige, H. 2006. *When Do Rural Roads Benefit the Poor and How? An In-Depth Analysis Based on Case Studies.* ADB. Manila.

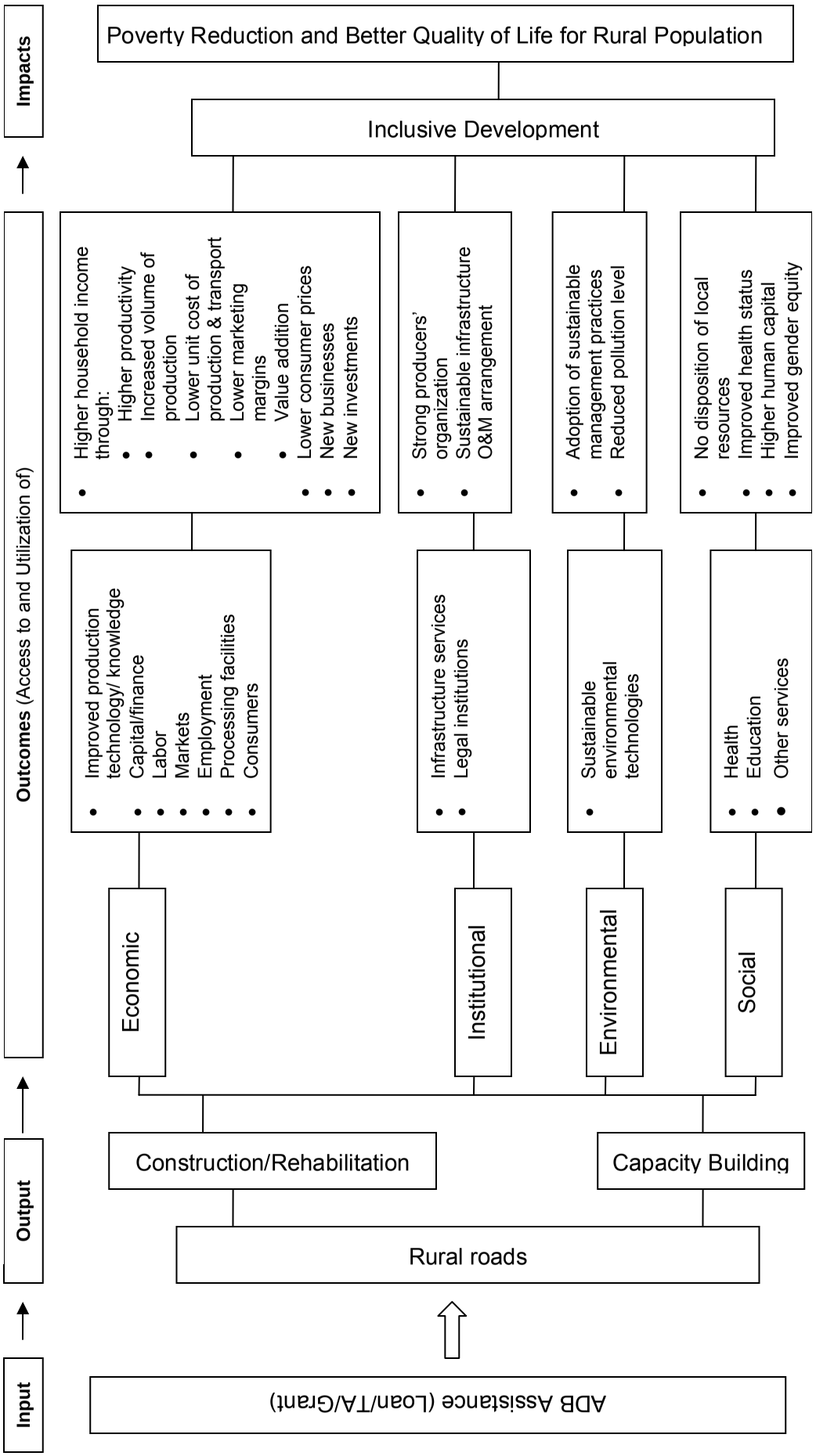
APPROACH AND METHODOLOGY FOR DATA COLLECTION

A. Understanding Inclusive Development

1. The fieldwork for the special evaluation study (SES) focused on documenting the contribution of the Asian Development Bank (ADB) to inclusive development (ID) due to rural road construction or rehabilitation in selected projects. The SES adopted a working definition of ID as "equitable access to and utilization of economic and social opportunities and services aimed at improving quality of life." ID was expected to improve the lives of all members of society, particularly the poor and disadvantaged groups, including ethnic minorities and households with female head. In the study's context, it relates to enhancing equal access to public goods and basic economic services (input supply and marketing of outputs, value addition, and additional employment), as well as social services (health, education, social safety nets and protection, and other social services); equal opportunities in particular for women, people's participation (among others, in subproject identification, construction, and operation and maintenance); people's empowerment (grassroots democracy); improved governance; improved access to information; better social and cultural interactions; and other factors that contribute to harmonious economic growth and well-being. The logic model of ID (Figure A2) emphasizes four dimensions of ID: economic, social, institutional, and environmental.

2. The economic dimension examined both backward and forward linkages to local production systems and assessed the contribution of rural roads to socioeconomic development in terms of increases in employment and income. The backward linkages comprised the input supply chain (technology, finance, and labor) while forward linkages focused on postharvest, marketing, transportation, and disposal of goods produced at the household level. In the social dimension, the emphasis was on assessing the road's contribution to social development opportunities such as health, education, community development participation, and social protection. In examining the institutional dimension, the SES focused on rural roads' contribution in accessing administrative, legal, technical, marketing, and institutional arrangements for sustainable road maintenance arrangements, including capacity building for local governments, community-based organizations, and other local institutions. The environmental dimension addressed soil erosion, landslides, dust pollution, pollution of waterways due to excessive use of chemicals and fertilizers, and potential loss of biodiversity.

Figure A2: Logic Model to Assess the Contribution of ADB Assistance in Rural Roads to Inclusive Development



ADB = Asian Development Bank, IED = Independent Evaluation Department, O&M = operation and maintenance, SES = special evaluation study, TA = technical assistance.
Source: IED/ADB. 2008. *Evaluation Approach Paper for the SES on ADB's Contribution to Inclusive Development through Assistance for Rural Roads*. Manila.

B. Selection of Projects

3. The projects for the SES were selected based on a review of the rural road-associated project portfolio, the projects' respective maturity. and their relative importance in improving the lives of disadvantaged groups. The Independent Evaluation Department shared the initial list of projects with prospective regional departments and resident missions, and a common understanding on the final selection was reached with concerned project staff before the start of the study. The SES covered Nepal, Philippines, and Viet Nam.[1] Nepal represented the fragile and postconflict situation, and Viet Nam was considered as a rapidly developing economy. The Philippines, which was selected initially to pilot-test the methodology for the SES, represented an economy with moderate growth. All three countries have had significant investments in rural or farm–to-market roads. The SES included two representative projects from each country—one project that had been completed few years ago, and another project that either was recently completed or is nearing completion. The projects selected were the Rural Infrastructure Development Project[2] and Road Network Development Project[3] in Nepal, the Cordillera Highland Agricultural Resource Management Project[4] and the Agrarian Reform Communities Project[5] in the Philippines, and the Rural Infrastructure Sector Project[6] and Provincial Roads Improvement Sector Project[7] in Viet Nam.

C. Selection of Sample Roads

4. For the SES, farm-to-market roads were purposively selected based on their relative importance to ID, demonstrated by the concentration of disadvantaged groups, particularly the poor, ethnic minorities, and households with female head in the road corridors. The list of project roads from each project was prepared in consultation with the project staff. After intensive discussion, an understanding was reached on the roads for the study (Table A2). One of the key criteria was that the selected roads should have been completed at least 2 years ago and are open to public transport.

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[1] Originally, the SES planned to include Bangladesh but because of the national and union council elections, the fieldwork could not be undertaken.

[2] ADB. 1996. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to Nepal for the Rural Infrastructure Development Project*. Manila.

[3] ADB. 2001. *Report and Recommendation of the President on a Proposed Loan to Nepal for the Road Network Development Project*. Manila.

[4] ADB. 1995. *Report and Recommendation of the President on Proposed Loans to the Philippines for the Cordillera Highland Agricultural Resource Management Project*. Manila.

[5] ADB. 1998. *Report and Recommendation of the President on a Proposed Loan to the Philippines for the Agrarian Reform Communities Project*. Manila.

[6] ADB. 1997. *Report and Recommendation of the President on a Proposed Loan to the Socialist Republic of Viet Nam for the Rural Infrastructure Sector Project*. Manila.

[7] ADB. 2001. *Report and Recommendation of the President on a Proposed Loan to the Socialist Republic of Viet Nam for the Provincial Roads Improvement Sector Project*. Manila.

Table A2: Summary of Roads Covered in Nepal, Viet Nam, and Philippines, 2009

Country/Project	Name of Road	Year Completed	Location (District/Province)	Length (km)	Sample Size			
					No. of Value Chain Analysis	Household Survey	FGDs (No.)	KII (No.)
Nepal								
Loan 1450-NEP(SF): Rural Infrastructure Development Project	Baglung – Burtibang Rural Road	2005	Baglung	91.0	1	143	6	10
Loan 1876-NEP(SF): Road Network Development Project	Rangeli – Bardanga-Urlabari Road	2007	Morang	43.0	1	158	6	10
Philippines								
Loan 1421-PHI/1422(SF): Cordillera Highland Agricultural Resource Management Project	Sadsadan-Curba-Longen-Pua	2006	Bauko, Mountain Province	5.2	2	50	3	4
	Bontoc-Guina-ang-Mainit	2003	Bontoc, Mountain Province	14.5	2	50	3	4
	Ambongdolan-Cabcaben-Tuel	2002	Tublay, Benguet	9.3	2	50	3	4
	Monglo-Bayabas	2003	Sablan, Benguet	5.7	2	50	3	4
	Maguyepyep-Bucloc	2003	Bucloc, Abra	12.8	2	50	3	4
	Manabo-Boliney Provincial Road	2004	Boliney, Abra	19.4	2	50	3	4
Loan 1667-PHI: Agrarian Reform Communities Project	San Geronimo – Lipata - Seneres Circumferential Road	2005	Barotac Viejo, Iloilo	2.4	1	50	1	3
	Sitio Proper – Basinang Farm to Market Road	2006	Barotac Viejo, Iloilo	2.7	1	50	1	3
	Poblacion – Misi Road	2002	Lambunao, Iloilo	2.3	1	50	1	3
	Pughanan- Panuran Farm to Market Road	2004	Lambunao, Iloilo	7.0	1	50	1	3
	Poblacion – Sulongvalley Farm to Market Road	2003	Sulop, Davao del Sur	6.3	2	50	1	3
	Sitio Katigbaw – Baluntaya Farm to Market Road	2004	Don Marcelino, Davao del Sur	2.7	1	50	1	3
	National Hi-way to Sitio Patulangon Farm to Market Road	2007	Don Marcelino, Davao del Sur	1.9	1	50	1	3
	Hagonoy Farm to Market Road	2003	Malabang, Davao del Sur	4.3	2	50	1	3
Viet Nam								
Loan 1888-VIE: Provincial Roads Improvement Sector Project	Route 307 Lap Thach	2007	Vinh Phuc	9.6	1	50	3	5
	Route 306 Lap Thach	2008	Vinh Phuc	14.6	1		4	4
	Route 284, Da Mai – Song Mai	2007	Bac Giang	7.0		50	4	5
	Route 289	2008	Bac Giang	19.1			4	9
	Route 185 (Yen Son – Chiem Hoa)	2007	Tuyen Quang	44.7	1	50	3	7
	Route 188 Road Project	2007	Tuyen Quang	27.0			2	4
	Route Mau A – Tan Nguyen	2006	Yen Bai	16.6	1	50	3	5
	Route Quy Mong – Dong An	2007	Yen Bai	7.0	1		3	7
	Bac Ha – Simacai Road Project	2002	Yen Bai	28.0				
Loan 1564-VIE(SF): Rural Infrastructure Sector Project	Bac Ha – Simacai Road Project	2002	Lao Cai	28.0	1	50	4	8
	Route 68 Cho Can –Bo Ban	2003	Quang Tri	23.0		50	2	4
	Phuoc Long – Thach Phu Dong Road Project	2004	Ben Tre	15.5	2	50	2	5
	Tan Canh – Mang Sang Road (Route 673)	2003	Kon Tum	10.0	1	50	2	5

FGD = focus group discussion, km = kilometer, KII = key informant interview, NEP = Nepal, PHI = Philippines, SF = special fund, VIE = Viet Nam.
Source: Independent Evaluation Department.

D. "Before" and "After" Comparisons

5. The SES compared the economic, social, institutional, and environmental opportunities before and after the road improvement or construction as applicable. The SES took into account available studies with relevant data to create baseline scenarios, but in most cases that was not possible. However, available baseline surveys and participatory rural appraisal carried out under the project preparatory technical assistance, surveys, participatory rural appraisal outputs, and other information collected during subproject identification, benefit monitoring and evaluation studies carried out during implementation, and other studies undertaken by other agencies in the area serviced by the road component were reviewed to assess and develop a better understanding of before-the-project scenarios. Due to lack of comparable data, the study relied on information or data recalled by the respondents during the fieldwork.

E. Tools for Collecting Data and Information

6. The SES applied a four-pronged approach to collect data in the project areas: (i) household survey, (ii) local business survey, (iii) interviews with key informants, and (iv) focus group discussions (FGDs) with beneficiaries and stakeholders. The household survey collected information on household characteristics and changes in socioeconomic well-being before and after road construction/rehabilitation. Wherever, possible, attempts were made to identify if any of the changes could be due solely to road improvement. The survey also collected information on households' access to and use of rural roads, and any disparities observed were documented. Specific information in the household survey included (i) change in economic, social, institutional, and environmental activities after road improvement; (ii) time spent in various activities, transport, and travel costs; (iii) volume of household production and associated change in trend due to the road, consumption patterns, and any pertinent changes due to the road; (iv) use of health and education services with noted changes due to roads; (v) households' participation in community and other social development activities; and (vi) changes in income and expenditures. The local business survey provided information on changes in volume of business, growth of business activities, trends in sales and procurements, changes in trading activities, etc. Local businesses covered by the survey varied across locations but included the likes of input suppliers, vendors, transport service providers, transport owners and operators, processors, traders, and marketing agents such as collectors. The key informants included local leaders, ADB and project staff, community development agents, and staff from administrative and service delivery institutions.

7. **Value Chain Analysis.** Participatory rural appraisal tools were used during FGDs to map out key actors in the value chains of commercial or traded commodities and document the contribution of roads to various opportunities. The value chain analysis (VCA)[8] was applied to quantify (i) margins and incomes for the various actors along the chain,[9] and (ii) changes in the value chain actors due to improved access. The VCA provided information on (i) how products were produced and reached the final customer; (ii) who were the actors/players in the chain and what were the economic and social relationships between them; (iii) how road development has changed the chain and/or had an impact on its actors, in a positive or negative sense; (iv) how this value chain is likely to change further over time; (v) what were the share of value addition and profits for each actor in the chain. A separate guideline on how to conduct the VCA was prepared, tested, and shared with the field data collection teams.

8. **Sample Size.** The coverage of the study—roads, and number of households surveyed, key informant interviews, FGDs, and VCAs—are summarized in Table A2. The study utilized data from 1,401 households, 74 FGDs, 33 VCAs, and 136 key informant interviews. The households were selected in equal proportions at three segments of each road (head, middle, and tail) and within a 5-kilometer radius.

[8] A value chain refers to the full range of activities that are required to bring a product or service from conception through the different phases of production, up to the delivery to final consumers and disposal after use. VCA maps out key actors and activities in the value chain of a specific commodity or product, and documents risks and benefits accruing to each group.

[9] The total value of the chain earnings was decomposed into the rewards that were obtained by the different actors in the chain and showed how these margins and incomes had changed as a result of the development of the road.

F. Methodological Limitations

9. The SES was conducted in three countries. Because each country had unique attributes, the survey instruments had to be adapted to local conditions. Relevant data and information were collected to explain the contribution of ADB's assistance to ID. While the overall approach was consistent in the methodology and tools adopted, field research design had to be adjusted to the respective countries' context. The type of rural road assistance also varied from one project to another, and from one country to another. Rural or farm–to-market roads ranged from black-topped roads to seasonal earthen roads and, in some cases, were segments of longer roads. The case study results reflect status at the time of evaluation, which may change over time depending on the internal and external environment. The household survey results are based on small samples; therefore, the results should be interpreted with caution. Furthermore, as indicated earlier, while some of the case study projects examined may have had other development interventions, the SES focused only on documenting the contribution rather than attribution of rural roads to ID. Frequent strikes and road closures affected the time required to complete fieldwork in Nepal. A detailed gender analysis was not conducted but the study examined inclusiveness of HFH. Furthermore, the lack of relevant data at the baseline did not permit with or without project comparisons.

RURAL ROAD-ASSOCIATED PROJECTS FINANCED BY THE ASIAN DEVELOPMENT BANK

Table A3.1: Distribution of Rural Road-Associated Loan Projects by Country and Region, 1996–2007

Regional Group/Country	No. of Projects	Amount ($M)	Percent	Average Loan Size ($M)
South Asia	**16**	**1,145.13**	**38.04**	**71.57**
Bangladesh	4	256.10	8.51	**64.03**
India	2	580.00	19.27	**290.00**
Nepal	4	116.50	3.87	**29.13**
Sri Lanka	6	192.53	6.40	**32.09**
Central and West Asia	**13**	**664.40**	**22.07**	**51.11**
Armenia	1	30.60	1.02	**30.60**
Pakistan	10	605.00	20.10	**60.50**
Tajikistan	2	28.80	0.96	**14.40**
East Asia	**1**	**33.12**	**1.10**	**33.12**
People's Republic of China	1	33.12	1.10	**33.12**
Southeast Asia	**23**	**1,167.55**	**38.79**	**50.76**
Cambodia	3	53.30	1.77	**17.77**
Lao PDR	4	64.00	2.13	**16.00**
Indonesia	7	440.50	14.63	**62.93**
Philippines	4	207.16	6.88	**51.79**
Viet Nam	5	402.59	13.37	**80.52**
Total	**53**	**3,010.20**	**100.00**	**56.80**

Lao PDR = Lao People's Democratic Republic, M = million.
Source: ADB Loan, TA, Grant, and Equity Approval database.

Table A3.2: Rural Road-Associated Loan Projects by DMC and Source of Funding

Country	Date Approved	Loan No.	Project Name	No. of Projects	Fund Type	Amount ($M)
Armenia				1		30.60
	28-Sep-07	2351	Rural Road Sector		ADF	30.60
Bangladesh				4		256.10
	20-Nov-97	1581	Third Rural Infrastructure Development		ADF	70.00
	26-Oct-00	1771	Chittagong Hill Tracts Rural Development		ADF	30.00
	2-Dec-02	1952	Rural Infrastructure Improvement		ADF	60.00
	18-Aug-06	2254	Second Rural Infrastructure Improvement		ADF	96.10
Cambodia				3		53.30
	5-Sep-00	1753	Stung Chinit Irrigation and Rural Infrastructure		ADF	16.00
	27-Nov-01	1862	Northwestern Rural Development		ADF	27.20
	5-Dec-07	2376	Tonle Sap Lowlands Rural Development Project		ADF	10.10
India				2		580.00
	20-Nov-03	2018	Rural Roads Sector I		OCR	400.00
	31-Jul-06	2248	Rural Roads Sector II Investment Program		OCR	180.00
Indonesia				7		440.50

	4-Nov-97	1570	Coastal Community Development and Fisheries Resource Management		OCR	26.00
	4-Nov-97	1571	Coastal Community Development and Fisheries Resource Management		ADF	15.00
	27-Jan-98	1605	Central Sulawesi Integrated Areas Development and Conservation		OCR	32.00
	25-Mar-99	1678	Community and Local Government Support Sector Development Program- Project Loan		OCR	120.00
	19-Oct-00	1765	Community Empowerment for Rural Development		ADF	50.00
	19-Oct-00	1766	Community Empowerment for Rural Development		OCR	65.00
	15-Aug-02	1909	Poor Farmers' Income Improvement through Innovation		ADF	56.00
	19-Dec-05	2221	Rural Infrastructure Support		ADF	50.00
	21-Nov-06	2264	Infrastructure Reform Sector Development Program (Project Loan)		ADF	26.50
Lao PDR				4		64.00
	7-Dec-00	1795	Rural Access Roads		ADF	25.00
	11-Nov-02	1949	Smallholder Development		ADF	12.00
	28-Jun-04	2085	Roads for Rural Development Project		ADF	17.70
	29-Sep-06	2259	Northern Region Sustainable Livelihoods through Livestock Development		ADF	9.30
Nepal				4		116.50
	27-Jun-96	1450	Rural Infrastructure Development		ADF	12.20
	19-Sep-96	1461	Third Livestock Development		ADF	18.30
	13-Dec-01	1876	Road Network Development		ADF	46.00
	24-Sep-04	2092	Decentralized Rural Infrastructure and Livelihood		ADF	40.00
Pakistan				10		605.00
	26-Sep-96	1467	Bahawalpur Rural Development		ADF	38.00
	4-Sep-97	1531	Dera Ghazi Khan Rural Development		ADF	36.00
	18-Mar-99	1672	Malakand Rural Development		ADF	41.00
	28-Nov-00	1787	North-West Frontier Province Area Development Phase II		ADF	52.00
	19-Dec-01	1892	Road Sector Development Program (Sector)		OCR	75.00
	19-Dec-01	1893	Road Sector Development Program (Sector)		ADF	75.00
	31-Oct-02	1928	Punjab Road Development Sector		OCR	150.00
	20-Nov-02	1934	Sindh Rural Development		ADF	50.00
	18-Nov-04	2104	North-West Frontier Province Road Development Sector and Subregional Connectivity		ADF	5.00
	14-Dec-04	2134	Sustainable Livelihoods in Barani Areas		ADF	41.00
	25-Apr-06	2234	Federally Administered Tribal Areas Rural Development		ADF	42.00
Philippines				4		207.16
	11-Jan-96	1421	Cordillera Highland Agricultural Resource Management		OCR	9.50
	11-Jan-96	1422	Cordillera Highland Agricultural Resource Management		ADF	9.50
	23-Jul-96	1453	Bukidnon Integrated Area Development		ADF	20.0
	18-Dec-98	1667	Agrarian Reform Communities		OCR	93.16

	31-Oct-00	1772	Infrastructure for Rural Productivity Enhancement Sector		OCR	75.00
PRC				1		33.12
	22-Oct-02	1924	Efficient Utilization of Agricultural Wastes		OCR	33.12
Sri Lanka				6		192.53
	16-Oct-01	1846	North East Community Restoration and Development		ADF	25.00
	14-Apr-05	2168	North East Community Restoration and Development II		ADF	26.00
	24-Sep-96	1462	North Central Province Rural Development		ADF	20.03
	30-Oct-97	1567	Southern Provincial Roads Improvement		ADF	30.00
	10-Nov-98	1639	Tea Development		ADF	35.00
	19-Dec-02	1986	Road Sector Development		ADF	56.50
Tajikistan				2		28.80
	20-Dec-00	1819	Road Rehabilitation		ADF	20.00
	29-Jan-07	2313	Rural Development		ADF	8.80
Viet Nam				5		402.59
	23-Oct-97	1564	Rural Infrastructure Sector		ADF	105.00
	17-Dec-01	1883	Central Region Livelihood Improvement		ADF	43.09
	18-Dec-01	1888	Provincial Roads Improvement Sector		ADF	70.00
	11-Nov-05	2195	Central Region Transport Networks Improvement Sector		ADF	94.50
	15-Oct-07	2357	Integrated Rural Development Sector Project in the Central Provinces		ADF	90.00
			Total	**53**		**3,010.20**

ADF = Asian Development Fund, DMC = developing member country, Lao PDR = Lao People's Democratic Republic, M = million, OCR = ordinary capital resources, PRC = People's Republic of China.
Source: ADB Loan, TA, Grant and Equity Approval database.

Table A3.3: Rural Road-Associated Loan Projects by Sector, 1996–2007

Date Approved	Loan No.	Country	Project Name	No. of Projects	Fund Type	Amount ($M)
Agriculture and Natural Resources				**15**		**508.530**
Agriculture Production, Agroprocessing, and Agribusiness				**5**		**149.80**
26-Sep-96	1467	PAK	Bahawalpur Rural Development		ADF	38.00
10-Nov-98	1639	SRI	Tea Development		ADF	35.00
15-Aug-02	1909	INO	Poor Farmers' Income Improvement through Innovation		ADF	56.00
11-Nov-02	1949	LAO	Smallholder Development		ADF	12.00
29-Jan-07	2313	TAJ	Rural Development		ADF	8.80
Agriculture Sector Development				**7**		**290.13**
11-Jan-96	1421	PHI	Cordillera Highland Agricultural Resource Management		OCR	9.50
11-Jan-96	1422	PHI	Cordillera Highland Agricultural Resource Management		ADF	9.50
24-Sep-96	1462	SRI	North Central Province Rural Development		ADF	20.03
27-Jan-98	1605	INO	Central Sulawesi Integrated Areas Development and Conservation		OCR	32.00
24-Sep-04	2092	NEP	Decentralized Rural Infrastructure and Livelihood		ADF	40.00
14-Dec-04	2134	PAK	Sustainable Livelihoods in Barani Areas		ADF	41.00
25-Apr-06	2234	PAK	Federally Administered Tribal Areas Rural Development		ADF	42.00
18-Aug-06	2254	BAN	Second Rural Infrastructure Improvement		ADF	96.10
Fishery				**1**		**41.00**

4-Nov-97	1570	INO	Coastal Community Development and Fisheries Resource Management		OCR	26.00
4-Nov-97	1571	INO	Coastal Community Development and Fisheries Resource Management		ADF	15.00
Livestock				**2**		**27.60**
19-Sep-96	1461	NEP	Third Livestock Development		ADF	18.30
29-Sep-06	2259	LAO	Northern Region Sustainable Livelihoods through Livestock Development		ADF	9.30
Law, Economic Management and Public Policy				**1**		**120.00**
25-Mar-99	1678	INO	Community and Local Government Support Sector Development Program- Project Loan		OCR	120.00
Multisector-Rural Development				**21**		**1,034.17**
23-Jul-96	1453	PHI	Bukidnon Integrated Area Development		ADF	20.00
4-Sep-97	1531	PAK	Dera Ghazi Khan Rural Development		ADF	36.00
23-Oct-97	1564	VIE	Rural Infrastructure Sector		ADF	105.00
20-Nov-97	1581	BAN	Third Rural Infrastructure Development		ADF	70.00
18-Dec-98	1667	PHI	Agrarian Reform Communities		OCR	93.16
18-Mar-99	1672	PAK	Malakand Rural Development		ADF	41.00
5-Sep-00	1753	CAM	Stung Chinit Irrigation and Rural Infrastructure		ADF	16.00
19-Oct-00	1765	INO	Community Empowerment for Rural Development		ADF	50.00
19-Oct-00	1766	INO	Community Empowerment for Rural Development		OCR	65.00
26-Oct-00	1771	BAN	Chittagong Hill Tracts Rural Development		ADF	30.00
31-Oct-00	1772	PHI	Infrastructure for Rural Productivity Enhancement Sector		OCR	75.00
28-Nov-00	1787	PAK	North-West Frontier Province Area Development Phase II		ADF	52.00
16-Oct-01	1846	SRI	North East Community Restoration and Development		ADF	25.00
27-Nov-01	1862	CAM	Northwestern Rural Development		ADF	27.20
17-Dec-01	1883	VIE	Central Region Livelihood Improvement		ADF	43.09
22-Oct-02	1924	PRC	Efficient Utilization of Agricultural Wastes		OCR	33.12
20-Nov-02	1934	PAK	Sindh Rural Development		ADF	50.00
14-Apr-05	2168	SRI	North East Community Restoration and Development II		ADF	26.00
19-Dec-05	2221	INO	Rural Infrastructure Support		ADF	50.00
21-Nov-06	2264	INO	Infrastructure Reform Sector Development Program (Project Loan)		ADF	26.50
15-Oct-07	2357	VIE	Integrated Rural Development Sector Project in the Central Provinces		ADF	90.00
5-Dec-07	2376	CAM	Tonle Sap Lowlands Rural Development Project		ADF	10.10
Transport and Communications				**16**		**1,347.50**
Roads-Roads and Highways				**16**		**1,347.50**
27-Jun-96	1450	NEP	Rural Infrastructure Development		ADF	12.20
30-Oct-97	1567	SRI	Southern Provincial Roads Improvement		ADF	30.00
7-Dec-00	1795	LAO	Rural Access Roads		ADF	25.00
20-Dec-00	1819	TAJ	Road Rehabilitation		ADF	20.00
13-Dec-01	1876	NEP	Road Network Development		ADF	46.00
18-Dec-01	1888	VIE	Provincial Roads Improvement Sector		ADF	70.00
19-Dec-01	1892	PAK	Road Sector Development Program (Sector)		OCR	75.00
19-Dec-01	1893	PAK	Road Sector Development Program (Sector)		ADF	75.00
31-Dec-02	1928	PAK	Punjab Road Development Sector		OCR	150.00
2-Dec-02	1952	BAN	Rural Infrastructure Improvement		ADF	60.00
19-Dec-02	1986	SRI	Road Sector Development		ADF	56.50
20-Nov-03	2018	IND	Rural Roads Sector I		OCR	400.00
28-Jun-04	2085	LAO	Roads for Rural Development Project		ADF	17.70

18-Nov-04	2104	PAK	North-West Frontier Province Road Development Sector and Subregional Connectivity		ADF	5.00
11-Nov-05	2195	VIE	Central Region Transport Networks Improvement Sector		ADF	94.50
31-Jul-06	2248	IND	Rural Roads Sector II Investment Program		OCR	180.00
28-Sep-07	2351	ARM	Rural Road Sector		ADF	30.60
			Total	**53**		**3,010.20**

ADF = Asian Development Fund, ARM = Armenia, BAN = Bangladesh, CAM = Cambodia, DMC = developing member country, IND = India, INO = Indonesia, LAO = Lao People's Democratic Republic, M = million, NEP = Nepal, OCR = ordinary capital resources, PAK = Pakistan, PHI = Philippines, PRC = People's Republic of China, SRI = Sri Lanka, TAJ = Tajikistan, VIE = Viet Nam.
Source: ADB Loan, TA, Grant and Equity Approval database.

Table A3.4: Distribution of Rural Road-Associated Loan Projects by Sector, 1996–2007

Subsector	No. of Projects	Amount ($M)	%
Agriculture and Natural Resources	15	508.53	16.89
Agriculture Production, Agroprocessing, and Agribusiness	5	149.80	4.98
Agriculture Sector Development	7	290.13	9.64
Fishery	1	41.00	1.36
Livestock	2	27.60	0.92
Law, Economic Management and Public Policy	1	120.00	3.99
Multisector-Rural Development	21	1,034.17	34.36
Transport and Communications-Roads	16	1,347.50	44.76
Total	**53**	**3,010.20**	**100.00**

M= million.
Source: ADB Loan, TA, Grant and Equity Approval database.

Table A3.5: Rural Road-Associated ADB Loan Projects, 1996–2007

Date Approved	Loan Number	Country	Project Name	Rural Roads	Rural Markets	Rural Comm.	Value-Adding Facilities	Support Services
Agriculture and Natural Resources								
Agriculture Production, Agroprocessing, and Agribusiness								
26-Sep-96	1467	PAK	Bahawalpur Rural Development	X	X		X	
10-Nov-98	1639	SRI	Tea Development	X			X	
15-Aug-02	1909	INO	Poor Farmers' Income Improvement through Innovation	X	X		X	X
28-Nov-02	1949	LAO	Smallholder Development	X	X			
29-Jan-07	2313	TAJ	Rural Development	X	X			
Agriculture Sector Development								
11-Jan-96	1421/1422	PHI	Cordillera Highland Agricultural Resource Management	X	X			X
24-Sep-96	1462	SRI	North Central Province Rural Development	X			X	X

27-Jan-98	1605	INO	Central Sulawesi Integrated Areas Development and Conservation	X				X
24-Sep-04	2092	NEP	Decentralized Rural Infrastructure and Livelihood	X	X			X
14-Dec-04	2134	PAK	Sustainable Livelihoods in Barani Areas	X				
25-Apr-06	2234	PAK	Federally Administered Tribal Areas Rural Development	X				X
18-Aug-06	2254	BAN	Second Rural Infrastructure Improvement	X	X			X
Fishery								
04-Nov-97	1570/1571	INO	Coastal Community Development and Fisheries Resource Management	X	X	X	X	X
Livestock								
19-Sep-96	1461	NEP	Third Livestock Development	X	X		X	X
29-Sep-06	2259	LAO	Northern Region Sustainable Livelihoods through Livestock Development	X	X		X	X
Law, Economic Management and Policy								
25-Mar-99	1678	INO	Community and Local Government Support Sector Development Program- Project Loan	X		X	X	
Multisector-Rural Development								
23-Jul-96	1453	PHI	Bukidnon Integrated Area Development	X				X
04-Sep-97	1531	PAK	Dera Ghazi Khan Rural Development	X	X		X	X
23-Oct-97	1564	VIE	Rural Infrastructure Sector	X	X		X	
20-Nov-97	1581	BAN	Third Rural Infrastructure Development	X	X		X	X
18-Dec-98	1667	PHI	Agrarian Reform Communities	X	X			X
18-Mar-99	1672	PAK	Malakand Rural Development	X				X
05-Sep-00	1753	CAM	Stung Chinit Irrigation and Rural Infrastructure	X	X		X	X
19-Oct-00	1765/1766	INO	Community Empowerment for Rural Development	X		X	X	
26-Oct-00	1771	BAN	Chittagong Hill Tracts Rural Development	X	X		X	X
31-Oct-00	1772	PHI	Infrastructure for Rural Productivity Enhancement Sector	X			X	
28-Nov-00	1787	PAK	North-West Frontier Province Area Development Phase II	X				X
16-Oct-01	1846	SRI	North East Community Restoration and Development	X				X
27-Nov-01	1862	CAM	Northwestern Rural Development	X			X	X
17-Dec-01	1883	VIE	Central Region Livelihood Improvement	X			X	X
22-Oct-02	1924	PRC	Efficient Utilization of Agricultural Wastes	X				
20-Nov-02	1934	PAK	Sindh Rural Development	X			X	X

14-Apr-05	2168	SRI	North East Community Restoration and Development II	X				X
19-Dec-05	2221	INO	Rural Infrastructure Support	X				X
21-Nov-06	2264	INO	Infrastructure Reform Sector Development Program (Project Loan)	X	X			X
15-Oct-07	2357	VIE	Integrated Rural Development Sector Project in the Central Provinces	X	X			X
05-Dec-07	2376	CAM	Tonle Sap Lowlands Rural Development Project	X	X			X
Transport and Communications								
Roads-Roads and Highways								
27-Jun-96	1450	NEP	Rural Infrastructure Development	X	X			X
30-Oct-97	1567	SRI	Southern Provincial Roads Improvement	X			X	X
07-Dec-00	1795	LAO	Rural Access Roads	X			X	X
20-Dec-00	1819	TAJ	Road Rehabilitation	X				
13-Dec-01	1876	NEP	Road Network Development	X	X			X
18-Dec-01	1888	VIE	Provincial Roads Improvement Sector	X				X
19-Dec-01	1892/1893	PAK	Road Sector Development Program (Sector)	X				
31-Oct-02	1928	PAK	Punjab Road Development Sector	X				
02-Dec-02	1952	BAN	Rural Infrastructure Improvement	X	X		X	X
19-Dec-02	1986	SRI	Road Sector Development	X				
20-Nov-03	2018	IND	Rural Roads Sector I	X				X
28-Jun-04	2085	LAO	Roads for Rural Development Project	X	X		X	X
18-Nov-04	2104	PAK	North-West Frontier Province Road Development Sector and Subregional Connectivity	X				
11-Nov-05	2195	VIE	Central Region Transport Networks Improvement Sector	X				
31-Jul-06	2248	IND	Rural Roads Sector II Investment Program	X				X
28-Sep-07	2351	ARM	Rural Road Sector	X				X
		Total		**53**	**23**	**3**	**22**	**37**

ARM = Republic of Armenia, BAN = Bangladesh, CAM = Cambodia, Comm. = communication, IND = India, INO = Indonesia, LAO = Lao People's Democratic Republic, PAK = Pakistan, PHI = Philippines, NEP = Nepal, SRI = Sri Lanka, TAJ = Tajikistan, VIE = Viet Nam.

