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ADB's Contribution to Inclusive Growth
in Transport and Energy Projects

Stein Hansen

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*The author is consultant at the Regional
and Sustainable Development Department
of the Asian Development Bank.

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Asian Development Bank
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About This Paper

This paper proposes a methodology for assessing inclusive growth contributions of ADB in economic infrastructure projects. It then applies the methodology to 8 energy and 10 transport projects of various subsectors and key activity areas.

The paper was written by Stein Hansen, infrastructure economist from Norway, and a highly experienced consultant to ADB, World Bank, and Scandinavian and other development aid organizations. For further comments on the report, please contact the author at steihaco@online.no.

This consultant report is part of the work of the Asian Development Bank (ADB) on operationalizing inclusive growth. The series of technical assistance studies was developed by a consulting team in close cooperation with the staff of the Poverty Reduction, Gender, and Social Development Division of ADB's Regional and Sustainable Development Department. The series include, apart from this infrastructure paper, other studies on (i) Concepts for Operationalizing Inclusive Growth (Stephan Klasen), (ii) Operationalizing Inclusive Growth in Agriculture and Small and Medium Enterprise Development Projects (Adrianus Rijk), (iii) Operationalizing Inclusive Growth in Projects with Environment as Strategic Development Objective (Benoit Laplante), and (iv) Operationalizing Inclusive Growth at Country Level (Terry McKinley). The team also produces a summary report. Inclusive growth is one of the three pillars of ADB's new long-term strategic framework, Strategy 2020, and the papers recommend methodology for ADB to monitor its contributions to inclusive growth at country and project levels.

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Executive Summary

Quantifying Inclusive Growth—Challenges for ADB

1. The long-term strategic framework, Strategy 2020, of the Asian Development Bank (ADB) has three pillars, of which inclusive growth is one. However, unlike for environmental sustainability and regional cooperation, the inclusive growth pillar does not have targets or indicators to measure ADB's contribution. Furthermore, the concept of inclusive growth is only vaguely described, and there are no guidelines as to how it can be made operational, nor contributions being measured in the context of ADB's results framework for Strategy 2020. The Poverty Reduction, Gender and Social Development Division in ADB's Regional and Sustainable Development Department therefore launched a knowledge project on how to operationalize inclusive growth. The project developed conceptual clarity on inclusive growth, and provided methodologies—at country and sector levels—to operationalize inclusive growth and measure ADB's contribution to it.

2. The consultant team has clarified what inclusive growth is about and concluded that (i) inclusive growth is a meaningful strategic concept; (ii) inclusive growth can be useful to try to measure the contribution of policies, programs, and projects to inclusive growth to further strengthen ADB's ability to achieve the goals of Strategy 2020; and (iii) the project assessment approach for inclusive growth contribution adopted in this project can help identify project elements and components that, if revised or added, could further enhance the inclusive growth contribution of a project.

3. This paper uses the conceptual framework of the consultant team and demonstrates how inclusive growth contributions by ADB can be measured and quantified in transport and energy infrastructure projects. The paper also tests the proposed methodology in 18 investment project examples (sovereign loans and grants, as well as nonsovereign private sector operations), and thus reveals strengths and weaknesses of the approach.

Sampling Projects for Inclusive Growth Assessment

4. The transport sector has been disaggregated into subsectors for the purpose of this analysis. For five of these subsectors, two projects each were subjected to a detailed inclusive growth contribution assessment (see the following table). Similarly, the energy sector was disaggregated into four subsectors, and for each of these subsectors two projects have been assessed. Thus, a total of 18 projects with varying amounts and forms of ADB financing are assessed.

5. The assessments are based on reports and recommendations of the President (RRPs) of ADB, which are available for downloading. A deliberate effort has been exercised to include all the developing member country (DMC) regions of ADB, including bigger countries with large infrastructure portfolio, such as India and the People's Republic of China (PRC). Only projects approved in the the first decade of the current century were selected, with the majority from the second half of the 2000–2010 decade. Eleven of the sampled project RRP's are from 2008–2009.

Distribution of Projects over Developing Member Country or Region, Subsectors, and Year of the Report and Recommendation of the President Reports

DMC region or country	Subsector	2000–2003	2004–2007	2008–2010
Central and West Asia	Rural roads, renewable energy		2006, 2007	
South Asia	Roads development, ports development, transmission and distribution, power generation	2003	2007	2008, 2009
India	Power generation		2006	
Southeast Asia	Rural roads, railways, transmission and distribution, other energy		2006, 2006	2009, 2009
People's Republic of China	Roads development, urban transport, railways, renewable energy			2008, 2009, 2009, 2009
Pacific	Urban transport, other energy		2007	2008, 2008

DMC = developing member country.

Source: ADB.

Methodology for Measuring Inclusive Growth Contributions in Infrastructure Projects

6. The consultant team agreed on a common methodology for assessing contributions to inclusive growth at both project and country levels. To this end, broad categories that constitute inclusive growth were agreed upon as follows:

- (i) The impact of the project (or the country social and economic policies) on growth and employment.
- (ii) The impact on asset distribution.
- (iii) The impact on human capability dimensions of inclusiveness (health, education, and municipal services).
- (iv) The impact on social protection and risk mitigation.
- (v) Sustainability and governance of the project (for project-level analysis only).

7. Each consultant then developed a set of criteria and indicators for the respective categories. The categories and criteria were weighted by subsector, based on their relevance, between 1% and 100%. The inclusive growth contribution of each project was then analyzed and rated on a scale of 0–10 (0–3, little contribution; 4–6, medium contribution; and 7–10, high contribution) for each criterion, based on its contribution against the set criteria. Weight and rating were multiplied to give a specific score showing the project's contribution to inclusive growth. The overall score over all criteria was then normalized so that total score would lie between 1 and 100 points. It is important to note that a project's contribution to inclusive growth

does not say anything about project quality or relevance. A very good and highly relevant infrastructure project can score low on inclusive growth and perhaps high on its contribution to ADB's other development goals, such as regional cooperation or environmental sustainability. Similarly, a project designed to contribute much to inclusive growth may have little quality in implementation.

Contribution of Inclusive Growth to Infrastructure Projects

8. In the transport sector:

Unsurprisingly, both rural road projects (Indonesia and Armenia) score “high contribution to inclusive growth” (above 70 out of 100 maximum), the main reason being that rural road projects tend to focus on providing access to, and opening up new opportunities for, isolated or poorly connected villages and townships, and where the local people suffer from costly, time-consuming, unreliable, and inconvenient transport, which discourages investments in more productive technologies and businesses.

The two road projects (national highways in the People's Republic of China [PRC] and Bangladesh) end up with a medium inclusive growth contribution score (54 and –62, respectively). This is also in the expected range compared to what one would expect from rural road projects, since national highways and/or expressways are often toll roads and connect large urban areas. What often yields a relatively high inclusive growth score for such road projects in some DMCs is the explicit choice of labor-intensive construction methods, and the inclusion of complementary rural access roads to isolated villages in the project area.

It would be expected that railway projects would have a score somewhat similar to that of highway and expressway projects, since both cater to large volumes of freight and passengers over longer distances, and indeed that is precisely what is found for the two railway projects in the sample (the PRC and Viet Nam).

Somewhat surprising perhaps is the observation that the urban projects (the PRC and Tonga) score only slightly below that of interurban highway and railway projects. The reason is of course in part due to the indicators used, and the fact that the projects are focused on improving intra-urban access to the least accessible parts of the cities.

The maritime sector covers a wide range of projects including interisland transport, which in Pacific island states very much resemble rural road projects (e.g., Solomon Islands), and large urban port projects (Colombo in Sri Lanka). Unsurprisingly, the interisland shipping project scored high (78) on the inclusive growth index. However, the port project, while clearly facilitating growth and increased employment opportunities, ends up with a low to medium score (40).

9. In the energy sector:

Both transmission and distribution projects (one in Cambodia and one in Sri Lanka) and broader-based energy projects that include both generation and transmission and distribution (one in India and one in Bhutan) score in the 66–73 range. These result are less obvious than those for rural roads, but it appears that, in selecting power projects, ADB looks for projects that provide (i) for new (and usually low income and/or rural) connections at affordable costs, and (ii) reliable power supply that makes costly diesel-operated backup generation redundant.

The renewable energy projects (the PRC and Pakistan) score low to medium (30–49) on the inclusive growth scale, the reason being that employment creation and provision of power to isolated groups have not been focal areas. Environmentally sustainable growth has been the focus.

Projects in the “other energy” category, covering investments as well as institutional reforms (the Philippines and Samoa), score medium on the inclusive growth scale (50–59).

10. In conclusion, these results are very much in the ranges one would have assumed for these different project types. This suggests that the inclusive growth assessment methodology and the selected criteria and indicators adopted for infrastructure projects are meaningful, and that the a priori selected weights and “consensus” ratings of indicators are not off target either.

11. Do the empirical findings from these 18 project assessments suggest that the ones with a low or medium inclusive growth score should be deleted from ADB’s project portfolio? Not at all. The individual project reviews have shown that, for most of these projects, one or both of the other two Strategy 2020 pillars are key reasons for formulating the project, but at present there is no system available for rating projects against these pillars.

12. How big a role does ADB play in making inclusive growth the focus of projects in which it participates as a funding partner? This is obviously difficult to quantify. However, experience from infrastructure project negotiations with client governments suggests that the many ADB social and environmental safeguards expressed as policies, directives, and guidelines are strictly adhered to by ADB negotiators, and may thus be experienced as direct ADB covenants by the borrower. The degree to which DMC governments actually would have enforced the same covenants in the case of domestic and commercial financing can only be speculated upon, except perhaps in countries with large comparable project portfolios of investments both with and without ADB participation, such as the PRC and India. In small DMCs where ADB has a relatively powerful negotiating position, one would expect the ADB influence on the inclusive growth profile of a project to be larger than the percentage financing contributed by ADB. However, such comparisons remain to be conducted.

13. A final thought is about variations in inclusive growth ratings of similar projects in countries at very different stages of equitable development and level of governance. One would expect that, when applying the same subsector criteria, indicators, and weights, the inclusive growth ratings would be relatively low in countries and project areas where many of the Millennium Development Goals (MDGs) and inclusive growth have already been achieved, and that inclusive growth ratings would be high in countries or provinces with lower achievements against these criteria and indicators.

14. One would expect that, as economies develop, projects in the infrastructure subsectors will take on increasingly more of the other Strategy 2020 pillars in their design and orientation. A low inclusive growth rating is therefore not in itself a sign of a project being unsuitable for ADB financing.

1. Conceptual Setting for Inclusive Growth

15. As was the case with the concept of sustainable development when the term first appeared in the 1980s, there are many different definitions of inclusive growth; some are process focused and others are outcome focused.

16. In its long-term strategic framework, Strategy 2020, the Asian Development Bank (ADB) has inclusive growth as one of its three pillars of engagement. The first ADB strategic focus is on the process aspect of growth, i.e., broadening of opportunities to participate. The second strategic focus described in Strategy 2020 is on broadening access, which is very close to the twin ideas of nondiscriminatory participation and growth that reduces disadvantage, thus combining both a process as well as an outcome focus.¹

17. However, while Strategy 2020 proposes a largely process-oriented approach to inclusive growth, emphasizing growth that enhances opportunities and equalizes access to these opportunities, it does not include any clear indicators to monitor performance in terms of inclusive growth in its so-called results framework.

18. Strategy 2020 defines inclusive growth as "... *two mutually reinforcing strategic areas, namely (a) sustainable growth that creates and enlarges opportunities and (b) broadens access to these opportunities to ensure that members of society can participate in and benefit from growth...*" Inclusive growth therefore is a nondiscriminatory development path (process) with development outcomes that reduce disadvantage. For economic growth to be inclusive, it needs to:

- (i) have employment and income opportunities for lower-income groups, targeting not only the very poor (\$1.25/day) and the moderately poor (\$2.00/day), but also excluded vulnerable groups;
- (ii) promote assets with equal distribution of benefits;
- (iii) promote non-income dimensions (health, education, and other forms of well-being) of development;
- (iv) reduce risk and protect against vulnerability; and
- (v) be systemic by making structural changes on the character of exclusiveness in the economy, institutional set-up, and society, and thereby help to reduce structural inequalities.

19. In attempting to operationalize inclusive growth, Stefan Klasen (footnote 1) has proposed **focus on process, nondiscriminatory participation of all, and reduction of disadvantages**, as the three central ingredients of inclusive growth, to be characterized by a limited number of income-dimension criteria and non-income-dimension criteria:² Inclusive growth is income growth that

- allows all members of society to participate in and contribute to income growth (program or project facilitates improved income-earning opportunities either in existing jobs or by means of an expanded range of alternative job opportunities with particular emphasis on the ability of the disadvantaged to participate in growth), helps promote equality of opportunities in income and non-income dimensions;
- inclusive growth is associated with at least a stable and or preferably declining inequality in income dimensions and in non-income dimensions, such as education, health, nutrition, and social integration;
- inclusive growth has regionally balanced outcomes, e.g., per capita consumption and per capita non-consumption welfare indicators of the different affected stakeholders; and

¹ See, e.g., Klasen, Stefan. 2010. Inclusive Growth: Multiple Definitions, Open Questions, and Some Constructive Proposals. Working paper for workshop on ADB's Contribution to Inclusive Growth in Asia and the Pacific, 23–25 February, 2010.

² Footnote 1, pp. 8–9.

- inclusive growth must result in improvements in non-income dimensions of well-being (with or without income growth) that particularly benefit those most deprived.

2. Inclusive Growth: Only One of Three Strategy 2020 Pillars

20. Strategy 2020 rests on three pillars, one of which is inclusive growth; the other two are regional integration and environmentally sustainable growth. Inclusive growth is only one of several strategic priorities that ADB agrees to cooperate on with a developing member country (DMC); ADB may also have a comparative advantage in offering cooperation to a DMC in other areas, e.g., environment and regional cooperation. Furthermore, ADB is only one among several international financing institutions (IFIs) and other donor agencies cooperating with DMC governments. One would therefore expect a division of tasks and responsibilities between these different actors with regards to who takes the lead on inclusive growth and other priority areas in different negotiated broad-based country programs. ADB can have an important role without being responsible for inclusive growth components in such programs. Finding that a project where ADB participates does not fulfill an inclusive growth agenda does not necessarily imply that it should not be pursued.

21. To avoid misinterpreting an inclusive growth rating of a country program or project in a country program, as well as ADB's contribution, the following control questions should be posed to interpret findings of the inclusive growth contributions of individual country projects or programs:

- To what extent is a project consistent with an inclusive growth agenda?
- If the extent is low, does it promote one of the other two strategic pillars of Strategy 2020?
- If not, is it part of a coherent overall ADB country program that is fostering inclusive growth or the other two strategic pillars?
If not, is it part of a multidonor or country-led strategy that is fostering inclusive growth overall or the other two strategic pillars?
- If the answer to four questions is “no,” then indeed one should worry that such a project is not consistent with an inclusive growth agenda. Even if the answers to only the first two questions are “no,” but “yes” to the last two questions, one should explore further if it is indeed best to pursue a project that is not consistent with the three strategic pillars as part of a country program that is promoting such an agenda overall.³

³ S. Klasen (2010), p. 10.

3. Operationalizing an Inclusive Growth Rating at Project Level

3.1 Project Selection Criteria for Inclusive Growth Relevance Assessment

22. During the inception phase of this study, it has been decided to focus on RRP's of projects not yet started, i.e., RRP's issued since 2009, and only review a limited number of historic ones (the majority from 2005–2008) for reference. Project RRP's from earlier years will, for obvious reasons, not reflect explicitly inclusive growth as one of ADB's strategic pillars as this came about with the launch of Strategy 2020 in 2008.

23. Each project in the inclusive growth alignment analysis is first identified based on the following criteria:

- year of the RRP,
- country,
- project number,
- project header name and ADB division,
- sector and subsector,
- themes and sub-themes,
- Targeting classification: either General Intervention (GI) or Targeted Intervention (TI) (if available), and
- loan/grant/private sector participation.

24. Transport and energy projects for inclusive growth alignment analysis are then selected over the 2000–2012 period, with the majority of projects being from post-2008 when projects should be compatible with Strategy 2020 with inclusive growth as one of the three strategic pillars.

25. Projects should ideally cover all ADB's geographic regions, two-thirds of the projects should be transport projects, and one-third should be energy projects. All the subsectors for each of these two main sectors should be represented, and the majority of the projects should be general interventions, but a few targeted interventions should also be included. The majority of the projects should be loans, but some grants and private sector financing should also be included.

3.2 Criteria and Weights for Inclusive Growth Relevance Assessment

26. Having selected projects based on the above criteria, RRP information on each project is used to determine the alignment of each project to the inclusive growth pillar of Strategy 2020, using the set of inclusive growth alignment criteria in paragraph 19 that appears most relevant to infrastructure projects (transport and energy sectors).

27. The proposed methodology for assessing inclusive growth uses **common criteria** for the different sectors, but with different weights based on the characteristics of the sector. As a result of the Regional and Sustainable Development Department (RSSD) workshop on inclusive

growth at ADB on 23–24 February 2010, it has been proposed that **five criteria** are used against which to measure a project's contribution to inclusive growth. Each criterion has a relative weight that indicates the importance of this criterion to inclusive growth for the sector. The maximum of relative weights of the criteria are the same for all interventions in the sector. The sum of these relative weights is 100% if each criterion is rated 10. The rating indicates the extent to which the criterion is applicable to the specific project (for practical purposes, criteria have a rating from 0 to 10; the score must then be divided by 10 to maintain the proper scale).

28. Such weights will vary significantly between sectors, depending on how ADB interventions in the sectors are focused. The growth of income per person or household is of overriding importance in advancing inclusive growth. Economic sector growth projects (as agriculture sector and small and medium enterprises (SME) sector projects are to be considered) have the highest weight because the sector deals with direct increase in incomes through productive employment or household income increase, or targeted income programs for identified poor. Hence, productive employment creation is considered most important when rating agriculture and SME sector projects. It provides the basis for progress of many other dimensions and has been given substantial relative weight in the overall composite score.⁴

29. For infrastructure interventions, the weight attached to criterion A (immediate contribution to growth and job creation) will be significantly lower than for the agriculture and SME sectors, for example. Infrastructure investments in the transport and energy sectors, while directly creating employment and income for local residents (many of whom are poor) during construction, first and foremost create access to a wider range of job opportunities for people so far excluded from and/or isolated from such opportunities and the associated increased incomes. Such projects thus reduce inequalities among these stakeholders by providing access, which may or may not be taken advantage of following implementation and completion. Hence, in infrastructure projects, criterion B would get the high weight.

30. Furthermore, in the case of such infrastructure interventions, the interdependence between income and non-income dimensions can be crucial, especially if one is able to take a longer time perspective into account. For a poor, isolated community with high incidence of loss of healthy days of life due to lack of access to medical services and poor education, providing reliable all-weather access by means of an improved rural road and/or reliable communication with the community center (clinic, schools, extension services, veterinarian, local market) means enhanced opportunities for more and more effective work days, and hence, improved conditions for increased income.

31. The weights to the five criteria will thus vary significantly between sectors, and they can vary significantly both between the transport and energy sector and also among the subsectors of these two main sectors.

32. The following five criteria derived from Strategy 2020 (Chapter 1) are therefore allocated inclusive growth weights, which apply to every project in each subsector:

⁴ For agriculture, the weight of criterion A has been set at 60%, but this is subject to further discussion in ADB by sector specialists. For SME projects, an even higher weight may be proposed, because agriculture projects also have other criteria that weigh higher than under SME; for example, related to risk, nutrition, and hunger (the sum of criteria is 100%). See A. G. Rijk (thematic sector consultant to RSDD for agriculture and natural resources and SME sectors). 2010. Measuring Inclusive Growth for Projects in Agriculture and the SME Sectors. Final draft. 4 April.

- Generate employment and income opportunities for lower-income groups, targeting not only the very poor (defined by international aid agencies as those with below \$1.25 per day per capita expenditures) and the moderately poor (similarly defined at \$2.00 per capita per day) but also excluded vulnerable groups.
- Promote assets with equal distribution of benefits.
- Promote non-income dimensions (of health, education, and other forms of well-being) of development.
- Reduce risk and protect against vulnerability.
- Be systemic by making structural changes on the character of exclusiveness in the economy, institutional set-up, and society, and thereby helping to reduce structural inequalities.

33. The choice of such criteria weights for each subsector is discussed and summarized in Table 3.1 (for use in the inclusive growth relevance rating of the sampled transport projects) and Table 3.2 (for the sampled energy projects).

34. The transport sector projects are selected from five subsectors (Table 3.1) and the energy projects from four subsectors (Table 3.2). Each of the five inclusive growth criteria will be given subsector-specific weights, which in practice may or may not be the same across the subsectors, as shown in Tables 3.1 and 3.2.

3.2.1 Transport Sector Projects

35. Transport projects provide physical assets that contribute to the removal or reduction of exclusion from, and inequalities in, access to markets and public sector services (education, clinics, and extension services), which again provides for enhanced income and job opportunities. In addition, construction of transport infrastructure is in many projects deliberately organized so as to hire local unemployed and underemployed working age men and women on equal terms as construction workers for several years of project execution. After project completion, due to skills acquired during construction, some of these workers will be offered infrastructure maintenance jobs and service station jobs.

36. Transport projects are justified by (i) reduced generalized transport and travel costs for normal traffic, (ii) new traffic generated as a results of transport costs, and (iii) travel time savings. These savings have both price and income effects once the road is completed or improved, and both new income and jobs are created. Freight and passenger transport services tend to improve and provide cheaper and more regular and reliable transport as a result of the project. Jointly, these factors represent processes that reduce exclusion from markets and social amenities, and reduce the risk aversion of local disadvantaged peoples, and thus stimulate their preparedness to invest locally for enhanced future incomes in farm and nonfarm income-earning opportunities. Some projects more explicitly focus on including disadvantaged groups as project beneficiaries, and this would normally be explicitly addressed in the RRP and then reflected in the project-specific inclusive-growth-relevant indicator values. Projects that provide access to isolated communities—such as all-weather rural roads for motorized travel—are given higher weights for contributing to reducing exclusion and local disadvantages with regard to access to markets, jobs, and income opportunities. Rural roads are also given higher weight than highway projects with regard to protection against vulnerabilities (i.e., being isolated due to flooding, earth slides, and others).

37. Since such projects also contain analysis of social or non-income well-being effects of the project, indicators of the different “well-being dimensions” will also be monitored (expected

improvement in access to schools, clinics, and various public services), since this is expected to improve on outcomes, such as enrollment of girls and boys at different levels of schooling, the use of clinics and extension services by villagers in the influence area of the project road, and others. Projects that provide access to isolated communities and/or all-weather roads for motorized travel are given higher weights for contributing to reducing exclusion and local disadvantages with regard to access to schools, clinics, extension services, and financial services.

Table 3.1: Transport Subsectors and Weights (%) for the Inclusive Growth Criteria

Transport Subsector	Criterion A: Participation: Enhance income and employment opportunities for lower- income and excluded vulnerable groups	Criterion B: Provision of assets with equal distribution of benefits	Criterion C: Promote non- income human well-being outcomes	Criterion D Reduce risks and protect against vulnerability	Criterion E: Remove structural and/or institutional inequalities and exclusion
Road development projects, (expressways and/or highways)	30	40	15	10	5
Rural road projects	25	30	20	20	5
Urban transport projects	25	30	20	10	15
Railway projects	20	20	20	20	20
Waterway projects	20	20	15	25	20

Source: Author's estimates.

38. Usually, the RRP's include institutional strengthening actions to improve and secure improved functioning for such a transport project to be operated safely and maintained in good condition. Such institutional performance is extremely important for railways; waterways, ports, and shipping projects; the crucial safety roles of air controls, railway communications, navigational aids, and communication; and less critical for road projects, and therefore the weights attached to this criterion as regards its contribution to inclusive growth will be higher for waterways and railway projects than for road projects, for example.

39. In choosing subsectors for inclusive growth–contribution analysis in the transport sector, civil aviation projects have been removed. Such projects will only be financed by ADB if they score high on one or more of the other pillars of ADB's Strategy 2020. This means that the rather heterogeneous waterways, ports, and shipping subsector is reduced to a more homogenous waterways and domestic shipping subsector for the inclusive growth–relevance analysis.

40. The subsectors of the transport sector and the weights chosen for the alignment analysis are presented in Table 3.1. The more technology-dependent the performance of the subsector (railways and water transport), the higher the weight attached to removal of institutional inequalities and failures to deliver, and the greater the risks of nondelivery and dangerous outcomes (criteria D and E). On the same criteria, the weights are low for rural roads and highway transport. As for enhanced income and non-income opportunities via asset provision, rural roads, highways, and urban transport receive the highest weights, and these subsectors also receive the highest weights for enhanced income and job opportunities.

3.2.2 Energy Sector Projects

41. The subsectors of the energy sector and the weights chosen for the inclusive growth alignment analysis are presented in Table 3.2. If power supply fails, the electric appliances upon which households and workplaces have made themselves dependent become useless and money must be spent on alternative energy sources if such are at all available. Many must resort to idling mode while they wait for power to return. The inconvenience, costs, uncertainties, and frustrations are large and uncertainties become a significant obstacle to income-enhancing investments when power sector supplies fail. Therefore, criteria D and E receive around half of the weights in all subsectors of energy projects. The remaining weights are distributed between the three income, non-income and job-promoting and enhancing opportunities, with criterion A given the lowest weight (10%) for energy policy change activities.

Table 3.2: Energy Subsectors and Weights for Inclusive Growth Criteria

Energy Subsector	Criterion A: Participation: Enhance income and employment opportunities for lower-income and excluded vulnerable groups	Criterion B: Provide assets with equal distribution of benefits	Criterion C: Promote non- income human well-being outcomes	Criterion D Reduce risk and protect against vulnerability	Criterion E: Remove structural and/or institutional inequalities and exclusion
Conventional power generation projects	15	20	15	25	25
Power transmission and distribution projects	15	20	20	20	25
Renewable energy projects	20	20	20	20	20
Others (e.g., energy policy change projects)	10	20	20	20	30

Source: Author's estimates.

3.3 Calculating the Inclusive Growth Contribution of a Project

42. For each of the five subsectors, criteria indicators have been developed to assess a project's contribution). For each of these five weighted criteria, a set of inclusive growth-relevant indicators are then selected for each infrastructure subsector. These are taken to represent how ADB values the relevance of these indicators for the subsector in question with reference to Strategy 2020. Each indicator is rated as follows:

- 0 = unlikely or not relevant,
- 1–3 = limited or low relevance,
- 4–6 = likely or medium relevance,
- 7–10 = highly likely or highly relevant.

These inclusive growth relevance values are fixed for each subsector.

43. A very tentative set of project-relevant indicators as rated from a Strategy 2020 perspective is presented for each of the five criteria for each transport and energy subsector on the 0–10 scale in Tables 3.3–3.7. Both the final indicators for use for projects in each infrastructure subsector as well as the 0–10 point inclusive growth relevance scores for each indicator must be finalized and agreed upon at ADB (such as in the way suggested by thematic sector consultant A.G. Rijk⁵). The selection of potential indicators for use in inclusive growth scoring is limited by the level of disaggregation of socioeconomic monitoring data available in the RRP and its appendixes. In the case of agriculture and SME projects, a large number of possible indicators have been presented for each of the five criteria. Such level of detail in, e.g., income distribution of the project stakeholders as these indicators represent, must therefore be available in, e.g., the demographic profile of the study area and/or in the poverty reduction and social strategy of the project. For agriculture and SME projects where jobs and income creation for the less privileged are the direct focal issues of ADB involvement, such socioeconomic disaggregation would be expected.

44. The next step in this inclusive growth alignment assessment is to apply the inclusive growth rating process to individual projects. This means that the project officer shall establish the relevance of the same selected ADB indicators for the subsector to the project in question, based on the information and priorities in the RRP. Since this is a project-specific rating by the project officer, the degree of inclusive growth relevance of each indicator will vary from one project to another based on the project expert's assessment, and some indicators may well take on the value zero for a given project.

45. Total project alignment to inclusive growth will be the weighted rating on the main inclusive growth criteria, and is calculated as follows, here illustrated with the first indicator—creation of permanent wage jobs under criterion A (enhance income and employment opportunities for lower-income and excluded vulnerable groups). Assume for the sake of illustration that the relevance of this indicator to a specific road development project (i.e., highway or expressway) as assessed by the expert is $RI = 7$. Assume further that the

⁵ A.G. Rijk. 2010. Measuring Inclusive Growth for Projects in Agriculture and the SME Sectors. Final draft. 4 April.

percentage weight attached to this criterion by the expert is $WC = 30$, and assume (purely for illustration) that the ADB consensus is that this indicator is highly relevant for achieving inclusive growth, i.e., $ADB-IGI = 8$, and that the sum of weighted ADB-IGI indicators, $(\sum W \times ADB-IGI)$ is 4.9×100 . This sum is used to “normalize” the score. Then the calculated score for this first project indicator becomes

$$(7 (RI) \times 30 (WC) \times 8 (ADB-IGI)) / 4.9 (\sum W \times ADB-IGI) \times 100 = 3.43$$

46. This calculation is then repeated for each project indicator under each of the five criteria to yield a score per criterion, and the sum of these scores becomes the composite inclusive growth score of the project.

47. In the case of infrastructure projects (e.g., in the transport and energy sectors) where the investments first and foremost create new and/or improved opportunities for jobs and increased incomes, such disaggregated socioeconomic and labor market data is usually not available. As a result, the indicators applied in inclusive growth scoring under each of the five criteria will be of a more aggregated nature to match what is available in terms of project area data. In the tentative selection of indicators for each subsector, the levels of socioeconomic data aggregation in the RRP is the major constraint on how far one can meaningfully disaggregate indicators for an inclusive growth relevance analysis.

3.3.1 Transport Subsectors

48. It is assumed that ADB gives a very high inclusive growth rating to rural roads projects on all criteria A and B indicators since exclusion and unequal access to jobs and income opportunities is most prevalent in rural areas. Also, for highway and expressway projects and the waterways and domestic shipping projects focused on here,⁶ the ADB ratings on the indicators under criterion A are high or medium since many of these projects are located in areas that link remote and isolated rural areas to commercial and public centers. Inclusive growth relevance for railway projects is generally lower due to much fewer stops linking to non-accessible communities. For urban transport projects, inclusive growth relevance is relatively high on some indicators and zero on indicators that typically apply to non-urban areas only.

49. It is emphasized that a project may well be highly ADB-relevant from a Strategy 2020 perspective even if it scores very low on all five inclusive growth criteria and their inclusive growth relevance indicators. The project may instead score high on one or both of the other Strategy 2020 pillars. In such cases, one needs to ask the following control questions:

- If the inclusive growth score of the project is low, does it promote one of the other two strategic pillars of Strategy 2020?
- If not, is it part of a coherent overall ADB country program that is fostering inclusive growth or the other two strategic pillars?
- If not, is it part of a multidonor or country-led strategy that is fostering inclusive growth overall or the other two strategic pillars?

⁶ In this analysis, central commercial port projects are not considered.

Table 3.3: ADB Rated Indicator Values on a 0–10 Scale for Transport Projects under Criterion A Participation: Enhance Income and Employment Opportunities for Lower-Income and Excluded Vulnerable Groups

Enhanced opportunities for	Road Development Projects	Rural Road Projects	Urban Transport Projects	Railway Projects	Waterways and Domestic Shipping Projects
Permanent nonfarm wage jobs and self-employment	10	10	7	6	8
Temporary wage jobs (e.g., project construction)	8	9	7	8	7
Adoption of labor-intensive construction methods	10	10	8	9	9
Increased income from change to higher-value local produce	8	9	0	7	8
Increased income from local materials supply and processing	9	10	0	8	8
Increased income from higher farm gate and local produce prices	9	10	0	6	8
Increased income from reduced input and consumer goods prices	8	10	0	8	9
Project benefits to trickle down to the poor	4	7	5	4	5
Project to directly target benefits to the poor	8	10	8	8	8
Project to target promotion of gender equality	10	10	8	8	8
Project to target inclusion and benefiting of excluded groups (e.g., ethnic minorities and slum dwellers)	10	10	8	8	8

Source: Author's estimates.

