Evaluation Study

Reference Number: SES:OTH 2010-46
Special Evaluation Study
October 2010

Post-Completion Sustainability of Asian Development Bank-Assisted Projects

Independent Evaluation Department

Asian Development Bank

ABBREVIATIONS

ADB	–	Asian Development Bank
ADF	–	Asian Development Fund
ADTA	–	advisory technical assistance
ANR	–	agriculture and natural resources
CAPE	–	country assistance program evaluation
DMC	–	developing member country
DMF	–	design and monitoring framework
EIRR	–	economic internal rate of return
ERD	–	Economics and Research Department
FIRR	–	financial internal rate of return
IED	–	Independent Evaluation Department
ISF	–	irrigation service fee
MDB	–	multilateral development bank
MTR	–	midterm review
NA	–	not available
O&M	–	operation and maintenance
OCR	–	ordinary capital resources
OECD-DAC	–	Organization of Economic Cooperation and Development–Development Assistance Committee
PAI	–	project administration instruction
PCR	–	project completion report
PIU	–	project implementation unit
PPER	–	project performance evaluation report
PRC	–	People's Republic of China
PSM	–	public sector management
RRP	–	report and recommendation of the President
RSDD	–	Regional and Sustainable Development Department
RSES	–	Environment and Safeguards Division
SAPE	–	sector assistance program evaluation
SDP	–	sector development program
SES	–	special evaluation study
SME	–	small and medium-sized enterprise
SWAp	–	sector-wide approach
TA	–	technical assistance
WSS	–	water supply and sanitation

NOTE

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

KEYWORDS

adb, asian development bank, development outcomes, evaluation, impacts, performance evaluation, post-completion monitoring, project completion, project outcomes, risk assessment and management plan, risks to sustainability, sustainability

Director General	H.S. Rao, Independent Evaluation Department (IED)
Director	R.B. Adhikari, Independent Evaluation Division 1, IED
Team leader	J.S. Bayley, Senior Evaluation Specialist, IED1 (Up to end August 2010)
Team members	S. Hutaserani, Lead Professional, IED1 (Leader, Education) S. Penjor, Principal Evaluation Specialist, IED1 (Leader, Water Supply) P. Perera, Senior Evaluation Specialist, IED1 (Leader, Energy) H. Park, Senior Evaluation Specialist, IED1 (Co-Leader, Transport) T. Yokota, Senior Evaluation Specialist, IED1 (Co-Leader, Transport) B. Palacios, Senior Evaluation Officer, IED S. Labayen, Senior Operations Evaluation Assistant, IED
	Independent Evaluation Department, SS-107

In preparing any evaluation report, or by making any designation of or reference to a particular territory or geographic area in this document, the Independent Evaluation Department does not intend to make any judgments as to the legal or other status of any territory or area.

CONTENTS

The guidelines formally adopted by the Independent Evaluation Department (IED) on avoiding conflict of interest in its independent evaluations were observed in the preparation of this report. Stephen Curry, Vishvanath Desai, Jonathan Cook (Water Supply), Shiva Lohani (Education), Ravi Nangia (Finance), and Leah Castro were the consultants. Henrike Feig peer reviewed the earlier draft of the report. To the knowledge of the management of IED, there were no conflicts of interest of the persons preparing, reviewing, or approving this report.

EXECUTIVE SUMMARY

Background

For multilateral development banks, projects are conceived primarily as investment interventions. Assessment of sustainability is centered on the continuity of project outcomes over the life of the project. This responds in the most practical way to accountability for resources used. The Asian Development Bank (ADB) Charter (the Agreement Establishing the Asian Development Bank, August 1966) places a clear fiduciary responsibility upon ADB to ensure that projects are financially viable and sustainable, that funds are used for their intended purpose, and that the borrower has the capacity to fulfill obligations under the loan agreement.

The basic idea of sustainability is that a project should be designed to produce a continuous flow of outputs, services, and outcomes over its useful or economic lifetime. Project results should be sustainable even where there are several risks to outputs and outcomes.

Historically, evidence on the sustainability of development assistance projects and programs has been limited. Like other development agencies, ADB has become increasingly concerned with the sustainability of the activities it supports, to complement the attention now given to achievement of development outcomes; and also with accountability in the use of resources.

ADB's approach to evaluating and rating the sustainability of projects and programs has evolved over time. ADB revised its project performance evaluation report (PPER) guidelines in 2000 and 2006, and project completion report (PCR) guidelines shortly after. A sustainability criterion was introduced as one of five core performance criteria to arrive at a composite rating of project success in PCRs from 2001. Since 2006, the number of core criteria was reduced to four, comprising relevance, with a weight of 20% in the overall assessment, effectiveness in achieving outcomes (30%), efficiency in resource use (30%), and sustainability, with a weight of 20%.

ADB's definition of sustainability for evaluating public sector projects refers to the probability that human, institutional, financial, and natural resources are sufficient to maintain the outcome achieved over the economic life of the project and that any risks need to be or can be managed.

Evaluation Objective, Scope, and Method

The objective of this special evaluation study (SES) was to assess (i) ADB's achievements with respect to the sustainability of projects and programs, and (ii) ADB's approach to project sustainability. The SES sought to address four key questions: (i) What is the evidence on the continuation of net benefits, or its likelihood, after the completion of implementation of ADB-funded operations? (ii) What major factors influenced the achievement or non-achievement of sustainability in ADB-funded projects and programs? (iii) What major risks to sustainability were identified at appraisal and during implementation, and how were they mitigated? (iv) What are the implications for ADB's approach to ensuring sustainability?

To assess ADB's approach to sustainability in the context of similar operational procedures, the SES covers only sovereign projects and programs. The SES is based primarily on desk research, with a limited amount of fieldwork on the illustrative cases. It includes discussions with ADB staff. Information on approaches to sustainability was collected from

multilateral development agencies through electronic mail and from visits in some cases. It started with a literature review, including other special evaluations. Where appropriate, the SES takes a sector perspective, which closely corresponds to the sector priorities of ADB. Sustainability ratings were analyzed using PCRs approved during 2001–2009. Other evidence on sustainability ratings included performance evaluation reports for these projects (especially where there was a change in rating) and sector assistance program evaluations.

Key Findings

Sustainability ratings depend on the time of assessment. For 97 PCRs for 2001–2009 with an associated PPER, approval was on average 20 months after completion, and for the associated PPERs on average 50 months after completion. These periods are longer for programs than for projects. PCRs provide a preliminary assessment of sustainability when outputs are starting to be produced. The average elapsed time to a PPER should be sufficient to provide a firm assessment of sustainability, although there is considerable variation in timing across sectors.

The sustainability ratings from 491 PCRs showed 65% were rated *most likely* or *likely* to be sustainable. This implies a substantial task after completion of enhancing the sustainability of the remaining 35%. The PCR ratings have not shown any noticeable trend over the period 2001–2009, but there are considerable variations across sectors and between frequent borrowers. Ratings for programs are more diverse than for projects, with a higher proportion of programs rated *most likely* at the time of assessment. The PPERs are not representative of the total population of PCRs for projects; nevertheless, the proportion of *most likely* and *likely* sustainability ratings in PPERs is roughly the same as in PCRs, but with fewer at the extremes of *most likely* and *unlikely*.

Project effectiveness and efficiency do not guarantee the sustainability of project net benefits. Projects rated *effective* and better, and *likely* sustainable and better were 57% of the total. Those rated *efficient* and better, and *likely* and better were 51% of the total. Several projects rated *effective* or *efficient* had a sustainability rating of *less likely*. This implies there is still a substantial task of ensuring greater sustainability for projects rated *effective* and those rated *efficient*. The conjunction of sustainability and other criteria is rarely discussed in specific evaluations. However, at project completion it is still possible to undertake a scenario analysis of key project features to identify where additional resources to enhance sustainability could best be put.

The main factor supporting a *most likely* sustainability rating for projects was a positive assessment of pricing and financial viability, followed by operation and maintenance (O&M) policies and financing. In around half of the cases, the rating was supported by the policy and regulatory environment—generally outside project control—and addressed at the sector or national level. The main factors leading to an *unlikely* rating for projects, including a higher proportion of nonrevenue-generating projects, was a negative assessment of the policy and regulatory environment, and O&M policies and financing. For programs, in all cases of *most likely* rating, the main positive factors were political will to maintain support for reforms and absence of policy reversals. For programs rated *unlikely*, which are small in number, absence of political will was the major factor, but there were some policy reversals and a negative assessment of resilience of policy reforms to changing conditions and institutions.

Like PCRs, PPERs had the same proportion of *most likely* and *likely* ratings some time later. However, this similarity disguises the changes in sustainability ratings at different points in

time. The rating changed for 33 of the 74 pairs of ratings: 10 were upgraded and 23 were downgraded. These projects overrepresent those with a PCR rating of *most likely;* there was a movement away from the extreme ratings toward the two middle ratings of *likely* and *less likely*. For a selection of these projects, there was no uniformity in the reasons for a change in sustainability rating. Not all factors are project-related; in several cases the upgrade in rating could be attributed partly to exogenous factors. Downgrading of the rating for some projects was associated with a relatively high economic internal rate of return but a low financial internal rate of return. Other instances of downgrading reflected issues of maintenance funding and management.

A key issue in the roads sector is the appropriate balance between investment for network expansion and dealing with the growing maintenance requirements for existing roads. Good construction standards could reduce maintenance requirements, as could coordination on the issue of axle loads. However, long-term maintenance planning is needed to optimize expenditures. The fiscal implications of O&M requirements of nonrevenue-generating roads are often not analyzed at project level. Sector funding—including the capacity to borrow—and sector revenues need to be explored at the sector and national levels. Program lending modalities might enhance sector reform and institutional capacity. Equally important is an increase in public awareness of the concept of maintenance and its benefits, through user and community participation.

Sector assessments in the energy and power sector found that financial issues were more problematic than technical considerations. Systems of tariff regulation and tariff increases needed continued support for demand management, investor incentive, and energy efficiency. Given the time it takes to achieve sector reform, prolonged government commitment and ADB support are required, together with a statement of risks that can be clearly monitored.

The water supply and sanitation sector featured several constraints to sustainability, including lack of revenue-generating powers and capacities of local governments, and lack of central budget transfers for O&M. Central government policies can also constrain tariffs. Loan covenants on financial matters could not make up for lack of demonstrated up-front commitment during project preparation. Sustainability depended upon the capacity of the water companies to effectively manage their networks, and upon support for tariff changes that would eventually cover all costs, including expansion.

In education, sustainability of project outputs is found to be *likely* due to continued government financing of O&M of project buildings and facilities after project completion. Sustainability of project outcomes and impacts is more difficult and found to be *less likely* in some cases since it depends not only on ADB's continued support and government commitment to implementing proper policy/institutional reforms, but also on the need to have built-in mechanisms during project design to address risks to sustainability, which is normally lacking in project report and recommendations of the President (RRPs) and design and monitoring frameworks (DMFs) (e.g., mechanisms to ensure government commitment to recurrent cost funding, retention of staff trained by the projects, and involvement of relevant local stakeholders from the beginning with measures to empower their capacities in mobilizing local financial and human resources to sustain project outcomes and impacts).

Government ownership and commitment to program outcomes were cited as the main risk to sustainability in the financial and small and medium-sized enterprise sector. It was necessary to identify (i) incentives and disincentives for government—including subnational levels—to implement reforms, and (ii) constituencies for or against the reforms. Preparatory

work with stakeholder consultation, and strengthening the independence of key organizations were two elements relevant to sustainability. As it takes considerable time to operationalize reforms, sector programs should be placed within a broader reform framework and process. Engagement during implementation needs to be maintained and improved to enhance the sustainability of outcomes.

Some overall findings from the SES's illustrative cases relate to business processes: (i) to provide greater attention to outcomes, project monitoring frameworks should cover the whole of the project life span; (ii) the importance of adherence to loan covenants for O&M must be made clear; (iii) the lack of specific risks and mitigation measures in ADB DMFs was partly made up for through loan covenants, which may have only a limited effect; and (iv) post-completion monitoring of outcomes is generally not undertaken. A review of most recent RRPs and corresponding linked documents indicated that the content of risks assessment and management plans has not improved, and sustainability issues are not adequately addressed.

Conclusions, Implications, and Recommendations

A focus on sustainability is carried forward by both operations and non-operations departments. The main actors are the regional departments that carry out programming, identification, preparation, implementation, and initial evaluation activities, and they exit at completion. Other departments contribute by conducting sector, country, and risk assessments; assessing safeguard issues; formulating loan covenants; and making retrospective quality assessments. Borrower and recipient countries are expected to be responsible for post-completion operation of ADB-assisted projects.

The Independent Evaluation Department (IED) carries out independent evaluation of sustainability as part of the performance evaluation of ADB assistance at the project, sector, and country levels. IED reviews and validates project completion reports prepared by operational departments, and prepares project performance evaluation reports only for a limited number of projects and programs.

Only partial evidence is available on the sustainability of the outcomes of project and program lending. Only a few IED special evaluation studies specifically focused on sustainability. Post-completion monitoring has not been the usual practice. Greater attention should therefore be paid to risks to sustainability and their mitigation at all stages of the project cycle. The project completion stage provides an opportunity for both ADB and the client government to identify key risks to sustainability of project outcomes and consider necessary mitigation measures and follow-up actions. There should also be a system of post-completion monitoring of projects and programs with emphasis on outcomes, sustainability, and impacts.

Risks and sustainability. Evaluating sustainability is complementary to assessing risks to project outcomes at different stages of the project cycle. A sharper focus on human, financial, institutional, and natural resource risks, and also technical and economic risks at the project and sector levels should enhance the likelihood that project outcomes will be sustained and intended development effectiveness achieved.

Limited discussion on project risks in the report and recommendations of the President. The write-up on project risks in the report and recommendations of the President often does not present risks in a way that is specific, consistently linked to DMFs, and monitorable. Limitations in the statement of assumptions and risks and monitoring indicators in DMFs have been identified as another important shortcoming. The newly introduced risk

assessment and management plan is a step in the right direction, but risk assessment should adequately address sustainability risks related to project outcomes. There is therefore a need to strengthen the current practice of risk assessments, DMFs and risk management plans with greater attention to risks to the sustainability of project outcomes. This may require fine-tuning business processes, staff instructions, and evaluation guidelines, and update accordingly the related report templates where necessary. Further, staff awareness and skills development activities would help facilitate implementation of such practices more effectively.

Limited evidence. The timing of data collection missions at the project level is currently appropriate for a preliminary assessment of sustainability and for assessing sustainability as part of a performance evaluation report. Sector- and country-level evaluations of ADB assistance will inform others about sustainability issues. IED would also consider preparing a sustainability assessment report every year, focusing on one core area of operations or a country. This could be a synthesis or a meta-evaluation and, where necessary, involve field research in selected countries. An alternative would be for the Management to prepare such reports, jointly with client governments. Such assessments should, however, include a sector where there is reliance on budgetary resources for sustainability, and risks to sustainability are high. Government expenditures and revenues for sector operations should be fully assessed, and actionable recommendations given.

Clarification of sustainability factors. Improvements in evaluating sustainability could arise from a clarification of the subcriteria used for rating, and their use. For example, clearer analysis of actions and incentives to assess government commitment to sustained outcomes and ownership of processes is required, along with a clearer assessment of the role of exogenous factors. There is also a need to clarify (i) how to rate sustainability in cases where outcomes are deemed *less effective* or lower, or *less efficient* and lower; (ii) how sustainability should be assessed when outcomes have only partially been achieved; and (iii) whether sustainability assessments for programs should be based on the planned set of reforms or on those that were actually implemented. IED will continue its activities in fine-tuning evaluation methodologies and related capacity development for ADB staff and developing member countries.

Loan covenants. There should be an in-depth assessment of the role and impact of loan and grant covenants on the sustainability of investment projects, including multitranche financing facilities, in the context of ADB's mandate for the achievement of development outcomes. This could be included in the assessments of sustainability at the sector or country level as outlined above.

On the basis of the foregoing, the SES is giving the following recommendations that ADB Management can consider to enhance the sustainability of ADB-assisted projects and programs.

Recommendations	Responsibility	Timing
1. Strengthen ADB's approach to identifying and mitigating risks to project sustainability during country and sector assistance programming (para. 121) (i) Assess public expenditures, revenues, and borrowing jointly with client governments, and other development partners and stakeholders as part of the public financial management under country risk assessments, taking also into account policies and practices for pricing, cost recovery and financing options and provisions.	RDs, RSDD, SPD	2011–12 and ongoing

Recommendations	Responsibility	Timing
(ii) Consider alternative and innovative assistance modalities to improve sector policies, institutions, and asset management systems to ensure sustainability of ADB-assisted projects and programs.		
2. Pay more attention to risks to sustainability of outputs and outcomes and their mitigation during project preparation and implementation (para. 122) (i) Strengthen risk management practices during project preparation by identifying the risks to achievement of project outcomes including an assessment of fiscal implications and financing provisions (in addition to risks in project implementation) and how they will be mitigated at different stages of the project cycle. (ii) Review risks to the sustainability of project outcomes during implementation (e.g., midterm) and at completion of project implementation, and identify necessary mitigating and monitoring measures by borrowers and/or recipients and ADB to improve post-completion sustainability of project outputs and outcomes.	RDs, RSDD, SPD	2011–12 and ongoing
3. Undertake post-completion monitoring of selected projects and programs with emphasis on outcomes, sustainability, impact, and monitoring arrangements (para. 123) (i) Conduct post-completion monitoring in selected developing member countries on a pilot basis and jointly with borrowers and/or recipients, where possible. (ii) Promote awareness of project sustainability within DMCs and ADB, including a forum where DMCs can present evidence on the sustainability of ADB-assisted projects post-completion.	RDs, SPD	2011–12 and ongoing

ADB = Asian Development Bank; DMC = developing member country; PPTA = project preparatory technical assistance; RD = regional department; RSDD = Regional and Sustainable Development Department; SPD = Strategy and Policy Department.

H. Satish Rao
Director General
Independent Evaluation Department

I. INTRODUCTION

A. Sustainability Issue

1. Sustainability can be assessed at the global level and over several future generations, with a focus on the resources used for and threats to human life. It can be assessed for programs of assistance with a focus on broader economic and institutional changes extending well beyond the life of specific activities. For multilateral development banks (MDBs), projects are conceived primarily as investment interventions; assessment of sustainability is centered on the continuity of project outcomes during the useful life of the project. This responds in the most practical way to accountability for resources used. The preface of the 2005 financial management and analysis guidelines states that "*The Asian Development Bank (ADB)'s Charter (the Agreement Establishing the Asian Development Bank, August 1966) places a clear fiduciary responsibility upon ADB to ensure that projects are financially viable and sustainable, that funds are used for their intended purpose and that the Borrower has the capacity to fulfill obligations under the loan agreements.*"[1]

2. Development outcomes are greater and more reliable when investment and policy change activities result in a continuous flow of outputs, services, and net benefits over their intended lifetimes. Like other development agencies, ADB has become concerned with the sustainability of the activities it supports and their effects. This concern complements the greater attention now given to achievement of development outcomes and accountability in the use of resources.

3. There is limited evidence on the post-completion sustainability of project and program effects. Neither governments nor international development agencies generate or receive full and systematic information on the extent to which project or program interventions are producing their intended economic and social benefits over the full life of the intervention, or even in the first decade after implementation is complete. Some early evidence suggests that as many as 40% of all new activities are not sustained beyond the first few years after disbursement of external funding.[2] It is a challenge to produce regular monitoring reports on project operation and maintenance (O&M), and on actual project benefits over time. Assessments of project and program sustainability therefore are commonly restricted to an assessment of how likely it may be that project and program effects will be sustained in the future.

4. ADB revised its guidelines on public sector project performance evaluation reports (PPER) in 2000 and in 2006.[3] A four-category overall success rating scheme was instituted in 2000, using five core performance criteria to arrive at an overall assessment of project success, including a sustainability criterion with a weight of 20% in the overall assessment. The overall rating categories and core performance criteria were included in revised project administration instructions for project completion reports (PCRs) in 2001. Hence, from 2000 for PPERs, and 2001 for PCRs, sustainability has been both assessed and rated for ADB-assisted projects. The 2006 revision of the guidelines, where the number of core criteria was reduced to four, followed broadly the international good practice standards in development evaluation.

---

[1] ADB. 2005. *Financial Management and Analysis of Projects*. Manila (July, preface page).

[2] M. Bamberger and S. Cheema. 1990. *Case Studies of Project Sustainability.* Washington, DC: World Bank; R. Savaya, et al. 2008. Sustainability of Social Programs: A Comparative Case Study Analysis. *American Journal of Evaluation.* 29 (4). pp. 478–493.

[3] ADB. 2006. *Guidelines for Preparing Performance Evaluation Reports for Public Sector Operations.* Manila. http://www.adb.org/Documents/Guidelines/Evaluation/PPER-PSO/guidelines-pper-pso.pdf.

B. Evaluation Objectives and Scope

5. The objective of this special evaluation study (SES) is to assess (i) ADB's achievements with respect to the sustainability of projects and programs, and (ii) ADB's approach to project sustainability. The SES provides a meta-evaluation of post-completion sustainability for ADB-assisted operations, drawing on existing evaluations and other documents, as well as conducting its own analysis of project sustainability ratings. It addresses the following four key questions:

(i) What is the evidence on the continuation of net benefits, or its likelihood, after the completion of implementation of ADB-funded operations?
(ii) What major factors influenced the achievement or non-achievement of sustainability in ADB-funded projects and programs?
(iii) What major risks to sustainability were identified at appraisal and during implementation, and how were they mitigated?
(iv) What are the implications for ADB's approach to ensuring sustainability? What and how should ADB do things differently to enhance post-completion sustainability and development effectiveness of its assistance?

6. To assess ADB's approach to sustainability in the context of similar operational procedures, the SES covers only sovereign projects and programs.[4] Where appropriate, the SES takes a sector perspective, which closely corresponds to the sector priorities of ADB and to the division structure of operations departments. The study conducted literature reviews, desk research, and a limited amount of fieldwork on illustrative cases, and interviews with MDBs. It included discussions with ADB staff. Information on approaches to sustainability of other multilateral development agencies was gathered with the help of interviews, electronic mail and website surveys. Sustainability ratings were assessed for projects with a PCR in the period 2001–2009. The study drew on previous project and sector level evaluations carried out by the Independent Evaluation Department (IED). Further information on the evaluation's approach and methodology is presented in Appendix 1.

C. Structure of the Report

7. After the introduction, Chapter II provides some background material on ADB's approach to sustainability, and the approach to sustainability in some other agencies. Chapter III assesses the sustainability ratings of ADB project and program operations with PCRs prepared in 2001–2009. Chapter IV summarizes the factors affecting sustainability, as found in project and other evaluation materials, and the changes in ratings between completion and performance evaluation reports. Chapter V presents evidence from the illustrative cases on sustainability issues addressed in projects and programs in different sectors. Chapter VI presents the main findings and recommendations.

II. BACKGROUND

A. Concept of Sustainability for Projects

8. The basic idea of project sustainability is that any project should be designed to produce a continuous flow of outputs, services, and outcomes for a long time over its useful or economic

[4] Where relevant, the following analysis and text make a distinction between operations under the project lending modality and those under the program lending modality. For simplicity, however, in many cases the term "projects" is used to encompass both.

life. Some definitions refer to the continuation of benefits after development assistance has been completed. Because sustainability includes project effects after implementation, some definitions refer to the likelihood that project results will be maintained over time. Project results should be sustainable even where there are several risks to outputs and outcomes; the notion of building resilience to risk is part of the reason for focusing on capacity development activities in a project scope, and for identifying mitigating measures. These three aspects of sustainability—continuation of benefits, likelihood that project results will be maintained, resilience to risk—are contained in the Organization of Economic Cooperation and Development– Development Assistance Committee (OECD-DAC) definition of project sustainability (Box 1).[5] However, the definitions are generic, and technical and economic factors are not explicitly mentioned.

9. Project sustainability refers to the sustainability of project effects rather than any particular project organization, which can be dissolved at the end of project implementation. For development purposes, arrangements can be made for ensuring continuity of outcomes; for development and accountability purposes, arrangements can be made for continuity of information and reporting on the project's effects. Donor practices generally assume that recipient governments will ensure continuity of the project effects of development assistance.

10. Sustainability depends on a continuing demand for what the project delivers. For projects that include a physical investment component, sustainability requires continued funding of operations, maintenance, and expansion. The funding can come from direct customers, other beneficiaries, or the government as owner of a project, or a combination of the three. It will depend upon both the beneficiaries' willingness to pay and perception of affordability, and the government's ability and willingness to charge. Nonrevenue-generating projects rely heavily on government funding.

11. By its nature, sustainability has a time dimension. Underlying these definitions is the notion of the project life cycle, proceeding from identification and preparation, to implementation and completion, to the operating period, to the end of the project life. Sustaining project net benefits over time will be affected by evolving economic and social conditions, and policies and capacities at the sector and country levels. Some projects will generate outcomes over as long as 40 years; in others, the benefit flow may be much shorter. The assessment of sustainability will be influenced by the time at which it is undertaken.

12. The factors thought of as determinants of project sustainability, and hence the basis of possible sustainability indicators, have been identified and grouped in different ways. ADB's definition of sustainability for evaluating public sector projects refers to human, institutional, financial, and natural resources necessary to sustainability and that any risks need to be or can be managed (footnote 3) The approach of ADB and some other agencies to sustainability is elaborated further in Appendix 2.

[5] OECD-DAC. 2002. *Glossary of Key Terms in Evaluation and Results Based Management.* Paris. p. 36.

Box 1: Definitions of Project Sustainability

ADB	The probability that human, institutional, financial, and natural resources are sufficient to maintain the outcome achieved over the economic life of the project and that any risks need to be or can be managed.
AfDB	The likelihood that project results will be maintained over the intended useful life of the project.
AusAID	The continuation of benefits after major assistance from a donor has been completed.
ECG	The probability of continued long-term benefits, and the resilience to risk of the net benefit flows over the intended useful project life.
IFAD	The likely continuation of net benefits from a development intervention beyond the phase of external funding support.... the likelihood that actual and anticipated results will be resilient to risks beyond the project's life.
IFC	An assessment of good business performance in relation to financial, economic, environment, and social factors.
OECD-DAC	The continuation of benefits from a development intervention after major development assistance has been completed. The probability of continued long-term benefits. The resilience to risk of the net benefit flows over time.
World Bank	(1990) The ability of a project to maintain an acceptable level of benefit flows through its economic life. (2006) The risk, at the time of evaluation, that development outcomes (or expected outcomes) will not be maintained (or realized).

ADB = Asian Development Bank, AfDB = African Development Bank, AusAID = Australian Agency for International Development, ECG = Evaluation Cooperation Group, IFAD = International Fund for Agricultural Development, IFC = International Finance Corporation, OECD-DAC = Organization of Economic Cooperation and Development– Development Assistance Committee.
Source: Compiled from evaluation and quality assurance documents or communications.