Notes: (i) Rural roads include rural roads, farm-to-market roads, bridges, culverts, road structures, and slope protection works; (ii) Rural markets are growth center markets, marketing assistance, information advice, and information centers. (iii) Rural communication pertains to communication networking infrastructure databases, and communication facilities. (iv) Value-adding facilities are equipment, machinery, technology, processing plants, storage, warehouses, ports, wharf, jetties, etc.; (v) Support services refer to research extension, rural finance, and capacity building.

Source: ADB Loan, TA, Grant and Equity Approval database.

Table A3.6: Approval of Rural Road-Associated Projects 1996–2007

Year	No. of Projects	Amount ($M)	%	3-Year Average Year	3-Year Average No. of Projects	3-Year Average Amount ($M)
1996	6	127.53	4.24	1996–1998	4.7	189.90
1997	5	282.00	9.37	1997–1999	3.3	201.05
1998	3	160.16	5.32	1998–2000	4.0	218.05
1999	2	161.00	5.35	1999–2001	5.0	285.10
2000	7	333.00	11.06	2000–2002	6.7	370.64
2001	6	361.29	12.00	2001–2003	4.7	392.97
2002	7	417.62	13.87	2002–2004	4.0	307.11
2003	1	400.00	13.29	2003–2005	2.7	224.73
2004	4	103.70	3.44	2004–2006	4.0	209.37
2005	3	170.50	5.66	2005–2007	4.0	221.30
2006	5	353.90	11.76			
2007	4	139.50	4.63			
Total	**53**	**3,010.20**	**100.00**			

M = million.
Source: ADB Loan, TA, Grant and Equity Approval database.

Table A3.7: ADB Grant-Financed Rural Road-Associated Projects, by Country, 2002–2007

Country	No. of Projects	Amount ($M)	%
Bangladesh	1	56.7	29.8
Afghanistan	3	51.0	26.8
Nepal	1	50.0	26.3
Timor Leste	1	10.0	5.3
Pakistan	2	6.0	3.2
India	1	5.0	2.6
Sri Lanka	3	4.4	2.3
Tajikistan	2	3.8	2.0
Philippines	1	3.0	1.6
Lao PDR	1	0.5	0.3
Total	**16**	**190.4**	**100.0**

LAO = Lao People's Democratic Republic, M = million.
Source: ADB Loan, TA, Grant and Equity Approval database.

Table A3.8: Rural Road-Associated ADB Grant Projects 2002–2007

Country	Date Approved	Approval No.	Project Name	No. of Projects	Bank Amount	Bank Source	Others ($M)	Grant Source	Total ($M)
Afghanistan				**3**			**51.00**		**51.00**
	03-Oct-02	9024	Road Employment Project for Settlement and Integration of Returning Refugees and Displaced Persons				15.00	JFPR	15.00
	26-May-03	9024	Road Employment Project for Settlement and Integration of Returning Refugees and Displaced Persons (Supplementary)				15.00	Kuwait	15.00
	26-Dec-03	9038	Integrated Community Development in Northern Afghanistan				3.00	JFPR	3.00
	12-Dec-06	9100	Rural Business Support				18.00	JFPR	18.00
Bangladesh				**1**			**56.70**		**56.70**
	18-Aug-06	0053	Second Rural Infrastructure Improvement				56.70	UK	56.70
India				**1**			**5.00**		**5.00**
	21-Jun-06	9094	Restoration and Diversification of Livelihoods for Tsunami-Affected Poor and Marginalized People in the States of Tamil Nadu and Kerala				5.00	JFPR	5.00
Lao PDR				**1**			**0.53**		**0.53**
	12-Nov-03	9034	Reducing Poverty Among Ethnic Minority Women in the Nam Ngum River Basin				0.53	JFPR	0.53
Nepal				**1**	**50.00**				**50.00**
	12-Dec-07	0093	Rural Reconstruction and Rehabilitation Sector Development Program (Project Grant)		50.00	ADF IX			50.00
Pakistan				**2**			**6.00**		**6.00**
	28-Apr-05	9067	Enhancing Road Improvement Benefits to Poor Communities in the North-West Frontier Province				1.00	JFPR	1.00
	27-Mar-06	9092	Immediate Support to Poor and Vulnerable Households in Inaccessible Areas Devastated by the 2005 Earthquake				5.00	JFPR	5.00
Philippines				**1**			**3.00**		**3.00**
	15-Dec-06	9102	Southern Leyte Landslide Disaster Assistance				3.00	JFPR	3.00
Sri Lanka				**3**			**4.40**		**4.40**

	05-Feb-07	0075	North East Community Restoration and Community Development Project				1.50	Norway/ Finland	1.50
	16-Oct-02	9025	Infrastructure Maintenance to Reduce Rural Poverty				0.90	JFPR	0.90
	04-Oct-05	9076	Public Works Restoration and Rehabilitation of Line Drainage Systems of Tsunami-Affected Local Government Roads				2.00	JFPR	2.00
Tajikistan				**2**			**3.80**		**3.80**
	04-Nov-05	9078	Community-Based Rural Road Maintenance				1.80	JFPR	1.80
	23-Oct-07	9111	Sustainable Access for Isolated Rural Communities				2.00	JFPR	2.00
Timor Leste				**1**	**10.00**				**10.00**
	27-Sep-05	0017	Road Sector Improvement		10.00	ADF IX			10.00
			Total	**16**	**60.00**		**130.43**		**190.43**

ADF IX = Asian Development Fund IX, JFPR = Japan Fund for Poverty Reduction, LAO = Lao People's Democratic Republic, M = million, UK = United Kingdom.
Source: ADB Loan, TA, Grant and Equity Approval database.

Table A3.9: Grants Attached to ADB Loans for Rural Road-Associated Projects 2002–2007

Sector	Date Approved	Approval No.	Country	Project Name	No. of Projects	Bank Amount	Bank Source	Others ($M)	Grant Source	Total ($M)
Agriculture and Natural Resources					**3**	**8.30**		**88.70**		**97.00**
Agriculture Production, Agroprocessing, and Agribusiness					**1**	**8.30**		**0.00**		**8.30**
	1 Jan 2007	2313	TAJ	Rural Development		8.30	ADF IX			8.30
Agriculture Sector Development					**2**			**88.70**		**88.70**
	24-Sep-04	2092	NEP	Decentralized Rural Infrastructure and Livelihood				1.90	SDC	2.60
								0.70	GTZ	
	18-Aug-06	2254	BAN	Second Rural Infrastructure Improvement				60.90	DFID	86.10
								3.60	GTZ	
								21.60	KfW	
Multisector					**9**	**23.90**		**56.26**		**80.16**
	05-Sep-00	1753	CAM	Stung Chinit Irrigation and Rural Infrastructure				2.60	AFD	2.60
	26-Oct-00	1771	BAN	Chittagong Hill Tracts Rural Development				15.00	Danida	15.00
	16-Oct-01	1846	SRI	North East Restoration and Development				0.50	Netherlands	7.00
								4.00	OPEC	

							2.50	GTZ	
17-Dec-01	1883	VIE	Central Region Livelihood Improvement				16.40	DFID	16.40
22-Oct-02	1924	PRC	Efficient Utilization of Agricultural Wastes				6.40	GEF	6.40
14-Apr-05	2168	SRI	North East Restoration and Development II		14.00	ADF IX			14.00
21-Nov-06	2264	INO	Infrastructure Reform Sector Development Program (Project Loan)				7.56	Netherlands	7.56
15-Oct-07	2357	VIE	Integrated Rural Development Sector Project in the Central Provinces				1.30	AFD	1.30
05-Dec-07	2376	CAM	Tonle Sap Lowlands Rural Development Project		9.90	ADF IX			9.90
Roads-Roads and Highways				**3**	**0.50**		**26.50**		**27.00**
02-Dec-02	1952	BAN	Rural Infrastructure Improvement				11.90	KfW	16.90
							5.00	GTZ	5.00
13-Dec-01	1876	NEP	Road Network Development				9.60	DFID	9.60
11-Nov-05	2195	VIE	Central Region Transport Networks Improvement Sector		0.50	ADF IX			0.50
			Total	**15**	**32.70**		**171.46**		**204.16**

ADB = Asian Development Bank, ADF IX = Asian Development Fund IX, AFD = Agence Francaise de Developpement, BAN = Bangladesh, CAM = Cambodia, Danida = Danish International Development Assistance, DFID = Department of International Development, GEF = Global Environment Facility, GTZ = Deutsche Gesellschaft Technische Zusammenarbeit, INO = Indonesia, KfW = Kreditanstalt fur Wiederaufbau, NEP = Nepal, OPEC = Organization of Petroleum Exporting Countries, PRC = People's Republic of China, SDC = Government of Switzerland, SRI = Sri Lanka, TAJ = Tajikistan, VIE = Viet Nam.
Source: ADB Loan, TA, Grant and Equity Approval database.

Table A3.10: Recipients of ADB Technical Assistance for Rural Road-Associated Projects by Region and Country, 1996–2007

Regional Group/ Country	No. of Projects	Amount ($M)	Percent
South Asia	**16**	**7.49**	**19.39**
Bangladesh	4	1.84	4.76
India	6	1.70	4.40
Nepal	4	2.45	6.34
Sri Lanka	2	1.50	3.88
Central and West Asia	**20**	**11.56**	**29.92**
Armenia	2	0.90	2.33
Kazakhstan	1	0.15	0.39
Kyrgyz Republic	2	1.40	3.62
Pakistan	10	5.72	14.81
Tajikistan	4	2.79	7.22
Uzbekistan	1	0.60	1.55
East Asia	**2**	**0.75**	**1.94**
PRC	2	0.75	1.94
Southeast Asia	**22**	**17.93**	**46.41**
Cambodia	2	1.60	4.14
Indonesia	6	7.09	18.35
Lao PDR	5	2.17	5.62
Philippines	4	2.67	6.91
Viet Nam	5	4.40	11.39
Pacific	**2**	**0.90**	**2.33**
Timor Leste	1	0.60	1.55
Vanuatu	1	0.30	0.78
Total	**62**	**38.63**	**100.00**

Lao PDR = Lao People's Democratic Republic, M = million, PRC = People's Republic of China.
Source: ADB Loan, TA, Grant and Equity Approval database.

Table A3.11: Technical Assistance Projects Supporting Rural Road-Associated Projects, 1996–2007

Country	Date Approved	TA No.	Loan No.	Project Name	No. of Projects	Type	Amount ($M)
Armenia					**2**		**0.90**
	13-Dec-06	4895		Rural Roads Rehabilitation I		PP	0.15
	30-Jul-07	4895		Rural Roads Rehabilitation I (Supplementary)		PP	0.15
	28-Sep-07	4973	2351	Transport Sector Development Strategy		AD	0.60
Bangladesh					**4**		**1.84**
	27-Mar-96	2550		Third Rural Infrastructure Development		PP	0.50
	30-Jun-99	3213		Chittagong Hill Tracts Rural Development		PP	0.50
	19-Sep-01	3723		Rural Infrastructure Improvement		PP	0.44
	20-Dec-04	4516		Second Rural Infrastructure Improvement		PP	0.40
Cambodia					**2**		**1.60**
	29-Aug-00	3489		Rural Development		PP	0.60
	14-Nov-05	4691		Transport Infrastructure Development and Maintenance		PP	1.00
India					**6**		**1.70**
	3-Sep-02	3914		Economic Studies for the Rural Roads Sector Development		PP	0.15
	3-Sep-02	3915		Engineering Studies for the Rural Roads Sector Development		PP	0.15
	3-Sep-02	3916		Environmental Analysis for the Rural Roads Sector Development		PP	0.10
	3-Sep-02	3917		Institutional and Policy Development Studies for the Rural Roads Sector Development		PP	0.15
	3-Sep-02	3918		Social Analysis for the Rural Roads Sector Development		PP	0.15
	20-Nov-03	4220	2018	Rural Roads Sector II		PP	1.00
Indonesia					**6**		**7.09**
	13-Dec-96	2709		Horticulture and Agribusiness Development		PP	0.60
	15-Oct-98	3088		Development of Rural-Urban Linkages		PP	0.89
	25-Mar-99	3177	1678	Capacity Building to Support Decentralized Administrative Systems		AD	0.50
	19-Oct-00	3518	1765/1766	Financial Management System		AD	1.10
	12-Dec-05	4728		Support for Infrastructure Development		AD	2.00
	21-Nov-06	4872	2264	Enhancing Private Sector Participation in Infrastructure Provision		AD	2.00
Kazakhstan					**1**		**0.15**
	16-Jul-03	4145		Formulation of Rural Road Development Plan		AD	0.15
Kyrgyz Republic					**2**		**1.40**
	20-Jul-98	3048		Community-Based Infrastructure Services Sector		PP	0.60
	19-Nov-04	4438		Second Agriculture Area Development		PP	0.80
Lao People's Democratic Republic					**5**		**2.17**
	7-Oct-97	2889		Rural Access Roads Improvement		PP	0.60
	17-Sep-98	3070		Road Infrastructure for Rural Development		AD	0.72
	7-Dec-00	3557	1795	Strengthening Social and Environmental Management Capacity in the Department of Roads		AD	0.20
	30-Oct-01	3756		Roads for Rural Development		PP	0.40
	28-Nov-02	4005	1949	Agribusiness Support and Training		AD	0.25
Nepal					**4**		**2.45**
	18-Aug-97	2851	1461	Third Livestock Development		AD	0.75

	25-Jan-01	3625		Second Rural Infrastructure Development		PP	0.80
	24-Sep-04	4397	2092	Capacity Building in Rural Infrastructure Institutions		AD	0.40
	2-Feb-07	4919		Rural Reconstruction and Rehabilitation Sector Development Program		PP	0.50
Pakistan					**10**		**5.72**
	10-Jun-96	2585		Dera Ghazi Khan Rural Development		PP	0.60
	8-Jul-96	2604		Malakand Area Development		PP	0.70
	22-Dec-98	3132		Sindh Rural Development		PP	0.80
	31-Dec-98	3151		North West Frontier Province Barani Area Development-Phase II		PP	0.50
	24-Sep-01	3725		Additional Preparatory Work on the Sindh Rural Development Project		PP	0.15
	13-Nov-02	3984		Federally Administered Tribal Areas Rural Development		PP	0.75
	20-May-03	4116		North-West Frontier Road Development Sector		PP	0.49
	3-Aug-04	4367		Balochistan Rural Development and Drought Mitigation		PP	0.60
	23-Dec-04	4525		Sindh Coastal and Inland Community Development		PP	0.65
	8-Dec-05	4720		Bahawalpur Rural Development, Phase II		PP	0.30
	25-Sep-06	4720		Bahawalpur Rural Development, Phase II (Supplementary)		PP	0.18
Philippines					**4**		**2.67**
	15-May-99	3194		Infrastructure for Rural Productivity Enhancement Sector		PP	0.80
	26-Oct-00	3524		Rural Road Development		PP	1.00
	18-Dec-01	3805		Rural Road Development Policy Framework		AD	0.72
	25-Aug-03	4164		Preparation of Cadastral Surveys for the Rural Roads Development Project		PP	0.15
People's Republic of China					**2**		**0.75**
	21-Oct-05	4671		Rural Road Development Strategy		AD	0.35
	28-Jun-06	4806		Sustainable Rural Transport Services		AD	0.40
Sri Lanka					**2**		**1.50**
	30-Oct-97	2904		Second Provincial Roads Improvement		PP	1.00
	19-Dec-02	4075	1986	Passenger Transport Services Improvement		AD	0.50
Tajikistan					**4**		**2.79**
	1-Mar-99	3168		Road Rehabilitation		PP	0.84
	20-Dec-00	3602	1819	Institutional and Policy Support in Road Sector		AD	0.50
	14-Jun-05	4598		Rural Development		PP	0.85
	29-Jan-07	4917	2313	Capacity Development for Planning and Management in Local Government		AD	0.60
Timor Leste					**1**		**0.60**
	14-Jul-05	4609		Infrastructure Sectors Capacity Development		AD	0.60
Uzbekistan					**1**		**0.60**
	21-Dec-05	4750		Development of Market Infrastructure for Private Farms and Agribusinesses		PP	0.60
Vanuatu					**1**		**0.30**
	22-Jun-99	3210		Performance Enhancement of Selected Frontline Services		AD	0.30
Viet Nam					**5**		**4.40**
	28-Aug-96	2635		Rural Infrastructure Sector		PP	0.60
	14-Jun-00	3455		Provincial Roads Improvement		PP	1.00
	13-Dec-02	4034		Central Region Transport Network		PP	1.00

	19-Nov-04	4440		Rural Infrastructure for Sustainable Livelihood Improvement in Central Region	PP	0.80
	15-Oct-07	4981	2357	Infrastructure Policy Reform Support	AD	1.00
				Total **62**		**38.63**

AD = advisory technical assistance, M = million, PP = project preparatory technical assistance, TA = technical assistance.
Source: ADB RRPs

Table A3.12: ADB Funding for Regional Rural Road-Associated Activities

Year	Countries	Date Approved	RETA No.	Activity	No. of Projects	Type	Bank Amount ($M)	Total ($M)
1997					**1**		**0.45**	**0.45**
	PRC, INO, PHI, NEP, LAO, THA, VIE, MYA	16-Dec-97	5762	Special Studies on Selected Operational Issues and Impact Evaluation Study of Rural Roads in Countries in the Greater Mekong Subregion		Study	0.45	0.45
1999					**1**		**0.35**	**0.35**
	Various DMCs (not specifically indicated)	02-Dec-99	5871	Road Funds Strategy		Others	0.35	0.35
2000					**1**		**0.80**	**0.80**
	PRC, IND, THA	25-Oct-00	5947	Assessing the Impact of Transport and Energy Infrastructure on Poverty Reduction		Study	0.80	0.80
				Total	**3**		**1.60**	**1.60**

ADB = Asian Development Bank, DMC = developing member country, IND = India, INO = Indonesia, JSF, LAO = Lao People's Democratic Republic, M = million, MYA = Myanmar, NEP = Nepal, PHI = Philippines, PRC = People's Republic of China, RETA = regional technical assistance, THA = Thailand, VIE = Viet Nam.
Source: ADB Loan, TA, Grant and Equity Approval database.

Table A3.13: Portfolio Indicators for Closed Rural Road-Associated Loans 1996–2008

Item	Number	%	Loans Completed on Time	%
Total Closed Loans[a]	**23.0**			
Loans with Extension	21.0	91.3		
Loans without Extension[b]	2.0	8.7		
Average Extensions (months)				
All Closed Loans	21.6			
All Closed Loans with Extension Only	22.5			
Average Time from Approval to Signing (months)	2.7			
Loans Signed within				
< or 30 days	2.0	8.7		
> 30 days	21.0	91.3	2	8.7
Average Time from Signing to Effectivity (months)	3.9			
Loans Made Effective				
< 90 days	2.0	8.7		
> 90 days	21.0	91.3	2	8.7
Length of Delays				

Item	Number	%	Loans Completed on Time	%
No delays	2.0	8.7		
Less than 1 year	4.0	17.4		
1 to 2 years	9.0	39.1		
2 to 3 years	5.0	21.7		
> 3 years	3.0	13.0		

% = percentage.
[a] Refers to loans approved in1996–2007 and closed on or before 31 December 2008.
[b] For the purpose of this study, Loan 1581 was considered as without extension as it closed 1 day after its original closing date.
Source of basic data: Asian Development Bank databases.

Table A3.14: Rural Road-Associated Loans Closed as of December 2008

Loan No.	Fund Type	Country	Loan Title	Amount ($M)	Approval Date	Approval to Signing (Month)	Signing to Actual Effectivity (Month)	Approval to Actual Closing (Year)	Original Closing to Actual Closing (Year)
1421	OCR	PHI	Cordillera Highland Agricultural Resource Management Project	9.50	11-Jan-96	3.93	13.03	9.35	1.63
1422	ADF	PHI	Cordillera Highland Agricultural Resource Management Project	9.50	11-Jan-96	3.93	13.03	9.42	1.70
1450	ADF	NEP	Rural Infrastructure Development Project	12.20	27-Jun-96	2.03	1.00	10.26	3.25
1453	ADF	PHI	Bukidnon Integrated Area Development Project	20.00	23-Jul-96	10.50	4.20	7.70	(0.25)
1461	ADF	NEP	Third Livestock Development Project	18.30	19-Sep-96	3.17	3.00	8.01	1.14
1462	ADF	SRI	North Central Province Rural Development Project	20.00	24-Sep-96	1.70	2.83	9.22	1.45
1467	ADF	PAK	Bahawalpur Rural Development Project	38.00	26-Sep-96	3.47	5.13	11.05	4.29
1531	ADF	PAK	Dera Ghazi Khan Rural Development Project	36.00	4-Sep-97	1.40	2.93	9.74	2.41
1564	ADF	VIE	Rural Infrastructure Sector Project	105.00	23-Oct-97	3.07	3.23	7.94	0.74
1567	ADF	SRI	Southern Provincial Roads Improvement Project	30.00	30-Oct-97	2.70	3.37	8.00	1.82
1570	OCR	INO	Coastal Community Development and Fisheries Resource Management Project	26.00	4-Nov-97	3.03	2.57	8.57	2.41
1571	ADF	INO	Coastal Community Development and Fisheries Resource Management Project	15.00	4-Nov-97	3.03	2.57	8.54	2.38
1581	ADF	BAN	Third Rural Infrastructure Development	70.00	20-Nov-97	3.67	3.77	7.62	0.00
1605	OCR	INO	Central Sulawesi Integrated Area Development and Conservation Project	32.00	27-Jan-98	1.20	2.40	8.39	0.71
1639	ADF	SRI	Tea Development Project	35.00	10-Nov-98	2.63	4.43	8.42	1.78
1667	OCR	PHI	Agrarian Reform Communities Development Project	93.16	18-Dec-98	2.43	5.07	10.03	2.99
1672	ADF	PAK	Malakand Rural Development Project	41.00	18-Mar-99	1.20	2.93	9.78	1.99
1677	ADF	INO	Community and Local Government Support Sector Development Program	200.00	25-Mar-99	0.00	0.00	2.70	1.22

1678	ADF	INO	Community and Local Government Support Sector Development Program	120.00	25-Mar-99	0.00	0.00	8.36	3.84
1765	ADF	INO	Community Empowerment for Rural Development Project	50.00	19-Oct-00	1.90	2.90	7.24	0.55
1766	OCR	INO	Community Empowerment for Rural Development Project	65.00	19-Oct-00	1.90	2.90	7.17	0.47
1795	ADF	LAO	Rural Access Roads Project	25.00	7-Dec-00	2.37	2.97	7.34	2.95
1819	ADF	TAJ	Road Rehabilitation Project	20.00	20-Dec-00	2.27	5.40	6.25	1.97
			Average			**2.68**	**3.90**	**8.31**	**1.80**

ADF = Asian Development Fund, BAN = Bangladesh, INO = Indonesia, LAO = Lao People's Democratic Republic, M = million, NEP = Nepal, OCR = ordinary capital resources, PAK = Pakistan, PHI = Philippines, SRI = Sri Lanka, TAJ =Tajikistan, VIE = Viet Nam.
Source: ADB Loan, TA, Grant and Equity Approval database.

ANALYSIS OF DESIGN AND MONITORING FRAMEWORKS OF APPROVED RURAL ROAD-ASSOCIATED PROJECTS

1. The design and monitoring framework (DMF) is an integral part of any project funded by the Asian Development Bank (ADB). It is contained in the reports and recommendations of the President (RRPs), technical assistance (TA) reports, and grant documents. Using the logic model conceptualized for the study (Appendix 2, Figure A2), the special evaluation study (SES) reviewed the DMFs and the predecessor project framework[1] of 53 project loans,[2] 62 TAs,[3] and 16 grant-financed projects,[4] which had assistance for rural roads and were approved during 1996–2007. The analysis is based on four dimensions of inclusive development (ID)—economic, social, institutional, and environmental—and is presented in two parts: ((i) content analysis of DMFs or project frameworks, and (ii) extent to which inclusiveness had been incorporated into the project designs. The final section summarizes the assessment findings.

A. Content Analysis of DMFs (or Project Frameworks)

1. Impact (Goal) [5]

2. During the period 1996–2007, all ADB project loans, TAs, and grants with assistance to rural roads mentioned at least two overarching goals: (i) poverty reduction, and (ii) economic development. The majority or 65% of the project loans, 77% of TAs, and 100% of grants had one intended impact or goal focusing on either poverty reduction or economic development. In some project loans, TAs, and grants, the main goals were intertwined with related concerns such as the improved status of women in multisector projects (e.g., Loan 1787-PAK, TA 3132-PAK, and Grant 9034-LAO), balanced regional development (e.g., Loan 1462-SRI and Loan 2104-PAK), environmentally sound resource management,[6] and improved social well-being and overall quality of life. Some projects had more than one impact or goal statement (Table A3.1).

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[1] The following references were used in analyzing the DMFs: (i) ADB. 2006. *Quality in Design and Monitoring Frameworks*. Manila; ADB. 2007. *Guidelines for Preparing a Design and Monitoring Framework*. Manila. ADB adopted the DMF framework in projects (loans and TAs) in 2005. Reference to DMFs in this paper includes project frameworks. The cited project loans, TA projects, and TA grants are referred to briefly by type (loan, TA, grant), number, and country (LAO, PHI, TAJ, VIE, etc.). Full information on each source is in Appendix 3 Tables A3.2 (loans), A3.8 (grants), and A3.11 (TA projects).

[2] These include project loans in the transport and communications-roads subsector (16); multisector (21); agriculture and natural resources (15); and law, economic management, and public policy (1). Out of the 53 project loans, 15 had grant components.

[3] These include 20 advisory TAs (ADTAs, of which 12 were attached to loans), and 42 project preparatory TAs (PPTAs, of which two were attached to loans).

[4] These include grants financed by the Japan Fund for Poverty Reduction (JFPR, 12), Asian Development Fund (2), Finland and Norway (1), and United Kingdom (1). One grant project financed by the JFPR was provided with supplementary funding by Kuwait.

[5] The outcome (goal) is the long-term objective by which the project contributes to sectoral, subsectoral, or national objectives (footnote 1).

[6] Loans 1605-INO, 1461-NEP, 1570/1571-INO, 1924-PRC, and 2134-PAK.

Table A4.1: Number of Impacts, Outcomes, and Outputs in Rural Road-Associated Projects

Type of Assistance	Average Number
A. Loans (N= 53)	
Impact (Goals)	1.4
Outcomes (Purpose)	2.3
Outputs (Components)	3.8
B. Technical Assistance (N= 24)	
Impact (Goals)	1.4
Outcomes (Purpose)	1.6
Outputs (Components)	3.4
C. Grants (N= 10)	
Impact (Goals)	1.0
Outcomes (Purpose)	1.2
Outputs (Components)	3.9

RRP = report and recommendation of the President, TA = technical assistance.
Note: Averages based on data available from the design and monitoring frameworks.
Source: Various RRPs, TA reports, and grant documents.

2. **Outcome** (Purpose) [7]

3. More than half or 55% of the project loans had more than one intended outcome (purpose), which would contribute to the goals of reducing poverty and achieving economic growth or productivity. In general, project loans had outcomes that relate to (i) reducing transport costs; (ii) improving road networks; (iii) promoting competitiveness in transport services, making the movement of goods and passengers more efficient, and creating more employment opportunities for the poor; and (iv) providing all-weather roads to markets. The intended outcomes of projects under the various sectors are as follows.

(i) **Transport Sector.** Projects under the transport sector envisaged efficient and effective road management through improved mechanisms for road maintenance and safety, developing a viable and efficient domestic road construction industry, and promoting private sector participation in road infrastructure services.[8] Most projects aimed to develop institutional capacities in road management, particularly, of local governments in road maintenance. Some projects also had objectives relating to social development, environment management, and poverty reduction in project designs (e.g., Loan 1892-PAK and Loan 1986-SRI). Another group of projects had the objective of developing human resources by providing reliable access to social services such as education and health (e.g., Loan 1795-LAO, Loan 1819-TAJ).

(ii) **Multisector.** Multisector projects had broader objectives and intended outcomes. In addition to the objectives common to all sectors, multisector projects aimed to improve access to potable water (Loan 1667-PHI),

[7] The outcome or purpose is the immediate objective and key anchor of the project (footnote 1).
[8] Loans 1876-NEP, 1888-VIE, 1892-PAK, 2018-IND, 2104-PAK, 1795-LAO, 1986-SRI, 1567-SRI, and 1888-VIE.

demonstrate the economic viability of rural roads through sustained use and management of natural resources (Loan 1787-PAK), improve social status of project beneficiaries (Loan 1934-PAK), and improve food security (Loan 1883-VIE). Like rural road-associated projects in the transport sector, multisector projects sought to accelerate rural infrastructure development through improvement in the capacity of local institutions responsible for rural development, private sector participation, mobilization of additional public sector resources, and awareness of the need for operation and maintenance (O&M). In addition, multisector projects aimed to strengthen the capacity of institutions to deliver social services, enhance resource management capacity of communities and beneficiaries (e.g., Loan 1765-INO, Loan 1883-VIE, and Loan 1667-PHI), and, in some cases, improve the human resources and income-generating potential of women in the area.[9]

(iii) **Agriculture and Natural Resources Sector.** Projects in the agriculture and natural resources sector with improvement of rural roads aimed to increase production, maximize incomes, generate jobs, and expand economic activities in the rural areas and upland farming communes. In most agriculture projects, the intended outcomes sought to expand access to inputs (seeds and fertilizers), credit, information, agricultural research, and technologies.[10] In some cases, the statements of intended outcomes and purpose mentioned increasing access to social services (e.g., education and health); incorporating sustainable and environment-friendly farming practices (e.g., reduced use of pesticides and protection of biodiversity);[11] and strengthening the planning, implementation, and management capacity of communities and implementing agencies. In addition, there were intentions to improve local governance (e.g., Loan 2234-PAK, Loan 1570/1571-INO, Loan 1461-NEP, Loan 1678-INO) and enhance empowerment of women (e.g., Loan 2254-BAN).

(iv) **Law, Economic Management, and Policy Sector.** The Community and Local Government Support Sector Development Program-Project Loan (Loan 1678-INO) aimed to reduce poverty and restore economic activity, support the government's decentralization efforts, and empower local communities to participate in development.

4. The intended outcomes of the TAs centered on developing sustainable road infrastructure to support the twin goals of poverty reduction and economic growth. The purpose of most advisory TAs (ADTA) was to improve the capacities of governments (national and local) and institutions involved in implementing rural road-associated projects (e.g., TA 3177-INO, TA 4917-TAJ, and TA 4397-NEP), and provide for rural road development strategies and policy reforms (e.g., TA 4973-ARM, TA 3602-TAJ, and TA 4981-VIE). On the other hand, the purpose of most project preparatory TAs (PPTA) was to help governments formulate a rural infrastructure project in selected areas so as to contribute to the long-term objectives or goals of the sector. Anecdotally, some PPTAs

[9] Loans 1672-PAK, 1771-BAN, 1753-CAM, and 1667-PHI.
[10] Loans 1467-PAK, 1639-SRI, 2313-TAJ, 1421/1422-PHI, 1462-SRI, 1605-INO, 2092-NEP, 2134-PAK, 2254-BAN, 1570/1571-INO, 1461-NEP, 1909-INO, and 1949-LAO.
[11] Loans 1639-SRI, 2313-TAJ, 1421/1422-PHI, 1605-INO (protect biodiversity within the park), 2234-PAK, and 1570/1571-INO

mentioned targeting the poor areas, smallholders, and tenant farmers; adopting sustainable natural resource management; and promoting human resource development as part of the outcomes (e.g., TA 2604-PAK, TA 3625-NEP, and TA 3723-BAN).

5. In general, the purpose of project grants was to link improvement in road transport to reducing poverty and giving the rural poor access to basic economic, social, and income-generating activities. In many project grants, the intended outcome was to improve the quality of life of rural communities and vulnerable groups living in hills, mountains, and isolated villages (e.g., Grant 0093-NEP, Grant 9111-TAJ, and Grant 9092-PAK). In some project grants, assistance in rural roads was important to meet the immediate objectives of restoring and rehabilitating people's quality of life in view of the negative effects of natural and human-made disasters such as earthquakes, tsunamis, landslides, and civil strife.[12]

3. **Outputs** (Components)[13]

6. During 1996–2007, project loans with assistance to rural roads had an average of nearly four outputs or components (Table A4.1). It appears that more recently approved projects (2001–2007) tend to have more project outputs (components) than those approved earlier (1996–2000).[14] In general, projects associated with rural roads focused on construction, improvement, and development of rural roads and structures; road rehabilitation and maintenance; and institutional development, capacity building, and/or project support. The scope of loan projects in each sector follows:

(i) **Transport and Communication Sector.** Most rural road-associated projects in this sector had components on community participation (e.g., Loan 1450-NEP and Loan 2195-VIE); awareness campaign for rural infrastructure development; construction of community structures such as growth center markets, public sanitation facilities, boat ferry landings (e.g., Loan 1450-NEP, Loan 1952-BAN); monitoring for poverty reduction, environmental management (Loan 1795-LAO); and building the capacity of implementing institutions for planning, budgeting, and road maintenance.[15] Components that were observed to be more pronounced and incorporated in recent years (2001–2007) than in the earlier period (1996–2000) included the strengthening of road and traffic regulations, road safety, and road assets management;[16] formulating a road sector reform and development program;[17] and involving the private sector (e.g., Loan 1928-PAK). In recent years, more projects incorporated the conduct of education and awareness programs on HIV/AIDS and sexually transmitted diseases, and trafficking of women and children (e.g., Loan 2085-LAO and Loan 2195-VIE).

[12] Grants 9076-SRI, 9038-AFG, 9092-PAK, 9102-PHI, and 9024-AFG.
[13] Smith, K. 2006. *Quality in Design and Monitoring Frameworks*; ADB: Manila; and ADB. 2007. *Guidelines for Preparing a Design and Monitoring Framework*. Manila. Outputs (components) are the physical categories of results, goods, and services that should be produced or delivered during project implementation.
[14] Projects approved in 1996–2000 had an average of about three outputs in the DMFs or project frameworks, compared with about four outputs (components) in projects approved in 2001–2007.
[15] Loans 1450-NEP, 1567-SRI, 1928-PAK, 1986-SRI, 2104-PAK, and 2351-ARM.
[16] Loans 1888-VIE, 1928-PAK, 2018-IND, 2085-LAO, and 2195-VIE.
[17] Loans 1892-PAK, 1928-PAK, 1986-SRI, 2104-PAK.

(ii) **Multisector.** Most multisector projects with assistance to rural roads had features similar to those in 1996–2007, although it was observed that projects approved in 2001–2007 had more components than those in 1996–2000. Components that were observed over the years include community development, and/or participatory development;[18] improving incomes, farm technologies, and agricultural productivity; establishing microenterprises and livelihood;[19] and building the capacity of national and local agencies, nongovernment organizations (NGO), and communities for participatory resource management, devolved planning, and implementation.[20] Components on soil and water conservation, energy conservation, and environmental policy implementation were observed in some projects (e.g., Loan 1531-PAK and Loan 1924-PRC). During 1996–2007, projects incorporated components for construction of growth center markets, flood shelters, and infrastructure for settlements (e.g., Loan 1581-BAN and Loan 1934-PAK); provision of financial services and development of financial institutions (e.g., Loan 1765/1766-INO and Loan 1672-PAK); adoption of public-private partnership (PPP) models (Loan 2264-INO); and use of integrated rural accessibility planning procedures in project design (Loan 1862-CAM).

(iii) **Agriculture and Natural Resources Sector.** Agriculture and natural resources projects had components for improving and rehabilitating rural infrastructure that included not only rural roads, but also minor irrigation systems, water supply and sanitation (WSS), storage, and growth center markets and facilities.[21] Also included were support services to complement physical infrastructure, e.g., national and local information resources; technology assessment and dissemination; agricultural extension, training, and research; and credit.[22] Components for community mobilization and development, awareness of participatory planning and implementation of rural infrastructure,[23] and environmental resource management[24] were common in most projects approved in the period under review. Significantly, components on policy and institutional development reforms (Loan 2313-TAJ), land management (Loan 2313-TAJ), and resettlement improvements (Loan 2254-BAN) were observed in recently approved (2001–2007) projects.