Table 3.4: ADB Rated Indicator Values on a 0–10 Scale for Transport Projects under Criterion B: Provision of Assets with Equal Distribution of Benefits

Improved infrastructure assets provide for	Road Development Projects	Rural Road Projects	Urban Transport Projects	Railway Projects	Waterways and Domestic Shipping Projects
Enhanced access to labor markets	8	10	8	8	8
Enhanced access to a wider range of jobs	8	10	8	8	8
Enhanced access to larger range of markets for local produce	8	10	0	8	8
Enhanced access to markets for a wider range and cheaper inputs and consumer goods	8	10	7	8	8
Enhanced access to income-creating training and extension services	7	10	8	7	8
Enhanced access to a wider range of services and repair facilities	8	10	8	7	8
Enhanced access to credit and insurance	8	10	4	5	8
Reduced inequalities of access to above opportunities	8	10	6	4	8
Reducing gender inequality	8	10	8	8	8
Project to target inclusion and benefiting of excluded groups (e.g., ethnic minorities and slum dwellers)	6	10	8	8	8

Source: Author's estimates.

50. For the same reasons as for criteria A and B, the inclusive growth relevance indicators for the non-income human well-being criterion will be given the highest weights for rural road projects, followed by waterway and highway projects (Table 3.5). Many urban pockets in large cities are quite isolated with very poor access to attractive job opportunities, social services, clinics, and schools, primarily because many large slum areas are not formally registered and approved for dwellers, and these informal settlers are therefore excluded from many of the opportunities urban life is meant to offer. These areas are inhabited by poor people (who are often migrants from rural areas) seeking employment in the cities. From an inclusive growth perspective, railway projects generally score low on all non-income human well-being outcomes, except the environment indicator. However, since all infrastructure projects require full environmental impact assessment (EIAs) and adherence to strict environmental directives, ADB attaches a very high rating to this indicator for all transport subsectors.

Table 3.5: ADB Rated Indicator Values on a 0–10 Scale for Transport Projects under Criterion C: Promote Non-Income Human Well-Being Outcomes, Provision of Assets with Equal Distribution of Benefits

Promote equal distribution of opportunities to non-income human well-being through	Road Development Projects	Rural Road Projects	Urban Transport Projects	Railway Projects	Waterways and Domestic Shipping Projects
Improved participation in community assemblies and social life	7	10	7	8	9
Reliable access to community centers for business and pleasure	7	10	8	7	9
Reliable access to clinic and health personnel (both ways)	8	10	8	7	9
Reduced child mortality	9	10	7	4	9
Increase in secondary school enrollment and attendance	7	10	7	4	9
Improved school completion among girls	7	10	7	4	9
Targeted benefits for the poor	8	10	7	8	9
Promoting gender equality	8	10	7	8	9
Including and benefiting ethnic minorities and excluded urban groups	6	10	0	8	9
Improved environmental sustainability	9	9	8	9	9

Source: Author's estimates.

51. The two main indicator categories for transport sector projects under criterion D are related to (i) all-weather access (i.e., access to critical services when needed, and being able to plan investments and operations of farm and nonfarm businesses on a longer-term basis); and (ii) comprehensive coverage of traffic safety measures for motorized traffic (i.e., traffic safety is mainstreamed in the design and choice of alignments); protection against landslides, avalanches and floods; length and steepness of slopes on roads and railways; signage; rest stops and emergency lanes; and protected waterways with good navigational aids and markings, and explicit traffic safety measures to separate and protect nonmotorized transport (i.e., pedestrians, cyclists, animal-drawn carts, and unmarked human-powered vessels) and motorized transport. These indicator values tend to take on extreme values (i.e., very high or very low). Railway projects appear to have the lowest relevance for criterion D when judged by the indicators in Table 3.6.

Table 3.6: ADB Rated Indicator Values on a 0–10 Scale for Transport Projects under Criterion D: Reduce Risk and Protect Against Vulnerability

Reduce risks and provide protection against vulnerability through	Road Development Projects	Rural Road Projects	Urban Transport Projects	Railway Projects	Waterways and Domestic Shipping Projects
Explicit traffic safety measures in choice and design of alignments	10	9	9	10	9
Protection of nonmotorized traffic	10	9	9	10	9
Protection against natural calamities (e.g., landslides, storms, and floods)	9	9	9	9	9
Reliable all-weather access to community and prefecture centers	8	9	6	7	9
Reliable all-weather access to and for clinics and health personnel	9	9	9	7	9
Reduced risks of pests and diseases	7	8	7	8	8
Reliable all-weather access to primary and secondary schools	8	9	6	4	9
Having complaints handling mechanisms in place	9	9	9	9	9

Source: Author's estimates.

52. People in remote, isolated areas or in urban slums are often captive to monopolistic suppliers of transport services. This means that they not only face higher public transport fares (if public transport services are at all available), but they also face poor and unreliable frequency of service, often offered with unsafe and overloaded vehicles. In many cases, such inequalities in transport service provision are just as much a result of institutional barriers and rigidities as of remoteness itself.

3.3.2 Energy Subsectors

53. Power transmission and distribution projects followed by renewable energy projects are most likely to have the highest direct inclusive growth relevance and inclusive growth contribution potential among the energy subsectors for all the indicators under criterion A.

54. Conventional power generation projects are of course essential for producing the power demanded that shall be transmitted and distributed to end users. Such projects often require large numbers of workers and can be constructed by means of labor-intensive methods and thus provide many temporary local jobs benefiting the poor, local women, and ethnic minorities. They can also provide training through such jobs, which will qualify the workers for a wider range of jobs after project completion. However, the relevance of such projects for direct and indirect poverty reduction, promotion of gender equality, and reduction of exclusion of disadvantaged groups is rather limited.

Table 3.7: ADB Rated Indicator Values on a 0–10 Scale for Transport Projects under Criterion E: Participation: Remove Structural and/or Institutional Inequalities and Exclusion

Remove excluding structural and institutional barriers by	Road Development Projects	Rural Road Projects	Urban Transport Projects	Railway Projects	Waterways and Domestic Shipping Projects
Providing equal opportunities for the provision of transport services	8	8	8	8	8
Creating a competitive transport services market	8	8	7	8	8
Simplifying conditions for entry into formal transport services markets	8	9	7	8	9
Removing infrastructure-destroying subsidies	8	9	9	8	9
Introducing fare subsidies to prevent exclusion of the poor and services to poor, isolated communities	8	8	8	8	8

Source: Author's estimates.

55. Renewable energy projects are rapidly changing in scope, size, and technology. Many small projects can be particularly useful in small, remote communities where extension of the grid is not feasible. Through subsidies, it can be possible to stimulate small agro-processing and other local nonfarm businesses otherwise not within reach, and thus reduce exclusion from new job and income opportunities.

56. Projects that change energy policies can first of all contribute to inclusive growth by means of power tariff policies that make electricity affordable for poor small-scale enterprises and rural and urban households that would otherwise be excluded from access to the services and benefits that require connection to a power source or network. Such policy reforms will benefit the poor directly, enhance gender equality, and provide for better inclusion of disadvantaged groups. This can be achieved by means of lifeline tariffs and/or progressive block tariff systems similar to those applied to make water tariffs socially benign. In this way, energy tariff policies can have poverty-reducing income effects. Many large public energy supply companies are poorly managed, often resulting in unreliable and expensive power supply, especially for those who can least afford it. Policy reforms targeting such ineffectiveness and inefficiencies can thus be highly inclusive-growth benign.

57. Energy projects—especially in transmission and distribution—and renewable energy projects reduce the risk of investing in, and enhance the opportunity to take advantage of, household and small enterprise physical assets (cookers, refrigerators, freezers, small electric appliances and machines, small irrigation pumps, implements for processing, and others) that are power driven and make day-to-day activities much easier. This again creates opportunities for a wider range of income-earning opportunities and more equal opportunities for women.

58. The indicator scores proposed in Tables 3.8–3.12 are first and foremost adopted to illustrate how the proposed methodology for inclusive growth scoring works. ADB experts have to agree on actual ADB scores for each indicator, and also on the final set of indicators to be used for each energy subsector. As will be seen in section 5, page 79, some indicators have been removed and others added under each subsector, simply because the indicator rigidity imposed by the contents of Tables 3.8–3.12 becomes unrealistic.

Table 3.8: ADB Rated Indicator Values on a 0–10 Scale for Energy Projects under Criterion A: Participation: Enhance Income and Employment Opportunities for Lower-Income and Excluded Vulnerable Groups

Enhance opportunities for	Conventional power generation projects	Power transmission and distribution projects	Renewable energy projects	Others (e.g., energy policy change projects)
Permanent nonfarm wage and self-employed jobs	9	10	10	7
Temporary wage jobs (e.g., project construction)	10	10	10	3
Income-enhancing farming methods	9	10	10	7
Adopting labor-intensive construction methods	10	10	10	4
Power-driven implements and workplace productivity-enhancing assets	10	10	10	8
Benefits to trickle down to the poor	6	8	6	7
Benefiting the poor directly	8	8	8	9
Promoting gender equality	7	8	8	9
Including and benefiting excluded groups, e.g., ethnic minorities and slum dwellers	8	8	8	9

Source: Author's estimates.

59. Both households and community services become more efficient with reliable electricity supply and can expand their range of services and opportunities to make daily life easier.

60. Typically, the first investments of households when electricity becomes available in a remote village are in power connection and outlets for lighting, followed by radio and television that can be operated without the need for expensive batteries. Along with these are mobile phones that allow direct contact with markets so that users can determine when to sell their produce, and to make appointments for social, medical, and extension services with minimal loss of valuable time. Then follows various appliances and farm implements, such as irrigation pumps, electric mills, and refrigeration facilities—both for food and medicines.

Table 3.9: ADB Rated Indicator Values on a 0–10 Scale for Energy Projects under Criterion B: Provision of Assets with Equal Distribution of Benefits

Improved infrastructure assets provide for	Conventional power generation projects	Power transmission and distribution	Renewable energy projects	Others (e.g., energy policy change projects)
A wider range of new, permanent nonfarm wage job opportunities	7	10	10	7
More effective contact and communication with product markets, labor markets, and public sector services	7	9	9	8
The use of electric appliances possible for farmers (e.g., mills and irrigation pumps) and for small-business uses	9	10	10	9
Enhanced access to repair and associated services	7	8	8	7
Enhanced access to credit	5	9	9	3
Change to higher-value processing of produce based on power and local resources inputs	7	9	9	8

Source: Author's estimates.

61. However, once businesses, farmers, and households have installed power connection (whether grid or renewable local energy supply), their economies and daily lives will be vulnerable to blackouts and erratic power supplies. This suggests particular vulnerability to transmission and distribution of grid-based power, and this again means that energy policies that secure sufficient revenues to the power suppliers so that they can maintain and operate the grid is crucial for the dependent customers, most of whom cannot afford costly backup diesel generators.

62. Local renewable energy schemes are often less vulnerable to political mismanagement at the central level. Also, the customers will experience that reliable and stable power supply depends on both the production ability of power from conventional plants, which may be vulnerable to severe drought (in the case of hydropower) or cut-off of diesel supplies from external markets (in the case of revenue mismanagement), and on the transmission operations of the grid and the distribution to the final users.

63. Market-based energy sector policies can prepare the ground for power supply stability, and power customers are therefore vulnerable to haphazard power policies that result in inadequate revenue generation to maintain and operate the system.

Table 3.10: ADB Rated Indicator Values on a 0–10 Scale for Energy Projects under Criterion C: Promote Non-Income Human Well-Being Outcomes: Provision of Assets with Equal Distribution of Benefits

Promote equal distribution of opportunities to non-income human well-being through	Conventional power generation projects	Power transmission and distribution	Renewable energy projects	Others (e.g., energy policy change projects)
Improved participation in community assemblies and social life	8	10	10	8
Improved access to information and communication	9	10	10	8
Reliable power supply for schools; improved school enrollment, attendance, and completion	9	10	10	8
Reliable power supply for clinics for lights, refrigeration of medicines, and tests; reduced child mortality	9	10	10	8
Improved effectiveness in household work	7	10	10	6
Benefits trickle down to the poor	7	8	8	5
Directly targeted on benefiting the poor	9	9	9	8
Promoting gender equality	9	9	9	8
Directly including and benefiting excluded groups, e.g., ethnic minorities and slum dwellers	9	9	9	8

Source: Author's estimates.

Table 3.11: ADB Rated Indicator Values on a 0–10 Scale for Energy Projects under Criterion D: Reduce Risk and Protect Against Vulnerability

Reduce risk and protect against vulnerability by	Conventional power generation projects	Power transmission and distribution projects	Renewable energy projects	Others (e.g., energy policy change projects)
Maintaining reliable transmission and distribution to customers	5	10	10	9
Providing for stable voltage to avoid damage to users' appliances and machinery	7	10	10	5
Providing backup power supplies	9	9	9	8
Protecting against landslides, storms, droughts, and floods	9	9	9	5

Source: Author's estimates.

Table 3.12: ADB Rated Indicator Values on a 0–10 Scale for Energy Projects under Criterion E: Remove Structural and/or Institutional Inequalities and Exclusion

Remove excluding structural and/or institutional inequalities and barriers by	Conventional power generation projects	Power transmission and distribution projects	Renewable energy projects	Others (e.g., energy policy change projects)
Providing equal opportunities for connecting to power and energy	6	10	10	10
Adopting tariff structure (e.g., block tariffs) affordable to small users and the poor	10	10	10	10
Simplifying conditions for connecting to the grid for excluded groups (e.g., isolated ethnic minorities)	10	10	10	10
Removing power subsidies for large users to make tariff subsidies for the poor possible	8	10	10	10

Source: Author's estimates.

64. Subsidies to large users often represent a drain on power companies that they are unable to supply smallholders and poor households reliably at affordable tariffs. This discourages low-income users from investing in power-driven assets and implements that are designed to enhance their job and home productivities and free-up time for other activities.

65. In urban slums where people have no formal land rights, they also have no formal access to electricity and are thus prevented from safe power access and the many above-mentioned advantages offered once a stable power supply is available for work and household chores.

4. The Contribution of Transport Sector Projects to Inclusive Growth

4.1 Road Development (Highways and Expressways)

4.1.1 The People's Republic of China: Anhui Integrated Transport Sector Improvement Project

66. Project classification summary:

- Approved: 2009
- Country: The People's Republic of China (PRC)
- Project No.: 42018
- ADB department: East Asia Department

- Theme: Economic growth
- Sub-themes: Promoting economic efficiency and enabling business environment, widening access to markets and economic opportunities, and environmental sustainability, with high rural impact and medium urban impact
- Financing: \$200 million ADB loan; 14.8% of total financing
- Targeting classification: General Intervention (GI)⁷

67. With per capita gross domestic product at 64% of the national average in 2007, Anhui ranked 27th among the 31 administrative areas in the PRC. It has 19 officially designated national poverty counties and 10 provincial poverty counties, accounting for 47.5% of the counties in the province. In 2007, the annual per capita net income of rural households was CNY3,556, while the annual per capita disposable income of urban households was CNY11,473. Rural income poverty incidence is 10.5%. Inadequate road infrastructure and associated high transport costs are major barriers to the reduction of poverty and disparity in Anhui. Anhui has a large surplus rural labor force, which is a main cause of low rural income.

68. Anhui is the least-developed province in the central PRC. Poverty in Anhui is concentrated in Huaibei Plain in the north and the Dabie Mountain area in the south. Huaibei Plain is a major grain production area; however, it is flood-prone, which limits intensification of farming. The main causes of poverty in Huaibei Plain are high population density and limited nonfarm employment, which results in a large surplus of rural laborers. Because of its remoteness and isolation, the resources and income-generating opportunities in the Dabie Mountain area are limited. Lack of transport accessibility and connectivity constrain socioeconomic development of the northern and southern mountainous areas.

69. The project will encourage the use of local labor and material supply during road construction, employing about 440,000 person-months of local unskilled labor. About 20% of this employment for unskilled labor is expected to go to the poor. This could then benefit an equivalent of 7,350 poor laborers or households with around 31,000 people over 4 years (assuming one unskilled laborer works 3 months a year). Consequently, this would bring additional income of about CNY3,000 for a family or CNY700 for each person every year. This additional income would help a poor household gradually move out of poverty.

70. The project is designed to reduce inter- and intra-provincial development disparities. It will (i) strategically integrate Anhui Province with more prosperous neighboring provinces to the east, thereby supporting trade and socioeconomic integration and expanding access to economic opportunities; (ii) support more balanced development of all classes of road networks to contribute to improved living conditions across the province, particularly in poverty areas; and (iii) enhance transport accessibility and connectivity by integrating a network of local roads into the trunk highway system and linking to major centers, counties, and townships.

⁷ A General Intervention (GI) is defined as a project with indirect impact on poverty reduction and vulnerability. In targeted interventions (TI), the impact channels are more direct addressing income poverty (\$1.25 international poverty line), geographical dimensions of poverty and inclusive growth (\$2 international poverty line), and the achievement of the Millennium Development Goals (MDGs). For more information see ADB's project classification system at: <http://www.adb.org/poverty/project-classification-system.asp>.

**Table 4.1: Indicator Relevance on Criterion A:
Participation: Enhance Income and Employment Opportunities for Lower-Income and Excluded
Vulnerable Groups (percentage weight: 30)**

RI	Criterion A indicator: Enhanced opportunities for:	ADB-IGI	WS-ADB-IGI	Score
7	Creation of permanent nonfarm wage and self-employment jobs (formal and informal sectors)	10	1	2.19
8	Creation of temporary wage jobs (e.g., project construction)	8	0.8	2.00
8	Adoption of labor-intensive construction (more jobs)	10	0.8	2.50
5	Increased income from change to higher-value local produce	8	0.8	1.25
5	Increased income from local materials processing	9	0.9	1.41
6	Increase in farm gate and local produce prices (income)	9	0.9	1.69
6	Reduced costs of inputs and consumer goods due to better access (income)	8	0.8	1.50
General Intervention (GI) and MDG related				
2	GI to trickle down to the poor	8	0.8	0.50
Targeted Intervention (TI) and MDG related				
7	Project to directly benefit the poor (income, household, geography)	8	0.8	1.75
7	Promoting gender equality	10	1	2.19
2	Income targeting the disadvantaged (e.g., ethnic minorities)	10	1	0.63
	Sum of weighted ADB-IG indicators		9.6	
Criterion A Score				17.61

MDG = Millennium Development Goal, RI = relevance indicator.

Note: For definitions of ADB-IGI WS-ADB-IGI, and Score, see explanations in section 3.3.

Source: Author's estimates.

71. The gender assessment conducted as part of the social and poverty analysis found that the project can contribute to increasing the social, educational, and health status of women. The project is not expected to have any adverse effects on women. The road safety component of the project will largely benefit women because women, children, and the elderly are the main pedestrians. Moreover, the village bus services component will allow easy access to township centers, which enable women to access townships in less time, more cost effectively, and with greater safety. The project will provide necessary provisions for empowering women during project implementation, and anticipates continued participation of women during planning, implementation, and post-construction activities with assistance from the All-China Women's Federation. ADB's Policy on Gender Development (1998) will be followed.

72. Enhanced transport accessibility and connectivity by integrating a network of local roads into the trunk highway system and linking to major centers, counties, and townships will contribute to inclusive growth by facilitating rural people's access to schools, health services, and public and social services, and thus contribute to reduced child mortality and increased life expectancy. Additional inclusive growth-relevant non-income indicators are improved school attendance, especially by girls, and facilitating local participation by ethnic minorities.

Table 4.2: Indicator Relevance on Criterion B: Creation of Opportunities; % Weight 40

RI	Criterion B indicator: Improved infrastructure assets provide for	ADB-IGI	WS-ADB-IGI	Score
8	Enhanced access to labor markets	8	0.8	3.28
8	Enhanced access to a wider range of jobs	8	0.8	3.28
8	Enhanced access to a larger range of markets for local produce	8	0.8	3.28
7	Enhanced access to markets for wider range and cheaper inputs and consumer goods	8	0.8	2.87
6	Enhanced access to income-creating training and extension	7	0.7	2.15
6	Enhanced access to a wider range of services and repairs	7	0.7	2.15
5	Improved access to credit	8	0.8	2.05
MDG related				
5	Improved access to education	8	0.8	2.05
5	Eliminate and/or reduce negative bias for women	8	0.8	2.05
2	Eliminate and/or reduce negative bias for ethnic minorities	8	0.8	0.82
Sum of weighted ADB-IG indicators			7.8	
Criterion B Score				23.98

MDG = Millennium Development Goal, RI = relevance indicator.

Source: Author's estimates.

Table 4.3: Indicator Relevance on Criterion C: Non-Income Well-Being; % Weight 15

RI	Criterion C indicator: Promote equal distribution of opportunities to non-income human well-being through	ADB-IGI	WS-ADB-IGI	Score
5	Improved participation in community and social life	7	0.7	0.60
5	Reliable access to community centers	7	0.7	0.60
5	Reliable access to clinics and visits by health personnel	8	0.8	0.69
5	Increase in secondary school enrollment and attendance	7	0.7	0.60
4	Improved school completion among girls	7	0.7	0.48
3	Improved health and/or life expectancy	9	0.9	0.47
4	Reduced child mortality	9	0.9	0.62
0	Improved environmental sustainability	9	0.9	0
5	Targeting benefits on the poor	8	0.8	0.69
4	Promoting gender equality	8	0.8	0.55
1	Including and benefiting ethnic minorities	8	0.8	0.14
Sum of weighted ADB-IG indicators			8.7	
Criterion C Score				5.44

RI = relevance indicator.

Source: Author's estimates.

Table 4.4: Indicator Relevance Criterion D: Social Protection and Risk Mitigation; % Weight 10

Criterion D indicator:				
RI	Reduce risks and provide protection against vulnerability through	ADB-IGI	WS-ADB-IGI	Score
6	Explicit traffic safety measures in choice and design of alignments	10	1	0.57
3	Protection of nonmotorized traffic	10	1	0.43
3	Protection against natural calamities	9	0.9	0.38
5	Reliable all-weather access to community centers	8	0.8	0.39
5	Reliable all-weather access to and for clinics and health staff	9	0.9	0.64
5	Reliable all-weather access to schools	8	0.8	0.57
5	Reduced risks of pests and diseases	7	0.7	0.50
6	Complaints handling mechanism in place	9	0.9	0.77
	Sum of weighted ADB-IG indicators		7.0	
	Criterion D Score			4.25

RI = relevance indicator.

Source: Author's estimates.

73. The social development action plan (SDAP) was formulated based on discussions with Anhui Provincial Department of Transport (APDOT) and other agencies (Supplementary Appendix G to the RRP). The SDAP is designed to ensure the mitigation of potential social risks and enhancement of social benefits in an inclusive manner, especially for the poor, women, and other vulnerable groups. The SDAP specifies key actions, target groups, implementing agencies, funding source, and monitoring indicators. Key features of the SDAP include (i) road safety, including community involvement; (ii) income and livelihood recovery for the resettlement of affected people; (iii) transmissible disease prevention; (iv) avoidance of community disturbance during project construction; (v) enhancement of local economic benefits from project construction; (vi) complementary poverty reduction programs; (vii) gender and development measures for women; and (viii) transport service improvements.

74. APDOT will ensure that construction contractors (i) provide timely payment of wages and safe working conditions to all workers, to be monitored by the Project Management Organization (PMO); (ii) provide women's employment, where appropriate, and pay equal wages to female and male employees for similar work; and (iii) not employ child labor as required by the relevant laws and regulations of the borrower. The Resource Manual for Health and Safety in Infrastructure developed under an ADB technical assistance (TA) project was distributed to APDOT and will be piloted under the project;

75. The recommendations of several ADB TA projects were integrated in the project design. From an inclusive growth perspective, the following in particular are of relevance: (i) the Sustainable Rural Transport Services TA provided the model for the village bus transport service reform and pilot projects; (ii) the resource optimization TA was disseminated to APDOT (the executing agency for the project) for road capacity optimization and natural resource preservation; (iii) the report of the corporatization, leasing, and securitization TA was distributed to APDOT and will serve as a basis for exploring private participation options in the sector

during the project; and (iv) in addition to conducting project design, the project preparatory TA supported some initial implementation activities of the road safety and village bus services components, which were appreciated by Anhui Provincial Government and local communities.

Table 4.5: Indicator Relevance on Criterion E: Addressing Institutional and Sustainability Issues; % Weight 5

Criterion E indicator:				
RI	Remove excluding structural and institutional barriers to equal opportunities by	ADB-IGI	WS-ADB-IGI	Score
7	Providing equal opportunities for the provision of transport services	8	0.8	0.70
7	Creating a competitive transport services market	8	0.8	0.70
7	Simplifying conditions for entry into formal transport services markets	8	0.8	0.70
3	Removing infrastructure subsidies that hamper efficiency	8	0.8	0.30
4	Introducing fare subsidies to prevent exclusion of the poor and services to vulnerable poor, isolated communities	8	0.8	0.40
	Sum of weighted ADB-IG indicators		4.0	
	Criterion E Score			2.8

RI = relevance indicator.

Source: Author's estimates.

76. The composite score of this general intervention (GI) road development project is **54.1**, which indicates medium overall inclusive growth relevance. Had there been ethnic minority people affected by the project, explicit measures to include them as beneficiaries would most likely be included, and the composite score would have been somewhat higher.

4.1.2 Bangladesh: Second Road Network Improvement and Maintenance Project

77. Project classification summary:

- Approved: 2003
- Country: Bangladesh
- Project No.: 34415
- ADB department: South Asia Department
- Theme: Economic growth
- Sub-themes: Poverty intervention and regional cooperation
- Financing: \$126 million ADB and Asian Development Fund (ADF) loan; 67.3% of total financing
- Targeting classification: not defined

78. The project will help the government achieve poverty reduction through economic growth by improving transport efficiency and strengthening integrated road networks. It will (i) facilitate the implementation of sector and institutional reform measures envisaged in the National Land

Transportation Policy (NLTP); (ii) improve the conditions of national, regional, and district roads, including the completion of some missing road network links, to provide rural farmers with better market access, social services, and employment opportunities; and (iii) provide better access to Bangladesh's borders, which will stimulate regional economic cooperation and cross-border trade with India and Nepal. Furthermore, the project will secure government funds for periodic and routine maintenance, improve road safety, privatize the operation of five vehicle inspection centers, open up road maintenance to private sector participation, and improve public awareness of HIV/AIDS and trafficking of women.

**Table 4.6: Indicator Relevance on Criterion A: % Weight 30.
Participation: Enhance Income and Employment Opportunities for Lower-Income
and Excluded Vulnerable Groups**

RI	Criterion A indicator: Enhanced opportunities for	ADB-IGI	WS-ADB-IGI	Score
7	Creation of permanent nonfarm wage and self-employment jobs (formal and informal sectors)	10	1	2.19
8	Creation of temporary wage jobs (e.g., project construction)	8	0.8	2.00
5	Adoption of labor-intensive construction (more jobs)	10	0.8	1.56
8	Increased income from change to higher-value local produce	8	0.8	2.00
5	Increased income from local materials processing	9	0.9	1.41
9	Increase in farm gate and local produce prices (income)	9	0.9	2.53
8	Reduced costs of inputs and consumer goods due to better access (income)	8	0.8	2.00
General Intervention (GI) and MDG related				
7	GI to trickle down to the poor	8	0.8	1.75
Targeted Intervention (TI) and MDG related				
6	Project to directly benefit the poor (income, household, geography)	8	0.8	1.50
7	Promoting gender equality	10	1	2.19
0	Income targeting the disadvantaged (e.g., ethnic minorities)	10	1	0.00
Sum of weighted ADB-IG indicators			9.6	
Criterion A Score				21.13

MDG = Millennium Development Goal, RI = relevance indicator.

Source: Author's estimates.

79. At the time of the poverty analysis related to this project, about half of Bangladesh's population was classified as poor, and about one-third as extremely poor.

80. The poverty and social assessment of the project showed extensive use of local labor and material supply during road construction. The analysis also shows that, in the communities where roads have been constructed or improved, farmers stated that improved roads would increase their production substantially due to improved access to fertilizer and seeds.

Furthermore, they stated that road improvements would lead to increased use of irrigation and cash crops, so labor would be needed throughout the year. While the benefits from improved agricultural production primarily accrued to larger and nonpoor farmers, the trickle-down effects from these increased agricultural activities (caused by road improvements) would increase farm demand for labor, and this would primarily benefit the poor. This additional income would help a poor household gradually move out of poverty.

81. The project would also have a direct disposable income effect through lower freight transport costs and greater access to larger markets, resulting in increased trade-related profits. At the same time, passenger fares and travel time would be reduced, allowing road users more time and money to devote to other income-generating activities.

82. Road improvements facilitate migration and this would have two potentially positive impacts. Remittances from migrants, combined with reduced population pressure in the project area, would result in increased per capita income in the project area. In addition, land values would increase significantly, both for agricultural and commercial land. However, the survey did not clarify the extent to which these effects would impact on the poor.

Table 4.7: Indicator Relevance on Criterion B: Creation of Opportunities; % Weight 40

RI	Criterion B indicator: Improved infrastructure assets provide for	ADB-IGI	WS-ADB-IGI	Score
8	Enhanced access to labor markets	8	0.8	3.28
8	Enhanced access to a wider range of jobs	8	0.8	3.28
8	Enhanced access to a larger range of markets for local produce	8	0.8	3.28
8	Enhanced access to markets for wider range and cheaper inputs and consumer goods	8	0.8	3.28
7	Enhanced access to income-creating training and extension	7	0.7	2.51
7	Enhanced access to a wider range of services and repairs	7	0.7	2.51
6	Improved access to credit	8	0.8	2.46
	MDG related			
7	Improved access to education	8	0.8	2.87
7	Eliminate and/or reduce negative bias for women	8	0.8	2.87
0	Eliminate and/or reduce negative bias for ethnic minorities	8	0.8	0.00
	Sum of weighted ADB-IG indicators		7.8	
	Criterion B Score			26.34

MDG = Millennium Development Goal, RI = relevance indicator.

Source: Author's estimates.

83. The project survey also addressed other non-income areas in which the project could potentially improve quality of life. Some of these are directly linked to increased per capita income, such as improved purchasing power of households, improved and more varied food

consumption, access to a variety of social and public services (e.g., clinics and education), and access to credit.

84. The gender assessment conducted as part of the social and poverty analysis found that the project can contribute to increasing the social, educational, and health status of women. The project is not expected to have any adverse effects on women. The road safety component of the project will largely benefit women because women, children, and the elderly are the main pedestrians. Moreover, the village bus services component will allow easy access to township centers, which enable women to access townships in less time, more cost effectively, and with greater safety.

Table 4.8: Indicator Relevance on Criterion C: Non-Income Well-being; % Weight 15

RI	Criterion C indicator: Promote equal distribution of opportunities to non-income human well-being through	ADB-IGI	WS-ADB-IGI	Score
8	Improved participation in community and social life	7	0.7	0.97
7	Reliable access to community centers	7	0.7	0.74
7	Reliable access to clinics and visits by health personnel	8	0.8	0.97
7	Increase in secondary school enrollment and attendance	7	0.7	0.74
7	Improved school completion among girls	7	0.7	0.74
6	Improved health and/or life expectancy	9	0.9	0.93
4	Reduced child mortality	9	0.9	0.62
0	Improved environmental sustainability	9	0.9	0.00
6	Targeting benefits on the poor	8	0.8	0.83
7	Promoting gender equality	8	0.8	0.97
0	Including and benefiting ethnic minorities	8	0.8	0.00
	Sum of weighted ADB-IG indicators		8.7	
	Criterion C Score			7.50

RI = relevance indicator.

Source: Author's estimates.

85. Enhanced transport accessibility and connectivity by integrating a network of local roads into the trunk highway system and linking to major centers, counties, and townships will contribute to inclusive growth by facilitating rural people's access to schools, health services, and public and social services, and thus contribute to reduced child mortality and increased life expectancy. An additional inclusive-growth-relevant non-income indicator is improved school attendance, especially among girls.

86. Extensive focus group discussions with stakeholder groups in small towns and hamlets in the project's zone of influence were conducted to activate participation in the project design process. Some of these groups were specifically designed to meet women and identify their concerns and preferences. A resettlement advisory committee was formed to conduct dialogue with key stakeholders in implementation of the resettlement plan.

Table 4.9: Indicator Relevance Criterion D: Social Protection and Risk Mitigation; % Weight 10

RI	Criterion D indicator: Reduce risks and provide protection against vulnerability through	ADB-IGI	WS-ADB-IGI	Score
7	Explicit traffic safety measures in choice and design of alignments	10	1	1.00
7	Protection of nonmotorized traffic	10	1	1.00
3	Protection against natural calamities	9	0.9	0.38
7	Reliable all-weather access to community centers	8	0.8	0.80
7	Reliable all-weather access to and for clinics and health staff	9	0.9	0.90
7	Reliable all-weather access to schools	8	0.8	0.80
2	Reduced risks of pests and diseases	7	0.7	0.50
6	Complaints handling mechanism in place	9	0.9	0.80
	Sum of weighted ADB-IG indicators		7.0	
	Criterion D Score			6.18

RI = relevance indicator.

Source: Author's estimates.