B. ADB's Approach to Project Sustainability

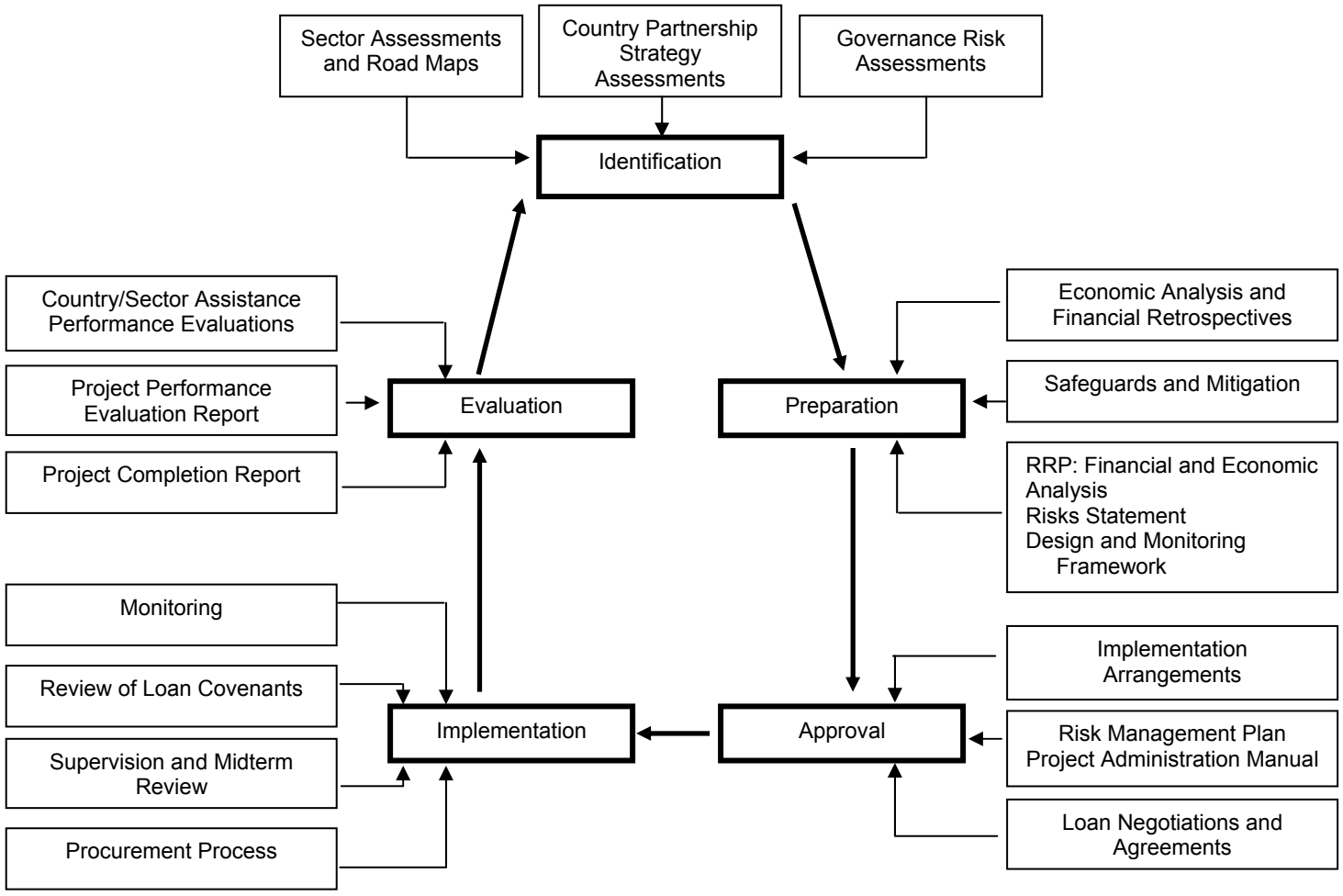
13. A focus on sustainability is carried forward through both operations and non-operations departments. The principal actors are the regional departments that carry out the main tasks to program, identify, prepare, implement, and carry out an initial evaluation of projects and programs; and IED, for subsequent evaluations. However, several other departments and divisions influence in some way the sustainability of projects at different stages of the project cycle. Figure 1 captures some of the inputs relevant to sustainability in particular. Regional departments are not explicitly required to monitor outputs, outcomes, and sustainability after reporting completion, during the technical project life or the loan repayment period.

14. The Public Management, Governance and Participation Division (RSGP) of the Regional and Sustainable Development Department (RSDD) promotes a risk-based approach to governance and public financial management at country, sector, and project levels; this should lead to clearer risk mitigation processes.[6] Economic analysis retrospectives by the Economics and Research Department (ERD) have distinguished between sustainability analysis of financial and institutional capacity for implementing and operating a project over its life, and risk analysis for assessing project viability given uncertainties in the future values of key variables.[7] RSDD's Environment and Safeguards Division (RSES) is responsible for monitoring the application of ADB's safeguards policies to avoid adverse impacts in its operations. The assessments relevant to sustainability are summarized in different parts of the report and recommendation of the President (RRP), which concludes with a statement of risks, and of specific assurances to be included in the legal agreements. Key project indicators and related assumptions and risks are

[6] Following ADB. 2006. *Second Governance and Anti-Corruption Action Plan (GACAP II)*. Manila .
[7] ADB. 2008. *Economic Analysis Retrospective 2007: Strengthening the Quality of Project Economic Analysis in ADB Operations.* Manila; and ADB. 2002. *Handbook for Integrating Risk Analysis in the Economic Analysis of Projects.* Manila.

summarized in the design and monitoring framework (DMF). A satisfactory DMF facilitates the monitoring of outcomes and risks after completion as well as during implementation. Recently, ADB started reporting on progress in achieving development results through its annual publication *Development Effectiveness Review*. Information for the review is drawn largely from PCRs issued in that particular year, but is not informed by later post-completion monitoring of development results of ADB-funded projects and programs.

Figure 1: Interventions for Sustainability in the Project Cycle



RRP = report and recommendation of the President.
Source: Independent Evaluation Department.

15. Some loan covenants are intended to have an impact after project completion; for most operations, however, monitoring of loan covenants ends with the regional departments' report in a PCR. The project performance report (PPR) system after approval identifies projects that are deemed to be "at risk" of not meeting their development objectives. Annual portfolio performance reports by IED have pointed out that the ongoing ratings are unduly optimistic; there is a discrepancy with subsequent PCR ratings. Recent recommendations on an improved PPR system were associated with recommendations to improve DMFs and for ADB to monitor results after project completion. For midterm reviews, the perspective is extended to an

assessment of the effects of any project restructuring that may be required on long-term project goals.[8]

16. At the completion of investment projects, borrowing and grant-receiving countries take over full responsibility for ensuring future net benefits through project O&M. For most programs, where there is no physical component, sustaining program outcomes is not so visible, except the avoidance of direct policy reversals. An SES in 2005 assessed the role of investment project implementation units (PIUs) for implementation efficiency and host agency capacity. It found that despite both positive and negative influences on agency capacity, some PIUs had "no clear plans for O&M of outputs after project completion."[9] Overall conclusions were that (i) PIUs were still a legitimate and justifiable arrangement for implementation of projects, (ii) it was preferable for PIUs to be internally staffed by the host agency, and (iii) where external staffing of PIUs occurred, a clear exit strategy or transformation for the O&M period should be agreed upon in advance.

17. At project completion, the borrower and then ADB prepare completion reports to assess the implementation process and achievement of objectives, and to make a preliminary assessment of sustainability. Independent evaluation of projects and project risks during implementation is limited; IED undertakes limited real-time evaluation of ongoing projects and programs in the context of sector assistance program evaluations.

C. Evaluating Project Sustainability

18. A sustainability rating is one factor in the overall success rating of ADB-assisted projects and programs. PCRs provide a preliminary assessment of sustainability 1−2 years after project completion. PPERs provide an assessment of sustainability some years later, and at least 3 years after completion. PPERs are prepared for a declining number of projects for two reasons; (i) a greater emphasis on improving self-evaluation by operations departments through PCRs, with IED assistance in review and validation; and (ii) introduction of higher level (country, sector, and special) evaluations. From 2007, IED significantly reduced the number of PPERs, moving to a purposive sample of around 10 operations per year. Greater reliance is now placed on PCRs for overall measures of project results.[10] The guidelines for PCRs and PPERs are broadly consistent with good practice standards issued for evaluation by the Evaluation Corporation Group of the MDBs.

19. Since the 2006 PPER guidelines (footnote 3), the overall project success rating is arrived at through four key performance criteria, including sustainability with the weight of 20%. This and other changes in evaluation methods were also incorporated in new project administration instructions (PAIs) for self-evaluation. Sustainability ratings are obtained by applying a set of possible determinants for projects and for programs (see chapter III.A, Table 1). These sustainability determinants complement those used for assessing other evaluation criteria; they are used in a manner to ensure there is no duplication or overlap. However, in specific cases there can be factors that influence both the effectiveness (achievement of outputs and outcomes) of a project, and the sustainability of outcomes. Sustainability can be influenced by exogenous factors also, especially changing economic conditions, which are beyond the

[8] ADB. 2010. Project Administration Missions. *Project Administration Instructions.* PAI 6.02. Manila (Appendix 1. June).

[9] ADB. 2005. *Special Evaluation Study on the Role of Project Implementation Units.* Manila. p. vi.

[10] In 2007, IED introduced a validation process for completion reports prepared by operations departments. By the end of 2009, 73 validation reports had been prepared for sovereign projects and programs. See ADB. 2007. *Guidelines for the Validation of Project Completion Reports and Extended Annual Review Reports.* Manila.

control of the project. There is a process for monitoring response to recommendations and follow-up actions of IED evaluations, including PPERs, directed mainly at ADB management and, through them, to borrowing or grant recipient countries. The responses are reported annually.[11] IED also compiles evaluation lessons and disseminates them electronically through its Evaluation Information System (EVIS).

D. Other Approaches to Sustainability

20. The closest comparators for evaluations at ADB are those at the African Development Bank (AfDB) and the World Bank. There are some differences between the approaches to evaluating project sustainability. First, the timing of completion and project performance evaluation reporting differs. ADB undertakes PCRs and PPERs at a later date after completion; therefore, it can more directly observe the status of sustainability for outcomes and other project effects. Second, the factors used to assess sustainability diverge to some extent. The factors used by AfDB differ from ADB's largely in terms of considering resilience to exogenous factors. The range of factors considered by the World Bank is also broader, including several that might be considered outside project control. Third, the World Bank changed its approach to sustainability assessment over the last 4 years. The sustainability criterion was replaced by a consideration of "risks to development outcomes." For relative ease of quantification, a risk assessment is based primarily on technical, economic, and financial factors for investment projects. However, several other risk factors—environmental, social, ownership, institutional—can be assessed as appropriate, and an assessment is made of whether they are adequately mitigated. Fourth, at completion and postevaluation, the risk to development outcomes is rated and presented as a stand-alone rating, along with a rating for achievement of outcomes (relevance, efficacy, and efficiency); it is not integrated with those other criteria into an overall success rating.

III. ANALYSIS OF SUSTAINABILITY RATINGS

A. Determinants of Project Sustainability

21. Not much is known about project effects after completion of implementation unless a monitoring process has been established and is operating. Evidence may accumulate in the context of subsequent operations or sector assessments. The main evidence comes from a preliminary assessment of sustainability in PCRs, and a fuller assessment in PPERs. In this chapter, we look at the basic evidence from these evaluations on sustainability in particular.

22. The evaluation guidelines specify that the sustainability criterion should look at the probability that the human, institutional, financial, and natural resources are sufficient to maintain the outcome achieved over the economic lifetime of the project and that any risks need to be or can be managed. Sustainability is an integral part of operational performance and is influenced by project design and implementation. Important factors affecting the sustainability of an investment project are the project's financial arrangements (such as tariffs and other cost-recovery arrangements or recurrent budget allocations), the performance of any operating or service entity, and the profitability of beneficiaries' enterprises. Other factors are human resource issues; institutional and market conditions and incentives; government ownership and commitment; and environment, social, and other risks. The important determinants proposed for

[11] ADB. 2009. *2008 Annual Report on Acting on Recommendations.* Manila.

assessing the sustainability of investment projects are in Table 1.[12] The rating of sustainability for a project or program follows a four-point scale: *most likely*, *likely, less likely,* or *unlikely.*

23. Evaluation is carried out during the first few years of a project's operational life; thus, evaluators must make assumptions about the sustainability of operational arrangements and probable future operating performance. Exogenous changes in the economic, business, or political environments may promote or reduce outputs and outcomes. The primary focus is on expected outcomes; sustainability of outputs alone might not be sufficient to ensure sustainability of outcomes.

24. From an evaluation perspective, program lending[13] differs from project lending in many respects. Disbursements in program lending depend on completion of reform measures, not on authorized claims for work done or supplies delivered. Program loans are complex operations that impact upon a large array of stakeholders. Typically, a program loan is provided by ADB to assist the development of a sector or a subsector as a whole, to improve medium- to long-term sector performance through policy and institutional changes. It is more difficult to assess, isolate, and attribute the effects of program lending. Policy and institutional reforms may take longer to implement, or for the impacts to become evident relative to loan maturity. In summary, compared with project lending, program loan objectives are broader, implementation schedules less precise, and loan funds utilization less clearly defined. The determinants proposed for assessing sustainability of programs include the human, institutional, and financial conditions for supporting the program; continued support from key stakeholders; and absence of policy reversals (Table 1).

Table 1: Important Determinants of Sustainability for Assessing and Rating Projects and Programs

Project Sustainability Subcriteria	Program Sustainability Subcriteria
1. Availability of adequate and effective demand for the project's services or products 2. Pricing of outputs 3. Financial viability of operating entities 4. Presence of appropriate policies and procedures to ensure continued funding for operation and maintenance of both public and private enterprises 5. Application of appropriate policies to ensure the maintenance of required human resources 6. Adequacy of policies, institutions, markets, and regulatory conditions and the risks of change 7. Political will to ensure government ownership of and commitment to the project 8. Adequacy of incentives for continued stakeholder participation 9. Environmental, social, technological, and natural resource risks	1. Likelihood that human, institutional, and financial conditions are sufficient to support program outcomes a. Political will on the part of government to maintain support of key stakeholders b. Institutional capacity to take appropriate follow-up actions c. Degree that the outcome of policy reforms is resilient to changing financial, social, economic, and political conditions 2. Continued support for program outcomes from key stakeholders a. Distribution of benefits and continued sociopolitical support from adversely affected groups b. Resilience to changes in government and institutional arrangements 3. Absence of major policy reversals

Source: Compiled from IED Guidelines, footnote 3.

[12] The evaluation Guidelines (footnote 3, p.15) state that "the important determinants of sustainability might include the following." With a similar qualification, important determinants of program sustainability are given in the Guidelines (footnote 3), Addendum 1, p.8.

[13] Program lending may also be described as policy-based lending.

B. Data on Sustainability Ratings

25. For this SES, a database of PCR ratings for the period January 2001–December 2009 was constructed. The database encompasses 548 overall success ratings.[14] However, allowing for those cases where there is no rating for sustainability itself in the publicly available documents (10% of the total), there are 491 ratings of sustainability in the population of PCRs.[15] As the PCRs were for operations approved some years earlier, it should be noted that until the end of 2009 there were no PCR ratings for periodic financing requests under multitranche financing facilities, and few under grant-funded operations or single tranche program operations.

26. The database also encompasses 97 PPER ratings of sustainability. These PPERs are only those relating to the projects with PCRs in 2001–2009. As explained earlier, there has been a reduction in the number of PPERs undertaken in recent years, and since 2007, a move away from about one-third randomly selected sample to purposive selection of only a limited number of projects/programs with a view to feed higher level evaluations as well as report on project performance. Hence, although the PCRs relate to all ADB sovereign projects and programs with a completion report over the period, the PPERs cannot be taken as representative of all ADB operations. PPER ratings are summarized briefly below; changes in sustainability ratings between PCRs and PPERs are discussed in chapter IV, B.

C. Time Lines of Project Completion and Performance Evaluation Reports

27. Sustainability ratings depend on the time of the assessment. At project completion for investment projects, all components and facilities to be constructed have been substantially completed and are ready for operation. Program completion is when the program period ends or a final tranche is released; it is generally measured by the program loan closure date. Completion reports for projects are prepared by the relevant operations department of ADB after a government PCR, and 1–2 years after completion, when revenues should be occurring for revenue-generating projects, to allow initial assessment of operations. On a selective basis, PPERs are prepared by IED some time after PCR circulation, and generally after at least 3 years of operations after completion.

28. For the 97 cases with both a PCR and a PPER, an analysis was undertaken of the elapsed time in months between project completion and PCR approval, and between PCR approval and PPER approval (Table 2).[16] It should be noted that the time of approval of a report is after the respective mission and data collection. The data on which a report is based may have been collected some months before its approval.

[14] Some PCRs contain a rating for more than one project or subproject. Some PPERs contain ratings for more than one project. In a few cases, there may be two PCR ratings and only one PPER rating, or the reverse. The number of ratings in PCRs and PPERs therefore differs to a small extent from the number of documents.

[15] For both PCRs and PPERs, occasionally there was a discrepancy between the sustainability rating stated in the text of a document and the numerical rating provided in a table for calculating an overall success rating from the criteria. In these cases, the numerical value was used when it was consistent with the calculation of the overall success rating.

[16] PCR and PPER documents are circulated shortly after approval. The date in months for circulation may slightly differ.

Table 2: Time Lines for Approval of PCR and PPER for Projects with PCRs and PPERs in 2001– 2009, by Modality

Item	Average	Project	Program
From completion to PCR (months)	20	20	21
From PCR to PPER (months)	30	29	33
From completion to PPER (months)	50	49	54
Total PPER Ratings		**77**	**20**

PCR = project completion report, PPER = project performance evaluation report.
Source: ADB IED database.

29. The average time between completion and PCR approval for these projects is 20 months; from PCR to PPER approval is 30 months; and the overall time between completion and PPER approval is 50 months. The average time between approval of a PPER and project completion should allow a reasonable assessment of future sustainability of project outcomes and other effects. Coming on average 30 months after the respective PCR, the PPER should also provide a more informed assessment of sustainability.

30. There is, however, considerable variability in the timing across operations. Among the 97 projects with both a PCR and a PPER, the highest number of months prior to PCR approval is 48 months. On the other hand, PCRs for 15 operations (12 investment projects and 3 programs) were approved less than 12 months after completion. The overall timing of PPERs post-completion is also variable. Approval for 13 PPERs (including 11 investment projects, 8 of them in the transport and communications sector) came less than 3 years after completion. Conversely, there are 17 operations (8 of them programs) whose PPERs were approved more than 5 years after completion. The transport and communications sector has the lowest average elapsed time from completion to PPER approval; the highest average is for the education sector.

31. Of the 97 observations on time lines, 77 are projects and 20 are programs.[17] Table 2 shows the average times for the project and program modalities. On average, PCR approval took place later for programs than for projects, and the overall elapsed time to a PPER, at 54 months, was also longer. The values are influenced by outliers at the high end, but the timing of program PPERs in general should be a good basis for assessing the sustainability of program effects.

D. Project Sustainability Ratings

32. To put sustainability ratings in perspective, Table 3 shows the overall success rate in PCRs for the 548 projects with PCR ratings in 2001–2009. It also shows the overall success ratings for the 97 projects with PPERs. Around 72% of the PCR ratings are *highly successful* or *successful* overall and only 6% are *unsuccessful*. Although not representative of the PCR projects, nearly two thirds of PPER ratings (65%) is accounted for by *highly successful* or *successful* overall with only 5% of the projects receiving a rating of *unsuccessful.*

[17] Programs include sector development programs.

Table 3: Overall Success Ratings from PCRs and PPERs of Projects with PCR Ratings in 2001–2009

Item	Overall Rating[a]					Total Ratings
	Highly Successful	Successful	Partly Successful	Unsuccessful	Not Available	
PCRs, no. per rating	56	342	117	31	2	548
% share in total PCR ratings	10	62	21	6	0	100
PPERs, no. per rating	6	57	29	5	0	97
% share in total PPER ratings	6	59	30	5	0	100

PCR = project completion report, PPER = project performance evaluation report.
[a] Where one PCR evaluates two projects, the ratings for each project was recorded. The same was done for PPERs.
Source: ADB IED database.

33. The overview of the sustainability ratings (Table 4) for the same projects shows that the majority of the PCR sustainability ratings are *most likely* or *likely*. Excluding PCRs with no sustainability rating from the totals, 65% of 491 projects with PCR sustainability ratings, are rated *most likely* or *likely*, and 7% are rated *unlikely*. All PPERs contained a rating for sustainability as well as for overall success. Of the 97 PPER sustainability ratings, 66% are *most likely* or *likely,* almost equal to the overall success rate in PPERs, and only 1% is *unlikely*.

34. Although the proportion of *most likely* and *likely* ratings is almost the same for both PCRs and PPERs, the distribution of sustainability ratings for the PPERs differs from that for PCRs, where the rating was available. For PCRs with a sustainability rating, 80% come in the categories *likely* or *less likely*. For PPERs, a lower proportion was rated *most likely* and *unlikely,* and 94% were rated *likely* or *less likely* for sustainability. The PPER ratings are more concentrated in the middle two categories, and there are fewer in the highest and lowest categories. Although the PPER ratings are not representative of the projects with PCR ratings, it is not surprising that different judgments are made about sustainability at different points in time. In fact, despite the similarity in terms of the proportion rated *most likely* and *likely*, there are a considerable number of changes between PCR and PPER sustainability ratings for the same projects (chapter IV, section B).

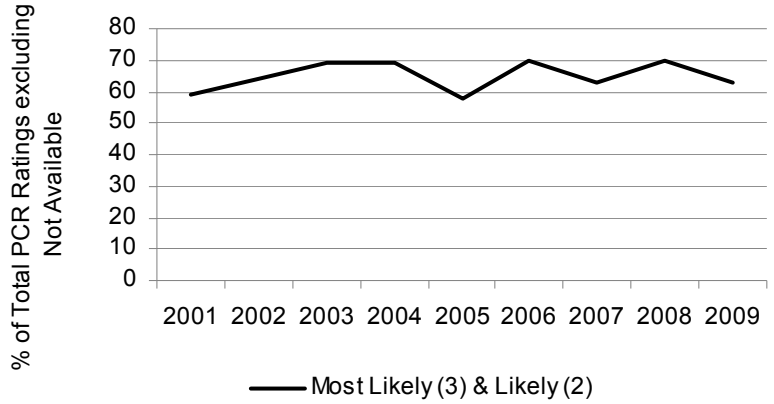
Table 4: Sustainability Ratings from PCRs and PPERs of Projects with PCR Ratings in 2001–2009

Item	Sustainability Rating[a]					Total Ratings
	Most Likely (3)	Likely (2)	Less Likely (1)	Unlikely (0)	Not Available (NA)	
PCRs, all sectors (no. per rating)	61	262	133	35	57	548
% share of total PCR ratings	11	48	24	6	10	100
% share of total PCR ratings excluding NA	12	53	27	7	0	100
PPERs (no. per rating)	5	59	32	1	0	97
% share of total PPER ratings	5	61	33	1	0	100

NA = not available, PCR = project completion report, PPER = project performance evaluation report.
[a] Where one PCR evaluates two projects, the ratings for both projects are recorded. The same applies to PPERs. To be able to process the IED data, some ratings were rounded off to conform with IED rating guideline, as follows: 3, 2, 1, 0.
Source: ADB IED database.

35. Together, the sum of *most likely* and *likely* PCR sustainability ratings has not shown any noticeable trend over the period 2001–2009 (Figure 2, and Appendix 3, Table A3.1). Although the proportion increased during some years, it has also fallen from time to time. Sustainability ratings for PCRs approved in 2009 were not significantly higher than those in 2001.

Figure 2: PCR "Most Likely" and "Likely" Ratings, 2001–2009



PCR = project completion report.
Source: IED.

36. Table 5 shows PCR project sustainability ratings by major sector. When those PCRs without a sustainability rating (not available [NA]) are excluded, a large proportion of PCR project sustainability ratings in the health and social protection (90%), education (84%), and energy (84%) sectors are rated *most likely* or *likely*. The three sectors have very few projects rated *unlikely*. Public sector management (PSM) ratings were below average for those categories of ratings. Although PSM had the lowest proportion of *most likely* and *likely* sustainability ratings, the proportion was still 46%. Agriculture and natural resources, covering a wide range of subsectors, had 54% of sustainability ratings *most likely* or *likely*, which is below average, and with the highest number of PCR ratings. Although the proportion of *most likely* and *likely* in the finance sector was barely below average, it had a relatively high percentage of PCR project sustainability rating of *unlikely* (15%). Proportions of sustainability ratings including NA are given in Appendix 3, Table A3.2.

Table 5: Percentage of Projects with Sustainability Rating in PCRs in 2001–2009, by Major Sector

	Sustainability Rating[a]					
Sector	Most Likely (3)	Likely (2)	Less Likely (1)	Unlikely (0)	Total Ratings %	Total Ratings No.
Agriculture and Natural Resources	2	52	39	7	100	110
Education	20	64	14	2	100	56
Energy	27	57	13	4	100	56
Finance	9	55	21	15	100	33
Health and Social Protection	16	74	5	5	100	19
Industry and Trade	31	31	25	13	100	16
Public Sector Management	21	25	38	17	100	24
Transport, and Information and Communication Technology	12	53	29	6	100	86

Sector	Sustainability Rating[a] Most Likely (3)	Likely (2)	Less Likely (1)	Unlikely (0)	Total Ratings %	Total Ratings No.
Water and Other Municipal Infrastructure	7	49	37	7	100	59
Multisector	9	59	22	9	100	32
% Share of Total	**12**	**53**	**27**	**7**	**100**	
Total no. of PCR ratings excluding NA						**491**

NA = not available, PCR = project completion report.
[a] Where one PCR evaluates two projects, the ratings for each project are recorded. The same applies to PPERs.
Source: ADB IED database.

37. Program lending does not entail any physical assets to maintain. During preparation and implementation, the focus is on meeting policy conditions for disbursement, and not so much on the sustainability of program outcomes. In addition, evidence for the sustainability or otherwise of programs is more difficult to obtain and to assess. Nevertheless, there is a higher proportion of programs rated *most likely* or *likely* (69%) than projects (65%) (Table 6). The ratings for programs are also more spread across the four rating categories than for projects; a slightly higher proportion is rated *unlikely* and a higher proportion rated *most likely*. Rating proportions by modality including NA are given in Appendix 3, Table A3.3.

Table 6: Percentage of Projects and Programs with Given Sustainability Rating in PCRs in 2001–2009

Sustainability Rating	Project (%)	Program (%)
Most Likely (3)	11	21
Likely (2)	54	48
Less Likely (1)	28	23
Unlikely (0)	7	8
Total	**100**	**100**
Total no. of PCR ratings	420	71

PCR = project completion report.
Source: ADB IED database.

38. The variability of program sustainability ratings also extends across sectors, and reflects variety of design, with the following characteristics: (i) out of the total 71 programs with a sustainability rating, 13 are in the financial sector, and 22 under PSM; (ii) there is a relatively high proportion (around 17%) of NA ratings for the group, all virtually in those two sectors; (iii) program ratings in the education, health and social protection, and industry and trade sectors are all *most likely* or *likely*—there are no lower ratings; (iv) most of the programs in education, and health and social protection were sector development programs (SDPs), including an investment component; and (v) the PSM sector includes different types of program, with several rated *most likely*, but many showing very little by way of sustainability (Appendix 3, Table A3.4). The variability of program ratings indicates that there are different results for different program operations, or that they require a higher degree of judgment when they are being assessed.