(iv) **Law, Economic Management, and Policy Sector.** In addition to roads, bridges, WSS, and irrigation, the Community and Local Government Support Sector Development Program (Loan 1678-INO) included components for strengthening decentralization and empowering communities through participatory mechanisms for planning and implementing rural infrastructure projects.

[18] Loans 1581-BAN, 1531-PAK, 1787-PAK, 1771-BAN, 1667-PHI, 1453-PHI, and 1934-PAK.
[19] Loans 1531-PAK, 1787-PAK, 1771-BAN, 1753-CAM, 1667-PHI, 1934-PAK, 1883-VIE, and 2376-CAM.
[20] Loans 1581-BAN, 1564-VIE, 1531-PAK, 1787-PAK, 1765/1766-INO, 1453-PHI, 1772-PHI, 2357-VIE, 1934-PAK, and 1862-CAM.
[21] Loans 1639-SRI, 1421/1422-PHI, 1605-INO, 2259-LAO, 1949-LAO, and 2254-BAN.
[22] Loans 1949-LAO, 2313-TAJ, 1421/1422-PHI, 1462-SRI, 2134, 1570/1571-INO, 1461-NEP, and 1909-INO.
[23] Loans 1421/1422-PHI, 1605-INO, 1909-INO, and 2092-NEP.
[24] Loans 1605-INO, 2234-PAK, 1467-PAK, 1639-SRI, and 1570/1571-INO.

7. As for TA**s,** ADTAs had more components than PPTAs.[25] In general, almost all components included in TAs focused on capacity development in various aspects. They included support to project planning, management, and implementation (98%); conduct of studies (81%); and advice in strengthening road policies and strategies (60%). Some examples of the scope of TAs are the following.

(i) **ADTA.** Most ADTAs had capacity development features to define a reform policy and action plan for O&M of rural infrastructure (e.g., TA 4981, TA 4075-SRI, TA 4671-PRC, and TA 4973-ARM); improve systems and procedures in planning, budgeting, and monitoring of rural road-associated projects (e.g., TA 3177-INO, TA 3805-PHI, TA 4397-NEP, TA 4917-TAJ); strengthen the social development and environmental management in road projects (e.g., TA 3557-LAO); and enhance private sector and community participation in providing infrastructure (e.g., TA 4872-INO and TA 4917-TAJ).

(ii) **PPTA.** PPTAs included the conduct of feasibility studies, inventories, and surveys to determine the investment potential of the proposed project areas; assessment of the need of relevant institutions and stakeholders for capacity development; review of road policies and strategies; coordination of project implementation arrangements; and assessment of poverty, social, and environmental impacts, among others (e.g., TA 2585-PAK, TA 2604-PAK, TA 2889-LAO).

8. The main components of project grants included road maintenance, capacity building, assistance in livelihood opportunities, and support for project administration and monitoring and evaluation (M&E). Road maintenance was focused on the adoption of community-based and participatory approaches (e.g., Grant 0093-NEP and Grant 9078-TAJ), decentralized systems and procedures (Grant 9111-TAJ), and establishment of a road maintenance fund (e.g., Grant 9025-SRI). Capacity building to be provided for government, NGOs, community-based organizations (CBOs), and private contractors touched on project preparation, implementation, and M&E. Assistance in livelihood opportunities was to be provided for fishing, and on-farm and nonfarm activities covering production, processing, and marketing (e.g., Grant 9094-IND and Grant 9092-PAK).

4. Indicators and Performance Targets

9. The quality of the indicators and performance targets of project loans, ADTAs, and grants were assessed using specific, measurable, achievable, relevant, and time-bound (SMART) criteria. The results are summarized in Table A4.2.[26]

[25] However, TA frameworks were mostly preliminary and the components (outputs) were still to be determined during project preparation.

[26] ADB's guidelines for preparing a DMF (footnote 1) refer to results the project seeks to achieve; measurable if stated in quantifiable terms; achievable if realistic in what is to be achieved; relevant when useful for management information purposes; and time-bound when stated with target dates.

Table A4.2: Summary of Indicator Analysis Based on the SMART Criteria

Type of Assistance	Complied with All Criteria No.	Complied with All Criteria %	Complied with Less than All Criteria No.	Complied with Less than All Criteria %	Total
A. Loans					
Impact (Goals)	51	39.8	77	60.2	128
Outcomes (Purpose)	107	43.7	138	56.3	245
Outputs (Components)	158	47.3	176	52.7	334
Subtotal	**316**	**44.7**	**391**	**55.3**	**707**
B. Technical Assistance (ADTA)					
Impact (Goals)	6	31.6	13	68.4	19
Outcomes (Purpose)	7	35.0	13	65.0	20
Outputs (Components)	31	100.0	0	0.0	31
Subtotal	**44**	**62.9**	**26**	**37.1**	**70**
C. Grants					
Impact (Goals)	7	63.6	4	36.4	11
Outcomes (Purpose)	7	29.2	17	70.8	24
Outputs (Components)	28	47.5	31	52.5	59
Subtotal	**42**	**44.7**	**52**	**55.3**	**94**

ADTA= advisory technical assistance, SMART= specific, measurable, achievable, relevant, time-bound.
Source: Assessment made by the Independent Evaluation Department.

10. **Loans.** Less than half or 45% of the indicators assigned for intended impacts (goals), outcomes (purpose), and outputs (components) were SMART. In particular, about 40% of impact, 44% of outcome, and 47% of output indicators were assessed as SMART indicators. Some impact indicators were too general, broad, or ambiguous in the statement of long-term objectives. The DMFs show that a very few projects had all their indicators assessed as SMART. Examples include Loan 2092-NEP, Loan 2254-BAN, Loan 1772-PHI, Loan 2357-VIE, Loan 2104-PAK, and Loan 2195-VIE. Almost all (99%) of the intended impacts, outcomes, and outputs had corresponding indicators. One or two projects did not explicitly list “rural roads” as a specific output in the DMF, but mentioned them as part of project design in the RRP (Table A4.2).

11. The study team analyzed the quality of indicators used in DMFs, using SMART criteria for the rural road-associated loan projects. The results suggests that 53 loan projects employed a total of 707 indicators, of which 73% were specific, 71% measurable, 98% attainable, 99% relevant, and 47% time-bound. At the aggregate level, however, only 45% met all five SMART criteria. The adoption of SMART indicators also varied across the four sectors with rural road-associated projects (Table A4.3). The agriculture and natural resources (ANR) projects had the highest percentage of SMART indicators (59%), followed by transport and communication (47%). Multisector projects had the least number of SMART indicators (35%), and law, economic management and public policy sector had only one project and it had no SMART indicators.

12. The presence of a higher proportion of SMART indicators in the ANR sector is consistent with ADB's long-standing experience in designing and implementing projects in that sector. ANR projects tend to have relatively well-defined targeted outputs such as increase in productivity, cropping intensity, and level of technological adoption. On the other hand, multisector projects tend to be complex in design and contain more descriptive rather than quantifiable indicators. Furthermore, the fact that less than half of

the indicators are time-bound shows that several projects did not have baseline studies that could help establish a benchmark to be achieved at the end of the project. Slightly more than one fourth of the indicators were neither specific nor measurable, suggesting that selected indicators were vague or too general, thereby reflecting lack of baseline data and/or limitations in conceptualizing project outcomes and impacts.

13. **TAs.** The majority or 60% of ADTAs were attached to loans and designed to support the achievement of the indicators and performance targets of the projects to which they were attached. For the rest of the ADTAs, which were not attached to loans and included DMFs, about 32% of the indicators for impacts were SMART, 35% for outcomes, and 100% for outputs. For PPTAs, less than half or 40% had project or TA frameworks. The TA frameworks were, however, mostly preliminary and many of the indicators were still to be developed in the PPTA (e.g., TA 3194-PHI, TA 4440-VIE, TA 3213-BAN, and TA 4598-TAJ) (Table A4.2).

14. **Grants.** Some project grants financed by the Japan Fund for Poverty Reduction had no DMFs, but components or outputs provided for corresponding monitorable deliverables. Key performance indicators, reporting mechanisms, and timetables for M&E were submitted in separate matrixes in project grant documents. Nonetheless, in project frameworks that could be similarly assessed, about 64% of impact indicators, 29% of outcomes, and 48% of outputs were SMART (Table A4.2).

Table A4.3: Summary of Indicator Analysis of Rural Road-Associated Loans by Criterion and by Sector

(%)

	Indicators			SMART Criteria									
				Specific		Measurable		Achievable		Relevant		Time-Bound	
Sector	Total	No. SMART	% SMART	No.	%	No.	%	No.	%	No.	%	No.	%
Agriculture and Natural Resources	166	98	59.0	136	81.9	136	81.9	163	98.2	163	98.2	101	60.8
Law, Economic Management, and Policy	7	0	0.0	0	0.0	0	0.0	7	100.0	7	100.0	0	0.0
Multisector (Rural Development only)	276	96	34.8	231	83.7	218	79.0	276	100.0	276	100.0	96	34.8
Transport and Communications	258	122	47.3	147	57.0	145	56.2	248	96.1	254	98.4	132	51.2
All sectors	**707**	**316**	**44.7**	**514**	**72.7**	**499**	**70.6**	**694**	**98.2**	**700**	**99.0**	**329**	**46.5**

B. Inclusiveness in Project Designs

15. **Inclusive Development in Country Goals.** The analysis shows no explicit mention of ID in the project DMFs, but some of the underlying dimensions of ID were present. The statement of goals in the DMFs centering mainly on poverty reduction and economic growth were aligned with the different governments' priorities that also focused on poverty reduction, economic growth, and overall improvement in the living standards of the poor in the rural areas. For instance, Pakistan's project loans, TAs, and grants[27] focusing on poverty reduction were consistent with the Government's efforts to tackle poverty and development of human resources. Pakistan, which had the most number of rural road-associated projects under review,[28] indicated in the RRPs that improving rural access roads would support the Government's anti-poverty and social action programs. Indonesia's projects (e.g., Loan 2264-INO and TA 4872-INO) cited macroeconomic goals in the DMFs in line with the Government's infrastructure reforms for the Medium-Term Development Plan. In brief, loans, TAs, and grants claimed to have strong links with efforts toward poverty reduction and economic development through improved access to markets and greater employment opportunities for the poor.

16. **Project Characteristics.** The characteristics of the projects were reviewed in terms of the extent to which the four dimensions of inclusiveness—(i) economic, (ii) institutional, (iii) social, and (iv) environmental—were incorporated in the design components.

1. Economic Dimension

a. Access to Improved Production Technology and Knowledge

17. Project interventions supporting access to improved production technology and knowledge were assessed in project loans, TAs, and grants. In projects[29] that did not specifically include assistance in providing technologies, there were assumptions that improvement of rural roads would provide people in the project area access to such opportunities. Loans, TAs, and grants included assistance in using improved farming techniques through agricultural extension services, training, research, microenterprise development, and, to some extent, establishment of production and marketing facilities that aimed to facilitate a transition from subsistence livelihood to commercial agriculture development. For example, Loan 1462-SRI provided postharvest technology, seedling nurseries, storage for farm products, and marketing facilities. Loan 1421/1422-PHI; Loan 1949-LAO and TA 4005-LAO; Loan 2376-CAM; and Loan 1461-NEP and the associated TA 2851-NEP included agricultural extension, knowledge training, and technical services to enable farmers to improve their livelihood opportunities and gain access to improved production technology. Grant 9067-PAK and Grant 0093-NEP also incorporated support to skills development in farming techniques and other skills training in small business management and marketing.

[27] Loans 1531-PAK, 1892-PAK, 1928-PAK, and 2234-PAK; TA projects 2585-PAK, 3984-PAK; and Grants 9067-PAK, and 9092-PAK.
[28] Pakistan has 10 rural road led projects during the period 1996–2007.
[29] Loans 1795-LAO, 1892-PAK, 1952-BAN.

b. Access to Production Inputs, Capital, and Finance

18. Rural road-associated project loans and grants included assistance in the form of farm inputs, (such as fertilizer, seeds, and small animals), market information, credit, and other rural financial services.[30] Significantly, these interventions were prominent in 1996–2000 although some were also carried out in 2001–2007. For example, Loan 1765/1766-INO sought to develop rural financial institutions or community-based savings and loan organizations to enhance the poor's access to credit. Several projects such as Loan 1639-SRI, Loan 2313-TAJ, Loan 1672-PAK, and Grant 9024-AFG also included assistance in short- and medium-term loans for small-scale enterprises and farmers to be channeled through participating financial institutions and NGOs. In the transport sector, Loan 1892-PAK and Loan 2085-LAO also underscored that rural roads would open opportunities for increased access to farm inputs and credit for livestock and fisheries activities, although it is unclear in the RRPs how the projects would provide such assistance.

c. Access to Labor

19. Loans, TAs, and grants across sectors recognized that assistance to rural roads would provide direct employment in civil works/construction and road maintenance and rehabilitation. Most project loans and grants[31] adopted labor-intensive technology for skilled or unskilled labor and recognized that improvement of rural access roads would open up opportunities for on-farm and nonfarm employment. Employment would be enhanced as a result of increased demand for agricultural labor, as in the case of Loan 1892-PAK, Loan 1667-PHI, and Grant 9100-AFG. Further, many project loans and grants[32] recognized that improved mobility of local people would bring about employment opportunities in commercial services and industries outside the communities, in nearby towns, as contract wage labor abroad, and in government service.

d. Access to Markets

20. In general, enhancing access to markets through assistance to rural roads was a common feature in project designs. In about 30% of the rural road-associated project loans approved during 1996–2007, assistance for rural roads was often complemented by construction of growth center markets and community structures that serve as a marketplace for agriculture and other products brought in from other villages along the roads.[33] More importantly, efforts to enhance market linkages became more apparent in projects approved in recent years (2001–2007) than in those approved earlier (1996–2000). Rural roads were expected to facilitate access of wholesale traders to rural areas to purchase produce (e.g., Loan 1819-TAJ), or to enable farmers to bring their produce

[30] Loans 1531-PAK, 1771-BAN (with TA 3213-BAN), 1753-CAM, 1672-PAK, 1934-PAK, 1883-VIE, 1862-CAM, 1467-PAK, 1639-SRI, 1421/1422-PHI, 1462-SRI, 1605-INO, 1570/1571-INO, 1461-NEP, 1949-LAO, 2313-TAJ, 2092-NEP, 2134-PAK, 2259-LAO; and Grants 9067-PAK, 9024-AFG, 9034-LAO, 9038-AFG.

[31] Loans 1450-NEP, 1795-LAO, 1952-BAN, 2104-PAK, 1892-PAK, 2248-IND, 2351- ARM, 1564-VIE, 1934-PAK, 1667-PHI, 1772-PHI, 1862-CAM, and 2221-INO; TA 3168-TAJ; and Grants 0017-TIM, 9111-TAJ, 0093-NEP, 9078-TAJ, 9076-SRI, and 9102-PHI.

[32] Loans 1876-NEP, 1986-SRI, 2254-BAN, 2376-CAM, and 1531-PAK; and Grants 0117-TIM, 9111-TAJ, 0093-NEP.

[33] Loans 1581-BAN (with TA 2550-BAN), 1795-LAO (and TA 2889-LAO), 1450-NEP, and 1909-INO. Assistance in the establishment of growth center markets was also observed in PPTAs.

to urban markets (e.g., Loan 1986-SRI). In Loan 1949-LAO, rural roads were expected to provide access to production centers and strategic markets, and enhance access to commercially viable zones serving large populations. With increased access to markets through efficient transport of goods, farmers would also have the opportunity to produce more of perishable products with minimal spoilage and increase the value of goods.[33] The increased competition among traders would enable farmers to receive higher prices for their produce (e.g., Loan 1883-VIE). Increased access to markets was likewise expected in project grants such as Grant 9100-AFG, Grant 0017-TIM, Grant 9102-PHI, and Grant 9067-PAK.

e. Access to Processing Facilities

21. Only a number of project loans, TAs, and grants (mostly from the ANR sector and multisector) emphasized enhancing access to processing facilities and creating value addition through the establishment of linkages from infrastructure to production and marketing of final products. For instance, Loan 1581-BAN/TA 2550-BAN intended to promote value addition through postharvest processing to be engaged in by women. Loan 1461-NEP/TA 2851-NEP included assistance in marketing milk, thereby encouraging project beneficiaries to also engage in the processing of meat and milk products. Other examples include TA 2709-INO and Loan 1949-LAO/TA4005-LAO, which were supposed to assist in the production, processing, and marketing of products in the project areas by providing better marketing linkages between the producer and secondary processors. As for grants, Grant 9094-IND sought to provide assistance in constructing internal roads to link the fishing village-processing complex to markets. In the same way, Grant 9100-AFG sought to connect farmers and agroprocessors by establishing rural business support centers.

f. Access to Consumers

22. Project loans, TAs, and grants recognized that improved rural roads would provide lower priced consumer goods. Loan 1892-PAK, for example, cited that better roads would facilitate the transport of goods between areas of surplus to areas of deficit. In Loan 1819-TAJ/TA 3602-TAJ and Loan 2248-IND, rural roads were expected to bring more produce to consumers who are currently not reached by good quality products because of damage or spoilage caused by bad road conditions. Further, a number of project loans and grants[34] recognized that cheaper food and basic necessities, increased local production, and greater inflow of goods would benefit the poor and address food security concerns.

g. Higher Household Incomes

23. The major benefits of rural roads observed in project loans, TAs, and grants were expected to be higher household incomes due to savings from reduced transportation and vehicle operation costs, lower passenger fares, and reduced costs in the handling and shipment of goods.[35] Reduced transportation costs were perceived to result in

[33] Loans 1928-PAK, 1986-SRI, 2085-LAO, 2104-PAK, 2195-VIE, 2351-ARM, 1862-CAM, 2221-INO, 2357-VIE, 2254-BAN, and 2376-CAM.
[34] Loans 2085-LAO, 2195-VIE, 1883-VIE, 1581-BAN, 2376-CAM; and Grant 9034-LAO.
[35] Loans 1567-SRI, 1795-LAO, 1819-TAJ, 1876-NEP, 1888-VIE, 1892-PAK, 1928-PAK, 1986-SRI, 2085-LAO, 2104-PAK, 2195-VIE, 2248-IND, 2351-ARM, 1531-PAK, 1753-CAM, 1667-PHI, 1772-PHI 2001-2007, 1883-VIE; and Grants 0017-TIM and 9111-TAJ.

increased competition in the transport industry. Lower vehicle operation costs would benefit vehicle operators in terms of higher incomes, while reduced fares would benefit the wider population (e.g., Loan 1567-SRI/TA 2904-SRI and Loan 1795-LAO/TA 3557-LAO, and Grant 9111-TAJ). Opportunities for higher incomes from the growth of agriculture, fisheries, and livestock production, value addition, and downstream microenterprises were observed in many ANR and multisector loans, TAs, and grants.[36] For example, Loan 1570/1571-INO aimed to raise the incomes of coastal communities through diversification of opportunities in nonfishing or land-based agricultural production, livestock, hatcheries, handicraft, processing, and ecotourism. Grant 9092-PAK also had objective to increase household incomes arising from farm and nonfarm livelihood activities in the project areas.

h. New Businesses and Investments

24. Assistance in rural roads was expected to stimulate commerce, create a favorable environment for agriculture and other business opportunities, and attract private sector investments in the rural areas.[37] The increased demand for agriculture products in urban markets would encourage commercial agriculture and reduce dependence on subsistence farming, thereby encouraging more inward investments in agribusiness.[38] For example, Loan 1639-SRI, expected improved rural roads to bring in investments for producing good planting materials, replanting and infilling of tea land, and manufacturing. Nonfarm economic opportunities were assumed to come from the growth of roadside businesses such as transport and vehicle repair, weaving, tailoring, small machinery maintenance services, and petty trading such as in Loan 1952-BAN, Loan 1771-BAN/TA 3213-BAN, and Grant 9067-PAK. In Loan 2018-IND, the growth of industries would generate higher tax revenues to support the government's other programs for economic growth. Significantly, an important function of PPTAs[39] was to determine the investment potentials, local needs, and growth priorities in the proposed project areas through feasibility studies and surveys.

2. Social Dimension

25. The social dimension of ID underscores the contribution of rural roads in enhancing access to health, education and skills development, and other social services. The majority of project loans, TAs, and grants emphasized enhanced access to health and education services as one of the major benefits of better roads and an efficient transportation system. A number of projects, however, had no clear interventions indicated in the DMFs and only stated that improved health and educational conditions of people in the project area would be the expected outcomes of assistance for rural roads. Nonetheless, some concrete interventions in social services were observed in the project designs.

[36] Loans 1819-TAJ, 1876-NEP, 1581-BAN, 1531-PAK, 1765/1766-INO, 1667-PHI, 1453-PHI, 1772-PHI, 1934-PAK, 1883-VIE, 2357-VIE, 2221-INO; TA projects 2709-INO and 4005-LAO; and Grants 9094-IND and 9092-PAK.
[37] Loans 1564-VIE, 1771-BAN, 1765/1766-INO, 1772-PHI, 2264-INO, 1570/1571-INO, 1421/1422-PHI, 1462-SRI, and 2313-TAJ.
[38] Loans 2104-PAK, 2195-VIE, 2248-IND, 2248-IND, 1531-PAK, 1667-PHI, 1888-VIE, 2104-PAK, and 2376-CAM; and Grants 9092-NEP and 9100-AFG.
[39] TA projects 2604-PAK, 2550-BAN, 3194-PHI, 4919-NEP, and 2709-INO.

a. Access to Health

26. Specific interventions for improving the health conditions of people in the project areas included the (i) construction of village health stations, WSS facilities for clean drinking water, tubewells, latrines, and public toilets; (ii) conduct of health awareness programs on nutrition, contraception, pregnancy, and child rearing; and (iii) training on hygiene and on attending traditional birth.[40] Loan 1605-INO observed that enhanced access to a clean water supply would help reduce the incidence of schistosomiasis and other gastrointestinal disorders in the project area. Grant 9102-PHI and Loans 1846 and 2168 sought to upgrade the health facilities and services of the provincial and district hospitals. Transport sector project loans and grants approved in recent years (2001–2007) required civil works to be complemented by (i) the dissemination of information on the risks of HIV/AIDS and sexually transmitted diseases on laborers, truck drivers, and sex workers; (ii) provision of health and sanitation facilities; and (iii) compliance with the guidelines of the International Labour Organization for appropriate working conditions for laborers.[41]

b. Access to Education and Skills Development

27. Another intended benefit emphasized in rural road-associated projects is enhanced access to education and skills development, particularly for poor children, ethnic minorities, and other vulnerable groups. Although all projects expected that improvement in rural roads would enable people in isolated villages to avail of education opportunities, specific interventions in some project loans and grants were observed. For example, Loan 1771-BAN/TA 3213-BAN, Grant 9102-PHI, Loans 1846 and 2168-SRI, and Loan 1564-VIE included investments for constructing classrooms, literacy centers, and community buildings that can also serve as schools. Significantly, improvement in human capital was also addressed in project designs through capacity building programs for marginal and ethnic communities and skills training for group formation, community development, and village planning (e.g., Loan 1765/1766-INO, Loan 1772-BAN, and Grant 9067-PAK). These concerns were also recognized in the PPTAs and appeared to inform the ensuing project designs (e.g., TA 2604-PAK). In addition to physical infrastructure, about 20% of ADTAs included additional activities such as providing training, nonformal education, and extension services to project beneficiaries.

c. Access to Other Services

28. About 23% of project loans incorporated the construction of community buildings that can be used for delivering various social services. Specifically, community buildings may be used as venues for agricultural extension services, informal education, day care, meetings, workshops, office space, flood shelters, and sometimes for bazaars.[42] In addition, an estimated 11% of rural road-associated project loans included assistance in improving shelter infrastructure.[43] A special component targeting household food security was highlighted in Loan 1883-VIE through assistance in establishing home gardens and clean water supply to address hunger and malnutrition. This feature is similar to that in one project grant, Grant 9038-AFG, which included a component for the

[40] Loans 1581-BAN, 1787-PAK, 1672-PAK, 1795-LAO, 1771-BAN, 1672-PAK, 1667-PHI, 1453-PHI, 1772-PHI, 1924-PRC, 1421/1422-PHI, and 1570/1571-INO; and Grants 9038-AFG, 9034-LAO, and 0093-NEP.
[41] Loans 2018-IND, 2104-PAK, 2195-VIE, 1888-VIE, and 2248-IND; and Grant 0017-TIM.
[42] Loans 1453-PHI, 1862-CAM, 1450-NEP, and 2376-CAM.
[43] Loans 1934-PAK, 1639-SRI, 1846-SRI, and 2168-SRI.

development of kitchen gardens to help provide livelihood to women in the project area. A key targeted poverty reduction component observed in project loans and grants was the provision for training and necessary support that may include access to credit to help promote business and enterprise development among project beneficiaries (e.g., Loan 2134-PAK, Grant 9094-IND, Grant 9100-AFG).

d. Adoption of Social Safeguard Measures

29. As observed in many PPTAs,[44] the social safeguard measures incorporated in project designs were based on studies (e.g., poverty assessment and social impact analysis) and consultations done during the project preparation stage. Social measures were included in project designs to address unintended effects of rural roads construction on vulnerable groups. The measures include the preparation of plans and programs to mitigate the adverse effects of resettlement and land acquisition issues to protect ethnic minorities, indigenous cultural communities, and women who live in the project areas.[45] In Loan 2313-TAJ/TA 4917-TAJ, specific actions targeted at ethnic minority groups included (i) the use of facilitators fluent in the Uzbek language, (ii) hiring of a social development specialist with an understanding of ethnic minority development issues, and (iii) budgetary support for monitoring project impact on ethnic minority groups. Other social safeguard measures were (i) contract specifications for protecting children from construction labor, (ii) stakeholder participation and consultation to ensure equitable distribution of benefits for the poor, and (iii) prevention programs against increased exposure to physical and economic exploitation and to greater risks from communicable diseases such as HIV/AIDS and drugs.[46] Notably, most of these measures were observed more in recent projects (2001–2007) than in the earlier ones (1996–2000).

e. Improving Gender Equity

30. Mainstreaming of gender concerns was highlighted in the majority of project loans and grants and many PPTAs. During project preparation, gender concerns were emphasized by identifying the needs of women and the steps necessary to allow their effective participation in implementing the ensuing projects (e.g., TA 3723-BAN). Project designs of loans and grants incorporated the provision of job opportunities for women in road maintenance and construction work; special corners for women in market centers; and training for women in community organization, livelihood, and management skills. Other design features were the preparation of a gender action plan; participation of women in village committees tasked to plan, implement, and monitor infrastructure projects; introduction of labor-saving appropriate technologies for women; and allocation of financial services for women to engage in income-generating activities.[47] In addition, special attention was given to women concerns in the preparation of social action plans, particularly, in the conduct of awareness programs on the trafficking of women and children in view of the improvement in rural access roads (e.g., Loan 2085-LAO, Loan 2313-TAJ, Grant 9034-LAO, and Grant 0093-NEP). Some of the projects also aimed to improve women's formal access to land, adopt participatory approaches, and promote

[44] TA projects 3168-TAJ, 3625-NEP, and 4919-NEP.
[45] Loans 1876-NEP, 2018-IND, 2085-LAO, 2104-PAK, 1888-VIE, 2195-VIE, and 2264-INO; and Grant 0093-NEP.
[46] Loans 2085-LAO, 1876-NEP, 1795-LAO, and 2168-SRI; and Grant 0017-TIM.
[47] Loans 1678-INO, 1765/1766-INO, 1672-PAK, 1581-BAN, 1952-BAN, 2018-IND, and 1467-PAK; and Grant 9076-SRI.

gender responsiveness among policymakers involved in the project (e.g., Loan 2313-TAJ and Grant 9034-LAO).

3. Institutional Dimension

31. A significant aspect of inclusiveness in the institutional dimension is enhancing access to infrastructure services. This was mostly addressed in project loans, TAs,[48] and grants through capacity development, project implementation support, decentralization, involvement of various stakeholders, beneficiary participation, partnerships, and adoption of road management policies and strategies.

a. Capacity Building

32. The majority of the loans, TAs, and grants focused on assistance to build the capacity of line agencies to support project implementation. There were training programs in project identification, planning, management, and administration. Project loans, TAs, and grants included support in management information systems, preparation of geographic information system resource maps, socioeconomic survey, participatory rural appraisal, integrated rural accessibility planning procedures, conduct of feasibility studies, and review of regulations, among others. Also provided was support in contract management, resource mobilization, technical surveys and design standards, asset management, road safety, oversight of construction activities, safeguards, procurement, and fiduciary arrangements.[49] For example, Loan 1986-SRI included commitments for reengineering the Road Development Authority and strengthening construction management systems and control procedures for expenditures. TA 4397-NEP supported the Department of Local Infrastructure Development and Agricultural Roads in developing sector-wide reforms in managing rural infrastructure. Grant 0017-TIM included building the capacity of the Ministry of Public Works for project management, supervision, and monitoring. Loan 2018-IND had a capacity building and asset management component that would assist the Government to establish procedures, make financing arrangements, and develop capacity to ensure the sustainability of road infrastructure. During 1996–2007, there were efforts to also improve the capacities of agencies to prepare, implement, and monitor resettlement and ethnic minority development plans and establish a framework for monitoring poverty reduction (e.g., TA 3557-LAO and Loan 1888-VIE).

33. A number of capacity building efforts aimed to strengthen the decentralization policy of governments. The primary responsibility for the O&M of rural roads was placed on local governments, which were also required to provide counterpart funds. As such, project loans, TAs, and grants supported the local or provincial governments to strengthen capacities in community-based and participatory approaches; implement road network management strategy; explore resource mobilization options; and develop skills in project planning, implementation, and M&E. Examples include Loan 1678-INO/TA 3177-INO), Loan 2313/TA 4917-TAJ, TA 3805-PHI, and Grant 9111-TAJ). [50]

[48] Many PPTAs focused on assessing the capacity development needs of institutions and on recommending appropriate capacity building programs to be incorporated into the project designs.

[49] Loans 1819-TAJ, 1892/1893-PAK, 2248-IND, 2195-VIE, 2104-PAK, 2018-IND, 1952-BAN, 564-VIE, 1772-PHI, 1883-VIE, 1862-CAM, 1421/1422-PHI, 1909-INO, and 1570/1571-INO; TA projects 3070-LAO, 3518-INO, 3177-INO, and 4397-NEP; and Grant 0017-TIM.

[50] Other examples were Loans 1564-VIE, 1765/1766-INO, 1667-PHI, 1952-BAN, 1421/422-PHI, 1605-INO, 2092-NEP, 1450-NEP, and 2221-INO; and Grant 9111-TAJ.

34. Equally emphasized were interventions building the capacity of community organizers and NGOs to manage rural roads through participatory development. Many loans, TAs, and grants also had information programs to raise awareness on ongoing or proposed project activities. For example, Loan 1467-PAK/TA 4720-PAK included training programs for communities on organizational, leadership, and management matters to be supplemented by technical guidance from government line agencies.[51] Loan 2234-PAK/TA 3984-PAK would assist in training village organizations on maintenance, repair, and management of roads. Loan 1453-PHI included capacity development programs on community organizing and participatory management approaches. Project grants that included capacity building for CBOs and NGOs were Grant 9078-TAJ and Grant 9025-SRI, among others.

b. Establishment of Associations

35. The establishment of associations was an important feature in project designs particularly since the beneficiaries—women, farmer producers, communities, and villages—were to play an active role in project planning, implementation, and O&M of rural roads. Several loans, TAs, and grants included support for forming community organizations, strengthening farmers' associations and cooperatives, and establishing savings mobilization groups.[52] Loan 1531-PAK/TA 2585-PAK would facilitate the establishment of strong women and community organizations, which will be responsible for O&M of rural infrastructure. Loan 1771-BAN/TA 3213-BAN would help develop farmer organizations and community organizations into union councils to participate in project planning and implementation. Loan 1883-VIE/TA 4440-VIE included the establishment of interest groups in the uplands to enable them to prioritize, plan, and manage their own development activities. In Grant 0093-NEP, village infrastructure user groups, building groups, or self-help groups would be formed to undertake O&M of rural infrastructure.

c. Involvement of NGOs/CBOs

36. The expected involvement of NGOs, CBOs, and beneficiaries was observed in project loans, TAs, and grants, which generally adopted participatory, community-driven, and/or demand-driven approaches to project planning and implementation. Project loans and grants incorporated mechanisms that allowed beneficiaries to participate in identifying, prioritizing, and implementing projects; O&M and monitoring to meet community development needs; and addressing location-specific issues.[53] For example, Loan 1883-VIE/TA 4440-VIE would involve the commune people's committees in selecting and implementing subprojects. Loan 1909-INO would (i) support group mobilization efforts; (ii) allow representation of beneficiaries in decision-making committees; and (iii) facilitate the creation of village project investment committees to assess, implement, and monitor investments, as well as manage funds in every village. Loan 2092-NEP would also involve women and disadvantaged ethnic groups and castes in building groups tasked to plan, implement, and operate and maintain supplementary investments in subproject areas. Grant 9078-TAJ would engage rural communities to

[51] Other examples include Loans 1421/1422-PHI, 1462-SRI, and 1570/1571-INO.
[52] Loans 1639-SRI, 1462-SRI, 1461-NEP (with TA 2851-NEP), 1467-PAK, and 1570/1571-INO; and TA 3984-PAK.
[53] Loans 1934-PAK, 1883-VIE, 1771-BAN, 1531-AK, 1772-PHI, 1667-PHI, 1795-LAO, 1952-BAN, 2018-IND, 2248-IND, and 1467-PAK.

participate in all stages of maintenance and minor repair of local roads, particularly in planning, identifying, as well as mobilizing resources. Meanwhile, most TAs[54] adopted mechanisms for consultative processes during project preparation to obtain from various stakeholders inputs in formulating the project designs.

d. Partnerships

37. Many project designs were open to adopting partnership arrangements with NGOs or local consulting services as a mechanism for road maintenance and monitoring of project loans and grants. In the case of Loan 2259-LAO, the project would partner with the Lao Women Union units at the provincial and district levels, which have the skills and experience to support the formation of community-based groups, develop participatory procedures, and manage village revolving funds. In Loan 1678-INO/TA 3177-INO, community mobilization activities would be pursued through partnership with local NGOs with expertise in providing group facilitators. In TA 3984, rural support programs and NGOs were to be involved in activities to develop the capacity of CBOs. In project grants, several projects would partner with NGOs to carry out community mobilization and empowerment activities (e.g., Grant 0017-TIM, Grant 9067-PAK, and Grant 9076-SRI).

38. Private sector development was highlighted in project loans, TAs, and grants approved in 2001–2007. Loan 2264-INO promoted PPPs and sought to come up with model PPP transactions in rural infrastructure projects. TA 4872-INO would help implement a risk management framework that would lead to greater private sector participation. In Loan 1567-SRI, private sector contractors would contribute to community infrastructure development needs to support the inadequate financial capacities of the government's Southern Provincial Road Development Authority. Other examples were Loan 1888-VIE, TA 4075-SRI, and TA 3805-PHI.