87. Traffic safety audit will be conducted on 800 kilometers (km) of existing roads with the highest accident rates, and black spots will be improved by explicit traffic safety measures in accordance with ADB's road safety guidelines, and with a specific focus on protection of nonmotorized traffic.

88. There are no explicit measures included that focus on transport services improvements, but it is assumed that transport services will improve as a result of the roads improvement and that the resulting competition will improve supply.

89. The main institutional reforms are focused on road maintenance and construction planning.

90. The composite score of this general intervention (GI) road development project is **62.5**, which indicates medium overall inclusive growth relevance. Had there been ethnic minorities in the project influence area, and explicit measures to include these as beneficiaries, the composite score would have been somewhat higher.

91. In addition, this project contributes to ADB's regional cooperation Strategy 2020 pillar, but this project was recommended long before the formulation of that strategy.

Table 4.10: Indicator Relevance on Criterion E: Addressing Institutional and Sustainability Issues; % Weight 5

RI	Criterion E indicator: Remove excluding structural and institutional barriers to equal opportunities by	ADB-IGI	WS-ADB-IGI	Score
4	Providing equal opportunities for the provision of transport services	8	0.8	0.40
4	Creating a competitive transport services market	8	0.8	0.40
3	Simplifying conditions for entry into formal transport services markets	8	0.8	0.30
1	Removing infrastructure subsidies that hamper efficiency	8	0.8	0.10
1	Introducing fare subsidies to prevent exclusion of the poor and services to vulnerable poor, isolated communities	8	0.8	0.10
	Sum of weighted ADB-IG indicators		4.0	
	Criterion E Score			1.3

RI = relevance indicator.

Source: Author's estimates.

4.2 Rural (Roads) Development

4.2.1 Indonesia: Second Rural Infrastructure Support to PNPM Mandiri Project

92. Project classification summary:

- Approved: 2009
- Country: Indonesia
- Project No.: 38385-01
- ADB department: Southeast Asia Department
- Themes: Social development, gender equity, governance, capacity development
- Sub-themes: Human development, gender equity in opportunities, institutional development, public administration (national and decentralized)
- Financing: \$90 million ADB loan; 79.2% of total financing
- Targeting classification: Targeted Intervention (TI)

93. Rural poverty incidence in Indonesia is almost 19%. In addition, there are many rural near-poor people who are vulnerable to external shocks that could push them below the national rural poverty line. Lack of access to basic services such as health, education, safe water, and sanitation; absence of economic opportunities; limited access to capital; and poor rural connectivity and infrastructure constitute the main causes of rural poverty in Indonesia. PNPM is Indonesia's flagship poverty reduction program.

94. This ADB loan is in support of facilitation, mobilization, and rural infrastructure support in rural communities, targeting 1.5 million rural poor people in about 1,500 poor and isolated villages in 215 subdistricts in 4 provinces. The project seeks to empower communities and strengthen their capacities to prioritize, design, implement, and monitor community interventions by means of three outputs: (i) strengthened capacity for community planning and development,

- (ii) improved village services and infrastructure through community development grants, and
 (iii) improved capacity for project implementation and monitoring and evaluation.

Table 4.11: Indicator Relevance on Criterion A; % Weight 25
Participation: Enhanced Income and Employment Opportunities for Lower-Income and Excluded Vulnerable Groups

RI	Criterion A indicator: Enhance income and employment opportunities for lower-income and excluded vulnerable groups through	ADB-IGI	WS-ADB-IGI	Score
5	Creation of permanent nonfarm wage and self-employment jobs (formal and informal sectors)	10	1	1.19
8	Creation of temporary wage jobs (e.g., project construction)	9	0.9	1.71
10	Adoption of labor-intensive construction (more jobs)	10	1	2.38
5	Increased income from change to higher-value local produce	9	0.9	1.07
9	Increased income from local materials processing	10	1	2.14
9	Increase in farm gate and local produce prices (income)	10	1	2.14
9	Reduced costs of inputs and consumer goods due to better access (income)	10	1	2.14
General Intervention (GI) and MDG related				
8	GI to trickle down to the poor	7	0.7	1.33
Targeted Intervention (TI) and MDG related				
10	Project to directly benefit the poor (income, household, geography)	10	1	2.38
10	Promoting gender equality	10	1	2.38
0	Income targeting the disadvantaged (e.g., ethnic minorities)	10	1	0
Sum of weighted ADB-IG indicators			10.5	
Criterion A Score				18.86

MDG = Millennium Development Goal, RI = relevance indicator.

Source: Author's estimates.

95. The direct labor impacts will be limited. The project will target employment of local villagers for the construction and maintenance work, and women will be prioritized. At the same time, local materials and products will be used as far as possible and this will also generate income for the villagers. By 2014, at least 290,000 person-months of immediate employment opportunities shall have been generated in the project villages, with at least 30% provided for women. By 2017, the number of households in project villages living below the poverty line shall be reduced by at least 20% from the baseline.

96. Each participating village will be allocated approximately \$25,000 two times for use on their prioritized actions. Experience has shown that around 80% of such allocations are spent on improving rural road access and other physical infrastructure as a means to reduce exclusion from opportunities, and 20% on economic and social activities.

Table 4.12: Indicator Relevance on Criterion B: Creation of Opportunities; % Weight 30

RI	Criterion B indicator: Improved infrastructure assets provide for	ADB-IGI	WS-ADB-IGI	Score
8	Enhanced access to labor markets	10	1	2.4
8	Enhanced access to a wider range of jobs	10	1	2.4
8	Enhanced access to a larger range of markets for the local produce	10	1	2.4
8	Enhanced access to markets for wider range and cheaper inputs and consumer goods	10	1	2.4
8	Enhanced access to income-creating training and extension	10	1	2.4
8	Enhanced access to a wider range of services and repairs	10	1	2.4
8	Improved access to credit	10	1	2.4
MDG related				
10	Improved access to education	10	1	3.0
10	Eliminate and/or reduce negative bias for women	10	1	3.0
0	Eliminate and/or reduce negative bias for ethnic minorities	10	1	0
Sum of weighted ADB-IG indicators			10	
Criterion B Score				22.80

MDG = Millennium Development Goal, RI = relevance indicator.

Source: Author's estimates.

97. By 2014, students in at least 100 villages shall benefit from improved school facilities and school improvements, and the number of girls aged 13–15 years who are not regularly attending secondary school shall have decreased by at least 15%. Residents in the 1,500 project villages in the four project provinces shall benefit from improved service delivery and improved village infrastructure. At least 60% of them shall be satisfied with improvements in local roads, drinking water, sanitation, and other basic infrastructure.

98. A gender action plan is implemented. By 2014, at least 40% of representation in community implementing organizations established in all of the 1,500 villages shall be women. There shall be separate planning meetings for women conducted in all of the involved villages. Women and the poorest community members shall participate at least 20% more actively in planning and decision-making meetings than before the project.

99. By 2017, the project aims at raising the satisfaction with local service delivery and governance by at least 20% compared to the baseline. Compared to the baseline, the number of prenatal care visits in the project villages shall increase at least 10% by 2014 due to improved rural roads, and this is expected to reduce child mortality. Also by 2014, the amount of time spent collecting water in the project villages shall be reduced by at least 20%, and at least 50% of the households in the project villages shall have adopted sound hygiene and sanitation practices.

Table 4.13: Indicator Relevance on Criterion C: Non-Income Well-Being; % Weight 20

RI	Criterion C indicator: Promote equal distribution of opportunities to non-income human well-being through	ADB-IGI	WS-ADB-IGI	Score
10	Improved participation in community and social life	10	1	1.82
10	Reliable access to community centers	10	1	1.82
10	Reliable access to clinics and visits by health personnel	10	1	1.82
10	Increase in secondary school enrollment and attendance	10	1	1.82
10	Improved school completion among girls	10	1	1.82
10	Improved health and/or life expectancy	10	1	1.82
10	Reduced child mortality	10	1	1.82
6	Improved environmental sustainability	10	1	1.09
10	Targeting benefits on the poor	10	1	1.82
10	Promoting gender equality	10	1	1.82
0	Including and benefiting ethnic minorities	10	1	0
	Sum of weighted ADB-IG indicators		11	
	Criterion C Score			17.50

RI = relevance indicator.

Source: Author's estimates.

Table 4.14: Indicator Relevance Criterion D: Social Protection and Risk Mitigation; % Weight 20

RI	Criterion D indicator: Reduce risks and provide protection against vulnerability through	ADB-IGI	WS-ADB-IGI	Score
5	Explicit traffic safety measures in choice and design of alignments	9	0.9	1.27
5	Protection of nonmotorized traffic	9	0.9	1.27
7	Protection against natural calamities	9	0.9	1.78
10	Reliable all-weather access to community centers	9	0.9	2.54
10	Reliable all-weather access to and for clinics and health staff	9	0.9	2.54
10	Reliable all-weather access to schools	9	0.9	2.54
10	Reduced risks of pests and diseases	8	0.8	2.25
10	Complaints handling mechanism in place	9	0.9	2.54
	Sum of weighted ADB-IG indicators		7.10	
	Criterion D Score			16.73

RI = relevance indicator.

Source: Author's estimates.

100. A land acquisition and resettlement framework has been prepared in accordance with ADB's Involuntary Resettlement Policy (1995). However, the involuntary resettlement impact is considered limited. The project is not expected to have any negative impact on indigenous peoples. Investments and training and information campaigns regarding safe water, hygiene, and sanitation are expected to

reduce the risks of pests and diseases, and as a result also reduce the economic risks to which poor people are exposed when becoming ill and physically handicapped.

101. An effective complaints handling mechanism is established and is operational.

Table 4.15: Indicator Relevance on Criterion E: Addressing Institutional and Sustainability Issues; % Weight 5

RI	Criterion E indicator: Remove excluding structural and institutional barriers to equal opportunities by	ADB-IGI	WS-ADB-IGI	Score
5	Providing equal opportunities for provision of transport services	8	0.8	0.28
5	Creating a competitive transport services market	8	0.8	0.28
5	Simplifying conditions for entry into formal transport services markets	9	0.9	0.31
3	Removing infrastructure subsidies that hamper efficiency	9	0.9	0.19
3	Introducing fare subsidies to prevent exclusion of the poor and services to vulnerable poor isolated communities	8	0.8	0.17
10	Establishing participatory processes	10	1.0	0.69
10	Strengthening people empowerment	10	1.0	0.69
10	Establishing accountability and transparency (good governance)	10	1.0	0.69
	Sum of weighted ADB-IG indicators		7.2	
	Criterion E Score			3.30

RI = relevance indicator.

Source: Author's estimates.

102. By 2014, the capacity for community planning, development, project implementation, monitoring, and evaluation will be strengthened as follows:

- (i) Functioning community implementing organizations and community planning processes will be established in all of the involved 1,500 villages.
- (ii) There will be separate planning meetings for women conducted in each of these villages.
- (iii) The active participation of women and the poorest community members in village planning and decision making is to increase by at least 20% compared to before the project.
- (iv) Well-designed investment and implementation plans for community-driven projects will be formulated and approved in each of the villages.
- (v) Inter-village meetings will be conducted to facilitate cross-village coordination and identify possible complementarities in infrastructure and service improvements.
- (vi) 120 staff will be trained for roles in the project management structures established by the project at central, provincial, and district levels.
- (vii) More than 1,000 community facilitators (at least 30% of whom will be women) and 82 consultants will be recruited, trained, and deployed.
- (viii) Detailed annual work plans and personnel schedules will be developed.
- (ix) Community investments are implemented based on agreed-upon criteria and standards.
- (x) An enhanced monitoring and evaluation (M&E) system is established and operational using independent nongovernment organizations (NGOs).

103. The overall composite inclusive growth relevance score of this Targeted Intervention (TI) is **79.19**, i.e., very high. Had there been ethnic minority people in the project area, and proactive measures incorporated to include these, the score would have been even higher.

4.2.2 Armenia: Rural Road Sector Project

104. Project classification summary:

- Approved: 2007
- Country: Armenia
- Project No.: 40610
- ADB department: Central and West Asia Department
- Themes: Sustainable economic growth, capacity development
- Sub-themes: Fostering physical infrastructure, institutional development
- Financing: \$30.6 million ADB loan; 73.9% of total financing
- Targeting classification: Targeted Intervention (TI)

105. In Armenia, 1.2 million people (about 38% of the total population) live in rural areas, of whom more than 45% are poor. Poverty has been reduced from 50.0% in 2000 to 29.8% in 2005 but poverty reduction has been slower in rural areas. This is mainly because of constrained economic activities—primarily attributable to mountainous topography and poor transport infrastructure—imposing high direct and indirect transport costs on the rural population, and limiting income opportunities and expansion of rural industries. High transport costs and limited road access have also negatively affected non-income aspects of poverty in rural areas because of limited access to social service delivery institutions.

106. The project is located in Ararat, Armavir, Gegharkunik, and Kotayk regions with a total population of nearly 1 million. About 54% of the total rural population in Armenia lives in these four regions and about 61% (about 650,000 people) of the total population in the four regions live in rural areas. The incidence of poverty ranges from 30.9% to 34.5%, against the national average of 29.8% in 2005.

107. Poor road infrastructure has also led to economic losses and limited access to basic services. According to the World Bank, about 40% of total survey participants replied that significant volumes of agricultural produce were lost during transport—18% responded that 40% was lost, and 24% stated that 30% was lost.

108. Poor road conditions in rural areas have constrained timely access to health and other social services and access to schools and time spent on education. Bus services and/or road freight services in some rural areas have been reduced or stopped because operators try to avoid damage to their vehicles or perceive high costs of driving on roads that are in poor condition.

109. The Rural Road Sector Project will (i) enhance the economic integration of selected rural communities (which make up about 10% of the total rural population) through improved high-priority rural feeder roads totaling about 220 km connected to the national road network, and (ii) strengthen the capability of transport sector management. Reduction in travel time is more than 40% on average for the whole project after project completion.

110. The project will have an additional, positive, long-term impact on the four project regions and on the income and non-income dimensions of poverty in rural areas as it serves about 10% of the country's total rural population. The outcome will be increased mobility and improved

accessibility to basic social service delivery institutions, employment opportunities, and domestic and international markets for communities and enterprises in rural and urban areas of the four regions. The feeder roads improved under the project will lead to (i) better quality and more frequent transport services for road users; (ii) increased business opportunities for the private sector in general, particularly the agriculture (including agro-processing), industry, and service sectors; and (iii) more synergetic benefits from close partnerships in the road and other sectors relevant to the project. Furthermore, the project will improve transport sector management through the technical assistance (TA) that will be attached to the project.

111. The project will also improve the income and non-income dimensions of poverty in rural areas. About 32% of road users within the project areas are poor and 6% are classified very poor. Project benefits will accrue to about 40,500 poor beneficiaries, of whom roughly 7,000 are very poor. Total net benefits accruing to the poor in the project areas are estimated at about \$24 million, of which the very poor will receive around \$4 million. In addition, improved road infrastructure will provide rural communities with enhanced access to social service delivery institutions including hospitals, clinics, and schools. This will support improvement of the non-income-related causes of poverty.

Table 4.16: Indicator Relevance on Criterion A; % Weight 25
Participation: Enhanced Income and Employment Opportunities for Lower-Income and Excluded Vulnerable Groups

RI	Criterion A indicator: Enhanced income and employment opportunities for lower-income and excluded vulnerable groups through	ADB-IGI	WS-ADB-IGI	Score
5	Creation of permanent nonfarm wage and self-employment jobs (formal and informal sectors)	10	1.0	1.19
5	Creation of temporary wage jobs (e.g., project construction)	9	0.9	1.07
5	Adoption of labor-intensive construction (more jobs)	10	1.0	1.19
8	Increased income from change to higher-value local produce	9	0.9	1.71
5	Increased income from local materials processing	10	1.0	1.19
9	Increase in farm gate and local produce prices (income)	10	1.0	2.14
9	Reduced costs of inputs and consumer goods due to better access (income)	10	1.0	2.14
General Intervention (GI) and MDG related				
8	GI to trickle down to the poor	7	0.7	1.33
Targeted Intervention (TI) and MDG related				
10	Project to directly benefit the poor (income, household, geography)	10	1.0	2.38
7	Promoting gender equality	10	1.0	1.67
0	Income targeting the disadvantaged (e.g., ethnic minorities)	10	1.0	0
Sum of weighted ADB-IG indicators			10.5	
Criterion A Score				16.01

MDG = Millennium Development Goal, RI = relevance indicator.

Source: Author's estimates.

112. There are no indigenous people affected by the project, and the surveys carried out during project preparation have concluded that negative impacts on internally displaced peoples are very limited.

113. The average poverty level in the project area will be reduced from 33.3% in 2005 to less than 20.0% after 10 years from project completion, using a national poverty line based on annual household surveys prepared by the National Statistics Services. Vehicle owners will be the largest beneficiary group, but passenger and freight users are expected to gain considerable benefits given the existing poor quality of the roads and the increase in speed and avoidance of damage to cargo (especially agriculture produce) after road improvement. The proportion of poor people in passenger numbers is assumed to be the average for the regions. In rural areas, many owners of old vehicles will benefit, and 20% are estimated to be very poor. Of the many poor farmers among the freight users, 25% are assumed to be poor, based on the results of poverty assessments conducted during project processing. Project benefits will accrue to about 40,500 poor beneficiaries, of whom roughly 7,000 are very poor.

114. The project will rehabilitate high-priority rural roads totaling about 220 km in Ararat, Armavir, Gegharkunik, and Kotayk regions, serving 71 communities with a total population of 127,000 (about 10% of the total rural population). It will improve the access of these communities to (i) the capital city and regional center through the main road network; and (ii) social service delivery institutions, markets, collection points for agriculture produce and dairy products, agro-processing centers, and industrial processing areas. As a result, the project will be able to offer communities new opportunities in the industry, agriculture (including small and medium-sized agro-industries), and service sectors.

115. The direct labor impacts will be limited. The project will target employment of local villagers for the construction and maintenance work, and women will be prioritized. At the same time, local materials and products will be used as far as possible and this will also generate income for the villagers.

116. Women accounted for 53.8% of the total project survey respondents. The overall poverty rate for the project regions was 33.3%; 29.7% of women are poor. The extreme poverty rate for the project regions was 5.8%; 4.6% of the women are very poor. The majority of women in the project areas are engaged in agriculture activities or small and medium-sized agro-industries (including cottage agro-industries). Reduced travel time and more available transport services will help improve the lives of women and children, as improved road transport under the project will enhance their access to the nearest markets and social service delivery institutions (such as schools, hospitals, and clinics) and increased employment opportunities. It is anticipated that greater road connectivity may have a direct and positive impact on less-educated girls and women by promoting their access to more education and training opportunities.

117. During the project surveys, women considered the roads to be extremely important for agricultural activities, agro-business, and other businesses in the communities. Secondly, they considered that an improved road is an important component of social development and of quality of rural life because it provides rural communities with enhanced access to social service delivery institutions including hospitals, clinics, and schools.

Table 4.17: Indicator Relevance on Criterion B: Creation of Opportunities; % Weight 30

RI	Criterion B indicator: Improved infrastructure assets provide for	ADB-IGI	WS-ADB- IGI	Score
8	Enhanced access to labor markets	10	1	2.40
8	Enhanced access to a wider range of jobs	10	1	2.40
8	Enhanced access to a larger range of markets for local produce	10	1	2.40
8	Enhanced access to markets for wider range of and cheaper inputs and consumer goods	10	1	2.40
8	Enhanced access to income-creating training and extension	10	1	2.40
8	Enhanced access to a wider range of services and repairs	10	1	2.40
8	Improved access to credit	10	1	2.40
	MDG related			
10	Improved access to education	10	1	3.00
7	Eliminate and/or reduce negative bias for women	10	1	2.31
0	Eliminate and/or reduce negative bias for ethnic minorities	10	1	0
	Sum of weighted ADB-IG Indicators		10	
	Criterion B Score			22.11

MDG = Millennium Development Goal, RI = relevance indicator.

Source: Author's estimates.

118. Other concerns are that the project will increase the potential of the spread of HIV/AIDS and other sexually transmitted infections because of the influx of construction workers and increased accessibility caused by the road improvements. Trafficking of teenage girls and women is an additional risk related to increased road connectivity. These risks will be minimized and mitigated by maintaining close coordination and regular consultations with the National Program on the Response to HIV Epidemic (2007–2011) being implemented by the government with assistance from the United Nations AIDS Programme (UNAIDS) and the United Nations Development Programme (UNDP)'s programs against human trafficking to raise awareness and provide preventive measures for local communities (with a special focus on women), construction workers, and the mobile population. Appropriate actions will be taken, if necessary. In general, all—and especially women—within the project areas will benefit from the project. Thus, a specific gender strategy has not been prepared.

119. The borrower, through the Ministry of Transportation and Communication (MOTC), shall ensure that (i) all civil works contracts require contractors employed under a subproject to incorporate applicable workplace occupational safety norms; (ii) that civil works contractors (a) comply with all applicable labor laws; (b) do not employ child labor for construction and maintenance activities; (c) do not differentiate wages between men and women for work of equal value; and (d) disseminate information to their employees on the risks of socially and sexually transmitted infections, including HIV/AIDS; and (iii) that the appropriate entities disseminate information on the risks of socially and sexually transmitted diseases to members of the local community, particularly females, living in the communities surrounding the subproject area. An effective complaints handling mechanism is established and operational.

Table 4.18: Indicator Relevance on Criterion C: Non-Income Well-Being; % Weight 20

RI	Criterion C indicator: Promote equal distribution of opportunities to non-income human well-being through	ADB-IGI	WS-ADB-IGI	Score
10	Improved participation in community and social life	10	1	1.82
10	Reliable access to community centers	10	1	1.82
10	Reliable access to clinics and visits by health personnel	10	1	1.82
10	Increase in secondary school enrollment and attendance	10	1	1.82
10	Improved school completion among girls	10	1	1.82
10	Improved health and/or life expectancy	10	1	1.82
10	Reduced child mortality	10	1	1.82
6	Improved environmental sustainability	10	1	1.09
10	Targeting benefits on the poor	10	1	1.82
7	Promoting gender equality	10	1	1.27
0	Including and benefiting ethnic minorities	10	1	0
	Sum of weighted ADB-IG indicators		11	
	Criterion C Score			16.95

RI = relevance indicator.

Source: Author's estimates.

Table 4.19: Indicator Relevance Criterion D: Social Protection and Risk Mitigation; % Weight 20

RI	Criterion D indicator: Reduce risks and provide protection against vulnerability through	ADB-IGI	WS-ADB-IGI	Score
5	Explicit traffic safety measures in choice and design of alignments	9	0.9	1.27
5	Protection of nonmotorized traffic	9	0.9	1.27
5	Protection against natural calamities	9	0.9	1.27
10	Reliable all-weather access to community centers	9	0.9	2.54
10	Reliable all-weather access to and for clinics and health staff	9	0.9	2.54
10	Reliable all-weather access to schools	9	0.9	2.54
5	Reduced risks of pests and diseases	8	0.8	1.13
10	Complaints handling mechanism in place	9	0.9	2.54
	Sum of weighted ADB-IG indicators		7.10	
	Criterion D Score			15.10

RI = relevance indicator.

Source: Author's estimates.

120. As part of the project preparation, more than 15 consultations (covering both social and environmental aspects) were held with stakeholders, including directly affected people, representatives of local governments and the Council of Elderly, and key persons in the communities. Literature reviews on social and poverty analysis of the poverty situation in the project regions were also conducted. Issues and activities related to project implementation were discussed and concerns (especially road safety and increased exposure to communicable diseases and human trafficking) have been integrated into the project design. Six consultations (social aspects) were held with representatives of local government and the Council of Elderly (Avagani), key persons in the communities (school principals, teachers, and agronomists), and community members in the project areas (Varnenis in the Gegharkunik region; Barzdrashen and Arevshat in the Ararat region; and Numus, Dzoraghiur, and Mayakovsky in the Kotayk region).

121. All stakeholders and project beneficiaries welcomed the initiatives and considered that the project will have a significant positive impact on rural development. First, they consider that the roads are extremely important for agricultural activities, agro-processing business, and other businesses in the communities. People also mentioned that the delivery of agricultural produce to domestic and international markets and the procurement of inputs for agricultural activities and agro-processing business will be more efficient with good roads. Improved rural road infrastructure will also reduce transport costs and damage to agricultural produce. As a result, prices of goods are expected to fall and volumes of agricultural produce for sale will increase. The consultations have concluded that the project will support improvement of the income-related Millennium Development Goals. Second, they believe that an improved road is an important component of social development and of the quality of rural life because it provides rural communities with enhanced access to social service delivery institutions including hospitals, clinics, and schools. The consultations have concluded that the project will also support improvement of the non-income-related Millennium Development Goals. In accordance with the government's requirements for externally funded projects, a project governing council will be established.

122. Stakeholder consultation and participation will continue throughout project implementation. The Armenian Roads Directorate Non-Commercial State Organization, the implementing agency, will ensure that the project is implemented with the active participation of all stakeholders, using participatory practices.

123. The overall composite inclusive growth relevance score of this Targeted Intervention (TI) is **72.67**, i.e., reasonably high. Had there been ethnic minority people in the project area, and proactive measures incorporated to include these, the score would have been even higher.

4.3 Waterways and Domestic Shipping

4.3.1 Solomon Islands: Domestic Maritime Support (Sector) Project

124. Project classification summary:

- Approved: 2008
- Country: Solomon Islands
- Project No: 40263
- ADB department: Pacific Department
- Theme: Sustainable economic growth, private sector development

- Sub-themes: Fostering physical infrastructure development; policy, institutional, legal, and regulatory reforms
- Financing: \$14 million ADB grant; 65.4% of total financing
- Targeting classification: Targeted Intervention (TI)

Table 4.20: Indicator Relevance on Criterion E: Addressing Institutional and Sustainability Issues; % Weight 5

RI	Criterion E indicator: Remove excluding structural and institutional barriers to equal opportunities by	ADB-IGI	WS-ADB-IGI	Score
5	Providing equal opportunities for the provision of transport services	8	0.8	0.28
3	Creating a competitive transport services market	8	0.8	0.17
1	Simplifying conditions for entry into formal transport services markets	9	0.9	0.06
1	Removing infrastructure subsidies that hamper efficiency	9	0.9	0.06
1	Introducing fare subsidies to prevent exclusion of the poor and services to vulnerable poor, isolated communities	8	0.8	0.06
10	Establishing participatory processes	10	1	0.69
10	Strengthening people empowerment	10	1	0.69
7	Establishing accountability and transparency (good governance)	10	1	0.49
	Sum of weighted ADB-IG indicators		7.2	
	Criterion E Score			2.50

RI = relevance indicator.

Source: Author's estimates.

125. Solomon Islands is a poorly developed and weakly performing nation with low per capita income and high unemployment. Agriculture, forestry, and fishing are key economic sectors with production taking place in rural areas with poorly developed and maintained transport infrastructure and services. Maritime transport is vital for connecting the islands, with weak institutional capacity and poor sector governance. Rehabilitated wharves and jetties will increase productivity and reduce costs of shipping operations, leading to more efficient and frequent port calls, and reduce barriers to market access, especially for poor, rural areas.

126. The improved interisland accessibility is expected to reduce the economic disadvantages and improve terms of trade in remote rural areas and stimulate agricultural growth both in volume and value, the latter from a combination of cultivated area expansion and a switch to higher-value agricultural produce and local processing of agricultural produce and fish catch. From this perspective, this waterways project has much in common with a rural roads project as a targeted intervention.

Table 4.21: Indicator Relevance on Criterion A; % Weight 20
Participation: Enhanced Income and Employment Opportunities for Lower-Income and Excluded Vulnerable Groups

RI	Criterion A indicator: Enhanced income and employment opportunities for lower-income and excluded vulnerable groups through	ADB-IGI	WS-ADB-IGI	Score
9	Creation of permanent nonfarm wage and self-employment jobs (formal and informal sectors)	8	0.8	1.67
8	Creation of temporary wage jobs (e.g., project construction)	7	0.7	1.30
9	Adoption of labor-intensive construction (more jobs)	9	0.9	1.88
9	Increased income from change to higher-value local produce	8	0.8	1.67
9	Increased income from local materials processing	8	0.8	1.67
10	Increase in farm gate and local produce prices (income)	8	0.8	1.86
10	Reduced costs of inputs and consumer goods due to better access (income)	9	0.9	2.09
General Intervention (GI) and MDG related				
6	GI to trickle down to the poor	5	0.5	0.70
Targeted Intervention (TI) and MDG related				
10	Project to directly benefit the poor (income, household, geography)	8	0.8	1.86
5	Promoting gender equality	8	0.8	0.93
0	Income targeting the disadvantaged (e.g., ethnic minorities)	8	0.8	0
	Sum of weighted ADB-IG indicators		8.6	
Criterion A Score				15.63

MDG = Millennium Development Goal, RI = relevance indicator.

Source: Author's estimates.

127. Average annual income per household in the project target areas is expected to increase from \$2,300 in 2008 to \$3,000 in 2018. With increased purchasing power in remote rural areas, overall economic activity will increase and create demand for new services, i.e., shops of different kinds. This again would create demand for new jobs both in construction and maintenance of buildings and associated infrastructure, as well as new opportunities in nonfarm and non-fisheries professions, such as restaurants, local processing, and repair and services of household durables and farm and industry implements.

128. The first major component of the project will finance a portion of the planned maritime infrastructure work, including 12 wharves and jetties for rehabilitation or reconstruction in remote areas of provinces that experience a greater incidence of poverty than the national average. Increased services on seven remote routes (from an average frequency of once a quarter in 2008 to at least once a month by 2018, based on the Franchise Shipping Scheme (FSS) allows for (i) access to external markets at much-reduced freight costs for the produce from rural areas; (ii) more frequent and reliable imports of inputs to farming, fishing, and forestry; and (iii) cheaper consumer goods. Interisland travel also becomes more convenient and safer as a result of the rehabilitation and reconstruction of wharves and jetties.

Table 4.22: Indicator Relevance on Criterion B: Creation of Opportunities; % Weight 20

RI	Criterion B indicator: Improved infrastructure assets provide for	ADB-IGI	WS-ADB-IGI	Score
10	Enhanced access to labor markets	8	0.8	2.00
8	Enhanced access to a wider range of jobs	8	0.8	1.60
10	Enhanced access to a larger range of markets for local produce	8	0.8	2.00
10	Enhanced access to markets for wider range and cheaper inputs and consumer goods	8	0.8	2.00
8	Enhanced access to income-creating training and extension	8	0.8	1.60
10	Enhanced access to a wider range of services and repairs	8	0.8	2.00
8	Improved access to credit	8	0.8	1.60
	MDG related			
10	Improved access to education	8	0.8	2.00
10	Eliminate and/or reduce negative bias for women	8	0.8	2.00
0	Eliminate and/or reduce negative bias for ethnic minorities	8	0.8	0
	Sum of weighted ADB-IG indicators		8.0	
	Criterion B Score			16.80

MDG = Millennium Development Goal, RI = relevance indicator.

Source: Author's estimates.

129. Creation of an FSS and provision of targeted subsidies is expected to have a catalytic effect on both private sector ship operators and rural agricultural producers. By providing regular and reliable scheduled services, producers and businesspersons should be able to plan and invest for higher yields and harvests, and thus increase their output and lose less of it to spoilage. Increased demand for cargo and passenger services should in turn make rural routes more commercially viable over time.

130. An expected outcome of these improvements is a 25% increase in the inward tonnage of copra and 2.4-times increase in passenger voyages from 2008 to 2018. Service delays will be reduced by 20%, as will the number of accidents.

131. Increasing services on seven remote routes from an average frequency of once a quarter in 2008 to at least once a month by 2018, gives improved access to public and social services for the isolated, rural poor and provides much better access to a wide range of health services.

Table 4.23: Indicator Relevance on Criterion C: Non-Income Well-Being; % Weight 15

RI	Criterion C indicator: Promote equal distribution of opportunities to non-income human well-being through	ADB-IGI	WS-ADB-IGI	Score
10	Improved participation in community and social life	9	0.9	1.36
10	Reliable access to community centers	9	0.9	1.36
10	Reliable access to clinics and visits by health personnel	9	0.9	1.36
10	Increase in secondary school enrollment and attendance	9	0.9	1.36
7	Improved school completion among girls	9	0.9	0.96
10	Improved health and/or life expectancy	9	0.9	1.36
10	Reduced child mortality	9	0.9	1.36
10	Improved safety on voyages	9	0.9	1.36
10	Targeting benefits on the poor	9	0.9	1.36
7	Promoting gender equality	9	0.9	0.96
0	Including and benefiting ethnic minorities	9	0.9	0
	Sum of weighted ADB-IG indicators		9.9	
	Criterion C Score			12.80

RI = relevance indicator.