39. There are differences in sustainability ratings across frequent borrowers, those with at least 15 PCR ratings over the study period. Table 7 lists the 11 specific countries by the proportion of ratings *most likely* and *likely*. The first four countries, People's Republic of China (PRC), Viet Nam, India, and Cambodia, that record 83% and above, have sustainability ratings that are significantly above the other countries; three of them also have no *unlikely* ratings for their projects. The Philippines and Pakistan have the highest proportion of projects rated

unlikely. The ratings *most likely* and *likely* for Pakistan and Sri Lanka are less than 50%, although the latter has no rating of *unlikely*. This variation in sustainability ratings across borrowers is unrelated to the source of ADB funding. Project sustainability ratings for these countries including NA are in Appendix 3, Table A3.5, and the proportion of ratings for all developing member countries (DMCs) is in Appendix 3, Table A3.6.

Table 7: Percentage of Given Sustainability Ratings for Developing Member Countries with at Least 15 Project Ratings, Projects with PCRs in 2001–2009

DMC	DMC Classification[a]	Percent with PCR Sustainability Rating[b] Most Likely (3)	Likely (2)	Less Likely (1)	Unlikely (0)	Total PCR Ratings Per DMC %	No.
1. China, People's Republic of	OCR	25	68	6	2	100	53
2. Viet Nam	Blend	30	59	11	0	100	27
3. India	Blend[c]	24	62	14	0	100	21
4. Cambodia	ADF	22	61	17	0	100	18
5. Lao People's Democratic Republic	ADF	13	50	31	6	100	16
6. Indonesia	OCR	10	51	35	4	100	69
7. Nepal	ADF	0	60	35	5	100	20
8. Philippines	OCR	13	46	23	18	100	39
9. Bangladesh	Blend	9	48	36	6	100	33
10. Sri Lanka	Blend	8	40	52	0	100	25
11. Pakistan	Blend	2	38	42	18	100	50

DMC = developing member country, PCR = project completion report.

[a] DMC classification based on ADB Operations Manual on Bank Policies, section A1, March 11, 2010. Indicates eligibility to borrow under the following resources: OCR and ADF. Blend means a mix of OCR and ADF.

[b] Where one PCR evaluates two projects, the ratings for each project are recorded. The same applies to PPERs.

[c] No ADF access as of March 2010.

Source: ADB IED database.

E. Sustainability, Effectiveness, and Efficiency Ratings

40. There are cases where a project is rated *effective* or better and sustainability is rated *less likely* or lower. There are also cases where a project is rated *less effective* or lower and sustainability is rated *likely* or better. Fourteen of the 491 PCRs with a sustainability rating are without a rating for effectiveness; there are therefore 477 pairs of PCR ratings of both sustainability and effectiveness. Table 8 shows 78 ratings of *effective* or better where sustainability was rated *less likely* or lower, 16% of those where both were rated. This means that the project achieved the expected objectives or outcomes but was not considered fully sustainable. Table 8 also shows 41 ratings of *less effective* where sustainability was rated *likely* or better, 9% of all cases where both were rated. This means that the project has disappointed in terms of achieving all its outcomes, but what it will achieve will be sustainable. The shaded area in Table 8 highlights the ratings that are *effective* and better, and also *likely* and better. This combination occurs for 271 ratings, 57% of the ratings where both were rated. It is an appropriate conjunction of ratings. However, a large number of ratings do not fall into this category. There is still a substantial task of ensuring greater sustainability of those rated *less likely*, both for the significant number of operations deemed *effective* and the significant number deemed *less effective.*

Table 8: Ratings for Effectiveness and Sustainability of Projects with PCRs in 2001–2009

	Effectiveness					
Sustainability	**Highly Effective (3)**	**Effective (2)**	**Less Effective (1)**	**Ineffective (0)**	**Not Available**	**Total PCRs**
Most Likely (3)	23	32	3	0	3	61
Likely (2)	42	174	38	0	8	262
Less Likely (1)	4	67	53	8	1	133
Unlikely (0)	0	7	16	10	2	35
Not Available	0	11	3	1	42	57
Total PCRs	69	291	113	19	56	**548**

PCR = project completion report.
Source: ADB IED database.

41. If achievement of outcomes is reckoned to be effective but there is some uncertainty about their continuation, two further questions can be asked: (i) Was the investment worthwhile? With the lower levels of outcome achieved, was it a worthwhile use of resources? (ii) How can the sources of uncertainty be isolated and mitigated, even after completion? Table 9 shows the conjunction of sustainability and efficiency ratings. Excluding again the 14 cases without an efficiency rating, there are again 477 pairs of PCR ratings of both sustainability and efficiency. For 71 projects rated *efficient* or better, sustainability was rated *less likely* or lower, 15% of those where both were rated. As with effectiveness, this means the investment was worthwhile, or at reasonable cost, but the continuation of net returns may not be sustained. For 68 projects rated *less efficient* or lower, sustainability was rated *likely* or better, 14% of those where both were rated. This means that in retrospect the investments were not as worthwhile as, or were less cost-effective than, anticipated, but the reduced net returns are likely to persist.

Table 9: Number of Projects with Ratings for Efficiency and Sustainability in PCRs in 2001–2009

	Efficiency					
Sustainability	**Highly Efficient (3)**	**Efficient (2)**	**Less Efficient (1)**	**Inefficient (0)**	**Not Available**	**Total PCRs**
Most Likely (3)	27	21	12	0	1	61
Likely (2)	37	159	54	2	10	262
Less Likely (1)	6	60	50	15	2	133
Unlikely (0)	1	4	12	17	1	35
Not Available	0	8	4	1	44	57
Total PCRs	71	252	132	35	58	**548**

PCR = project completion report.
Source: ADB IED database.

42. The shaded area in Table 9 indicates the conjunction between ratings of *efficient* and better, and of *likely* and better. There are 244 such combinations, 51% of those where both were rated. There are therefore many projects that do not fall into this conjunction of ratings. There are several efficient projects where sustainability needs to be improved, and many others where sustainability needs to be enhanced to ensure that the relatively low efficiency does not diminish further.

43. For investments or programs that are already completed, operations rated *less effective* or *less efficient* and lower may have limited options for action to raise outcomes, or improve the efficiency with which they are being achieved. It depends in part on whether the operations were relevant and well-designed or not, as well as on their financial and technical management.

There is greater opportunity to reduce the shortcomings of projects that are *effective* and *efficient*, but *less likely* sustainable.

44. In assessing efficiency through calculations of the economic internal rate of return (EIRR), it is common ADB practice to use sensitivity analysis to identify possible changes that will reduce a project's net returns to 12%. These sensitivity calculations, however, are commonly mechanical and do not focus on particular variables. On the other hand, fuller risk analyses that have been proposed are demanding in terms of information, but provide decision makers ex ante with a measure of the risks of the investments. Such analyses are not so useful when the investments have already been completed. In these circumstances, what is required is a scenario analysis that identifies at completion two or three key features of a project on which future results depend, estimates high and low values for them on the basis of previous experience, and calculates which combinations of values could seriously affect project results. Such scenario analysis can be informed by inputs from different stakeholders, and can lead to a focus on how best to assure that expected positive results do come about.

45. The EIRR (and financial internal rate of return [FIRR]) calculations take full account of lifetime costs for a project, including maintenance and replacement. However, they do not directly ask how all the costs will be financed, nor whether the institutional capacity exists for carrying them out. These questions are asked under the sustainability criterion; if there is insufficient evidence to assume appropriate funding of future costs or adequate institutional capacity, then a project with a rating of *efficient* can be rated *less likely* for sustainability. To apply the criteria on a consistent basis, the economic return calculations for projects with a sustainability rating of *less likely* and lower could be revisited to adjust the cost stream for the project, and the benefit stream too as this will also be affected. The full economic return effects would provide an alternative scenario for assessing (i) whether a project is likely to be worthwhile, (ii) provision of sufficient maintenance and replacements, and (iii) demand during operations.

46. The initial investment costs of a project after completion are sunk costs. Alternative sustainability options can be assessed through their effectiveness—how much they would contribute to future outcomes—and their future costs. Where economic and financial calculations are not appropriate or used, prioritizing among sustainability options can be done on a qualitative, but transparent, basis.

47. **Conclusions.** PCRs for 2001–2009 giving a preliminary assessment of sustainability are approved on average 20 months after project completion; PPERs associated with these PCRs were approved on average 50 months after project completion. The period is somewhat longer for programs than for projects. Although there is considerable variation in the timing of these reports, these average timings are adequate for assessing and explaining the sustainability of project effects.

48. The overall project success rate for PCRs was 72%. For those with a sustainability rating, the proportion rated *most likely* and *likely* was lower at 65%. Sustainability ratings show no particular trend over the last 9 years. Projects judged both *effective* and better, and *likely* sustainable and better were 57% of the total; 16% were judged *effective* and better, but *less likely* or lower for sustainability. Projects rated *efficient* and better, and *likely* sustainable and better were 51% of the total; 15% were rated *efficient* and better, but *less likely* and lower for sustainability. Some operations are judged *effective* and *efficient* when their sustainability is *less likely*.

49. There are significant differences in sustainability ratings across major sectors, from a high 90% *most likely* and *likely* to a low of 46%, and a high degree of variability. Some sectors had a high overall rating, and very few projects rated *unlikely*; some with a significant proportion rated *unlikely* also had projects rated *most likely*. Differences in sustainability ratings are more pronounced across the 11 most frequent borrowers, ranging from 93% *most likely* and *likely* to 40%. Sustainability issues at the sector level need to be addressed in the country context too.

50. Sustainability ratings for programs are more spread across the rating categories, but with a somewhat higher proportion rated *most likely* and *likely*. Some sectors, including those using SDPs, had no rating of *less likely* or below. However, the proportions are dominated by the financial and PSM sectors where there were a significant number of programs, and a significant number not rated. Results differ for different types of programs; they require considerable thought when they are assessed.

51. The variability of sustainability results suggests that the sustainability rating is providing information independently of the other criteria in assessing overall success. Scenario analysis could be used to assess the consequences of different assumptions about sustainability on project effectiveness and efficiency. At the same time, these results reinforce the need to take action to enhance sustainability for some projects even after project completion.

IV. FACTORS AFFECTING PROJECT SUSTAINABILITY

A. Positive and Constraining Factors from Project Evaluations

52. Evidence on factors that promote or constrain project sustainability was obtained from projects where the PCR rating was the highest (*most likely)* and the lowest (*unlikely)* for all PCR sustainability ratings in 2001–2009. The factors identified as reasons were different for investment projects and for programs, reflecting the different determinants recommended for these different types of operation. For investment projects, they were aggregated into seven categories (Table 10). Of the 491 PCR ratings of sustainability, 61 were rated *most likely*, of which 46 are investment projects and 15 are programs; and 35 were rated *unlikely*, of which 29 are investment projects and 6 are programs. The columns in Tables 10 and 11 show how many times a particular determinant was used to arrive at a rating, then the number of cases as a positive factor with sustainability rated *most likely*, then as a constraining factor for sustainability rated *unlikely*.

53. For investment projects rated *most likely*, the most frequent reasons cited for the rating were a positive assessment of pricing and financial viability (72% of cases), and O&M policies and financing (67%). This reflects the substantial number of revenue-generating projects requiring an assessment of financial viability, and also of the state of O&M policies and procedures. In half of the cases, the sustainability rating was supported by an assessment of the policy and regulatory environment, which is beyond direct project control and has to be addressed at the sector or national level. Only in about 33% of the ratings were sustained demand, human resource capacities, and government and stakeholder commitment stated as significant determinants of sustainability. Despite the physical assets implied for most investment projects, broader environmental, social, and natural resource risks were mentioned in only 9% of cases.

54. Investment projects rated *unlikely* had a higher proportion of nonrevenue-generating activities. The policy, market, and regulatory framework, and O&M policies and financing were the most frequently cited constraining factors for sustainability, together with a substantial

proportion of cases where poor financial viability was quoted. Demand, human resource, and commitment factors played a smaller role than for the projects rated *most likely*. Taken together, the results point to the fact that project factors relating to financial viability and O&M, which have long been addressed in ADB-assisted projects remain important to project sustainability, but that the sector environment beyond the project level is also an important influence on sustainability. A recent retrospective for financial due diligence at approval of ADB's RRPs in 2008–2009 concluded that average scores for four attributes were "good" or "excellent," but only "adequate" for three attributes. Almost half of the RRPs reviewed failed to satisfactorily cover all required financial due diligence issues.[18]

Table 10: Reasons Cited for *Most Likely* and *Unlikely* Sustainability Rating of Investment Projects with PCRs in 2001–2009

	Total Overall Use		*Most Likely* Positive Factors		*Unlikely* Constraining Factors	
Reasons Cited for Project Rating[a]	No.	%	No.	%	No.	%
Demand/Pricing	20	27	15	33	5	17
Pricing & financial viability	45	60	33	72	12	41
O&M policy, procedures & financing	46	61	31	67	15	52
Human resources	21	28	15	33	6	21
Policies, institutions, markets, regulatory environment	39	52	23	50	16	55
Government & stakeholders' commitment	17	23	12	26	5	17
Others (environmental, social, technological, natural resource risks)	9	12	4	9	5	17
No reason	7	9	4	9	3	10
Total PCRs for investment projects with rating of *Most Likely* or *Unlikely*	**75**		**46**		**29**	

PCR = project completion report.
[a] Multiple reasons for *Most Likely* and *Unlikely* sustainability ratings were cited; thus, the numbers do not add up to 45 and 29, respectively, or 100%.
Source: ADB IED database.

55. For projects in the education sector, common PCR explanations for a sustainability rating of *most likely* are as follows: the project was highly relevant to the needs of beneficiaries; the project was consistent with government policy; and the government had its own legal and financial commitment to the associated policy objectives. For energy sector projects, the identified success factors for sustainability are profitable executing agencies with sufficient budgets for O&M; adequate consumer demand; skilled and competent staff in the executing agencies; the availability of appropriate technology and equipment; and a supportive local enabling environment (subsidies, tariffs, prices, legal frameworks, political considerations). For the health and social protection sector, the institutionalization of new structures and systems was identified as a key factor for enhancing sustainability. In the industry and trade sector, emphasis was given to the importance of government ownership and commitment, and the operating and financial performance of the operating entity. PCRs for transport sector projects identified the key sustainability factors as adequate demand for services, institutional capacity, adequate revenues and profit, and sufficient technical expertise. In the water supply and municipal infrastructure sector, high levels of sustainability were explained by the presence of

[18] ADB. *2008–2009 Financial Due Diligence Retrospective Report*. Unpublished draft.

experienced and skilled staff; and appropriate tariffs to ensure sufficient revenues to cover ongoing operations, maintenance, and depreciation costs.

56. The agriculture and natural resources sector had several examples of projects rated as *unlikely* to be sustained. Explanations for that rating highlighted the limited implementation of project activities and inadequate programs for maintenance. In the microfinance subsector, projects experienced sustainability challenges due to problems in managing the volume of bad debts. In the transport sector, project sustainability was rated low due to shortfalls in the delivery of planned outputs and insufficient funding for O&M. In the water supply and municipal infrastructure sector, the reasons cited were the limited delivery of physical outputs, insufficient revenues to fund O&M, and weak institutional capacity. For multisector projects, PCR explanations for limited sustainability ratings emphasized insufficient financial resources and institutional capacity.

57. A similar analysis of the positive and constraining factors has been undertaken for a small selection of projects where sustainability was rated *likely* and *less likely*.[19] For these sustainability ratings in the middle of the range, the overall rating of sustainability is a balance between positive and constraining factors. Hence, the same factor may appear as both a positive and constraining factor for a rating of *likely*, and as a positive and constraining factor for a rating of *less likely.* A positive assessment of future financial viability played the largest positive role in *likely* ratings, together with O&M policies and financing, but some elements of financial viability were cited also as the predominant constraining factor for these projects. *Likely* ratings for projects were supported by positive assessments of government and stakeholder commitment, and of the status of human resources, to a larger extent than for projects rated *most likely*. The assessment of projects where sustainability was rated *less likely* identified very few positive factors. They included more projects where O&M policies and financing were constraining, followed by financial viability. By comparison with projects with an *unlikely* rating, human resource status and lack of effective demand were also identified as substantial constraining factors. This additional analysis suggests that the factors influencing sustainability ratings have some common financial elements, but nevertheless differ between projects and rating categories.

58. For programs, 15 were rated *most likely* and 6 *unlikely* (Table 11). All those rated *most likely* cited the government's strong ownership and commitment in the design and implementation of the program, and an absence of major policy reversals at the time of sustainability assessment. In the majority of cases, laws and decrees had been enacted or implemented, indicating resilience to changing conditions. Neither institutional capacity nor the response of those adversely affected was a large factor for future sustainability; program sustainability depended more on the larger issues of continued commitment and resilience to change. Only a small number of cases were rated *unlikely*. For these, the factors were seen as detracting from program sustainability. In two cases, there had been no major policy reversals: for one, the design was too complex and the government could not fully fund the program changes. For four other cases, there were cancellations of tranches or loans (in the case of SDPs), or policy reversals which undermined any progress that had been made. The governments had changed, or did not really support the program.

59. Positive and constraining factors were assessed for a small number of programs rated *likely* and *less likely*. As for projects in these categories, sustainability factors can be both

[19] A 10% random sample of projects was drawn from the population of projects with a PCR sustainability rating of *likely* and those rated *less likely*. The sample included 23 projects rated *likely* and 12 projects rated *less likely*.

positive and constraining for the same program. The main factor cited to support the sustainability rating was the institutional capacity to take appropriate follow-up action and support reforms, and the political will of the government to maintain support for program outcomes. By comparison with programs rated *most likely*, supportive factors for those rated *likely* included institutional capacity to implement reforms, and the distribution of reform benefits.

Table 11: Reasons Cited for *Most Likely* and *Unlikely* Sustainability Rating of Programs with PCRs in 2001–2009

Reasons Cited for Program Rating[a]	Total Overall Use		*Most Likely* Positive Factors		*Unlikely* Constraining Factors	
	No.	%	No.	%	No.	%
1. Likelihood conditions are sufficient to support outcomes						
a. Political will to maintain support	20	95	15	100	5	83
b. Institutional capacity	8	38	6	40	2	33
c. Resilience to changing conditions	17	81	13	87	4	67
2. Continued support from key stakeholders						
a. Distribution of benefits	9	43	7	47	2	33
b. Resilience to institutional/government changes	13	62	9	60	4	67
3. Absence of major policy reversals	19	90	15	100	4	67
Total PCRs for programs with rating of *Most Likely* or *Unlikely*	**21**		**15**		**6**	

PCR = project completion report.

[a] Multiple reasons for sustainability rating of *most likely* and *unlikely* were cited; thus, the numbers do not add up to the number of PCRs or 100%.

Source: ADB IED database.

60. There are some specific features of programs rated *most likely* and the way they were assessed. All cited government commitment as key to sustainability, despite a change in government in two cases. This is partly reflected in the inclusion of reform objectives in broader development strategies. In other cases, the indicators of government commitment are not made explicit. For some more recent cases, the programs were used as an instrument of coordination around a reform agenda, with strong development partner involvement. Sustainability is enhanced also when programs are implemented as part of a series in a broader framework. This allows the emphasis to change, for example, from macro-stabilization to service delivery as progress is made at the national level. In one program, the effects were budget neutral. In a case of trade facilitation, it was noted that revenue collection by the government should increase. In still another case, program transactions costs had been low. The possible impacts of the programs were not always made explicit.

61. The overall results of program lending operations have been assessed in other evaluations. In an SES in 2001, four key areas to enhance the effectiveness and sustainability of policy reforms through advisory technical assistance (ADTA) in the power and water sectors were identified: (i) policy reform needs to be treated as a dynamic process in a given sector, and not a one-off policy change or a fixed set of institutional changes; (ii) ownership is the key to success and sustainability; (iii) the effectiveness of future ADTAs depends on ADB's ability to allocate the required resources; (iv) accountability for results from ADTAs needs to be enhanced by building coalitions among interest groups for reform. [20] With respect to lending operations, in some cases, formal compliance with policy conditions did not result in sustainable reforms. This may stem in part from insufficient resources for institutional capacity development.

[20] ADB. 2001. *Special Evaluation Study on Sustainability of Policy Reforms through Selected Advisory Technical Assistance.* Manila.

An SES update in 2007 enumerated some factors that had positively contributed to program results, some that had detracted from program results, and some that were exogenous to the program.[21] It drew attention to the importance of harmonization around reform agendas. For Pacific DMCs, a series of public sector reform programs aimed to address growing fiscal deficits, downsize and enhance the productivity of the public sector by strengthening public sector management for overall allocation and efficiency, and improve the environment for the private sector. The conclusion was that most programs achieved the immediate objectives to stabilize finances, but outcomes over the longer term were mixed. Owing in part to limited reform capacity, budget deficits had reemerged, and there were only modest impacts for private sector development. Although results for different countries varied, assistance to these programs as a whole was rated *less likely*. The approach to reforms needed to be enhanced through greater ownership, capacity, and continuity.[22] It was also pointed out that policy reform can be viewed as the creation of an asset requiring maintenance spending; the fiscal costs of reform can be immediate while the consequent impacts and fiscal returns may be some time into the future. This may be true for the private sector as well, not just the government. This approach to the analysis of program lending needs further application, particularly for the production of public goods at the sector level, such as education and roads.

62. A key indicator of the financial sustainability of ADB projects is the FIRR. Where relevant, the FIRR is recalculated at the PCR stage and compared with the appraisal estimate, to determine the sustainability of some projects. At appraisal, all FIRRs should exceed the weighted average cost of capital. Recalculated FIRRs are available for some projects rated *most likely* (25 observations) or *unlikely* (5 observations). Table 12 shows the number of cases where the recalculated FIRRs are higher, lower, or relatively unchanged from the appraisal estimate. For projects rated *unlikely*, all cases showed a lower FIRR value at project completion. For projects rated *most likely*, half the recalculated FIRRs were higher than at appraisal, but 44% were also lower than at appraisal. The FIRR by itself is not decisive in assessing sustainability, without reference to the overall financial status of the executing agency.

Table 12: Recalculated versus Appraisal FIRRs for Projects Rated *Most Likely* and *Unlikely* with PCRs in 2001–2009

	Most Likely (3)		Unlikely (0)	
Recalculated vs Appraisal FIRR	**No.**	**%**	**No.**	**%**
Higher	12	48	0	0
Lower	11	44	5	100
Relatively unchanged[a]	2	8	0	0
Total PCRs excluding NA[b]	25	100	5	100
Total NA	36		30	
Total PCRs including NA	61		35	

FIRR = financial internal rate of return, NA = not available, PCR = project completion report.
[a] Recalculated FIRR when rounded off to zero decimal point is the same as in the RRP.
[b] NA means not available in publicly available project documents; no comparison with appraisal; not relevant to the project.
Source: ADB IED database.

[21] ADB. 2007. *Policy Based Lending: Emerging Practices in Supporting Reforms in Developing Member Countries.* Manila.
[22] ADB. 2009. *ADB Support for Public Sector Reforms in the Pacific: Enhance Results through Ownership, Capacity, and Continuity.* Manila.

B. Changes in Sustainability Ratings

63. PPERs assess sustainability on average 30 months after the preliminary assessment provided by a PCR. Up to end-2009, PPERs provided 97 ratings for the population of PCRs in 2001–2009. For 23 of them, however, there was no sustainability rating in the PCRs.[23] For the 74 pairs of sustainability ratings, the rating for 33 (45%) changed between the PCR and the PPER. Of the 33 cases, 5 were programs of which 4 were downgraded.[24] More PPERs downgraded (23) than upgraded (10) the sustainability rating. Table 13 records the number and direction of change of the rating categories. There is a net increase in the two middle ratings, *likely* and *less likely*, consistent with the overall distributions of PPER ratings, which show a movement away from the extremes. However, the net change between those rated *most likely* and *likely*, and those rated *less likely* and *unlikely*, is only a net reduction of 5 ratings in the former.

Table 13: Number and Direction of Change in Sustainability Ratings of Projects with PCR in 2001–2009 and a PPER Rating

Higher PPER Ratings	Number	Lower PPER Ratings	Number
Unlikely to Less Likely	1	Most Likely to Likely	10
Unlikely to Likely	1	Most Likely to Less Likely	2
Less Likely to Likely	7	Likely to Less Likely	11
Likely to Most Likely	1		
Total Changes Up or Down	10		23

PCR = project completion report, PPER = project performance evaluation report.
Source: ADB IED database.

64. Given the significant number of changes in rating between the PCR and the PPER, attention was focused on some of those projects to elicit the reasons for the change. Some projects with a change in sustainability rating are addressed as illustrative cases in chapter V. The reasons for the change are summarized for some of the other instances, including some where the rating was upgraded and some where it was downgraded. Further details are presented in Appendix 4.

65. In several cases, the upgrade in the sustainability rating could be attributed partly to exogenous factors outside the project. Several projects were completed in the early to mid-2000s, in a recovery and growth period for regional economies. In different projects, faster traffic growth than expected was combined with higher allocations to road maintenance; the telecommunications sector had diversified and grown through new technologies and private sector investment; and the organizational context had stabilized after the capital moved to a new location. Those exogenous factors were combined with project features advantageous to the circumstances. At present, ADB's determinants for sustainability do not explicitly refer to the effect of exogenous factors.

66. Five projects where the rating for sustainability changed are revenue-generating projects or have revenue-generating components. For such projects, apart from other financial indicators, the FIRR can be compared with the EIRR.[25] A revenue-generating project raised to *most likely*

[23] This reflects the higher number of PCRs with no sustainability rating in earlier years, from which more PPERs were drawn.
[24] The projects identified with a change in rating overrepresent those with a PCR rating of *most likely,* and under-represent those rated *less likely* and *unlikely.*
[25] ADB. 1997. *Guidelines for the Economic Analysis of Projects.* Manila *(*Section XIII, A).

had an appropriate balance between the two indicators: a more than acceptable EIRR, showing the investment was nationally worthwhile, and a FIRR comfortably above the weighted average cost of capital, showing a significant contribution to financial stability. However, results differed across other projects where the sustainability rating fell. In two cases, there was a relatively high EIRR, but a low FIRR. For a railway project, tariffs were constrained by competition with road passenger transport services; passenger trains were being run at a loss to the operator. In a road project, finances were weakened by a doubtful design assumption: an assumed shift from rail to road transport for a port road link, which is unlikely, given the bulk nature of the freight being serviced. At the same time, there was no full autonomy over road tolls to allow them to adjust to the actual demand circumstances.