39. Cofinancing was observed in 11 project loans with grants from nonbank sources amounting to about $171.5 million. Some of the major partners were the governments of Germany through the Deutsche Gesellschaft Technische Zusammenarbeit (GTZ) and the Kreditanstalt fur Wiederaufbau (KfW), the United Kingdom through the Department of International Development, and the Netherlands. For example, Loan 2254-BAN had grant sources from the Department of International Development ($60 million), GTZ ($3.6 million), and KfW ($21.6 million). Another project loan (Loan 1846-SRI) had grant resources from the Organization of Petroleum Exporting Countries ($4 million), GTZ ($2.5 million), and Netherlands ($0.5 million).

e. Strategies for O&M and Road Management Strategies

40. Strategies for sustainable O&M management adopted in project loans, TAs, and grants include participatory approaches, communal labor contributions, and establishment of an O&M fund. Loan 1564-VIE, Loan 1765/1766-INO/TA 3518-INO, and Grant 9078-TAJ had community-managed infrastructure development through labor contributions for O&M of rural roads. Some project loans and grants included as one of the outputs a dedicated fund to ensure sustainable, timely, and available funding for

[54] Some examples are TA projects 3213-BAN, 2604-PAK, 3194-PHI, and 3625-NEP.

constructing, rehabilitating, and maintaining rural roads.[55] In addition, loans, TAs, and grants incorporated the establishment of a set of criteria for subproject selection and O&M procedures that would ensure the sustainability of rural roads.[56]

41. Road management strategies and policies were a continuing concern in project loans and TAs on rural roads during 1996–2007. Few project loans and TAs were concerned with developing a road maintenance strategy, preparing an O&M plan for each subproject (e.g., Loan 1564-VIE, Loan 1787-PAK, and TA 4981-VIE), and conducting policy studies on the imposition of road tolls on main arteries to provide sufficient funds for maintenance and sustainability of rural roads (e.g., Loan 1581-BAN and Loan 1672-PAK). In TA 3602-TAJ, policy and institutional constraints on development planning and management in the road subsector would be reviewed and addressed. In one project (Loan 1819-TAJ), the government committed to establish a transport legal committee that would review the legal framework for the transport sector. In addition to road maintenance, project loans and TAs approved in 2001–2007[57] incorporated measures to strengthen enforcement of regulations on road safety and vehicle management; improve cross-border facilities; conduct awareness programs on traffic and road safety regulations; and address environmental and social impacts, among others. Further, many ADTAs[58] incorporated efforts to review road management policies and legislation and rationalize organizational structures to ensure financial and administrative accountability. In 2002, several small-scale TAs[59] approved for India focused on the conduct of economic, technical, and policy studies in the rural roads sector.

f. Access to Legal Institutions

42. Some project loans, TAs, and grants associated with rural roads explicitly included features enhancing access to legal institutions through measures that promote good governance, transparency, and accountability; and uphold legal rights of beneficiaries. For example, Loan 1934-PAK and TA 3177-INO included components for governance and legal support and adopted anticorruption measures in project implementation. Some project loans[60] would facilitate the grant of land use rights and/or ancestral land claims to farmer and ethnic minority beneficiaries in the project area through assistance in registration, land reform, farm restructuring, and legal services. Grant 9034-LAO incorporated awareness training on legal rights for women.

[55] Loans 1934-PAK (with TA 3132-PAK), 1888-VIE, 2376-CAM, and 1952-BAN (with TA 3723-BAN); TA 4691-CAM; and Grant 9025-SRI.
[56] Loans 2313-TAJ, 1421/1422-PHI, and 1862-CAM; TA projects 2635-VIE, 3194-PHI, and 4691-CAM; and Grants 9025-SRI and 0017-TIM.
[57] Loans 1876-NEP, 1888-VIE, 2018-IND, 2085-LAO, 2104-PAK, 2195-VIE, and 2248-IND; and TA 3916-IND.
[58] Examples include TA projects 3070-LAO, 4973-ARM, 4981-VIE, 3805-PHI, and 4609-TIM.
[59] TA projects 3914-IND, 3915-IND, 3916-IND, 3917-IND, and 3918-IND.
[60] Loans 1862-CAM, 2085-LAO, 2313-TAJ, and 1421/1422-PHI.

4. Environmental Dimensions

a. Adoption of Environmental Measures

43. Almost all project loans and grants[61] incorporated environmental safeguard measures to ensure that rural construction work will not result in adverse negative impacts. During the project preparation stage, many PPTAs (e.g., TA 3625-NEP, TA 3723-BAN, and TA 4919-NEP) included initial environmental screening and impact assessments for each sample subproject in line with ADB's environmental assessment guidelines. Consequently, some projects included the hiring of environmental experts or local NGOs to strengthen environmental assessments and to ensure that environmental concerns in developing the rural roads are addressed.[62] Most loans and TAs incorporated the preparation of environmental management and monitoring plans including guidelines that outline the process and steps required for determining the impacts of road development activities. In Loan 1795-LAO/TA 3557-LAO, the design assigned an independent third party to monitor the impacts of road improvements in environmentally sensitive areas.

b. Adoption of Sustainable Management Practices

44. Several features promoting sustainable management practices were observed in project designs. They included adopting environment-friendly technical designs and standards, planting trees and vegetation along embankments to protect the landscape and prevent landslides; constructing stable, turfed, and paved roads that will reduce soil erosion and eliminate dust hazard (e.g., Loan 1581-BAN, Loan 1819-TAJ); and undertaking hill torrent management (e.g., Loan 1531-PAK, Loan 1787-PAK). In Loan 1888-VIE, appropriate protective measures such as fencing, checkpoints, or demarcation of adjacent sites would be placed where an existing road passes near a sensitive site. This project also addressed minor realignment to protect the ecology of the areas surrounding the roads or roads that pass near sensitive areas such as protected nature reserves and cultural historic sites.

45. A complementary feature noted in project designs was programs to build the capacity of government agencies and communities to conduct environmental monitoring to support the adoption of sustainable management practices (e.g., Loan 1928-PAK, Loan 2351-ARM, and Loan 2234-PAK). Some projects also included the conduct of environmental awareness activities in project communities to integrate environmental assessments in formulating village investment plans (e.g., Loan 1909-INO, Loan 1421/1422-PHI, Loan 2234-PAK, Grant 9034-LAO, and Grant 9038-AFG).

46. In general, rural road-associated projects did not foresee significant negative environmental impacts arising from the construction of roads. Potential short-term effects, however, such as dust and noise pollution, removal of trees on embankments along the forests or plantation boundaries, water pollution in the vicinity, surface water flooding, blocked drainage, and traffic disruption may result at low intensity (e.g., Loan 1888-VIE, Loan 1952-BAN, and Loan 2254-BAN). To address those concerns, project designs

[61] Loans 1564-VIE, 1531-PAK, 1934-PAK, 2221-INO, 1986-SRI, 2357-VIE, 1667-PHI, 2357-VIE, 1876-NEP, 1909-INO, 2248-IND, 2264-INO, and 2376-CAM; and Grants 9067-PAK, 0017-TIM, and 0093-NEP.
[62] Loans 2248-IND, 1986-SRI, 1453-PHI, and 1771-BAN.

emphasized the implementation of mitigation and monitoring measures based on the environmental management plans.

C. Summary

47. The assessment of DMFs showed that the impacts (goals) focusing on poverty reduction and economic growth in loans, TAs, and grants with assistance for rural roads were by nature consistent with the attainment of inclusive growth and development. The intended goals were aligned with the priorities and plans of countries and ADB. The intended outcomes (purpose) underscored the importance of assistance for rural roads as a means toward achieving the long-term objective of the agriculture sector, transport system, and the nation as a whole. In various respects, the purposes mentioned in the DMFs of project loans and grants emphasized enhancing the social and economic well-being of the poor and improving the overall quality of life in the rural areas. The purpose of most TAs focused on building capacities and strengthening institutions, systems, and procedures so as to achieve the intended impacts.

48. There appear to be slightly more outputs (components) from project loans that were approved in the early period (1996–2000) than in those approved in recent years (2001–2007). The combination of components varied during the 10-year period under review, but the major components focused on improving rural roads through civil works, rehabilitation and maintenance, institutional development, capacity building, and project support. For projects in the transport sector, components to strengthen road and traffic regulations, implement road sector reforms, involve the private sector, and educate the people on the risks of HIV/AIDS and sexually transmitted diseases became more pronounced in 2001–2007. Adopting participatory and community-driven development frameworks, devolving authority to local governments, and involving NGOs and beneficiaries in project planning and implementation (e.g., O&M of rural roads), however, remain as key features in project designs. Similarly, the main components of TAs were capacity building, institutional strengthening, and project support. Some of the particular features included the conduct of feasibility studies in most PPTAs, and assistance in policy, planning, and management in most ADTAs, which generally contributed to capacity development in the rural roads subsector. Project grants included key components for O&M of rural roads, capacity building, assistance in livelihood opportunities, and support for project administration.

49. For project loans, slightly less than half of the indicators (performance targets) assessed were specific, measurable, achievable, relevant, and time-bound. Outputs were observed to have relatively good indicators compared with outcomes and impacts. Meanwhile, the project frameworks for most PPTAs were often preliminary or otherwise consistent with the ensuing projects. Most ADTAs were anchored on projects and ought to support the achievement of the projects' performance targets. The project frameworks of grants appear to have good indicators for intended impacts compared with those for outcomes and outputs. Project grants, which were mostly funded by the Japan Fund for Poverty Reduction, adopted separate matrixes to monitor deliverables and performance indicators.

50. The project characteristics incorporated in the designs of loans, TAs, and grants show that the elements of inclusive development—economic, social, institutional, and environmental—were addressed in various ways. For the economic dimension, project designs were clear that assistance for rural roads would enhance access to production

technology and knowledge, productive inputs, employment, markets, and consumers. Improved production technology and knowledge were recognized through opportunities to learn up-to-date farming techniques, technical training, and research. Enhanced access to productive inputs referred to farming inputs such as seeds, planting materials, and fertilizers; market information; and credit. Access to employment was underscored in almost all projects. Job opportunities would be generated from direct construction works as many projects would employ skilled and unskilled labor. Employment within the project areas would be enhanced as demand would increase with the growth of on-farm and nonfarm industries. The increased mobility of local people would also open opportunities for work outside the villages or in nearby towns. Increased access to markets was generally recognized in the majority of projects in addition to the fact that there were also projects that incorporated complementary support to establish growth center markets and create producer-processor linkages. Affordable consumer goods and increased availability of food were expected to help address food security concerns. In all, the benefits would come in terms of higher household incomes, increased productivity, lower consumer prices, and new businesses and investments.

51. The institutional dimension of ID was addressed through increased access to infrastructure services. A number of interventions broadened the participation of community and farmer organizations, stakeholders, and beneficiaries in preparing, implementing, and monitoring projects. In project loans, TAs, and grants, the strengthening of institutions through capacity development, decentralization, PPPs, and road management policies and strategies contributed to enriching the project designs. Strategies for sustainable O&M include participatory approaches, communal labor, and establishment of a road maintenance mechanism. Further, facilitating access to legal institutions was highlighted through measures that promote good governance and uphold legal rights.

52. For the social dimension**,** the majority of the loans, TAs, and grants cited that assistance for rural roads would enhance access of people in the rural areas to social services, particularly, education and health. However, many loans and TAs in the transport sector did not elaborate this nor provide specific interventions in the design components. Some projects (mostly multisector) that incorporated concrete measures invariably included social services by way of special and targeted measures for the poor and vulnerable groups. Assistance was extended in constructing community infrastructure such as village health stations, literacy centers (for formal and nonformal education), WSS facilities, and shelters. Other features such as establishment of home gardens and provision for livelihood assistance through microfinance and training were also noted to complement efforts to raise household incomes. As for TAs, additional social activities were incorporated in the training and skills development programs. Social safeguard measures relating to resettlement, land acquisition, and ethnic minorities were consistently included in loans, TAs, and grants although many more were observed in recent approvals. Mainstreaming of gender concerns was consistently emphasized in the preparation of gender action plans, inclusion of women in village decision-making committees, and provision of opportunities in work, skills development, and livelihood.

53. Design features relating to the environmental dimension concerned the adoption of sustainable management practices. They included the use of low-intensity technology, environment-friendly technical designs and standards, and planting of trees and vegetation on embankments to prevent soil erosion and landslides. Loans, TAs, and

grants had consistent interventions regarding compliance with standard environmental requirements such as environmental screening, initial environmental examination, and environmental impact assessment. The majority of the projects did not foresee negative environmental impacts in the long term, but nonetheless provided for environmental management and monitoring plans to ensure protection of environmentally sensitive areas.

PROJECT CASE STUDIES

A. Loan 1450-NEP(SF): Rural Infrastructure Development Project[1]

1. Background

1. The Project aimed to reduce poverty in three hill districts[2] of Nepal by strengthening rural road networks and providing access to market centers and other basic support services. It had three components: (i) development of rural roads and related structures, (ii) village-level development support, and (iii) awareness campaigns for rural infrastructure development at the central and local levels. The Project was implemented by the Department of Local Infrastructure Development and Agricultural Road of the Ministry of Local Development and had the key objective of creating local employment by adopting a labor-intensive and environment-friendly (LEF) approach. The Asian Development Bank (ADB) financed 68% of the total project cost of $15.6 million. The project completion report rated the Project as *successful* based on the criteria of relevance, effectiveness, efficiency, and sustainability.

2. For the special evaluation study (SES) project case study, the 91-kilometer (km) Baglung-Burtibang road was selected because it is considered an important road providing access to more than 200,000 people of 12 village development committees (VDCs).[3] The road links 7 of the 12 current growth centers and 13 of the 20 potential growth centers of Baglung district identified in the District Transport Master Plan. The Government accorded high priority to this road, which is envisaged to become part of the midhills highway.[4] The road as designed is a dirt road, suitable for seasonal travel.

3. Road construction was completed in 2005; but at the time of the evaluation (even in dry season), surface road conditions were very poor and the road was passable only by four-wheel-drive vehicles and with great difficulty. Use of heavy vehicles such as tractors, poor road alignment, inadequate drainage outlets, and lack of maintenance have been cited as the major reasons for the poor conditions. Improvement of the road very recently started as a priority with the assistance of the Decentralized Rural Infrastructure and Livelihoods Project,[5] funded by ADB. The Project provides for graveling the first 25 km from the district headquarters, Baglung Bazar. The contribution of the road to ID was evaluated, keeping in mind that the road has been open to the public for about 3 years.

2. Contribution to Inclusive Development

4. The Baglung-Burtibang road has been highly successful in removing geographical exclusion (local disparity). It gave the local people mobility, and instilled in geographically isolated communities a sense of belonging to the district, partly because they are able to reach their district headquarters relatively easily. The road has also led to social integration of people living in remote hills (e.g., Burtibang, Bobang, Nishi, Dhorpatan, etc.) with people in other parts of the district. The road contributed in three ways: (i) shortened travel time, particularly for those

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[1] ADB. 1996. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to Nepal for the Rural Infrastructure Development Project*. Manila.

[2] Baglung, Kavre, and Tanahun districts.

[3] A VDC is the lowest administrative organ in Nepal. One VDC comprises several villages.

[4] The Government of Nepal has conceived a 1,700-kilometer-long midhills highway that will run, more or less, parallel to the existing East-West Highway located in the Terai, the plain bordering India.

[5] ADB. 2004. *Report and Recommendation of the President on a Proposed Loan and Technical Assistance Grant to Nepal for the Decentralized Rural Infrastructure and Livelihood Project*. Manila.

living in the middle and end sections; (ii) facilitated transportation of consumption goods and physical infrastructure materials at reduced costs; and (iii) increased the price of roadside lands. All types of households—poor and non-poor, higher as well as lower ethnic castes (Brahmins/Chhetris, Dalits/Janajatis), and households with either a male (HMH) or a female head (HFH)─ benefited differently and at different levels. Furthermore, several nongovernment organizations (NGOs) and microcredit financing institutions expanded their services in the areas previously not served.

3. Economic Opportunities

5. **Employment Opportunities.** About 19% of the households[6] in the road corridor had one or more members involved in road construction. Of that percentage, 78% obtained employment as laborers, 15% worked in road maintenance, and 7% in contracting work. Proportionately more HFH, poor, and Dalit households participated in construction compared with HMH, non-poor, and non-Dalit households. [7] Construction defined as LEF required the engagement of more manual labor, estimated to be 4.2 million person-days. In addition, employment of about 431,025 person-days was created on a sustainable basis.[8] Most of the jobs created were for unskilled labor and were related to farming, and operating tea stalls/small restaurants and convenience stores on the roadside, and transport. While the intention was to employ local people, the volume of work within a given time frame sometimes obliged contractors to bring in laborers from outside areas.

6. **Reduction in Travel Time and Transportation Costs.** The project road unarguably reduced travel time for the majority of the residents who can afford trips and have available cash. For residents of Burtibang, the road saved them about 2 days of travel time. However, transportation cost increased from Nepalese rupees (NRs) 100 per trip to more than NRs600 to and from Burtibang, and NRs400 to and from Hatiya each way. According to the key informants in the area, transportation cost for goods went down by 60% (from NRs5/kilogram [kg]/50 km to NRs2/kg/50 km). However, due to the small volume of transactions, not many people travel a long distance (more than 10 km) or transport goods by vehicles. Furthermore, while transportation cost has gone down substantially, the local people perceive it as still too high.

7. **Business Opportunities.** The project road created a number of business opportunities including transport operations, automobile repair, roadside tea shops/restaurants, input supplies, and local trade. As a result, 50–60 vehicles now ply the road daily and employ 155 drivers, 50 driving assistants, and 100 porters for loading/unloading goods during dry season, and 25–30 during wet season. Road construction also led to the establishment of three automobile repair shops and more than 100 tea stalls/small restaurants along the road. There has not any been significant increase in the number of input supply-related businesses, but there is clearly a high demand for the business. The constraint is the limited supply of fertilizers particularly for potato production. The sale of vegetable seeds, particularly of tomato, cucumber and cauliflower, has steadily increased by 5%–6% annually. The road did not create any dramatic shift in local

[6] Based on a survey of 143 households.
[7] This information was confirmed during triangulation exercise with key informants. and during focus group discussions FGDs). However, according to some of the key informants, distribution of workload and remuneration arrangements were inequitable and were perceived as unfair.
[8] The estimate is based on input provided during FGDs and key informant interviews. The basis for computation is in Supplementary Appendix A, Table SA13.

occupational structure, and farming remains the mainstay for the majority of the people.[9] However, construction of the road may have partially contributed to a steady decline in farming. An overwhelming majority of the households have one or more members employed in the Gulf countries or in the Republic of Korea. According to the key informants, interest in farming in local areas continues to decline due to input supply constraints, low profit margins, and lack of irrigation systems. Furthermore, the pressure to work on-farm has been greatly reduced due to remittance income from household members working overseas. Commercial farming such as growing vegetables and tomatoes applying plastic tunneling techniques appears on the rise in some scattered areas, and this may have been caused by the road because of better access to inputs and produce markets. Overall, it is still insignificant.

8. Due to the small volume of production at the household level and the need for cash to pay for transportation, marketable goods were manually carried by the household members rather than transported using public vehicles. Road construction, however, led to the expansion of market centers[10] and even the revival of old markets in some areas.[11] Economic activities in market centers primarily involve consumption goods, including food and beverages. The number of traders dealing with agricultural products has not increased in the road corridor for three reasons: (i) low volume of marketable surplus due to subsistence agriculture; (ii) the fact that resident household members tend to be the elderly and children who are not willing or are unable to invest in farming; and (iii) limited commercialization opportunities, except with potatoes.

9. The transport operators see increased opportunities to expand their business in the future when the road is improved and new feeder roads are opened. They expect an increase in passengers, but also more competition from additional operators. Vehicles carrying food and other commercial items are empty on the return trip because they are not allowed to pick up passengers, and local people have little or no marketable surplus for which they need road transport. With improvement of the road, the operators expect that increased commercialization in the corridor (e.g., vegetable production) will increase the volume of goods to be transported. However, other factors (prices of vegetables, availability of farm labor and inputs, etc.) will determine whether this will actually happen.

10. **Potato Value Chain Analysis.** Potato was identified as an important commodity in the study area with tremendous potential for commercialization. However, input supply and other production constraints have prevented commercialization. The Baglung District Agriculture Office reported that since the construction of the road, the area under potato had increased by 10% but productivity remained stagnant. Both backward and forward linkages are yet to develop. The crop is largely grown in traditional ways with very little fertilizer or chemical inputs. Major constraints that input suppliers face are an inadequate supply of quality planting materials (seeds) and lack of fertilizers. The producers are constrained by lack of irrigation, shortage of labor, poor seed quality, high incidence of diseases, lack of storage space, and high production costs. The collectors encounter problems with storage, lack of understanding of the value associated with grading, transporting crop seeds to road head, and unavailability of transport when needed. The wholesalers face storage problems to meet seasonal demand and low volume of production.

[9] Farming was reported as primary occupation by 29.4% of the sample households, indicating a decline from 33.6% without the road construction. It was also identified as a secondary occupation by 13.3% of households, a decline from 16.8% of the households before without the road.

[10] Deurali Bazar, Rijal Chowk, Hatiya Bazar, Paupyapata Bazar, Akchhate, Dobilla Bazar, Khar Bazar, Kharbang an Burtibang.

[11] Hari Chaur Bazar.

11. A small share of local production is actually sold by farmers in local markets to village traders or large producers also acting as traders. The traders have marketing links to Butwal and Baglung (larger towns). Their job is limited to collection, bulk packing without grading, and selling to wholesale traders who occasionally repack the produce in jute sacks and resell to retailers in bulk quantities without grading. According to key informants, 90% of the producers are smallholders or subsistence farmers, and 10% are semi-subsistence producers. Independent Evaluation Department (IED) estimates suggest that half of the smallholder production and three fourths of the semi-subsistence production enter the market. Of the marketable quantity, 60% goes to collectors, 30% to wholesalers, and 10% to retailers.

12. Typically, Brahmins/Chhetris dominate the marketing chain and, hence, derive most of the benefits. Farmers generally are from poorer households, belonging to lower social strata, and receive about 56% of the retail price. Data shows that net margins tend to be 13.6% accruable to the farmers, 12.0% to the retailers, 9.2% to the local traders/collectors, and 8.4% to the wholesale traders. With the increase in volume of production, IED expects the margins to farmers to increase considerably due to access to better market and technical information and lower unit transportation costs. This would imply that part of the benefits is likely to flow to the disadvantaged groups of farmers.

13. **Investment Opportunities.** In interactions with local residents, the study team learned that prices of land along the road have increased substantially, from 30% to 120%. The increases are higher around the marketplaces in all three sections of the road (head, middle, and tail). Interestingly, land ownership increased from 81.0% of the households before road construction to 94.4% after. Land ownership, however, is biased toward households with male head (HMH), and non-poor and Brahmin/Chhetri households rather than to households with female head, (HFH) and poor and Janjati/Dalit households. The respondents were also quick to qualify that investment in land ownership was mostly due to remittance income and not due to local economic activities and, hence, could not be directly attributed to the project road. However, they also agreed that without the road construction, investment in land ownership may not have been at the current level.[12] In addition, road construction gave a boost to public investment in rural electrification.

14. **Household Income and Expenditure.**[13] The household income sources marginally changed between the with- and without-road conditions, with a 2.1% to 0.7% drop in the proportion of households with farm income only, a 17.5% to 14.7% drop for those with nonfarm income only, and an 80.4% to 84.6% increase in the proportion of households with both farm and nonfarm incomes. Incremental household income tended to decline as one moved away from the main center (district headquarters in this case), with an overall increase in household income by 40%. While income increased for all types of households, the increase was smallest (28%) for Dalits and highest for the non-poor households (40%). The results show that the share of farm income in total household income declined from 21.9% to 16.6%, and that of nonfarm income increased from 78.1% to 83.4%. Janajatis and HFH experienced a 16.2% and 5.3% drop in farm income, while Brahmin/Chhetris had a 10.4% increase. The share of livestock, vegetables, fruit crops, and forest products in total farm income also increased, but that from cereal crops decreased, although cereals accounted for more than four fifths of the farm income. On the other hand, Janajatis realized nearly twice as much income from nonfarm sources and HFH about 63%. Remittances had a large impact on nonfarm income. They accounted for 49%

[12] Speculative investment in land has consistently yielded handsome returns; hence land is considered secure and more profitable than investment in other businesses.
[13] Computed in 2004 constant prices.

of nonfarm income in 2005, which increased to 71% in 2008. Janajatis, in particular, saw more than a fivefold increase in remittance income. Although household income substantially increased in 2008 over that in 2005, it should be recognized that the increase was largely associated with income from remittances, with little direct contribution from the roads, except for improved access to employment information and mobility. Table A5.1 summarizes the perceived impact[14] on household income and expenditure due to the project road.

Table A5.1: Change in Income and Expenditure Due to Baglung-Burtibang Road

	Income			Expenditures	
HH Category	**Overall**	**Farm**	**Non-farm**	**HH**	**Farm**
Overall	High	Low	High	Medium	Medium
By HH head					
With male head	High	Low	High	Medium	Medium
With female head	High	Low	Very high	Medium	Medium
By Economic Class					
Poor	Low	Low	Low	Medium	Medium
Non-Poor	High	Low	High	Medium	Medium
By Caste/Ethnicity					
Brahmin/Chhetri	High	Low	High	Medium	Medium
Janajati	Very high	Very low	Very high	High	Medium
Dalit	Medium	Low	Medium	Medium	Medium

ADB = Asian Development Bank, IED = Independent Evaluation Department, HH = household, SES = special evaluation study.

Note: Categorization of changes is based on percentage change in income and expenditure after road construction: (i) very low (up to 25%); (ii) low (25%–50%), (iii) medium (50%–75%); (iv) high (75%–100%); and (v) very high (above 100%).

Source: IED. 2009. Household Survey Data for SES on ADB's Contribution to Inclusive Development through Assistance for Rural Roads. Manila.

15. Changes in household expenditure pattern reflect changes in quality of life. Overall, household expenditure increased by 22.6% between 2005 and 2008, in contrast to the 40.0% increase in income reported earlier. The increase in expenditure was proportionately higher for HFH, and poor and Janajati/Dalit households compared with HMH, the non-poor, and Brahmin/Chhetri households. Overall, consumption expenditure accounted for 80% of total expenditure in 2005 and 78% in 2008. During the same period, consumption expenditure increased by 20% and nonconsumption expenditure by 34%. The increase in consumption expenditure was largest for HFH, the poor, and ethnic minorities (Dalits/Janajatis). The increase in nonconsumption expenditure was associated with the purchase of fixed or movable assets, including land, and was substantial for the Janajati households with 82% increase in 2008 over the 2005 level. Improved access due to the project road also meant a change in lifestyle as demonstrated by substantial increases (from 22% to 46%) in utilities and communication and transportation-related expenditure. In real terms, food expenditure declined from 75.0% to 68.0%, education from 13.8% to 12.8%, and health from 7.5% to 6.2%. No significant changes were observed in expenditure on other items. A substantial increase in communication expenditure was associated with telephone calls to household members living outside the village or out of the country, and increased transportation expenditure was due to the use of public transport. The higher expenditure on electricity was a result of rural electrification after the road construction. The changes in expenditure pattern were the result of multiple factors but,

[14] The SES used two different intervals for grouping percent change in income and expenditures because of the two different reference periods used for the two roads: 5 years for the Baglung-Burtibang road, and 2 years for the Rangeli-Bardanga-Uralabari road.

according to key informants, they were certainly catalyzed by the road construction. While household expenditure increased across the board, the HFH, the poor, and Dalit/Janjati households experienced increases larger than those of their respective counterparts.

16. Overall, farm expenditure increased by 25% between 2005 and 2008. The increase was somewhat smaller for the poor households (18%), but Janajatis and HFH experienced the largest increase (30%). The poor and Dalit households used less quantity of purchased inputs, while Janajatis spent more on fertilizer. The Brahmin/Chhetri households, on the other hand, were relatively more semicommercialized and purchased more fertilizer and pesticides, hired labor and tractors, and used marketing services. Interestingly, Janajatis and Dalits spent less on irrigation.

17. **Social Development Opportunities.** Before the road construction, the primary mode of transportation was walking and goods were transported by mules or porters. At the time of evaluation, all household respondents reported that they used the project road, but only 38.5% used it regularly, others used it occasionally. Road use varied with the location of the respondents; 51% of the respondents at the tail end of the road alignment used it regularly compared with the slightly less than one third at the head or middle section. Most respondents cited going to district headquarters to avail of public services like getting passports, citizen certificate, courts, drawing pensions, and going to Butwal and Kathmandu as main reasons for using the project road. Almost all respondents said that the road made their travel easy, reduced their travel time and cost, and made it easy to bring household goods from the main markets (Baglung Bazar for the households located along the head and middle section of the road, and Butwal Bazar for the households at the tail end). While residents have better access and linkages to markets, economic opportunities are yet to develop. Except for one or two respondents, none of the households had used the road for accessing health or education facilities. All children still go to school on foot, and sick people are carried by porters and often end up visiting local health posts within the VDCs. The primary reasons for the low use for social services are (i) lack of cash; (ii) high cost of transportation by local standards; (iii) vehicles not stopping at the required points; and (iv) vehicles start full and cannot pick up additional passengers. Only 10% of the households considered economically well-off and who also happen to be Brahmins and Chhetris used the transport plying the road or their personal conveyances to reach health facilities located in the district. Most of the primary schools can be reached in 30 minutes, and secondary schools in 90 minutes on foot. However, the road has encouraged more qualified teachers to locate to local schools. Hence, the general perception is that the quality of education after the road improved, largely because of better teachers.

4. Institutional Development Opportunities

18. Several external factors played a key role in institutional development in Nepal, and the unfolding political development is a dominant factor. The project road, however, has catalyzed community development activities, particularly in networking, lobbying, and advocating. Overall, the participation of the respondent households in community-based organizations (CBOs) increased from 42% in 2005 to 72% in 2008. Between 2005 and 2008, the participation of (i) HFHincreased from 45% to 77%; (ii) poor households, from 26% to 47%; (iii) Dalits, from 26% to 62%; and (iv) Janajatis, from 56% to 67%. CBOs represent various interest groups such as mother and women's group, community forestry group, microfinance cooperatives, infrastructure group, agriculture production group, road building group, and other groups.[15] The opinions of the relatively disadvantaged groups are valued more now than before. For example, in 2008, four female household heads occupied a decision-making position in CBOs compared with none

[15] Other groups are religious groups, youth clubs, and cultural groups.

in 2005 (prior to road completion). Similarly, in 2008, one head of a poor household held a similar position compared with none in 2005. The number of Dalits in a decision-making position increased from 1 in 2005 to 19 in 2008.

5. Environmental Concerns

19. While the project road was constructed based on the LEF approach, 60% of the respondents reported negative environmental impact due to the project road. Dust pollution, soil erosion, and landslides were cited as major reasons. Janajati respondents had a stronger opinion as 94% of them believed that the road had caused environmental problems. A somewhat higher proportion of HFH held a similar view, but the poor and non-poor had no significant opinion. Also widely visible is the unplanned and haphazard road connection to villages linked with the project road. Nearly three fourths of the respondents thought that the road had contributed to a higher incidence of landslides in the absence of adequate slope protection and sound drainage outlets. Furthermore, the high demand for the road network and shortage of laborers encouraged local bodies to allow the use of heavy equipment like bulldozers on environmentally sensitive areas, thereby further causing environmental challenges. During the dry season, earthen roads become dusty and may cause respiratory problems for persons living along the road. Respondents complained that the expenses for washing clothes had increased, and they can no longer grow vegetables, fruits, and fodder on the road side because of dust. These matters are likely to be resolved once the road becomes metaled.[16]

6. Key Challenges

20. **Operation and Maintenance**. The current state of the road reveals that there is no planned or sustainable mechanism for operation and maintenance (O&M). The local people often viewed O&M as a responsibility of the Roads Department although it falls under the jurisdiction of the Baglung District Development Committee (DDC) Annual fund allocation for repair and maintenance by DDC is too little for any meaningful rehabilitation work. No evidence was found that local people are willing to provide voluntary labor or contribute cash for road maintenance purposes. A toll booth about 2.5 km from the district headquarter is the sole outfit responsible for collecting a road user charge on vehicles plying the entire road length of 91 km. There is no guarantee that the tolls collected for the road have a portion allocated for the maintenance work on the same road by DDC.

21. **LEF Approach**. While the labor-intensive and environment-friendly (LEF) approach is promoted in the Project, it has not been successful. The main reasons for the failure cited by the DDC/VDC officials follow: (i) high demand for construction of roads but the approach takes a long time to deliver; (ii) the approach is costly—only few VDCs can be covered at a time, which is not acceptable to local leaders as they want to deliver outputs (roads) in the shortest possible time; (iii) rural communities compete heavily to connect their communities or settlements with vehicle-friendly roads sooner than later; (iv) there is a shortage of local labor due to the high level of out-migration of able-bodied people; and (v) the government budgetary system (late release but requirement to spend within the fiscal year) favors outsourcing and use of heavy machinery such as bulldozers.

22. **Domination of the Transport Entrepreneurs' Association**. The Transport Entrepreneurs' Association (TEA) controls the number of vehicles plying the road in a day,

[16] First 25 km from Baglung is being graveled under the ADB-funded Decentralized Rural Infrastructure and Livelihood Project (footnote 5).

including departure and arrival time. It also determines transportation fares.[17] A strong perception among local people is that TEA is monopolized by transport owners for business and avoids healthy competition.[18] This has restricted the required delivery of services, particularly for people at the tail end of the road alignment. A common practice is that jeeps do not depart for their destination unless all seats are taken (10–13 passengers), and this is a concern for passengers who may end up waiting for many hours until a jeep has a full load. On the other hand, according to the jeep operators, their vehicle operating costs (VOCs) are too high due to poor road conditions and they have to operate at a very low margin.

23. **Limited Economic Opportunities**. While the road has tremendous economic potential, it is yet to be effectively used for expanding economic opportunities. A largely subsistence-oriented economy, low volume of marketable surplus, and lack of production inputs collectively contributed to limited economic opportunities. Both backward and forward linkages are yet to develop in the road area. Vehicles cannot ply the road during rainy season and passengers have to cross rivers and transfer to other vehicles. At least four bridges are needed for year-round transport operations.

7. Summary

24. The project road has been successful in removing geographical exclusion or local disparity in Baglung district. It has linked more than 47 VDCs of the district and has become a strategic road linking isolated communities to the district headquarters and public institutions. All types of households—HFH, and those of the poor, and Dalits and Janajatis—have reaped benefits in some form from the road. However, the benefits are biased for Brahmins/Chhetris, non-poor, and HMH. While it cannot be said with certainty to what extent the road contributed to increasing household income and expenditure, it can be concluded that it has catalyzed factors contributing to household income and expenditure, which are largely attributable to income from remittances. For people using the road, travel time and transportation cost for goods were reduced by 80% and 60%, respectively. The direct economic contribution of the road is limited at present, but is expected to increase as both backward and forward linkages develop over time and subsistence agriculture is able to move toward partial and full commercialization, given a conducive environment. The potential for socioeconomic development along the road is high but remains unrealized. It is expected to improve with greater use of the road for commercial purposes and movement of people. As for the contribution to social development, the road facilitated increased participation of disadvantaged groups in CBOs established for various

[17] The Transport Management Act of 1992 does not allow syndicates to monopolize a particular route. The Act also functions as a negotiation platform between local governments and transport operators. The associations are seen as offering fair opportunity to each operator, but may also reduce competition. The Act envisions free competition among transport service providers. However, public transport on the road is controlled by the respective associations. When the Government of Nepal decided to end the syndicate system fostered by the association, it was opposed by the Federation of Nepali National Transport Entrepreneurs' (FNNTE), the umbrella organization of transport entrepreneurs. Having failed to respond to FNNTE appropriately, the Ministry of Labor and Transport Management (MoLTM), as per an agreement with FNNTE, issued a circular to its transport management offices across the country on 13 January 2008 to provide road permits, register routes and new transport entrepreneurs' organizations only after acquiring permission from FNNTE. As this agreement was seemingly against the Act, the Supreme Court directed government authorities not to implement the 13 January 2008 decision of MoLTM. However, the syndicate system is so deep-rooted that dismantling it is problematic. However, in many countries some form of regulation for transport exists, including in the case of privatized operators. In Nepal, there appears to be little coordination between FNNTE and the concerned government agencies.

[18] As of February 2009, Dhaulagiri Jeep Entrepreneurs' Association had registered 155 vehicles; but only 50–60 ply the road in a day during dry season, and 30–40 in wet season, which implies that, on average, a vehicle gets business for only 10–12 days.

purposes, but it has not been able to influence much further access to and use of health and education services. If ID is to become a reality in countries like Nepal, rural roads can only serve as a catalyst by facilitating access. Hence, a road is a necessary but not sufficient condition. A sufficient condition would require that economic and social opportunities be created in parallel with infrastructure development. Furthermore, sustaining rural roads is a major challenge and requires careful planning to avoid environmental degradation and secure adequate resources for year-round provision of services. The current practice of O&M) for the project road is not likely to be sustainable. The case study also demonstrates that the LEF approach may not be practical when the demand for roads is very high, but the local labor supply is inadequate.