Source: Author's estimates.

Table 4.24: Indicator Relevance Criterion D: Social Protection and Risk Mitigation; % Weight 25

RI	Criterion D indicator: Reduce risks and provide protection against vulnerability through	ADB-IGI	WS-ADB-IGI	Score
8	Explicit traffic safety measures	9	0.9	2.54
2	Protection of nonmotorized waterway traffic	9	0.9	0.63
9	Protection against natural calamities	9	0.9	2.85
10	Reliable all-weather access to community centers	9	0.9	3.17
10	Reliable all-weather access to and for clinics and health staff	9	0.9	3.17
10	Reliable all-weather access to schools	9	0.9	3.17
3	Reduced risks of pests and diseases	8	0.8	0.85
0	Complaints handling mechanism in place	9	0.9	0
	Sum of weighted ADB-IG indicators		7.1	
	Criterion D Score			16.38

RI = relevance indicator.

Source: Author's estimates.

132. Due to deferred maintenance, deteriorated rural facilities hinder service provision and pose a safety risk. Global climate change is expected to cause sea-level rise and increase

vulnerability to natural hazards, and as a result of this, there will be increased economic risk, especially to the poor on the rural, isolated islands.

Table 4.25: Indicator Relevance on Criterion E: Addressing Institutional and Sustainability Issues; % Weight 20

RI	Criterion E indicator: Remove excluding structural and institutional barriers to equal opportunities by	ADB-IGI	WS-ADB-IGI	Score
8	Providing equal opportunities for the provision of transport services	8	0.8	2.51
8	Creating a competitive transport services market	8	0.8	2.51
10	Simplifying conditions for entry into formal transport services markets	9	0.9	3.53
3	Removing infrastructure subsidies that hamper efficiency	9	0.9	1.06
10	Introducing fare subsidies to prevent exclusion of the poor and services to vulnerable poor, isolated communities	8	0.8	3.14
10	Public–private partnership and private sector development	9	0.9	3.53
	Sum of weighted ADB-IG indicators		5.1	
	Criterion E Score			16.28

RI = relevance indicator.

Source: Author's estimates.

133. Recurrent funding for maintenance through community contracts, supported by training, will be provided to improve safety, reliability, and sustainability. The legal basis to implement the FSS will be established in a proposed Maritime Reform Bill, and administrative and operational responsibility shall be vested in the Ministry of Infrastructure Development. Provisions for competition in the supply of water transport services will both improve frequency of service and reduce fares and freight rates, and thus bring outlying communities closer to markets and service centers at more affordable costs.

134. The overall composite inclusive growth contribution score of this Targeted Intervention (TI) is **77.89**, i.e., very high inclusive growth relevance. Had there been ethnic minority people in the project area, and proactive measures incorporated to include these, the score would have been even higher.

4.3.2 Sri Lanka: Colombo Port Expansion Project

135. Project classification summary:

- Approved: 2007
- Country: Sri Lanka
- Project No.: 39431-SRI
- ADB department: South Asia Department
- Themes: Sustainable economic growth, private sector development
- Sub-themes: Fostering physical infrastructure development, public–private partnership

- Financing: \$300 million ADB grant; 38.5% of total financing
- Targeting classification: General Intervention (GI)

136. In 2005, 22% of Sri Lanka's population was living below the poverty line. The government's objective is to increase the rate of economic growth to around 8% per annum to generate the resources needed for sustained poverty reduction, achieve its social and economic goals, and reduce regional disparities. Medium-term prospects hinge on government plans to foster economic growth by significantly raising foreign direct investment as well as domestic public and private investment. No large infrastructure improvements have been made in the last 20 years, resulting in bottlenecks that are a heavy drag on the economy. An efficient port system is a key factor in improving the country's competitiveness and attracting investment. It can also be a factor in encouraging the establishment of other value-added industries, since Colombo Port is ideally situated to be the transshipment center for South Asia.

137. In recent years, Colombo Port has lost market share of the regional transshipment market because the fundamentals of the market changed and the port did not adapt. Colombo Port cannot offer the additional operating capacity required to compete for the Indian subcontinent transshipment market or the depth required to berth the latest-generation container ships. Colombo Port will have to develop additional container berths with the required depth to address these capacity and depth infrastructure constraints if it is to remain a transshipment hub port.

138. According to the RRP, the Colombo Port Expansion Project provides for dredging and breakwater construction sufficient to accommodate three terminals, which will be constructed sequentially. The project, to be developed on a public-private partnership basis, includes the establishment of a new marine operations center, relocation of a submarine oil pipeline, provision of navigational aids, and construction of shore utilities. The harbor infrastructure works—dredging, breakwater construction, and other works—will be implemented by the Sri Lanka Ports Authority (SLPA). The first terminal will be operational in 2010 and the second in 2015, and will be constructed by operators chosen through open competitive bidding under a build-operate-transfer concession agreement. The first concession bid will be for one terminal.

139. The project will promote economic growth by improving Sri Lanka's competitiveness in the ports sector by expanding Colombo Port using public-private partnerships, and facilitate economic growth by enhancing national competitiveness in international trade via lower transport costs and faster delivery times. Container handling capacity will be increased from 3.3 million twenty-foot equivalent units (TEUs) in 2006, to 5.7 million TEUs by 2010, 8.1 million TEUs by 2015, and 10.5 million TEUs by 2024. The additional capacity will enable Colombo Port to increase its Indian subcontinent transshipment market share from 23% in 2002 to 30% by 2011. Sri Lanka will thus be able to generate additional income from transshipment. Foreign direct investment in the ports sector is projected to increase by approximately \$800 million between 2010 and 2024. The project will benefit Sri Lankan exporters by enhancing their competitiveness in international markets through lower freight costs and faster delivery times for time-sensitive exports, such as textiles, which account for 52% of Sri Lanka's exports. Lower freight costs are expected to result in annual savings from the baseline year of 2010, of \$82 million by 2015, and faster delivery times will create annual savings of \$49 million by 2015. In addition, transshipment traffic will generate direct net annual income of \$77 million to terminal operators by 2015.

140. According to the Department of Census and Statistics (2004), the percentage of poor households living below the official poverty line was 5% for Colombo District, 9.2% for

Gampaha, and 17.7% for Kalutara, compared with 19.2% for Sri Lanka as a whole. Although the Western Province in which the Colombo Metropolitan Region (CMR) is located records the lowest incidence of poverty in absolute numbers, it accounts for the largest proportion of the total poor. A closer look at the poverty profile of the city of Colombo reveals that there are 1,614 poor urban settlements with 77,612 families. The urban poor of Colombo include those engaged in informal sector activities and blue collar workers of the ports, industries, railways, and others. They are mostly concentrated in the slums, shanties, and low-cost housing in the northern and central parts of the city. Lack of land ownership, poor access to drinking water, poor sanitation facilities, and lack of a regular source of income are a few of the main factors causing poverty.

141. Major positive social impacts of the project are anticipated through the creation of direct and indirect employment opportunities during project construction and operation. Jobs during construction are projected to total 1,950, including 300 for construction of the breakwater and 550 for staged construction of each of the three terminals.

142. During the operation phase, 3,870 permanent jobs are estimated to be created after the breakwater is complete and the three terminals are commissioned. Thus, the number of additional jobs created is expected to be significant.

143. The majority of the temporary employment related to construction of the breakwater and three terminals will accrue to those living in the CMR. About half of the population in Colombo live in slums, and the poor who are underemployed or unemployed will have access to temporary employment opportunities created by the project. Similarly, those residing in the surrounding areas will compete for more regular employment opportunities arising out of the project.

144. During project operation, only a fraction of the new jobs are expected to be executive positions; the largest proportion of workers employed will be in administration (clerks, supervisors, storekeepers, typists, and others), followed by technical workers (crane operators, vehicle drivers, and others) and nontechnical positions (dockers, cleaners, and others).

145. Areas where rock will be sourced for the construction of the breakwater will be determined by the appointed contractor. However, people who live close to the quarry sites, land-based transport routes, and barge load-out points will experience some of the direct impacts of the project. The income impact of quarrying will be largely attributed to contractors, providers of related services (such as transport), and workers. Those working in the quarrying industry are recognized as belonging to one of the most impoverished employment sectors in the country, due to low wages and discontinuous work. As such, this group will benefit substantially from any employment opportunities. According to the projected estimates for quarrying activities, the predicted opportunities of employment will vary from 4,000 to 12,000 positions per year depending on the contractor's method of production, i.e., mechanized or traditional.

146. Benefits will also result from increased vessel traffic and other related initiatives outside the immediate scope of the project, such as the development of a free trade zone. Benefits to import and export industries are likely to accrue in areas outside the project-affected area due to overall improvements in the national economy from the growth in shipping operations facilitated by the project. Therefore, the project will provide a source of income and new employment opportunities in a wide range of job categories including unskilled labor, particularly in terminal operations, construction work at the project, and quarrying sites for the unemployed, low-income earners, and the impoverished. This will lead to poverty reduction.

147. The project will provide educated youth (men and women) with equal opportunities to seek short- and long-term employment created under the project. Those men and women supplying labor for quarrying-related activities would typically be those with low literacy rates and low incomes, with a higher proportion being women. Assuming the degree of mechanization does not affect the proportion of employees by gender, the project is expected to provide additional employment opportunities for women. In general, the project will provide employment opportunities for both men and women during project construction and operation, and in the quarrying sites. The project will ensure that employment opportunities and rates of remuneration are determined without gender-based discrimination, according to the principles of equal remuneration for work of equal value.

Table 4.26: Indicator Relevance on Criterion A; % Weight 20
Participation: Enhanced Income and Employment Opportunities for Lower-Income and Excluded Vulnerable Groups

RI	Criterion A indicator: Enhanced income and employment opportunities for lower-income and excluded vulnerable groups through	ADB-IGI	WS-ADB-IGI	Score
9	Creation of permanent nonfarm wage and self-employment jobs (formal and informal sectors)	8	0.8	1.67
9	Creation of temporary wage jobs (e.g., project construction)	7	0.7	1.47
9	Adoption of labor-intensive construction (more jobs)	9	0.9	1.88
6	Increased income from change to higher-value local produce	8	0.8	1.12
6	Increased income from local materials processing	8	0.8	1.12
3	Increase in farm gate and local produce prices (income)	8	0.8	0.56
3	Reduced costs of inputs and consumer goods due to better access (income)	9	0.9	0.63
General Intervention (GI) and MDG related				
7	GI to trickle down to the poor	5	0.5	0.81
Targeted Intervention (TI) and MDG related				
10	Project to directly benefit the poor (income, household, geography)	8	0.8	1.86
5	Promoting gender equality	8	0.8	0.93
0	Income targeting the disadvantaged (e.g., ethnic minorities)	8	0.8	0
Sum of weighted ADB-IG indicators			8.6	
Criterion A Score				11.95

MDG = Millennium Development Goal, RI = relevance indicator.

Source: Author's estimates.

Table 4.27: Indicator Relevance on Criterion B: Creation of Opportunities; % Weight 20

RI	Criterion B indicator:		WS-ADB-	
	Improved infrastructure assets provide for	ADB-IGI	IGI	Score
8	Enhanced access to labor markets	8	0.8	1.60
8	Enhanced access to a wider range of jobs	8	0.8	1.60
2	Enhanced access to a larger range of markets for local produce	8	0.8	0.40
3	Enhanced access to markets for wider range and cheaper inputs and consumer goods	8	0.8	0.60
5	Enhanced access to income-creating training and extension	8	0.8	1.00
4	Enhanced access to a wider range of services and repairs	8	0.8	0.80
3	Improved access to credit	8	0.8	0.60
MDG related				
3	Improved access to education	8	0.8	0.60
7	Eliminate and/or reduce negative bias for women	8	0.8	1.40
0	Eliminate and/or reduce negative bias for ethnic minorities	8	0.8	0
Sum of weighted ADB-IG indicators			8.0	
Criterion B Score				8.60

MDG = Millennium Development Goal, RI = relevance indicator.

Source: Author's estimates.

Table 4.28: Indicator Relevance on Criterion C: Non-Income Well-Being; % Weight 15

RI	Criterion C indicator: Promote equal distribution of opportunities to non-income human well-being through		WS-ADB-	
	ADB-IGI	IGI	Score	
5	Improved participation in community and social life	9	0.9	0.68
3	Reliable access to community centers	9	0.9	0.41
3	Reliable access to clinics and visits by health personnel	9	0.9	0.41
4	Increase in secondary school enrollment and attendance	9	0.9	0.55
5	Improved school completion among girls	9	0.9	0.68
5	Improved health and/or life expectancy	9	0.9	0.68
3	Reduced child mortality	9	0.9	0.41
1	Improved safety on voyages	9	0.9	0.14
8	Targeting benefits on the poor	9	0.9	1.09
7	Promoting gender equality	9	0.9	0.96
0	Including and benefiting ethnic minorities	9	0.9	0
Sum of weighted ADB-IG indicators			9.9	
Criterion C Score				6.01

RI = relevance indicator.

Source: Author's estimates.

148. The government will cause the SLPA to ensure that all works comply with all applicable labor laws; do not employ child labor for construction and maintenance activities; encourage employment of the poor, particularly women; provide appropriate facilities for women in construction sites; and do not differentiate wages between men and women, particularly for work of equal value. The government will cause the SLPA to ensure that civil works contracts include a requirement on the part of the contractors to conduct an information and education campaign on communicable diseases, including sexually transmitted diseases and HIV/AIDS, for construction workers as part of the health and safety program at campsites during the construction period. The civil works contracts will include specific clauses on these undertakings, and compliance will be strictly monitored by the SLPA during project implementation

149. No land acquisition or negative resettlement impacts are associated with the project. Construction and operation activities will extend seaward from the south end of the existing Colombo Port. Therefore, no additional land will be required by either the government or the private sector.

150. On specific effects associated with quarries, the quarry location will be identified by the contractor only during project implementation prior to the construction of the breakwater. Thus, the government will have to ensure that any land acquisition and resettlement impact associated with quarrying of rocks will require the formulation and implementation of appropriate mitigation measures in compliance with ADB's policy.

151. Based on the analysis, no major insurmountable environmental impacts are associated with the construction and operation of the project, with the assumption that the recommendations for the mitigation measures are implemented.

152. As part of project preparation, consultations were held with primary and secondary stakeholders including people in the project-affected area (men and women), fishers' cooperatives, the Ministry of Ports and Aviation, and other local administration departments. Issues related to the proposed port development and various activities involved in the construction and operation of the project were discussed. The main objective was to ascertain the community response to the project and any negative impacts that the project needs to mitigate. All those consulted had positive reactions to the project and welcomed the benefits that development of the port would lead to, such as increased employment opportunities for the people living in the project area.

153. Consistent with the government's and ADB's commitment to good governance, accountability, and transparency, the government will ensure, and will cause the SLPA to ensure, that the project funds are utilized effectively and efficiently to implement the project and to achieve its objectives.

Table 4.29: Indicator Relevance on Criterion D: Social Protection and Risk Mitigation; % Weight 25

RI	Criterion D indicator: Reduce risks and provide protection against vulnerability through	ADB-IGI	WS-ADB-IGI	Score
8	Explicit traffic safety measures	9	0.9	2.54
4	Protection of nonmotorized waterway traffic	9	0.9	1.27
9	Protection against natural calamities	9	0.9	2.85
1	Reliable all-weather access to community centers	9	0.9	0.32
1	Reliable all-weather access to and for clinics and health staff	9	0.9	0.32
1	Reliable all-weather access to schools	9	0.9	0.32
1	Reduced risks of pests and diseases	8	0.8	0.28
0	Complaints handling mechanism in place	9	0.9	0
	Sum of weighted ADB-IG indicators		7.1	
	Criterion D Score			7.90

RI = relevance indicator.

Source: Author's estimates.

Table 4.30: Indicator Relevance on Criterion E: Addressing Institutional and Sustainability Issues; % Weight 20

RI	Criterion E indicator: Remove excluding structural and institutional barriers to equal opportunities by	ADB-IGI	WS-ADB-IGI	Score
1	Providing equal opportunities for the provision of transport services	8	0.8	0.31
1	Creating a competitive transport services market	8	0.8	0.31
3	Simplifying conditions for entry into formal transport services markets	9	0.9	1.06
1	Removing infrastructure subsidies that hamper efficiency	9	0.9	0.35
1	Introducing fare subsidies to prevent exclusion of the poor and services to vulnerable poor, isolated communities	8	0.8	0.31
10	Public-private partnership and/or private sector development	9	0.9	3.53
	Sum of weighted ADB-IG indicators		5.1	
	Criterion E Score			5.87

RI = relevance indicator.

Source: Author's estimates.

154. The overall composite inclusive growth contribution score for this Targeted Intervention (TI) is **40.33**, i.e., low-medium inclusive growth relevance. Had there been ethnic minority people in the project area, and proactive measures incorporated to include these, the score would have been even higher. Furthermore, the overall inclusiveness contribution on a number

of indicators is very low because such inclusiveness is already present to the affected stakeholders in the project area and the contribution of the project is minimal.

4.4 Urban Transport

4.4.1 The People's Republic of China: Lanzhou Sustainable Urban Transport Project

155. Project classification summary

- Approved: 2009
- Country: The People's Republic of China (PRC)
- Project No.: 40625
- ADB department: East Asia Department
- Theme: Economic efficiency and enabling business environment
- Sub-themes: Climate change mitigation
- Financing: \$150 million ADB loan; 31.3% of total financing
- Targeting classification: General Intervention (GI)

156. Lanzhou, the capital of Gansu Province, is a regional hub between the eastern and western regions of the PRC. Home to 3.1 million inhabitants, it is the economic, political, and cultural center of Gansu Province. The main city is located on the banks of the Yellow River and is contained within a narrow east–west valley with steep terrain on both the northern and southern sides that effectively constrains further expansion of the city. The city has four distinct development zones. Three—Xigu, Qilihe, and Chengguan—are at the site of the original city on the south bank of the Yellow River and are still the centers of business, commerce, and government. The fourth zone is on the north bank of the river at Anning, a residential area that is also a center for education, including universities. Economic activity and population are heavily concentrated in the four urban districts, which occupy only 8.5% of Lanzhou's land area but account for 62.9% of its population and 80.2% of its gross regional product.

157. There is limited potential for further growth of the city along the south bank. In Chengguan, in particular, population density has reached 18,000 people per square kilometer (km²), bringing considerable congestion and pollution. There is good potential for developing the city in Anning, where 80% of the land is suitable for settlement and the population density is only 3,400/km². Future urban development will therefore require a second city center to be developed at Anning.

158. The project is an important demonstration of how proactive urban public transport solutions, such as bus rapid transit (BRT) systems, could improve the local environment and health conditions, and at the same time lead to considerable reductions in greenhouse gas emissions. By introducing a BRT system in Lanzhou, the project will provide a cost-effective and flexible form of mass transport. BRT systems typically cost less than 10% of the cost of underground metros and can be planned, designed, and implemented much more quickly. Fares of underground metros are typically three to four times those of BRT. The project consists of four components under ADB financing:

- constructing and reconstructing 33.8 km of urban roads, including BRT facilities and nonmotorized transport lanes;
- introducing advanced traffic management;

- implementing an advanced environmental monitoring system; and
- building capacity to support project implementation and BRT operation and management.

159. The impact of the project will be sustainable economic growth, effective environmental improvement, and improved quality of urban life in Anning. The outcome will be an efficient, safe, and clean urban road transport system. The project will

- generate certified emission reductions,
- increase average bus speeds on the BRT corridor,
- increase the share of public transport,
- shorten the average travel time, and
- lower accident rates for vehicles and nonmotorized transport.

160. This shows that this project is primarily focused on the Strategy 2020 pillar of environmental sustainability. This also means that one would not expect this project to score very high on the inclusive growth indicators and criteria.

Table 4.31: Indicator Relevance on Criterion A; % Weight 25
Participation: Enhance Income and Employment Opportunities for Lower-Income and Excluded Vulnerable Groups

RI	Criterion A indicator: Enhanced opportunities through	ADB-IGI	WS-ADB-IGI	Score
4	Creation of permanent nonfarm wage and self-employment jobs (formal and informal sectors)	7	0.7	0.83
4	Creation of temporary wage jobs (e.g., project construction)	7	0.7	0.83
8	Adoption of labor-intensive construction (more jobs)	8	0.8	2.96
General Intervention (GI) and MDG related				
2	GI to trickle down to the poor	8	0.8	0.74
Targeted Intervention (TI) and MDG related				
4	Project to directly benefit the poor (income, household, geography)	8	0.8	1.48
4	Promoting gender equality	8	0.8	1.48
5	Income targeting the disadvantaged (e.g., slum dwellers)	8	0.8	1.85
Sum of weighted ADB-IG indicators			5.4	
Criterion A Score				10.17

MDG = Millennium Development Goal, RI = relevance indicator.

Source: Author's estimates.

161. In the urban project area, there are very few people living below the poverty line but a large share of the urban population lack adequate public transport and rely on nonmotorized transport. For them, accessibility to jobs and social services is greatly improved by the project. This in itself is inclusive growth for the large groups of people who earn less than \$2.50 per day and who, as a result of much-improved urban transport, will face increased jobs and income opportunities. When urban transport infrastructure is improved, rapid urban growth will generate

more employment. Some unskilled job opportunities will benefit local people during construction, but this effect will be limited.

162. Some of the affected people in the project area are poor. For economically vulnerable people—including the elderly living alone, disabled, households headed by single women, and poverty households—the project will provide additional training and support. The affected households include those with current vulnerability as well as those facing severe impacts and risks caused by land acquisition and resettlement.

Table 4.32: Indicator Relevance on Criterion B: Creation of Opportunities; % Weight 30

RI	Criterion B indicator: Improved infrastructure assets provide for	ADB-IGI	WS-ADB-IGI	Score
6	Enhanced access to labor markets	8	0.8	2.62
6	Enhanced access to a wider range of jobs	8	0.8	2.62
6	Enhanced access to markets for wider range and cheaper inputs and consumer goods	7	0.7	2.29
6	Enhanced access to a wider range of public services and repairs	8	0.8	2.62
MDG related				
5	Improved access to education and training	8	0.8	2.18
5	Eliminate and/or reduce negative bias for women	8	0.8	2.18
6	Eliminate and/or reduce negative bias for slum dwellers and other excluded groups	8	0.8	2.62
Sum of weighted ADB-IG indicators			5.5	
Criterion B Score				17.13

MDG = Millennium Development Goal, RI = relevance indicator.

Source: Author's estimates.

163. Improved urban accessibility is an asset that promotes inclusive growth for a large share of the urban population by creating more equal travel and commuting opportunities. The review of benefit distribution among different income groups shows that public transport users, pedestrians, and cyclists will be the prime beneficiaries of the project.

164. The benefits of the project will be widespread among the urban districts of Lanzhou. However, the related urban development will have significant benefits for urban and rural residents in Anning. The beneficiaries include (i) road users, such as private vehicle owners, bus passengers and operators, bicycle owners, and pedestrians; and (ii) public and private sector entities, such as universities, government offices, commercial businesses, and industries. New urban roads will improve connections between the two central business centers, thereby reducing travel times and increasing the options of finding employment outside of Anning. The project will attract more commercial, residential, and industrial development to Anning, which will expand local employment opportunities. Rural residents who currently leave Anning to work as migrant workers in other districts or cities will find expanded employment opportunities close to home. There are 2,750 disabled people in Anning, or 1.31% of the population. Disabled

people are disproportionately poor in the district, with 1,114 poor or especially needy people (40.5% of all disabled people). Some 425 poor disabled people are living on minimum security guarantee. The Lanzhou Municipal Government has policies, such as free bus service and blind paths, to provide the disabled with better mobility. These measures have been incorporated into the project design. Also, the project will assess the transport demands of disabled people and may promote minibuses for them. There are only 1,508 ethnic minority people in Anning, or 1.83% of the population. Most of these ethnic minority people in affected areas are Hui, who have a long tradition of successfully integrating with the majority of the Han population. The government has provided preferential policies and programs for minorities. The project will have no impacts on ethnic minorities.

Table 4.33: Indicator Relevance on Criterion C: Non-Income Well-Being; % Weight 20

RI	Criterion C indicator: Promote equal distribution of opportunities to non-income human well-being through	ADB-IGI	WS-ADB-IGI	Score
6	Improved participation in community and social life	7	0.7	1.12
7	Reliable access to community centers	8	0.8	1.49
5	Reliable access to clinics and visits by health personnel	8	0.8	1.07
5	Increase in secondary school enrollment and attendance	7	0.7	0.93
4	Improved school completion among girls	7	0.7	0.64
3	Reduced child mortality	7	0.7	0.56
8	Improved environmental sustainability	9	0.9	1.92
5	Targeting benefits on the poor	7	0.7	0.93
7	Promoting gender equality	7	0.7	1.31
7	Including and benefiting excluded groups (e.g., slum dwellers)	8	0.8	1.49
	Sum of weighted ADB-IG indicators		7.5	
	Criterion C Score			11.46

RI = relevance indicator.

Source: Author's estimates.

165. The project is first of all a climate mitigation project due to the increased use of a more efficient urban transport system. However, due to the much-improved accessibility for many urban lower-income people, the project promotes inclusive growth and facilitates access to jobs, social services, and markets for large parts of the urban population.

166. This a climate mitigation project. BRT will improve current public transport systems to meet the current demand for public transport and additional demand generated as passengers are diverted from private vehicles and by future economic growth. It will also reduce energy consumption and carbon dioxide emissions. As one important driving force of the project, greenhouse gas emission reduction has been considered an indicator for the optimization of urban transport system planning in Lanzhou. BRT will help to mitigate climate change by reducing greenhouse gas emissions through (i) improved fuel-use efficiency through the use of new and larger buses, (ii) mode switching with the availability of an efficient and attractive public transport system, (iii) increased load by having a coordinated system for dispatching buses, and

(iv) smoother driving (less frequent acceleration and braking, and increased average speed for all vehicles (not only buses) as a result of the diversion from private to public transport.

Table 4.34: Indicator Relevance Criterion D: Social Protection and Risk Mitigation; % Weight 10

RI	Criterion D indicator: Reduce risks and provide protection against vulnerability through	ADB-IGI	WS-ADB-IGI	Score
9	Explicit traffic safety measures in choice and design of alignments	9	0.9	1.80
9	Protection of nonmotorized traffic	9	0.9	1.80
3	Protection against natural calamities (floods, typhoons, etc.)	9	0.9	0.60
5	Reliable all-weather access for vulnerable groups	9	0.9	1.0
5	Complaints handling mechanism in place	9	0.9	1.0
	Sum of weighted ADB-IG indicators		4.5	
	Criterion D Score			6.20

RI = relevance indicator.

Source: Author's estimates.

167. From 2010 to 2020 in Anning, fuel consumption by transport per unit of GDP will decrease by 20%, carbon dioxide emissions per passenger-km will decrease by 20%, and emissions of major pollutants per vehicle-km will also decrease by 20%.

168. Accident rates in the project area will decrease by 15% from 2010 to 2020; the nonmotorized traffic accident rate will decrease by 20% from 2010 to 2020.

169. The urban poverty rate in Anning district is 5.5%, and the official rural poverty rate is 2.8%. Less than 5% of people in Anning own vehicles, and most rely on walking, bicycles, or buses. The project area has very few members of ethnic minorities, and they will not be significantly affected by the project or its land acquisition and resettlement.

170. Project design will emphasize improvements for pedestrians, bicycles, and bus transport, including BRT (e.g., safer pedestrian crossings, speed controls, better nonmotorized transport routes, and improved bus services). Other social measures will enhance benefits for local people, including farmers, women, the elderly, the disabled, and children. A social development action and monitoring plan (SDAMP) has been formulated in consultation with key stakeholders and will be implemented by the project management office and other agencies. Actions and monitoring measures that will target and/or involve women in design and implementation (e.g., traffic safety awareness, livelihood training, pedestrian training, and adequate lighting on streets and at bus stops) have been included in the SDAMP. The implementation of these actions will ensure that (i) development benefits are inclusive of women, children, the elderly, the disabled, and poor people; and that (ii) any adverse impacts are identified and avoided or mitigated.

Table 4.35: Indicator Relevance on Criterion E: Addressing Institutional and Sustainability Issues; % Weight 15

RI	Criterion E indicator: Remove excluding structural and institutional barriers to equal opportunities by	ADB-IGI	WS-ADB-IGI	Score
7	Providing equal opportunities for the provision of transport services	8	0.8	1.83
6	Creating a competitive transport services market	7	0.7	1.37
5	Simplifying conditions for entry into formal transport services markets	7	0.7	1.14
7	Removing infrastructure subsidies that hamper efficiency	9	0.9	2.05
3	Introducing fare subsidies to prevent exclusion of the poor and services to vulnerable poor, isolated communities	8	0.8	0.78
5	Improving people empowerment and/or participatory processes	7	0.7	1.14
	Sum of weighted ADB-IG indicators		4.6	
	Criterion E Score			8.31

RI = relevance indicator.

Source: Author's estimates.

171. Governance of the project is in line with ADB requirements. The project is designed for clean development mechanism (CDM) financial support. To the extent dependency on CDM approval and CDM-financial revenue is critical to make the project financially feasible, one can conclude that the project is highly vulnerable, since urban transport CDM-projects face great risk of being rejected.

172. Transport demand management (TDM) addresses traffic congestion by reducing or optimizing demand for transport and influencing user behavior at various levels. The project will streamline TDM concepts and strategy in Lanzhou and (i) develop a TDM strategy including recommendations, action plans, and guidelines that will enable the LMG to build capacity for implementing TDM and incorporate TDM concepts and strategy into future city planning; (ii) reform on a pilot basis the current policy on pricing public parking by introducing a demand-based pricing system; (iii) develop the concept of pilot traffic calming zones to restrict high-speed driving, through traffic, and truck traffic with traffic regulations and physical barriers; and (iv) advise on the institutional coordination of TDM issues within the LMG.

173. The overall composite inclusive growth score on this general intervention (GI) is **53.27**, i.e., medium inclusive growth relevance. However, as mentioned, this project was first and foremost designed to be relevant to the sustainable environment pillar of Strategy 2020 through major interventions to improve the urban public transport supply as a means to reduce the growth in urban traffic congestion and the associated pollution and emissions of greenhouse gases.

174. Any positive inclusive growth ratings can thus be considered a "bonus" from a Strategy 2020 overall rating perspective.

4.4.2 Tonga: Integrated Urban Development Sector Project

175. Project classification summary:

- Approved: 2008
- Country: Tonga
- Project No.: 38160
- ADB department: Pacific Department
- Themes: Sustainable economic growth, capacity development
- Sub-themes: Developing urban areas, institutional development
- Financing: \$11.30 million ADF grant; 79.5% of total financing
- Targeting classification: General Intervention (GI)

176. Around 23% of Tongan households are estimated to experience periodic difficulties in meeting their basic needs. Urbanization is only a relatively recent phenomenon in Tonga, but the problems associated with unplanned and uncontrolled development are already being experienced. Nuku'alofa, located on the island of Tongatapu, is the national capital and has a population of 34,058. The population of Nuku'alofa represents 34% of the national population and about 75% of the national urban population. The annual growth rate in the Nuku'alofa urban area from 1996 to 2006 was 0.85%. Migration to Nuku'alofa from Tonga's outer islands is significant. Approximately 22% of households have migrated to Nuku'alofa from other areas within Tonga during the 1995–2005, and half of these people have migrated in the last 2 years.

177. The buildup of traffic in and around Nuku'alofa in recent years has meant that the main approach roads to the urban area, and roads in the town center, are experiencing congestion. This is especially severe around the public market and also in other areas at peak office and school arrival and departure hours. Traffic congestion in the town center is exacerbated by the fact that vehicular access to the wharves and industrial sites to the east of the primary urban area is restricted and traffic has to pass either through or close to central commercial areas. Inadequate traffic management in strategic locations along the main road network, and especially in terms of off-street parking, also contributes to traffic congestion.

178. The lack of adequate sidewalks along many of the busiest roads results in significant conflict between pedestrians and vehicular traffic. The situation is particularly acute during rainy days, when roadside flooding forces pedestrians onto the main roadways.

179. The standard of road maintenance and repair is low and usually involves repeated patching of damaged sections. Where roads are resurfaced, a new layer of chip seal is laid on top of the existing surfaces without repair to the base course in soft areas, resulting in rapid deterioration of the resurfaced road. The absence of adequate road drainage and poor maintenance of existing drains result in frequent flooding along roadways or over the roadways themselves. In 1998, the Ministry of Works (MOW) prepared a comprehensive nationwide road improvement program, and considerable work has been done toward completing the primary and secondary roads throughout Nuku'alofa. However, many of the roads completed prior to the 1998 plan have now exceeded their designed useful lives and again require resurfacing. The surfaces of most local residential access roads are gravel. These are badly broken and potholed. After heavy rains, they can be intraversable, limiting access to homes.