67. Downgrades in ratings for investment projects were influenced by issues of maintenance funding and management. For an energy conservation project, the facilities were well-maintained and kept in service order; those provided under the project were expected to last for their projected economic life. The staff was able to maintain and rehabilitate the facilities. However, the PPER downgraded the sustainability rating; owing to financial pressures, maintenance expenditures were being cut and the operational focus had shifted to repairing equipment failures rather than taking preventive measures. For a road overlay and improvement project, the PPER concluded that sector-wide maintenance funds were insufficient. ADB's loan covenant requiring the government to provide adequate maintenance funding was not effective.

68. For some programs, sustainability was downgraded from the PCR rating of *most likely*. Reforms had not met their objectives and had stalled. This was partly due to lack of overall financial resources to support relevant units. Generic assumptions and risks had been identified during program preparation, but there were no well-developed mitigation measures to deal with them. Implementation focused more on compliance with loan tranche conditions, and less on managing risks to program outcomes. Under an SDP in the education sector, at the time of the PCR, many sector indicators had recovered to pre-transition levels. Further development had taken place by the time of the PPER, but the rating was downgraded to *likely* sustainable. Although education had retained a consistent share of government income, the amount was not enough for maintenance purposes. Parents had become somewhat involved in school management but could not afford any contributions, and there was a need for a future school building program.

69. Environment and social issues were not a significant factor in the change in sustainability rating. In most cases, minor environmental effects were dealt with adequately during implementation.

70. **Conclusions.** The reasons for a change in sustainability rating over time were not uniform. Not all factors were project-related. Revenue generation does not guarantee sustainability by itself. Not all factors can be resolved at the project level. Some conclusions can be drawn from assessing the change in sustainability rating between the PCR and PPER stages.

(i) Exogenous factors, especially enhanced demand, can influence the assessment of sustainability. However, demand is partly an endogenous factor also. Where capacities have been built, project-level actions can be taken to raise utilization rates.

(ii) Tariff systems for revenue-generating projects regulate the distribution of economic net benefits among stakeholders. Where a project generates an acceptable economic return, arrangements can be put in place to ensure the operator receives a share of the returns sufficient to cover operation,

maintenance, and repair, and contributes to expansion. This is a prerequisite for private sector involvement in some sectors.

(iii) Funding requirements for nonrevenue-generating projects, or those generating revenues that meet only some of the costs, need to be estimated during project preparation for the full economic life of a project, including all maintenance and replacement needs. Although this is generally done for financial and economic calculations, it is not reflected in financing plans.

(iv) Maintenance funds are often in short supply. Financing of maintenance cannot be resolved at the project level; it requires a fiscal assessment at the sector and country level, including borrowing capacity.

(v) Sector development programs can be effective where there is a close link between the policy and investment elements. However, there have been virtually no programs in the transport and water sectors. Alternative modalities could be used to meet maintenance requirements, such as grant cofunding, or budget support for institutional improvements in planning and managing maintenance.

71. Some conclusions can also be drawn on the determinants used for assessing projects and programs. They are rarely made explicit. A common practice is to reduce sustainability considerations to "financial viability and institutional capacity." The present determinants could be elaborated further.

(i) Exogenous factors are clearly taken into account in some cases, but not in others. An explicit consideration of exogenous factors would allow clearer attribution to project design and implementation.

(ii) A demand for the output or service provided is a prerequisite for achieving outcomes. This is not just a problem of forecasting, but also of how the good or service can be made more available and accessible to the beneficiaries.

(iii) Consistency is required in assessing sustainability where a project has achieved much less than was expected. Which should be rated, the sustainability of planned outcomes, or the sustainability of the actually achieved outcomes?

(iv) In assessing financial sustainability, it is useful to compare EIRR and FIRR values in cases where both can be calculated, to see whether a reasonable level of economic returns is being turned into financial returns for the service provider. This applies to the provision of any private good regardless of whether it is supplied by the public or the private sector.

(v) A better approach to assessing commitment to reforms needs to be developed, with greater analysis of the incentives in the relevant institutional and political structures.

(vi) Sustainability ratings should be checked against the associated effectiveness and efficiency ratings, to articulate how sustainability can be enhanced, especially for those cases where the rating for sustainability is lower than that for effectiveness or efficiency.

C. Other Evidence on Sustainability

72. Since 2003, a number of sector assistance program evaluations (SAPEs) have been undertaken, mostly in relation to preparation of country assistance program evaluations (CAPEs). When undertaken for the first time in a particular country and sector, the SAPE assessed a long period of ADB operations. SAPEs that are publicly available on IED's website contain recommendations relevant to project and sector sustainability for future operations.

More recent SAPEs have a rating of sustainability from a "bottom-up" perspective. Key findings are summarized below. More details, including references, are in Appendix 5.

73. **Energy and power.** Four sector assessments were made for the energy and power sector. Of three ratings, two were *likely* and one was *less likely*. Generally, ADB's assistance had moved beyond expansion and improvement of generation, transmission, and distribution systems to embrace an unbundling and sector reform agenda. In general, project investments were technically sound and well-constructed. Differences in O&M practices depended on the extent of preventive maintenance; for older facilities, there could be lack of funds, delayed procurement of parts, and a management culture less dedicated to preventive maintenance. In all cases, the main problem area was financial. In one case, tariffs were at about half their long-run marginal costs, accounting practices were poor, and there were continuing problems with system losses and revenue collection. In another case, the sector's financial viability had deteriorated, with a large accumulation of debt. At the time of the assessment, power tariffs were not enough to enable power companies to self-finance replacement investments, and significant losses burdened the government. In a further assessment, power system financial sustainability remained questionable. Although there were competent and profitable power sector utilities, with stock market listings, there was still little history of significant changes in tariffs. A key recommendation was price changes for managing demand, and for energy efficiency and investor incentive.

74. A special evaluation of cost recovery in the power sector across 14 countries in 2003 brought out the primacy of financial issues in sector sustainability.[26] The context included entry of private sector power producers in the sector, and a buildup of debts in foreign currency for power purchase, fuel supply, and borrowings. The three key criteria for assessing the ability to sustain supply were minimization of physical and financial costs, tariff-setting elements, and revenue collection efficiency. While those with tolerable performance should be assisted through policy dialogue and monitoring of compliance with loan covenants (found to be 61% across the agencies in the 14 countries), those with unsatisfactory performance needed assistance with structural changes in the sector as well as tariffs to recover costs. Assistance was shifting from investments for integrated utilities with strong cost recovery covenants, to program support for sector restructuring that would eventually allow consumer choice of suppliers in a more commercial and transparent environment. Other lessons from the sector assessments were that (i) the time required for, and risks associated with, power sector restructuring proved much greater than anticipated; (ii) a key assumption that private investment would continue to be attracted to power generation had not been confirmed; (iii) in one case, outcomes of technical assistance for state regulators were regarded as successful and sustainable, with regulation of tariffs based increasingly on performance rather than costs, and with some consumer participation; and (iv) ADB could do a better job on risk analysis at entry, and continued risk assessment during implementation through specific and monitorable performance indicators.

75. **Road transport**. Six sector evaluations were made of the transport or road sector. Sustainability was *likely* for three, *most likely* for one, *less likely* for another, and *likely* and *less likely* for one more for different levels of road classification. In all cases, the main issue was how to further expand the network while dealing with the growing maintenance requirements and deteriorating roads. In one case, there were inadequate indirect revenues from low traffic levels, and the road fund resources were increasingly used for construction and rehabilitation. The problem was exacerbated in another case by a high level of debt of road sector enterprises;

[26] ADB. 2003. *Special Evaluation Study of Cost Recovery in the Power Sector.* Manila.

maintenance funding was estimated as 50% of the requirements at all levels of a decentralized government system. Subnational entities to which roads were handed over for maintenance had neither the human nor financial resources to cope. Partial solutions were high construction standards to reduce maintenance requirements, attempts to involve the private sector in road operations, or corporatization for revenue-generating roads. The problem of maintenance was commonly exacerbated by high axle loads. Where freight rates were highly competitive, axle load problems could not be resolved without considerable self-regulation by the trucking industry.

76. In all six cases, all loan projects were investment projects. Assistance to policy and institutional changes overall was not given the same priority as investment in the road sector. One evaluation concluded that non-infrastructure components had had little effect; another called for more intensive dialogue on road safety and institutional coordination; from the sustainability point of view another called for continued advice on institutional strengthening and long-term maintenance systems. Where investment was accompanied by a process of gradual but sustained reform, including greater commercialization and new approaches to construction financing, ADB assistance could contribute to sustainable changes for the sector as a whole. In another case, however, strategies to involve the private sector were not effective, and there were no human resources to run sector data systems. An assessment of technical assistance (TA) to the sector in one case concluded that TAs would have more lasting effects if they were more focused and sequenced, and had longer implementation schedules.

77. A key conclusion that the funding of road maintenance should be treated as a macrolevel issue was already acknowledged in an SES of road O&M in five countries in 1998.[27] ADB had and has a large exposure to the road sector, with highly visible outputs. Nevertheless, O&M was accorded a low priority; in times of stress, budget priorities shifted to the health and education sectors. Noncompliance with loan covenants relating to post-completion O&M funding was frequent. Underlying causes included a weak link between medium-term planning and annual budgeting. Earmarking of funds from road charges required sufficient revenues and was more feasible where the road network was already well-developed. Building institutional capacity for road maintenance had proven far more difficult than building roads. Hence, road maintenance funding should be addressed within a multiyear framework for public expenditure management. In addition, support for maintenance could come through participation of the key stakeholder groups: road builders and managers, with an interest in continued expenditure in the sector; direct road users, enjoying cost and time savings for households and transport operators; and beneficiaries in the road area, benefiting from greater access to services and traffic-related enterprise opportunities.

78. **Water supply and sanitation, and urban services.** Two SAPEs were undertaken in 2009 for ADB-assisted operations in water supply and sanitation (WSS) and urban services. The sustainability rating was *less likely* for one and *likely* for the other. In one case, continuation of systemic constraints limited the sustainability of the modest investments made so far in the two subsectors. Assumptions about tariff levels and reforms were usually not confirmed. Other systemic constraints remained unresolved. Local governments lacked revenue-generating powers and capacity, there were no central transfers for O&M budgets, and personnel lacked the discretion to make decisions. In the other case, water supply tariffs covered most of the O&M costs of water supply companies, but not the full cost of capital. Central government policies constrained tariff levels; most loan covenants on financial issues, particularly tariff

[27] ADB. 1998. *Special Evaluation Study on the Operation and Maintenance of Road Facilities and Their Impact on Project Sustainability*. Manila.

increases and financial ratios, were not met. Despite adequate technical capacity, sustainability remained at risk. In the WSS sector also, all loan projects were investment projects. Sustainability was addressed through an SES of building capacity for managing WSS in four Pacific countries in 2003.[28] The goals of the operations were to improve operational and financial performance, provide better services to clients, and become less dependent on government subsidies. In terms of sustainability, water resource management, an essential issue where sources are limited, was not treated as a central issue, and the operations lacked the context of a medium-term strategy for building the capacity of the water utilities. A key lesson was that corporatization did not automatically result in commercialization; at the time of the evaluation, commercial goals were absent in three of the four cases. One of the utilities operated profitably, two were making progress toward covering O&M costs, and the fourth showed deteriorating performance when political support for corporatization failed. Sustainability of investments in capital works still depended on cost-cutting measures, improved revenue collections, and unpopular tariff increases. More generally, building capacities and implementing institutional changes constitute a time-consuming process, something not sufficiently recognized in ADB's TA modality.

79. **Education.** The education SAPE in Bangladesh in 2008 assessed, among others, the performance of joint-partners efforts through a program-based, sector-wide approach (SWAp) in the primary education subsector. The SAPE found the SWAp to work well in facilitating government ownership and/or leadership in the subsector, and in contributing to achieving and sustaining subsector outcomes. However, in this particular case, it was found to be not efficient due to involvement of too many development partners giving rise to difficulties in harmonizing certain procedures and high transaction costs. The SWAp modality (i) helped improve sustainability of subsector outcomes because of long-term partner commitments to providing financial and policy support, (ii) increased synergies of assistance, and (iii) integrated the program management unit into the executing agency's normal operations system.

80. **Agriculture and natural resources.** Three assessments of operations in the agriculture and natural resources (ANR) sector were made. Sustainability was rated *less likely* in one case, and *likely* in the others. In one case, although there were no overt policy reversals, policy implementation was affected by regulatory uncertainty, and lack of transparency and accountability. Renewed interest in assistance for the ANR sector would improve sustainability prospects. Sustainability of investment projects was constrained by insufficient O&M, inadequate resources for sustainability, and market constraints to farmers and agribusinesses. It was difficult to judge the sustainability of income-generating projects. Local councils could undertake maintenance for social infrastructure projects if sufficient funding was available, and sustainability was enhanced where nongovernment organizations were involved in group formation.

81. **Conclusions.** Several of the factors found to explain changes in sustainability ratings are reinforced by findings from the SAPEs and other evaluations, but sometimes from a broader perspective.

(i) For the energy and power sector, in most cases, financial issues were more problematic than technical issues. Systems of tariff regulation and tariff increases

[28] ADB. 2003. *Special Evaluation Study on Asian Development Bank Capacity Building Assistance for Managing Water Supply and Sanitation to Republic of the Fiji Islands, Kiribati, Papua New Guinea, and Republic of the Marshall Islands.* Manila.

needed continued support to manage demand and for investor incentive and energy efficiency.

(ii) Given the time it takes to achieve sector reform, prolonged government commitment and ADB support are required, together with a statement of risks that can be clearly monitored.

(iii) In all cases where networks were being expanded and improved, a key issue in the road sector was the appropriate balance between construction and maintenance; and the sources of funds—general revenues, borrowing, grants.

(iv) An appropriate balance is also needed between civil works and policy changes. Funding issues cannot be resolved except at the national level in the context of public sector expenditure management as a whole. Program lending modalities might enhance sector reform and institutional capacity.

(v) Issues of financial and human capacity need to be addressed at all levels of the road and administrative system. TA should be in the context of a long-term and sequenced framework for developing capacity, with incentives for retaining developed capacity.

(vi) Good construction standards, if properly adhered to, could reduce maintenance requirements, as could coordination with other agencies to control axle loads. However, long-term maintenance planning and management systems were needed to optimize expenditures.

(vii) In the energy and transport sectors, private sector involvement had been achieved for some functions and at some times. However, how to bring the private sector to substantially complement public funding for maintenance activities is not clear-cut.

(viii) In the urban and WSS sector, assumptions made on tariffs and reforms usually had not been realized. Local governments often lacked capacity and also revenue-generating powers. Loan covenants on financial issues commonly could not be met in these circumstances.

(ix) In the education sector, sustainability depends on financing and staffing. Many staff had been taken on the recurrent budget although funds were still inadequate. SWAp arrangements resulted in long-term partner commitments and common project management arrangements, but transactions costs were high.

(x) In the ANR sector, sustainability was enhanced where nongovernment organizations were involved in group formation, and where there was a prospect of long-term assistance through renewed interest in the sector. Income-generating activities were confronted by market constraints for farmers and agribusiness. Sustainability was difficult to judge without a comprehensive situational analysis.

(xi) Sustainability assessment could also include an analysis of fiscal implications of the projects (e.g., including revenue, expenditure and debt management) at sector and national levels particularly in the case of projects involving large investments, or nonrevenue generating, or with pricing and cost recovery issues.

V. LESSONS ON RISKS TO SUSTAINABILITY FROM ILLUSTRATIVE CASES

A. Illustrative Cases

82. Illustrative cases were prepared to examine findings and identify lessons for sustainability. Sustainability issues and assessments were derived at different times for the cases: at approval, at reporting of completion, and at postevaluation where available. In two sets of cases, the current status of sustainability was directly observed in the field. In a few

other cases, fieldwork to confirm the findings was limited. Cases were selected from the future priority sectors of ADB operations. They are presented by sector in Appendix 6.[29]

B. Summary of Findings and Lessons for Major Sectors

83. **Road sector.** Cases for the road sector were chosen from different countries and different levels of roads: national, urban, rural, and subregional. The projects were approved between late 1992 to late 2001. Inadequate O&M activities have been the major problem of ADB-supported projects in most DMCs. Inadequate road maintenance undermines the project objectives and makes the project outcome less sustainable. Lack of systematic road maintenance results mainly from insufficient funding; higher priority is given to new construction and rehabilitation. Shortage of funds also limits the sector's capacity to recruit and train qualified personnel and procure appropriate maintenance equipment. Loan covenants were introduced to enhance maintenance funding, but revenues were generally insufficient. Other important factors affect project sustainability: (i) traffic demand, linked to economic growth and a well-maintained road; (ii) project design and implementation, especially construction quality; (iii) traffic management, especially truck design, and axle-load regulations and their enforcement; and (iv) road safety systems, to which ADB-assisted projects had contributed. These projects reported no cases where environmental and social factors became serious issues of project evaluation, and had no explicit discussion of other externalities, such as emissions.

84. Several lessons emerged. Sustainable funding for the road sector cannot be resolved in the scope of a single project. Improvements can be made through a combination of (i) sector policy dialogue in conjunction with other partners; (ii) assistance for mechanisms for road asset management incorporating performance-based systems; (iii) funding mechanisms, such as equivalent counterpart funds for ADB-assisted maintenance works; (iv) increased role of the private sector under maintenance contracts or tolled roads; and (v) increased public awareness of the concept of maintenance and its benefits, including community participation. Overall, road maintenance funding should be addressed in ADB's program as part of the macroeconomic concerns of stabilization and service delivery. Specific lessons, such as sharing maintenance costs through charging systems, coordinating technical standards, and simplifying border formalities, were generated for subregional corridors, which have the potential to generate larger traffic volumes and project outcomes. Procedurally, RRPs in the road sector should pay greater attention to life-cycle costs, outcomes, and post-completion monitoring. It must be made clear that adherence to loan covenants oriented to sustainable operations is important.

85. **Energy and power sector.** Cases for the energy sector were chosen from different countries and different subsectors: hydropower, thermal power, rural electrification, natural gas, and the power sector as a whole. Eight completed energy projects and programs approved between 1990 and 2001 were selected. Financial concerns in the sector are more problematic than technical concerns. The financial viability of energy sector investment projects is critically dependent on the financial viability of the power sector or the executing agency responsible for operating the project. However, it is heavily influenced by the government, directly or indirectly, through (i) regulatory agencies or control of end user tariffs and fuel prices, (ii) transfer prices between generation and distribution companies, and (iii) transmission charges where the power sector had been unbundled. Fiscal subsidies to compensate for electricity sales at below full cost recovery to certain consumer groups, and purchases from private sector producers at a cost higher than the prevailing tariff may not be paid on time. Such issues were identified during appraisal and covenanted in the loan agreements, but compliance was variable. Financial

[29] Details of the cases are found in Appendix 6. They are not footnoted when they are referred to in the text.

sustainability is also affected by operational performance such as system losses and bill collection. Lack of financial viability can lead to low staff morale, lack of incentive, and loss of technically competent staff. Good corporate governance and institutional capacity are not a sufficient condition for financial sustainability in the context of other factors like tariff setting. Hence, broader policy dialogue, and tariff and institutional reforms supported through program loans, with specific actions to improve institutional and financial sustainability of the sector, play an important role in ensuring the sustainability of investment programs. Such policy-based interventions critically depend on complex political economy issues and the quality of diagnostic studies, and continuity of development partner support.

86. The main lessons for the sector as a whole are that (i) in countries with weak institutional and regulatory regimes, specific investment projects are less likely to be sustainable; (ii) policy interventions to improve sector governance and institutional framework require a broad-based consensus among key stakeholders; and (iii) policy interventions that do not take account of the political economy and implementation capacity in the concerned country are unlikely to be sustainable in the long run even if they achieve short-term outcomes. In addition, for energy sector projects—hydropower, thermal power, as well as gas projects—with significant environment and social effects, the current focus of environment and social safeguards to mitigate adverse impacts during the construction phase is not adequate to ensure long-term environment and social sustainability. Project-specific institutional arrangements for addressing environment and social impacts are usually discontinued after the project is commissioned. ADB does not have an institutional structure to regularly monitor environmental and social compliance of ADB-financed projects after their completion.

87. **Education sector.** Three completed education projects—one each in nonformal, primary, and secondary education—in Bangladesh were selected to assess sustainability in detail. They were approved between 1995 and 1999. A recent mission assessment found that physical outputs (schools, classrooms, and other buildings and facilities) were *likely sustainable* in all three subsectors due to continued government financing of recurrent costs after project completion, with reasonable subsector shares of recurrent education budget, although more O&M funding at the school level is needed. Project outcomes and impacts are more difficult to sustain since they depend not only on ADB's continued support and government commitment to implementing proper policy and/or institutional reforms, but also on the need to have built-in mechanisms during project design to address risks to sustainability (e.g., by ensuring government commitment to recurrent cost funding, ensuring retention of staff trained by the projects, and identifying relevant local stakeholders from the beginning with measures to empower their capacities in mobilizing local financial and human resources for carrying out regular O&M of project facilities and other activities after project completion). The latter is normally lacking in project RRPs and DMFs such that sustainability of project outcomes and impacts are found *less likely* in nonformal education, *likely* at borderline in primary education, and *likely* in secondary education.

88. The mission assessment produced the following lessons for sustainability. Strong government ownership and commitment as reflected in continued financial, institutional, and policy support are important to improve sustainability, with long-term continuity of ADB support. However, follow-up projects should develop new activities building on the success of previous projects, and not be used to accommodate activities left undone in the earlier projects. The projects as designed lacked built-in measures—such as government commitment to finance major recurrent costs, preparation of regular O&M plans, identification of potential local stakeholders, and retention requirements for staff trained by the project—to sustain project outcomes and impacts. Project activities were ignored after project completion, while ad hoc

provision of ADTA resulted in piecemeal and ineffective policy and institutional reforms. A program approach—in close coordination with development partners—and a mix of modalities would better facilitate policy and institutional reforms in a sustainable manner. More generally, risks to sustainability and mitigation mechanisms identified in the DMF were too broad and were not linked to measures needed to sustain the project; loan covenants provided more information related to project sustainability. Important aspects of the projects—the institutional outcomes and sector-specific outcomes and impacts—and not just physical outputs, are those that need to be sustained and should be the focus when assessing sustainability.

89. **Water supply and irrigation sectors.** Two water supply and two irrigation subsector projects in Viet Nam and one water supply project in the PRC were studied. The projects were approved between 1993 and 2003. Two main aspects have supported the sustainability of the water supply projects in Viet Nam: (i) the increasing affluence of the country and major urban centers was an incentive for the local government to expand coverage and lengthen the supply period; and (ii) the water companies had the capacity to manage their networks effectively, exerting considerable efforts to reduce nonrevenue water and improve leak detection. Recent trends in tariffs indicate that the authorities of the towns where the projects are located support the concept of viable water companies. The main remaining risk for sustainability is the inadequate provision for depreciation and/or amortization, which may threaten the ability of the companies to engage in the next round of major investment or renovation without further external assistance. Three main factors have supported the sustainability of the urban water supply project in Harbin, PRC: (i) institutional reforms that have consolidated the implementing agencies for water supply and wastewater treatment facilities; (ii) implementation of national guidelines on water tariffs, which require water supply companies to increase tariffs progressively toward achieving full cost recovery; and (iii) an appropriate balance between the FIRR and EIRR estimates in the PCR, showing project benefits were accruing both to the company and to its customers. In general for the sector, key approaches for promoting sustainability are (i) installing a meter for every connection, where possible, to allow volume-based charging as consumers are willing to pay for a 24-hour supply of high quality water; (ii) negotiating tariffs that allow long-term operation, maintenance, and rehabilitation, with the support of national policies and local administration; (iii) conducting benchmarking surveys that allow water companies to see how their performance compares with that of others; and (iv) pointing out the risks of unrelated businesses that can disguise poor company performance.

90. Two irrigation projects were selected for sustainability assessment as part of a broader evaluation of ADB's Water Policy and Operations. The projects in Viet Nam were approved between 1993 and 1994. Their sustainability seems *likely.* O&M of the main system (primary and secondary) infrastructure is now funded from the central budget. While only 2 years experience has been gained, three irrigation and drainage management companies found that the timing of budget release had substantially improved, compared with reliance on the collection of irrigation service fees (ISFs); releases were appropriately timed to meet minor maintenance needs and were higher. Larger repairs or rehabilitation of the main structure remains dependent on specific project budget allocations. Fees continue to be collected for maintaining the tertiary to on-farm systems, at a sufficient level but about half of the previous full ISF. Broader threats to sustainability remain in the lowland irrigation systems in the area, mostly not in the project area. They include (i) the inability to undertake major self-funded main system renovation; (ii) increasing intrusion of seawater into estuaries, owing to a rise in sea level and excess extraction of groundwater; and (iii) in the longer term, reduced river flow owing to the construction of main river dams on the Mekong and Red rivers.

91. **Financial, and small and medium-sized enterprise sector.** Four programs from three countries were chosen, two relating to the financial sector itself and two to small and medium-sized enterprise (SME) development, together with an SME project. The operations were approved between 1996 and 2004 (first subprograms), and had sustainability ratings ranging from *most likely* to *unlikely* at completion. Because of an undefined "life," the long time required for the outcomes and impacts of reforms to become evident, and difficulty in attributing the findings, determining sustainability is more difficult for programs than for projects.

92. To enhance sustainability, the design of a program needs thorough analysis of issues and constraints, and a careful sequencing of reforms tailored to the specific context and in consultation with a range of stakeholders. The design needs to be validated continuously by reviewing the results throughout implementation and on completion. It is most effective to place individual, short- to medium-term sector programs within a long-term overall vision and development strategy for the sector. It usually takes line agencies much longer than anticipated to fully operationalize new laws, rules, and procedures. Development of human capacity and institutions as well as capacities of subnational institutions needs long-term support. The PCRs frequently report that progress on capacity development was slow. Continuing engagement enhances sustainability; engagement during implementation needs to be improved as policy dialogue tends to be displaced by monitoring policy conditions; TA operations can be extended beyond loan closure to build capacities and operational reforms. Financing is still required to cover the expenses of certain activities after loan closure. PCRs point to delays or non-allocation of counterpart funds for program expenses even during the implementation period; future financing of these expenditures is not really addressed in the loan documents.

93. The fundamental importance of government ownership and commitment to program outcomes was universally recognized and cited as the main risk to program implementation and sustainability. Evaluating the extent of commitment and measures taken to reinforce it was generally limited, with an overreliance on policy conditions that had been met. The analysis needs to identify incentives or disincentives for governments (including provincial and local government entities) to implement the proposed reforms, as well as constituencies for or against these reforms. It is important to have a key domestic constituency in favor of reforms. Two instances of actions to reinforce sustainability were (i) extensive preparatory work with stakeholder consultation, and (ii) strengthening the independence of key organizations to make it more difficult for the government to undermine or backtrack on reforms. A review of project documents and interviews with staff revealed that sometimes the assessment of sustainability is tied closely to the fulfillment of planned outputs, and at other times on reforms that are actually implemented, analogous to a revised economic return calculation for projects. Specific guidance for assigning a particular sustainability rating to a program should be provided.