B. Loan 1876-NEP(SF): Road Network Development Project[19]

1. Background

25. The Project aimed to improve transport efficiency and thereby stimulate economic growth and job creation, leading to poverty reduction. The Project components included maintenance of the East-West Highway (140 km), improvement of 165 km of roads to all-weather paved surface, and construction of a 96 km district headquarters access road. The Project was implemented by the Department of Roads under the Ministry of Transport. It was to use the LEF construction method; develop and implement performance-based maintenance on about 200–300 km of road network; and improve about 10 km of cross-border access road. The Project was expected to (i) induce more efficient movement of goods and passengers, and provide better access to income and employment opportunities and to education and health centers; (ii) improve public sector implementation and maintenance capacity in the road sector; (iii) support the development of private sector capabilities to carry out road improvement and maintenance by contract; (iv) improve road safety and axle-load control; and (v) provide community access and complementary facilities through a participatory approach leading to poverty reduction. ADB financed $46.0 million of the $69.5 million project cost. Initially, the Department for International Development had committed to provide £9.6 million as cofinancing, but it later reduced its commitment to £5.5 million due to slow implementation progress. The Project was approved by ADB on 13 December 2001 and was originally planned for completion by 31 December 2007. The closing date was revised twice to 30 June 2009 due to delays associated with (i) loan effectiveness, (ii) mobilization of consultants and contractors, (iii) conflict and challenging security situation, (iv) Koshi river floods, (v) unavailability of fuel and construction materials, (vi) poor performance of some of the contractors, and (vii) weak monitoring of implementation by the Department of Roads. The Project received from ADB the certificate of exemplary contribution to improved performance continuously for 3 years (2005–2007).

26. The Rangeli-Bardanga-Urlabari section of the Biratnagar-Bardanga-Urlabari road was selected for the SES case study. The section represents 42 km of the 67 km road. The Biratnagar-Rangeli section of the road was not included due to its high degree of urbanization and proximity to the major commercial center in Eastern Nepal, Biratnagar. The road section is black-topped but has a distinct rural character, primarily dominated by farming communities. It also serves as an alternate route for people in south of Urlabari to reach Biratnagar without going on the East-West Highway. The road[20] is very important to the Morang district because it is an old postal road running parallel to the East-West Highway and serves an extensive highly

[19] ADB. 2001. *Report and Recommendation of the President on a Proposed Loan to Nepal for the Road Network Development Project*. Manila.

[20] It is a feeder road that connects to the national East-West Highway and is also part of a strategic road network. The East-West Highway is part of the Asian Highway (AH2).

productive farming area. It is also important for the cross-border trade to India.[21] It serves about 40,000 households of 14 VDCs. Although the road section is located in the Terai region, the majority of the population are migrants from the hills who have settled in the area in the past 40 years. The road is an improvement of an existing gravel road, and it was opened to the public in 2007.[22] Its contribution to ID has been evaluated on the basis of key informant interviews, focus group discussions (FGDs), local business surveys, value chain analysis (VCA) of a major commodity in the area (rice in this case), and a survey of 158 households located in three VDCs.

2. Contribution to Inclusive Development

27. The improved Rangeli-Bardanga-Urlabari road has facilitated the movement of people and goods, and has shortened travel time. The road has proved to be an effective alternative route to reach district headquarters especially when the East-West Highway is closed due to strikes, street demonstrations, or road blockades. It gave a boost to local agricultural production as reliable transport options are available year-round. People directly benefited from reduced dust pollution and improved roadside drainage facilities. The road has facilitated the movement of change agents such as NGOs and service delivery institutions, particularly those associated with microfinance, and health and extension services. It has contributed to increased cross-border informal trade in terms of frequency of travel by small traders as well as quantity of goods moved. To date, however, the contribution of the road to ID has been far less than its development potential.

3. Economic Opportunities

28. **Employment Opportunities**. Discussions with key informants, respondent households, officials of NGOs, and project officials confirmed that the Project generated employment opportunities for the poor and wage earners to work as unskilled, semiskilled, and skilled laborers when the road was being upgraded. The upgrading work was undertaken by contractors selected through low-cost competitive bidding; hence, there was no requirement that the workers residing in the road corridor be assured of employment. Effectively, workers from other parts of the district and outside the district, including Bhutanese refugees, availed of employment. Successful bidders were free to appoint petty contractors, and use laborers from anywhere from Nepal and even from bordering areas of India provided that they delivered services as per the quantity and quality required by the contract. Neither the Project nor anyone else[23] has kept a record of the use of laborers. The household survey showed that only 9 of 158 (5.7%) households actually had a member engaged for the road upgrading work. The nine represented Janajati and Dalit communities, but only one was considered as coming from a poor household, and all of them were headed by males. Only one household had a member employed in road maintenance; all others worked as laborers. As the road is in a good condition, no subsequent employment has been created for regular road maintenance.

29. **Reduced Travel Time and Transportation Costs.** Road upgrading contributed to one third to half reduction in travel time. Moreover, for the majority of the respondents, the upgraded road has become more bicycle-friendly. The number of people using bicycles substantially increased, and their transportation cost was subsequently reduced. Between 2005 and 2008, ownership of bicycles in the road corridor increased from 49% to 84% of the households. On the other hand, while VOCs had declined by 40%, the savings have been largely capitalized by the

[21] The Indian border is about 4 km away from Bardanga and people move back and forth across the border.
[22] Local disputes led to delayed completion of the 500-meter section of the road near Rangeli Bazar, which was completed only in early 2009.
[23] Personal communications with project officials and supervising consultants.

vehicle operators and not passed on to the road users. The uptake of public transport services has remained limited due to local perceptions that (i) the road does not go to the required final destinations; (ii) bus service is irregular and infrequent due to the controlled syndicate system leading to longer waiting time; (iii) buses run when all seats are taken, and do not have any space for potential passengers who need to travel between the starting and ending points; and (iv) people can easily reach their destinations on bicycles.

30. **Business Opportunities.** The upgrading of the road led to some increase in business activities in the local areas. There has been a limited increase in the number of vendors and retailers in the local markets (haats/bazaars). Key informants revealed that the number of buses plying the road increased from 28 to 40 after the road upgrade; but since the movement of vehicles is controlled by the transport operators' association, the unit passenger fare is kept high and trips are few. Due to reduced business opportunity, some buses ply earthen roads (e.g., to Jhurke via Amardaha, Amardaha via Diania, Bhaunne via Rangeli, etc.). According to the Eastern Nepal Transport Entrepreneur Association representatives, truck operators prefer to use the East-West Highway route because the project road has (i) a narrow width, which limits speed; (ii) many speed breaks; (iii) cattle and buffaloes grazing on the roadside; (iv) no concentration of industries in the road corridor because most of them are located in or around Duhabi, and are easily accessible by the East-West highway; and (v) lots of bicycles on the road, which restrict the movement of trucks. According to key informants, there has not been any significant increase in other businesses in the road corridor.

31. The occupational structure of the people in the road corridor changed marginally after road improvement.[24] The communities along the road corridor primarily represent farming or farm-dependent households. Slightly more than half of the respondent households sold their farm produce in the nearby markets accessible by bicycle or rickshaw. Interestingly, a significantly higher proportion of HFH (83%) and only 42% of poor households did that. Except for the Dalits,[25] more than half of all other households were able to sell their farm production. Cereals, livestock, and vegetables comprised the dominant marketed commodities. Four out of five households sold their production within 5 km of their homestead and 94% used either a bicycle or a rickshaw to transport their goods to the market. The shortage of labor, long dry spell during winter, and reduced irrigated area in winter further restrict agricultural development despite the tremendous potential. No other businesses reported any significant growth and associated employment opportunities. The number of agroprocessors, traders, wholesalers, transport operators, input suppliers, and distributors virtually remained unchanged even after the road improvement. However, consumer goods stores have diversified the items that they now sell. Also, fertilizer and seed dealers now sell more varieties of consumer items to spread their business risk.

32. An unestimated informal cross-border trade has, however, increased significantly after the road improvement. Local key informants suggest that the volume of traded goods nearly doubled. These are, however, carried by small petty traders who haul their products on bicycles across the border. The nature of goods traded varies based on seasonality of demand and cross-border prices. As Indian fertilizers are subsidized, more fertilizer tends to come from India

[24] Results from the household survey indicate that the percentage of households reporting agriculture as a primary occupation increased from 43.0% in 2005 to 44.3% in 2008, and those reporting private business and public/private employment increased from 10.8% to 11.4% and from 5.1% to 6.3%, respectively. The proportion of respondent households reporting casual wage employment decreased from 32.3% to 29.7% over the same period. Furthermore, households reporting secondary occupation exhibited a similar trend except for those in private business, which declined from 6.3% to 5.1%.

[25] Only 17% of Dalits sold their agricultural production.

particularly during the planting season, while soaps and vegetables are transported to Indian border towns from Nepal.

33. **Rice Value Chain Analysis.** Rice was selected for VCA as it represents the main commodity in the road corridor studied. It ranks first among all crops in the district in both area coverage and production. It is also the most commonly traded commodity in the area. Key actors in the value chain are farmers, *kantawalas* (small-scale collectors) or stockists (large-scale collectors), rice millers, wholesalers, retailers, and consumers.[26] The rice millers play a central role in the value chain. They remove husks and bran layers, and produce an edible white rice kernel that is milled and sufficiently free from impurities.[27] Most of the wholesalers are located in major marketing centers such as Duhabi, Itahari, and Biratnagar, all some distance away from the project road corridor. IED estimates indicate that farmers sell their produce directly to haulers (7.5%), cellars (2.5%), *kantawalas* (75.0%), and stockists (15.0%). All haulers sell milled rice back to the farmers for consumption. All rice collected by *kantawalas* and stockists are sold to the cellars for packing and branding, after which rice is sold to wholesalers and retailers. About 70.0% of milled rice goes to the wholesale market while the remaining 30.0% goes to local retail markets. In the 2008–2009 production year, margins to rice farmers, *kantawalas*/stockists, cellars, wholesalers, and retailers amounted to 24.1%, 5.5%, 9.4%, 10.3%, and 7.1%, respectively.

34. According to the key informants, the rice mills have more than 50.0% excess capacity, to allow milling of paddy coming from the Indian side when the price is favorable and demand is high in Nepal. There is no estimate on informal cross-border trade in rice, but it is believed to be significantly high and is governed by prevailing cross-border price differentials. At times, there is a rice glut in the market due to the large volume of paddy coming from India. No significant change in the number of actors in the road corridor after road upgrading was reported.

35. A number of factors adversely affect the rice value chain. For example, farmers do not get quality seeds on time, lack adequate irrigation facilities, and face a higher unit cost of production and lower output prices compared with markets across the Nepalese border. While average yield per hectare is high in Morang, as well as on farms in the road corridor compared with the national level, total area and production have fluctuated over time, partly because one fourth of the paddy area is rainfed. Inadequate finance and narrow margins were cited problematic areas by *kantawalas* and stockists. Frequent transport strikes and road blockades, frequent and longer electricity load shedding were among rice millers,' wholesalers,' and retailers' grievances. In addition, rice millers also faced several disruptions from labor unions.

36. The role of disadvantaged groups to rice production in the value chain is very limited. None of the respondent households had any member working as a *kantawala*, stockist,

[26] The *kantawalas* serve as the primary link between the farmers and wholesalers or stockists. Improvement of the road has meant that the *kantawalas* no longer go to the villages to collect rice; instead, small farmers sell directly to them. However, large farmers tend to avoid *kantawalas* and sell their produce directly to stockists or rice millers. The road has also enabled more of small farmers to sell their produce. In most cases, the kantawalas essentially collect rice from farmers and pack it in jute sacks before selling to the stockists, and to the rice millers in a few cases. The stockists often provide working capital to the *kantawalas* for rice procurement. Reportedly, the *kantawalas*' business is competitive and operates with a small margin. The number of *kantawalas* in the road corridor, however, has remained unchanged, although some have exited the business while others have entered in recent years.

[27] Rice millers are of two types—haulers and cellars. Haulers are primarily village-based small-scale operators, and cater to local consumption; while cellars are commercial rice mills of various capacities. Millers sell rice to either the wholesalers or retailers.

wholesaler, or miller, although all ethnic groups were well-represented in the household survey. Madhesis and Brahmins/Chhetris, however, dominated the value chain beyond the farm gate.

37. **Investment Opportunities.** Investment in land is viewed secure and has proven to have high capitalization value, and land close to all-weather roads tends to get a higher premium. The household survey revealed that land ownership in the study area increased from 72.2% to 81.4%. Interestingly, the percentage increase in land ownership was much higher for the Dalit and Janajati, as well as for poor households. Ownership among Brahmin/Chhetri households, however, declined from 84.1% to 73.5%. According to the key informants and FGD conducted with the beneficiary households, the shift in land ownership from Brahmins and Madhesis to Janajatis and Dalits was partly attributable to political disturbances and racial tension in the area. While fewer land transactions took place in the past 3 years, it is speculated that land price increased between 30% to 75% depending on location and proximity to the project rehabilitated road. There was, however, no evidence of other forms of new investment that could be attributed to the road at the time of evaluation.

38. **Household Income and Expenditure.**[28] The decline in the proportion of single source (farm or nonfarm) income and increase in income from both farm and nonfarm sources indicate that households have slowly started diversifying their income sources. This may be partly attributable to the road upgrading, which facilitated the movement of people and goods. The findings also indicate that the increases in household income were not uniform along the length of the project road. While gross incomes are higher at the head section of the road due to proximity to the major business hub Biratnagar, the households in the middle section of the road realized a greater increase in income between 2005 and 2008. Overall, household income increased by nearly 20.9% after the road improvement (by 32.7% along the middle section of the road, by 17.8% along the tail end, and 14.4% along the head section). Similarly, household nonfarm income increased by 27.1% in contrast to only 11.6% in farm income. Farm income accounted for 39.9% in 2005 and 36.8% in 2008, and nonfarm contribution to household income increased from 60.1% to 63.2%.

39. In real terms, household income decreased by 3.6% for the poor and increased by 21.5% for the non-poor households. Proportionately, the household income of the Dalit and Janjati household increased (25.2% and 26.1%, respectively) more than that of Madhesi and Brahmin/Chhetri households (17.0% and 16.8%, respectively); that of HFH increased slightly less than that of HMH (22.4% vs 24.3%, respectively).

40. Dalits realized a 34.8% increase in farm income (also associated partly with land ownership), in contrast with the 1.9% decrease experienced by Madhesis and 15.2% increase by Janajatis and Brahmin/Chhetris. Increase in farm income was largely associated with crop diversification from traditional cereal crops to vegetables and livestock. Poor households saw only a 0.9% increase in farm income in contrast with the 11.7% for the non-poor households. HFHs observed a 7.4% increase in contrast to 21.0% for HMHs. Cereals accounted for nearly two thirds of farm income in 2008, with a slight increase from the 2005 level (61%). The proportionate increase in nonfarm income gave a somewhat different picture. Madhesi households had a 40.0% increase compared with 31.0% in Janajati, 23.0% in Dalit, and 18.2% in Brahmin/Chhetri households. The share of remittances in nonfarm income is noticeable as it increased 27.2% in 2005 to 35.4% in 2008, and represents a corresponding increase in the proportion of households with members working outside their residences from 17.7% in 2005 to 22.8% in 2008. In addition, average remittance income jumped by 65.8% during the same

[28] The changes reflected between 2005 and 2008 and the figures are based on 2006 constant prices.

period. While it cannot be said with certainty that increase in remittances was due to road improvement, a tripartite study[29] noted that for a geographically diverse country such as Nepal, better roads encourage work through migration from remote regions, which in turn contributes directly and indirectly to household welfare. The overall changes in income and expenditure after upgrading of the project road are summarized in Table A5.2. Once again, the results should be interpreted in the prevailing context.

Table A5.2: Change in Income and Expenditure due to Rangeli-Bardara-Urlabari Road

	Income			Expenditures	
HH Category	**Overall**	**Farm**	**Nonfarm**	**HH**	**Farm**
Overall	Medium	Low	High	Medium	High
By HH head					
With Male Head	High	High	Medium	High	High
With Female Head	High	Low	High	High	Medium
By Economic Class					
Poor	Low	Low	Very low	Medium	High
Non-Poor	High	Medium	High	High	Very high
By Caste/Ethnicity					
Brahmin/Chhetri	High	Medium	High	Medium	High
Janajati	Very high	Medium	High	Medium	Low
Madhesi	High	Very low	Very high	High	High
Dalit	High	Very High	High	Medium	High

ADB = Asian Development Bank, IED = Independent Evaluation Department, HH = household, SES = special evaluation study.

Note: Categorization of changes is based on percentage change in income and expenditure after the road upgrading: (i) very low (up to 10%), (ii) low (10%–20%), (iii) medium (20%–30%), (iv) high (30%–40%), and (v) very high (above 50%).

Source: IED. 2009. Household Survey Data for SES on ADB's Contribution to Inclusive Development through Assistance for Rural Roads. Manila.

41. Overall, household expenditure in the study area increased by nearly 14.5% in contrast to the 20.9% increase in income between 2005 and 2008. The consumption expenditure increased by 26% and nonconsumption expenditure by 13.2% over the same period. The poor experienced a 46.1% increase in consumption expenditure compared with only 12.1% for the non-poor households. Similarly, HFHs, Dalits and Brahmin/Chhetri households also showed proportionately higher consumption expenditure increases. On the other hand, Madhesis faced a 30.4% increase in nonconsumption expenditure, followed by Janajatis (20.7%), Dalits (13.4%), and Brahmin/Chhetris (15.5%). The structure of consumption has remained more or less static over the review period and it is likely to take some time before it makes a tangible shift. Food, by far, took the largest chunk of consumption expenditure, which declined marginally from 73.2% to 69.2%. The decline in the share of food costs was not necessarily related to lower food prices, but instead was a result of consumption adjustments. Similarly, festivals and clothing represented the greatest increase in nonconsumption expenditure. At the household level, education expenditure increased by 35.5% and communication by 71.6%. Increase in communication was attributable to overseas-employed household members and increase in education expenditure was associated with some households opting to send their children to private schools and the higher cost of education materials. There is a tendency to spend more on religious and social activities in the presence of improved cash position. The proportionate increase in communication was very high across all groups of respondents, followed by that for

[29] World Bank. 2006. Nepal Resilience Amidst Conflict: An Assessment of Poverty in Nepal, 1995–1996 and 2003–2004. World Bank, DFID and ADB Report No. 34834-NP.

transportation and social activities. Increase in expenditure, however, should be interpreted with caution as it may not necessarily have fully resulted from the improved road condition. However, it can be asserted that due to improved road conditions, the mobility of household members increased, resulting in exposure to a broader basket of consumption goods.

42. Between 2005 and 2008, average farm expenditure increased by 22.0%, but the increase was higher for the non-poor (22.4%) than for the poor households (11.8%). The Brahmin/Chhetri households experienced the largest increase (36.7%) compared with other groups—Janajatis/Dalits (17.2%) and Madhesis (6.7%). The increase in household farm expenditure was accounted for by higher costs of fertilizer and hired labor. There is, however, no clear indication of a specific input influencing farm expenditure consistently for all groups of respondents. For example, increases in seeds expenditure were largest for the HFH and increase in tractor/machinery cost was greatest for the non-poor Brahmin/Chhetri households. Madhesis and Janajatis had the highest irrigation cost increases. Dalits were the least affected by farm expenditure increases due to their low level of input use in farming.

4. Social Development Opportunities

43. While upgrading of the project road was well received by the local people, its utilization substantially increased particularly for people using bicycles, but only marginally for other users. As stated earlier, low utilization of the road is attributable to four reasons: (i) the road does not go to the desired destinations; (ii) public bus service is irregular and, hence, people have to wait longer; (iii) buses do not run until they are full and, hence, road users from the middle section of the corridor are not able to ride public transport; (iv) since most of the household activities take place within a shorter radius, people can either walk or use bicycles[30] as they used to before the road improvement. Hence, available evidence suggests that due to other constraints, improved access has not necessarily translated into greater use. In the study area, 63% of the households reported that they visited a health facility over the past 6 months, but most visits (69%) were to the local health posts within 5 km of their home; and three fourths of the visits were accomplished either on foot or by bicycle. The use of public transport for about 24% of the visits has not increased. It is widely recognized that people do not want to spend cash for transport unless there is a compelling reason to do so, such as taking a chronically ill person to the district hospital. Those who use public transport have not realized a reduction in transport cost. One exception though is that women, in general, and pregnant women for prenatal and postnatal care, in particular, have made more frequent visits to a health facility after the road improvement. Only half of the Janajati and Dalit households reported visits to health facilities compared with 73% of Brahmin/Chhetri and Madhesi households.

44. School enrollment has not changed significantly between 2005 and 2008 after road upgrading; however, 45% more girls now ride bicycles on the project road. About 43% of households had children going to a primary school, and 39% to a secondary school. Two thirds of the children in primary school traveled less than 1 km to school, and another one fourth traveled 1–2 km. Similarly, 44% secondary school children traveled less than 1 km, and another 25% traveled 1–2 km. Proportionately, a larger number of Brahmin/Chhetri and Janajati children traveled longer distance than Madheshi and Dalit children. The difference is mostly due to social norms as the Madhesi households are relatively more conservative than the other groups. Only 18% of the households had children going to higher secondary school, and one third of them traveled more than 2 km. Overall, 85% of the primary school children walked to school, 14% used bicycles (riding with parents), and 1% used a school bus. Similarly, 49% of secondary

[30] The patients sit on the bicycle carrier (sidecar) and do not ride alone.

school children walked, another 49% rode bicycles, and 2% used a school bus. Furthermore, 60% of higher secondary students used a bicycle, 12% walked, 8% used a school bus, 4% used a rickshaw, and 16% used public transport.

45. After road upgrading, participation of households in CBOs increased by 21%. The proportionate increase is greater for Madhesi households (35%) compared with that for other ethnic groups. As the FGDs and key informant interviews revealed, the conscious effort by NGOs and local agencies played a key role and the improved road facilitated gathering at convenient locations. Participation in CBOs increased from 44% to 72% for HFH, from 29% to 43% for the poor, from 21% to 35% for Dalits, from 30% to 65% for Madhesis, and from 41% to 67% for Janajatis. The CBOs were largely microfinance cooperative societies, followed by mother/women's group. The road's contribution to the growth of household participation in microfinance CBOs is largely due to improved facilitation by the concerned facilitators. While overall the situation of the disadvantaged groups did not change significantly between 2005 and 2008 as reported by 18% of the households, there has been a marked shift in CBO leadership positions, particularly in agriculture and infrastructure groups.

5. Environmental Concerns

46. More than half of the households (56%) cited positive environmental benefits due to the project road—reduced noise and dust pollution along with improved drainage on roadsides. Another 41% of the households did not report any negative environmental impact. As a result, slowly but steadily, homesteads located further from the road have started relocating to areas near the road. However, none of the respondents believed that the road upgrading used any environment-friendly technology.

6. Key Challenges

47. **Operation and Maintenance Cost**. While the road is in decent condition, there are signs that spot maintenance is required at a number of places. The road has not been handed over to the Road Maintenance Department, and technically the Department of Roads is responsible for any O&M costs. While the contractor is liable for 18 months after the completion, there will be continued fund requirement for O&M works. According to the project staff, road maintenance funds are often grossly underfunded and only a limited urgent repair works can be carried out, leaving behind other needed maintenance works.

48. **Business Opportunities.** There is considerable potential for business growth opportunities in the road corridor, which has not been exploited so far. As population clusters develop along the road, new opportunities are expected to arise and forward planning is needed for new investments in infrastructure (e.g., connecting tertiary roads, rural industries, expansion of electrification, etc.). The role of the transporters' syndicate has partly constrained private investment in transport services for more reliable access and greater use by people potentially served by the road corridor. While the road has become bicycle-friendly, road use is still very low for tangible commercial purposes. Furthermore, the number of traders and businesses has remained static, reflecting weak backward and forward linkages. There is a need to develop appropriate interventions for enhancing road use. Crop production diversification is very limited and renewed emphasis is required on value-added activities in addition to production of high-value commodities.

49. **LEF Approach.** Lack of human labor remains a major constraint to large-scale road construction/upgrading work. The usefulness of the LEF approach in the Terai areas is very

limited and it can slow down project implementation considerably due to additional factors, including contract management.

50. **Inclusive Development.** Efficient transport and improved connectivity to rural areas are necessary for economic development leading to poverty reduction, but they are unlikely to automatically deliver ID. ID requires that gains due to efficiency improvement be also equitable. The results as of now are mixed and do not provide adequate basis to suggest that equitability has actually materialized.

51. **Transport Entrepreneurs' Syndicate.** The transport entrepreneurs' syndicate system has effectively limited the transport services on the project road and beyond, although the 1992 Transport Management Act promotes competition and bans operation of a syndicate system in public transport. Without instituting a viable efficient transport service management framework, it would be extremely difficult to increase use of the project road, particularly by disadvantaged and vulnerable groups.

52. **Road Safety.** Improvement of the road has meant that the vehicles can travel at twice the speed they used to. Without adequate road safety measures, all study respondents along the road corridor agreed that the number of accidents increased after road upgrading. In addition, 10% of the respondents felt that the incidence of theft or robbery increased after the road was upgraded. However, no significant increase in human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS) cases were reported after road upgrading. This is not surprising as the road is not much used by truckers.

7. Summary

53. The project road, which was graveled and passable year-round, was upgraded and black-topped under the Project. Road conditions have significantly improved and the road has become more bicycle-friendly. It also facilitates smooth travel free from frequent bumps and has good roadside drainage. The volume of cross-border informal trade has increased substantially, but reliable estimates are not available. Due to increased mobility, the beneficiaries in the road corridor have slowly started to diversify their sources of income and expenditure patterns. Both household incomes and expenditures increased modestly after the road was upgraded, although the increase in income is more associated with remittances received by the households. The road contributed to a reduction in VOC by up to 40%, but the savings have not been passed on to the users. Improved road conditions have also contributed to an increase in land purchase and sale transactions and pushed up land prices by as much as 75% between 2005 and 2008.

54. Since the improved road opened not too long ago, its contribution to ID is still evolving. Evidence so far indicates that it has had very limited contribution to economic and social conditions, but noise and dust pollution have significantly been reduced. Very few new business opportunities have emerged so far, partly due to the low volume of traffic and the control in the number of vehicles imposed by the syndicate system institutionalized by the TEA. This control is contrary to the 1992 Transport Management Act, which mandates that transport fares be kept at more or less the same level as it was before road improvement. The road has, however, facilitated movement of microfinance facilitators and contributed to the promotion of finance service-based cooperative societies. In the absence of adequate road safety measures and lack of awareness, the number of accidents in the road corridor has increased substantially. However, since the road serves as an alternate route to the major business hub of Biratnagar, the road offers significant development potential particularly for cross-border trade and improved access to other major towns such as Urlabari and Rangeli. There is no evidence to show that the LEF approach was

successful in the interest of the population served by the road corridor. While the road is in a reasonably good condition, its economic life is likely to diminish in the absence of an adequate provision for O&M.

C. Loans 1421-PHI and 1422-PHI(SF): Cordillera Highland Agricultural Resource Management Project (CHARM)[31]

1. Background

55. The Project was a special project of the Philippine Department of Agriculture aimed at reducing the incidence of poverty from 70% to 25% after project completion by increasing income from PhP21,200 in 1995 to PhP56,000 in 2006, and reducing the number of households below the poverty line from 33,000 to 12,000 over the same period. The immediate objectives were to (i) promote sustainable resource management practices, (ii) protect the environment and mitigate adverse development impacts, (iii) strengthen existing institutions, (iv) involve project beneficiaries in planning and implementation, and (v) improve beneficiaries' access to formal and nonformal credit. The project had four components: (i) rural infrastructure development, (ii) community mobilization and resource management, (iii) agricultural support services, and (iv) project management and coordination. ADB approved the Project in 1996 and the loan closed in 2005. ADB contributed $19.0 million of the $31.88 million total project costs. The International Fund for Agricultural Development cofinanced the project and contributed $9.2 million. The Project closed 1.7 years after the original scheduled completion date and the delays were associated with consultant recruitment and mobilization, bureaucratic procedures, change in project scope, and decentralization issues. According to the PCR,[32] the Project was successful in reducing poverty in the Cordillera Administrative Region by increasing average household income by 66% against the target of 164%. Specifically, with improved connectivity as a result of improvement of FMRs combined with communal irrigation systems, the households reportedly experienced food security and had a larger quantity of marketable surplus commodities.

56. The SES focused on assessing the contribution of rural roads to ID and covered six purposely selected roads supported by the Project in Abra, Benguet, and Mountain Province. All study roads are rehabilitation projects. The roads in Benguet Province were chosen primarily due to their proximity to the La Trinidad Trading Post and Baguio City market. The objective was to evaluate how road improvements facilitated access to those main markets, and the gains from such access. In contrast, the basic motivation for road selection in the province of Abra was to uncover how far-flung or remote *barangays* (villages) benefited from road improvements. Finally, the roads in Mountain Province were chosen based on a combination of remoteness and strategic location. For instance, the Bontoc-Guina-ang-Mainit Road is the second longest of the road segments and connects remote villages in the municipality. The Sadsadan-Curba-Longen-Pua Road is actually the shortest of the roads, and is a strategic link for vegetable marketing for the growers in Sadsadan.[33] The nature of project support varied across the six

[31] ADB. 1995. *Report and Recommendation of the President on Proposed Loans to the Philippines for the Cordillera Highland Agricultural Resource Management Project*. Manila

[32] ADB 2006. Project Completion Report on the Cordillera Highland Agricultural Resource Management (CHARM) Project (ADB Loans 1421 PHI and 1422-PHI (SF).

[33] The selection included the Manabo-Boliney Provincial Road (19.40 km) serving three barangays (village) and the Maguyepyep-Bucloc Road (12.76 m) benefiting five barangays in Abra; the Ambongdolan-Cabcaben-Tuel in Tublay (9.29 km) serving Ambongdolan and Tuel barangays, and the Monglo-Bayabas in Sablan road (5.66 km) benefiting the barangay Bayabas in Benguet Province; and the Bontoc-Guina-ang-Mainit Road (14.46 km), which serves barangays Guina-ang, Dalican and Mainit, and the Sadsadan-Curba-Longen-Pua Road (5.24 km) serving barangay Sadasadan and also is the gateway to other barangays in the Mountain Province.

road segments based on local needs identified by the barangays and the provincial authorities. One interesting peculiarity in the region concerns road classification. There are roads that are considered municipal and provincial, but were rehabilitated and classified as FMRs as they provide the critical links in the movement of goods from farms to markets.[34]

57. The case study is based on data collected in April and May 2009 from a survey of 300 households, 6 business surveys, 12 VCA, 18 FGDs, and 24 key informant interviews. The households were distributed along the head, middle, and tail sections of each road and highlighted the inclusiveness aspects of the roads. The key informants included village council leaders, barangay officials, organization/farmer association leaders, and health and education workers.

2. Contribution to Inclusive Development

58. The household respondents in the three Cordillera provinces all belong to closely related indigenous peoples popularly known as Igorots. They are grouped into ethnic or ethnolinguistic tribes such as the Tingguian in Abra, the Kankana-ey and Ibaloi in Benguet, and the Kankana-ey and Bontoc Kankana-ey in Mountain Province. The study looks closely into how these ethnic minority groups benefited from the identified road projects of the CHARM. About two thirds (65%) of the households in Mountain Province are poor, followed by 53% from Abra, and 27% from Benguet.[35]

59. The results suggest that the selected FMRs have benefited all types of residents, including ethnic minorities, women, children, the elderly, and the poor in various ways. The benefits include better access to production input and output markets, increase in farm productivity, better prices for farm products, employment and higher incomes, reduced travel time and costs, improved access to health and education facilities and local institutions, and more social interactions among the residents.

a. Economic Opportunities

60. **Employment Opportunities.** During road rehabilitation, civil works for the Project provided employment to local residents, particularly in four of the six roads[36] that were constructed through the *pakyaw* system,[37] implying that labor was sourced 100% from the community. Although, the two other roads were rehabilitated using a contract system,[38] local contractors also employed people from the beneficiary barangays. After rehabilitation, the road also opened employment opportunities. For example, 20 women are working for a small ube (yam) processing plant in Benguet.[39] Investments in trucking have created jobs for the drivers and their companions (e.g., manual haulers) for transporting vegetables, as well as for driving jeepneys and tricycles.[40] Although there is no firm data available, 68% of the respondents stated that increases in crop production and area cultivated provided seasonal employment to farm laborers, especially during labor-intensive stages of crop production (i.e., planting) and

[34] Based on the interviews conducted by the IED Mission among selected officials of local government units (LGU) in the three provinces under study. This has implications in terms of road maintenance and operations.
[35] This was based on the Philippine monthly poverty threshold level of P5,885 for a family of five residing in rural areas. Data was from the National Statistical Development Board.
[36] The roads in Abra and Mountain Province were constructed through *pakyaw* system.
[37] The beneficiaries formed a people organization from among them to work on specific segments of the road, and were supervised by technical experts from the province or the LGU. Labor provided was paid.
[38] This means that the task was awarded to the best bidder among local contracting parties.
[39] Each woman worker gets an additional PhP100 per day as additional income.
[40] The case of Sablan is a good example for tricycle operators.

marketing. In Bauko, Mountain Province, many migrant farmers and workers seek employment opportunities during the planting season. The more progressive farmers have grabbed the opportunity and have offered migrant farmers production financing to cultivate parcels of their land. This practice has spread to other small farmers with limited capital as well. The absence of data for paid seasonal farm labor may be partly explained by the *bayanihan* system[41] widely prevalent in the Philippines, including in the project areas.

61. **Reduced Travel Time and Transportation Costs.** The road improvements have brought real savings in time and cost of transportation for the households. Across the three provinces, the respondent households indicated savings[42] of PhP11.85 per km for transporting agricultural products and inputs, and PhP4.35 per km in travel cost to the nearest market. The biggest transport cost saving (PhP28.03 per km) was observed for transporting agricultural goods and inputs in Mountain Province.[43] In terms of time savings across all roads, transport of goods and inputs was reduced by 4.2 minutes per km. The Tuel residents in Benguet saved 1.2 hours in travel to the main market located 17 km from their homesteads.

62. **Business Opportunities.** The project roads serve mostly farming communities in the three provinces and have encouraged increased production of farm commodities. Improvement in road connectivity resulted in increased input use and adoption of improved farm practices, thereby increasing crop yields. According to the FGD participants, the road improvements and associated activities in Boliney (Abra) have led to increased *achuete* yield (from 8.5 to 9.1 tons/hectare [t/ha]). In Tuel (Benguet) green pepper yield increased by more than 100% (from 7.6 to 16.5 t/ha). In Sadsadan (Mountain Province) potato harvest increased by 37% (from 7.5 to 10.3 t/ha), and cabbage yield increased by 40% (from 8.2 to 11.5 t/ha). In the previously isolated communities such as Guina-ang and Mainit in Bontoc (Mountain Province), the notion of generating marketable surplus and selling agricultural goods to generate cash emerged and residents are at present able to buy other consumption goods. In addition to increased crop yields, the project roads also created opportunities to till idle land, previously unused due to difficulty in hauling and marketing commodities produced on the farm. The effective cropped area per household increased from 0.41 ha to 1.23 ha. However, this is most likely the result of other complementary factors such as improved technologies and production techniques and the provision of agricultural support services for the CHARM Project.

63. Nearly two thirds of the respondent households (65%) are engaged in the sale of farm produce and related activities, and 69% noted a rising trend in the volume of crop sale after road improvements. Increased sales are associated with more frequent visits of producers to markets (88% of the respondents), increased trips of jeepneys plying the project roads (used by 82% of the respondent households), and more frequent visits by traders or collectors to the local communities (experienced by 64% of the respondents), thereby creating competition and better prices for the producers. Thus, the producers are no longer just price takers. Some examples of farm gate price increases are 83% for achuete in Boliney (Abra), 32% for snap beans in Tuel (Benguet), 69% for bananas in Sablan (Benguet). Banana postharvest losses were reduced by half due to improved market access as a result of road improvements.[44] However, no significant changes in input costs were reported, due perhaps to the smaller quantities procured by

[41] The system works where farmers in the community take turns in providing free labor to assist a fellow farmer during production cycles requiring heavy labor inputs. This is also known as *perma* labor in other Asian countries.
[42] In 2000 constant prices.
[43] It should be noted that the savings come largely from not having to walk long distancing of transportation in such cases as going to the farm, health centers, etc.
[44] The value chain for banana indicated that the farmers' net income increased by 146% and retailers' by 47% after road improvements.

individual households. The improved roads have not led to significant changes in the number of business establishments primarily because the study roads are short. Nonetheless, the roads opened avenues for farmers to easily access agricultural inputs and better technologies for crop production.