180. A number of government agencies are responsible for land transport and traffic management in Tonga. The MOW is responsible for planning and design standards, road construction, and maintenance. The Ministry of Police is responsible for vehicle licensing, traffic

signals, traffic management, and traffic enforcement. The Department of Environment of the Ministry of Health is responsible for street cleaning and public health. The Ministry of Labor, Commerce and Industries is responsible for bus and taxi rates and operations. Limited interagency and interdepartmental coordination has resulted in inadequate allowance for the provision of infrastructure and such public utilities as drainage, water, and electricity supply lines in many road rights-of-way.

181. The project will support the development of urban infrastructure in Nuku'alofa through rehabilitating approximately 10 km of primary roads, including road drainage; constructing 4 km of all-weather access roads in low-income residential areas; developing a preventive road maintenance program; rehabilitating all existing drains in Nuku'alofa's central business area; constructing 2.1 km of flood relief drains; and developing a storm water drainage maintenance program. In addition, it will finance subprojects comprising some road resurfacing and widening, and construction of sidewalks to improve traffic safety.

182. Although it is not classified as poverty intervention, the project addresses poverty reduction by targeting, through the Sopu drainage and secondary roads subprojects, residents of the low-income areas of Sopu and Popua. Core subprojects were developed based on a detailed poverty analysis conducted through various participatory approaches during the project preparatory stage. Project components in those areas will (i) provide for improved drainage of stagnant water in low-lying areas and reduce the risk of damage from floods (Sopu); and (ii) improve the residents' access to their homes, which is now only by poorly constructed tracks that are frequently flooded and often impassable (Sopu and Popua). The project will reduce poverty by lessening the financial burden of repairing flood damage to properties and, just as importantly, substantially improving the access to and habitability of low-income residential areas. It will also lessen health care costs by reducing areas of standing water. The improved access road conditions will reduce vehicle operating and repair costs.

183. The project also provides direct employment opportunities, including opportunities for residents of low-income areas, as local contractors will be engaged to carry out much of the civil works. During and after implementation, employment will be thus created in constructing and maintaining civil works. Also, by reducing travel costs and times, inducing economic activities, and employing people directly, the project will improve people's incomes and food security. During the project performance monitoring for the project, the economic impacts of the project on the poor and nonpoor will be assessed using secondary and field data.

184. In this urban project area, the average vehicle journey time for a 7-km trip through Nuku'alofa during peak hours will be reduced from 28 minutes in 2006 to 18 minutes or less by 2012.

185. Improved urban accessibility is an asset that promotes inclusive growth for a large share of the urban population by creating more equal travel and commuting opportunities. The duration of severe flooding in Sopu will be reduced from several months to less than 1 day per year by 2012. Benefits would be expected to include lower prices for consumer goods along with improved access to markets and basic social services. Improving secondary and access roads in Popua and Sopu is expected to primarily benefit the lower-income and most vulnerable households and enable them to benefit from the upgrades of primary roads.

Table 4.36: Indicator Relevance on Criterion A; % Weight 25 Participation: Enhance Income and Employment Opportunities for Lower-Income and Excluded Vulnerable Groups

RI	Criterion A indicator: Enhanced opportunities through	ADB-IGI	WS-ADB-IGI	Score
4	Creation of permanent nonfarm wage and self-employment jobs (formal and informal sectors)	7	0.7	0.83
4	Creation of temporary wage jobs (e.g., project construction)	7	0.7	0.83
4	Adoption of labor-intensive construction (more jobs)	8	0.8	1.48
	General Intervention (GI) and MDG related			
5	GI to trickle down to the poor	8	0.8	1.85
	Targeted Intervention (TI) and MDG related			
7	Project to directly benefit the poor (income, household, geography)	8	0.8	2.59
4	Promoting gender equality	8	0.8	1.48
8	Income targeting the disadvantaged (e.g., slum dwellers)	8	0.8	2.96
	Sum of weighted ADB-IG indicators		5.4	
	Criterion A Score			12.02

MDG = Millennium Development Goal, RI = relevance indicator.

Source: Author's estimates.

Table 4.37: Indicator Relevance on Criterion B: Creation of Opportunities; % Weight 30

RI	Criterion B indicator: Improved infrastructure assets provide for	ADB-IGI	WS-ADB-IGI	Score
7	Enhanced access to labor markets	8	0.8	3.06
7	Enhanced access to a wider range of jobs	8	0.8	3.06
7	Enhanced access to markets for wider range and cheaper inputs and consumer goods	7	0.7	2.67
7	Enhanced access to a wider range of public services and repairs	8	0.8	3.06
	MDG related			
7	Improved access to education and training	8	0.8	3.06
5	Eliminate and/or reduce negative bias for women	8	0.8	2.18
8	Eliminate and/or reduce negative bias for slum dwellers and other excluded groups	8	0.8	3.49
	Sum of weighted ADB-IG indicators		5.5	
	Criterion B Score			20.58

MDG = Millennium Development Goal, RI = relevance indicator.

Source: Author's estimates.

186. Those households in greatest need are living in low-lying areas, and it is estimated that over 1,000 households reside in these areas in Popua and Sopus. Further, many allotments allocated by the government in wetland areas are being filled but are not yet occupied. Because

of the cost of fill material, reclaiming the wetlands takes low-income families many years to achieve and typically requires them to mortgage the lot to pay for the improvements. The prevalence of poverty is notably higher among the residents of these areas than among urban households overall.

187. The selected infrastructure projects for improvements in roads and drainage will benefit the poor, particularly those residing in low-lying areas, by improving the overall conditions and standards of drainage and public health. The project components were developed based on the detailed poverty analysis conducted through various participatory approaches during the project preparatory stage.

Table 4.38: Indicator Relevance on Criterion C: Non-Income Well-Being; % Weight 20

RI	Criterion C indicator: Promote equal distribution of opportunities to non-income human well-being through	ADB-IGI	WS-ADB-IGI	Score
6	Improved participation in community and social life	7	0.7	1.12
9	Reliable access to community centers	8	0.8	1.92
9	Reliable access to clinics and visits by health personnel	8	0.8	1.92
6	Increase in secondary school enrollment and attendance	7	0.7	1.12
4	Improved school completion among girls	7	0.7	0.75
7	Reduced child mortality	7	0.7	1.31
7	Improved environmental sustainability	9	0.9	1.68
8	Targeting benefits on the poor	7	0.7	1.49
7	Promoting gender equality	7	0.7	1.31
8	Including and benefiting excluded groups (e.g., slum dwellers)	8	0.8	1.71
	Sum of weighted ADB-IG indicators		7.5	
	Criterion C Score			14.33

RI = relevance indicator.

Source: Author's estimates.

188. A highly participatory approach was employed in preparing the project, and consultations with stakeholders were conducted throughout Tonga. The social assessment component was based on (i) 16 workshops that included more than 300 participants on community needs assessment and involved interest groups such as women, youth, and community leaders, as well as church leaders in 'Eua, Ha'apai, Tongatapu, and Vava'u; and (ii) a socioeconomic survey of 431 randomly selected households in Nuku'alofa.

189. Tonga has many nongovernment organizations that work mainly with women on household improvement and income-generation assistance. These women's organizations were consulted during project preparatory technical assistance (TA) fact-finding and identified for membership in the TA steering committee. Gender analysis was conducted during the project preparatory TA to identify strategies for addressing gender issues. Workshops on community and development needs involved leaders of women's nongovernment organizations and representatives of the women's community. More than half of the people interviewed for a

household survey of Nuku'alofa on socioeconomic, social service, and infrastructure issues were women. The workshops and survey revealed that women and men share most of the same concerns, such as cost of living, landlessness, and unemployment (particularly of young people). The workshops found that many low-income households in Nuku'alofa are supported by women's earnings from raising pigs, growing vegetables, and making *tapa* cloth and mats for sale.

190. No gender strategy is required. Urban road improvements will not require a gender strategy as the upgrading and drainage will benefit both men and women, including those living near the roads or using the roads as pedestrians or motorists. Male and female beneficiaries of the Sopu Drainage Channel, as well as other holders of registered leases and allotments resident in Tonga, have been consulted at each stage of the conceptual design.

191. Positive social impacts will include improved access to commercial, health, education, and other community facilities within the urban area. Other impacts will include reduced accident rates for pedestrians and reduced waterborne disease infections. Potential negative social impacts include those associated with faster vehicular traffic brought about by road rehabilitation. Groundwater remains safe for potable use. Reticulated water quality continues to meet the World Health Organization (WHO) Guidelines for Drinking Water Quality.

192. The project will lead to a reduction in the number of annually reported cases of waterborne diseases as indicated by

- diarrhea, to less than 1,500 by 2012 (from 2,320 in 2003);
- dengue fever, to less than 100 by 2012 (from 194 in 2003); and
- typhoid fever, to less than 15 by 2012 (from 23 in 2003).

193. Land acquisition and involuntary resettlement impacts will be minimal.

Table 4.39: Indicator Relevance Criterion D: Social Protection and Risk Mitigation; % Weight 10

RI	Criterion D indicator: Reduce risks and provide protection against vulnerability through	ADB-IGI	WS-ADB-IGI	Score
7	Explicit traffic safety measures in choice and design of alignments	9	0.9	1.40
9	Protection of nonmotorized traffic	9	0.9	1.80
9	Protection against natural calamities (floods, typhoons, and others)	9	0.9	1.80
10	Reliable all-weather access for vulnerable groups	9	0.9	2.00
7	Complaints handling mechanism in place	9	0.9	1.40
	Sum of weighted ADB-IG indicators		4.5	
	Criterion D Score			8.40

RI = relevance indicator.

Source: Author's estimates.

Table 4.40: Indicator Relevance on Criterion E: Addressing Institutional and Sustainability Issues; % Weight 15

RI	Criterion E indicator: Remove excluding structural and institutional barriers to equal opportunities by	ADB-IGI	WS-ADB-IGI	Score
7	Providing equal opportunities for provision of transport services	8	0.8	1.83
3	Creating a competitive transport services market	7	0.7	0.69
2	Simplifying conditions for entry into formal transport services markets	7	0.7	0.39
2	Removing infrastructure subsidies that hamper efficiency	9	0.9	0.58
2	Introducing fare subsidies to prevent exclusion of the poor and services to vulnerable poor, isolated communities	8	0.8	0.52
7	Improving people empowerment and/or participatory processes	7	0.7	1.60
	Sum of weighted ADB-IG Indicators		4.6	
	Criterion E Score			5.61

RI = relevance indicator.

Source: Author's estimates.

194. The overall composite inclusive growth score of this general intervention (GI) urban development project, dominated by urban transport, is **60.94**, i.e., medium–high inclusive growth relevance.

4.5 Railway Development

4.5.1 Viet Nam: Greater Mekong Subregion Kunming–Hai Phong Transport Corridor: Yen Vien–Lao Cai Railway Upgrading Project

195. Project classification summary:

- Approved: 2006
- Country: Viet Nam
- Project No.: 39175
- ADB department: Southeast Asia Department
- Themes: Sustainable economic growth, regional cooperation
- Sub-themes: Promoting economic efficiency and enabling markets, fostering physical infrastructure development
- Financing: \$60 million ADB Loan; 37.5% of total financing.
- Targeting classification: General Intervention (GI)

196. The Hai Phong to Lao Cai railway forms part of the Kunming–Hai Phong transport corridor linking Yunnan Province in the People's Republic of China (PRC) with Viet Nam. The project is designed to promote sustainable economic growth by rehabilitating 285 km of railway line from Yen Vien station in the northern suburbs of Hanoi to Lao Cai on the border with the PRC. The project will develop a safe, efficient, and environmentally sustainable railway

transport system in the northwest region of Viet Nam, enhance connectivity with the PRC through the Kunming–Hai Phong transport corridor, and assist with institutional reform of the railway subsector.

197. The project will contribute to ADB's support for cooperation in the Greater Mekong Subregion (GMS) and for the government's investment in transport infrastructure. The project is in line with the strategic thrust of strengthening connectivity and facilitating cross-border movement and tourism under ADB's Regional Cooperation Strategy and Program approved by the Board of ADB in March 2004. This project is first and foremost designed to contribute to ADB's Strategy 2020's pillar of promoting regional cooperation.

198. The project will
- (i) increase the corridor's capacity, benefiting consumers and producers of goods and services through the provision of timely and efficient transport services and lower costs;
 - (ii) generate direct and indirect employment in the project-influenced area, and create jobs and income-earning opportunities;
 - (iii) greatly facilitate subregional trade, in particular by providing Kunming and the rest of Yunnan Province with closer and potentially more efficient access to the sea, through Viet Nam's Hai Phong port;
 - (iv) stimulate local development through tourism, and railway station area development; and
 - (v) increase gross domestic product (GDP) per capita in the project area outside Hanoi to 70% of the national average by 2020.

The major project beneficiaries will be

- (i) passengers, including tourists;
- (ii) freight users;
- (iii) local residents who will benefit from lower prices of commodities and services transported by the project railway;
- (iv) local labor involved in construction work and supply of materials during implementation and later in the operation of the railway;
- (v) local manufacturers and traders who will be able to increase production capacity or establish businesses; and
- (vi) local governments that will benefit from the increased opportunity for local area development and increased revenues; the project will benefit more than 200,000 people living in the project area.

199. Of the people affected by the project, 93.2% are Kinh (i.e., ethnic Vietnamese) and 6.8% are from ethnic minorities. The ethnic minority groups living in the project area are Dao, Hmong Xa Pho, and Tay, and they live together with the Kinh in mixed settlements in towns. They are integrated into the urban lifestyle in terms of employment in the formal and informal sectors, housing, and schools. The ethnic minorities do not have separate cultural and social organizations to retain their traditional livelihood systems. The socioeconomic survey indicated that the project is not expected to have any adverse effect specific to these non-Kinh groups. Thus, ADB's policy on indigenous peoples is not triggered, and an ethnic minorities development plan is not required.

Table 4.41: Indicator Relevance on Criterion A; % Weight 20
Participation: Enhance Income and Employment Opportunities for Lower-Income and Excluded Vulnerable Groups

RI	Criterion A indicator: Enhanced opportunities through	ADB-IGI	WS-ADB-IGI	Score
5	Creation of permanent nonfarm wage and self-employment jobs (formal and informal sectors)	6	0.6	0.75
8	Creation of temporary wage jobs (e.g., project construction)	8	0.8	1.60
8	Adoption of labor-intensive construction (more jobs)	9	0.9	1.80
5	Income increase from change to higher-value local produce	7	0.7	0.88
8	Income increase from local materials supply and processing	8	0.8	1.60
7	Increase in farm gate and local produce prices (income)	6	0.6	1.05
8	Reduced costs of inputs and consumer goods due to better access (income)	8	0.8	1.60
General Intervention (GI) and MDG related				
3	GI to trickle down to the poor	4	0.4	0.30
Targeted Intervention (TI) and MDG related				
3	Project to directly benefit the poor (income, household, geography)	8	0.8	0.60
4	Promoting gender equality	8	0.8	0.80
1	Income targeting the disadvantaged (e.g., ethnic minorities)	8	0.8	0.20
Sum of weighted ADB-IG indicators			8.0	
Criterion A Score				11.18

MDG = Millennium Development Goal, RI = relevance indicator.

Source: Author's estimates.

200. The project will primarily enable increased railway freight traffic, which has little direct impact on people living in the project area. There will be minor increases in effective travel speeds and improved regularity of train operations, which will have a direct, positive impact on train passenger and freight users. These improvements are, however, small and will not significantly affect train users. More broadly, improved and increased freight train operations reduces the general cost of freight transport, thereby enabling lower consumer prices and improving Viet Nam's international competitiveness. In turn, this will promote economic growth that will create new jobs and income opportunities. The improved railway will increase the attractiveness of locating economic activities in the project area relative to elsewhere, which in time will generate additional economic growth and additional job opportunities in the project area.

201. Efficient railway transport will improve subregional traffic and significantly reduce the cost of transport by offering cheaper alternatives and providing competition to existing modes and routes. Railway transport will reduce road maintenance requirements and the incidence and severity of traffic accidents by diverting heavy and hazardous road haulage to the railway.

Table 4.42: Indicator Relevance on Criterion B: Creation of Opportunities; % Weight 20

RI	Criterion B indicator: Improved infrastructure assets provide for	ADB-IGI	WS-ADB-IGI	Score
6	Enhanced access to labor markets	8	0.8	1.52
6	Enhanced access to a wider range of jobs	8	0.8	1.52
7	Enhanced access to a larger range of markets for local produce	8	0.8	1.78
8	Enhanced access to markets for wider range and cheaper inputs and consumer goods	8	0.8	2.03
5	Enhanced access to a wider range of services and repairs	7	0.7	1.11
MDG related				
5	Reduced inequalities of access to the list above, for the poor	8	0.8	1.27
5	Eliminate and/or reduce negative bias for women	8	0.8	1.27
2	Eliminate and/or reduce negative bias for ethnic minorities	8	0.8	0.51
Sum of weighted ADB-IG indicators			6.3	
Criterion B Score				11.01

MDG = Millennium Development Goal, RI = relevance indicator.

Source: Author's estimates.

Table 4.43: Indicator Relevance on Criterion C: Non-Income Well-being; % Weight 20

RI	Criterion C indicator: Promote equal distribution of opportunities to non-income human well-being through	ADB-IGI	WS-ADB-IGI	Score
6	Improved participation in community and social life	8	0.8	1.78
5	Reliable access to community centers	7	0.7	1.30
5	Reliable access to clinics and visits by health personnel	7	0.7	1.30
9	Improved traffic safety	9	0.9	3.00
5	Targeting benefits on the poor	8	0.8	1.48
5	Promoting gender equality	8	0.8	1.48
2	Including and benefiting ethnic minorities	8	0.8	0.59
Sum of weighted ADB-IG indicators			5.4	
Criterion C Score				10.93

RI = relevance indicator.

Source: Author's estimates.

202. District resettlement committees established according to the resettlement plan shall include representatives from the district women's union. Commune resettlement committees established according to the resettlement plan will include representatives from the commune women's union, as well as female representatives from affected households, including those from households headed by women, and women from ethnic minority households.

203. The project may increase the potential for the spread of HIV/AIDS and other sexually transmitted infections because of the influx of workers during construction. This potential risk will be mitigated by a program to increase the awareness of local communities and the workforce.

204. The gender strategy will include training for staff from the Railway Project Management Unit (RPMU) and other agencies and leaders from the affected people. This will enable effective implementation of resettlement, livelihood activities and social safety net programs, and training of female leaders of the communes and mass organizations (women's unions and youth unions) to increase their participation in implementing HIV/AIDS and human trafficking prevention.

205. A grievance mechanism will be established to ensure that the concerns and grievances of affected persons are addressed and resolved in a timely and satisfactory manner. Affected persons will be made fully aware of their rights orally and in writing during consultations, surveys, and at the time of compensation payment. Copies of ADB's *Information Guide to the Consultation Phase of the ADB Accountability Mechanism* have been also provided to affected persons.

206. Traffic safety measures, along with the diversion of heavy (often overloaded) road traffic to the railway, will lead to a reduction in the number of accidents on the railway by 25% and on the adjacent roads by 10% by 2015. Under the safety component of the project, a package of measures will improve the safety of rail and road users and the public living near the railway line. These include improvements to level crossings, construction of a flyover, and measures to check unauthorized track crossings by public vehicles.

Table 4.44: Indicator Relevance Criterion D: Social Protection and Risk Mitigation; % Weight 20

RI	Criterion D indicator: Reduce risks and provide protection against vulnerability through	ADB-IGI	WS-ADB-IGI	Score
9	Explicit traffic safety measures in choice and design of alignments	10	1.0	4.00
7	Protection of nonmotorized traffic	10	1.0	3.11
2	Protection against natural calamities	9	0.9	0.80
7	Reduced risks of pests and diseases, including sexually transmitted diseases	8	0.8	2.49
8	Complaints handling mechanism in place	9	0.9	3.20
	Sum of weighted ADB-IG indicators		4.5	
	Criterion D Score			13.60

RI = relevance indicator.

Source: Author's estimates.

207. The project contains an agreed agenda for railway reform for facilitating the implementation of the new Railway Law (in effect since 1 January 2006) that seeks to provide opportunities for private sector participation in the development of railway infrastructure and operations. The basic thrust of this reform is to allow private sector entities to take part in operations and some operational activities, such as onboard train services.

Table 4.45: Indicator Relevance on Criterion E: Addressing Institutional and Sustainability Issues; % Weight 20%

RI	Criterion E indicator: Remove excluding structural and institutional barriers to equal opportunities by	ADB-IGI	WS-ADB-IGI	Score
5	Providing equal opportunities for the provision of transport services	8	0.8	1.67
7	Creating a competitive transport services market	8	0.8	2.33
7	Simplifying conditions for entry into formal transport services markets	8	0.8	2.33
8	Facilitating opportunities for private sector participation	8	0.8	2.67
2	Removing infrastructure subsidies that hamper efficiency	8	0.8	0.67
2	Introducing fare subsidies to prevent exclusion of the poor and services to vulnerable poor, isolated communities	8	0.8	0.67
	Sum of weighted ADB-IG indicators		4.8	
	Criterion E Score			10.24

RI = relevance indicator.

Source: Author's estimates.

208. The composite score of this general intervention (GI) railway development project is **56.96**, which indicates medium overall inclusive growth relevance. However, it should be noted that this project was explicitly designed to be relevant to the ADB Strategy 2020's pillar of regional cooperation, and any positive inclusive growth-relevant ratings may thus be considered project performance "bonuses."

4.5.2 The People's Republic of China: Chongqing–Lichuan Railway Development Project

209. Project classification summary

- Approved: 2008
- Country: The People's Republic of China
- Project No.: 39153
- ADB department: East Asia Department
- Theme: Sustainable economic growth
- Sub-themes: Promoting economic efficiency and enabling markets, and fostering physical infrastructure development
- Financing: \$150 million ADB loan; 5% of total financing
- Targeting classification: General Intervention (GI)

210. Transport constraints and high logistics costs are two factors contributing to regional economic disparities, and two of the constraints preventing the western region from capitalizing on its comparative advantages. The project is in line with the government's western development strategy to provide less-developed regions with better infrastructure to facilitate economic growth, thereby giving people more opportunities to improve their living standards. The interior regions of the PRC have not benefited as much from economic growth and reforms as the east coast; in fact, the gap between economic and social development has increased.

The project is part of the shortest east–west corridor linking Shanghai, Qingdao, Wuhan, Yichang, and other major cities and ports in the east to Chongqing and Chengdu in the west.

211. The proposed alignment for the project railway is 369 km shorter than the existing route between Shanghai and Chengdu, and travel time will be reduced (i) from 6 hours to 3 hours, for travel from Chongqing to Lichuan; and (ii) from 32 hours to 18 hours, for travel from Shanghai to Chengdu. The cost of travel will be reduced from CNY0.35/km in 2007 to CNY0.15/km by 2014.

212. The project will help increase standards of living and reduce poverty in the project area by removing a transport constraint on sustainable economic growth, and improve safety and reliability by introducing new and modern technology. This will be achieved through the provision of efficient, affordable, environmentally friendly, and energy efficient railway transport in unserved, less-developed areas, creating the conditions necessary for developing local resources and generating employment and income-enhancing opportunities.

213. The project comprises (i) the construction of 259 km of double-track, electrified, standard-gauge class I railway from Chongqing to Lichuan; (ii) the construction of eight new railway stations complete with facilities; (iii) safety initiatives, including the provision of modern technology and equipment for enhancing safety; (iv) the provision of signaling, communication, and management information systems; (v) training in the use and maintenance of modern equipment; (vi) consulting services for construction supervision, monitoring and evaluation, and marketing and business development; and (vii) institutional strengthening.

214. The project will (i) provide the shortest land route between Lichuan, Fuling, and Chongqing (key economic centers of Chongqing and Hubei Province) and enable railway users to benefit from lower transport costs and shorter travel distances and times; (ii) improve the environment and reduce pollution; (iii) enhance railway safety; (iv) reduce fuel consumption and enhance energy efficiency, enabling the PRC to save valuable foreign exchange; and (v) increase the corridor's capacity.

215. The major project beneficiaries will be

- (i) passengers, including tourists;
- (ii) freight users;
- (iii) local residents who will benefit from the lower prices of commodities and services transported by the project railway;
- (iv) local labor involved in construction work and supply of materials during implementation and later in operation of the railway;
- (v) local manufacturers and traders who will be able to increase production capacity or establish businesses; and
- (vi) local governments, which will benefit from the increased opportunity for local area development and increased revenues.

216. Identifying ways of enhancing the poverty reduction impact has been an integral part of project planning and design. Specific features include (i) providing employment during construction and operation of the railway on a preferential basis to poor workers, including women; (ii) using locally produced materials (e.g., sand, stone, and cement) that meet the requirements of quality and economy; (iii) providing for railway station area development; (iv) providing station access roads and construction access roads; and (v) supporting the poverty reduction programs of local governments. The project will finance construction access roads to be handed over to the local villages after construction. Local governments have a 5-year plan for improving the road network and transport services in the project area

concurrently with the project. These roads will reach all of the province-designated poverty villages. The project and the local road development will increase the welfare gains for the poor, including women, and help spread project benefits to the poverty villages.

217. The project will benefit about 5.5 million people living in the project area. The poverty and social assessment looked at seven counties or districts. Two counties are designated national or provincial poverty counties. There are 681 poverty villages and about 590,000 people are poor. About 65% of the beneficiaries live in rural areas, and 16.4% are poor, with an annual net income per capita of less than CNY900.

218. The project area includes 792,000 people belonging to ethnic minorities, which represents 14.4% of the project area's population. The main ethnic group in the project area, the Tujia, has been integrated with the Han for nearly 200 years and shares the same socioeconomic conditions, as investigations showed, and there have been a large number of intermarriages.

219. The links between poverty, difficult topography, and poor transport systems are apparent in the project area for the proposed railway. Poverty is often caused by geographic remoteness and isolation, limited transport access, high transport costs, and poor access to market information, as well as limited access to health, education, and other social services.

220. The project will facilitate the creation of additional employment and income-generating opportunities. About 119,000 person-years of work will be created during construction. This will provide direct employment opportunities to more than 59,500 poor people, and the poor, including women, capture 50% of the jobs for unskilled labor.

221. The use of locally produced materials for railway construction will generate an additional 22,000 person-years of work for unskilled laborers, with total wages of CNY165.5 million. The construction tax revenue will be reallocated to counties and used for a range of poverty reduction and social activities. Priority will be given to women, people affected by resettlement, ethnic minorities, and other vulnerable people.

222. Once the new railway starts operation in 2014, an estimated 3,530 direct and indirect jobs will be created with total wages of CNY35.3 million annually. The project's eight new railway stations will be connected to the road network accessible by all villages, including the poor, and will create various jobs, thus helping distribute the benefits in the project area. There will be enough space in and around the stations for local area development, and local governments will support the poor, women, ethnic groups, and other vulnerable people in setting up shops and selling local specialties and other goods and services.

223. Railway station area development will increase incomes in local communities and help generate local revenues. The project will facilitate the development of small businesses, local industry, and tourism, and thus help generate additional opportunities in the future for local people. Consultations with local people in the project area indicated their strong support for the project. By 2015, there will be 50% more shops, tourist centers, hotels, and small businesses established in the vicinity of station areas than in 2008.

224. The increased tax revenues generated by the economic development induced by the project will help finance improved social service facilities and basic infrastructure.

225. Poverty incidence in the project area will be reduced from 10.7% in 2007 to 5% by 2015. All poverty villages along the alignment will be provided with road access, drinking water, and telephone access by 2014. In the 5 years after construction starts, the employment generated in the project area will be 20% higher than in 2006.

**Table 4.46: Indicator Relevance on Criterion A; % Weight 20
Participation: Enhance Income and Employment Opportunities for Lower-Income
and Excluded Vulnerable Groups**

RI	Criterion A indicator: Enhanced opportunities through	ADB-IGI	WS-ADB-IGI	Score
7	Creation of permanent nonfarm wage and self-employment jobs (formal and informal sectors)	6	0.6	1.05
8	Creation of temporary wage jobs (e.g., project construction)	8	0.8	1.60
8	Adoption of labor-intensive construction (more jobs)	9	0.9	1.80
8	Increased income from change to higher-value local produce	7	0.7	1.40
8	Increased income from local materials supply and processing	8	0.8	1.60
7	Increase in farm gate and local produce prices (income)	6	0.6	1.05
8	Reduced costs of inputs and consumer goods due to better access (income)	8	0.8	1.60
General Intervention (GI) and MDG related				
6	GI to trickle down to the poor	4	0.4	0.60
Targeted Intervention (TI) and MDG related				
9	Project to directly benefit the poor (income, household, geography)	8	0.8	1.80
7	Promoting gender equality	8	0.8	1.40
8	Income targeting the disadvantaged (e.g., ethnic minorities)	8	0.8	1.60
Sum of weighted ADB-IG indicators			8.0	
Criterion A Score				15.50

MDG = Millennium Development Goal, RI = relevance indicator.

Source: Author's estimates.

226. Through several ongoing programs along the alignment, the All-China Women's Federation will specifically address the needs of women and children. The federation will operate even more actively in the project area so that women are able to take full advantage of additional work and income opportunities facilitated by the project to build businesses that help sustain their families. The expansion of secondary and tertiary industries will help generate additional long-term employment opportunities for both men and women. Afforestation activities will provide additional employment opportunities for women relatively close to their homes.

227. The government will cause the Ministry of Railways and the project company to (i) implement the project in accordance with the social development action plan (SDAP) and take all necessary actions to encourage women living in the project area to participate in project planning and implementation; (ii) ensure that civil works contractors comply with all applicable

laws relating to gender equality; and (iii) monitor the effects of the project on women through the collection and compilation of gender-disaggregated data, where relevant, including in the resettlement plan, SDAP, and project performance monitoring system.

Table 4.47: Indicator Relevance on Criterion B: Creation of Opportunities; % Weight 20

RI	Criterion B indicator: Improved infrastructure assets provide for	ADB-IGI	WS-ADB-IGI	Score
8	Enhanced access to labor markets	8	0.8	2.03
8	Enhanced access to a wider range of jobs	8	0.8	2.03
8	Enhanced access to a larger range of markets for local produce	8	0.8	2.03
8	Enhanced access to markets for wider range and cheaper inputs and consumer goods	8	0.8	2.03
7	Enhanced access to a wider range of services and repairs	7	0.7	1.56
MDG related				
8	Reduced inequalities of access for the poor	8	0.8	2.03
7	Eliminate and/or reduce negative bias for women	8	0.8	1.78
7	Eliminate and/or reduce negative bias for ethnic minorities	8	0.8	1.78
	Sum of weighted ADB-IG indicators		6.3	
Criterion B Score				15.27

MDG = Millennium Development Goal, RI = relevance indicator.

Source: Author's estimates.

Table 4.48: Indicator Relevance on Criterion C: Non-Income Well-Being; % Weight 20

RI	Criterion C indicator: Promote equal distribution of opportunities to non-income human well-being through	ADB-IGI	WS-ADB-IGI	Score
6	Improved participation in community and social life	8	0.8	1.78
8	Reliable access to community centers	7	0.7	2.07
8	Reliable access to clinics and visits by health personnel	7	0.7	2.07
7	Improved traffic safety	9	0.9	2.33
9	Targeting benefits on the poor	8	0.8	2.67
7	Promoting gender equality	8	0.8	2.07
7	Including and benefiting ethnic minorities	8	0.8	2.07
	Sum of weighted ADB-IG indicators		5.4	
Criterion C Score				15.06

RI = relevance indicator.

Source: Author's estimates.

228. Since the railway will require only a narrow corridor, the average loss of land per household is estimated to be 15%; this means that about 35,000 persons will be partially affected. Resettlement will cause the relocation of about 5,314 people. The railway alignment was selected to minimize resettlement where possible. The resettlement plan includes preferential treatment for employment during construction, supply of local materials, allocation of commercial space near railway stations, and job training. Resettlement will be implemented by local governments and closely monitored and supervised. These measures will mitigate the potential social risks associated with resettlement. The resettlement budget will be adjusted to conform to the actual measurement of physical losses, market prices, and final compensation rates. Affected people have been consulted about the likely impact during the feasibility and preliminary design stages. Resettlement information booklets, in the local language, have been distributed to the affected villages.

229. Since some of the affected minority villages are poor, the resettlement plan specifically provides for livelihood training, employment in construction, access to rural credit, assistance with house construction, and social security. The project includes an SDAP to enhance the benefits to poor or vulnerable people in the project area. Tujia minorities are a target group in the SDAP.