94. **Conclusions.** Many of the case lessons are specific to the concerned sector, but some general conclusions are also possible. Generally, RRPs and DMFs identify generic assumptions and risks to sustainability, but mitigation measures are not well-developed. Implementation normally focuses on delivery of physical outputs or fulfillment of tranche conditions, not managing risks to outcomes. For the cases where a DMF was required, the average number of risks and assumptions for programs and for projects was around 11. This average was raised for transport and communication projects in more recent years, and for WSS projects. The risk factors sometimes included matters outside project control, such as weather conditions and economic growth rates. Several of the risk factors were included in special assurances, averaging almost nine per project. Formally, assurances can be much fewer for programs; most require commitment to policy conditions already made and to be made. Emphasis is on following through with the policy matrix. Overall, there is a variety of risks and assurances,

without making clear which were key to sustainable outcomes, and without confirming the capacity to implement them.

95. The content of assurances varies across sectors and projects. However, there are some common elements. A key element is funding for continued O&M, and for implementing policy reforms. Fiscal effects differ between operations producing largely public goods—roads, education, and policy reforms—and the energy and water sectors where financial relations with the government budget can be more complex, including a focus on tariffs and their regulation, and agency autonomy. Assurances across most sectors for projects and programs acknowledge the role of stakeholder coordination and public consultations for schools, rural roads, power supply, and policy reforms for enhancing the sustainability of outcomes; and conversely, for mitigating adverse environmental and social effects, and the impacts of policy reforms. Recruitment and retention of qualified staff were also the subject of assurances across projects, in conjunction with improved O&M practices, and for maintaining a capacity for implementing reforms after completion. Further risks and assumptions were identified in relation to coordination within the government, with development partners, and with the private sector, including for the latter the costs of compliance with policy reforms; and investor interest in energy investments in particular. The range and variety of risks and assurances show concern with the sustainability of project outcomes, but it is not clear what the key issues are in any particular operation. As the cases illustrate, unless related to subsequent operations, loan covenants may have a limited role in promoting sustainable operations. Post-completion monitoring of outcomes is usually not undertaken; and longer term monitoring must be strengthened for major and uncertain environmental and social effects.

VI. CONCLUSIONS AND RECOMMENDATIONS

96. Drawing on the foregoing analyses, discussions, and summary conclusions (paras. 47–51, 70–71, 81, and 94–95), this chapter presents key findings, implications, and recommendations for ADB Management to consider.

A. Key Findings

1. Framework

97. Enhancing the sustainability of ADB-assisted projects is a collective responsibility with multiple actors. The main actors are the regional departments that carry out programming, identification, preparation, implementation, and initial evaluation activities. IED carries out independent evaluation of sustainability as part of the evaluation of the performance of ADB assistance. Other departments contribute by assessing sector and country risks; assessing safeguard issues; formulating loan covenants; and retrospectively assessing quality at entry. Borrower and recipient countries are expected to be responsible for post-completion operation of ADB-assisted projects.

98. MDBs differ in their working definition and evaluation of project sustainability while remaining broadly consistent and compliant with good practice standards. Within ADB, sustainability has been assessed and rated for the last decade as one criterion integrated into overall success ratings for projects and programs, and recently in SAPEs. However, since 5 years ago, the World Bank has moved away from incorporating a sustainability assessment in overall success ratings. It adopted a stand-alone assessment and rating of the risks to development outcomes, and also determined whether the risks were being mitigated.

2. Sustainability Ratings

99. Not much is known about project effects after completion. The main evidence comes from PCRs, approved on average 20 months after completion; and from PPERs, approved on average 50 months after completion of projects. The overall elapsed time to a PPER should be sufficient to provide a firm assessment of sustainability. However, ADB has reduced the number of PPERs that it prepares. IED reviews and validates all PCRs circulated by operations departments.

100. The 491 PCRs with sustainability ratings show 65% as *most likely* or *likely*. This implies a substantial task of enhancing the sustainability of the remaining 35% of the projects with *less likely* and *unlikely* ratings. When added together, the top two categories in PCR ratings did not show any noticeable trend in 2001–2009. At the same time, sustainability ratings vary considerably across sectors and frequent borrowers. Sustainability results also differ among types of programs. Sustainability issues need to be addressed at the project, sector, and country levels.

101. Effectiveness is no guarantee of sustainability. Projects rated *effective* and *likely sustainable* and better were 57% of the total. Those rated *efficient* and better, and *likely sustainable* and better were only 51% of the total. There is still a substantial task of ensuring greater sustainability, even for those rated *effective* and those rated *efficient*. The conjunction of sustainability and other criteria is rarely discussed in specific evaluations. Scenario analysis could be used to assess the consequences of different actions that could be taken to enhance sustainability, even after project completion.

3. Factors Affecting Sustainability

102. The main factors affecting sustainability provide the basis for constructing appropriate indicators for monitoring and evaluation. The main factors supporting a rating of *most likely* for investment projects are a positive assessment of financial viability, and O&M procedures and financing. The policy, institutional, market, and regulatory environment are also important. The main factors leading to a rating of *unlikely* for investment projects with a higher proportion of nonrevenue-generating projects are a negative assessment of O&M procedures and financing, and the policy and regulatory environment. These factors need to be addressed at both the project and sector levels. In all cases of programs rated *most likely*, the positive factors were political will to maintain support for reforms, and absence of policy reversals. For programs rated *unlikely*, which are small in number, political will and policy reversals were dominant as negative factors, with little resilience to changing conditions and institutions.

103. **Sustainability changes.** Reasons for a change in sustainability rating over time are not uniform. Not all factors are project-related. Forty-five percent of projects with a sustainability rating in both PCR and PPER showed a change in the rating at the later date. More ratings were downgraded (23) than upgraded (10). There was a net increase for these projects in the two middle categories, *likely* and *less likely*. In several cases, upgrading the rating could be attributed largely or partly to exogenous factors, such as renewed growth in the economy, which allowed larger maintenance allocations or greater institutional stability. In other cases, rating upgrades were attributable more to project arrangements, e.g., beneficiaries who manage maintenance.

104. Tariff-setting mechanisms are an important part of future sustainability. In some cases of a rating downgrade, projects yielding high economic returns had low financial returns because

of competing services or absence of a tariff mechanism, with the risk of insolvency or budget transfers. A better balance needs to be struck between the service users and the suppliers. Other factors may cause changes in sustainability ratings—lack of funding can lead to a focus on repairing failed equipment rather than taking preventive measures; ADB's loan covenants on funding for maintenance were not really effective; programs did not contain well-developed mitigation measures. Conclusions from the evidence on sustainability changes can be summarized as follows: (i) reasons for a change in rating are not uniform, (ii) exogenous factors can play a significant role, (iii) revenue generation is important but does not guarantee sustainability, and (iv) not all issues can be resolved at the project level.

105. **Sector assessments**. In the energy and power sector, financial issues in most cases were more problematic than technical issues. Systems of tariff regulation and tariff increases needed continued support for managing demand, investor incentive, and energy efficiency. A key assumption that the private sector would continue to invest was questionable. ADB could do a better job on risk analysis at entry, and continued risk analysis during implementation.

106. A key issue in the roads sector is the appropriate balance between expanding a network and dealing with growing maintenance requirements. Good construction standards and anticipating excessive axle loads can mitigate a subsequent lack of long-term maintenance management. Funding for road maintenance—including the capacity to borrow—and sector revenues should be addressed within a multiyear framework for public expenditure management. Support for maintenance could come from key stakeholder groups: road builders and managers, with an interest in continued expenditure in the sector; direct road users, households enjoying cost and time savings, and transport operators; and people in the road area, benefiting from greater access to services and opportunities for traffic-related enterprise. Alternative or innovative assistance modalities could be used to enhance sustainability through improved sector policies, institutional capacity, and asset management systems.

107. In the WSS and urban sectors, local governments' lack of revenue-generating powers and capacities, and lack of central budget transfers for O&M constrained sustainability. Tariffs can also be constrained by central government policies. Loan covenants on financial matters could not make up for lack of up-front commitment during project preparation. In education, sustainability depends principally on budget financing including staffing costs. In one particular case, SWAp arrangements prompted long-term partner commitments and common project management arrangements, but transactions costs were high. In ANR, sustainability was enhanced with involvement of nongovernment organizations, but was difficult to assess for income-earning activities under market constraints.

4. Illustrative Cases

108. The illustrative cases from different sectors generated some findings and lessons, not only for each sector, but also for ADB processes in general. Table 14 summarizes the key factors affecting sustainability by sector (see Appendix 6 for further details). A well-maintained road sustains traffic demand, inducing a positive cycle of economic growth, traffic demand, and financing of maintenance. Axle load of trucks is a common issue across road types and countries. Mechanisms for managing road assets should be based on a performance-oriented management system, with involvement of the private sector where possible. Public involvement in rural road activities from the planning stage can induce local communities to play a substantial role in selecting sites and maintaining roads. Funding for maintenance should be addressed in ADB's country programs as part of macroeconomic concerns with stable growth and service delivery.

Table 14: Factors Affecting Sustainability by Sector

1.0 Road Transport
- 1.1 Budget allocation and provision of sustainable funding for road maintenance.
- 1.2 Project design based on a strategic, long-term investment plan.
- 1.3 Governance of maintenance by improving procedures and identifying entity responsible for work.
- 1.4 Business procedures that promote quality of outputs and sustainability of outcomes during processing and administration.
- 1.5 Subregional corridors that enhance demand for road services.
- 1.6 Public awareness for better appreciation by the public or decision makers of the benefits from road maintenance.

2.0 Energy
- 2.1 Financial viability of the power sector or the executing agency responsible for operating the project.
- 2.2 Institutional performance in maintaining assets.
- 2.3 Institutional reforms and policy based interventions.
- 2.4 Ensuring that environmental and social safeguards are complied with even beyond project completion.

3.0 Education
- 3.1 Strong government ownership and political commitment as reflected in continued financial, institutional, and policy support to improve basic education.
- 3.2 Long-term continuity of ADB support.
- 3.3 Specific measures to sustain the projects identified at the design stage.
- 3.4 Appropriate mix of modalities to facilitate policy and institutional reforms.

4.0 Water Supply
- 4.1 Expanding water production on a cost-effective basis.
- 4.2 Network management by installing a meter for every connection where possible to allow for volume-based charging.
- 4.3 Negotiated tariffs to allow for long-term viable operations and maintenance and rehabilitation.
- 4.4 Strong government and ADB commitment.

5.0 Financial and Small and Medium-Sized Enterprises
- 5.1 Good program design and formulation.
- 5.2 Government commitment and ownership of the reform program.
- 5.3 Sequencing of reforms and appropriating realistic time frames for completing individual programs.

Source: Independent Evaluation Department.

109. In the energy sector, financial viability is still uncertain, with sector agencies dependent on unreliable fiscal subsidies. Institutional capacity and good governance are necessary conditions for financial sustainability, but may not be sufficient. Specific actions to reform the sector under program lending play an important role, but they need continuity of support over an appreciable period of time and a broad consensus among key stakeholders. In some projects, adverse environmental and social effects during construction are not adequately mitigated to ensure long-term sustainability; however, ADB does not have the institutional structure to monitor environmental and social effects beyond project commissioning.

110. In the education sector in Bangladesh, physical outputs were likely to be sustained, although dependent on the government's recurrent budget. O&M funding should receive more attention. Involving local groups could both promote resource mobilization and help sustain institutional outcomes through nonformal learning centers and monitoring of teachers' performance. Positive factors for sustainability were continued commitment through financial, institutional, and policy support; and long-term continuity of support from ADB. A constraining factor was the failure at the design stage to identify specific measures to sustain projects, such as identification of local stakeholders and retention requirements for trained staff.

111. In the WSS sector in Viet Nam, increasing incomes encouraged the expansion of service delivery through water companies with capacity for efficiently managing their networks. The main remaining risk is inadequate provision for amortization to ensure future investment and innovation without further external assistance. Irrigation projects gained access to resources,

such as budget allocations to water and drainage companies, to meet maintenance for primary and secondary infrastructure. Such resources were a substantial improvement over the ISFs collected by farmer organizations. Currently, risks to sustainability include the inability to undertake major system renovation on a self-funded basis and, in some areas, increasing salinity and its possible effects on water flow of the main river dams.

112. In the financial and SME sector, policy dialogue and preparatory work were extensive in most cases. Reform programs in the context of a longer-term vision for sector development need significant time. During program implementation, the focus turns to meeting policy conditions; however, monitoring is already required to build ownership and constituencies during implementation of reforms. The key to sustainability is usually seen as government commitment to reforms; analysis needs to identify the relevant incentives and disincentives. In some cases, unfulfilled conditions were met after completion, reflecting the different assessments of sustainability that can occur over time.

113. Findings from the case studies overall are as follows: (i) to provide greater attention to outcomes, project monitoring frameworks should cover the whole of the project life span; (ii) the importance of adhering to O&M-related loan covenants must be made clear; (iii) there were risks and assurances, but it was not clear which were key to sustainable outcomes and what was needed to implement them; and (iv) post-completion monitoring of outcomes is generally not undertaken; long-term monitoring needs to be strengthened for major and uncertain environmental and social effects.

B. Implications for ADB's Approach to Project Sustainability

114. **Monitoring of risks and sustainability.** Evaluation of sustainability, including some means of monitoring development outcomes after completion, complements (and not contradicts) the assessment of risks to development outcomes at different phases of the project cycle. A sharper focus on financial, technical, institutional, and natural resource risks at the project and sector levels should enhance the likelihood that project outcomes will be sustained.

115. **Risk assessments, RRPs, and DMFs.** The quality of RRPs and DMFs for new operations must be regularly assessed. Limitations in the statements of assumptions and risks have been identified as one of the main shortcomings. The write-up on risks in RRPs rarely presents them in a way that is specific, meaningful, and monitorable. Similarly, assessing the risk of public financial management does not go far enough to identify the fiscal implications of projects and/or programs or sector assistance programs so that risks can be identified and mitigation measures planned. Often, there is a weak or no relation between the discussion in the RRP and statements and indicators in its DMF. The new streamlined business processes have introduced a risk assessment and management plan, which is a step in the right direction. A review of recent RRPs, however, indicates that the content of the risk assessment and management plans has not yet improved, and very often is limited to general descriptions about government's possible actions or reform processes; sustainability issues are rarely adequately addressed.

116. **Limited evidence.** The timing of data collection missions at the project level is currently appropriate for a preliminary assessment of sustainability in a project completion report and for assessing sustainability as part of a performance evaluation report. At the project completion stage, both ADB and client governments have the opportunity to identify key risks to the sustainability of project outcomes and consider necessary mitigation measures and follow-up actions. Only a few IED evaluations have specifically focused on sustainability. Sector and

country-level evaluations of ADB assistance inform further on sustainability issues. IED would also consider preparing a sustainability assessment report every year, focusing on one core area of operations or a country. This could be a synthesis or meta-evaluation and, where necessary, involve field study in selected countries. An alternative would be for ADB Management to prepare such reports, jointly with client governments. Such an evaluation should, however, include a sector relying only on budgetary resources; it should fully assess revenues and expenditures including debt service for sector operations, and come up with actionable recommendations.

117. **Clarification of sustainability factors.** Improved evaluation of sustainability could arise from a clarification of the subcriteria used. For projects, this could include (i) direct reference to exogenous factors, and what is attributable to the project; (ii) greater attention to demand factors and the extent to which they can be influenced by the project itself; and (iii) comparison of EIRR and FIRR values where they occur, to assess the distribution of economic and financial benefits and possible changes in prices. For both projects and programs, a clearer analysis of actions and incentives to assess government commitment to sustained outcomes and ownership of processes is required. The subcriteria for a particular evaluation should be made explicit.

118. **Use of the sustainability criterion and rating.** There is also a need to clarify issues related to the evaluation methodology: (i) how to rate sustainability in cases where outcomes are deemed *less effective* or below, or *less efficient* and below; (ii) how sustainability should be assessed when outcomes have only partially been achieved; and (iii) whether sustainability assessments for programs should be based on the planned set of reforms or on those that were actually implemented. Actions that could enhance project sustainability at the PCR stage could also be assessed. IED will continue its activities in fine-tuning evaluation methodologies and related capacity development for ADB and DMC government officials as part of its regular activities.

119. **Loan covenants**. An in-depth assessment of the role and impact of loan covenants on the sustainability of investment projects in the context of ADB's mandate for achieving development outcomes would be desirable. The study would assess (i) which loan covenants related to sustainability were met, not met, and partially met in the post-completion period; (ii) how the loan covenants had been formulated, and their additionality to other means of enhancing sustainability; and (iii) how loan covenants had been assessed and reported on during project implementation and after project completion. This assessment could be added to the sector or country sustainability assessments outlined earlier.

C. Recommendations

120. Based on the foregoing discussions, the SES puts forward the following recommendations for consideration by ADB Management to enhance the sustainability of ADB-assisted projects and programs.

121. **Strengthen ADB's approach to identifying and mitigating risks to project sustainability during country and sector assistance programming.** This could be accomplished by undertaking an assessment of public financial management, including public expenditure, revenue, and borrowing, jointly with client governments and other development partners, as part of country risk assessments (e.g., Operations Manual, C4/OP, 27 October 2008). Similar assessment could be carried out at sector level, taking also into account policies and practices for pricing, cost recovery and financing options and provisions for nonrevenue

generating projects. Policy dialogue should be pursued with the client governments to draw their increased attention to fiscal implications and financing provisions to ensure project sustainability. Appropriate assistance modalities could accordingly be discussed and identified. New assistance modalities could include budget support not only to enhance sector policies, institutions, and procedures but also for financing fiscal deficits to enhance continuity of sector outputs and outcomes. These would contribute to identifying sustainability risks and mitigation measures at project identification level.

122. **Pay more attention to risks to sustainability of outputs and outcomes and their mitigation during project preparation and implementation.** To achieve this, ADB should take actions in three key areas during project preparation and implementation. First, there is a need to strengthen risk management practices during project preparation by identifying the risks to achievement of outcomes and impacts for a project and/or program (in addition to project implementation related risks), and how they will be mitigated at different stages of the project cycle. Fiscal implications of the projects and programs should be carefully analyzed and recommendations made for financing deficits and capacity support, where appropriate, considering also pricing reform, extended contractors' services, or adequate budgetary provision of operations and maintenance for the initial years of operation. Second, a review of risks to sustainability of project and/or program outcomes should be carried out during implementation, particularly during midterm review, and necessary updating on risks and their mitigation measures be undertaken. Third, similar but more comprehensive review of risks and mitigation measures should be undertaken at completion of project implementation. This should be jointly undertaken with client governments to identify necessary mitigating and monitoring measures by the governments and their executing agencies and ADB to improve post-completion sustainability of project outputs and outcomes. Essentially, these actions could be taken as part of current business processes but with extra rigor.

123. **Undertake post-completion monitoring of selected projects and programs with emphasis on outcomes, sustainability, impacts, and monitoring arrangements.** Monitoring on a selective basis should be carried out jointly by regional departments and borrowers and grant recipients, where appropriate, involving also other development partners and stakeholders. To promote increased awareness of project sustainability within ADB and DMCs as part of ADB's development effectiveness agenda, the process could involve a forum where DMCs prepare and present evidence on sustainability after completion for ADB-assisted operations. The candidates for pilot countries could be those where ADB has provided assistance for building the capacity for monitoring and evaluation. Another consideration would be in those DMCs where sustainability ratings by PCRs have been *less likely* or *unlikely* in many cases. This proposal further supports the IED's recommendation for post-completion monitoring in the *2007 Annual Portfolio Performance Report,* together with an estimated cost of $3 million technical assistance for piloting post-completion monitoring in selected borrowing countries. Lastly, ADB staff awareness and necessary skill development activities would help facilitate implementation of more rigorous practices in ensuing post-completion sustainability of ADB-assisted projects and programs which would contribute to maximizing development effectiveness of ADB assistance.

EVALUATION OBJECTIVES, SCOPE, AND METHODOLOGY

A. Evaluation Objectives and Scope

1. The objective of this special evaluation study (SES) is to assess the Asian Development Bank's (ADB) (i) achievements with respect to the sustainability of projects and programs, and (ii) approach to project sustainability. The SES will address four key questions:

(i) What is the evidence on the continuation of net benefits, or its likelihood, after implementation of ADB-funded operations is completed?
(ii) What major factors influenced the achievement or non-achievement of sustainability in ADB-funded projects and programs?
(iii) What major risks to sustainability were identified at appraisal and during implementation, and how were they mitigated?
(iv) What are the implications for ADB's approach to ensuring sustainability? What and how should ADB do things differently to enhance post-completion sustainability and development effectiveness of its assistance?

2. The SES provides a meta-evaluation of post-completion sustainability for ADB-assisted operations, drawing on existing evaluations and other documents, as well as conducting its own analysis of project sustainability ratings. To keep the evaluation to a manageable size, and to assess ADB's approach to sustainability in the context of similar operational procedures, the SES covers only sovereign project and program lending operations.[1] Where appropriate, the SES takes a sector perspective, which closely corresponds to the sector priorities of ADB and to the structure of operations departments. Nearly all the evidence on ADB-funded projects was collected on projects and programs for which there are completion reports in the 9-year period 2001–2009. This means that not all projects were prepared using the same procedures; some were prepared using ADB procedures in the 1990s.

B. Approach, Methods, and Limitations

3. The overall approach and method of the SES involved collecting and analyzing evidence relevant to the four key questions above.

(i) A database was compiled of the ratings of ADB operations in project completion reports (PCRs) for 2001–2009 and their project performance evaluation reports (PPERs) and the evaluation criteria, including the sustainability criterion. The information presents the results of sustainability assessments by sector, country, and modality, and the relationship between sustainability, and the effectiveness and efficiency assessments of projects.
(ii) A content analysis of completion and evaluation reports was made to summarize the factors identified as affecting the sustainability of projects. Focus was on projects whose sustainability rating was *most likely* or *unlikely*; and on projects whose sustainability rating changed between the completion and post-evaluation reports. This phase also reviewed factors relating to sustainability identified at the sector level in sector assistance program evaluations.

[1] Where relevant, the following analysis and text distinguish between operations under the project lending modality and those under the program lending modality. For simplicity, however, in many cases the term "projects" is used to cover both.

(iii) A set of project case examples were examined to derive lessons for sustainability and how it can be enhanced over the project cycle. The cases were drawn from the following sectors and subsectors: (a) education; (b) energy: gas and power development including hydropower; (c) financial sector, including the small and medium-sized enterprise subsector; (d) transport sector: roads; and (e) water: water supply and sanitation (WSS) and irrigation. The five sectors accounted for almost 75% of approved lending for projects with a PCR in 2001–2009. They are in the five core areas of operations for identifying ADB's contribution to development of the Asian and Pacific region through country outcomes in ADB's Strategy 2020 results framework.[2]

(iv) Other multilateral development banks were consulted directly and electronically, on their approach to sustainability, how it is assessed, and how their assessment compares with that of ADB.

4. The approach and information used showed some limitations. The sustainability of projects after completion was first rated in PCRs in 2001. The SES focused on projects with a PCR rating in and after 2001. PCRs provide a preliminary assessment of sustainability at a time when outputs are being produced but outcomes may only be developing. The Independent Evaluation Department (IED) has undertaken very few impact studies; subsequent evidence of sustainability is derived mainly from PPERs, which were prepared on a selective basis. In addition, the study was based primarily on desk research, with a limited amount of fieldwork on the illustrative cases.

C. Evaluation Matrix

5. The evaluation matrix is presented in the following table:

Evaluation Question	Methodology	Source of Information	Criteria for Judgment
(i) What is the evidence on the continuation of net benefits, or its likelihood, after the implementation of ADB-funded operations is completed?	• Desk research to assess project sustainability ratings using the database developed for this purpose by the evaluation • Missions to selected DMCs to review a sample of projects and determine their current sustainability status	• ADB project documents, e.g., RRPs, PCRs, PPERs, etc. • ADB databases • ADB staff	• ADB guidelines • Trends in ratings over time • Stakeholder values
(ii) What major factors influenced the achievement or non-achievement of sustainability in ADB-funded projects and programs?	• Literature scan • Content analysis of PCRs and PPERs • Interviews of HQ staff • Reviews of selected projects	• ADB project documents, e.g., RRPs, PCRs, PPERs, etc. • ADB staff	• Analysis of the factors identified through the literature scan and ADB documents
(iii) What major risks to sustainability were identified at	• Reviews of selected projects in the	• ADB project cycle	• Compliance with guidelines

[2] ADB. 2008. *Strategy 2020: The Long-Term Strategic Framework of the Asian Development Bank 2008–2020.* Manila (Appendix 2); and ADB. 2008. *ADB Results Framework*. Manila.

Evaluation Question	Methodology	Source of Information	Criteria for Judgment
appraisal and during implementation, and how were they mitigated?	education, energy, finance, transport, and water sectors	guidelines • ADB project documents, e.g., RRPs, PCRs, PPERs, etc. • ADB staff	
(iv) What are the implications for ADB's approach to ensuring sustainability? What and how should ADB do things differently to enhance post-completion sustainability and development effectiveness of its assistance?	• Desk review of ADB policy documents • Comparison of ADB policies and those of other development partners • Comparison of ADB PCR predictions of sustainability and actual results in PPERs	• As above	• Review evidence from other multilateral development banks outcomes • Does ADB have procedures in place to enhance sustainability during all project phases; e.g., during project preparation, operations, at project completion, and post-completion

ADB = Asian Development Bank, DMC = developing member country, HQ = headquarter, PCR = project completion report, PPER = project performance evaluation report, RRP = report and recommendation of the President.

APPROACHES TO SUSTAINABILITY AND ITS EVALUATION

A. Concept of Project Sustainability

1. Sustainability of development activities can be assessed at different levels and over different time periods. The most general perspective is global and over several future generations. The primary concern is the integrity of the environment, the resources used for and the threats to sustaining and enhancing human life. A less encompassing perspective relates to the broader institutional and development impacts of programs of assistance. It recognizes the value of economic and institutional changes enduring beyond the life of specific activities. Sustainability assessments in this context should extend well beyond specific activities, and capture a range of impacts over a period of 12–15 years or longer. The concept of project sustainability refers to the enduring outcomes of specific activities. This concept reflects the mandates of multilateral development banks, and their fiduciary responsibility to shareholders. Projects are conceived primarily as investment interventions that will generate a return. Assessment of sustainability centers then on the continuity of project outcomes during the life of the project. This responds in the most practical way to accountability for resources used. It also results in a focus on financial and institutional aspects of project sustainability, although other factors can also be important.

B. Factors Affecting Sustainability

2. Sustainability sometimes has a low priority. Governments and international development agencies commonly hold that development planning processes and those associated with lending focus more on approval and implementation of projects, and less on the processes and conditions required to maintain project outputs and outcomes during the rest of the project life. Giving a low priority to the sustainability of projects can result in several substantial consequences: (i) more rapid deterioration of infrastructure and increased maintenance costs, (ii) reduction in the level and duration of project benefits, (iii) reduced quality of services, (iv) reduced access of particular groups to project benefits, and (v) reduced focus on institutional development.[1]

3. Influence on project sustainability has been attributed to different factors. In an early World Bank study, the main factors influencing sustainability at the project level were grouped into four categories: (i) continued delivery of services and production of benefits, (ii) maintenance of physical infrastructure, (iii) long-term institutional capacity, and (iv) political support. The African Development Bank (AfDB) addresses a set of issues during project planning, implementation, completion, and post-completion. At post-completion, eight factors are taken into account while assessing sustainability: (i) technical soundness; (ii) government commitment; (iii) socio-political support; (iv) economic viability; (v) financial viability; (vi) institutional, organizational, and management effectiveness; (vii) environmental impact; and (viii) resilience to exogenous factors.