64. The improved project roads also increased the availability of transport services in the road corridors studied. In Boliney before road improvement, two jeepneys traveled daily during the dry season and two to three times a week in rainy season; after road improvement, transport business opportunities increased as the number of jeepneys plying the road doubled. In Sablan, the Monglo-Bayabas tricycle operators and drivers' association was established; it operates 11 tricycle units that regularly ply the Monglo-Bayabas road in addition to two to three jeepneys that service the residents daily.

65. **Value Chain Analysis.** With the use of a value chain approach, the impact of the road was assessed for two major crops in each road segment per province. Overall, there were 12 value chains in this case study. Given different conditions for the crops in each case, no effort was made to integrate value chain results for similar crops. Value chain mapping and analysis were made for the major crops of the road service areas: rice and achuete for Boliney, and rice and banana for Bucloc in Abra; banana and ube for Sablan, and snap beans and bell pepper for Tublay in Benguet; potato and cabbage in Bauko, and rice and sugarcane in Bontoc, Mountain Province. The results suggest that the roads contributed to the increase in the number of actors in the value chain, in particular traders, buyers, and transporters. Increases in production were also facilitated by the improvement and expansion of backward linkages, particularly in the choice of farm inputs. The road shortened travel time and reduced postharvest losses. In effect, the combination of these factors resulted in better choices, credit availability, employment, business and investment opportunities, and better prices for the farming households. In the context of benefit spread, farmers obtained the largest share of net profits in at least six crops, excluding rice.[45] The *viajeros* or truckers received the next largest net profits particularly from marketing vegetables such as cabbage (Mountain Province) and bell pepper (Benguet).[46] Assemblers, wholesalers, and retailers followed the truckers for selected produce in deriving benefits.

66. In Sablan, investment in a small ube processing plant opened up another option for small producers to directly market their produce. The respondents now sell their raw ube directly to processors instead of taking their produce to Baguio City, thus saving time and transportation costs. Similarly, the processor benefits from a lower price for raw material and is able to produce wine and candies from unprocessed ube. In Bucloc before road improvement, banana farmers used mostly old stocks of planting material and produced for home consumption, selling only a small marketable surplus to neighbors and schools. Now, they seek better varieties from outside their communities and they have expanded the banana plantation substantially. Similar changes in backward linkages have been noted in rice production with more marketable surplus. In Boliney, the project road gave producers' access to more buyers, resulting in competition and better prices. It also facilitated information and geographic flow of goods as well. There are now five collectors for achuete (*Bixa Orellana*) instead of only one before road improvement. Farmers have established a direct link with Chinese traders in Bangued (capital of Abra) who are also one of the main markets of the local collectors. In Bauko, commercialization of cabbage and potatoes has improved the provision of production inputs and access to capital to small and marginal farmers.

[45] Rice is predominantly produced for home consumption.
[46] This shows that investing in trucks was a good decision for farmers who did so.

67. **Investment Opportunities**. In Boliney, the project road also paved the way for the construction of a mobile phone tower, which made real time communication (through cellular phones) possible. Farmers are able to communicate with collectors about market conditions for achuete, thus minimizing unwanted visits and associated travel costs. The female participants in the FGDs in Sablan said that the road gave them time to engage in other income-generating opportunities. Specific reference was made to extra income from processing ube (yam) and pineapple, which is a combined result of road access and on-site training provided by various agencies. Women who are the majority members of a cooperative are working in a small ube processing plant established (after the training) after the road improvement, and they look forward to expanding the business, given the encouraging initial business performance.

68. After road improvements. nine residents [47] along the roads purchased trucks to facilitate the transfer of vegetables to the market. In Sadsadan, a trucking association that was organized has developed better business and social arrangements between farmers and truckers. For example, when there is a glut of vegetables, farmers need to pay only half of the existing freight cost to the truckers or, in extreme cases, only the actual transport cost so that truckers can break even. Thus, risk sharing has become a practice in the area. Furthermore, the entry and investment of cable operators in the far-flung communities have given households access to television news and entertainment.

69. **Food Security and Household Incomes.** Respondents had difficulty in recalling information called for in the interviews. Although there is no concrete data on changes in total household income, and increases in crop production cannot be fully attributed to road improvements given other factors, [48] respondents nonetheless had the perception that household incomes increased after road improvement (78%) and that road access contributed to better opportunities for higher sales and income particularly for poor households (88%). The survey results suggest that the average household income after road improvement increased by 35% from PhP77,092 to PhP103,790.[49] In the FGDs, the increased income opportunities were also attributed to improvements in nonfarm incomes, particularly in Abra.

70. Improvements in income manifest themselves in the quality of life of the respondents. The quality of life improved on the basis of selected lifestyle indicators. For one in six respondent households, light materials for housing such as nipa and bamboo were replaced with wood, lumber, and concrete with galvanized roofing. Expanding the houses with additional rooms in 22% of the households was noted and attributed to the impact of the road improvement. The source of water for drinking and for laundry improved in 15% of the households that were able to connect their homes to the nearest spring or community water reservoir because they could buy PVC pipes. A notable case of better access to a power source is in Daoangan barangay in Boliney. Despite the fact that the barangay is still unconnected to the Abra Electric Cooperative, the Manabo-Boliney road improvement enabled 10% of the households to subscribe to batteries from a private power supplier. Overall, 31% of all

[47] The survey alone, there where nine new trucks brought by respondent owners who attributed it 100% to the road. They are distributed as follows: Benguet (two), Mt. Province (six), and Abra (one).

[48] The other factors include better technologies, improved management techniques and irrigation. Road access also maximized the use of backward linkages as the roads opened areas that are good sources of planting materials, as in the case of yam production in Sablan, Benguet.

[49] Based on 2000 constant prices. The PCR also estimated the change in incomes for beneficiaries of the farm-to-market roads (FMRs). Based on the PCR, the average annual family income of FMR beneficiaries in the region improved from PhP46,452 in 2000 to PhP98,484 in 2004. It is difficult to estimate the incomes before road improvement because the respondents could not recall them nor the periods when the roads were constructed.

respondents attributed their shift to electricity (from kerosene) as power source and liquefied petroleum gas (LPG, from wood) was due to improved road access. Toilet facilities improved to flush type for 17% of the households. For the first time, many households acquired appliances and fixtures such as beds, television sets, DVD/CD players, living room furniture, refrigerators, dining room sets, to name a few. More than four fifths of the owners of motorcycles, jeepneys, and trucks attribute their purchase decisions to road improvement. Transport's share in total household expenditure also increased. The majority of the respondent households linked the higher purchasing ability to road improvement. However, according to the FGDs, the changes in purchasing power also altered the expenditure patterns of households. Road access has encouraged more spending as people purchase "wants more than needs."

71. Traditionally, the staple food crop rice was not marketed in the study roads in Mountain Province and Abra. The FGD revealed that in Bontoc, the practice is to keep their rice harvest in the granary to ensure that they have a food buffer stock until the next harvest. Rice production increased by an average 16% (from 4.9 t/ha to 5.7 t/ha) after road rehabilitation. This increase has an implication for rice security, especially in poor households. Assessing this in relation to impact on women farmers, results reveal an increase in volume of harvest by women farmers by as much as 3.5% (from 3.72 t/ha to 3.85 t/ha) or 2.6 cavans. The largest increment in rice production was observed in Mountain Province with a mean harvest of 997 cavans. On the other hand, the poor households of Abra had the highest yield increase of 1.06 t/ha compared with the same group in the other provinces. The production increment may be explained by the adoption of high yielding varieties by rice farmers, facilitated by road access to rice farming areas. The FGDs noted that the increase in production also meant a steady supply source for meeting seed and buffer stock requirements, as well as opportunities to grace community events. For the female respondents in Abra, the roads increased the availability of food for their households by enabling women to purchase food anytime, and from a wider array of choices. The women easily commute to the markets, and various vendors come to the barangays to bring food that is ordinarily hard to find—including milk fish, some kinds of vegetables, and even ice cream.

b. Social Development Opportunities

72. **Health Services and Institutions.** Secondary data obtained from the rural health units and FGDs indicate that project roads were very helpful in improving access to health care facilities, particularly for women, children, and the elderly in all the provinces and for all types of households, including the poor and ethnic minorities. The fact is reflected by the increase in the number of outpatient consultations, decrease in morbidity cases, and improvement of the nutrition status of the households. In the household survey, 93% of the respondents said that they were availing of health services, especially of barangay health workers, and 83% said that visits to health institutions such as hospitals and clinics became more frequent after road improvement. The older respondents (60 years and above) are the most frequent users of health services and institutions.

73. **Education and Youth Activities.** Nearly 83% of the household respondents stated that access to educational institutions was better after road improvement. Enrollment at all levels increased and children safely commute to school. Mothers from Bauko and from Bayabas, Sablan, stated that for the children who go to school, the road rehabilitations gave relief on two fronts. First, the children are spared from walking long distances in muddy trails during rainy season; and second, mothers get equal relief from not having to do the concomitant laundry and cleaning to remove the mud spatters. For parents in Boliney and Bucloc, Abra, the roads facilitated a reliable supply of food and monetary allowance for the children who study in cities

like Baguio, and in the capital towns like Bangued, Bontoc, and La Trinidad, to name a few. For the poor households, this has a big implication for the schoolchildren who are sometimes forced into abstinence when food supply from home cannot be transported, as was the case before the road rehabilitation. The youth, on the other hand, have more opportunities to attend meetings of the Samahang Kabataan (barangay youth organization). In effect, better social mobility for all groups of people in the barangays was somehow facilitated by road improvement.

74. **Organizational Memberships and Participation**. In general, there has been a small increase in membership in civic (5%), religious (1%), and agriculture organizations (2%), and in cooperatives (2%). In Abra, however, membership in almost all types of organizations increased, perhaps due to a high level of community mobilization in the province. All respondents belong to at least one organization and several play active roles as officers. The slight increase in the number of organizations and corresponding membership may have also been influenced by the community mobilization component of the CHARM Project, which had been mobilizing communities even before the completion of the road subprojects. Nonetheless, 80% of the respondents noted that road improvement helped increase social interactions, which facilitated membership recruitment and information dissemination. Meanwhile, the number of households acknowledging visits made by outsiders increased marginally by only 2.4%; the visits were perceived to have been facilitated by the increased use of public vehicles. However, the number of households making social visits outside of the community declined by 0.9%, mostly in the Mountain Province and Benguet.

75. Households served by the project roads had been active in all stages of road improvement. Slightly more than half had participated in civil works and two thirds in road maintenance. In fact, 96% of the respondents had approved the road project and 75% were willing to contribute labor for maintaining the quality of the road. It is also significant that half of the respondents acknowledged community ownership of the road rather than ownership by the national and municipal governments. This implies that the community recognizes its social responsibility in contributing to road upkeep. Meanwhile, there were marked increases in the number of those participating in joint affairs with other communities within a year, and in the number of trips to discuss with local officials or attend public meetings.

76. **Other Social Development Opportunities.** In the FGDs, women in Bucloc, Abra, stressed that the road improvement favored their search for marriage partners since most men within the community were relatives and were therefore not eligible. In another FGD in the road corridor, the president of the Senior Citizens' Association lauded the rehabilitation of the road as it now enabled the elderly to travel to Bangued (capital) to process papers for senior citizen's cards, as well as join community celebrations in *canaos.*[50]

c. Institutional Development Opportunities

77. The greatest institutional benefit resulting from road rehabilitation is the improvement in communication facility for all the provinces. For example, the improvement of the Manabo-Boliney road facilitated the construction of a mobile phone cell site in Boliney, Abra. The cell site provides cheap real time communication to the local people through access to text messaging. This has been advantageous not just to individuals and to the households, but more especially to the local government of Boliney in terms of governance and maintaining peace and order. For once vulnerable sites like Boliney and Bucloc, the access to communications wards off the threat of insurgency. Other institutional benefits that the respondents acknowledged include the

[50] An important socio-religious ceremony where ethnic communities of Baguio annually come together to celebrate.

quickness of response from government agencies due to better access, the increased visibility of local government leaders through more frequent visits, the access to technical services and assistance from the government (in cash or in kind), and government extension workers among others. As mentioned earlier, the increase in social interaction and membership in various organizations also helped shape the development of institutions in those areas.

d. Environmental Concerns

78. Reported negative environmental impacts due to road improvement include increased garbage in the road corridors, poor air quality due to dust and smoke, and noise due to more vehicles plying the roads. Local perception suggests that the benefits from road improvement far outweigh negative impacts. In Abra, local people manage well the traditional natural resource management practice of *lapat.*[51] However, there are indications of loss of biodiversity in the two other provinces.

3. Key Challenges

79. **Operation and Maintenance.** As in most roads, O&M is a key concern. Under Philippine laws, rural road maintenance is under the jurisdiction of LGUs. However, given the low budget[52] allocated for road O&M, improving and maintaining road conditions receive less priority. In many areas, the responsible LGUs (barangay or municipality) have to seek support from the provincial LGUs to undertake repairs, particularly major ones. Due to the slow bureaucratic process, that takes time. In addition, rural road classification is also an issue in the Philippines as there are roads that are classified as provincial or municipal, or even national, but were rehabilitated and considered as FMRs. This makes O&M accountability more challenging. Nonetheless, based on the survey, 75% of the respondents who are also residents of the area are willing to provide free labor for road maintenance. The responsible LGUs need to be creative enough or have the political will to raise or allocate funds intended solely for road maintenance.

80. **Marketing Agricultural Produce.** While project roads created additional income and social opportunities for the beneficiary communities, there is still substantial scope for improvement. Lack of storage facilities, low output prices due to a glut of vegetables in the market, and unavailability of transportation when needed pose major challenges to local people.

4. Summary

81. The rural road improvements supported by the CHARM Project have benefited wider communities and served traditionally underserved, disadvantaged, and isolated communities and linked them to key market and employment centers. Increased agricultural production and income opportunities have improved the food security situation in the project areas. The roads facilitated improved access to markets and lowered transportation costs for people and marketable commodities. Travel time to market centers decreased by at least 20% and postharvest losses have been reduced significantly, up to half in some cases. A number of people found employment during road rehabilitation work under the project.

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[51] *Lapat* controls any unwanted expansion in the crop area, especially if they have negative implications for the community. *Lapat* is an indigenous natural resource management system that is peculiar to Boliney and Bucloc.

[52] The budget from road maintenance is usually obtained from the 20% allocation for social services. This means that the O&M budget has to compete with other demands from the social services sector.

82. Business and investment opportunities, however, have been primarily in the areas of small-scale food processing, access to microcredit, trucking and transport services, and the entry of service providers such as mobile phone (cell sites) and cable operators. Income estimates before and after road improvement showed a 35% increase in real terms, and this is supported by the quality of household assets and change in ownership. Respondents said that the expenditure pattern was also affected, as people purchase more on the basis of wants than of needs. The VCA shows improvements in backward linkages to production systems (inputs and credit) and forward linkages to markets (collectors and processors), leading to higher net returns to the farmers and lower cost structure for the processors. Farmers gained most from the road improvement, followed by a small group of truckers and transport providers and primary produce processors. However, investment in transport and processing largely was led by larger and wealthier farmers and entrepreneurs who also provided credit for crop production, particularly of cabbage, potatoes and bell pepper.

83. Women also benefited from improved roads, particularly in marketing their surplus production. They thus were able to enter the marketing network, run small enterprises or businesses, and access health services. The risk-sharing arrangement in the Mountain Province was a unique achievement under the Project. Social interaction particularly among women and the elderly was noticeable along with increased public participation in community development activities and organizations. Children felt safer in going to school without worrying about snake bites and muddy trails. Roads also provided better linkages for people in the road corridor to service delivery institutions and administrative offices. Overall, roads have been widely used by local people including ethnic minorities and the poor. However, availability of funds for O&M on a sustainable basis remains a major challenge for local barangays to keep roads in good condition. There is substantial room for improving and strengthening the value chain of marketable commodities in the project area by involving private businesses and processors.

D. Loan 1667-PHI(SF): Agrarian Reform Communities Project[53]

1. Background

84. The Agrarian Reform Communities Project (ARCP) aimed to reduce poverty in 140 agrarian reform communities (ARCs) and reach 28,000 agrarian reform beneficiary households. It had four components: (i) project management and capacity building, (ii) rural infrastructure, (iii) development support, and (iv) land survey. Each component was expected to propel impacts on production and productivity, and increase income to reduce the depth of poverty. The Department of Agrarian Reform (DAR) was the Executing Agency. ADB approved the project in December 1998 and contributed $93.2 million of the total project cost of $168.85 million. The loan closed in December 2008, almost 3 years after its original completion schedule. Government budgetary uncertainties caused by delayed budget approvals, delayed accounts clearing by LGUs, lack of timely funds flow, construction delays of rural infrastructure projects, and capacity problems in some LGUs[54] collectively contributed to implementation delays.

85. For the SES, eight FMRs in Davao del Sur and Iloilo provinces were purposively identified in consultation with the staff of DAR.[55] The rating conditions based on the results of

[53] ADB. 1998. *Report and Recommendation of the President on a Proposed Loan to the Philippines for the Agrarian Reform Communities Project*. Manila.

[54] The reasons for delays were cited in the Government's Project Completion Report (PCR) and were confirmed with ADB staff. ADB's PCR is yet to be prepared.

[55] In Iloilo—(i) San Geronimo-Lipata-Seneres Circumferential Road in the municipality of Barotac Viejo consisted of the concreting of the Junction National Road to San Geronimo Lipata Road (,1.13 km) and the Señeres Road (1.30

sustainability monitoring also played an important role in road selection.[56] It should be noted that the chosen roads were partly financed by the LGUs and are now parts of longer roads. Two commodities were selected for VCA in each road corridor based on (i) current production area, (ii) possibility for scaling up, (iii) number of residents involved, (iv) consistency with priority programs of the national Government, and (v) volume of production. Secondary data[57] supplemented the primary data collected. The case study used data from the survey of 400 households, 8 FGDs, 10 VCAs, and 24 key informant interviews of beneficiaries in the road corridors.

2. Contribution to Inclusive Development

86. The household survey respondents included 47% and 62% of the respondents from Iloilo and Davao del Sur, respectively, belonging to the disadvantaged groups.[58] The ethnic minorities are concentrated in Davao del Sur (16%) and belong to the B'laan group, who are migrants from Sarangani Province. As per the 2006 monthly poverty threshold of the Philippines, at least 89% and 82% of the respondents from Iloilo and Davao del Sur, respectively, are considered poor.[59] The selected roads financed under the Project facilitated the movement of goods and services in the local communities. It also reduced travel time and allowed the entry of change agents and service providers such as government extension workers and private investors. The number of buyers and traders also increased, to the benefit of farmers. The roads provided opportunities for partnerships between big companies and cooperatives with the farmers as well as opened up employment opportunities for them. Although the growth of business enterprises was limited to small stores, farmers especially women learned to integrate to boost their earnings. The respondents perceived that their quality of life was better after road improvement. Finally, the roads also paved the way for improved access of social services, improved organizational memberships, and better governance.

a. Economic Opportunities

87. **Employment Opportunities.** Initially, the rehabilitation of roads provided employment to 53% of the households, many of whom are members of cooperative societies. The partnerships between farmers and investors such as with 80% of the farm laborers in Hagonoy who belong to poor households gave rise to additional employment opportunities. In Sulop road, the profit-

km); (ii) Sitio Proper—Basinang FMR (2.65 km) is an all-weather road also in Barotac Viejo with spot concreting in some critical areas; (iii) Poblacion—Misi Road (2.34 km) is in Lambunao, Iloilo; and (iv) Iloilo and Pughanan-Panuran Road(7.04 km) is a gravel road with spot concreting also in Lambunao and stretches from Barangay Misi Junction all the way to Sitio Proper in Barangay Panuran; In Davao del Sur—(i) Hagonoy FMR (4.3 km) is a gravel road In the municipality of Hagonoy; it connects the barangay to the center of the municipality; (ii) Poblacion-Sulongvalley Road (6.3 km) is a rehabilitated road in the municipality of Sulop that connects the community to the municipality's Poblacion; (iii) Sitio Katigbao-Baluntaya Road (2.7 km) is an all- weather road in the municipality of Don Marcelino that connects Baluntaya to the Don Marcelino-Mati Provincial Highway junction; and (iv) the National Highway to Sitio Patulangon Road (1.85 km) is also in Don Marcelino.

[56] One of the key features of the loan was the requirement of subproject agreements between DAR and the recipient LGUs, which mandated the establishment of a special trust fund for infrastructure maintenance after project completion. DAR was expected to conduct a periodic monitoring of LGU compliance in maintaining the road for 5 years. Since the road fund was a grant, LGU noncompliance led to a conversion of the grant into a loan that would be recovered through a deduction in the annual revenue allocation of the concerned LGU.

[57] Secondary data sources included (i) project documents (feasibility studies, status reports, and other reports of such nature);(ii) internally generated reports of existing enterprises in the area; and (3) data collected by relevant government agencies, including historic production data, prices, pertinent laws, rules, ordinances governing the conduct of business and support.

[58] This includes the landless, ethnic minorities, and the handicapped.

[59] Based on monthly incomes below the rural poverty threshold in the Philippines, set at PhP6,211 for a family of five as of 2006.

sharing arrangement for mango production ensured paid employment for the farmers while waiting for the harvest season. The increases in crop production generated seasonal jobs in rice production, which was estimated at 91-day jobs for every additional hectare tilled. There has been no job displacement after road construction, except for the boatmen from Hagonoy who used to transport people and goods across the river.

88. **Reduced Travel Time and Transport Cost.** An improvement in market access for farmer beneficiaries in Davao del Sur and Iloilo was reported by 92% and 76% of the respondents, respectively. The main benefits cited were quicker access to input and output markets and more frequent visits by more traders to the local villages[60] The farmers were able to market their produce or buy farm inputs using public transport. According to 76% of the respondents, the roads not only made the transport of goods easy but also increased mobility and facilitated the entry of more input providers. The average travel time across all study roads to access markets was reduced by almost 60% (from 138 minutes to 56 minutes). The experience of the Hagonoy road in Davao del Sur exhibits the ease of transporting farm outputs. Movement before road rehabilitation was either on foot or by motorcycle. To reach town, people crossed the river using a bamboo raft; when the water level was low, they used a *kariton* (sled) to transport their crops. Travel time took almost a whole day to and from the markets. After road improvement, travel in the area became easier because of the availability of transport vehicles. Trucks move agricultural products from the farms. During rainy season, people cross the river on a bridge constructed to connect the village to the town. As a consequence, the quality of the marketed products is also much better and postharvest losses have been significantly reduced. In the corridor of the Baluntaya road in Don Marcelino where ethnic minorities such as the B'laan tribe reside, crops produced were earlier moved on horse and carabao because big trucks could not travel on the road. Road improvement has enabled the B'laan community to move their goods to market faster.

89. After the road improvement, the cost of transporting agricultural goods by trucks decreased by one fourth (from PhP1,000 to PhP754 per trip) and by jeepneys by one sixth (PhP18 to PhP15 per trip). Newer and smaller trucks in the transport market stimulated competition, and VOCs went down for the older vehicles. The proportion of people, who walk and manually transport goods to the market and are typically from poor households, decreased from 35% to 8%. This has also meant that the share of transportation in total costs has increased, as reported by 82% of the respondents. Furthermore, the cost saving has not been passed on in terms of lower input prices because (i) farmers are locked in lease and profit-sharing arrangements at the production stage with a contractor who supplies all inputs, and (ii) fertilizer prices tend to vary widely as most of them are imported and hence are affected by foreign exchange rate fluctuations. Smallholder rice and banana producers tend to use their own stock of planting materials and do not benefit from input transport cost savings.

90. **Crop Production and Diversification.** Market access due to improved road conditions led to production increases and crop diversification. In Iloilo, the main agricultural products are rice, sugarcane, banana, and corn. After the road improvement, there was nearly a six fold increase in the production of vegetables, which are considered high-value crops. More than four fifths (82%) of the farmers in Davao del Sur and 60% in Iloilo observed that project roads contributed to production increments, which were facilitated by the introduction by agricultural extension workers of high-value cash crops, and other production-enhancing technologies and cultivation practices. Production improvements are well exemplified in Davao del Sur by a big shift from traditional rice to sugarcane and banana in the areas served by the Hagonoy road.

[60] Nearly 80% of respondents reported more buyers visiting their community after road improvement.

Road improvements facilitated the operations of big private companies. As a result, total banana production increased several fold. Most banana (97%) is sold to Lapanday Global Fruits. Total sugarcane production also increased significantly. All sugarcane is sold directly to Filinvest, Inc. In essence, in Davao del Sur, improved roads led to the emergence and expansion of new enterprises and successful contracts between the companies and the farmers.[61]

91. **Business Opportunities.** Overall, new business opportunities due to project roads have been limited mostly to local consumer goods store (convenience stores locally called *sari-sari*). These stores tend to be small with hardly any storage area. The survey data shows that 20% of the household respondents in Iloilo and 7% in Davao del Sur are engaged in small businesses and most of the 40 establishments interviewed are operating small sari-sari stores. Most of these stores had been established in the past 2 years after road improvement, and are made of light materials (bamboo and nipa [coconut leaves]) in Iloilo and of mixed materials in Davao del Sur. The businesses tend to be managed by the proprietors themselves and offer a convenient supply of a variety of consumer goods. Nearly two thirds (64%) of the business operators have realized increased sales and two fifths (41%) have increased their profits from the operation. A number of these businesses are still at the establishment stage and hence have yet to operate profitably. Investments have been very small due to the limited market for each store. A possible explanation for the restricted business opportunities may be the short lengths of the project road (1.85 km to 7.04 km) and the presence of earlier business establishments in the town capitals, which are readily accessible by road.

92. **Value Chain Analysis.** A common belief is that project roads are directly linked to improvements of commodity supply chains in places where these roads are located. The roads have generally facilitated easier access to inputs, movement of outputs, and choice of inputs and input suppliers, including availability of production credit facility. There are also some emerging examples of vertical integration and the entrepreneurial venture of the women in Lambunao, Iloilo. Before road improvement, a portion of the bananas produced in the locality was bought by a few traders/buyers who visited the area. After road improvement, the women joined hands and began to sell their bananas to other barangays and in the city, bypassing several traders that ply their area. The venture enabled the women to get higher profit margins (20%). Vertical integration[62] is also evident among rice farmers in San Geronimo, Iloilo, who sell their produce to their cooperative. The cooperative, of which the farmers are also members, has invested in mechanical dryers and collectively sells the product to the National Food Authority[63] or other buyers that offer a better price. In return, the cooperative receives patronage refunds and incentives from the National Food Authority. The results indicate that a proportionately larger chunk of incremental income is captured by traders and processors. This is evident in the case of rice production in Lambunao,[64] sugarcane,[65] and banana[66] (with the exception of

[61] It has also institutionalized more rational banana, sugarcane, and mango industries anchored on process integration from input acquisition to product marketing. However, given that the ARCP is an integrated project where provision of support services is included, increased production and crop diversification cannot be fully attributed to the roads.

[62] The process in which several steps in the production and/or distribution of a product or service are controlled by a single company or entity, so as to increase that company's or entity's power in the marketplace.

[63] The function of the National Food Authority is ensure the food security of the country and the stability of the supply and price of the staple grain, rice. It performs this function through various activities and strategies, which include procurement of paddy from individual farmers and their organizations, buffer stocking, processing activities, dispersal of paddy and milled rice to strategic locations, and distribution of the staple grain to various marketing outlets at appropriate times of the year.

[64] For rice production in Lambunao, the farmers get only PhP10−12/kg while the trader sells it at PhP30.00

[65] For sugarcane in Hagonoy, the farmers earn only PhP0.23/kg compared with independent truckers (PhP0.96) and millers (PhP12.00).

Lambunao). Insufficient capital and the inability of some farmers to collaborate (fragmented) to achieve economies of scale have been cited as difficulties in securing a better price for the farmers.

93. There are, however, contrary views. The perception is that project roads removed from landowners their decision-making rights over the land they own, particularly in cases where land is rented out for corporate farming, as in the case of banana production in Hagonoy, Davao del Sur. Although the land they own is suitable for producing high-value crops, farmer-owners, in effect, are relegated to become daily wage earners. Corporate farming to a large extent brings positive economic gains to the overall economy, but according to the respondents from poor households in particular, they are unable to benefit from their land. The farmers were provided with land purportedly to address the issue of their being poor as a result of their limited access to factors of production like land, and inequitable distribution of wealth.[67] In the case of the ethnic communities or the B'laan tribe who reside in Don Marcelino, Davao del Sur, the value chains for corn and coconut show that the community did not obtain significant benefits from the road. The production for both commodities in the area is very small; hence, only a few traders visit the area to buy the produce.[68]

94. **Investment Opportunities.** The improved road conditions encouraged a shift from low-value crops such as rice and corn to high-value crops such as *lakatan* (banana) and sugarcane along some of the case study roads. The shift is also fueled by the corporate investments either through leasehold arrangement, contract farming, profit sharing, or the provision of credit windows. The integration of corporate investors and the small farmers is expected to result in a strategic alliance founded on each party's core competence and resources. To the corporate investors, it is their finance, managerial expertise, access to their life-long attachment to the land they currently own. The investment in the areas of comparative advantage has promoted the economic growth of beneficiary communities. In effect, improvements of the road, the entry of private investments, and the additional agricultural activities have collectively increased the prices of agricultural land significantly as demonstrated by the eightfold increase (from PhP50,000/ha to PhP400,000/ha) in San Geronimo, Barotac Viejo. This has also created the opportunity for farmers to lease their land at a higher rate. Such factors have contributed to reclassification of some of the municipalities. For example, Hagonoy LGU has been elevated from fifth class to second class. In Davao del Sur, the project roads also facilitated access to utilities such as electricity, water supply, and television cable lines in selected communities.

95. **Household Incomes and Quality of Life.** Data limitation did not permit the SES to determine the extent of increase in household incomes[69] due to project roads, but 62% of respondents from Iloilo and 82% from Davao del Sur said that their incomes increased after road improvement. The increase is also associated with increases in income from remittances for one fourth of the Iloilo respondents, and the secure agricultural wages for farmer-laborers in

[66] Banana farmers get a value-added price of PhP2.00/kg compared with the trader's PhP13.00 and the PhP6 to PhP8.00 for wholesalers/retailers.

[67] The fact remains that after land distribution, they seem to be in a similar system. Many factors can explain the circumstances and highlight the need for more comprehensive interventions to induce development aside from creating or improving roads. Among the factors are (i) insufficient capital, (ii) progressive production technology, (iii) access to markets; (iv) lack of managerial expertise; (v) no bargaining power; (vi) limited flexibility of the human resource base to address the dynamic needs of the industry, (vii) demand for high risk taking activities, and (viii) high technical skills requirement. In essence, these factors exist with or without road improvement.

[68] As a consequence they have to travel to Malita or General Santos which is 30 km further than the market in Don Marcelino located only 12 km away.

[69] Based on the survey data, the average monthly household incomes for Iloilo and Davao del Sur respondents were PhP4,018 and PhP3, 588, respectively.

Davao del Sur. According to an Asian Development Bank Institute study,[70] 12% real increase in incomes and assets across ARCP sites was recorded from 2001 to 2003. Nonetheless, the SES survey involved questions that gauge improvements in the quality of life, using lifestyle indicators. The results revealed that roads contributed to changes in the lifestyle of beneficiaries. In Davao del Sur, people's access to power/electrical supply and the services of local water utilities/sources for potable water supply overwhelmingly increased between 81% and 86%, respectively, upon the entry of utility companies in the area.

96. In Iloilo, the majority of the respondents own their homes, most of which were made of light materials. But after road improvement, the quality of the homes significantly improved. Light construction materials were replaced by mixed materials (e.g., lumber and bamboo) and/or concrete and galvanized roofing. No such changes were observed in Davao del Sur project areas. However, the use of water-sealed and flush toilets registered a significant increase among the respondents in Davao del Sur. Home appliances and furnishings, as well as the number of motor vehicles owned by each family also increased. Although not all changes can be directly attributed it to the road project, the survey data show a consistent improvement in lifestyle changes. Nonetheless, given the integrated nature of the project, attribution of benefits to FMRs has become a challenge. Data from the FGDs in Davao del Sur suggests that communities' exposure to larger and choice sets of consumption goods and services also means a decrease in savings and an increase in indebtedness.

b. Social Development Opportunities

97. **Social Services and Institutions.** The results of the household survey indicate that the main perceived social benefits attributed to the road project in the two provinces were improved access to health institutions (clinics), health services (barangay health workers), education (schools), information, and the increased frequency of social interactions within and outside the community. The respondents in Davao valued the enhanced opportunity to visit their friends and relatives and to have more time for leisure and travel due to the improved road. Improvements in access to social services for both provinces were evident in the reduction of average travel time (Table A5.3). The reduction in travel time to schools has benefited the children with reduced exhaustion, but roads have played little role in increasing school enrollments. The improved project roads showed increased use, particularly for periodic needs. For example, In Davao del Sur, before the project, most residents used project roads to go to market, school, and farms regularly, but they transported agricultural goods and visited health centers based on pressing need, which usually ranged from monthly to even quarterly. After the road rehabilitation, the most particular change is the number of activities on a weekly basis, indicating that traffic communication significantly improved. While the daily routine continues, trips to market and to health centers have become more frequent (weekly). According to health center staff, the average visits to health centers for a simple checkup have increased fivefold.

[70] Asian Development Bank Institute 2008. The Impact of Rural Infrastructure and Agricultural Support Services on Poverty: the Case of Agrarian Reform Communities in the Philippines. Asian Development Bank Institute Discussion Paper 110.

Table A5.3: Average Travel Time Before and After Road Improvement

Travel Purpose	Before Road Improvement		After Road Improvement		Savings in Travel Time (%)
	Respondents	Average Travel Time (min)	Respondents	Average Travel Time (min)	
School	230	73	246	47	36
Transport of agricultural goods/ inputs	148	171	169	65	62
Market	269	138	293	57	59
Farm	150	40	154	25	38
Health centers	190	58	206	33	43
Visiting friends/relatives	140	140	166	85	39
Local institutions	109	94	128	49	48

Source: SES Household Survey Data, 2009.

98. **Organizational Memberships and Gender Roles.** Overall, the survey shows a 20% increase in membership in various organizations (cooperatives, religious, women's, etc.) in both provinces. For the cooperatives, the increase cannot be fully attributed to the road as it was part of the capacity-building component of the ARCP. Besides, one of the stipulations before road rehabilitation started in 2002 was that the unskilled members of the community would be hired as construction workers but they should be members of the cooperative. Likewise, for the women's organizations, the increase cannot be fully credited to the road but may have been due to the capacity development activities under the ARCP. Nonetheless, the respondents observed that the presence of roads facilitated the transfer of information that assisted in increasing memberships and enhanced the level of participation and social interactions. The increase in the number of women members in various organizations is also indicative of the active role that they play in community affairs and development. Based on the survey data, women's participation in the different production cycles, particularly in the marketing of farm products which is typical in agricultural communities in the Philippines, substantially increased.

c. Institutional Development Opportunities

99. **Governance.** About 63% of the respondents stated that improved roads made access to legal and government institutions easy. The same is true of technical service delivery institutions. Due to Improved mobility, development workers from different government agencies can make more frequent visits to the local communities and assist them to organize themselves into cooperatives that provide some form of leverage in dealing with outside traders. Participants in FGDs and key informants perceived improvement in governance, particularly in Iloilo, as reflected in (i) the increased visibility of local government leaders and (ii) the shorter response time of government agencies. In Barotac Viejo, the project road led to the increase in the frequency of visits of government extension workers who brought new farming technologies as well as conducted regular training sessions on values education and gender issues. People in the community learned to apply new knowledge to generate additional income for their households and strengthen their community organizations. Local people began to enact statutes for the benefit of their respective communities.