230. The project may increase the potential for the spread of HIV/AIDS and other sexually transmitted infections (STIs) because of the influx of workers during construction. This potential risk will be mitigated by a program to increase the awareness of local communities and the workforce. Medical clinics have been established in the area of construction camps, and HIV/AIDS awareness campaigns and preventive measures for workers and communities have been organized. These measures have effectively managed the potential risks of HIV/AIDS, STIs, and other diseases, and will be applied to the project.

Table 4.49: Indicator Relevance Criterion D: Social Protection and Risk Mitigation; % Weight 20

Criterion D indicator: Reduce risks and provide protection against vulnerability through				
RI		ADB-IGI	WS-ADB-IGI	Score
8	Explicit traffic safety measures in choice and design of alignments	10	1.0	3.56
3	Protection of nonmotorized traffic	10	1.0	1.33
5	Protection against natural calamities	9	0.9	2.00
7	Reduced risks of pests and diseases, including sexually transmitted diseases	8	0.8	2.49
7	Complaints handling mechanism in place	9	0.9	2.80
	Sum of weighted ADB-IG indicators		4.5	
Criterion D Score				12.18

RI = relevance indicator.

Source: Author's estimates.

Table 4.50: Indicator Relevance on Criterion E: Addressing Institutional and Sustainability Issues; % Weight 20

RI	Criterion E indicator: Remove excluding structural and institutional barriers to equal opportunities by	ADB-IGI	WS-ADB-IGI	Score
5	Providing equal opportunities for provision of transport services	8	0.8	1.67
7	Creating a competitive transport services market	8	0.8	2.33
5	Simplifying conditions for entry into formal transport services markets	8	0.8	1.67
8	Facilitating opportunities for private sector participation	8	0.8	2.67
7	Removing infrastructure subsidies that hamper efficiency	8	0.8	2.33
2	Introducing fare subsidies to prevent exclusion of the poor and services to vulnerable poor isolated communities	8	0.8	0.67
	Sum of weighted ADB-IG indicators		4.8	
	Criterion E Score			11.34

RI = relevance indicator.

Source: Author's estimates.

231. The composite score of this general intervention (GI) railway development project is **69.35**, which indicates high–medium overall inclusive growth relevance.

4.6 Overall Rating of Sampled Transport Projects

232. The overall ratings in the sampled transport sector projects are presented in Table 4.51.

Table 4.51: Overview of Project Ratings in the Transport sector

Transport Sector	Criterion A	Criterion B	Criterion C	Criterion D	Criterion E	Total
Road development (highways, and others)	17.61	23.98	5.44	4.25	2.80	54.10
	21.13	26.34	7.50	6.18	1.30	62.50
The PRC Anhui Integrated Transport Sector Improvement Project						
BAN Road Network Improvement and Maintenance						
Rural roads	18.86	22.80	17.50	16.73	3.30	79.19
INO Rural Infrastructure Support to PNPM Mandiri	16.01	22.11	16.95	15.10	2.50	72.67
ARM Rural Roads Sector						
Waterways and domestic shipping	18.63	16.80	12.50	16.38	16.28	77.89
	11.95	8.60	6.01	7.90	5.87	40.33
SOL Domestic Maritime Support Project						
SRI Colombo Port Expansion Project						
Urban transport	10.17	17.13	11.46	6.20	8.31	53.27
PRC Lanzhou Sustainable Urban Transport	12.02	20.58	14.33	8.40	5.61	60.94
TON Integrated Urban Development Sector Project						
Railway development	11.18	11.01	10.93	13.60	10.24	56.96
VIE Yen Vien–Lao Cai Railway Upgrading Project	15.50	15.27	15.06	12.18	11.34	69.35
PRC Chongqing–Lichuan Railway Development Project						

Notes: ARM = Armenia, BAN = Bangladesh, INO = Indonesia, PRC = People's Republic of China, SOL = Solomon Islands, SRI = Sri Lanka, TON =Tonga, VIE = Viet Nam.

Criterion A =employment and income poverty, Criterion B = equity of asset distribution, Criteria C = non-income well-being, Criteria D = risk and vulnerability, Criteria E = sustainability and governance.

Source: Author's estimates.

5. The Contribution of Energy Sector Projects to Inclusive Growth

5.1 Renewable Energy Projects

5.1.1 The People's Republic of China: Zhangbei Wind Power Project

233. Project classification summary

- Approved: 2009
- Country: The People's Republic of China
- Project No.: 41926
- ADB department: East Asia Department
- Themes: Environmental sustainability, sustainable economic growth, private sector development
- Sub-themes: Cleaner production, control of industrial pollution, fostering physical infrastructure development, public–private partnerships
- Financing: \$34.3 million ADB loan
- Targeting classification: General Intervention (GI)

234. In its medium- and long-term renewable energy development program promulgated in 2007, the Government of the People's Republic of China (PRC) set a goal to produce 15% of its primary energy from renewable resources by 2020, up from 7.5% in 2005. The share of renewable resources in electricity production will be raised to 20% by 2020, dominated by hydropower (300 gigawatt [GW] of capacity) but with 30 GW of wind power and 20 GW of biomass and biogas.

235. Actual wind power development in the PRC clearly shows the high priority attached to this renewable resource. The wind power generation capacity has been doubled every year since the adoption of the renewable energy law in 2005.

236. While the national target for cumulative wind power capacity was originally set at 5 GW by 2010 and 30 GW by 2020, the 2010 goal was reached by 2007, and the 2010 goal was lifted to 10 GW, and even that goal was reached in 2008. This puts the PRC among the top five wind energy producers in the world, but in terms of new wind power capacity added, the PRC ranks second after the United States.

237. The wind power potential of the PRC is large. With current commercially available technologies, around 1,200 GW could be developed, i.e., more than 1.5 times the current PRC overall power generation capacity.

238. The proposed project is located in Zhangbei County in Hebei Province, 242 km northwest of Beijing. Zhangbei has an estimated 5 GW of wind resources that can be commercially developed with existing technologies, of which 1.5 GW will be developed by the end of 2010.

239. This project is first and foremost a project that justifies ADB support due to its contribution to environmentally sustainable development—one of the three pillars of ADB's

Strategy 2020. Its main contribution will be replacing the use of coal for power generation, and as a result, reducing carbon dioxide emissions by approximately 0.25 million tons per year.

240. However, this project is not really relevant to the inclusive growth pillar of Strategy 2020, as will be demonstrated in the following (based on the development effectiveness framework published in the RRP of this project).

241. Very little impact is expected from this project with regard to direct and indirect enhancement of income and employment opportunities for lower-income and excluded vulnerable social groups. It will obviously contribute to sustained economic growth by mitigating power shortages, and the benefits are estimated to be

- creating 500 jobs during construction for local workers, and 50 operational jobs thereafter;
- stimulating the expansion of local manufacturing and services industries, thus creating around 1,000 new jobs,
- increasing the incomes of rural households by payments of land leasing fees and purchase of local products and services; and
- contributing to the development of local ecotourism.

Table 5.1: Indicator Relevance on Criterion A; % Weight 20
Participation: Enhance Income and Employment Opportunities for Lower-Income and Excluded Vulnerable Groups

RI	Criterion A indicator: Enhanced opportunities through	ADB-IGI	WS-ADB-IGI	Score
5	Creation of permanent nonfarm wage and self-employment jobs (formal and informal sectors)	10	1.0	1.11
5	Creation of temporary wage jobs (e.g., project construction)	10	1.0	1.11
3	Adoption of labor-intensive construction (more jobs)	10	1.0	0.67
4	Increased income from change to higher-value local produce	10	1.0	0.89
3	Increased income from local materials processing	10	1.0	0.67
5	Use of power-driven productivity enhancing implements	10	1.0	1.11
General Intervention (GI) and MDG related				
2	GI to trickle down to the poor	6	0.6	0.27
Targeted Intervention (TI) and MDG related				
4	Project to directly benefit the poor (income, household, geography)	8	0.8	0.71
0	Promoting gender equality	8	0.8	0
0	Income targeting the disadvantaged (e.g., ethnic minorities, slum dwellers, and others)	8	0.8	0
Sum of weighted ADB-IG indicators			9.0	
Criterion A Score				6.54

MDG = Millennium Development Goal, RI = relevance indicator.

Source: Author's estimates.

242. There are no indigenous peoples or ethnic minorities affected by this project, and there are no explicit components for reducing gender bias. The opportunities created for local people as a result of this grid-connected asset is limited. There is no gender issue related to the project, according to the RRP.

Table 5.2: Indicator Relevance on Criterion B: Creation of Opportunities; % Weight 20

RI	Criterion B indicator: Improved infrastructure assets provide for	ADB-IGI	WS-ADB-IGI	Score
4	Enhanced access to labor markets and wider range of jobs	10	1.0	1.11
4	More effective contacts and communication with product markets and the public sector	9	0.9	1.00
4	Productive use of electric appliances in farming and processing	10	1.0	1.11
4	Enhanced access to a wider range of services and repairs	8	0.8	0.89
1	Improved access to credit	9	0.9	0.25
	MDG related			
1	Improved access to training	8	0.8	0.22
0	Eliminate and/or reduce negative bias for women	9	0.9	0
0	Eliminate and/or reduce negative bias for excluded groups, e.g., ethnic minorities	9	0.9	0
	Sum weighted ADB-IG indicators		7.2	
	Criterion B Score			4.58

MDG = Millennium Development Goal, RI = relevance indicator.

Source: Author's estimates.

243. Aside from showing that the project sustains a nonpolluted local environment, the RRP shows that the project is not focused on having local impacts of a non-income well-being nature, as seen in Table 5.3.

244. The project company has adopted a corporate social responsibility mechanism and an HIV/AIDS awareness and prevention program.

Table 5.3: Indicator Relevance on Criterion C: Non-Income Well-Being; % Weight 20

RI	Criterion C indicator: Promote equal distribution of opportunities to non-income human well-being through	ADB-IGI	WS-ADB-IGI	Score
0	Improved participation in community and social life	10	1.0	0
5	Improved access to information and communication	10	1.0	1.18
3	Improved services by clinics and health personnel; reduced child mortality	10	1.0	0.71
1	Improved school enrollment, attendance, and completion	10	1.0	0.24
3	Improved effectiveness in household work	10	1.0	0.71
10	Sustained local high ambient air quality	8	0.8	1.88
2	Targeting benefits on the poor	9	0.9	0.42
0	Promoting gender equality	9	0.9	0
0	Including and benefiting excluded groups, e.g., ethnic minorities	9	0.9	0
	Sum of weighted ADB-IG indicators		8.5	
	Criterion C Score			5.14

RI = relevance indicator.

Source: Author's estimates.

Table 5.4: Indicator Relevance Criterion D: Social Protection and Risk Mitigation; % Weight 20

RI	Criterion D indicator: Reduce risks and provide protection against vulnerability through	ADB-IGI	WS-ADB-IGI	Score
8	Reliable, all-weather stable voltage transmission and distribution to private and public customers to prevent damage to users' machinery and appliances	10	1.0	4.32
3	Provision of backup power supplies	9	0.9	1.46
7	HIV/AIDS awareness and prevention program	9	0.9	3.41
5	Complaints handling mechanism in place	9	0.9	2.43
	Sum of weighted ADB-IG indicators		3.7	
	Criterion D Score			11.62

RI = relevance indicator.

Source: Author's estimates.

245. No explicit inclusive growth-focused institutional and sustainability issues and actions are included in the RRP. However, the institutional and organizational arrangement is clearly focused on establishing a financially sustainable operation.

Table 5.5: Indicator Relevance on Criterion E: Addressing Institutional and Sustainability Issues; % Weight 20

RI	Criterion E indicator: Remove excluding structural and institutional barriers to equal opportunities by	ADB-IGI	WS-ADB-IGI	Score
1	Providing equal opportunities for connecting to power and energy	10	1	0.40
1	Adopting tariff structure (e.g., block tariffs) affordable to small users and the poor	10	1	0.40
1	Simplifying conditions for connecting to the grid or local power source for excluded groups (e.g., isolated ethnic minorities and slum dwellers)	10	1	0.40
1	Removing power subsidies that hamper efficiency for large users	10	1	0.40
1	Introducing tariff subsidies to prevent exclusion of services among vulnerable poor, isolated communities	10	1	0.40
	Sum of weighted ADB-IG indicators		5	
	Criterion E Score			2.00

RI = relevance indicator.

Source: Author's estimates.

246. The composite score of this general intervention (GI) renewable energy project is **29.88**, which indicates low overall inclusive growth relevance. This is in part explained by the fact that no gender and ethnic minority challenges are present in this project, and inclusion of poor and isolated groups is not part of it. The project is focused on clean, sustainable energy provision and pollution reduction.

5.1.2 Pakistan: Renewable Energy Development Sector Investment Program

247. Project classification summary:

- Approved: 2006
- Country: Pakistan
- Project No.: 34339
- ADB department: Central and West Asia Department
- Themes: Environmental sustainability, sustainable economic development, capacity development
- Sub-themes: Cleaner production, control of industrial pollution, fostering physical infrastructure development, organizational development
- Financing: \$510 million ADB loan, 23.2% of total
- Targeting classification: General Intervention (GI)

248. Pakistan has one of the lowest levels of per capita energy consumption in the world, but is a net importer of energy. Oil is the main cost item, and oil imports place a heavy burden on foreign exchange reserves. More than 65% of Pakistan's electricity comes from thermal sources, a little less than 30% from hydropower, and less than 1% from renewable and other sources. Despite imports, Pakistan's power supplies are 20% less than they should be. In addition, only 55% of the population has access to electricity from the national grid. The

remaining 45% use kerosene, fuel wood, and other forms of biofuels for lighting, cooking, and heating.

249. Pakistan has considerable potential for developing a broad range of renewable energy resources, principally wind, solar, biomass, and small and medium-sized hydropower plants. Renewable energy resources can contribute to energy supply and security while helping change the mix. They can also contribute to both off-grid and grid-connected power supply. Renewable energy supports rural development and economic activity in remote areas while yielding positive environmental and social impacts.

250. The Government of Pakistan is committed to developing the renewable energy sector. At the federal level, a renewable energy policy framework has already been developed by the Alternative Energy Development Board, an apex body charged with promoting renewable energy nationwide. The policy framework will be backed by a comprehensive action plan, which includes physical investments, reforms, governance, private sector engagement, institutional change, and capacity development. The renewable energy policy fits with a broader clean energy and environmental policy in Pakistan.

251. The investment program is based on this renewable energy policy framework and is designed to benefit all grid-connected consumers of electricity by expanding electric power supplies. Electricity from small and medium-sized hydropower plants under the investment program will go directly to the local grids, contributing to this key policy objective and helping fulfill provincial demand. The overall objective of expanding clean energy capacity will generate local, regional, and global environmental benefits. Local air quality, particularly indoor air quality, will improve because of substituting electricity for biomass (animal dung and wood) and kerosene.

252. By expanding generation capacity, the investment program will result in more reliable power to consumers, particularly benefiting commercial, residential, and agricultural customers in the region, and it will have direct positive economic and social benefits. Poor and vulnerable consumers (including hospitals, schools, and other social utilities) that are often hardest hit by inadequate power supply, load shedding, and poor power quality will benefit directly from the investment program.

253. The investment program will create new full-time employment opportunities. For civil works, the contractors expect to hire about 100 skilled and 500 unskilled workers for a period of 10 years. Indirect positive impacts of the project will result from economic growth and sales of power to the national grid, allowing local governments to generate income that can be targeted specifically for social development of the province, particularly the poor.

254. Relative to a 2005 baseline, the program will increase gross energy output by 8% per year, or an amount sufficient to serve 600,000 new connections or 4.8 million domestic consumers equivalent at current consumption rates.

255. Greater access to reliable electricity will contribute to poverty reduction. In fact, reliable electricity supply is a key to supporting community services, such as education, health care, and water supply. Access to electricity will improve living conditions in rural areas. Jobs will also be created, and with this, greater income opportunities. The program is also sound on gender grounds.

Table 5.6: Indicator Relevance on Criterion A; % Weight 20
Participation: Enhance Income and Employment Opportunities for Lower-Income and Excluded Vulnerable Groups

RI	Criterion A indicator: Enhanced opportunities through	ADB-IGI	WS-ADB-IGI	Score
5	Creation of permanent nonfarm wage and self-employment jobs (formal and informal sectors)	10	1.0	1.11
5	Creation of temporary wage jobs (e.g., project construction)	10	1.0	1.11
3	Adoption of labor-intensive construction (more jobs)	10	1.0	0.67
4	Increased income from change to higher-value local produce	10	1.0	0.89
3	Increased income from local materials processing	10	1.0	0.67
5	Use of power-driven productivity enhancing implements	10	1.0	1.11
General Intervention (GI) and MDG related				
2	GI to trickle down to the poor	6	0.6	0.27
Targeted Intervention (TI) and MDG related				
4	Project to directly benefit the poor (income, household, geography)	8	0.8	0.71
5	Promoting gender equality	8	0.8	0.89
5	Income targeting the disadvantaged (e.g., ethnic minorities, slum dwellers, and others)	8	0.8	0.89
Sum of weighted ADB-IG indicators			9.0	
Criterion A Score				8.32

MDG = Millennium Development Goal, RI = relevance indicator.

Source: Author's estimates.

256. Apart from showing that the project sustains a non-polluted local environment, the RRP shows that the program is focused on having local impacts of a non-income well-being nature. By expanding generation capacity, the program is expected to result in more reliable power to consumers (particularly benefiting commercial, residential, and agriculture customers in the region) and it will have direct positive economic and social benefits. Poor and vulnerable consumers (including hospitals, schools, and other social utilities) that are often hardest hit by inadequate power supply, load shedding, and poor power quality, will benefit directly from the investment program.

Table 5.7: Indicator Relevance on Criterion B: Creation of Opportunities; % Weight 20

RI	Criterion B indicator: Improved infrastructure assets provide for	ADB-IGI	WS-ADB-IGI	Score
4	Enhanced access to labor markets and wider range of jobs	10	1.0	1.11
4	More effective contacts and communication with product markets and the public sector	9	0.9	1.00
8	Productive use of electric appliances in farming and processing	10	1.0	2.22
8	Enhanced access to a wider range of services and repairs	8	0.8	1.78
3	Improved access to credit	9	0.9	0.75
MDG related				
1	Improved access to training	8	0.8	0.22
5	Eliminate and/or reduce negative bias for women	9	0.9	1.25
5	Eliminate and/or reduce negative bias for excluded groups, e.g., ethnic minorities	9	0.9	1.25
	Sum of weighted ADB-IG indicators		7.2	
	Criterion B Score			9.58

MDG = Millennium Development Goal, RI = relevance indicator.

Source: Author's estimates.

Table 5.8: Indicator Relevance on Criterion C: Non-Income Well-Being; % Weight 20

RI	Criterion C indicator: Promote equal distribution of opportunities to non-income human well-being through	ADB-IGI	WS-ADB-IGI	Score
5	Improved participation in community and social life	10	1.0	1.18
5	Improved access to information and communication	10	1.0	1.18
7	Improved services by clinics and health personnel; reduced child mortality	10	1.0	1.65
6	Improved school enrollment, attendance, and completion	10	1.0	1.41
6	Improved effectiveness in household work	10	1.0	1.41
10	Sustained local high ambient air quality	8	0.8	1.88
4	Targeting benefits on the poor	9	0.9	0.85
5	Promoting gender equality	9	0.9	1.06
5	Including and benefiting excluded groups, e.g., ethnic minorities	9	0.9	1.06
	Sum of weighted ADB-IG indicators		8.5	
	Criterion C Score			11.68

RI = relevance indicator.

Source: Author's estimates.

257. A resettlement framework and indigenous peoples development framework were prepared. These will serve as the basis for preparing subsequent resettlement plans and indigenous peoples development plans for additional subprojects, as required and in accordance with ADB's policies on involuntary resettlement and indigenous peoples. All plans will be prepared in full consultation with the affected persons and will be disclosed to them prior to contract awarding.

258. Extensive field appraisal, survey, and community consultations were undertaken on eight subprojects under the first periodic financing request (PFR). Particular attention was given to traditional decision-making mechanisms. Social and poverty impacts were assessed. Following the consultations, changes were introduced to the design to minimize adverse impacts on affected persons. Due to this process, resettlement impacts are limited (as measured by the number of affected persons) and are insignificant according to ADB criteria. The subprojects were also designed to avoid negative impacts on downstream villages.

Table 5.9: Indicator Relevance Criterion D: Social Protection and Risk Mitigation; % Weight 20

RI	Criterion D indicator: Reduce risks and provide protection against vulnerability through	ADB-IGI	WS-ADB-IGI	Score
8	Reliable, all-weather stable voltage transmission and distribution to private and public customers to prevent damage to users' machinery and appliances	10	1.0	4.32
7	Provision of backup power supplies	9	0.9	3.41
0	HIV/AIDS awareness and prevention program	9	0.9	0
6	Complaints handling mechanism in place	9	0.9	2.92
	Sum of weighted ADB-IG indicators		3.7	
	Criterion D Score			10.65

RI = relevance indicator.

Source: Author's estimates.

259. There are institutional and sustainability issues and actions included in the resettlement plan (RR) that are explicitly focused on inclusive growth, and the institutional and organization arrangements are clearly focused on establishing and managing a financially sustainable operation that will enhance inclusion of stakeholders who would otherwise be excluded.

Table 5.10: Indicator Relevance on Criterion E: Addressing Institutional and Sustainability Issues; % Weight 20

RI	Criterion E indicator: Remove excluding structural and institutional barriers to equal opportunities by	ADB-IGI	WS-ADB-IGI	Score
7	Providing equal opportunities for connecting to power and energy	10	1	2.80
5	Adopting tariff structure (e.g., block tariffs) affordable to small users and the poor	10	1	2.00
7	Simplifying conditions for connecting to the grid or local power source for excluded groups (e.g., isolated ethnic minorities and slum dwellers)	10	1	2.80
1	Removing power subsidies that hamper efficiency for large users	10	1	0.40
1	Introducing tariff subsidies to prevent exclusion of services to vulnerable poor, isolated communities	10	1	0.40
	Sum of weighted ADB-IG indicators		5	
	Criterion E Score			8.40

RI = relevance indicator.

Source: Author's estimates.

260. The composite score of this general intervention (GI) energy project is **48.63**, which indicates medium overall inclusive growth relevance. The program also contributes to Strategy 2020's pillar of environmentally sustainable economic growth.

5.2 Transmission and Distribution Projects

5.2.1 Cambodia: Second Power Transmission and Distribution Project

261. Project classification summary

- Approved: 2006
- Country: Cambodia
- Project No.: 37041
- ADB department: Southeast Asia Department
- Themes: Sustainable economic growth, capacity development
- Sub-themes: Fostering physical infrastructure development, organizational development
- Financing: \$20 million ADB loan, 38% of total financing
- Targeting classification: General Intervention (GI)

262. When this project was proposed, Cambodia had one of the costliest electricity sectors in the world, based on imported diesel fuels and diesel generators, many of which are operated by independent power producers. The power sector was highly fragmented, based on 24 isolated power systems centered on the provincial cities. There was no integrated high-voltage transmission system.

263. This situation was seen as a major obstacle to economic growth and a major hindrance to attracting investments and stimulating economic activities.

264. The provision of electricity to rural areas has been recognized as a key to reducing rural poverty. Some 600 rural electricity enterprises provided services in small towns and villages to small commercial establishments and households, but at extremely high tariffs (\$0.38–\$0.63 per kilowatt-hour (kWh), compared to the (also very high for such a poor country) \$0.13–\$0.20 per kWh from Electricite de Cambodge (EDC) in Sihanoukville, and only for a few hours per day.

265. The project will directly expand the 230 kilovolt (kV) power transmission grid from Kampot to Sihanoukville to provide sustainable and reliable electricity supply at affordable prices to consumers in Sihanoukville and adjacent areas along the transmission corridor. Through the project, electricity from Viet Nam will have a delivered electricity price in Sihanoukville of around \$0.08/kWh, including losses, operation and maintenance, and all taxes. This will greatly ease the burden on consumers and small commercial enterprises by enabling them to use their saving for other purposes (education, health, or business development). Access to electricity has expenditure-reducing effects, which are particularly important for poor households. Reduced expenditures on electricity allows households to spend more on items such as food, education, and health services. All rural villages and communities close to the transmission line that were not served will also be supplied with electricity through this project. As a result, the electrification ratio by population will increase from 17% in 2005 to 30% in 2010.

266. There are no excluded indigenous peoples or ethnic minorities affected by this project. The income and job prospect opportunities created for local people adjacent to the transmission line as a result of this grid-connected asset are substantial. There is no major gender-related exclusion issue related to the project, according to the RRP, but the project includes explicit plans for participation and construction works as well as capacity building for commune leaders, with equal opportunities for women and men. These plans will facilitate effective implementation of resettlement and livelihood activities.

Table 5.11: Indicator Relevance on Criterion A; % Weight 15
Participation: Enhance Income and Employment Opportunities for Lower-Income and Excluded Vulnerable Groups

RI	Criterion A indicator: Enhanced opportunities through	ADB-IGI	WS-ADB-IGI	Score
8	Creation of permanent nonfarm wage and self-employment jobs (formal and informal sectors)	10	1.0	1.30
9	Creation of temporary wage jobs (e.g., project construction)	10	1.0	1.47
9	Adoption of labor-intensive construction (more jobs)	10	1.0	1.47
8	Increased income from change to higher-value local produce	10	1.0	1.30
8	Increased income from local materials processing	10	1.0	1.30
10	Use of power-driven productivity enhancing implements	10	1.0	1.63
	General Intervention (GI) and MDG related			
7	GI to trickle down to the poor	8	0.8	0.91
	Targeted Intervention (TI) and MDG related			
9	Project to directly benefit the poor (income, household, geography)	8	0.8	1.17
7	Promoting gender equality	8	0.8	0.91
5	Income targeting the disadvantaged (e.g., ethnic minorities, isolated poor rural communities, slum dwellers, and others)	8	0.8	0.65
	Sum of weighted ADB-IG indicators		9.2	
	Criterion A Score			12.11

MDG = Millennium Development Goal, RI = relevance indicator.

Source: Author's estimates.

267. All communities adjacent to the transmission line are being provided with grid connection, and these people (virtually all of whom are poor or near poor) will experience significantly improved possibilities to communicate with local markets and community centers (schools, clinics, extension services), as well as have a reliable source of electric light, making completion of school much easier for children who must do homework after dark. With increased incomes, electric household and farm appliances become available and these contribute to improved productivity with regard to household chores, thus freeing up time for social activities and work. These opportunities are provided along the transmission line in a way that reduces inequalities and provides for more equal opportunities. The rating and scoring reflect this (Table 5.13).

Table 5.12: Indicator Relevance on Criterion B: Creation of Opportunities; % Weight 20

RI	Criterion B indicator: Improved infrastructure assets provide for	ADB-IGI	WS-ADB-IGI	Score
8	Enhanced access to labor markets and wider range of jobs	10	1.0	2.22
9	More effective contacts and communication with product markets and the public sector	9	0.9	2.25
10	Productive use of electric appliances in farming and processing (opportunities for enhanced productivity and higher-value produce and processing of local produce)	10	1.0	2.78
8	Enhanced access to a wider range of services and repairs	8	0.8	1.78
7	Improved access to credit	9	0.9	1.75
MDG related				
7	Improved access to training	8	0.8	1.56
4	Eliminate and/or reduce negative bias for women	9	0.9	1.00
8	Eliminate and/or reduce negative bias for excluded groups, e.g., ethnic minorities and poor, isolated rural communities	9	0.9	2.00
Sum of weighted ADB-IG indicators			7.2	
Criterion B Score				14.89

MDG = Millennium Development Goal, RI = relevance indicator.

Source: Author's estimates.

268. The project company has adopted a corporate social responsibility mechanism for increased participation of the various stakeholders. This is stimulated by means of a capacity-building training program for the affected people, commune leaders, as well as the relevant government departments and implementing agencies. Such capacity building will prepare the stakeholders for fair consultations and negotiation preceding the resettlement activities and compensation planning. Gender-sensitizing training is part of this program. The project company must also have in place an operational HIV/AIDS awareness and prevention program.

269. The resettlement program preparations, updating, and implementation will pay special attention to the role of women's economic activities in restoring living standards, and in this context, facilitated access to credit and agricultural extension for women and poor households is of particular importance.

Table 5.13: Indicator Relevance on Criterion C: Non-Income Well-Being; % Weight 15

RI	Criterion C indicator: Promote equal distribution of opportunities to non-income human well-being through	ADB-IGI	WS-ADB-IGI	Score
8	Improved participation in community and social life	10	1.0	1.41
8	Improved access to information and communication	10	1.0	1.41
10	Improved services by clinics and health personnel; reduced child mortality	10	1.0	1.77
9	Improved school enrollment, attendance, and completion	10	1.0	1.59
9	Improved effectiveness in household work	10	1.0	1.59
0	Sustained local high ambient air quality	8	0.8	0
9	Targeting benefits on the poor	9	0.9	1.43
5	Promoting gender equality	9	0.9	0.79
7	Including and benefiting excluded groups, e.g., ethnic minorities and poor, isolated rural communities	9	0.9	1.11
	Sum of weighted ADB-IG indicators		8.5	
	Criterion C Score			11.10

RI = relevance indicator.

Source: Author's estimates.

270. Similarly, the resettlement program includes a process for women and poor household members to lodge complaints and grievances.

Table 5.14: Indicator Relevance Criterion D: Social Protection and Risk Mitigation; % Weight 25

RI	Criterion D indicator: Reduce risks and provide protection against vulnerability through	ADB-IGI	WS-ADB-IGI	Score
10	Reliable, all-weather stable voltage transmission and distribution to private and public customers to prevent damage to users' machinery and appliances	10	1.0	6.76
8	Provision of backup power supplies	9	0.9	4.87
8	HIV/AIDS awareness and prevention program	9	0.9	4.87
7	Complaints handling mechanism in place	9	0.9	1.58
	Sum of weighted ADB-IG indicators		3.7	
	Criterion D Score			18.08

RI = relevance indicator.

Source: Author's estimates.

271. The institutional and organization arrangement is clearly focused on establishing a financially sustainable operation. The project will improve Electricite du Cambodge's operational efficiency and performance through institutional development and capacity building.

Table 5.15: Indicator Relevance on Criterion E: Addressing Institutional and Sustainability Issues; % Weight 25

RI	Criterion E indicator: Remove excluding structural and institutional barriers to equal opportunities by	ADB-IGI	WS-ADB-IGI	Score
9	Providing equal opportunities for connecting to power and energy	10	1	4.50
8	Adopting tariff structure (e.g., block tariffs) affordable to small users and the poor	10	1	4.00
8	Simplifying conditions for connecting to the grid or local power source for excluded groups (e.g., isolated ethnic minorities and slum dwellers)	10	1	4.00
2	Removing power subsidies that hamper efficiency for large users	10	1	1.00
2	Introducing tariff subsidies to prevent exclusion of services among vulnerable poor, isolated communities	10	1	1.00
	Sum of weighted ADB-IG indicators		5	
	Criterion E Score			14.50

RI = relevance indicator.

Source: Author's estimates.

272. The composite score of this general intervention (GI) energy project is **70.68**, which indicates high overall inclusive growth relevance.

273. In addition, this project is also relevant to Strategy 2020's pillar of regional cooperation, as it provides for considerable trade in electricity between Cambodia and Viet Nam, and this again will stimulate trade and the utilization of comparative advantages in the Greater Mekong Subregion, which again may (or may not) contribute to environmentally sustainable economic growth.

5.2.2 Sri Lanka: Clean Energy and Access Improvement Project

274. Project classification summary:

- Approved: 2009
- Country: Sri Lanka
- Project No.: 39419
- ADB department: South Asia Department
- Themes: Sustainable economic growth, governance, private sector development
- Sub-themes: Fostering physical infrastructure development, development of rural areas
- Financing: \$135 million ADB loan; \$25 million ADF loan; total of 85% of total financing
- Targeting classification: General Intervention (GI)

275. Sri Lanka's power sector struggled throughout the late 1980s, 1990s, and early 2000s to meet the growing demand for electricity. The entire growth in demand has been served by oil-

fired thermal generation. The move toward oil-fired plants, the increase in the oil price, and the delayed construction of new hydropower plants have significantly pushed up the cost of generation. There is an urgent need to build up base-load generation capacity with low-cost fuels, such as imported coal, and to invest in hydropower and other renewable resources.

276. Given that demand for power is growing by about 8% per year, the country faces a serious shortage of power and a consequent slowdown in economic growth unless generation capacity is significantly increased and the transmission and distribution network is strengthened. Electricity is expensive and subject to interruptions. Substantial disparities in access to electricity still exist, and about 20% of households do not have access to it.