4. To elaborate on its definition of sustainability, the International Fund for Agricultural Development (IFAD) posed a set of questions to guide its evaluation of both outcomes and processes. (i) What factors favor or militate against the maintenance of benefits? What is the likely resilience of economic activities to shocks or progressive exposure to competition and reduction of subsidies? (ii) Is there a clear indication of government commitment after loan closing date? Did the project design anticipate such support would be needed after loan

[1] M. Bamberger and S. Cheema. 1990. *Case Studies of Project Sustainability.* Washington, DC: World Bank.

closure? (iii) Was a specific exit strategy or approach prepared and agreed upon to ensure post-project sustainability? (iv) Do project activities benefit from the engagement of, participation of, and ownership by local communities? (v) Do project users have access to adequate training for maintenance and to spare parts and repairs? and (vi) Are the ecosystem and environmental resources likely to contribute to project benefits, or is a depletion process taking place? [2]

5. The Australian Agency for International Development (AusAID) produced some guidance on enhancing the sustainability of longer term outcome effects. It summarized the key factors affecting sustainability, namely, (i) partner government and aid agency policies; (ii) participation, management and organization; (iii) financial and economic; technology; social, gender, and culture; and environmental factors; and (iv) external political and economic factors.[3] More importantly, the report emphasized the work required during the whole activity cycle to increase the likelihood of sustainability, and the corresponding sustainability tools.

C. ADB's Approach to Sustainability

6. In the Asian Development Bank (ADB), the main actors for ensuring and evaluating project sustainability are the regional departments and the Independent Evaluation Department (IED). However, several other departments and divisions play a role in ensuring sustainability of outcomes over the life of ADB-assisted projects.

7. **During project identification**. Sector assessments prepared by regional departments for formulating a country partnership strategy provide an opportunity for assessing factors relevant to sustainability at the sector level. Road maps and sector results frameworks can use outcome indicators as far as possible based on regular government statistical processes. When regular data sources are used, it also becomes more feasible to continue monitoring project and sector results after completion. Generally, specific indicators have to be constructed in relation to safeguards issues.

8. Consistent with ADB's governance policy,[4] a risk-based approach to governance and to public financial management is being promoted. It involves identifying key risks at the country, sector, and project levels in those two areas. The risk assessments seek to identify various risks to development effectiveness in country systems and in ADB project systems. A risk assessment should identify risks that have both a high likelihood of occurrence and a high magnitude of impact, the key risks. Guidance notes focusing on institutional, organizational, and sector operational risks are being prepared and issued by the Regional and Sustainable Development Department (RSDD), to be used in actual risk assessments at the sector level. The notes should help make assessment of sector risks and of project approval documents more specific, and lead to clearer risk mitigation processes.

9. **During project preparation.** The recent annual development effectiveness reviews that monitor progress on Strategy 2020 expected outcomes provide summary evidence on whether outputs and outcomes are being achieved for the core sectors, and on operational quality.[5] However, the summary evidence on sector achievements, drawn substantially from project

---

[2] IFAD. 2009. *Evaluation Manual: Methodology and Processes*. Rome (Office of Evaluation. Box 5, pages 38–39). For IFAD, sustainability is rated and included in an overall rating of project achievement, but not in the rating of project performance (relevance, effectiveness, efficiency).

[3] AusAID. 2000. *Promoting Practical Sustainability.* Canberra. *(*http://www.ausaid.gov.au/publications/pdf/sustainability.pdf).

[4] ADB. 2006. *Second Governance and Anticorruption Action Plan (GACAP II).* Manila.

[5] ADB. 2010. *Development Effectiveness Review 2009*. Manila.

completion reports (PCRs), incorporates but does not single out the sustainability of operational outcomes.

10. The Economics and Research Department's (ERD) Economic Analysis and Operations Support Division (EREA) carried out six retrospective studies of economic analysis in ADB operations documents for 2003–2008. They covered approved country strategy and programs; economic, thematic and sector work; the education sector; and project economic analysis in reports and recommendations of the President (RRPs). In the latest retrospective for project economic analysis of sovereign investment projects, the quality of economic analysis was assessed for six attributes, each on a four-point scale, allowing a numerical assessment.[6] The conclusion is that the quality of project economic analysis has improved in recent years, but there is still a need for significant improvement, particularly in demand analysis and alternatives analysis. Ensuring there will be a sustained demand for goods and services is an important element of the sustainability of outputs, revenues, and outcomes; demand analysis was deemed weak across sectors, except for transport. The retrospectives distinguish between "sustainability analysis" and "sensitivity and risk analysis." The former assesses financial and institutional capacity to implement and operate a project over its life. For nonrevenue-earning projects, sustainability analysis includes the budgetary impact of the project, and the government's long-term commitment. Sensitivity and risk analysis assesses the robustness of project economic viability, given the uncertainties in the future values of key variables. Sensitivity and risk analysis was scored below the mean in three of the four sectors reviewed.

11. Sensitivity analysis generally involves the effects on the net present value of fixed percentage increases or decreases in key variables. It is applied for economic viability, and also for financial returns of revenue-generating projects. However, it is often done for large categories of costs or benefits, without identifying specific variables and their determinants. Consequently, it has limited use for elaborating possible mitigation measures. Risk analysis assesses the probability that changes in specific variables will affect a project decision. It involves assessing the probability of a key variable taking a different value, its possible correlation with other variables, the magnitude of the difference, and the consequences for a project decision. It is demanding in terms of information and approach, and is scarcely used.[7] Nevertheless, even without quantitative analysis, identifying risks and corresponding mitigation measures at project design is a key element in managing for sustainability.

12. Environmental and social effects at the project level are dealt with largely through ADB's safeguards policy, which contains explicit reference to sustainability. The goal of the policy is to promote sustainability of project outcomes by protecting the environment and people from adverse impacts. More specifically, the objectives are to avoid adverse impacts in the project's operations, minimize and mitigate unavoidable effects on the environment or affected people, and help borrowing countries strengthen their safeguard systems.[8] Joint management of environmental and social impacts and risks should enhance the long-term sustainability of investments. Preparation teams should ascertain broad community support for the project and mitigation measures. RSDD reviews all proposed projects with the category most likely to have substantial impacts and drafts a compliance memo for them during preparation.

---

[6] ADB. 2008. *Economic Analysis Retrospective 2007: Strengthening the Quality of Project Economic Analysis in ADB Operations.* Manila. The six attributes used are (i) economic rationale, (ii) demand analysis, (iii) alternatives analysis, (iv) benefits and costs evaluation, (v) sustainability analysis, and (vi) sensitivity and risk analysis.

[7] ADB. 2002. *Handbook for Integrating Risk Analysis in the Economic Analysis of Projects.* Manila.

[8] ADB. 2010. Safeguard Policy Statement. *Operations Manual.* OM F1/BP. Manila. The three safeguard areas are environment, involuntary resettlement, and indigenous peoples. Procedures are outlined in relation to different project financing modalities, and the assessment of country safeguard systems.

13. Safeguards as well as some broader environmental issues including capacity development for executing agencies can be incorporated in loan covenants at approval. During implementation, borrowers are required to submit monitoring reports; review missions should visit project sites; and RSDD's Environment and Safeguards Division (RSES) itself undertakes about 10 independent review missions each year relating to safeguard issues. The policy is supplemented by grievance procedures. As longer term project impacts cannot always be predicted, ADB has a perceived obligation to respond to complaints after project completion; there is no stated cut-off period.

14. The assessments relevant to sustainability of project effects undertaken during preparation are summarized in different parts of the RRP. During the evaluation period, the analysis in an RRP concludes with a statement of risks, and of specific assurances to be included in the legal agreements. Risks such as general economic conditions may not be under project or sector control. There is always a risk of project and program delays; more pertinent for development are risks to sustaining contribution to outcomes over the longer term through adequate capability and funding. Recent changes in business processes from 2010 have instituted risks and management plans as a component of project and RRP preparation. It will be important that these are used to focus on longer term sustainability of outcomes and not just on implementation issues. Key indicators are summarized in the design and monitoring framework (DMF), which specifies measures of the achievement of project outputs and outcomes, and the associated assumptions and risks. The quality of DMFs has been tracked by IED since 2000. Stricter DMF guidelines were issued in 2006. The most recent assessment for loan approvals in 2009, covering 53 multitranche financing facility (MFF) programs and loans, showed that the least satisfactory component of the DMFs was that for 'Assumptions and Risks.'[9]

15. **During the approval stage.** Particular elements relating to project sustainability are the specification of implementation arrangements, assessment of financial and fiscal impacts, and specification of loan covenants. Covenants included in the legal agreements between ADB and a borrower can include special covenants relevant to the sustainability of an operation, for example, sector policy, operational and management matters; institutional development and training; and review of tariffs and charges. Some covenants may refer to the operations stage of a project, for example, a continued obligation after completion to report on the financial status of agencies or environmental effects. Depending on how they are formulated, special covenants may enhance the sustainability of operations after completion. However, this effect also depends on appropriate resourcing of the capabilities needed to comply with the covenants.

16. **During implementation**. The procurement process provides a means of enhancing future sustainability of outcomes, for example, by requiring environment management plans in bidding documents and contract supervision. More generally, the project performance ratings system after approval is intended to identify projects encountering difficulties so that remedial measures can be adopted during implementation. The performance indicators used in project performance reports (PPRs) assess implementation progress, focusing on physical and financial factors, and the likelihood of the project attaining its immediate objectives. Annual portfolio reports by IED, focusing mostly on implementation progress, have pointed out that the ongoing ratings are unduly optimistic; there is a discrepancy between them and subsequent PCR ratings. An upgraded system of project reporting during implementation is being finalized; however, project implementation is embedded in the governance regimes and the natural

[9] ADB. Annual Report on 2009 Portfolio Performance. Unpublished.

conditions of a country.[10] An improved PPR system has been associated with recommendations to improve DMFs and for post-completion monitoring of project results, and has been reiterated in subsequent annual reports.

17. A project midterm review (MTR) is the main mechanism available for undertaking a comprehensive review of an ongoing project, from a longer time perspective toward its expected outcome and impact, including the status of the DMF indicators. A recent SES assessed the conduct of a sample of MTRs and derived some lessons and good practices.[11] The SES concluded that MTRs were effective in addressing a range of project design and implementation issues, and provided solutions to project bottlenecks, but were less effective in assessing the likelihood of a project attaining its expected outcome. The SES also concluded that MTR missions probably need to be fielded earlier for projects that are process oriented, are decentralized, have subprojects, involve different government agencies and have interactions with communities. Moreover, where the scope of MTRs includes safeguard and cross-cutting issues, additional specialist resources would be required.

18. After approval, the Office of the General Counsel retains interest in supervising loan covenants, which are, however, monitored by regional department staff until a PCR is issued. Their status is again reviewed and reported on by IED staff in the case of a project performance evaluation report (PPER). In cases of noncompliance with special covenants, the general approach, as indicated in the relevant policy, is to seek corrective measures so as to attain the original development objectives of the ADB-financed project. Waivers can sometimes be agreed upon when conditions change, and ADB and the borrower agree that a covenant is no longer relevant to achieving development objectives. They are most often prompted by an upcoming operation. In this context, loan covenants, when appropriately formulated, provide a basis to monitor progress through implementation and post-completion. For most projects, however, the monitoring of loan covenants ends with the report of completion.

19. After completion of investment projects, the borrowing countries take over full responsibility for ensuring future net benefits through project operation and maintenance (O&M). For most programs, where there is no physical component, sustaining the program outcomes is not so visible, but is also part of the government's own development effort. An SES in 2005 assessed the effect of project implementation units (PIU) on implementation efficiency and on capacity development for the host agency. PIUs were meeting a peak need for human resources during the implementation period, particularly for regular government agencies and at the subnational level. It was difficult to conclude on PIU effects on implementation efficiency, apart from the continued demand for PIUs. The effects of PIUs on agency capacity are variable. While there were both positive and negative influences, some PIUs had "no clear plans for O&M of outputs after project completion."[12] Overall conclusions are that (i) PIUs were still a legitimate and justifiable arrangement for implementing projects, (ii) it was preferable that PIUs be internally staffed by the host agency, and (iii) where external staffing of PIUs occurred, a clear exit strategy or transformation for the O&M period should be agreed upon in advance. This conclusion was generally supported, while bearing in mind the alignment objectives included in the Paris Declaration.

[10] ADB. 2008. *Annual Report on 2007 Portfolio Performance.* Manila.
[11] ADB. 2008. *Special Evaluation Study Update: Midterm Review Process.* Special Evaluation Study. IED. Manila. This SES updated a similar study in 1998.
[12] ADB. 2005. *Special Evaluation Study: Role of Project Implementation Units.* Manila. p. vi.

20. After completion, the borrower and then ADB prepare completion reports to assess the implementation process and achievement of objectives. Independent evaluation of projects and project risks during implementation is limited. IED undertakes an independent assessment of portfolio performance at the aggregate level annually, a snapshot of portfolio status. It undertakes limited real-time evaluation of ongoing projects and programs in sector assistance program evaluations.

D. Evaluating Project Sustainability

21. Accountability and lessons can be derived from a combination of self-evaluation after completion, and independent evaluation at the project, sector, and country levels. PCR missions are obliged to conduct a reevaluation of economic and financial performance, assess future O&M schedules, and assess the project monitoring and evaluation system. The reevaluation should lead to a preliminary assessment of and a rating of sustainability in a PCR, including a rationale for recommended follow-up actions to enhance sustainability.[13] A more complete assessment of sustainability is made for projects subject to a PPER.

22. Sustainability is not a new subject for ADB's operations or their evaluation. In 1987, IED adopted a scheme for assessing overall success of a project; the text of PPERs included a subsection on sustainability. Following initiatives taken by the Evaluation Cooperation Group (ECG) of multilateral development banks (MDBs) to harmonize evaluation practices and standards, revised PPER guidelines were issued in 2000. A four-category overall success rating scheme was instituted, using five core performance criteria to arrive at a conclusion. The scheme included a sustainability criterion with a weight of 20% in the overall assessment. The overall rating categories and core performance criteria were included in a revised project administration instruction (PAI) for PCRs starting in 2001. Hence, sustainability has been assessed and rated in both PPERs and PCRs since 2001. Following the 2006 PPER guidelines, the overall rating is now arrived at through four core performance criteria. The weight for sustainability is still 20%, a relative fall in the context of four rather than five criteria. This and other changes in the evaluation methods were also incorporated in new PAIs for self-evaluation.

23. PCRs should be prepared 1−2 years after project or program completion. PPERs should be prepared at least 3 years after completion. During the 2000s, PPERs were prepared for a declining number of projects for two reasons: (i) a greater emphasis on improving self-evaluation by operations departments through PCRs, with IED assistance; and (ii) introduction of higher level (country, sector, and special) evaluations to meet IED's brief in relation to all ADB operations and policies. The practice in the early 2000s was to prepare a PPER for all programs and 40% of investment projects; the 2006 guidelines referred to 25% of completed projects and programs for which a PCR was available. From 2007, IED significantly reduced the number of PPERs again, moving to a purposive sample of around 10 operations per year. Greater reliance is therefore placed now on PCRs for overall measures of project results. The guidelines for PCRs and PPERs are broadly consistent with good practice standards issued for MDB evaluations.[14]

24. Sustainability ratings are obtained by applying a suggested set of determinants for projects and for programs. The suggested determinants in the 2006 guidelines are given in Table 1, chapter III.A. They cover most of the factors deemed to affect the sustainability of

[13] ADB. 2009. Project Completion Reports for Sovereign Operations. *Project Administration Instructions.* PAI 6.07A. Manila (p. 12, para. 25).

[14] Evaluation Cooperation Group. 2002. *Good Practice Standards for Evaluation of MDB Supported Public Sector Operations*. http://www.adb.org/evaluation/wgec.pdf

project outcomes. Sustainability should be assessed in a manner that does not duplicate or overlap with the other core criteria: relevance, effectiveness, and efficiency.

25. Relying on PCRs for overall assessments of sustainability has limitations. PCRs provide only a preliminary assessment of sustainability at a time when outputs and revenues have started to be produced but outcomes may not yet be directly observable. Some determinants of sustainability deal primarily with delivery of outputs, but the delivery of outputs may be insufficient for the generation of outcomes. Hence, there is need for later assessments of sustainability through PPERs or sector assistance program evaluations, or direct monitoring of project outcomes on a systematic basis after completion.

26. In 2007, a new validation process was introduced for PCRs. A preliminary account of the validation results was presented in a recent annual evaluation review.[15] For validation reports at that time, the relatively small rating gap for overall success between PCRs and validation reports was taken to indicate that regional departments have a reasonably acceptable self-evaluation capacity. However, the divergence was larger for individual evaluation criterion, especially "relevance". The rating for sustainability in particular was downgraded for 5 projects, 10% of the PCR ratings. The reasons given for the change in rating were a focus on government funding of recurrent costs rather than other financing mechanisms; failure to capture human, institutional, and financial aspects of sustainability; and lack of data to justify a rating.

E. Other Approaches to Sustainability

27. For AfDB, several issues will be addressed at project planning and appraisal to enhance the likelihood of sustainability: an appropriate legal framework is in place; private and institutional stakeholders have the necessary incentives; there will be a positive financial impact on the implementation agency; there will be sufficient funds to meet both capital outlays and recurrent costs; and cross-cutting issues are adequately addressed. The completion report for a project assesses sustainability, including the participation of beneficiaries in realizing and maintaining project investments, among other criteria. Sustainability is a key criterion in independent PPERs, carried out selectively around 2 years after implementation is complete. Evaluating sustainability in diverse contexts is difficult; ensuring quality at entry and of supervision is understood to go a long way in promoting sustained project and program results.

28. For the World Bank, reports on completion of implementation and results are prepared at the time of completion; project performance assessment reports are completed around 18 months later. There is very limited information on actual project performance at these stages; it is difficult to obtain consistent information after completion. Hence, the focus is on near-term risk. The World Bank has changed its approach to sustainability assessment; a sustainability criterion was replaced by "risks to development outcomes." Critical risks, with a risk rating, are considered for completion and post-evaluation reporting. For relative ease of quantification, a risk assessment for investment projects is based on technical, economic, and financial factors. Several other factors that might be thought to contribute to sustainability— environmental, social, ownership, institutional—are assessed for any adverse impacts, and whether they are adequately mitigated.

[15] ADB. 2009. *2009 Annual Evaluation Review: Role and Direction of Self-Evaluation Practices*. Manila.

SUSTAINABILITY RATINGS

Table A3.1: Percentage Share of Sustainability Ratings by Year of Projects with Project Completion Report Ratings in 2001–2009 (%)

PCR Sustainability Rating	2001	2002	2003	2004	2005	2006	2007	2008	2009
Most Likely (3)	21	18	13	7	11	13	13	8	15
Likely (2)	41	47	56	61	47	57	50	62	50
Less Likely (1)	36	29	28	27	32	23	27	22	24
Unlikely (0)	3	6	4	4	11	6	10	8	11
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
% share of total PCR ratings with Not Available (NA)[a]	29	26	13	4	2	4	0	5	10
NA (no.)	16	17	8	3	1	2	0	4	6

NA = not available in publicly available documents, PCR = project completion report.
[a] Total PCR ratings inclusive of not available is 548.
Source: ADB IED database.

Table A3.2: Percentage Share of Sustainability Ratings by Major Sector, Projects with Project Completion Report Ratings in 2001–2009

	Sustainability Rating[a] (%)						
Item	**Most Likely (3)**	**Likely (2)**	**Less Likely (1)**	**Unlikely (0)**	**Not Available (NA)**	**Total Ratings %**	**No.**
Agriculture and Natural Resources	2	51	39	7	1	100	111
Education	19	61	14	2	5	100	59
Energy	23	49	11	3	14	100	65
Finance	7	39	15	11	28	100	46
Health and Social Protection	12	54	4	4	27	100	26
Industry and Trade	31	31	25	13	0	100	16
Public Sector Management	16	19	29	13	23	100	31
Transport, and Information and Communication Technology	11	48	26	5	9	100	95
Water and Other Municipal Infrastructure	6	46	35	6	6	100	63
Multisector	8	53	19	8	11	100	36
% share of total	11	48	24	6	10	**100**	
Total no. of PCR ratings including Not Available							**548**

NA = not available in publicly available documents, PCR = project completion report.
[a] Where one PCR evaluates two projects, the ratings for each project are recorded. The same was applied for PPERs. To be able to process the IED data, some ratings were rounded off to conform with IED rating guideline, as follows: 3, 2, 1, 0.
Source: ADB IED database.

Table A3.3: Percentage Share of Sustainability Ratings by Modality, Projects and Programs with Completion Report Ratings in 2001–2009

Sustainability Rating	Project	Program
	%	
Most Likely (3)	10	17
Likely (2)	49	40
Less Likely (1)	26	19
Unlikely (0)	6	7
Not Available (NA)	9	17
Total	**100**	**100**
Total no. of PCR ratings including NA	**462**	**86**

NA = not available in publicly available documents, PCR = project completion report.
Sources: ADB IED database.

Table A3.4: Programs with Sustainability Rating in Program Completion Reports in 2001–2009, by Major Sector

Major Sector	Sustainability Rating (No.)					Total Ratings		Sustainability Rating (% excluding NA)				Total
	Most Likely (3)	Likely (2)	Less Likely (1)	Unlikely (0)	Not Available (NA)	No. (including NA)	No. (excluding NA)	Most Likely (3)	Likely (2)	Less Likely (1)	Unlikely (0)	
Agriculture and Natural Resources	0	5	2	1	0	8	8	0	63	25	13	100
Education	1	3	0	0	0	4	4	25	75	0	0	100
Energy	0	3	2	0	0	5	5	0	60	40	0	100
Finance	3	6	2	2	8	21	13	23	46	15	15	100
Health and Social Protection	1	4	0	0	0	5	5	20	80	0	0	100
Industry and Trade	3	4	0	0	0	7	7	43	57	0	0	100
Public Sector Management	5	6	8	3	6	28	22	23	27	36	14	100
Transport, and Information and Communication Technology	0	1	1	0	0	2	2	0	50	50	0	100
Water and Other Municipal Infrastructure	0	0	0	0	0	0	0	0	0	0	0	0
Multisector	2	2	1	0	1	6	5	40	40	20	0	100
Total no. of PCR ratings including NA	**15**	**34**	**16**	**6**	**15**	**86**						
Total no. of PCR ratings excluding NA	**15**	**34**	**16**	**6**			**71**					

NA = not available in publicly available documents, PCR = project completion report.
Source: ADB IED database.

Table A3.5: Percentage Share of Sustainability Ratings for Developing Member Countries with at least 15 Ratings, Projects with Project Completion Report Ratings, 2001–2009

DMC	DMC Classification[a]	PCR Sustainability Rating[b] (%) Most Likely (3)	Likely (2)	Less Likely (1)	Unlikely (0)	Not Available (NA)	Total No. of PCR Rating per DMC %	No.
1. China, People's Republic of	OCR	24	65	5	2	4	100	55
2. Viet Nam	Blend	26	52	10	0	13	100	31
3. Cambodia	ADF	20	55	15	0	10	100	20
4. India	Blend[c]	19	48	11	0	22	100	27
5. Indonesia	OCR	10	48	33	4	5	100	73
6. Philippines	OCR	12	44	22	17	5	100	41
7. Nepal	ADF	0	55	32	5	9	100	22
8. Bangladesh	Blend	8	43	32	5	11	100	37
9. Lao People's Democratic Republic	ADF	10	40	25	5	20	100	20
10. Sri Lanka	Blend	7	37	48	0	7	100	27
11. Pakistan	Blend	2	34	38	16	11	100	56

ADF = Asian Development Fund, DMC = developing member country, NA = not available in publicly available documents, OCR = ordinary capital resources, PCR = project completion report.

[a] DMC classification based on ADB Operations Manual on Bank Policies, Section A1, 11 March 2010. Indicates eligibility to borrow under the following resources: OCR and ADF. Blend means a mix of OCR and ADF.

[b] Where one PCR evaluates two projects, the ratings for each project are recorded. The same was applied for PPERs.

[c] No ADF access as of March 2010.

Source: ADB IED database.

Table A3.6: Percantage Share of Sustainability Ratings by Developing Member Country, Including Not Available, Projects with Project Completion Report Ratings, 2001–2009

DMC	DMC Classification[a]	PCR Sustainability Rating[b] (%) Most Likely (3)	Likely (2)	Less Likely (1)	Unlikely (0)	Not Available	Total No. of PCR Rating per DMC %	No.
Afghanistan	ADF	0	67	0	0	33	100	3
Azerbaijan	Blend	0	0	100	0	0	100	1
Bangladesh	Blend	8	43	32	5	11	100	37
Bhutan	ADF	0	88	0	0	13	100	8
Cambodia	ADF	20	55	15	0	10	100	20
China, People's Republic of	OCR	24	65	5	2	4	100	55
Cook Islands	OCR	0	67	33	0	0	100	3
Fiji Islands	OCR	0	0	0	50	50	100	2
India	Blend[d]	19	48	11	0	22	100	27
Indonesia	OCR	10	48	33	4	5	100	73
Kazakhstan	OCR	0	40	60	0	0	100	5
Kiribati	ADF	0	0	100	0	0	100	1
Korea, Republic of[c]		0	0	0	0	100	100	1
Kyrgyz Republic	ADF	8	62	23	0	8	100	13

DMC	DMC Classification[a]	PCR Sustainability Rating[b] (%) Most Likely (3)	Likely (2)	Less Likely (1)	Unlikely (0)	Not Available	Total No. of PCR Rating per DMC %	No.
Lao People's Democratic Republic	ADF	10	40	25	5	20	100	20
Malaysia	OCR	25	63	13	0	0	100	8
Maldives	ADF	0	75	0	0	25	100	4
Marshall Islands, Republic of the	Blend	0	25	38	13	25	100	8
Micronesia, Federated States of	Blend	0	50	50	0	0	100	2
Mongolia	ADF	6	69	6	0	19	100	16
Nauru	ADF	0	0	0	100	0	100	1
Nepal	ADF	0	55	32	5	9	100	22
Pakistan	Blend	2	34	38	16	11	100	56
Papua New Guinea	Blend	0	54	8	15	23	100	13
Philippines	OCR	12	44	22	17	5	100	41
Samoa	ADF	0	50	25	25	0	100	4
Solomon Islands	ADF	0	50	0	50	0	100	2
Sri Lanka	Blend	7	37	48	0	7	100	27
Tajikistan	ADF	33	22	33	0	11	100	9
Thailand	OCR	21	36	21	7	14	100	14
Timor-Leste	ADF	0	40	20	40	0	100	5
Tonga	ADF	0	25	50	0	25	100	4
Tuvalu	ADF	0	0	0	0	100	100	1
Uzbekistan	Blend	13	50	25	13	0	100	8
Vanuatu	ADF	0	33	67	0	0	100	3
Viet Nam	Blend	26	52	10	0	13	100	31
Total PCR ratings including NA (no.)		**61**	**262**	**133**	**35**	**57**		**548**
% share of total		**11**	**48**	**24**	**6**	**10**		

ADF = Asian Development Fund, DMC = developing member country, OCR = ordinary capital resources, NA = not available in publicly available documents, PCR = project completion report.