100. **Change Agents.** The roads also partly contributed to the entry of other NGOs in the community such as the Taytay Sa Kauswagan Inc. in Iloilo. The NGO extends loans to community members and at the same time instills values such as, but not limited to, the entrepreneurial drive, integrity, savings propensity and honor. Such knowledge, skills, and values are expected to empower the communities to be more confident and make informed choices. In Davao del Sur, the topmost benefit attributed to the road is the entry of utility companies providing electricity and water in the isolated communities. In retrospect, there were no power and adequate water facilities before the road was rehabilitated.

d. Environmental Concerns

101. No major environmental degradation due to road improvement was reported, except for the worsening garbage problem on the roadside and noise pollution. After road improvement, the Barotac Viejo LGU in Iloilo formulated legislation supporting organic farming, prohibiting burning of rice straws, and supporting environment-friendly rice production alternatives.

3. Key Challenges

102. **Benefit Distribution.** There is a need to improve equitable distribution of benefits to local people with due attention to disadvantaged groups because, at present, benefits are skewed in favor of traders/collectors and transporters. For the ethnic communities, the benefits from the road are very limited: only a few buyers come to their area despite the improved road because the volume of their production is low. As a result, members of the ethnic community have to travel to a central market 30 km away from their villages to sell their produce at higher prices. This means longer travel time and higher transportation costs for smallholders. As noted earlier, at least 86% of total respondents are classified as poor and any improvements directed to them will have a major impact on their quality of life.

103. **Scope for Improving Value Chain.** At present, improved roads have had very limited impact on the value chain of some commodities produced locally, and both backward and forward linkages are yet to develop. In addition, the agglomeration of producers, involvement of the private sector in storage and food processing, and improved efficiency in increasing the shelf life of perishable commodities are yet to be realized.

104. **Operation and Maintenance.** Road maintenance has always been an issue, especially for rural roads. Historically, funding is inadequate and O&M accountability is not clearly defined. Although the ARCP mandates the allocation of O&M for rural roads for 5 years after road completion, it is not a guarantee[71] that the road will be properly maintained during the contract period. Furthermore, classification of roads in the Philippines has made it challenging to determine the level of accountability among the different levels of LGUs. In addition, some of the roads tend to be a short part of longer road networks where sections had been constructed or improved by different funding agencies under differing conditions. Under the circumstances, the concerned LGUs face the challenge of finding a sustainable funding base to maintain the road.[72]

105. **Rapid Population Growth.** FGD participants cited one emerging challenge attributed to the ADB roads─concerns about rapid population growth fueled mainly by in-migration. Sixty-

[71] As of the last sustainability monitoring reports for the eight roads under study (as of June and December 2008), one was given a “poor” rating, implying that maintenance has been neglected.

[72] As a start, survey results indicate that the residents are willing to contribute some amount and labor for road maintenance.

four percent of the respondents from Iloilo cited that outsiders were attracted to the development in their area and started to move in and settle in the community. The migrants have their own beliefs, practices, and attitudes, which in some instances were initially not acceptable to the community. Alternatively, the new migrants found it difficult to accept the existing beliefs and practices of the local people. As in any migration issue, residents of a community may initially not accept strangers as the latter may further share in services provided by the government for existing residents and burden the institution. In essence, the concerned authorities need to seek measures to address communal harmony.

4. Summary

106. Road conditions have to some extent influenced the nature, volume, timing of availability, and quality of produce in all the areas in which existing FMRs have been improved. The magnitude of the impact has varied depending on the area's specific conditions, institutional and market linkages, as well as the social readiness of the community where these roads are located. Under the Project, rural roads facilitated improvements in the economic and social well-being of the members of the community. Market access through better product movements within and outside the community increased because of improved roads. Better access also resulted in increases in crop production and in diversification due to the introduction of new technologies, practices, information, and investments from private companies. Road works also provided temporary employment to family members of 53% of household respondents. Travel time savings (almost 60%) generated by improved roads and more efficient transportation systems resulted in better quality products and reduced postharvest losses. This was very evident in the case of the rural roads in Hagonoy and Don Marcelino in Davao del Sur.

107. The entry of some private investments created new employment opportunities in the area. Likewise, private sector involvement introduced partnerships with local farmers in the form of lease arrangements, contract farming, profit sharing, and the provision of credit facilities. Road improvements increased the value of land eightfold as in San Geronimo, Iloilo. Transport cost savings of 20% to 33% have translated into better profit margins for farmers, but proportionately more to traders. However, there is no substantial evidence that transport savings translated into lower input prices.

108. Anecdotal evidence suggests that the number of actors in the value chain increased after road improvement. Backward and forward linkages to agricultural production were strengthened for all types of the households as demonstrated by women farmers in Lambunao. However, the benefits have been limited and suggest that improved roads do not always guarantee higher income unless supported by allied services, including strengthening of market structure and increased efficiency in the value chain of the relevant commodity produced locally. When production arrangements are contractual in nature, benefits from road improvements largely accrue to the traders and larger businesses rather than to smallholders.

109. In the social context, project roads have enabled better access to and use of health services and education (schools) for the children. Health workers and government extension workers raised the frequency of their visits to the area, ensuring sustained health and social benefits to all members. Roads also contributed to increased social interactions that may have led to information dissemination and increase in organizational memberships by 20%. Likewise, roads paved the way for the entry of utilities (electricity and water) to the community. The enhanced role of women is also evident in the increased membership in women's organization and their role in marketing agricultural produce and decision making. The ethnic minorities, represented by the B'laan tribe also benefited as they are able to market their products more

frequently and in better form or quality. However, given that the volume of production is still too small, they are yet to benefit from potential opportunities constrained by other factors.

110. The roads increased the visibility of local government agencies in the community. Response times are shorter and services are better than they were before the road improvements. However, challenges remain in achieving production efficiency and equitable distribution of benefits, development of backward and forward linkages, proper garbage disposal and elimination of noise pollution, maintaining social harmony between longtime residents and new settlers, and finding a stable mechanism to fund O&M of roads.

E. Loan 1564-VIE(SF): Rural Infrastructure Sector Project[73]

111. The Project's overall objective was to enhance agricultural and off-farm production, improve personal incomes, improve access to markets and basic services, and reduce poverty through the improvement of basic infrastructure. It had three components: (i) rural civil works, (ii) project management, and (iii) subproject preparation assistance. The activities under the first objective included rehabilitating or building critical rural infrastructure, such as roads between communes and between communes and district centers and alignments to link the national network with associated bridges and culverts, small-scale irrigation schemes, rural water supplies for safe water, and markets. The Project was executed by the Ministry of Agriculture and Rural Development and implemented by 23 provincial peoples' committees (PPC) of the 23 provinces. It was approved on 23 October 1997 and closed on 27 September 2005, with 9 months' delay. Total project cost was $151.06 million. ADB financed $94.58 million and Agence Française de Devéloppement funded $14.78 million. Rural roads alone accounted for $73.96 million, 49% of the total project costs. The project completion report was circulated to the Board of Directors on 4 October 2006, and it rated the Project as *satisfactory*.

112. The SES covered 4 of the 23 project provinces—Ben Tre, Kon Tum, Quang Tri, and Lao Cai. In each of the four, one road segment was randomly selected from a list of completed rural roads.[74] In all four cases, existing roads were widened and black-topped to facilitate vehicular movement. Improvement of the roads was completed between 2002 and 2004; hence, they have been accessible for nearly 5 years. According to the provincial authorities, the local communes prioritized the roads for better connectivity to the major centers of economic activities. Reportedly, the roads significantly reduced travel time and transportation costs, and facilitated the mainstreaming of ethnic minorities. The contribution to ID was evaluated in a case study involving a survey of 200 households, 4 VCA, 8 FGDs, and 18 key informant interviews. The survey respondents comprised 101 Kinh/Chinese (50.5%) and 99 ethnic minority households (49.5%).[75] Of the 200 households, 79 (39.5%) were HFH and 121 (60.5%) were classified as poor. The SES also used relevant data from other sources.

1. Economic Opportunities

113. **Employment Opportunities.** On average, 89% of the respondents from all groups thought that the project roads had helped household members with off-farm employment opportunities. Significant increases in roadside shops, restaurants, and handicraft production

[73] ADB. 1997. *Report and Recommendation of the President on a Proposed Loan to the Socialist Republic of Viet Nam for the Rural Infrastructure Sector Project*. Manila.

[74] Phuoc Long-Thach Phu Dong in Ben Tre (15.5 km), Tan Canh-Mang Sang in Kon Tum (10.0 km), Route 68 Cho Can-Bo Ban in Quang Tri (23.0 km), and Bac Ha-Simacai in Lao Cai (28.0 km).

[75] Ethnic categorization is based on the standard differentiation used by the Government and development partners in Viet Nam, with the broad groupings of Kinh/Chinese and ethnic minority.

were noted. In addition, due to the improved access to markets, a significantly greater number of households chose self-employment, particularly through increased involvement in livestock, aquaculture, vegetable, and fruit production. There was a modest increase in the households employing hired labor for those undertakings. Residents in the road corridors were able to commute longer distances to work due to the project road. Key informants and FGDs indicated that household members in the poorer, remote, and upland areas benefited from labor-based employment opportunities. Overall, 63% of the study respondents thought that the road improvement helped remarkably increase employment or working time of household members, while another 36% felt that the increase was only modest.

114. **Reduced Travel Time and Transportation Costs**. The project roads significantly contributed to reductions in travel time and transportation costs, although to a varying degree based on location and proximity to market centers. SES findings reveal that, on average, travel time was reduced by 40%–50%, while unit transportation costs declined by 20%–30% with road improvement. Nearly 34% of the respondents thought that the project roads slightly reduced the prices of consumer products, while 61% realized substantial price reduction Producers saw a substantial increase in farm gate prices. For example, in Ben Tre, the road used to be only 1.8 meters wide and very muddy during 6 months of rainy season and vehicles got stuck for long hours. All agricultural produce (coconut as a main crop) and inputs were transported by only two operational ferries through waterways. The FGD results indicate that the cost of transportation was reduced by 50%, and the difference in farm gate and market prices was reduced from 30% to 10%.

115. **Business Opportunities**. The corridors of the study roads are dominated by farming communities. The household survey indicated that 49% of the households were producing rice; 58%, vegetables or other annual crops; 43%, fruits; and 9%, other perennial crops. Nearly 32% were involved in livestock production, followed by 22% in forestry and 6% in nonfarming activities. The structure of the local economy has remained more or less the same as before road improvement with some adjustments. Proportionately more households were in livestock production than before road improvement. About 62% of rice, 73% of vegetables and other annual crops, 86% of fruits and other perennial crops, 85% of livestock, and 78% of aquaculture and other nonfarm products are sold in the market by the producers.[76] Interestingly, almost all respondents, irrespective of group, said that the volume of produce sold increased after the road improvement. Nearly 23% of the respondents said that without road improvement, a only a smaller quantity of their produce would sell, while 75% thought that the volume of sale would not have changed, but they would have incurred higher transportation costs. This is partly associated with the fact that 61% of the producers sold their produce at farm gate in 2008. The project roads, however, promoted traders'/collectors' visits to producers' homestead to procure goods. The road also generated competition among the traders/collectors, a large number of whom are now more active than they were before road improvement.

116. The procurement of inputs was not a problem before road improvement as 63% procured from suppliers visiting the homestead. However, there has been a noticeable increase in the number of input suppliers coming to the homesteads due to the improved road conditions. If the road had not been improved, 22% of the respondents would have bought smaller quantities of inputs while 75% would have continued to purchase the same quantity but at a higher price. This situation is also associated with transport ownership. In 2009, 76% of the ethnic minority households transported inputs on bicycles, and 14% on motorcycles. In contrast, 48% of the Kinh/Chinese transported inputs by bicycle, and another 48% by motorcycle. Three

[76] Based on the imputed value of production.

fourths of the poor households used bicycles, and one sixth used motorcycles, compared with 45% of the Kinh/Chinese using bicycles, and another 45% using motorcycles. Almost all traders used the project roads to reach their clients. Similarly, 24% of the households reported using the project road to go to a processing facility, while 22% did their processing in their homestead. The average distance to a processing facility is 3.24 km. Among the ethnic minorities, only 11% required processing outside the homestead. Only 16% of the poor compared with 36% of the non-poor households had product processing needs. The improved road facilitated the mobility of wage earners.

117. Proportionately more households belonging to ethnic minorities, HFH, and poor households are able to hire some quantity of hired labor. According to 63% of the respondents, project roads helped them access improved farm production technologies and skills, and another 35% felt that the road's contribution to accessing technology was modest. No significant difference was observed across ethnicity and sex of the household head. However, proportionately fewer poor held similar views compared with non-poor respondents.

118. The project roads increased the volume of traffic and the number of vehicles and motorcycles plying the roads. This means that road use increased substantially with improved conditions. Similarly, ownership of motorcycles in particular increased by nearly 40%, which implies more efficient ferrying of people and goods from one place to another.

119. In most communes in the road corridors, road improvement resulted in an increased number of services such as restaurants, cafes, traders, and sales agents. According to the participants in the FGDs, on average 20–30 jobs were created in each commune.

120. **Value Chain Analysis.** The results from the participatory value chain analyses suggest that the project roads significantly contributed to the value chain of commercial commodities produced in the road corridors. In Ben Tre, the improved road resulted in (i) 20% reduction in transportation costs for traders and producers, (ii) increased coconut yields by 15%, (iii) conversion of unproductive sugarcane land to coconut plantations, and (iv) increased producers' margin due to access to market information and ability to negotiate with traders more effectively. The road has also created about 200 home-based jobs in handicrafts based on coconut palm stems, providing added cash income. The number of traders increased from 4 in 2004 to 15 in 2009. The poor, in particular, benefited from reduced transportation costs and higher product prices; while the economically well-off and medium-income households benefited from land conversion from sugarcane to coconut palm. Poor women in particular benefited from handcraft employment.

121. In Kon Tum, the improved road gave price incentives leading to about a 20% increase in cassava yield. The main beneficiaries are the households closer to the roads. A number of traders realized steady business growth; hence, some of them have relocated in the road corridors. Before road improvement, producers used to sell 20% of the fresh produce in the local market and 20% to local processors. The remaining 60% used to be sold to local traders who collected from farmsteads. The produce was mostly used as a livestock feed or sold to province-based industry for cassava power processing. After the road improvement, the marketing structure changed significantly and processors have assumed a major role in the value chain. The processed product is now even exported to the People's Republic of China, Malaysia, and Japan. Due to the commercial sensitivities involved, the traders opted not to reveal their margins, but said they have good margins.

122. In Quang Tri, rice and perennial trees for paper mills are the main commercial commodities benefiting from road improvement. The project road improved access for traders and collectors. As a result, the number of traders, including those from other districts and provinces, doubled in the past 5 years. The price differential between farm gate and market price was reduced by 50%.[77] In the same province, road improvement benefited even the economically well-off households associated with perennial tree crops for paper mills. Road improvement enabled paper mills to procure wood using large trucks. This has resulted in the expansion to unused land of the plantations of scattered trees (keo and tram) for the paper industry. Local estimates put the expansion area up to 600 hectares. Maize production is the primary beneficiary from road improvement in Lao Cai. The project road has allowed vehicle access year-round and improved access to markets. Since the road was upgraded, nearly half of the maize area is now planted to improved and hybrid varieties. All harvested hybrid maize is sold to the livestock feed industry.

123. **Diversified Livelihood Opportunities**. Improvement of the roads under the Project particularly helped poor households in diversifying their livelihood opportunities. In Quang Tri, livestock became the second important source of cash income for the local people, particularly the poor.[78] The road improvement greatly facilitated vehicle access. As a result, pig traders visit twice a week to buy pigs, and poultry birds can be sold at any time in the local market or to the traders. In Lao Cai, big trucks from other provinces are able to come to the area and purchase cattle and buffaloes from the Can Cau commune cattle market that operates twice a week.

124. **Investment Opportunities**. Improved roads also facilitated access to finance in the road corridors. Evidence shows that subsistence households can now engage in small trading as well as produce commercial commodities instead of, or along with, subsistence crops. The demand for land in the road corridor also increased substantially as reflected by the price increase of by as much as 200%–300%. Even the price of residential land in the villages increased by 30%–50%. Economic opportunities prompted the use of unused land. For example, idle land was used to expand coconut plantations in Ben Tre and for planting tram trees for paper mills in Quang Tri. In Ben Tre, a coconut fiber processing enterprise was established right after completion of the road improvement work.[79] However, the roads have not yet attracted any other significant public or private investors. This is not surprising as the project roads targeted improving access for remote and mountainous regions and areas with high poverty levels.

125. **Household Income and Expenditure**. In 2009, overall annual household income for the respondent households was dong (D) 24.49 million (D4.60 million per capita). Income from cropping accounted for 73.1% of the total income, followed by 9.0% from livestock and aquaculture, 8.6% from agricultural wages, 8.9% from nonfarm-related wages, and 0.5% from remittances and transfers. There is, however, a substantial income gap across different socioeconomic groups. For example, ethnic minorities earned 46% less than Kinh/Chinese households and the poor earned 53% less than nonpoor households. Interestingly, HFH earned 7% less than HMH. Almost all households (98.5%) reported an increase in household income

[77] Per kg farm gate rice price used to be dong (D) 400 less than market price before road improvement. It has gone down to D200 per kg due to improved market information and access to more number of traders and collectors.

[78] Income from livestock, although small, is important for poor households that often tend to have little or no productive land and fewer providers of labor, and cannot rely on subsistence farming for cash income. Selling pigs or poultry birds provides cash needed, particularly for medical services during sickness, payment of debts, school fees, and purchase of fertilizers for crops.

[79] The processing plant employs 30–60 workers, giving them a monthly income between D0.8 million and D1.2 million.The enterprise uses local material and has forward linkages developed with factories in other countries. The fiber is transported to the companies in Ben Tre, Cho Lach, and Tra Vinh for export.

after the road improvement although, due to lack of baseline data and difficulty in recollection, the income levels prior to road improvement could not be established. An increase in income from various sources varied somewhat across the socioeconomic groups. Almost 90% of ethnic minorities realized an increase in cropping income compared with 99% of Kinh/Chinese households; 92% of the poor experienced higher cropping income compared with 99% of non-poor households; and 92% of the HFH also realized similar benefits compared with 96% of the HMH. A higher number of ethnic minorities and poor households reported income increases from livestock and aquaculture activities compared with their respective counterparts. A higher number of ethnic minority, poor, and HFH also reported an increase in income from off-farm activities.[80] IED's indirect estimates suggest that 9.5% of the household income increase is attributable to road improvement, while other factors including off-farm income opportunities, improved agricultural technologies, and better farm management practices may have contributed to the remaining income increases.

126. An analysis of expenditure for 2008 shows that 76% of household expenditures went to consumption, and the remaining 24% went to production and nonproductive assets. Similarly, 71.0% of consumption expenditures was on food, 5.0% on health, 7.6% on education, 7.9% on social events, and 8.7% on other consumption items, including utilities, transport, and communication. The poor, HFH, and ethnic minority households spent a larger share of their consumption expenditure on food—79%, 76%, and 75%, respectively. As a result, the same households also spent far less on other consumption items. Overall, per capita consumption expenditure for the ethnic minority was 33% less than for Kinh/Chinese households; for the HFH, it was 10% less than in HMH; and for the poor, it represented 48% less than for the non-poor households. The pattern of nonconsumption expenditure was substantially different for the poor households, which spent far less on productive assets compared with non-poor households, and used nearly 73% of nonconsumption expenditure on nonproductive assets compared with less than 5% spent by non-poor households on similar items.

127. Similar to household income, expenditure before the road improvement could not be obtained due to problems with recollection and lack of baseline data. However, 93.5% of the households interviewed experienced increases in real terms (92% of ethnic minorities vs 94% of Kinh/Chinese, 94% of HFH vs 93% of HMH, and 92% of the poor vs 96% of the non-poor households). A smaller proportion of ethnic minority, HFH, and poor households reported increased expenditure after road improvement compared with their respective counterparts. This is not surprising because these groups also had substantially lower household expenditure as well. IED's indirect estimate suggests that an 8.3% increase in household expenditure is attributable to the project roads.

2. Social Development Opportunities

128. **Education.** Improved roads facilitated travel to the schools. About 95% of the survey households had at least one or more members attending school during the past 12 months. Almost 98% of the respondents suggested that children would have continued to attend school but would have faced hardships in traveling to school.[81] They would have spent more time in traveling to and from the centers of learning. Nearly 77% of the respondents considered road improvement to be very important, while 23% felt that it was important for commuting to schools. Although project roads have had no role in increasing school attendance, key informants reported that school dropout rates declined after road improvement. In Ben Tre and Quang Tri,

[80] This includes agricultural wages, income from nonfarm sources, and transfers/remittances.
[81] No significant difference was noted across socioeconomic groups.

children can now go to lower and higher secondary schools on bicycles year-round and they save time and efforts particularly during rainy season. In these areas, 90% of the primary school children continued to lower secondary schools and 70% of the lower secondary school children moved on to higher secondary schools. As a result of good roads, more girls in the lower secondary school could also attend higher secondary schools.[82] In nonproject communes, more children had to stop schooling at lower secondary level or had to stay in town for schooling far from their homesteads. In Lao Cai and Kon Tum, attendance in higher secondary schools was less than 50%.

129. **Health.** With improved road conditions, 83% of the households were able to visit a health care center or hospital in the past 12 months. However, fewer ethnic minority and poor households visited health facilities compared with Kinh/Chinese and the non-poor.[83] Only 1.03% Kinh/Chinese, 1.56% HFH, and 1.50% poor households believed that without improved roads, their members would not have visited a health center. Road improvement was considered important and very important by 27% and 73% of the respondent households, respectively. They were unanimous in saying that road improvement contributed to reduction in travel time and increased utilization of health and medical services. In remote areas, households reported more frequent visits by health workers who provided information about disease prevention for both adults and children and child care. Health centers also reported an increase in the number of children immunized.

130. **Security**. None of the respondents felt that road improvement led to increased (i) theft or robbery, (ii) diseases including HIV/AIDS, or (iii) women and child trafficking. However, 15.5% had concerns about the traffic jams and accidents. Such perception was more prominent among ethnic minorities and poor households. Drug use and prostitution were brought up as road-associated problems by 1.6% of HFH, and 1.0% of the poor households. Participants during FGDs highlighted the need for guideposts, lights, and road markings to improve road safety in the road corridors.

131. **Social Events and Interactions.** The community-level FGD revealed that improved road conditions increased the frequency of social events such as traditional festivals and religious events. The events are highly appreciated particularly by the ethnic minority, poor, and women respondents because they provide valuable opportunities to meet, share information, and enjoy common interests. In Thach Phu Dong commune of Ben Tre, after road improvement, the local pagoda was upgraded and, as a result, many more local women attend pagoda services on religious days. Pagoda services were also used for communicating community information. Similarly, in Can Cau commune of Lao Cai, the market serves as a popular meeting place for the ethnic minority. With road improvement, visits to the market by ethnic minority women increased from one to three times a month. On the downside, project roads have led to the growth of internet gaming shops and drinking outlets about which respondents have expressed concern. According to them, children tend to be distracted from school and men spend more time in the local restaurants and bars, with less time for the family and children.

132. **Gender Roles**. Increased economic opportunities as a result of improved connectivity have enabled women to participate in market activities and, consequently, participate equally

[82] Respondents revealed that economic opportunities created by improved roads resulted in better living standard and parents could afford to send girls to school rather than having them engage in economic activities. At present, all communes in Viet Nam have a primary and lower secondary school and a higher secondary school within a radius of 10–15 km, except in remote areas, where only two to three higher secondary schools exist in a district.

[83] Seventy percent of the ethnic minority and 80% of the poor visited a health facility in the past 12 months. These figures were 96% for the Kinh/Chinese, and 87% for non-poor households.

with men in household decision-making, as well as in exercising control over resources. This has also meant that women are increasingly involved in labor-intensive farm activities such as sowing, weeding, harvesting, and marketing. Economically well-off households have been able to free up women from farming to some extent by employing seasonal workers.

3. Institutional Development Opportunities

133. Most residents in the road corridors have been using the project roads to seek services and guidance from various institutions. In early 2009, almost all households used the project roads to visit PPC and state agencies. However, the ethnic minority, HFH, and poor households visited much fewer times than their respective counterparts.[84] Kinh/Chinese households, on the other hand, made significantly fewer visits to State agencies compared with ethnic minorities (11.5 vs 49.4 visits per year). The poor visited State agencies 27 times in a year compared with 37 visits by non-poor households. According to the study participants, improved connectivity also increased utilization of the service of the commune cultural house and commune post office. It also helped local people in accessing market information so that producers are able to get better prices from their traders who visit them in the villages. The project roads led to increased visits to and by agricultural extension workers, livestock extension workers, health workers, and buyers for agricultural products. Increased visits have helped local people in acquiring new knowledge about farming practices, improved livestock care and animal health, reproductive health, HIV/AIDS, and prevention of other health ailments and undesirable social interactions. No clear indication could be ascertained regarding capacity building for local institutions, except for two communes in Quang Tri and Ben Tre, where the commune officials traveled more frequently to the villages to attend village meetings or special events, thus, enhancing the capacity of village leaders. Also, the number of provincial delegation to commune peoples' committees increased by 50% after road improvement.

4. Environmental Concerns

134. Half of the survey respondents thought that the project roads had no adverse environmental impact, while 43% noted that more began to experience a garbage disposal problem. The opinions on environmental concerns were consistent across all socioeconomic groups. Less than 3% mentioned reduction in forest cover, increased flooding and soil erosion problems due to road rehabilitation. It was also noted that the increased demand for land to expand the cropping area has posed a major threat in sloping lands, mostly used for maize and cassava. Such cultivation practice may not be sustainable.

5. Key Challenges

135. **Operation and Maintenance.** The O&M of project roads is assigned to the state-owned provincial-level road infrastructure company, which is responsible for maintenance of all roads at the province, district, and commune levels. The community and local authorities have no role in O&M and have no say in how the O&M function is managed. This is a major concern for local people because often the provincial allocation for road maintenance is grossly inadequate to meet local needs.

136. **Road Safety.** The improvement in road conditions also increased concerns about road safety. The increased volume of traffic, high speed of vehicles and motorcycles, and lack of

[84] The average number of visits in the past 12 months to PPC was 13.3 for Kinh/Chinese vs 7.3 for the ethnic minority, 12.2 for HMH vs, 7.4 for HF, and 7.5 for poor vs 14.9 for non-poor households.

awareness about road safety have led to a number of accidents in the road corridors. They could have been avoided with preventive measures and knowledge dissemination.

137. **Further Road Improvement**. Viet Nam's economic prosperity has created a high demand for rural roads as demonstrated by the increase in volume of traffic. Growth in the demand for roads is likely to continue and, in the not too distant future, several project roads would have to be upgraded in terms of both width and quality of construction to improve carrying capacity. There is a demand for road widening to facilitate use by larger vehicles and trucks in particular.

138. **Environment.** Although not so prominent at this stage, the increasing demand for cultivable land particularly in the mountainous region is likely to invite application of less sustainable practices leading to reduced forest cover and increased soil erosion. A major challenge lies in providing better income and employment opportunities for the local people through their involvement in the production of high-value crops and agroprocessing facilities.

6. Summary

139. The project roads were instrumental in creating economic opportunities through increased production of primary produce in the road corridors and enabled producers to procure production inputs and labor more efficiently. Transportation costs decreased by 20%–50% depending on the location and nature of economic opportunities, and travel time was reduced by 40%–50%. The roads also provided opportunities for a larger number of traders and collectors, and encouraged them to locate or relocate in the road corridor with increased marketing efficiency for both producers and traders/collectors. Improved road connectivity also led to more transparent market information, and producers are able to get fairer prices compared with what they received before road improvements. The price differential between farm gate and markets decreased substantially, thereby ensuring a larger margin for the producers. The roads helped establish forward linkages for some commercial commodities such as cassava, which is now exported to other countries. Additional businesses have emerged in the road corridors, e.g., input suppliers, retailers, food shops, restaurants, and internet gaming centers. There are more frequent visits by traders and collectors for procuring goods in the villages. The road has further contributed in facilitating travel to schools, health centers, and other service delivery and community organizations. There are also verifiable indications that these roads have permitted local people to increase and diversify their income sources. For example, the livestock sector has experienced substantial growth due to improved connectivity. Agricultural processing as a business adding value to the primary production is yet to develop in the project areas.

140. From the perspective of inclusiveness, ethnic minorities, HFH, and poor households also benefited in terms of economic, social, and institutional development opportunities from the improved road connectivity. The subsistence agricultural production system is moving toward commercialization, and ethnic minorities in particular are more actively participating in economic activities, including marketing and home-based small handicraft businesses. However, these disadvantaged groups have not benefited to the same level as their respective counterparts—Kinh/Chinese, HMH, and non-poor households. This is largely due to lower resource endowments and skills base. For example, expansion of cropped areas for coconut in Ben Tre, cassava in Kon Tum, and tram trees in Quang Tri mostly benefited only the economically well-off households who were able to invest in land expansion or conversion and had access to capital. Transport operators and service providers in all four study provinces also were economically well-off households. On the other hand, the poor and women in particular

benefited from fruit and vegetable production in three of the four provinces—Ben Tre, Kon Tum, and Quang Tri. None of the collectors or traders represented disadvantaged groups. A sustainable O&M system, road safety, cultivation on barren land, and limited carrying capacity of project roads have emerged as major challenges, which need to be addressed sooner than later.

F. Loan 3455-VIE: Provincial Road Improvement Sector Project[85]

141. The Project was expected to contribute to poverty reduction and economic growth by improving transport efficiency. It had six specific objectives: (i) improve the provincial road network on both social and economic grounds; (ii) provide improved access for the poor and disadvantaged groups living in rural communities; (iii) strengthen asset management capacity and maintenance programs of Viet Nam Road Administration (VRA), and the provincial departments of transport (PDOTs); (iv) continue institutional strengthening of VRA, and improve governance in the road subsector; (v) strengthen PDOT capacity to prepare, implement, and monitor resettlement and ethnic minority development plans; and (vi) promote private sector participation in the delivery of road infrastructure and maintenance. The Project comprised (i) a program including an investment plan and policy framework to improve about 1,600 km of provincial roads in 18 northern provinces; (ii) assistance to project management unit No. 5 and the PDOTs to strengthen their capacity to prepare and implement improvements to, and maintenance of, provincial roads; (iii) development and introduction of an action plan to implement a road fund scheme; (iv) assistance to introduce new regulations and further strengthening of VRA; (v) assistance to implement and monitor resettlement and ethnic minority development plans; and (vi) consulting services for preparing, implementing, and supervising civil works, preparing additional subprojects, and capacity building for PDOTs. ADB financed 70% of the $100 million project cost from the Asian Development Fund. As per the latest project performance report, the Project closed on 30 June 2009 after 30 months' delay, with two extensions.

142. Since the focus of the SES was on rural connectivity, eight roads in four of the 18 poor northern provinces (Vinh Phuc, Bac Giang, Tuyen Quang, and Yen Bai provinces) were randomly selected for the study. [86] The eight are all-weather, black-topped roads. They have been in operation for less than 2 years and hence are relatively new. They were constructed under the management of PDOTs. Their contribution to ID was evaluated based on a case study involving a survey of 200 households, 9 VCA, 26 FGDs, and 46 key informant interviews. The survey involved 72.5% Kinh/Chinese and 27.5% ethnic minority households;[87] 16% were HFH and 36% were classified as poor households. The SES also used relevant data from other sources.[88]

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[85] ADB. 2001. *Report and Recommendation of the President on a Proposed Loan to the Socialist Republic of Viet Nam for the Provincial Roads Improvement Sector Project*. Manila.

[86] Route 306 Lap Thach (9.6 km) and Route 307 lap Thach (14.6 km) in Vinh Phuc; Route 284, Da Mai–Song Mai (7.0 km) and Route 289 in Bac Giang (19.1 km); Route 185 Yen Son-Dheim hoi (44.7 km) and Route 188 (27.0 km) in Tuyen Quang; and Route Mau A–Tan Nguyen (16.6 km) and Route Quy Mong–Dong An (7.0 km) in Yen Bai.

[87] Ethnic categorization is based on the standard differentiation used by the Government and development partners in Viet Nam, with broad groupings as Kinh/Chinese and ethnic minority.

[88] Baseline and participatory rural appraisal surveys carried out under the project preparatory technical assistance; national surveys such as Viet Nam Household Living Standard Survey and National Census; provincial data and information from the Departments of Agriculture and Rural Development, Labor Invalids and Social Affairs, and Ethnic Minorities and Mountain Areas; surveys, benefit monitoring and evaluation studies carried out by the Project; participatory rural appraisals conducted during subproject identification; and other studies undertaken in the area for the project components.

1. Economic Opportunities

143. **Employment Opportunities.** Four fifths of the household members interviewed believed that the project roads assisted them with finding more off-farm employment. The perception was stronger among ethnic minorities and poor households than among Kinh/Chinese and non-poor respondents. However, no significant difference was found between respondents from HMH and those from HFH. Slightly less than half (46.5%) of the respondents also thought that project roads helped household members increase employment opportunities including working hours. An equal number thought that such contribution was only modest, and not remarkable. The response was consistent with the fact that 48% of the respondents also felt that project roads improved households' access to improved technology and skills sets remarkably. About 7.5% of the respondents, on the other hand, felt that the project roads had no contribution in creating such employment opportunities. Employment opportunities were largely associated with enhanced mobility due to improved road connectivity to markets and employment centers in addition to increased self-employment particularly in farming as a result of increased economic activities. The contribution of roads to employment opportunities, however, was not uniform. Fewer ethnic minority and HFH noted a remarkable increase in employment or working hours of the household members. In contrast, a larger number of poor respondents agreed that the roads had a remarkable contribution to employment. In fact, 8% of households were able to hire more outside labor for their business or production requirements.

144. **Reduced Travel Time and Transportation Costs.** The respondents generally agreed that travel and transportation costs were significantly reduced due to the project roads. A 10% reduction in transportation cost was identified by rice farmers in Vinh Phuc and bamboo culms and bamboo shoots in Yen Bai road corridors. Reduced transportation costs were also realized by peanut and dairy farmers in Vinh Phuc and Bac Giang, as reflected by the 100% increase in frequency of visits by collectors and traders to the villages. Reduction in travel time was 25%–50% depending on location. More importantly, in Tuyen Quang, respondents revealed that with project roads, they could bring pigs and poultry birds to markets or traders could easily come to the villages. Tuyen Quang rice farmers characterized the benefits as lower input costs, particularly of fertilizer, pesticides, and irrigation. Overall, 38.5% of respondents perceived that reduction in unit transport cost was significant, 48.0% considered it only modest, and 13.5% did not think that unit costs had gone down. The respondents' perceptions across socioeconomic groups were relatively uniform.

145. **Business Opportunities.** Cropping and livestock remain as the primary occupations of people living in the road corridor. The survey revealed that 45% of the respondent households produced rice, but sold only one fourth (in value of production terms) in the markets or to the collectors/traders visiting the villages. A slightly higher proportion was sold by HFH and poor households, presumably to purchase other consumption goods. Vegetables and other annual crops were produced by 37% of the households; half of the production (in value terms) was marketed. Slightly more than one fifth of the households (22.5%) also produced fruit crops and 18% produced other perennial crops. In terms of value of production, nearly two thirds of fruits and other perennial crops were marketed by the producers. Similarly, 69% of the households were engaged in livestock production, 9.5% in forestry, and 6.5% in aquaculture. Nearly 81% of livestock, 56% of forest products, 60% of aquaculture products, and 82% of other nonfarm products were also marketed.[89] According to the respondents, improved road connectivity played a major role in increasing the volume of sale.

[89] In value terms.

146. The ethnic minorities, HFH, and poor households sold a greater proportion of rice, vegetables, fruits, and other perennial crops, but a smaller proportion of other products compared with their respective counterparts. Sale of livestock exhibited a similar pattern across all three socioeconomic groups. A majority of the respondents felt that due to the project roads, they were able to produce and sell more high-value crops and nonfarm products. They also stated that, without the road improvement, the volume of sale would have been smaller and they would have had a longer travel time and higher transportation costs. One third of the producers procured inputs at their homestead, while the remaining two thirds procured them from suppliers in their own (53%) or other communes (14%). Without the project roads, 18% of them would have bought smaller quantities of inputs, while 81% would still have bought the same quantity but at a higher price and transportation costs. No significant differences were noted across the three socioeconomic groups.