277. The project will provide support for private sector participation in 200 megawatts (MW) of small hydropower development, and the policy and regulatory framework will be reformed to make this happen through improved sector governance, and then with innovative demand-side management approaches that shall result in improved energy efficiency.

278. The outputs of the project will be (i) for the efficiency improvement component, a stronger transmission and distribution network and demand-side management of municipal street lighting; (ii) for the renewable energy development component, the removal of network bottlenecks for small hydropower plants; and (iii) for the component for access for the poor, a stronger transmission network in the Eastern Province and an expanded credit support program for service connections in the selected provinces.

279. The project RRP concludes that the energy efficiency improvement component will enhance the overall reliability of the power system to benefit households, small and medium-sized businesses, and public services, including, in particular, schools and hospitals. It will bring power to industrial districts where existing industries currently relying on captive generators will be able to improve their productivity. New investments will also be encouraged by the additional availability of power. In both cases, a sharp increase in labor demand is ultimately expected to benefit the local population. The demand-side management part is expected to save energy equivalent to a thermal power plant of 3.5 MW. The renewable energy development component will help bring 200 MW of clean hydropower energy into the grid, thereby reducing emissions by about 0.5 million tons equivalent of carbon dioxide per year.

280. The primary benefit of grid substation augmentations and transformer capacity enhancements are the reduction in unserved demand. This demand will now be met by increasing the transmission capacity by eliminating transmission bottlenecks from the existing without-project scenario, and by enabling the grid to accommodate the anticipated demand growth over time. The primary benefit from the new transmission lines is the power flow improvements, and the resulting elimination of diesel-fired power generation that is required in the without-project scenario. The need for small, local diesel generators for voltage correction in the transmission constrained areas will be eliminated by the construction of new lines, which will allow grid power to flow into these areas. The primary benefit of the new system control center will be increased system efficiency and reduced transmission network losses.

281. In Sri Lanka, many households remain unconnected because they cannot afford to pay connection charges even though distribution feeders have already reached their neighborhood. However, some of these households may have the capacity to repay a loan or to pay the connection charges in monthly installments over 2–3 years. To address this issue, in 2004, ADB approved a microfinance scheme funded by the Japan Fund for Poverty Reduction—the Power Fund for the Poor. The fund has been successfully implemented by two participating credit

institutions in collaboration with Ceylon Electricity Board and a local organization specializing in the energy sector and has connected more than 10,000 poor households in eight districts while maintaining a recovery ratio of more than 95%.

Table 5.16: Indicator Relevance on Criterion A; % Weight 15
Participation: Enhance Income and Employment Opportunities for Lower-Income and Excluded Vulnerable Groups

RI	Criterion A indicator: Enhanced opportunities through	ADB-IGI	WS-ADB-IGI	Score
7	Creation of permanent nonfarm wage and self-employment jobs (formal and informal sectors)	10	1.0	1.14
5	Creation of temporary wage jobs (e.g., project construction)	10	1.0	0.82
3	Adoption of labor-intensive construction (more jobs)	10	1.0	0.49
6	Increased income from change to higher-value local produce	10	1.0	0.98
6	Increased income from local materials processing	10	1.0	0.98
7	Use of power-driven productivity enhancing implements	10	1.0	1.14
General Intervention (GI) and MDG related				
7	GI to trickle down to the poor	8	0.8	0.91
Targeted Intervention (TI) and MDG related				
9	Project to directly benefit the poor (income, household, geography)	8	0.8	1.17
7	Promoting gender equality	8	0.8	0.91
7	Income targeting the disadvantaged (e.g., ethnic minorities, isolated poor rural communities, slum dwellers, etc.)	8	0.8	0.91
Sum weighted ADB-IG indicators			9.2	
Criterion A Score				9.45

MDG = Millennium Development Goal, RI = relevance indicator.

Source: Author's estimates.

282. As evidenced by the high recovery ratio, target households are able to pay once they get connected, with technical and institutional support from the organizations involved. The project aims to scale-up the fund through a loan-funded credit support program and is expected to provide electricity connection to at least 60,000 poor households, including those in areas affected by conflict. This represents 8% of the total number of poor households. This will provide significant support to the achievement of the government's goal of increasing the household electrification ratio through grid connections from 82% in 2008 to 88% by 2016.

283. Electrification will enable poor households engaged in home-based economic activities to generate more household income and to save time and physical labor by using electrical appliances.

Table 5.17: Indicator Relevance on Criterion B: Creation of Opportunities; % Weight 20

RI	Criterion B indicator: Improved infrastructure assets provide for	ADB-IGI	WS-ADB-IGI	Score
7	Enhanced access to labor markets and wider range of jobs	10	1.0	1.94
8	More effective contacts and communication with product markets and the public sector	9	0.9	2.25
9	Productive use of electric appliances in farming and processing (opportunities for enhanced productivity and higher-value produce and processing of local produce)	10	1.0	2.50
8	Enhanced access to a wider range of services and repairs	8	0.8	1.78
10	Improved access to credit	9	0.9	2.50
MDG related				
7	Improved access to training	8	0.8	1.56
7	Eliminate and/or reduce negative bias for women	9	0.9	1.75
8	Eliminate and/or reduce negative bias for excluded groups, e.g., ethnic minorities and poor, isolated rural communities	9	0.9	2.25
	Sum of weighted ADB-IG indicators		7.2	
Criterion B Score				16.53

MDG = Millennium Development Goal, RI = relevance indicator.

Source: Author's estimates.

Table 5.18: Indicator Relevance on Criterion C: Non-Income Well-Being; % Weight 15

RI	Criterion C indicator: Promote equal distribution of opportunities to non-income human well-being through	ADB-IGI	WS-ADB-IGI	Score
6	Improved participation in community and social life	10	1.0	1.06
8	Improved access to information and communication	10	1.0	1.41
9	Improved services by clinics and health personnel; reduced child mortality	10	1.0	1.59
8	Improved school enrollment, attendance, and completion	10	1.0	1.41
9	Improved effectiveness in household work	10	1.0	1.59
7	Sustained local high ambient air quality	8	0.8	0.99
9	Targeting benefits on the poor	9	0.9	1.43
7	Promoting gender equality	9	0.9	1.11
9	Including and benefiting excluded groups, e.g., ethnic minorities and poor, isolated rural communities	9	0.9	1.43
	Sum of weighted ADB-IG indicators		8.5	
Criterion C Score				12.02

RI = relevance indicator.

Source: Author's estimates.

284. The component for access for the poor will contribute to social and economic inclusion and the integration of marginalized people, especially in rural areas. Health, hygiene, and sanitation will be improved, and children and adolescents will be able to spend more hours studying. The component will improve access to information, awareness, and knowledge.

285. Women are going to be positively affected, particularly under the Asian Development Fund (ADF) component as they generally work at home and are responsible for fetching alternative sources of energy. As beneficiaries will be selected from among the poorer (although still economically viable) and vulnerable households, this will include households headed by women. No particular gender actions or measures were considered necessary for inclusion in the design to promote gender equality and women's empowerment—access to and use of relevant services, resources, assets, or opportunities and participation in decision-making processes.

286. The project will enhance mobility and security, particularly where people suffer from attacks by wild animals while searching for food or where they are affected by the conflict.

287. The component for access for the poor will directly benefit Eastern Province, which has been severely affected by the conflict, and other poor regions. Such regions often suffer from harsh weather and natural disasters, and lack basic infrastructure, including electricity distribution. Three districts in Eastern Province where the component will be implemented have mixed Sinhalese, Tamil, and Muslim populations, and are therefore more complex than other parts of the country. The project will directly contribute to the development of Eastern Province, but will also benefit other regions that are lagging behind.

288. The project will not entail any land acquisition. About 480 hectares of private land might be temporarily affected by the erection of transmission towers and stringing of transmission lines. As a result, a maximum of 1,800 households might be temporarily affected, although not significantly. As far as possible, the Ceylon Electricity Board will ensure that construction of towers and stringing of lines will not be carried out during the cropping season to reduce the impact on the local rice crop.

289. No direct impact is foreseen on indigenous peoples so no indigenous peoples development plan has been prepared. However, special provisions were added to the resettlement plan to ensure additional compensation is paid to vulnerable groups, including indigenous peoples.

Table 5.19: Indicator Relevance Criterion D: Social Protection and Risk Mitigation; % Weight 25

RI	Criterion D indicator: Reduce risks and provide protection against vulnerability through	ADB-IGI	WS-ADB-IGI	Score
10	Reliable, all-weather stable voltage transmission and distribution to private and public customers to prevent damage to users' machinery and appliances	10	1.0	6.76
8	Provision of backup power supplies	9	0.9	4.87
0	HIV/AIDS awareness and prevention program	9	0.9	0
7	Complaints handling mechanism in place	9	0.9	1.58
	Sum of weighted ADB-IG indicators		3.7	
	Criterion D Score			13.21

RI = relevance indicator.

Source: Author's estimates.

290. The past policy and investment strategy described above has resulted in dramatic increases in generation costs, and these costs have not been passed on to electricity consumers. The retail tariffs do not reflect the costs of supply. The resulting shortage of investments in upgrading the transmission and distribution network has also resulted in high commercial network losses and lack of penetration in rural areas where high connection charges makes electricity unaffordable to many potential users.

291. Affected communities have been consulted from the beginning to minimize or avoid impacts. The corridor of the proposed transmission lines has been identified in consultation with the communities and the affected people. Their concerns have been taken into consideration throughout the process. Communities and affected persons will continue to be consulted during the entire implementation of the project to ensure that most civil works will be scheduled to avoid disruption of the crops. Consultations have also been carried out with the implementing agencies of the Power for the Poor project, as well as with other nongovernment organizations and financial agencies. The object has been to design the ADF component in the most efficient way, learning from the Power Fund for the Poor experience.

292. In addition, the projects contribute to the ADB Strategy 2020's pillar of environmentally sustainable economic growth.

Table 5.20: Indicator Relevance on Criterion E: Addressing Institutional and Sustainability Issues; % Weight 25

RI	Criterion E indicator: Remove excluding structural and institutional barriers to equal opportunities by	ADB-IGI	WS-ADB-IGI	Score
9	Providing equal opportunities for connecting to power and energy	10	1	4.50
8	Adopting tariff structure (e.g., block tariffs) affordable to small users and the poor	10	1	4.00
10	Simplifying conditions for connecting to the grid or local power source for excluded groups (e.g., isolated ethnic minorities and slum dwellers)	10	1	5.00
2	Removing power subsidies that hamper efficiency for large users	10	1	1.00
2	Introducing tariff subsidies to prevent exclusion of services among vulnerable poor, isolated communities	10	1	1.00
	Sum of weighted ADB-IG indicators		5	
	Criterion E Score			15.50

RI = relevance indicator.

Note: The composite score of this general intervention (GI) energy sector project is **66.71**, which indicates high–medium overall inclusive growth relevance.

Source: Author's estimates.

5.3 Conventional Power Generation Projects

5.3.1 India: Uttaranchal Power Sector Investment Program

293. Project classification summary:

- Approved: 2006
- Country: India
- Project No.: 37139
- ADB department: South Asia Department
- Themes: Sustainable economic growth, environmental sustainability
- Sub-themes: Fostering physical infrastructure development, cleaner production, control of industrial pollution
- Financing: \$300 million ADB loan, 5.8% of total investment program, which is heavily dominated by the generation component
- Targeting classification: General Intervention (GI)

294. Uttaranchal is one of India's poorest states. In 2002, the per capita net state domestic product was Rs13,000, compared with the national average of Rs18,000. A recent survey found that 36% of rural families in Uttaranchal are below the poverty line. Poverty is unevenly distributed throughout the state, with pockets of extreme poverty located in interior, rural areas. Energy services, especially reliable electric power, are essential for economic and social development in Uttaranchal. Clean energy and tourism are two important economic growth and poverty reduction drivers. The state has undeveloped hydropower potential estimated at 20,000 MW. Harnessing this hydropower capacity is vital to meet all in-state demand and to enable

export of power to surrounding states and to support investment in rural and other productive sectors. Power remains a bottleneck to economic growth, affecting both domestic and industrial consumers. The program will generate exports to neighboring states and improve efficiency and cut energy leaks and operating and financial losses in the system.

295. The program will encourage reform, promote clean energy and energy efficiency improvements, and build capacity to effectively manage the ongoing multibillion dollar expansion program. Capacity building activities will initially concentrate on implementation of investments funded by ADB, and will be expanded to support the broader sector reform agenda under the leadership of the government of Uttaranchal.

296. The comprehensive power sector program consists of (i) a major generation component (approximately \$4 billion in new investments), (ii) a \$550 million state transmission network expansion component integrated with the generation expansion activities, (iii) \$370 million in new distribution investments, and (iv) ADB technical assistance to improve the policy framework and the institutional capacity to implement the state power sector road map. These components are interlinked—transmission investments are necessary to make other investments in generation and distribution possible. The investment program will obviously create employment, tax revenues, and royalties to the state.

297. The generation expansion program is dominated by clean energy development in the form of low-carbon generation operations, and energy efficiency improvements in the form of renovation and system loss reductions. While most of the new hydropower capacity during the first phase will come from large (more than 100 MW) and medium (25–100 MW) plants, the program includes small run-of-river hydropower plants (3–25 MW). New small hydropower plant capacity will provide additional power to local grids in rural areas and is expected to meet about one-third of the projected in-state, non-industrial power demand at the time of commissioning. Additional power output from the renovation, modernization, and upgrade of existing hydropower plants will be sufficient to meet small- and medium-scale industrial demand at the time of commissioning. The total power delivery attributable to the investment program will serve more than 12 million people in Uttaranchal and the northern region grid service area. Parallel efforts by Uttaranchal Power Corporation, Limited in relation to rural electrification and local grid improvements will complement ADB's intervention.

298. The program is founded on clean energy development, a field where Uttaranchal has a clear comparative advantage over other states. The costs of hydropower generation are estimated to be as low as \$0.013/kWh averaged over a plant's lifetime, with initial costs of around \$0.040–\$0.050/kWh. In Uttaranchal, consumer tariffs range from \$0.030/kWh to \$0.078/kWh, and in 2003 the average retail tariff across all consumer categories was \$0.047/kWh.

299. Poverty reduction is facilitated through village and rural electrification programs. Furthermore, there will be provision of sufficient power supplies to serve the majority of the consumers living below the poverty line in the districts of Uttarkashi and Rudraprayag, and provide incremental power supplies to serve 151,000 consumers in the Haridwar service area.

300. Expanding clean energy capacity will generate local, regional, and global environmental benefits. Local air quality, particularly indoor air quality, will improve with the substitution of electricity for biomass (animal dung and wood) and kerosene. Regional air quality will be preserved by offsetting the expansion of thermal generating capacity. Carbon credit trading is expected to create significant dividends.

301. The investment program is expected to create new, full-time employment opportunities. For civil works in relation to small hydropower plant investment, 160 unskilled workers will be hired for 3 years; for renovation, modernization, and upgrade, 240 unskilled workers will be hired. For the civil works related to transmission lines, about 650 unskilled local workers will be hired for 18 months. Improved power supplies will induce light industrial and commercial activity, creating employment opportunities and improving productivity and the quality of outputs in the manufacturing and agriculture sectors. Indirect positive impacts will result from exports of power to the northern region grid, allowing the state government to generate income that can be targeted specifically for social development in the state, particularly for the poor. The average population below the poverty line in rural areas of Garhwal division (seven districts), where most of the transmission subproject investments are located, is 46%, a figure that is skewed upward by high figures in Uttarkashi, Tehri (57%), and Chamoli (52%). About one-third of the population in rural areas in the other hill districts live below the poverty line.

302. This shows that this program's power generation component is directly relevant to the ADB Strategy 2020's pillar of environmentally sustainable growth.

Table 5.21: Indicator Relevance on Criterion A; % Weight 15
Participation: Enhance Income and Employment Opportunities for Lower-Income and Excluded Vulnerable Groups

RI	Criterion A indicator: Enhanced opportunities through	ADB-IGI	WS-ADB-IGI	Score
6	Creation of permanent nonfarm wage and self-employment jobs (formal and informal sectors)	9	0.9	0.94
9	Creation of temporary wage jobs (e.g., project construction)	10	1.0	1.57
7	Adoption of labor-intensive construction (more jobs)	9	0.8	1.10
6	Increased income from change to higher-value local produce	10	1.0	1.05
6	Increased income from local materials processing	10	1.0	1.05
8	Use of power-driven productivity enhancing implements	10	1.0	1.40
General Intervention (GI) and MDG related				
6	GI to trickle down to the poor	6	0.6	0.63
Targeted Intervention (TI) and MDG related				
8	Project to directly benefit the poor (income, household, geography)	8	0.8	1.12
2	Promoting gender equality	7	0.7	0.24
6	Income targeting the disadvantaged (e.g., ethnic minorities; isolated poor, rural communities; slum dwellers; and others)	8	0.8	0.84
Sum of weighted ADB-IG indicators			8.6	
Criterion A Score				9.94

MDG = Millennium Development Goal, RI = relevance indicator.

Note: There are no excluded indigenous peoples or ethnic minorities affected by this project.

Source: Author's estimates.

Table 5.22: Indicator Relevance on Criterion B: Creation of Opportunities; % Weight 20

RI	Criterion B indicator: Improved infrastructure assets provide for	ADB-IGI	WS-ADB-IGI	Score
8	Enhanced access to labor markets and wider range of jobs	8	0.8	2.25
7	More effective contacts and communication with product markets and the public sector	7	0.7	1.72
9	Productive use of electric appliances in farming and processing (opportunities for enhanced productivity and higher-value produce and processing of local produce)	9	0.9	2.84
6	Enhanced access to a wider range of services and repairs	7	0.7	1.47
3	Improved access to credit	5	0.5	0.53
MDG related				
4	Improved access to training	7	0.7	0.98
1	Eliminate and/or reduce negative bias for women	7	0.7	0.25
5	Eliminate and/or reduce negative bias for excluded groups, e.g., ethnic minorities and poor, isolated rural communities	7	0.7	1.23
Sum of weighted ADB-IG indicators			5.7	
Criterion B Score				11.27

MDG = Millennium Development Goal, RI = relevance indicator.

Source: Author's estimates.

303. The investment program is expected to result in more efficient and reliable delivery of electric services. Poor and vulnerable consumers, including hospitals, schools, and other social utilities, which are often hardest hit by inadequate power supply, load shedding, and poor power quality, will benefit directly from the investments. Direct positive economic and social benefits will result from the subprojects. Power generated by small hydropower plant will be connected to the local grid at 33 kV, increasing local grid capacity and bringing the benefits of electricity, which include better health care, sanitation, education, greater income-earning opportunities, and higher living standards, to remote communities. Renovation, modernization, and upgrade activities will provide more reliable power to the existing grid. The rating and scoring is reflected in Table 5.23.

304. Detailed fieldwork to assess the socioeconomic profile of affected people did not find scheduled tribes or indigenous peoples in the subproject areas, thus the investment program is not expected to affect indigenous peoples negatively or differentially. Socioeconomic data indicate the presence of vulnerable groups, and provisions to address impacts on these groups have been made in the resettlement plan and resettlement framework. Special assistance to vulnerable groups includes prioritization in land-for-land compensation schemes; additional allowances for house reconstruction, relocation, and income losses; specialized training; and priority for employment in subproject activities.

305. The project company has adopted a corporate social responsibility mechanism for increased participation of the various stakeholders. This is stimulated by means of a capacity building training program for the affected people, commune leaders, and government departments and

implementing agencies. Such capacity building shall prepare the stakeholders for fair consultations and negotiation preceding the resettlement activities and compensation planning.

Table 5.23: Indicator Relevance on Criterion C: Non-Income Well-Being; % Weight 15

RI	Criterion C indicator: Promote equal distribution of opportunities to non-income human well-being through	ADB-IGI	WS-ADB-IGI	Score
8	Improved participation in community and social life	8	0.8	1.22
7	Improved access to information and communication	8	0.8	1.06
9	Improved services by clinics and health personnel; reduced child mortality	9	0.9	1.54
7	Improved school enrollment, attendance, and completion	9	0.9	1.20
8	Improved effectiveness in household work	9	0.9	1.37
7	Sustained local high ambient air quality	9	0.9	1.20
9	Targeting benefits on the poor	9	0.9	1.54
2	Promoting gender equality	9	0.9	0.34
5	Including and benefiting excluded groups, e.g., ethnic minorities and poor, isolated rural communities	9	0.9	0.85
	Sum of weighted ADB-IG indicators		7.9	
	Criterion C Score			11.52

RI = relevance indicator.

Source: Author's estimates.

306. The resettlement plan provides details on the impacts of appraised subprojects. All affected people will be provided with compensation and resettlement assistance if their land is permanently or temporarily acquired; their income sources are adversely affected; and their crops, trees, and other facilities or access to properties are damaged or reduced because of the subprojects. A lack of legal documents pertaining to their customary rights of occupancy or titles does not affect eligibility for compensation. In addition to compensation payments in accordance with the Land Acquisition Act, those affected will receive assistance to match replacement costs for lost land; the transaction costs, including stamps and registration costs, for the purchase of replacement land; and other forms of resettlement assistance, such as transition allowances and agricultural inputs for reestablishing crops. Losses of profits and income because of property losses or loss of access to property, regardless of whether or not the affected person has title to the land, will be compensated. To restore income losses, compensation for lost work days and/or income and training will be provided to affected people. Short-term training will be provided by engaging nongovernment agencies where feasible.

307. The resettlement program preparations, updating, and implementation will pay special attention to the role of women's economic activities in restoring living standards and, in this context, facilitated access to credit and agricultural extension for women and poor household members is particularly important.

308. The subprojects are unlikely to result in increased prices of goods and services accessed by the poor. The investments will support the government's goal of affordable power

for all by 2012, which is considered a pro-poor initiative. Electricity tariffs are regulated by the government and include lifeline tariffs for poor consumers.

309. The project includes development of a hydrometeorological monitoring network, and this will improve the efficiency of the generation system, including reduced flood damage to hydropower facilities.

310. The resettlement program includes a process for lodging complaints and grievances by women and poor households. Stakeholder analysis has been undertaken. All stakeholders have been actively involved to reduce the likelihood of grievances and to ensure that benefits are distributed fairly. In addition, for the selection of unskilled labor in the project area, the contractors will consult with local township labor officials and local village leaders and will also ensure that labor is hired on a nondiscriminatory basis.

Table 5.24: Indicator Relevance Criterion D: Social Protection and Risk Mitigation; % Weight 25

RI	Criterion D indicator: Reduce risks and provide protection against vulnerability through	ADB-IGI	WS-ADB-IGI	Score
5	Reliable, all-weather stable voltage transmission and distribution to private and public customers to prevent damage to users' machinery and appliances	7	0.7	2.04
8	Protection against landslides, drought, and floods	9	0.9	4.19
7	Provision of backup power supplies	9	0.9	3.66
1	HIV/AIDS awareness and prevention program	9	0.9	0.52
7	Complaints handling mechanism in place	9	0.9	3.66
	Sum of weighted ADB-IG indicators		4.3	
	Criterion D Score			14.07

RI = relevance indicator.

Source: Author's estimates.

311. The institutional and organizational arrangement is clearly focused on establishing a financially sustainable operation. The project will improve the operational efficiency and performance through institutional development and capacity building.

312. Distribution tariffs include lifeline tariffs for poor households and graduated increases in tariffs (25% every 3 months) for unmetered connections. The state government will ensure that its three power utility companies—Uttaranchal Jal Vidyut Nigam, Limited; Power Transmission Corporation of Uttaranchal, Limited; and Uttaranchal Power Corporation, Limited—conform to the tariff orders issued from time to time by the Uttaranchal Electricity Regulatory Commission C to ensure reduced transmission and distribution losses, rational power pricing, and graduated increase in tariffs as determined by the Uttaranchal Electricity Regulatory Commission.

313. The composite score of this general intervention (GI) power sector project is **67.48**, which indicates medium to almost high overall inclusive growth relevance.

314. In addition, this project also scores on Strategy 2020's pillar of environmentally sustainable economic growth by supplying clean energy and reducing transmission and distribution losses.

Table 5.25: Indicator Relevance on Criterion E: Addressing Institutional and Sustainability Issues; % Weight 25

RI	Criterion E indicator: Remove excluding structural and institutional barriers to equal opportunities by	ADB-IGI	WS-ADB-IGI	Score
8	Providing equal opportunities for connecting to power and energy	9	0.9	4.87
9	Adopting tariff structure (e.g., block tariffs) affordable to small users and the poor	10	1.0	6.08
8	Simplifying conditions for connecting to the grid or local power source for excluded groups (e.g., isolated ethnic minorities and slum dwellers)	10	1.0	5.41
8	Removing power subsidies that hamper efficiency for large users	8	0.8	4.32
	Sum of weighted ADB-IG indicators		3.7	
	Criterion E Score			20.68

RI = relevance indicator.

Source: Author's estimates.

5.3.2 Bhutan: Green Power Development Project

315. Project classification summary:

- Approved: 2008
- Country: Bhutan
- Project No.: 37399
- ADB department: South Asia Department
- Themes: Sustainable economic growth, private sector development, regional cooperation
- Sub-themes: Fostering physical infrastructure development, public–private partnership, cross-border infrastructure
- Financing: \$51 million ordinary capital resources loan plus \$29 million hard-term ADF loan, both for the Agachhu Hydropower component, and a \$25 million ADF grant; these total 45% of overall investments
- Targeting classification: General Intervention (GI)

316. Bhutan has substantial clean and renewable hydropower capacity, but only about 6% is being used. Of the total 1,500 MW of installed capacity, 80% is exported to India after meeting domestic consumption. Power exports account for the largest source of government revenue in the form of taxes and dividends from hydropower companies. Accelerating the development of hydropower for export is of strategic significance for Bhutan's economy. Given the government's limited fiscal capacity for large infrastructure projects, the hydropower development strategy is to leverage public and private investments through private participation in development projects. This approach is expected to accelerate hydropower development and generate income for more socioeconomic development.

317. Despite the nation's net power surplus for export, most rural residents do not have access to electricity. Only 40% of rural households use electricity as their main source of lighting, compared to 96.4% of urban households. Expansion of rural electrification will provide access to more remote rural areas where the costs of investment, operation, and maintenance

will be higher due to low population density and unfavorable terrain. Since about 70% of the population lives in rural areas, electricity for all is a significant implementation challenge.

318. Operating subsidies are essential to ensure the sustainability of expanding rural electrification. In Bhutan, subsidies are regulated and provided from royalty revenues yielded from power exports to cross-subsidize electricity prices, in particular for rural domestic customers. The government distributes the remaining power export revenues to support socioeconomic goals, such as health and education, as well as infrastructure development, e.g., rural roads and bridges. Thus, rural electrification and hydropower export are strongly interrelated with inclusive economic growth and poverty reduction. Expanding generation capacity for export and rural access to electricity will enhance energy and social security.

319. The Green Power Development Project has two components: (i) regional clean power trade, and (ii) renewable energy access for the poor. Under the first component, the Dagachhu hydropower development (a 114 MW run-of-river type) aims to export power from Bhutan to India through the existing grid. The rural electrification component will provide access to electricity sourced from hydropower to 8,767 households and facilities with grid extensions, and electricity sourced from solar energy to 119 remote public facilities (e.g., schools, health clinics, and other community facilities) on an off-grid basis.

320. The Dagachhu hydropower development will be promoted by a joint-venture company between Druk Green Power Corporation in Bhutan and Tata Power Company in India through a public-private partnership. The rural electrification component will be mainly served by the Bhutan Power Corporation, a public utility service company.

321. According to the National Statistical Bureau, 23.2% of the population is poor; poverty in rural areas (30.9%) is significantly higher than in urban areas (1.7%).⁸

322. Since the government estimates that more than 90% of the poor live in rural areas, rural electrification will contribute significantly to socioeconomic development and poverty reduction for about 9,000 households and 55,000 residents, representing almost 10% of the national population. Rural electrification is expected to create opportunities for alternative income-earning avenues and development of rural industries. Income-generation activities and increased productivity are among the major positive impacts of rural electrification schemes. Income security through diversification is also a fundamental benefit, as it reduces vulnerability.

323. Furthermore, the component will improve access to social services, such as education and health. Access to electricity is also expected to improve education by allowing children to devote longer hours to studying, and schools to use additional facilities, such as computers. After implementation of the component, the national rural electrification ratio is expected to be increased to 84% from the current 60%.

324. The Dagachhu hydropower component will have direct and indirect positive impacts on poverty. The local economy has already started developing as some of the civil works have been implemented. The development of access roads to the project site will improve accessibility of local communities to main roads. This is expected to stimulate the local economy, while improving the quality of life. The Dagachhu development will indirectly support

⁸ National Statistical Bureau. 2007. *The Poverty Analysis Report*. Thimphu.

rural domestic customers, in particular, those under a lifeline tariff. The tariff policy requires the government to subsidize electricity for lifeline consumers, using 12%–18% of the royalty revenue yielded from power exported from the Dagachhu plant. Because alternative sources of energy, in particular kerosene, have become progressively more expensive, use of cheaper electricity will increase savings.

**Table 5.26: Indicator Relevance on Criterion A; % Weight 15
Participation: Enhance Income and Employment Opportunities for Lower-Income
and Excluded Vulnerable Groups**

RI	Criterion A indicator: Enhanced opportunities through	ADB-IGI	WS-ADB-IGI	Score
8	Creation of permanent nonfarm wage and self-employment jobs (formal and informal sectors)	9	0.9	1.26
6	Creation of temporary wage jobs (e.g., project construction)	10	1.0	1.05
5	Adoption of labor-intensive construction (more jobs)	9	0.8	0.79
8	Increased income from change to higher-value local produce	10	1.0	1.40
8	Increased income from local materials processing	10	1.0	1.40
8	Use of power-driven productivity-enhancing implements	10	1.0	1.40
General Intervention (GI) and MDG related				
6	GI to trickle down to the poor	6	0.6	0.63
Targeted Intervention (TI) and MDG related				
10	Project to directly benefit the poor (income, household, geography)	8	0.8	1.40
7	Promoting gender equality	7	0.7	0.86
7	Income targeting the disadvantaged (e.g., ethnic minorities, isolated poor rural communities, slum dwellers, etc.)	8	0.8	0.98
Sum of weighted ADB-IG indicators			8.6	
Criterion A Score				11.16

MDG = Millennium Development Goal, RI = relevance indicator.

Source: Author's estimates.

325. Power exports will increase the government's revenue base and enable it to allocate more resources to socioeconomic development including health, education, and rural electrification. In 2006–2007, revenues from power exports contributed to all the expenditures for the agriculture and social sectors (e.g., health and education). During the next 5-year plan (2008–2013), the government considers that revenues from hydropower development will be the major sources used to directly improve the quality of life and reduce poverty. Incremental income from power exports will be used for improving and expanding road and bridge infrastructure to promote rural development for poverty reduction. The enhanced infrastructure will encourage tourism, agribusiness, and communication, and thus contribute to inclusive economic growth. It will also encourage private sector operations and help create new employment opportunities.

326. The poor are expected to receive 62% of the net economic benefits of the project. Of the beneficiaries, 88% farm as their main activity (mainly rice and maize); 10% raise livestock; and the remaining 2% are employed in some service activity, particularly hospitality (restaurants and small guesthouses).

327. No resettlement of households is required for either of the two project components.

328. There are no excluded indigenous peoples or ethnic minorities affected by this project.

329. While the Dagachhu hydropower development is basically neutral to gender issues, rural electrification is expected to have positive impacts on gender development. Women in the project area will not be constrained or discriminated from accessing the benefits that accrue from electrification. In fact, females will benefit more than males as they remain indoors and perform household chores. The provision of electricity will not only make their chores easier but will improve their health since most of their respiratory and eye ailments are caused by the smoke emitted from firewood stoves and kerosene wick lamps in poorly ventilated houses. Considering the status of women in the project areas, and considering that the rural electrification component is gender-neutral, no specific measures (gender plans) are needed for differential gender requirements as women are not specifically disadvantaged because of economic, political, or socio-legal discrimination and they do not face specific barriers to access and benefits of electrification.

Table 5.27: Indicator Relevance on Criterion B: Creation of Opportunities; % Weight 20

RI	Criterion B indicator: Improved infrastructure assets provide for	ADB-IGI	WS-ADB-IGI	Score
7	Enhanced access to labor markets and wider range of jobs	8	0.8	1.97
7	More effective contacts and communication with product markets and the public sector	7	0.7	1.72
9	Productive use of electric appliances in farming and processing (opportunities for enhanced productivity and higher-value produce and processing of local produce)	9	0.9	2.84
6	Enhanced access to a wider range of services and repairs	7	0.7	1.47
5	Improved access to credit	5	0.5	0.88
MDG related				
4	Improved access to training	7	0.7	0.98
7	Eliminate and/or reduce negative bias for women	7	0.7	1.72
7	Eliminate and/or reduce negative bias for excluded groups, e.g., ethnic minorities and poor, isolated rural communities	7	0.7	1.72
Sum of weighted ADB-IG indicators			5.7	
Criterion B Score				13.30

MDG = Millennium Development Goal, RI = relevance indicator.