[a] DMC classification based on ADB Operations Manual on Bank Policies, 11 March 2010. Indicates eligibility to borrow under the following resources: OCR and ADF. Blend means a mix of OCR and ADF.

[b] Where one PCR evaluates two projects, the ratings for each project are recorded. The same was applied for PPERs.

[c] Has graduated from regular ADB assistance.

[d] No ADF access as of March 2010.

Source: ADB IED database.

CHANGES IN SUSTAINABILITY RATINGS[1]

1. Of 74 projects where sustainability was rated in both a project completion report (PCR) and a project performance evaluation report (PPER), the sustainability rating changed for 33 (45%) projects. The reasons for the change have been identified for some, including where the rating was upgraded and where it was downgraded.

2. **Exogenous factors.** In several cases where the sustainability rating was upgraded, the change could be attributed partly to factors outside the project's control. In particular, several projects were completed in the early to mid-2000s in a recovery and growth period for regional economies. The Thailand Rural Enterprise Credit Project,[1] with a double upgrading from *unlikely* to *likely*, benefited from the strong recovery of the Thai economy in the early 2000s after the financial crisis. Farmers had already started to repay loans before the end of a debt payments moratorium so that they could access new lending through a larger number of smaller loans. The PPER stressed the loyalty of clients to the lending agency. Under the Cambodia Primary Roads Restoration Project, upgraded from *less likely* to *likely*, growth in traffic was faster as a result of overall economic growth rates, and vehicle operating costs more substantial than expected. Road maintenance allocations at the time of the PPER had been increased. A subsequent cofinanced project for managing road assets aims at enhancing the sustainability of existing primary road infrastructure through new arrangements for managing and financing road maintenance, and should lead to a more timely provision of maintenance in step with pavement deterioration. The main constraint on the rating at the time of the PPER was substantial truck overloading, which was damaging the road pavement. Despite the establishment of a national road safety institution, some problems still remain with road safety at the project level (accident rates are high) and the resettlement process.

3. The Government of Kazakhstan had moved the capital and ministries to Astana during implementation of the Road Rehabilitation Project, with a complete and continuing turnover of staff. Pavement defects had been identified, but the Asian Development Bank (ADB) was unable to find ways to engage substantially in the reform of the road sector. Sustainability was rated *less likely* in the PCR. At the time of the PPER, the organizational context had stabilized, economic growth and budget allocations for maintenance had increased, and other international agencies were providing assistance for programming maintenance. The government was undertaking road sector reform, at its own pace. All these exogenous factors contributed to an upgrading to *likely* for sustainability. What was attributable to the project was further investigation of the raveling and cracking of the pavements that were being maintained to a high standard at the time of the PPER; and government recognition of the need to address road safety issues. The sustainability rating of the Mongolia Telecommunications Project to expand the fixed line network was upgraded to *most likely* in the PPER. There had been extensive growth in the telecommunications sector, including mobile telephony, in the main towns supported by the project. Telecommunications had become a dynamic sector dominated by private companies providing a range of services, including internet services. A regulatory authority, funded from license fees, had been established by the time of the PPER, but had little history of decisions. All these largely positive developments were deemed in part to have resulted from the approach the project had taken—addressing important issues, focusing investments on the main demand centers, stable project management, and quick decisions from government. The project had managed to maintain a balance between supporting and introducing competition to the government-owned telecommunications provider.

[1] Details of the projects and programs cited in this appendix are found in Table A4. They are not footnoted when they are referred to in the text.

4. The second development finance loan for Indonesia, approved in the early 1990s, provided funds on-lent to several participating financial institutions (PFIs) to promote lending to non-oil-exporting companies. The pricing of ADB's loan, set in foreign currency, was not competitive. The lending process was slow, and the project eventually got caught up in the financial crisis in the late 1990s. Loan covenants required information outside the country's own prudential requirements; accumulatively, 62% of the loan was cancelled. Sustainability was rated *less likely*. Despite the weaknesses, at the time of the PPER, it was found that 44 of 50 subborrowers were operating profitably on the basis primarily of exports built up through organizational chains, and absorbing external knowledge. Exogenously, the economy and the world economy had recovered and were growing again. The repayment profiles of export-oriented companies showed better than average borrowers. The project was assessed *likely* for sustainability, although at a level of lending less than half the expectation.

5. In other cases, upgrades to sustainability ratings were attributable more to project effects. The Northeast Minor Irrigation Project in Bangladesh sought to increase crop productivity and farm income by establishing a credit facility promoting irrigation technology, and constructing critical bridges and culverts in rural areas. The PCR rated sustainability as *less likely* due to the probable deficiencies in operating and financial performance, and doubts about the extent to which incentives were adequate to maintain project benefits. The PPER rated the project as *likely* to be sustainable. The Bangladesh Water Development Board had taken on responsibility for continuing groundwater monitoring, and individual farmers or farmer groups were maintaining equipment installed under the project. There was also adequate capacity in the local service sector to carry out maintenance. Beneficiaries of the technology who are owner-operators continued to maintain their tube wells, given the significant increase in farm income associated with adopting this technology. The road bridges/culverts established under the project were incorporated into road networks within the project districts and are likely to be maintained through the programs of the Local Government Engineering Department.

6. **Financial viability.** Tariff-setting mechanisms are an important part of future sustainability, affecting both the demand for a service, and the financial stability of the supplier. Five projects where the rating for sustainability changed were revenue-generating projects or had revenue-generating components. For such projects, the financial internal rate of return (FIRR) is one indicator of sustainability. To understand its relevance, it is best to compare it with the economic internal rate of return (EIRR).[2] The revenue-generating project raised to *most likely* (Mongolia telecommunications) had an appropriate balance between these two indicators. It had a more than acceptable EIRR, showing the investment was worthwhile from the national point of view, and an FIRR comfortably above the weighted average cost of capital, showing a significant contribution to financial stability.

7. Three revenue-generating projects at the time of the PPER were rated *likely*, falling from *most likely*. Two of them had a relatively high EIRR, but a low FIRR. For the People's Republic of China (PRC) Guizhou-Shuibai Railway Project, tariffs were constrained by market conditions including uncertainty about the timing of increased demand for a single major commodity, coal. At the same time, road passenger transport services competed with rail; passenger trains were being run at a loss to the operator. The uncertainty over future financial returns led to a more cautious sustainability rating, although still *likely*. The PPER for the PRC Fangcheng Port Development Project was only able to reassess the financial status of the road, and not the port component. The road finances were weakened by a doubtful design assumption that was only queried at the PPER stage; the assumed shift from rail to road transport with the port road link

[2] ADB. 1997. *Guidelines for the Economic Analysis of Projects.* Manila. Section XIII, A.

was unlikely, given the bulk nature of the freight being serviced at the port. Absence of a rail improvement component was deemed another design weakness. At the same time, there was no full autonomy over port and road tolls to allow their adjustment to the actual demand circumstances. Although operation and maintenance (O&M) for the road was sustained through provincial government allocations, a review of large truck toll rates relative to the actual forms of transport demand was recommended as a follow-up action. Absence of a toll rate mechanism led to uncertainty about the future financial status of the project, for which sustainability overall was rated *likely*.

8. The Cambodia Power Rehabilitation Project achieved a balance between the financial and economic returns of the project. However, sustainability had a lower rating at PPER time because the executing agency was about to absorb some provincial capital networks, which would reduce its overall efficiency, and because there was no regular system for tariff review. There had been an increase in power demand, but tariffs reflecting high fuel costs, and substantial revenues to government from taxes on fuel and a value-added tax (VAT), were very high. There was some uncertainty about both power demand and future financial viability of the executing agency, although sustainability was still rated *likely.* The Tangshan and Chengde Environmental Improvement Project in the PRC contained seven subprojects intended to improve environmental quality through more environment-friendly gas supplies, wastewater treatment, and pollution abatement measures. The PCR rated the subprojects as *likely* to be sustainable but also referred to disappointing financial/economic performance and the need for higher tariffs. The PPER rated the subprojects as *less likely* to be sustainable. Although O&M was generally satisfactory, the economic and financial returns were lower than the expected, with some negative values. The lower rating for sustainability reflected the insolvency of the implementing agencies of three of the seven subprojects, and insufficient tariffs for two other subprojects. It was concluded that major tariff reforms were necessary to ensure sustainability.

9. **Maintenance.** Downgrades in ratings for investment projects were influenced by several factors, including maintenance management and funding. The PCR for an energy conservation project in Mongolia rated the project as *likely* to be sustainable. It noted that the facilities for district heating were well-maintained and kept in service order; those provided under the project were expected to last for their projected economic life. The training provided to O&M staff had prepared them to maintain the rehabilitated facilities in the future. The PPER rated the project's sustainability as *less likely*. Sustainability depends largely on proper maintenance of facilities and the district heating company's sound financial performance. Due to financial pressures, maintenance expenditures were being cut and the operational focus was now on repairing equipment rather than on taking preventive measures before problems occur. The weak financial health of the district heating company is a major concern for the project's long-term sustainability.

10. In Indonesia, the PPER downgraded sustainability for the Engineering Education Development Project from *most likely* to *likely* because of inadequate funds for O&M expenditures, and because some equipment had become inoperable as a result. A road overlay and improvement project in Bangladesh funded the periodic maintenance of about 1,000 kilometers of roads east of the Jamuna River. The PCR rated the project as *likely* to be sustainable but also raised concerns regarding the rapid growth in traffic volumes, overloading of vehicles, the need for adequate user charges, and the importance of quality maintenance. The PPER rated the project as *less likely* to be sustainable. Sector-wide maintenance funds were insufficient, resulting in a backlog in maintenance, particularly for secondary roads. ADB's loan covenant requiring the government to provide adequate maintenance funding was not effective.

11. **Approach to implementation.** A project in Indonesia was intended to strengthen national and provincial institutional capacity for the sustainable and economic management of water resources on a river basin basis. The PCR rated the project as *likely* to be sustainable. New national policies and the increasing allocation of funds supported sustainability as did increased stakeholder awareness of the importance of the sector. Long-term benefits were expected to result from the key project outcomes including an operational national water resources council, stronger capacity for drafting regulations, and decentralized management of water resources. The PPER rated this project as *less likely* to be sustainable. Although some improvements had occurred, in other areas it appears that the Directorate General of Water Resources had not taken advantage of the opportunities provided by the project. At the provincial level, sustainability was severely limited by the project's centralized implementation approach, which resulted in limited capacity building in local government organizations.

12. **Programs.** In Papua New Guinea, there was an upgrade from *unlikely* to *less likely* for a public service program, for which sustainability subcriteria were still not positive. No clear reasons were given for the upgrade. In Thailand, the post-crisis Social Sector Program was downgraded from *most likely* to *likely*. There was little reporting of progress after completion, but no policy reversals. At the time of the PPER, despite continued actions consistent with the reform objectives, only one of three objectives had been fully met. The Madhya Pradesh Public Resource Management Program was downgraded from *most likely* to *less likely*. At the time of the PPER, the reforms had stalled, and only one of three objectives had been fully met. In part, this was due to lack of overall financial resources; key technical support units were not sustained. It was noted that generic assumptions and risks had been identified during program preparation, but there were no well-developed mitigation measures to deal with them. Implementation focused more on compliance with loan tranche conditions, and less on managing risks to program outcomes and sustainability.

13. The Education Sector Development Program (SDP) in Mongolia in the mid-1990s, ADB's first for the modality, supported a range of reform measures to stabilize sector expenditures and transform the structure and quality in the sector. The project component supported the program reforms through extensive training programs, and improvements to school infrastructure under a rationalization process for staff and schools. The PCR noted that, because of the program and project, public expenditure for education had remained stable, rationalization of staff and school mergers meant expenditures were more effectively used, and management capabilities had been improved. Sustainability was rated *most likely*. Many sector indicators had recovered to pre-transition levels. Further development had taken place by the time of the PPER. Some private sector schools and institutions had been established, changes in the sector had continued after SDP completion, and there was better coordination among all partners. Nevertheless, although education had retained a consistent share of government income, it was not enough for maintenance purposes. Parents had become involved in school management but could not afford any contributions; and there was a need for a future school building program. The PPER rated sustainability as *likely*, not *most likely*.

14. **Environment and social issues.** These were not always identified as issues, and were not a very significant factor in any change of sustainability rating reviewed. In most cases, minor environmental effects were dealt with adequately during implementation. Road improvements often lead to an increase in traffic accidents immediately after their completion, but accidents can diminish as mitigation measures take effect. For the two road projects where the rating improved, governments established road safety institutions or were taking action at the time of the PPER. Conversely, there were more accidents on the road component of the PRC Fangcheng Port Development Project, and the existing highway institutions were

underresourced, contributing to the downgrading in sustainability rating. In the same project, a more significant factor was that a wastewater treatment plant to service much more than the port was still not constructed at the time of the PPER. For the PRC Guizhou-Shuibai Railway Project, only 7 of a planned 13 stations were constructed at the time of the PPER, and only 6 were operational. In addition, the resettlement required was much more than the estimate at appraisal. For the Cambodia Power Rehabilitation Project, new generating equipment reduced emissions, and some cables were put underground, but there were still many noisy private generators in operation.

Table A4: List of ADB Projects and Programs Cited

Loan Number	Country	Project Name	Date Approved	PCR Year	PPER Year
AGRICULTURE & NATURAL RESOURCES					
1125	BAN	Northeast Minor Irrigation Project	21-Nov-91	2001	2003
1339	INO	Capacity Building Project in the Water Resources Sector	06-Dec-94	2005	2006
EDUCATION					
1432	INO	Engineering Education Development Project	06-Feb-96	2004	2009
1507/1508	MON	Education Sector Development Program/Project	19-Dec-96	2003	2007
ENERGY					
1345	CAM	Power Rehabilitation Project	15-Dec-94	2001	2003
1492	MON	Energy Conservation Project	26-Nov-96	2002	2005
FINANCE					
1223	INO	Second Development Finance	30-Mar-93	2002	2004
1540	THA	Rural Enterprise Credit Project	18-Sep-97	2002	2004
HEALTH AND SOCIAL PROTECTION					
1611	THA	Social Sector Program	12-Mar-98	2002	2005
PUBLIC SECTOR MANAGEMENT					
1717	IND	Madhya Pradesh Public Resource Management Program	14-Dec-99	2004	2007
1875	PNG	Public Service Program	12-Dec-01	2006	2008
TRANSPORT AND INFORMATION AND COMMUNICATION TECHNOLOGY (ICT)					
1287	BAN	Road Overlay and Improvement Project	09-Dec-93	2002	2004
1300	MON	Telecommunications Project	16-Jun-94	2001	2003
1427	PRC	Fangcheng Port Development Project	18-Jan-96	2002	2006
1455	KAZ	Road Rehabilitation Project	27-Aug-96	2004	2005
1626	PRC	Guizhou Shuibai Railway Project	18-Aug-98	2005	2007
1697	CAM	Primary Roads Restoration Project	21-Sep-99	2006	2009
2406	CAM	Road Asset Management Project	21-Jan-08		
WATER SUPPLY AND OTHER MUNICIPAL INFRASTRUCTURE					
1270	PRC	Tangshan and Chengde Environmental Improvement Project	25-Nov-93	2002	2004

ADB = Asian Development Bank, ADF = Asian Development Fund, BAN = Bangladesh, CAM = Cambodia, IND = India, INO = Indonesia, KAZ = Kazakhstan, MON = Mongolia, OCR = ordinary capital resources, PNG = Papua New Guinea, PRC = People's Republic of China, THA = Thailand.
Source: ADB loan, technical assistance, grant, and equity approvals database.

SECTOR ASSESSMENTS AND SUSTAINABILITY

1. Since 2003, a number of sector assistance program evaluations (SAPEs) have been undertaken, mostly in relation to the preparation of country assistance program evaluations (CAPEs). When undertaken for the first time in a particular country and sector, the SAPEs assessed a long period of Asian Development Bank (ADB) operations. More recent SAPEs have contained a rating of sustainability from a "bottom-up" perspective; those publicly available on the Independent Evaluation Department's (IED) website contain recommendations relevant to sustainability of future operations at the sector level. The following discussion has reference to some other sector-level evaluations also.

2. **Energy and power.** Given the predominance of power networks in most countries, sustainability should be assessed at both the project and sector levels for energy and power. For the Bangladesh power sector in 2003, ADB's assistance had moved beyond expansion and improvement of generation, transmission, and distribution systems to embrace an unbundling and sector reform agenda.[1] In general, project investments were technically sound, and well-designed and constructed. Operation and maintenance (O&M) practices differed between newer generating facilities—some through private investment and described as exemplary—and older facilities whose shortcomings were related to lack of funds, delayed procurement of parts, and a management culture less dedicated to preventive maintenance. However, the main area where sustainability was questionable was financial. Tariffs were at about half their long-run marginal costs, accounting practices were poor, and there were continuing problems with system losses and revenue collection. A positive future scenario would require tariff reforms and an independent regulator, corporatization of the remaining public sector agencies, and sector recapitalization with sound financial policies.

3. A special evaluation study (SES) of cost recovery in the power sector across 14 countries in 2003 reported the primacy of financial issues in sector sustainability.[2] The context in the 2000s included entry of private sector power producers in the sector, and a buildup of debts in foreign currency for power purchase, fuel supply, and borrowings. The three criteria for assessing the ability to sustain supply were minimization of physical and financial costs, tariff-setting elements, and revenue collection efficiency. Of the 14 power sector organizations, 3 were assessed as *satisfactory*, 5 as *unsatisfactory*, and 6 as showing a tolerable performance between the two other criteria. A specific analysis of compliance with financial loan covenants showed an average compliance rate of 61% for activities supported by ADB, which included institutions with a more business-like approach. While those with tolerable performance should be assisted through policy dialogue and monitoring of compliance with loan covenants, those with unsatisfactory performance needed assistance with structural changes to the sector as well as cost recovery tariffs. However, it was also noted that assistance was shifting from investments for integrated utilities with strong cost recovery covenants, to program support for sector restructuring that would eventually allow consumers to choose a supplier in a more commercial and transparent environment.

4. For the India energy sector in 2007, sustainability was rated *likely*.[3] A key focus of operations was the state electricity boards, which had been burdened with large cross-subsidies to the poor, especially farmers. A combination of program lending for restructuring and reforms

[1] ADB. 2003. *Sector Assistance Program Evaluation: Asian Development Bank Assistance to Bangladesh Power Sector.* Manila.
[2] ADB. 2003. *Special Evaluation Study: Cost Recovery in the Power Sector.* Manila.
[3] ADB. 2007. *Sector Assistance Program Evaluation: Energy Sector in India–Building on Success for More Results.* Manila.

was combined with investment projects for expanding generation and transmission capacities. Three states at that time were committed to change and were deemed likely to sustain their systems; maintenance had become more preventive. There were still financial losses for the sector. One of the lessons was that loan covenants should be realistically designed. Outcomes of technical assistance (TA) for state regulators were regarded as successful and sustainable, with regulation of tariffs based increasingly on enhanced performance rather than costs, and with some consumer participation. Attention was drawn to environmental issues at the strategic and project level, and their integration through rehabilitation, energy efficiency policies, and operations. However, no recommendation was specifically on sustainability of power sector operations.

5. For the Bangladesh energy sector in 2009, sustainability was rated *likely*.[4] As 85% of power generation is fueled by domestic gas supplies, the evaluation covered both the power and gas subsectors. Phased and gradual reforms had been relatively successful, but the power sector continues to experience gas supply shortages. A key assumption since 2002 that private investment would continue to be attracted to power generation has not been confirmed. More broadly, future depletion of the gas resource now needs to be countered by energy diversification. Despite the presence of competent and profitable power sector utilities with stock market listings, there was still little history of significant changes in tariffs. Financial sustainability of the power system is questionable. Price increases needed for demand management, investor incentive, and energy efficiency were a key recommendation. End-user energy efficiency also can be improved by removing implicit subsidies and installing meters for residential gas consumers.

6. For the Philippines power sector in 2005, the evaluation covered assistance to the sector over 34 years.[5] Sector operations were rated *less likely* for sustainability. Since the late 1980s, the power sector's financial viability had deteriorated, with a large accumulation of debt. Power tariffs were not enough to enable power companies to self-finance replacement investments; significant losses were a burden on the government; and ADB-financed projects would be unsustainable without direct financial support to the sector. At the time of the assessment, the status quo could not be maintained. In more recent years, ADB had supported the government's sector restructuring and reforms. However, the time required for and risks associated with power sector restructuring proved much greater than anticipated. A lesson was that ADB could do a better job on risk analysis at entry and continued risk assessment during implementation. A better analysis could lead to specific, clear, and monitorable performance indicators for any program lending operation.

7. **Road transport**. Pakistan had experienced high traffic growth rates prior to an assessment of the roads sector in 2006. By then, half of the rural communities had road access. However, the road system, particularly the trunk highways, was deteriorating and traffic volumes on rural roads were low.[6] The main issues confronting the sector were the need to further expand the network, while dealing with the growing maintenance requirements and especially the problem of axle loads. ADB-assisted road investments, including all-weather access roads, were deemed efficient. However, non-infrastructure components of the program had had little effect, and information on road safety was lacking. Nevertheless, sustainability of the road sector investments was rated *likely*. Although maintenance was insufficient and roads were

[4] ADB. 2009. *Sector Assistance Program Evaluation: Bangladesh Energy Sector.* Manila.
[5] ADB. 2005. *Sector Assistance Program Evaluation: Asian Development Bank Assistance to Philippines Power Sector.* Manila.
[6] ADB. 2006. *Sector Assistance Program Evaluation: Road Sector in Pakistan.* Manila.

rough, construction standards had generally been good as reflected in the durability of the roads. Lack of long-term maintenance planning and management represented a future risk to the sustainability of road sector services. Freight trucking rates were highly competitive, and axle load problems would not be resolved without a considerable degree of self-regulation within the trucking industry. The SAPE recommended a clarification of the fiscal implications of road maintenance and a program for road safety.

8. Treating the funding of road maintenance as a macrolevel issue was already acknowledged in an SES of road O&M in five countries in 1998.[7] ADB had and has a large exposure to the road sector, with highly visible outputs. Nevertheless, O&M was accorded low priority. A persistent lack of funds for maintenance resulted in a weak ability to retain qualified staff or procure relevant equipment. In times of stress, budget priorities shifted to the health and education sectors. Noncompliance with loan covenants relating to post-completion O&M funding was frequent because of a weak link between medium-term planning and annual budgeting, and a considerable public tolerance for poor maintenance but not for the absence of a road. Earmarking of funds from road charges required sufficient revenues and was more feasible where the road network was already well-developed. Building institutional capacity for road maintenance had proven to be far more difficult than building roads, and, given the need for planned, sustained, and consistent support, the impact of TA operations was likely to be limited. A key conclusion was that road maintenance funding should be treated as a macrolevel issue within a multiyear framework for public expenditure management. In addition, support for maintenance could come through participation of the key stakeholder groups: road builders and managers, with interest in continued expenditure in the sector; direct road users, households and transport operators enjoying cost and time savings; and beneficiaries in the road area, benefiting from greater access to services and traffic-related enterprise opportunities.

9. The transport sector in India and the roads and rail sectors in the People's Republic of China (PRC) were assessed in 2007. India has an ambitious program for national trunk highways, state highways, and all-weather roads for rural areas. The assessment identified some key institutional issues,[8] among them, how to bring the private sector to complement public funding, particularly in rehabilitation and maintenance activities. Options included build-operate-transfer (BOT) contracts on a toll or annuity basis. Funding was a problem at all levels. Construction for the national program of relatively expensive all-weather rural roads was centrally funded, but maintenance requirements may exceed financial and human resources when the roads are handed over to the states to operate, given fiscal deficits at the state level. Sustainability was rated *less likely* for national and rural road operations and *likely* for state roads. In this multifaceted context, the main recommendations to secure the sustainability of road sector outcomes at all levels were to develop an action plan for a mix of public and private financing of road sector activities, and carry out a more intensive policy dialogue on road safety and institutional coordination. Over the past two decades, the PRC had implemented huge programs to expand and improve its road and railway transportation systems. Investment was accompanied by gradual but sustained reform of subsector policies and institutional arrangements, including a greater commercial orientation and new approaches to cost recovery and construction financing. Apart from a high level of financing for investment in the national road and rail systems, ADB assistance in all projects designed to be revenue-generating had contributed to long-term and sustainable changes in the development of roads and railways by

[7] ADB. 1998. *Special Evaluation Study: Operation and Maintenance of Road Facilities and their Impact on Project Sustainability.* Manila.
[8] ADB. 2007. *Sector Assistance Program Evaluation: Transport Sector in India–Focusing on Results.* Manila.

supporting policy and institutional reforms and building the capacity for better sector governance.[9] Overall, sustainability was rated *most likely* to *likely*.

10. Transport and trade facilitation operations in Mongolia were assessed in 2008.[10] Sustainability for the transport sector as a whole, including two aviation and three road projects, was rated *likely*. All-weather roads were costly to maintain. Project management and debt repayment capacities were limited. The road traffic levels generated insufficient revenues for the road fund, which drew on registration fees and fuel taxes. In addition, the initial scope of road fund expenditures on routine and periodic maintenance had increasingly been breached to contribute to investment counterpart funds. In addition to several institutional issues, including those for transport services, in a sector still dominated by the government, the primary issue was the appropriate level and composition of road sector expenditure. The main recommendations relating to sustainability were continued advice on institutional strengthening, support for road maintenance systems, and formulation of a road sector strategy focusing on an affordable and effective level of investment.

11. Road operations (under the national, but not the Greater Mekong Subregion, program) in Viet Nam were evaluated as part of an assessment of transport operations in 2009.[11] Sustainability for the transport sector was rated *less likely*. As in many other countries, road sector expenditure in Viet Nam is driven by new construction rather than maintenance of existing assets. Specifically, the transport sector as a whole has a substantial debt, including that of over 200 semi-autonomous state-owned enterprises. Road sector projects had focused on completion of civil works and paid less attention to institutional change. Completed projects have acceptable economic rates of return, and some attempts have been made to deal with axle loads and road safety. However, the main constraint on sector operations is lack of maintenance funding; national maintenance is underfunded by about 50%. In addition, there are no human resources to run the sector data systems, including maintenance systems. A strategy to involve the private sector in maintenance activities has not been effective. These issues of capacity need to be addressed at provincial and district levels, and not just at the national level. The main recommendations for sustainability included the need to address organizational changes as the transport sector continues to grow, and to obtain a higher government commitment to maintenance funding, including recurrent budgets in the context of decentralization.