147. The business opportunities created by project roads have been both farm- and nonfarm-based, but slowly but steadily more homestead-based small-scale consumer and agricultural input stores, restaurants, and bicycle repair shops are coming up along the road corridors. The roads increased visits to and from the agricultural and vocational training centers, for the producers and the staff involved in knowledge dissemination. The increases in the volume of passenger traffic and local produce also resulted in a substantial increase in the number of vehicles and transport operators as well as motorcycle ownership in the households. A number of new production enterprises have emerged—bricks and tiles, raw sugar, and dairy are noteworthy. Their number has nearly doubled from 42 to 78. Similarly, in mountainous communes, the number of business enterprises increased—particularly in the nontimber forest products, traditional herbs, and soybean milk—by more than 50% from 150 to 234. The increases are consistent across the four project provinces.

148. **Value Chain Analyses.** Bamboo shoots in Yen Bai province are collected both as a wild nontimber product and from planted bamboo. They are an important source of income for the poor households, especially during periods of food shortage. The bamboo shoot is boiled in the households before it is sold. It is consumed locally as well as transported to lowland areas in dried form. Collecting bamboo shoots is a family activity—women and children collect them near the edge of the forest while men and young people go further deep into the forest. The households, who are mostly poor, sell their produce to middlemen in the village so that they can have cash to buy food. The price of fresh bamboo shoot in the local market tends to be around D4,000/kg, and dried bamboo shoots can fetch up to D40,000 during Tet season. Before the roads were upgraded, 80% of the bamboo shoot collected by local people was sold to middlemen in the village, 15% was sold as dried bamboo shoot to mobile collectors, and the remaining 5% was sold as fresh bamboo shoot directly to the consumers. After the road upgrade, bamboo shoot collectors are able to get one third higher price (D4,000 /kg), and 60% is sold to middlemen in the village, 30% is sold as dried bamboo shoot to mobile collectors, and 10% is sold directly to consumers as fresh product. The middlemen are now able to process sour bamboo shoots, which sells for D20,000/kg, and sell the processed product to the retailers in the district and province or directly to the customers. As a result, local people are able to get a higher price and income by processing a large quantity in dried form. Processors have created a niche for themselves in the product processing and marketing chain.

149. Peanut is an important cash crop in Lap Thach of Vinh Phuc province. Participants in the FGDs observed that the road improvement made inputs easily available when required. The

result is about a 20% increase in crop yield.[90] With improved roads, farmers are able to sell at a more competitive price to the traders in the village, or they are able to hire a truck and transport peanut directly to the district market. The road also brought more frequent visits by candy makers looking for peanuts of the highest quality along with new varieties for this niche market. In most cases, producers grow peanuts under contractual arrangements with the traders. However, there are a few exceptions; some opt for direct sale to traders offering the highest price at the time of harvest.

150. In Dong Thinh commune of Vinh Phuc province, raising dairy cows is a main livelihood option for 20 households. In 2 years' time, with improved marketing opportunities and a stable price for milk, they nearly doubled their stock from 85 to 160 head. As a result of production increases, three intermediary milk collectors joined the market and invested in refrigeration to keep milk fresh. The milk company collects milk every day from the village. As a result of the road improvement, producers are receiving a better price (D8,000/liter). According to the respondents, the road alone would have contributed about a 10% increase in their profit margin.

151. The project roads created additional opportunities for the small households raising pigs in Tuyen Quang. The increase in the number and frequency of the visits by traders to the villages has created additional cash opportunities for local people. They are able to enter into contractual arrangements with local traders or slaughterhouses.[91] It is widely believed that with increase in income, local people are likely to improve their breeding stock and further enhance their income opportunities.

152. Overall, the contribution of project roads in the product value chains has been modest. It is largely due to improved connectivity leading to more frequent visits of traders and collectors, availability of production inputs, and increase in volume of production. Some product processing businesses have emerged. Since the project roads opened only 2 years ago, there is the possibility of their further contribution to the development of the value chain and key players in the chain.

153. **Diversified Livelihood Opportunities.** There has been limited diversification of livelihood opportunities other than livestock, particularly for the poor and ethnic minority households. However, there is some trend in intensification and specialization of production systems such as expanding the tram tree area for paper mills. However, such opportunities so far have been limited primarily to HMH, non-poor, and Kinh/Chinese households. In addition, a number of households, including disadvantaged groups, have or are in the process of moving from subsistence to commercial farming.

154. **Investment Opportunities.** Increases in economic activities stimulated by improved road connectivity have given rise to the demand for additional land for cultivation as well as capital needs. It was reported that previously unused land has been used to meet the demand. More than four fifths (86.5%) of the household respondents noted that road improvement had a positive impact on land and housing prices. On average, the common perception was that prices may have increased by 38%, with very marginal differences in perceptions across socioeconomic groups. Furthermore, one third of the respondents also felt that the road was likely to encourage them to open a small shop or operate a home business. This indicates that there are potential opportunities for the households in the road corridor in the near future. In response to economic opportunities, the project roads also have encouraged household

[90] In 2008, peanut yields ranged from 70 to 90 kg per sao. One sao is equivalent to 360 square meters.
[91] Some traders also have slaughterhouses and they capture 85% of the local pig market.

members to seek external finance. As of February 2009, 29.2% of the respondents borrowed from the Viet Nam Bank for Social Policies, 18.6% borrowed from other banks, and 9% also borrowed from other credit institutions. However, borrowing from nonformal sources was limited to only 9% from friends, relatives, and private moneylenders. Without the road improvement, more than half (56%) of the respondent households would have faced longer travel time and higher costs in seeking finance. The FGDs point to an increasing trend in lending activities in the project road corridors.

155. **Household Income and Expenditure.** Overall, the survey households earned D30.29 million in 2008 (D6.97 million per capita) with nearly equal share from farm and off-farm sources (49% and 51%, respectively). Income from cropping accounted for 59% of farm income and the balance came from livestock enterprises. Similarly, 70% of the off-farm income was derived from nonfarm activities, followed by 18.5% from wages, and 11.6% from remittances. The ethnic minorities earned 65% of farm income from cropping in contrast to the 56% of their Kihn/Chinese counterparts. Only marginal differences in income sources were found between HMH and HFH, and between poor and non-poor households. Ethnic minorities earned 22% less than the Kinh/Chinese and the poor earned 46% less than non-poor households. On the other hand, no difference was found in income between HMH and HFH. Interestingly, HFH earned 66% of their income from off-farm activities compared with 48% by HMH. The difference was largely attributable to differences in remittances and transfers as well as income from nonfarm activities. The poor also received a higher share of their off-farm income from remittances and transfers than the non-poor households (16.8% vs 10.8%). There was near consensus that incomes from cropping and livestock had increased due to the project roads, while an overwhelming majority of the respondents agreed that roads positively contributed to increases in wage and nonfarm incomes (87% and 73%, respectively). Nearly one in three respondents also felt that remittances and transfers had increased as well. Compared with their respective counterparts, a higher percentage of ethnic minorities and poor household respondents felt that nonfarm income increased due to the project roads. The proportion of ethnic minorities reporting increase in income from remittances was significantly higher than their Kinh/Chinese counterparts—60% vs 21%. Overall, the respondents' own assessment based on personal experiences suggests that improved road connectivity would have contributed about an 18% increase in household income.

156. An average household spent D28.29 million in 2008—71% on consumption and 29% on nonconsumption items. Food accounted for 58%, education for 14%, health for 10%, 6% for social events, and 13% for nonfood items. Similarly, purchase or repairs of land/house, and investment in productive and nonproductive assets accounted for 17%, 36%, and 25% of non-consumption expenditure reported by the respondents. With few exceptions, no significant differences across socioeconomic groups were observed. The ethnic minority spent less on nonfood consumption items and purchase/repair of land/houses compared Kinh/Chinese households. HFH spent more on housing and land compared with HMH. The poor spent more on food and productive investments, but somewhat less on education, health, and non-productive assets compared with non-poor households. More than half of the respondents stated that expenditure in general as well as specific terms had increased due to improved connectivity. Overall, according to the respondents, roads alone accounted for about 18% increase in household expenditure.

2. Social Development Opportunities

157. **Education.** About 68% of the households had one or more children attending schools in the past 12 months. Interestingly, a higher proportion of poor households (74%) had school-

going children compared with non-poor households (65%), but fewer in HFH (59%) than in HMH (70%). However, no significant difference was observed across major ethnic groups. While access to school was not affected for most of the children, project roads greatly facilitated children's travel and reduced travel time in particular. For 54% of the households, the project roads were very important in facilitating travel to schools; another 41% considered it to be important. Higher proportions of the ethnic minority and poor households rated roads to be very important. All respondents agreed that the project roads also facilitated travel to the higher secondary schools as well. The children could travel on bicycles, usually 7 km–10 km distance. Before the road improvement, higher secondary school children lived away from home during school days. Now, they commute on bicycles. The enrollment in higher secondary schools, however, has not changed and has remained at 20%–25% in all project communes.

158. **Health.** The respondents reported that 93% of the households had one or more family members who had visited a health care center or hospital in the past 12 months.[92] The ease of travel to health facilities and the importance of the project roads were recognized by all but two respondents. Travel costs had also gone down. Before the road improvements, poor households in particular had limited access to health facilities. They were largely limited to commune health stations and found travel cost to the district or city hospitals prohibitive.[93] Today, their travel cost to district or city hospitals has been halved to D20,000 on average. The key informants and FGDs generally agreed that, after the road improvement, visits by doctors from district hospitals to the commune health stations doubled in 2 years. There was general agreement in local communities that the improved road has facilitated access to more rapid medical services, and the benefits have been significantly high during emergencies. In all communes covered by the SES, there was a consensus that the number of motorcycles has increased significantly (70% in Tuyen Quang, 80% in Phuc Vinh, and 50% in Bac Giang and Yen Bai). This has cut down travel time as well as costs for the local people. Moreover, car hire became cheaper and more affordable to the local people as a result of competition among the service providers.

159. **Security.** Although improved project roads facilitated travel and reduced travel time and transportation costs, 17% of the respondents also believed that the roads increased robbery and thefts in the road corridors. Moreover, 7% felt that the improved roads contributed to increased prevalence of diseases including HIV/AIDS, and 19% linked them to the increase in drug use and prostitution. About 26.5% of the respondents associated roads with increase in traffic jam/accidents, and 3% linked them to child/women trafficking. Children were considered highly vulnerable to accidents. For example, in two communes of Tuyen Quang, four children were seriously injured in accidents involving motorcycles used by ill-trained and unlicensed drivers. Similarly, in Bac Giang, among 60 young women from two communes who migrated to Bac Giang City, Lang Son, and Hanoi in search of work, 4 cases of women trafficking had been reported. The local people strongly believe that the project road could have contributed to such outcomes. There was also a general feeling in the community that trafficking risks are high, particularly for women of young age and low level of education.

160. **Social Events and Interactions.** Local people agreed that improved roads under the project have resulted in more community activities, especially during the Tet festival, women's day, and children's day. The children's festival in mid-lunar year was attributed to the road improvement. The roads also contributed in improving the social capital and kinship network of support in the local communities. It was also recognized that economic changes freed women from labor-intensive activities so that they now could participate more in community

[92] No significant difference in use of health services was observed.
[93] Average one-way cost was around D40,000 per trip.

development activities. Furthermore, new opportunities in vocational training courses on handicraft production for women and women health awareness have emerged after the road improvement. Some initiatives highlighted by respondent women included a campaign to prevent HIV/AIDS, knowledge in nursing small children, education on sanitation and the environment and family planning.

161. **Gender Roles**. Road improvements gave rise to an increase in the number of roadside beer stalls, internet shops, small consumer item stores, and restaurants. These are often manned by women in their new role. Other recent developments include access to finance, particularly for poor women. Nearly 95% of poor women had access to credit from the Government of Viet Nam or other externally assisted projects/programs, such as the Saving and Credit Club in Yen Bai; support for improving food security for households with many young children in Tuyen Quang; literacy classes for Women in Yen Bai; and subsidies for pig raising in Bac Giang.

162. However, some of these developments worry the women respondents as there had been several instances of disputes within the households leading to abuse of women and children dropping out of school. To protect their children, concerned mothers opt to walk or drive their children to school themselves. Women viewed this new role as taking time from their other household duties.

3. Institutional Development Opportunities

163. Almost all respondent households reported visiting the PPC. The visits ranged from 17 by ethnic minorities to 39 by Kinh/Chinese households, with an average of 33 visits a year. Similarly, 93% of the households also visited State agencies, at an average of 36 visits a year. Almost all households used the project roads to reach the PPC (96%) and State agencies (91%). All households but one also visited the commune cultural house (36 visits on average), and 77% of them also visited commune post offices (39 visits). Almost all households used project roads to reach those institutions. However, the visits by ethnic minorities were far less than those by Kinh/Chinese households—17 vs 39 visits to PPC; 9 vs 46 visits to State agencies; 13 vs 46 visits to the commune cultural house; and 12 vs 48 visits to the commune post office in a year. There was general agreement in the local communities that project roads had facilitated the movement of service agency staff, and increased visits by agriculture, forestry, and livestock extension workers.

164. Reportedly, more training and capacity development activities were organized to improve the economic and social welfare of women, farmers, veterans, the elderly, and poor people than before road improvement. Furthermore, ethnic minorities used to be out of the mainstream economic and social activities, but after road improvement, they could travel to the markets, attend community classes and meetings, and learn the Kinh language. These collectively made them confident in interacting with the Kinh/Chinese and move toward social integration. The Kinh/Chinese also became more sensitive to norms and needs of ethnic minorities. Some progress was also reported in the areas of land use planning, land financing, bidding procedures for land, ownership and management of infrastructure projects, settling complaints, and eliciting feedback from local people. The Commune Peoples' Committee also reported increased revenue from new businesses and production enterprises.

4. Environmental Concerns

165. Slightly less than half (47%) of the respondents did not identify any environmental concerns due to project roads, but 43% felt that dust pollution had increased in the road corridors and 16% thought that roads had generated a garbage collection problem. Five percent of the respondents identified reduced forest cover, and 4% associated soil erosion with road development. Two respondents experienced flooding as well. An additional environmental concern experienced by elderly people was noise pollution due to the operation of heavy trucks in the road corridors. Respondents in Yen Bai also experienced road degradation due to heavy trucks operated in the mining industry.

5. Key Challenges

166. **Access to the Poor and Minorities, and Distribution of Benefits.** There are concerns that a majority of ethnic minorities are still left behind due to remote locations and still face a connectivity problem that may keep them from being mainstreamed in the market economy. In addition, not all groups of households benefited equally from the road improvements. The major benefit has gone to the Kinh/Chinese population, and less to the poor and ethnic minorities. Furthermore, some PPCs have issued a policy instructing local authorities to utilize funds from the sale of land and to invest in other local infrastructure. However, the policy does not include a mechanism to ensure that the poor and ethnic minority groups are given priority in the allocation of such infrastructure and that they would be included in the decision-making process.

167. **Value Addition.** Evaluation suggests that road improvement catalyzed primary production, but it has yet to play major role in adding value to the primary produce. This would require downstream planning for the required investment in market and transport infrastructure. While backward linkages have developed and are evolving, forward linkages need to be clearly identified and strengthened.

168. **Operation and Maintenance.** Wear and tear on roads have started to emerge, particularly in roads used by heavy trucks, and are likely to accelerate in the near future. In the absence of adequate O&M funding, deteriorating road conditions would lead to higher VOCs and, eventually, higher transport costs and reduced services. There is a need for a sustainable basis for O&M over the medium and long terms. O&M responsibility has been delegated to PDOT, but without the required resources, PDOT would not be able to maintain roads in desirable conditions.

169. **Road Safety.** However small, an accident is one too many. Lack of road safety measures and accident prevention campaigns have partly contributed to a number of road accidents. High speed, poor driving skills, and heavy consumption of alcohol were cited as major factors contributing to road hazards.

170. **Environment.** Increases in farm productivity due to roads have boosted the local economies, but use of pesticides and chemical fertilizers has also increased. The impact of excessive fertilizer and chemical use on the local environment and water quality requires immediate attention for the health and safety of the people involved as well as consumers.

6. Summary

171. The project roads facilitated access to markets, schools, health centers, and institutions for an overwhelming majority of the respondent households. The roads provided economic

opportunities through increased production and associated employment, and ability to travel more frequently to off-farm employment centers with 10% reduction in transportation costs and 25%–50% reduction in travel time. Increased business opportunities emerged in the areas of marketing and development of the service sector, primarily dominated by roadside shops, beer outlets, restaurants, and consumer stores. Limited business opportunities have also emerged in the production and construction sectors as well. In addition, there has been considerable diversification into livestock production, particularly for the poor households. However, the bulk of benefits from enterprise diversification has gone to the majority Kinh/Chinese rather than ethnic minority households. Improved connectivity through project roads has also increasingly mainstreamed ethnic households from barter to a market economy. Since the road is relatively new, value-added business opportunities are limited and more are yet to emerge. Positive evidence, however, exists for cassava, which is dried and exported mostly to the People's Republic of China. The VCA shows that producers' marketing margin has increased due to improved access and mobility as well as better market information system as a result of competition among the collectors/traders vying for products produced locally.

172. Income and expenditure increased due to a number of factors. Improved connectivity has exposed consumers to a wider variety of consumption goods. The quality of consumption as well has improved over the past 2 years. Overall, expenditure has kept pace with income increases, although the poor and ethnic minorities are lagging far behind compared with their non-poor and Kinh/Chinese counterparts, respectively. While roads have not necessarily increased enrollments in different schools, they have greatly facilitated mobility and save time and costs for children attending schools and patients going to health stations and district hospitals for treatment. Improved connectivity has also mobilized production and social services delivery institutions, increasing the frequency of their visits to communes and providing guidance to local people with improved technology, management practices, and inputs when required. The local people, particularly women, have greatly benefited from the project roads as they are now able to meet more frequently with people in their network for both productive and social purposes. The increased frequency of events organized locally is an example of the direct contribution of the project roads to the local communities.

173. A number of challenges confront development assistance through the improvement of rural roads. Further improvement in equitable access to opportunities, services and institutions and, hence, economic and social opportunities can be achieved for the local people, ethnic minority, and the poor in particular. Some major environmental problems local people face include dust and noise pollution. Economic challenges ahead include increased scope for value addition to primary production systems and further reduction in marketing margins, so as to increase profit margins for producers and price incentives for consumers. Adequate funding and management of O&M of project roads are already a concern as some of the roads have started to exhibit symptoms of low quality maintenance due to budgetary stress faced by PDOT. Road safety is another area that the provincial and local governments must focus on.

ASSESSMENT OF INCLUSIVE DEVELOPMENT IN CASE STUDY PROJECTS

Table A6.1: Local Perception about the Contribution of Rural Roads to Various Opportunities in Terms of Access and Utilization

Access to and Utilization of	Nepal				Philippines				Viet Nam				Overall	
	RIDP		RNDP		CHARM		ARCP		RISDP		PRISP			
	A	U	A	U	A	U	A	U	A	U	A	U	A	U
A. Economic Opportunities														
Production technology	Moderate	Negligible	Significant	Moderate	Significant	Moderate	Significant	Moderate	Significant	Moderate	Significant	Significant	Significant	Moderate
Capital	Moderate	Moderate	Significant	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Significant	Moderate	Moderate	Moderate
Labor	Moderate	Moderate	Moderate	Moderate	Significant	Moderate	Significant	Moderate	Significant	Moderate	Significant	Moderate	Significant	Moderate
Markets	Significant	Moderate	Significant	Significant	Significant	Significant	Significant	Moderate	Significant	Significant	Significant	Significant	Significant	Significant
Employment	Moderate	Negligible	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Traders/ Collectors	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Significant	Significant	Significant	Significant	Moderate	Moderate
Processing	Negligible	Negligible	Moderate	Negligible	Negligible	Negligible	Moderate	Moderate	Moderate	Negligible	Moderate	Negligible	Moderate	Negligible
Consumers	Significant	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Significant	Moderate	Significant	Moderate	Moderate	Moderate
B. Institutional Opportunities														
Legal/Administrative services	Significant	Significant	Significant	Moderate	Significant	Moderate	Significant	Moderate	Significant	Significant	Significant	Moderate	Significant	Moderate
Extension service	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Producers' organization	Negligible	Negligible	Negligible	Negligible	Moderate	Moderate	Moderate	Moderate	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
C. Social Development Opportunities														
Health	Significant	Moderate	Significant	Significant	Significant	Significant	Significant	Moderate	Significant	Significant	Significant	Significant	Significant	Significant
Education	Significant	Negligible	Significant	Moderate	Significant	Significant	Significant	Moderate	Significant	Moderate	Moderate	Moderate	Significant	Moderate
Social interaction	Significant	Significant	Significant	Moderate	Significant	Significant	Significant	Moderate	Significant	Moderate	Moderate	Moderate	Significant	Moderate
Gender roles	Significant	Significant	Significant	Moderate	Significant	Significant	Significant	Moderate	Significant	Moderate	Moderate	Moderate	Significant	Moderate
Ethnic groups	Significant	Significant	Significant	Moderate	Significant	Significant	Moderate	Moderate	Significant	Moderate	Moderate	Moderate	Significant	Moderate

A= access, ARCP = Agrarian Reform Communities Project (Loan 1667-PHI), CHARM = Cordillera Highland and Agricultural Resource Management Project (Loans 1421-PHI and 1422-PHI[SF]), PRISP = Provincial Road Improvement Sector Project (Loan 3455-VIE), RIDP = Rural Infrastructure Development Project (Loan 1450-NEPSF]), RISDP = Rural Infrastructure Sector Project (Loan 1564-VIE[SF]), RNDP = Road Network Development Project (Loan 1876-NEP[SF]), U = utilization.
Source: Independent Evaluation Department findings based on supporting data and information.

Table A6.2: Assessment of Opportunities in Case Study Project Roads

Opportunities	Nepal		Philippines		Viet Nam		Overall
	RIDP	RNDP	CHARM	ARCP	RISDP	PRISP	
A. Economic							
Reduction in travel time	Significant	Significant	Significant	Significant	Significant	Significant	Significant
Lower unit transport cost for inputs	Negligible	Negligible	Negligible	Negligible	Significant	Significant	Moderate
Lower unit transport cost for outputs	Moderate	Moderate	Significant	Significant	Significant	Significant	Significant
Availability of transport	Moderate	Moderate	Substantial	Substantial	Substantial	Substantial	Significant
Affordability of transportation	Moderate	Negligible	Moderate	Moderate	Significant	Significant	Moderate
Increase in crop yields per ha	Negligible	Moderate	Substantial	Moderate	Substantial	Moderate	Moderate
Farm enterprise diversification	Moderate	Negligible	Significant	Moderate	Moderate	Negligible	Moderate
Increase in total cropped area	Negligible	Negligible	Significant	Moderate	Moderate	Moderate	Moderate
Increase in cropping intensity	Negligible	Moderate	Significant	Moderate	Moderate	Moderate	Moderate
Improved total farm production	Negligible	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Increase in producers' margins	Negligible	Negligible	Significant	Moderate	Moderate	Moderate	Moderate
Increase in traders' marketing margins	Moderate	Moderate	Significant	Moderate	Moderate	Moderate	Moderate
Value addition	Negligible	Negligible	Moderate	Moderate	Moderate	Moderate	Moderate
More variety of consumption goods	Significant	Moderate	Significant	Significant	Significant	Significant	Significant
Lower consumer prices	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
New business growth	Negligible	Negligible	Moderate	Moderate	Moderate	Significant	Moderate
New investment	Negligible	Negligible	Moderate	Moderate	Negligible	Negligible	Negligible
B. Institutional							
Increase in O&M local ownerships	Negligible	Negligible	Moderate	Significant	Negligible	Negligible	Negligible
Increase in O&M funds	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
Establishment of producer organization	Negligible	Negligible	Moderate	Moderate	Negligible	Negligible	Negligible
Strengthened capability of infrastructure institution(s)	Negligible	Negligible	Moderate	Moderate	Moderate	Moderate	Moderate
Better disposition of local resources	Moderate	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
C. Social							
Improved health status	Moderate	Moderate	Significant	Significant	Significant	Significant	Significant
Improved human capital	Negligible	Negligible	Significant	Significant	Negligible	Negligible	Moderate
Gender equity	Moderate	Negligible	Moderate	Moderate	Moderate	Negligible	Moderate
Integration of female heads of households	Moderate	Negligible	Moderate	Moderate	Negligible	Negligible	Moderate
Integration of ethnic minorities	Substantial	Moderate	Substantial	Moderate	Significant	Moderate	Significant
D. Environmental (Challenges)							
Noise pollution	Moderate	Moderate	Moderate	Moderate	Significant	Significant	Moderate
Dust pollution	Substantial	Negligible	Negligible	Significant	Significant	Negligible	Moderate
Garbage disposal problems	Negligible	Negligible	Moderate	Substantial	Negligible	Negligible	Moderate
Soil erosion	Significant	Negligible	Moderate	Negligible	Negligible	Negligible	Moderate
Community and roadside crimes	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
Accidents	Negligible	Negligible	Negligible	Negligible	Significant	Significant	Moderate

ARCP = Agrarian Reform Communities Project (Loan 1667-PHI), CHARM = Cordillera Highland Agricultural Resource Management Project (Loans 1421-PHI and 1422-PHI[SF]), PRISP = Provincial Road Improvement Sector Project (Loan 3455-VIE), RIDP = Rural Infrastructure Development Project (Loan 1450-NEPSF]), RISDP = Rural Infrastructure Sector Project (Loan 1564-VIE[SF]), RNDP = Road Network Development Project (Loan 1876-NEP[SF]).
Source: Independent Evaluation Department findings based on supporting data and information.

MANAGEMENT RESPONSE TO THE SPECIAL EVALUATION STUDY ON ASIAN DEVELOPMENT BANK'S CONTRIBUTION TO INCLUSIVE DEVELOPMENT THROUGH ASSISTANCE FOR RURAL ROADS

On 22 October 2009, the Director General, Operations Evaluation Department, received the following response from the Managing Director General on behalf of Management:

I. General Comments

1. The purpose of this Special Evaluation Study (SES) is to enhance understanding of the contribution of rural roads to inclusive development (ID). Although the SES does not include "with" and "without" comparisons due to data limitations, the SES presents important potential benefits and risks associated with rural roads. We appreciate the contribution of the SES to better understanding of economic, social, institutional and environmental opportunities and constraints to ID through rural roads.

2. While we value the contribution of the SES, there are some methodological limitations. The six rural road projects (in three countries) that constitute the case studies are a small sample, and were not conceived with ID specifically in mind (e.g., their scope and design and monitoring frameworks do not reflect ID). While it generally takes a long time for the full impacts of a rural road to be realized, the six sample projects are in various stages of completion. These methodological limitations make it difficult to endorse the performance evaluation of the SES, including its "partly successful" rating of the sample projects from the perspective of ID, and the SES's findings on ADB's rural roads support in general.

3. The SES also seeks to make the case that rural road projects should encompass all aspects of the development process that are needed in the vicinity of the roads for the projects to have the fullest possible impact. While a road project may include complementary elements, it is in the first instance a road project, and cannot address all constraints to ID. Lessons learned from ADB's portfolio of rural road-associated projects indicate that project design should not be overly complex and that the scope should mainly be road provision. We acknowledge, however, the importance of assessing and taking advantage of the contribution a rural roads project can make on ID.

4. We also acknowledge the importance of sustaining benefits from rural road projects. The sustainability of any infrastructure asset depends upon its being designed and constructed "fit for purpose" within realistic existing maintenance capacities. Successful operation and maintenance require not only realistic financing mechanisms but also clear delineation of ownership and management responsibilities and authority. While the SES includes an important discussion of operation and maintenance, it looks at this issue somewhat narrowly and without duly considering the engineering dimension of developing rural roads.

II. Specific Comments on Recommendations

5. **Recommendation 1: Rural roads may be necessary but not sufficient, condition for ID. Promote ID in rural road-associated projects design.** We agree. ADB is already carrying out actions supporting this recommendation. Well planned, constructed and maintained rural roads enable increased individual mobility and decreased transport costs—both of which are essential, but insufficient conditions for inclusive rural development. While evaluation experience and portfolio findings indicate that rural road-associated projects should not be overly complex in design and scope, ADB will encourage governments to adopt a holistic approach to development that considers the needs of rural communities to develop socio-economic, institutional, business, and environmental services and opportunities. Since a rural road project cannot address all constraints to ID, it is important to assess whether the basic setting of the project is conducive to contributing to ID. As a general principle, we agree that rural roads development should follow an agreed sector road map. Wherever feasible and practical, rural road development should consider approaches that optimize the cost effective and sustainable use of available local resources including labor, materials, enterprise, knowledge and ingenuity. We will continue to carry out measures to address these issues.

6. **Recommendation 2: Sustainability of project benefits must be ensured. Emphasize both access and utilization of rural roads and the role of local governments, communities and private sector.** We agree. Realizing the full potential benefits of investments in rural roads depends on the reliability and sustainability of service to the users. We acknowledge the importance of effective maintenance, and believe that the following steps can enhance sustainability: (i) appropriate technical design and construction approaches that minimize whole life cycle costs within realistic existing local maintenance and management capacities; (ii) establishment of a whole life asset management strategy and corresponding structure that optimizes inputs of the community and private sector; and (iii) systematic strengthening of maintenance and management capacities, including financing mechanisms for recurrent costs.

7. Design of rural road-associated projects should consider both access and utilization of the rural roads and the role of local governments, communities and private sector. Recent rural road-associated projects have taken into account: (i) design to meet the current and projected long-term needs of the community, as well as business and industry, appropriately and safely; and (ii) the need for complementarity and coordination with other investments. We acknowledge the need to enable the participation of the private sector as a user; feasibility assessments are routinely based on estimates of largely private users. While we also seek to identify the private sector as a service provider, the wide range of market failures in rural infrastructure often supports the justification for public intervention.

8. **Recommendation 3: Progress toward inclusive development is necessary to demonstrate development effectiveness of rural road-associated projects. Strengthen results monitoring and evaluation systems in rural road-associated projects**. We agree. ADB support for ID, including promoting gender and addressing the needs of disadvantaged people and

communities, is being promoted and pursued in line with ADB's Strategy 2020, corporate results framework, and policies. At the same time, monitoring and evaluation are being strengthened under several initiatives. These include (i) improving the quality of design and monitoring frameworks through enhanced quality assurance along with training of project staff; (ii) rolling out, in late 2009, of a new project processing and portfolio management system (P3M), replacing outdated legacy systems and enabling better monitoring of all aspects of projects; and (iii) introducing impact evaluations on a pilot basis. Introduction of P3M will enhance the ability to monitor progress of ID-related issues and indicators over time. We also see a need to further develop analytical approaches to interpret the relationships among benefits, asset use, asset deterioration, and maintenance costs. This will help develop asset management and development strategies that will further enhance ID.

DEVELOPMENT EFFECTIVENESS COMMITTEE

Chair's Summary of the Committee Discussion on 26 October 2009

Special Evaluation Study on Asian Development Bank's Contribution to Inclusive Development through Assistance for Rural Roads

1. The Independent Evaluation Department (IED) emphasized that rural roads are a major component of rural infrastructure. They are an important vehicle for achieving inclusive growth and inclusive development as a strategic agenda under Strategy 2020. The special evaluation study (SES) aimed at assessing the Asian Development Bank's (ADB) contribution to inclusive development through assistance to rural roads. For this purpose, the SES (i) examined ADB's rural roads portfolio, (ii) assessed the quality of design and monitoring frameworks, (iii) reviewed project completion reports, and then (iv) undertook in-depth case studies of the six sample projects (two each in Nepal, the Philippines, and Viet Nam) which, among others, had implicit inclusive development objectives. The sample projects were selected in consultation with concerned regional departments and resident missions.

Results Indicators

2. The Development Effectiveness Committee (DEC) members noted the importance of monitorable indicators to strengthen the results monitoring and evaluation system. DEC Chair noted that only 45% of the 707 indicators of the rural roads portfolio are measurable and being monitored. IED suggested that indicators should capture the four dimensions of inclusive development, namely, economic, social, institutional, and environmental contributions. Baseline indicators should also be identified at the design stage. Management (represented by senior staff from South Asia and Southeast Asia regional departments) mentioned the ongoing work of the ADB-wide working group on monitoring of indicators for inclusive development. Close coordination and knowledge sharing with Communities of Practice has also being maintained.

Evaluation Methodology

3. One DEC member suggested a more pragmatic approach to evaluation, which would include quantified assessments and measurements of forward and backward linkages. Another DEC member mentioned that the evaluation should have analyzed the processing stages of the sample projects to determine the strength and adequacy of project design and staff resources. DEC members also sought clarification on the appropriateness of the sample size of the study. IED emphasized that any evaluation is unlikely to reach a level of measurement that will yield precise judgment. Results from a study for small samples may be verified for large samples, especially for issues that occur commonly and persistently. The review of the design and monitoring framework examined the quality of outcome, and impact and related indicators. Four dimensions of inclusive development were studied and the relevant data was obtained from household surveys and focus group discussions.

Sustainability Issues

4. Some DEC members emphasized the importance of maintenance of rural roads to ensure their sustainability, and suggested that an evaluation study be conducted on this. IED informed that it would advance the study on post-completion sustainability of projects originally scheduled for 2011. Management mentioned that there is an ongoing study on operations and maintenance of rural infrastructure, including, rural roads. The study would

cover projects in Cambodia, Lao People's Democratic Republic, the Philippines, and Viet Nam. One DEC member also noted that cooperation with other development partners should be explored in such studies.

Portfolio Management

5. DEC noted the recurring problem of project start-up and implementation delays. IED mentioned that the problem should be addressed even if the observed average 22-month delay for the entire portfolio and the sample projects is comparable to the overall ADB average.

6. Management explained that there are many project owners involved in rural road projects, and the problems of even one owner affect the entire implementation process. Management also informed about the use of project readiness filters, including retroactive financing for procurement, in recent projects.

7. Some DEC members expressed concern on the presence of syndicated transport system, particularly in Nepal, as reported by the SES. IED explained that the syndicate system is a common practice, where the number of vehicles that pass on the roads are controlled by a group of entrepreneurs and private associations. There are laws in Nepal that prohibit syndicate systems but their implementation is weak. Management explained that the existence of a syndicate system was not known at the project appraisal stage, and it would request the Nepal Resident Mission to investigate this.

Contribution of Rural Roads to Inclusive Development

8. Management suggested that definition of rural roads should be clarified in the context of their contribution to inclusive development. There are rural roads that form only a very small portion of a provincial road, and the contribution of such rural roads to poverty alleviation may be very minimal. DEC Chair saw scope for some studies on the definition and relative contribution of different types of roads (regional, provincial, and different types of local rural roads) that pass through rural areas, to inclusive development.

9. IED explained that definition of rural roads differs in the context of each country. Another difficulty was that that the total population for each category of roads may be too small to allow a statistically valid conclusion. The SES selected the sample projects that had roads that would likely serve the disadvantaged communities. IED further noted that recent evaluation studies show that rural roads would have more impact if they were linked with other economic activities, complementary investments, and networks.

Conclusions

10. DEC welcomed the SES on ADB's contribution to Inclusive development through assistance for rural roads. It recognized that the focus of the study was not only on poverty alleviation, but also inclusive growth and on inclusive development, which is defined as equitable access and utilization of economic, social, institutional, and environmental opportunities and services.

11. Members emphasized that it was very important to have monitorable indicators and to actually monitor the indicators to have reliable results.

12. Furthermore, maintenance was a critical issue. Without proper maintenance, the full benefits of inclusive development from sustained availability of rural roads would not be available.

13. Although the implementation delay of 22 months for rural roads was almost as long as the average delays for other projects, DEC saw scope for improving the implementation process.

14. For deriving the full benefit of inclusive development from rural roads, members also emphasized the need for having supplementary policies such as ensuring the absence of restrictive trade practices on vehicular traffic.

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Development Effectiveness Committee