Source: Author's estimates.

Table 5.28: Indicator Relevance on Criterion C: Non-Income Well-Being; % Weight 15

RI	Criterion C indicator: Promote equal distribution of opportunities to non-income human well-being through	ADB-IGI	WS-ADB-IGI	Score
7	Improved participation in community and social life	8	0.8	1.06
7	Improved access to information and communication	8	0.8	1.06
9	Improved services by clinics and health personnel; reduced child mortality	9	0.9	1.54
8	Improved school enrollment, attendance, and completion	9	0.9	1.37
9	Improved effectiveness in household work	9	0.9	1.54
7	Sustained local high ambient air quality	9	0.9	1.20
9	Targeting benefits on the poor	9	0.9	1.54
7	Promoting gender equality	9	0.9	1.20
7	Including and benefiting excluded groups, e.g., ethnic minorities and poor, isolated rural communities	9	0.9	1.20
	Sum of weighted ADB-IG indicators		7.9	
	Criterion C Score			11.71

RI = relevance indicator.

Source: Author's estimates.

330. Rural households in non-electrified villages depend on kerosene for lighting. Therefore, access to electricity sourced from hydropower and solar will have significant positive environmental impacts, such as reduced use of fossil fuels and deforestation due to firewood harvesting. Export of the clean power surplus will lower greenhouse gas emissions by 500,000 tons per year from the coal-dominated Indian power market.

331. All relevant stakeholders, including affected communities and affected people, were fully consulted during project preparation. Development of the Dagachhu hydropower component considered affected peoples' concerns and preferences during finalization of the design, particularly the alignment of access roads to minimize negative impacts, while maximizing benefits. Affected people were consulted to define appropriate compensation rates and a course of actions including scheduling, and were requested to select cash compensation or 1. The alternative land awarded as replacement for the land acquired by the Dagachhu facility. Public consultation with all stakeholders will continue throughout implementation of the Dagachhu hydropower component. A total of 25 households will be affected through the loss of part of their land. Each of the affected households and communities was given the opportunity to choose between cash or land-for-land compensation. Through public consultation, they have selected alternative plots of land.

332. The government, through the Druk Green Power Corporation and Dagachhu Hydro Power Corporation, will cause the contractors to disseminate information on the risks of socially and sexually transmitted diseases, including HIV/AIDS and malaria, to their employees during project implementation.

Table 5.29: Indicator Relevance Criterion D: Social Protection and Risk Mitigation; % Weight 25

RI	Criterion D indicator: Reduce risks and provide protection against vulnerability through	ADB-IGI	WS-ADB-IGI	Score
8	Reliable all-weather stable voltage transmission and distribution to private and public customers to prevent damage to users' machinery and appliances	7	0.7	3.26
3	Protection against landslides, drought, and floods	9	0.9	1.57
7	Provision of backup power supplies	9	0.9	3.66
6	HIV/AIDS awareness and prevention program	9	0.9	3.14
8	Complaints handling mechanism in place	9	0.9	4.19
	Sum of weighted ADB-IG indicators		4.3	
	Criterion D Score			15.82

RI = relevance indicator.

Source: Author's estimates.

333. In accordance with the Tariff Determination Regulations 2006, the royalty revenue yielded from power export from the Dagachhu development will be used to subsidize electricity for rural domestic customers, in particular those under a lifeline tariff.

Table 5.30: Indicator Relevance on Criterion E: Addressing Institutional and Sustainability Issues; % Weight 25

RI	Criterion E indicator: Remove excluding structural and institutional barriers to equal opportunities by	ADB-IGI	WS-ADB-IGI	Score
10	Providing equal opportunities for connecting to power and energy	9	0.9	6.08
10	Adopting tariff structure (e.g., block tariffs) affordable to small users and the poor	10	1.0	6.76
10	Simplifying conditions for connecting to the grid or local power source for excluded groups (e.g., isolated ethnic minorities and slum dwellers)	10	1.0	6.76
3	Removing power subsidies that hamper efficiency of large users	8	0.8	1.62
	Sum of weighted ADB-IG indicators		3.7	
	Criterion E Score			20.22

RI = relevance indicator.

Source: Author's estimates.

334. The composite score of this general intervention (GI) energy sector project is **72.21**, which indicates high overall inclusive growth relevance.

335. One component of this project is designed to contribute to regional cooperation, which is one of the other ADB Strategy 2020 pillars.

336. In addition, this project also scores on Strategy 2020's pillar of environmentally sustainable economic growth by supplying clean energy and reducing transmission and distribution losses.

5.4 Other Energy Projects

5.4.1 The Philippine Energy Efficiency Project

337. Project classification summary:

- Approved: 2009
- Country: The Philippines
- Project No.: 42001
- ADB Department: Southeast Asia Department
- Themes: Sustainable economic growth, regional cooperation, capacity development
- Sub-themes: Promoting economic efficiency and enabling markets, trade and investment, institutional development.
- Financing: \$31.1 million ADB loan, 66.9% of total investment program
- Targeting classification: General Intervention (GI)

338. Philippine consumers spend a large part of their household income on energy; the country's electricity tariffs are among the highest in the region. This situation has become even worse with recent oil price increases and is likely to continue in the short-to-medium term as the government cannot influence high oil prices. The introduction of competition through open access and targeting existing subsidies can only reduce electricity tariffs in the medium-to-long term. The government is focusing on increasing the use of indigenous renewable energy generation (such as geothermal, biomass, wind, and hydropower) and promoting energy efficiency to meet these challenges.

339. According to the project RRP, the government recognizes that it alone cannot identify and finance the various energy efficiency initiatives. Studies carried out by the Department of Energy with assistance from ADB demonstrate that, by investing \$46.5 million in energy efficiency, the government could defer \$450 million of investments in new power plants, and save about \$100 million annually in fuel costs.

340. Many other countries have used a compact fluorescent lamp (CFL) distribution program as an effective alternative to building new power stations to meet growing demand. Put simply, if 1 million incandescent bulbs are replaced with CFLs at a cost of about \$1.5 million, electricity demand will be reduced by 50 megawatts (MW). The impact on the power system will be the same as building a new 50 MW power station, which may cost at least \$50 million, another \$2 million–\$3 million each year to operate, and take 3–4 years to construct.

341. The project's purpose is to reduce the peak load power demand by implementing an energy efficiency program, with particular focus on efficient lighting that will contribute to greenhouse gas reduction. The project will (i) retrofit about 40 government-owned office buildings with efficient lighting, (ii) procure 13 million CFLs for distribution to residential and other customers to reduce peak power demand, (iii) introduce energy-efficient lamps for public lighting, (iv) set up a laboratory for testing energy-efficient appliances and a lamp waste management facility, (v) establish a super energy service company (ESCO) to support ESCO development, (vi) promote an efficient building initiative, and (vii) develop and implement a communication and social mobilization program.

342. The impacts and outcome of the project include reduced energy costs for consumers with the use of efficient lighting. According to the RRP, poor customers will particularly benefit, as lighting is a significant component of their electricity consumption. These households will benefit from improved quality lighting.

343. In the Philippines, a typical lifeline customer uses about 100 kilowatt-hour (kWh) of electricity per month. Many of the customers use at least two 40-watt (W) incandescent bulbs. One of the objectives of the project is to replace these two incandescent bulbs with CFLs, collect the working incandescent bulbs, gather them as evidence of a government-led program, and claim clean development mechanism credits. The electricity consumption for lighting will be reduced by 80% for these customers when they switch to energy-efficient CFLs. Overall, this initiative will distribute about 13 million CFLs, free of charge, to residential and other customers of four private utilities and 108 electric cooperatives nationwide. This will help these customers to more easily adjust to the government's proposal to phase out incandescent bulbs by 2010.

344. Customers in some off-grid areas will be provided with light-emitting diode (LED) lights under a pilot program to evaluate the use of LED lights in place of kerosene, candles, and other non-electric alternatives. LED is a third-generation lighting system; a typical 9 W LED light can produce as much light as a 13 W CFL or a 60 W incandescent bulb. Good quality LEDs can last between 10,000 and 50,000 hours compared with 8,000 hours for a typical CFL or 800 hours for an ordinary incandescent bulb. This initiative will increase the environment's carrying capacity to support the country's sustained economic growth, reducing poverty in the process.

345. The project's objective in terms of its contribution to reduce poverty was assessed. The poverty assessment concluded that the project will not have significant direct impacts on economic growth and poverty reduction as it will not support new connections. Most of the users of CFL lamps are from higher- and middle-income groups, as the cost of a good quality CFL bulb is high.⁹ However, in recent years, more poor households have been using CFL lamps, although use is limited by the cost. Poor households use both CFLs and incandescent lamps, and balance spending on light bulbs with energy consumption. The main beneficiary of the project will be rural households, specifically households on lifeline tariffs, consuming less than 100 kWh a month. The same households will also learn about other affordable energy-efficient choices for reducing household expenditures on energy from the communication and social mobilization component. Remote rural households that depend on kerosene-based lighting will have the opportunity to test LED-based lighting. The project's contribution in the energy sector will be mainly on energy saving during peak hours. The Philippine Energy Efficiency Project will distribute good quality and reliable power to existing consumers with lower losses.

346. A budget of \$18 million, including \$250,000 for the LED program, is allocated for this component. Under this component, for example, by replacing two incandescent bulbs with two CFLs at no cost, each customer will save about P800 each year. This savings can continue for about 7 years (the life of a 10,000-hour lamp for 3–4 hours a day average use), and overall save each customer about P6,000 over the next 7 years.

347. With reduced electricity demand, the overall need for supply (generation) will be reduced. Also, a large amount of greenhouse gas emissions—and the associated cost of importing fuel—will be avoided, creating carbon credits for the project under the clean development mechanism.

⁹ The RRP does not indicate how many people are between the extreme (\$1.25) and the moderate (\$2.50) poverty line, and how many above these.

348. The project will establish sustainable business models for large-scale implementation of energy efficiency programs. It will reduce public sector and local government energy expenditure, reduce health risks associated with residual mercury and kerosene (in off-grid areas), enhance livelihoods of rural communities, facilitate a viable ESCO industry, and establish a certification process for energy and environmentally efficient commercial buildings.

349. In short, the project addresses all three of ADB's Strategy 2020 pillars: environmentally sustainable growth, regional cooperation, and inclusive growth. This review only deals with the degree to which this project addresses inclusive growth, regardless of how well it meets the other two Strategy 2020 strategic goals.

**Table 5.31: Indicator Relevance on Criterion A; % Weight 10
Participation: Enhance Income and Employment Opportunities for Lower-Income
and Excluded Vulnerable Groups**

RI	Criterion A indicator: Enhanced opportunities through	ADB-IGI	WS-ADB-IGI	Score
3	Creation of permanent nonfarm wage and self-employment jobs (formal and informal sectors)	7	0.7	0.29
2	Creation of temporary wage jobs (e.g., project construction)	5	0.5	0.14
2	Adoption of labor-intensive construction (more jobs)	7	0.7	0.19
3	Increased income from change to higher-value local produce	7	0.7	0.29
3	Increased income from local materials processing	7	0.7	0.29
3	Use of power-driven productivity-enhancing implements	7	0.7	0.29
General Intervention (GI) and MDG related				
3	GI to trickle down to the poor	6	0.6	0.33
Targeted Intervention (TI) and MDG related				
4	Project to directly benefit the poor (income, household, geography)	9	0.9	0.49
0	Promoting gender equality	9	0.9	0
0	Income targeting the disadvantaged (e.g., ethnic minorities; isolated, poor rural communities; slum dwellers, and others)	9	0.9	0
Sum of weighted ADB-IG indicators			7.3	
Criterion A Score				2.31

MDG = Millennium Development Goal, RI = relevance indicator.

Note: There are no excluded indigenous peoples or ethnic minorities affected by this project. Specific gender components were not considered necessary in this project.

Source: Author's estimates.

Table 5.32: Indicator Relevance on Criterion B: Creation of Opportunities; % Weight 20

RI	Criterion B indicator: Improved infrastructure assets provide for	ADB-IGI	WS-ADB-IGI	Score
3	Enhanced access to labor markets and wider range of jobs	7	0.7	0.74
6	More effective contacts and communication with product markets and the public sector	8	0.8	1.68
3	Productive use of electric appliances in farming and processing (opportunities for enhanced productivity and higher-value produce and processing of local produce)	9	0.9	0.95
4	Enhanced access to a wider range of services and repairs	7	0.7	0.98
3	Improved access to credit	5	0.5	0.53
MDG related				
3	Improved access to training	7	0.7	0.74
0	Eliminate and/or reduce negative bias for women	7	0.7	0
0	Eliminate and/or reduce negative bias for excluded groups, e.g., ethnic minorities	7	0.7	0
Sum of weighted ADB-IG indicators			5.7	
Criterion B Score				5.62

MDG = Millennium Development Goal, RI = relevance indicator.

Note: Detailed field work to assess the socioeconomic profile of affected people did not find scheduled tribes or indigenous peoples in the subproject areas, thus the investment program is not expected to affect indigenous peoples negatively or differentially.

Source: Author's estimates.

Table 5.33: Indicator Relevance on Criterion C: Non-Income Well-Being; % Weight 20

RI	Criterion C indicator: Promote equal distribution of opportunities to non-income human well-being through	ADB-IGI	WS-ADB-IGI	Score
7	Improved participation in community and social life	7	0.8	1.11
7	Improved access to information and communication	7	0.8	1.11
8	Improved services by clinics and health personnel; reduced child mortality	9	0.9	1.64
6	Improved school enrollment, attendance, and completion	9	0.9	1.23
7	Improved effectiveness in household work	9	0.9	1.43
5	Sustained local high ambient air quality	9	0.9	1.02
6	Reduced soil pollution from mercury	9	0.9	1.23
4	Targeting benefits on the poor	9	0.9	0.82
0	Promoting gender equality	9	0.9	0
0	Including and benefiting excluded groups, e.g., ethnic minorities	9	0.9	0
Sum of weighted ADB-IG indicators			8.8	
Criterion C Score				9.59

RI = relevance indicator.

Source: Author's estimates.

350. The project company has adopted a corporate social responsibility mechanism for increased participation of the various stakeholders. This is stimulated by means of a capacity building training program for the affected people, commune leaders, as well as the relevant government departments and implementing agencies. Such capacity building shall prepare the stakeholders for fair consultations and negotiation preceding the resettlement activities and compensation planning.

351. The subprojects are unlikely to result in increased prices of goods and services accessed by the poor. Electricity tariffs are regulated by the government and include lifeline tariffs for poor consumers.

352. Environmental benefits include less air pollution through the reduction of local emissions of sulfur dioxide, nitrogen oxides, particulate matters, and most importantly, carbon dioxide. The component addressing lamp waste management will include the collection of spent fluorescent lamps from households, institutions, and business establishments. The facility will enable consumers to dispose of fluorescent lamps without damaging the environment. Disposal of spent CFLs and fluorescent tube lamps in landfills is among the primary sources of mercury pollution that could migrate to groundwater and also become airborne. Recovery of glass tubes, aluminum, mercury, and other lamp components by the recycling facility would reduce the need for production of raw materials. Mercury emission during recycling is negligible. The recycling facility has air emission control equipment to ensure that mercury levels comply with applicable standards. Regular monitoring of indoor air quality will be undertaken during operation. Transport, storage, handling, and packaging of recycled materials—mercury in particular—will be in accordance with the requirements of the Republic Act 6969 (an act to control toxic substances and hazardous and nuclear wastes).

353. Communication and social mobilization activities will be grouped into two streams: (i) communication for efficient lighting, and (ii) promotion of efficiency in everyday life. An integrated campaign will be launched based on the detailed marketing plan developed with the government during project preparation. The communication plan themes are (i) widespread awareness, (ii) widespread understanding, (iii) cooperation and participation, (iv) development of a sense of urgency, and (v) community ownership. The grassroots campaigns will use local social and nongovernment organizations to provide effective adoption and monitoring of CFLs.

354. The institutional and organizational arrangement is clearly focused on establishing a financially sustainable operation. The project will improve the operational efficiency and performance through institutional development and capacity building.

355. Distribution tariffs include lifeline tariffs for poor households. The lifeline subsidy—a subsidy paid to consumers using less than 100 kWh per month—was exempted from the power subsidy phaseout for 10 years, as mandated by the Electric Power Industry Reform Act. As of October 2007, the Manila Electric Company (MERALCO) had 1.7 million lifeline customers, about 43% of all its residential customers. The lifeline rate is supported by a contribution of P0.1132 per kWh by all other MERALCO customers.

Table 5.34: Indicator Relevance Criterion D: Social Protection and Risk Mitigation; % Weight 20

RI	Criterion D indicator: Reduce risks and provide protection against vulnerability through	ADB-IGI	WS-ADB-IGI	Score
8	Reliable all-weather stable voltage generation, transmission and distribution to private and public customers to prevent damage to users' machinery and appliances	9	0.9	3.27
7	Protection against mercury poisoning from disposal of fluorescent lamps in landfills	9	0.9	2.86
7	Reduced air pollution	9	0.9	2.86
6	Complaints handling mechanism in place	9	0.9	2.46
8	Communication and social mobilization	9	0.8	3.27
	Sum of weighted ADB-IG indicators		4.4	
	Criterion D Score			14.72

RI = relevance indicator.

Source: Author's estimates.

Table 5.35: Indicator Relevance on Criterion E: Addressing Institutional and Sustainability Issues; % Weight 30

RI	Criterion E indicator: Remove excluding structural and institutional barriers to equal opportunities by	ADB-IGI	WS-ADB-IGI	Score
9	Providing equal opportunities for connecting to power and energy	10	0.9	7.30
9	Adopting tariff structure (e.g., block tariffs or lifeline tariffs) affordable to small users and the poor	10	1	7.30
9	Simplifying conditions for connecting to the grid or local power source for excluded groups (e.g., isolated ethnic minorities, isolated rural communities, and slum dwellers)	10	1	7.30
7	Removing power subsidies that hamper efficiency of large users	8	0.8	4.54
	Sum of weighted ADB-IG indicators		3.7	
	Criterion E Score			26.44

RI = relevance indicator.

Source: Author's estimates.

356. The composite score of this general intervention (GI) energy project is **58.68**, which indicates medium overall inclusive growth relevance, with most of the inclusive growth contribution scored on how the project addresses institutional issues that reduce exclusion and make access to affordable lighting possible for ordinary rural households and small businesses.

357. In addition, this project also has relevance to Strategy 2020's pillar of environmentally sustainable economic growth (but there is no way of quantifying this score) by supplying clean energy and reducing transmission and distribution losses.

5.4.2 Samoa: Power Sector Expansion Project

358. Project classification summary:

- Approved: 2007
- Country: Samoa
- Project No.: 38183
- ADB department: Pacific Department
- Themes: Sustainable economic growth, capacity development
- Sub-themes: Fostering physical infrastructure development, promoting economic efficiency and enabling markets, institutional development
- Financing: \$26.62 million ADF loan, \$15.39 million ADF grant, 42% of total investment program
- Targeting classification: General Intervention (GI)

359. Reliable power supply is essential for enhancing the quality of life of all Samoans. Good performance of the power sector and reliable electricity services are vital for promoting private sector investments to diversify the economy and achieve sustainable economic growth. The performance of the power sector is increasingly becoming a hindrance to economic growth. High system losses and voltage drops have resulted in poor reliability and quality of electricity supply. As a consequence, consumers are resorting to more expensive self-generation.

360. The Power Sector Expansion Project comprises (i) support to the Electric Power Corporation's (EPC) investment plan 2008–2015 through three investment components and a project management component, and (ii) a TA cluster for Implementing the Samoa National Energy Policy.

361. The three investment components are as follows: (i) component A, consisting of the stage 1 expansion and underground cabling of the Hospital Feeder that forms part of EPC's underground cabling program for the transmission network to provide protection from cyclones; (ii) component B, consisting of the supply and installation of single- and three-phase prepayment meters to improve EPC's collection performance and lay the foundation for effective demand-side management; and (iii) component C, consisting of 17 candidate subprojects including 11 transmission projects; 4 generation projects; a system control and data acquisition project; and voltage, current, and stream-flow-gauging measurement equipment. The project management component (component D) comprises the recruitment of a project manager and implementation consultants to build capacity and help implement EPC's investment plan.

362. The unreliable and poor quality electricity supply in Samoa is affecting all consumers and is becoming an increasing constraint on the expansion of the tourism industry and economic growth. Once the benefits of the investment plan have been realized, improvements in power supply cost-effectiveness will reduce the need for tariff increases.

363. Short-term employment opportunities may be generated during the construction phase of the project. Longer-term employment opportunities, particularly in the service sector, could also be generated by commercial and industrial development resulting from more reliable power supply. The overall employment impacts are not considered to be significant.

364. Ensuring that sufficient power is available to meet growing demand is essential to achieving a broader economic base and reducing the country's vulnerability to external shocks. With the rural electrification program nearing completion, 95% of the population has access to

electricity. Good performance of the power sector and reliable electricity services are vital for promoting private sector investments to diversify the economy and achieve sustainable economic growth. Electricity is also an intermediate input to the provision of basic social services, including health, education, and water supply. Perceived benefits of the electrical services include (i) prolonging the study time of school children, (ii) savings on expenses and making household chores convenient, (iii) enjoyment in watching television programs or listening to radio programs, and (iv) enhancement of skills which are dependent on electricity, such as refrigeration and electronic repairs and steel fabrication.

365. Poor people are disproportionately affected by poor reliability and quality of power supply, and by inefficiencies in the power sector. Poor people typically spend comparatively more on electricity but generally consume small amounts of electricity for basic lighting and an electric fan. Access to the electricity grid has resulted in significant savings for poor households, and this has allowed them to become more energy efficient. However, with deteriorating quality and reliability of supply, the impact on poor households is disproportional as appliances need to be replaced more often.

Table 5.36: Indicator Relevance on Criterion A; % Weight 10
Participation: Enhance Income and Employment Opportunities for Lower-Income and Excluded Vulnerable Groups

RI	Criterion A indicator: Enhanced opportunities through	ADB-IGI	WS-ADB-IGI	Score
3	Creation of permanent nonfarm wage and self-employment jobs (formal and informal sectors)	7	0.7	0.29
3	Creation of temporary wage jobs (e.g., project construction)	5	0.5	0.21
2	Adoption of labor-intensive construction (more jobs)	7	0.7	0.19
7	Increased income from change to higher-value local produce	7	0.7	0.67
3	Increased income from local materials processing	7	0.7	0.29
7	Use of power-driven, productivity-enhancing implements	7	0.7	0.67
General Intervention (GI) and MDG related				
3	GI to trickle down to the poor	6	0.6	0.25
Targeted Intervention (TI) and MDG related				
5	Project to directly benefit the poor (income, household, geography)	9	0.9	0.62
3	Promoting gender equality	9	0.9	0.37
1	Income targeting the disadvantaged (e.g., ethnic minorities; isolated, poor rural communities; slum dwellers; and others)	9	0.9	0.12
Sum of weighted ADB-IG indicators			7.3	
Criterion A Score				3.68

MDG = Millennium Development Goal, RI = relevance indicator.

Source: Author's estimates.

Table 5.37: Indicator Relevance on Criterion B: Creation of Opportunities; % Weight 20

RI	Criterion B indicator: Improved infrastructure assets provide for	ADB-IGI	WS-ADB-IGI	Score
3	Enhanced access to labor markets and wider range of jobs	7	0.7	0.74
6	More effective contacts and communication with product markets and the public sector	8	0.8	1.68
7	Productive use of electric appliances in farming and processing (opportunities for enhanced productivity and higher-value produce and processing of local produce)	9	0.9	2.21
7	Enhanced access to a wider range of services and repairs	7	0.7	1.72
3	Improved access to credit	5	0.5	0.53
MDG related				
3	Improved access to training	7	0.7	0.74
3	Eliminate and/or reduce negative bias for women	7	0.7	0.74
1	Eliminate and/or reduce negative bias for excluded groups, e.g., ethnic minorities	7	0.7	0.25
Sum of weighted ADB-IG indicators			5.7	
Criterion B Score				8.61

MDG = Millennium Development Goal, RI = relevance indicator.

Source: Author's estimates.

Table 5.38: Indicator Relevance on Criterion C: Non-Income Well-Being; % Weight 20

RI	Criterion C indicator: Promote equal distribution of opportunities to non-income human well-being through	ADB-IGI	WS-ADB-IGI	Score
7	Improved participation in community and social life	7	0.8	1.11
7	Improved access to information and communication	7	0.8	1.11
5	Improved services by clinics and health personnel; reduced child mortality	9	0.9	1.02
5	Improved school enrollment, attendance, and completion	9	0.9	1.02
8	Improved effectiveness in household work	9	0.9	1.64
2	Sustained local high ambient air quality	9	0.9	0.41
0	Reduced soil pollution from mercury	9	0.9	0
4	Targeting benefits on the poor	9	0.9	0.82
3	Promoting gender equality	9	0.9	0.61
1	Including and benefiting excluded groups, e.g., ethnic minorities	9	0.9	0.20
Sum of weighted ADB-IG indicators			8.8	
Criterion C Score				7.94

RI = relevance indicator.

Source: Author's estimates.

366. Land acquisition for the project will generally involve fallow agricultural lands. For the core subprojects, no land acquisition or resettlement effects are anticipated. Future subprojects may have resettlement impacts. Procedures for land acquisition are included in the land acquisition and resettlement framework prepared for the project.

367. The project will contribute to the government's objective of providing a reliable and secure electricity supply at cost-effective prices. More frequent and timely tariff adjustments will be required to ensure that project benefits are sustainable.

368. A stakeholder analysis was prepared as part of the community and household consultations for the Vaita'i Hydropower Subproject. A physical scale model was displayed to the communities and used to explain the impacts of the subproject during a series of community meetings undertaken in March 2007. A project information booklet was provided in the Samoan language to ensure that the impacts of the project could be clearly understood. Separate consultations were also undertaken with women.

369. In general, affected people responded positively to the project but consensus has not been reached. Therefore, the project has been postponed until 2013 or until such time as the communities accept the project. Until acceptable renewable generation sources can be developed on Savai'i, the people of Savai'i will have access to electricity supplied from the existing diesel power station at Salalologa. EPC's investment plan includes a control system and a power factor improvement project for the power system on Savai'i. This is expected to lead to improvements in quality and reliability of electricity supply provided that existing diesel generators are operated and maintained adequately.

370. Candidate subprojects will require community acceptance prior to implementation. An environmental and social unit will be formed within EPC and will operate within the project management unit. The environmental and social unit will be responsible for stakeholder consultations and manage project environmental, land acquisition, and resettlement activities. Project information booklets will be prepared for each candidate subproject and disclosed to affected people in the wider community. Further stakeholder analysis will be undertaken as part of the power sector reform in order to fully understand and take into account the views and interests of, and impacts on, all stakeholder groups. This analysis will be supported through the TA cluster for Implementing the Samoa National Energy Policy.

371. The TA cluster incorporates the preparation and implementation of stakeholder participation and consultations into the reform process and awareness building for development of renewable energy. The participation strategy outlining the community consultation and participation framework for the Power Sector Expansion Project is included in the land acquisition and resettlement framework. EPC consults with landowners prior to land acquisition. Representatives from EPC inform the affected parties, in advance, of EPC's intention to acquire land and compensation matters.

372. Currently, no specific adverse impacts to women are foreseen. The development of subprojects involves community consultations and EPC will actively encourage representation by women at all public meetings to ensure that women (i) fully understand the subproject and its benefits, (ii) become involved in collective decision making, and (iii) raise the issues and concerns affecting them in respect to the subproject and identify suitable mitigation measures to address concerns.

373. Social investigations show that poor and vulnerable groups are adequately catered for within traditional Samoan society and will receive an equitable share of any compensation. No specific remedial actions are thought necessary.

374. The project is not envisaged to have any impacts on indigenous peoples.

Table 5.39: Indicator Relevance Criterion D: Social Protection and Risk Mitigation; % Weight 20

RI	Criterion D indicator: Reduce risks and provide protection against vulnerability through	ADB-IGI	WS-ADB-IGI	Score
9	Reliable all-weather stable voltage generation, transmission and distribution to private and public customers to prevent damage to users' machinery and appliances	9	0.9	3.68
0	Protection against mercury poisoning from disposal of fluorescent lamps in landfills	9	0.9	0
2	Reduced air pollution	9	0.9	0.82
7	Complaints handling mechanism in place	9	0.9	2.86
8	Communication and social mobilization	9	0.8	3.27
	Sum of weighted ADB-IG indicators		4.4	
	Criterion D Score			10.63

RI = relevance indicator.

Source: Author's estimates.

Table 5.40: Indicator Relevance on Criterion E: Addressing Institutional and Sustainability Issues; % Weight 30

RI	Criterion E indicator: Remove excluding structural and institutional barriers to equal opportunities by	ADB-IGI	WS-ADB-IGI	Score
7	Providing equal opportunities for connecting to power and energy	10	0.9	5.68
5	Adopting tariff structure (e.g., block tariffs or lifeline tariffs) affordable to small users and the poor	10	1.0	4.05
7	Simplifying conditions for connecting to the grid or local power source for excluded groups (e.g., isolated ethnic minorities, isolated rural communities, and slum dwellers)	10	1.0	5.68
5	Removing power subsidies that hamper efficiency of large users	8	0.8	3.24
	Sum of weighted ADB-IG indicators		3.7	
	Criterion E Score			18.65

RI = relevance indicator.

Source: Author's estimates.

375. The composite score of this general intervention (GI) energy sector project is **49.51**, which indicates medium overall inclusive growth relevance.

5.5 Overall Rating of Sampled Energy Projects

376. The variation in the rating of the sampled energy sector projects is summarized in Table 5.41.

Table 5.41: Overview of Project Ratings in the Energy Sector

Energy Sector	Criterion A	Criterion B	Criterion C	Criterion D	Criterion E	Total
Renewable energy						
PRC Zhangbei Wind Power	6.54	4.58	5.14	11.62	2.00	29.88
PAK Renewable Energy Development	8.32	9.58	11.68	10.55	8.40	48.63
Conventional power generation						
IND Uttaranchal Power Sector	9.94	11.27	11.52	14.07	20.68	67.48
BHU Green Power Development	11.16	13.30	11.71	15.82	20.22	72.21
Transmission and distribution						
CAM Power Transmission and Distribution	12.11	14.89	11.10	18.08	14.50	70.68
SRI Clean Energy and Access Improvement	9.45	16.53	12.02	13.21	15.50	66.71
Other energy projects						
PHI Energy Efficiency Project	2.31	8.62	9.59	14.72	26.44	58.68
SAM Power Sector Expansion	3.68	8.61	7.94	10.63	18.65	49.51

Notes:

BHU = Bhutan, CAM = Cambodia, IND = India, PAK = Pakistan, PHI = Philippines, PRC = People's Republic of China, SAM = Samoa, SRI = Sri Lanka.

Criterion A = Income and employment opportunities, Criterion B = Access and equity opportunities, Criterion C = Non-income well-being, Criterion D = Social protection and risk mitigation, Criterion E = Institutional and sustainability issues.

Source: Author's estimates.

ADB's Contribution to Inclusive Growth in Transport and Energy Projects

This paper develops a methodological ex ante impact assessment tool of composite inclusive growth index. The index shall help demonstrate how ADB projects in the transport and energy infrastructure sectors contribute to inclusive growth. The paper then tests the methodology on 18 investment projects of ADB. The index was developed by a consultant team as part of RSDD's knowledge work on inclusive growth. Other studies comprise papers on conceptual framework of inclusive growth (Klasen), inclusive growth on agriculture and small and medium-sized enterprise development (Rijk), inclusive growth at the country level (McKinley), and inclusive growth in environment projects (Laplante).

About the Asian Development Bank

ADB's vision is an Asia and Pacific region free of poverty. Its mission is to help its developing member countries substantially reduce poverty and improve the quality of life of their people. Despite the region's many successes, it remains home to two-thirds of the world's poor: 1.8 billion people who live on less than \$2 a day, with 903 million struggling on less than \$1.25 a day. ADB is committed to reducing poverty through inclusive economic growth, environmentally sustainable growth, and regional integration.

Based in Manila, ADB is owned by 67 members, including 48 from the region. Its main instruments for helping its developing member countries are policy dialogue, loans, equity investments, guarantees, grants, and technical assistance.