12. A SAPE for the transport sector in Cambodia in 2009 rated sustainability as *likely*.[12] Since 2002, ADB's strategy has aimed at a phased and sustainable rehabilitation and development of the national transport system, with emphasis on policy reforms and increased private sector participation. The SAPE found that sustainability results were mixed across subsectors, with road maintenance as a specific concern. However, recent increases in road maintenance financial allocations and new arrangements for managing and financing road maintenance will likely generate more lasting results. In addition, separately, additional weigh stations have been constructed on national roads to try and regulate axle loads. A significant element in sustainability is the outcomes of TA operations. TAs should have a sharper and narrower focus and longer implementation schedules. The overall recommendation was that TA

[9] ADB. *Sector Assistance Program Evaluation: Asian Development Bank Assistance for Roads and Railways in the People's Republic of China.* Manila.
[10] ADB. 2008. *Sector Assistance Program Evaluation: Transport and Trade Facilitation–Potential for Better Synergies in Mongolia.* Manila.
[11] ADB. 2009. *Sector Assistance Program Evaluation: Asian Development Bank Support for the Transport Sector in Viet Nam.* Manila.
[12] ADB. 2009. *Sector Assistance Program Evaluation: Transport Sector in Cambodia–Focusing on Results.* Manila.

operations should be guided by a clear capacity development framework with a long-term perspective, with proper sequencing and incentives for capacity retention.

13. **Water supply and sanitation, and urban services.** Two SAPEs were undertaken in 2009 for ADB-assisted operations for water supply and sanitation, and urban services in Bangladesh and Viet Nam. Sustainability for operations at the sector level in Bangladesh was rated *less likely*.[13] There was little reform in the urban sector in 2001–2008. Continued systemic constraints limited the sustainability of the modest investments made so far in the two subsectors. Assumptions made in ADB projects with regard to tariffs and reforms were usually not realized. The government and assistance agencies need to address the financing conditions of various urban sector investments. These systemic constraints have remained unresolved: lack of revenue-generating powers and capacity of local governments, lack of central transfers for O&M budgets, and lack of discretion in personnel decisions. In Viet Nam, sustainability for sector operations was rated *likely*.[14] An earlier CAPE in 2002 had reported that urban infrastructure development was generally unsustainable and showed very low efficiency, lack of performance, and low staff capacity. A SAPE in 2009 found that water supply company staff have enough knowledge and technical expertise to take charge of water supply engineering. Capacity development in various degrees of intensity, including training for O&M and reduction in nonrevenue water, management information systems, and financial management and accounting, had been provided. However, a broader view of institutional development was still required. Loan covenants on institutional reforms, and financial performance and tariffs, outside the control of implementing agencies, were not fully complied with. Setting realistic objectives for such issues requires full understanding and commitment of decision makers; covenants cannot make up for lack of demonstrated up-front commitment during project preparation. Because tariff revenues are not yet sufficient, water utilities look to other businesses to subsidize their water operations. There is a risk that in the future such businesses will fail and require support from the already diminished water supply revenues.

14. An SES of building the capacity to manage water supply and sanitation in four Pacific countries was circulated in 2003.[15] Capacity building was defined to include development of both the physical and institutional capabilities of water utilities, assisted through a combination of lending and TA. The goals were to improve operational and financial performance, provide better services to clients, and become less dependent on government subsidies. A key lesson was that commercialization does not automatically follow from corporatization. In terms of sustainability, water resource management, which is essential where sources are limited, was not treated as a central issue, and operations lacked the context of a medium-term strategy for building the capacity of the water utilities. At the time of the evaluation, one of the utilities operated profitably, two were making progress toward covering O&M costs, and performance was deteriorating in the fourth where political support for corporatization failed. Sustainability of investments in capital works still depended on further commercialization, including cost-cutting measures, improved revenue collections, and unpopular tariff increases. More generally, building capacities and implementing institutional changes are a time-consuming process, something not sufficiently recognized in ADB's TA modality.

[13] ADB. 2009. S*ector Assistance Program Evaluation: Urban Sector and Water Supply and Sanitation in Bangladesh.* Manila.
[14] ADB. 2009. *Sector Assistance Program Evaluation: Urban Services and Water Supply and Sanitation Sector in Viet Nam.* Manila.
[15] ADB. 2003. *Special Evaluation Study: Asian Development Bank Capacity Building Assistance for Managing Water Supply and Sanitation to Republic of the Fiji Islands, Kiribati, Papua New Guinea, and Republic of the Marshall Islands.* Manila.

15. **Education.** Assessment of the education sector in Bangladesh in 2008 included operation of a sector-wide approach (SWAp).[16] The study included an evaluation of the strategies and programs of four of the assistance agencies active in the sector. The four had formed a joint country strategy and a joint project management unit for 11 partners. Although access to and gender balance in education had improved over the period 1989–2007, outcome indicators were still poor: literacy had improved from 35% to only 55%, and a 60% primary dropout rate had improved to only 50%. However, sustainability at the time of the assessment was considered *likely*. Sustainability in the subsectors depended on financing and staffing. Although many staff positions had been taken into the recurrent budget, staff pay was still being met in part from development partners. In secondary education, staff turnover was high. A future focus on quality and institutional capacity was one of the key recommendations. The SWAp itself had resulted in long-term partner commitments and institutionalized project management activities. It had worked well in contributing to outcomes, and facilitated government ownership and leadership in the sector. However, SWAp arrangements involved high transactions costs and there were too many partners.

16. **Agriculture and natural resources.** Operations in the agriculture and natural resources (ANR) sector were assessed in the Lao People's Democratic Republic (Lao PDR) in 2005, in Nepal in 2009, and in Cambodia in 2009. For the Lao PDR, sustainability was rated *less likely*.[17] Over 20 years of ADB support, policy reform measures had been sustained, with no overt reversals in the formal policy direction. However, regulatory uncertainty, unpredictability, lack of transparency and accountability, and other governance issues had affected policy implementation. The reform process was also influenced by central and local government jurisdictions and decentralization measures. TA operations often produced recommendations that could not be implemented because of deficient analysis of the implications concerning resource requirements, institutional arrangements, and organizational development and management. The sustainability of investment projects was generally assessed as *less likely* due to (i) shortfalls in O&M; (ii) inadequate arrangements (human, financial, institutional, and other resources) to sustain outcomes; and (iii) marketing constraints confronting farmers and agribusinesses.

17. The 2009 SAPE for Nepal rated sustainability as *likely*.[18] Most policymakers appreciated ADB's contribution to policy and institutional reforms. However, they sometimes expressed worries about weak ADB support in responding to newly emerging problems. Removal of fertilizer subsidies was a major accomplishment of the second agricultural program loan, but there was a tendency not to directly support major policies and institutional changes in subsequent projects. Sustainability prospects were enhanced where nongovernment organizations were involved in forming inclusive groups and the private sector had adequate incentive. Indications of renewed interest in assistance for ANR among government officials and development partners improve the likelihood of sustainability. A SAPE for Cambodia in 2009 rated sustainability as *likely*.[19] At a strategic level, sustainable economic growth is best achieved through labor-intensive agriculture and rural development. The establishment of both a legal and institutional basis for sustainable management of ANR is a key condition. Most policy and institutional measures under initial program operations have been strengthened and further

[16] ADB. 2008. *Evaluation on the Education Sector in Bangladesh: What Worked Well and Why Under the Sector-Wide Approach?* Manila.
[17] ADB. 2005. *Sector Assistance Program Evaluation: Agriculture and Natural Resources Sector in the Lao People's Democratic Republic.* Manila.
[18] ADB. 2009. *Sector Assistance Program Evaluation: Agriculture and Natural Resources Sector in Nepal.* Manila.
[19] ADB. 2009. *Sector Assistance Program Evaluation: Agriculture and Rural Development Sector in Cambodia.* Manila.

developed. For rural infrastructure projects, a key issue is the provision of funding to provincial governments for establishing regular routine maintenance activities, particularly for rural roads. The evaluation concluded that Government authorities were well aware of the problem, and there is a good probability that the necessary maintenance will be provided. For irrigation projects, the Government's policy of forming farmer water user committees has already been tested in other projects. Well-designed and constructed social infrastructure projects can be maintained by the commune councils; although, some councils may not have sufficient funding to do so. It is difficult to judge the likely sustainability of income-generating projects, which depend on their own financial viability.

ILLUSTRATIVE CASES

A. Case Selection

1. Findings from some illustrative cases were examined to identify lessons for sustainability. Assessments were made at different points in time: at approval, when the project completion report (PCR) was made, and when the project performance evaluation report (PPER), if available, was prepared. For two sets of cases, the current status of sustainability was directly observed in the field. In a few other cases, there was limited fieldwork to confirm the findings.

2. Cases were selected from the future priority sectors of Asian Development Bank (ADB) operations. In the transport and communications sector, cases were chosen from different countries and from different levels of the road subsector, including national, urban, rural, and subregional. In the energy sector, similarly, cases were chosen from different countries and different subsectors: hydropower, thermal power, rural electrification, natural gas, and the power sector as a whole. The approach was different in the education sector. Three projects at different levels of the education system were chosen from one country, Bangladesh. In the water resources and supply sector, two water supply and two irrigation subsector projects were chosen for one country, Viet Nam, together with one water supply project in the People's Republic of China (PRC). Finally, two financial sector programs were chosen in different countries, and two small and medium-sized enterprise (SME) development programs in different countries, plus one SME project. The choice of projects in each sector and the main findings and lessons from the cases are summarized in the following sections.

B. Summary of Cases in the Road Sector

1. Selection of Cases

3. ADB has assisted the development and maintenance of road networks over a long period, and at different levels of road classification. Nine cases involving 10 developing member countries (DMCs) were selected. They are four cases focusing on national roads (including a sequence of three projects in one case), one urban road project, two cases of rural roads, and two cases of subregional roads (with two subprojects each). One of the national road projects is a revenue-generating expressway. Table A6.1 lists the cases, and the dates of project completion reports (PCRs) and performance evaluation reports where there is one. The road sector projects were approved between late 1992 and late 2001. All completion reports are within the period 2001–2009 for which basic data was used in this evaluation.

Table A6.1: Summary for Road Sector Cases

Loan No.	Project Name	Loan Approval Date	PCR Date	PCR Rating on Sustainability	PPER Date	PPER Rating on Sustainability
Highway						
BHU-1763	Road Improvement	October 2000	July 07	Likely		
IND-1274	National Highways	November 93	January 08	Likely		
KGZ-1444	Road Rehabilitation	January 96	December 02			
KGZ-1630	Second Road Rehabilitation	September 98	August 05			
KGZ-1853	Third Road Rehabilitation	October 01	October 08	Likely		

Loan No.	Project Name	Loan Approval Date	PCR Date	PCR Rating on Sustainability	PPER Date	PPER Rating on Sustainability
PRC-1641	Changchun-Harbin	November 98	October 04		December 06	Very likely
PRC-1642	Expressway	November 98	October 04	Most likely	December 06	Very likely
Urban Road						
THA-1195	Bangkok Urban Transport	November 92	December 02	Less likely	November 05	Sustainable
Rural Road						
LAO-1795	Rural Access Roads	December 2000	October 08	Less likely	December 09	Less likely
NEP-1450	Rural Infrastructure Development	June 96	November 06	Likely		
Subregional Corridor						
CAM-1659	Phnom Penh to Ho Chi Min City	December 98	December 07	Less Likely	December 08	Less likely
VIE-1660	Highway	December 98	December 07	Likely	December 08	Likely
KAZ-1774	Almaty-Bishkek Regional Road	October 00	December 07	Likely	March 09	Less likely
KGZ-1775	Rehabilitation	October 00	December 07	Likely	March 09	Less likely

BHU = Bhutan, CAM = Cambodia, IND = India, KAZ = Kazakhstan, KGZ = Kyrgyz Republic, LAO = Lao PDR, NEP = Nepal, PCR = project completion report, PPER = project performance evaluation report, PRC = People's Republic of China, THA = Thailand, VIE = Viet Nam.
Source: Various PCRs and PPERs.

2. Summary Findings on Sustainability Assessment in the Roads Sector

4. Inadequate operation and maintenance (O&M) activities were among the major problems of ADB-supported projects in most DMCs. A typical objective of a road project is to contribute to economic growth by increasing the mobility of passengers and freight, and enhancing accessibility through reduced costs of transport. Inadequate road maintenance undermines the project objectives and makes the project outcome less sustainable. The lack of systematic and appropriate road maintenance in developing countries is mainly the result of insufficient funding. The cases show that the allocation of adequate budgets for O&M is a challenge. Giving higher priority to new construction and rehabilitation investments rather than to maintenance of the existing road stock is another reason for inadequate maintenance funds. The shortage of funds also limits the sector's capacity to recruit and train qualified personnel and procure appropriate maintenance equipment and facilities. In some cases, loan covenants were introduced to enhance the funding of maintenance. Creation of a special fund for road maintenance was included, for example, in the Lao PDR and the Kyrgyz Republic. However, the funds are not well functioning so far. In the Kyrgyz Republic, this budget allocation mechanism was not supported by either the Ministry of Finance or the International Monetary Fund, which were providing a macroeconomic stabilization program at the time. In other cases, enforcement has not been strict; generated revenues have been insufficient.

5. The cases demonstrate that other important factors affect project sustainability. Economic viability of a project affects its sustainability. The sustainability of a road project is closely linked to traffic demand. In turn, traffic demand is linked to economic growth; the level of trips generated is a function of economic and social activities. A well-maintained road is a pre-condition to sustain projected traffic demand, including traffic generated as a result of cost reductions, and makes it possible to produce a stream of economic benefits over time. Extra

traffic generally leads to higher budget revenues through fuel taxes and vehicle registration. A positive cycle of economic growth, traffic demand, and financing of maintenance exists. The Thonburi Road Extension under the urban transport project in Bangkok, Thailand, demonstrates that economic growth helped the Government secure sufficient funding for routine maintenance and to increase it year by year. This positive cycle can be demonstrated in a more direct way in the case of toll roads. The increased traffic volume generating a stream of higher toll revenues enhances financial viability; financing of maintenance becomes easier.

6. Project sustainability in the road sector is also affected by project design and implementation. The cases show that planning, design, construction quality, and supervision of project implementation are closely related to sustainability. If any of these factors are not properly done and carried out, the road infrastructure will deteriorate earlier and its life will be shortened. Traffic management is another factor affecting sustainability of road investments. For example, controlling overloaded trucks and enforcing axle load regulations are frequently recommended during project preparation. Many projects list truck weight control and monitoring of overloading as a loan covenant, but compliance with that covenant is generally lax.

7. No cases reported environmental and social factors as serious issues in project evaluation. In some cases, a number of households needed resettlement due to civil works. Generally, road safety received more attention before projects were implemented. In the Kyrgyz Republic, the government established a Road Safety Secretariat within the Ministry of Transport and Communication in response to a major accident that occurred in the Tyu Ashu tunnel during the civil works. Some road sections in mountainous areas in the winter season can be closed out of safety concerns.

8. The project cases did not explicitly discuss other externalities, such as pollution. One of the recent changes in the transport sector is that ADB transport projects and transport sector operations could be designed in a more environment-friendly way, taking account of the impacts of energy use and carbon dioxide emissions, not only for the sustainability of project assets but also for sustainable development more broadly.[1]

9. Within the nine cases and their components, there were seven PCR ratings for sustainability of *likely*, three of *less likely*, and one of *most likely*. For the cases where a PPER was prepared, one rating was upgraded from *less likely* to *likely*, while two ratings were downgraded from *likely* to *less likely*.

10. Several aspects of road projects were anticipated in statements of risk found in the report and recommendation of the President (RRP) and in project/design and monitoring frameworks (DMF), and included in assurances relevant to project sustainability.[2] For national roads, some common risks and mitigation measures included budget allocations and managing revenues through special road funds, pavement management systems, retaining qualified staff, and support to local contractors through equipment pools. In northern locations, weather conditions could affect construction schedules and pavement quality. Repeated references were made to enforcing axle load regulations, but also to encouraging multi-axle trucks through taxation changes in one case. For revenue-generating projects, additional risks related to financial ratios and changes in exchange rates for loan payments. In some of the later projects, greater emphasis was placed on complementary measures to sustain the demand for the road

[1] ADB. 2010. *Operational Plan. Staff Working Paper: Sustainable Transport Initiative*. Manila (May); and ADB. 2010. *Evaluation Project Brief: Reducing Carbon Emission from Transport Projects*. Manila (July).

[2] Of the 11 RRPs concerned, 4 did not have a DMF.

project services, such as maintaining secondary roads, deregulating transport services, attracting nongovernment funds for future expenditures; and on mitigation of adverse impacts by considering environment, social, and health issues, and clearing ordinance. The main issues for regional roads were effective implementation of cross-border agreements, and adequate maintenance on both sides of the border. Maintenance risks for rural roads were addressed through community involvement, and even toll collection by user committees. Environmental effects in some cases were subject to third-party monitoring. The full complement of issues addressed through risk mitigation measures made for a substantial policy dialogue, and ranged outside the mandate of the road agencies themselves.

3. Factors Affecting Sustainability in the Road Sector

11. **Budget allocation.** The central issue of sustainability for road sector projects is how to put higher priority on road maintenance in the budgeting process. This cannot be resolved within the scope of a single project. Sustainable funding for road maintenance can be improved through the following means.

(i) Sector policy dialogue with DMCs should ensure an appropriate budget is allocated for road maintenance. The SAPE for the transport sector in Viet Nam in 2009 recommended that ADB secure government commitment to fund maintenance by applying a coordinated approach to the government in cooperation with other development partners.
(ii) Further support should be given to DMCs to help them establish mechanisms for road asset management based on the stakeholders' needs. Such systems can be a basis to justify required funding for the road sector to people outside of the road department, particularly to finance ministries. The SAPE for the transport sector in Mongolia in 2008 recommended that ADB work closely with the government in strengthening the road maintenance regime, achieving a balanced distribution of public funds, and identifying alternative financing sources including the private sector.
(iii) Matching funds could be sought from borrowing countries to ensure a higher priority is put on road maintenance. If ADB provides loans for maintenance works and requires a matching fund from the borrowing countries, the latter may put relatively higher priority on maintenance. This would also decrease the risk of over-investing in new road construction through new projects.
(iv) O&M financing needs to be addressed through ADB’s operational program as a macroeconomic concern.

12. **Project design and technical sustainability.** Projects need to be designed based on a strategic, long-term investment plan to avoid short-cycle repeat loans for rehabilitation and maintenance.

(i) Overloading of trucks is widespread. It damages roads after construction or rehabilitation in a way that routine maintenance cannot correct. It also stresses the vehicles. Systems for monitoring and controlling axle loads need to be established, in cooperation with non-road agencies and the trucking industry.
(ii) In some DMCs, support could be provided for improving project management to ensure appropriate standards are respected, and to improve the capacity of contractors.

13. **Governance of maintenance.** Road maintenance can be improved by clearly specifying the entity that is responsible for the work, and the procedures through which the work could be contracted out.

(i) Road maintenance practices tend to be output- and schedule-driven, which results in a discretionary, inequitable, and inefficient allocation. One option is to establish a public enterprise dedicated to road construction and maintenance management. In the case of India's National Highway Project, it is believed that the creation of the National Highways Authority of India has contributed to an improved maintenance regime.

(ii) Additionally, maintenance should be managed on a performance-based system, involving the private sector where possible. Responsibility for maintenance is fully devolved to the concessionaire in the case of build-operate-transfer (BOT) and other partnerships, at least for the period of the concession.

(iii) The 2009 SAPE of the transport sector in Cambodia recommended that ADB continue to pursue private sector involvement, and the 2007 SAPE of the transport sector in India recommended that ADB assist the Indian Government in developing an action plan using an appropriate mix of public and private funding. Even though unsuccessful, the creation of an equipment pool in the Kyrgyz Republic sought to promote private sector participation in the maintenance industry.

(iv) Where appropriate, local community participation can enhance maintenance practices, and the motivation for maintenance activities. The local road user committees in the rural infrastructure development project in Nepal showed that public involvement from the planning stage can induce local communities to play a substantial role in road maintenance, as long as rights and responsibilities are clearly recognized.

14. **Business procedure**. ADB's business procedures should promote quality of outputs and sustainability of outcomes during processing and administration. Current procedures for preparation and implementation give most attention to monitoring of procurement, civil works, and disbursement.

(i) To provide greater attention to outcomes, project monitoring frameworks should cover the whole of the project's life span. Currently, direct contact of operations staff with a project ends with the completion report, 1–2 years after actual completion.[3] ADB could remain actively involved in performance monitoring after completion, along with the borrowers.

(ii) Loan covenants relating to project O&M are among the most frequently breached. A clear signal needs to be given to DMCs regarding the importance of adhering to O&M-related covenants.

15. **Subregional corridors**. Cross-border roads could benefit from the following observations.

(i) Road maintenance costs should be shared by all vehicles using the roads, through charging systems for vehicles of other countries.

[3] For a small number of projects, operations departments will be asked to respond to follow-up actions identified in PPERs.

(ii) At the same time, technical standards and road maintenance should be coordinated in subregional cooperation to provide the same quality of road services for all vehicles.
(iii) To ensure sustainability through an enhanced demand for road services, best use should be made of infrastructure investment in cross-border roads, and cross-border agreements should simplify border formalities as far as possible.

16. **Public awareness.** The long-term benefits from road maintenance are often not appreciated by the public or decision makers. In Bhutan, requests for maintenance budgets usually are turned down owing to lack of understanding of the need for maintenance. Support for the concept of maintenance needs to be promoted in all activities.

C. Summary of Cases in the Energy Sector

1. Selection of Cases

17. Eight completed energy projects were used to assess sustainability across a range of project types and countries. They include hydroelectric power generation in Nepal and the Lao PDR, financial and institutional reforms in India, a natural gas development project in Bangladesh, policy reform in Pakistan, and rural electrification in Bhutan. The reviews were based on desk research and selected field missions. The projects were approved between 1990 and 2001 and the PCRs were prepared during 2001–2009 (Table A6.2). Of the six PCRs with available sustainability ratings, sustainability was rated *most likely* in three and *likely* in three. All four PPERs gave a rating of *likely*, two downgraded from *most likely*.

Table A6.2: Summary for Energy Sector Cases

Loan No.	Project Name	Loan Approval Date	PCR Date	PCR Rating on Sustainability	PPER Date	PPER Rating on Sustainability
NEP-1452	Kali Gandaki "A" Hydroelectric Project	Jul 96	Apr 04	Likely		
BAN-1505	Ninth Power Project	Dec 96	Jan 07	Most Likely	Dec 09	Likely
IND-1868/1869	Madhya Pradesh Power Sector Development Program	Dec 01	Jun 08	Likely		
PAK-1807/1808/1809	Energy Sector Restructuring Program	Dec 2000	Aug 07	Likely		
IND-1029	Second North Madras Thermal Power Project	Aug 90	Dec 02	Most Likely		
BAN-1293	Third Natural Gas Development Project	Dec 93	Nov 05	Most Likely	Dec 09	Likely
BHU-1375	Rural Electrification Project	Sep 95	Dec 01	Not Available	Dec 03	Likely
LAO-1456	Nam Leuk Hydropower	Sep 96	Feb 02	Not Available	Aug 04	Likely

BAN = Bangladesh, BHU = Bhutan, IND = India, LAO = Lao PDR, NEP = Nepal, PAK = Pakistan, PCR = project completion report, PPER = project performance evaluation report.
Source: ADB IED database.

2. Summary Findings on Sustainability in the Energy Sector

18. **Financial viability.** The sustainability of energy sector investment projects was critically dependent on the financial viability of the power sector or the executing agency responsible for operating the project. In most countries, the power sector, although structured as state-owned enterprises, is expected to be financially independent from the government. However, financial sustainability is strongly influenced by the government directly or indirectly through regulatory

agencies or control of end user tariffs and fuel prices; transfer prices between generation and distribution companies; and transmission charges in countries where the power sector had been unbundled. Financial sustainability of the sector may also be affected by its ability to collect bills from consumers, especially other state-owned enterprises and government agencies.

19. Power sector agencies sometimes had to provide electricity to certain consumer groups at below the full cost recovery, and to purchase electricity from private sector producers at a cost higher than the prevailing tariff. The cost differences were then paid by the government as fiscal subsidies or by other consumer groups as cross-subsidies. In most cases, fiscal subsidies were not paid on time, and governments resorted to offsetting these payments against the obligations of the utilities to the government. This practice results in cash flow difficulties in the utilities. This was the case in Bangladesh, Pakistan, and Madhya Pradesh of India at the time of the respective loan approvals. These issues were identified during appraisal, and institutional and structural reforms including tariff adjustments were covenanted in the loan agreements. The covenants included specific measures to gradually phase out the fiscal subsidies, to institute a transparent and independent tariff-setting mechanism, and to functionally unbundle the sector. However, compliance varied in the three projects, with Bangladesh and Madhya Pradesh complying with most of the loan covenants, and Pakistan complying with a few.

20. **Institutional performance.** When the power sector is not financially sustainable, the operational and technical sustainability of the sector can be adversely affected. Lack of financial strength to maintain assets and under-investment in power generation and transmission capacity result in overloading of the existing assets and deterioration of the quality of the power supply. Institutional performance and sustainability are also closely linked to financial sustainability, as lack of financial sustainability results in low staff morale, lack of incentives, and loss of technically competent staff. Institutional capacity and good governance are necessary conditions for financial sustainability, although, because of exogenous factors such as tariff setting, they may not be sufficient. While financial and institutional performance and sustainability of power sector entities in Bangladesh and Madhya Pradesh have continued to improve with the implementation of reforms agreed upon with ADB, the institutional and financial performance of Pakistan has deteriorated.

21. **Reform policies.** The sustainability of ADB investments in the energy sector must be assessed in the context of the sector as a whole. Broader policy dialogue and tariff and institutional reforms supported through program loans, with specific actions to improve the institutional and financial sustainability of the sector, play an important role in ensuring the sustainability of the investment program. The sustainability of policy-based interventions critically depends on the consideration given to complex political economy issues and the quality of diagnostic studies undertaken during project preparation. Some policy-based interventions require a longer period (more than 5 years) to implement and the continuity of development partner support especially in terms of technical assistance (TA) is important to ensure the sustainability of initial reforms.

22. Power sector reform programs in Madhya Pradesh in particular and in Bangladesh to a certain extent had taken into account the political economy issues and strove to achieve consensus among the stakeholders. This contributed to continuation of the reform programs after initial loan closures, with the support of follow-up lending operations. In Pakistan, however, reform program loans were processed as part of a broader macroeconomic adjustment program; there had not been adequate consultation and consensus building. The lack of stakeholder ownership, political instability, and macroeconomic issues contributed to the lack of financial and institutional sustainability of the reform program supported by ADB.

23. **Environmental and social effects.** For energy sector projects with significant environmental and social effects such as hydropower, thermal power, as well as oil and gas projects, the current focus of environment and social safeguards on mitigating adverse impacts during the construction phase is not adequate to ensure long-term environment and social sustainability. All three power generation projects considered as cases had loan covenants and elaborate institutional arrangements to ensure environmental and social sustainability during project implementation. However, project-specific institutional arrangements for addressing the environmental and social impacts of energy sector projects are usually discontinued after the project is commissioned. In the absence of such institutionalized arrangements, including corporate oversight and environmental monitoring at the national level, there is a significant risk of noncompliance with safeguard requirements after completion. Continuing those arrangements beyond project completion depends on the importance attached to these measures by the executing agencies and national environment regulators.

24. ADB does not have an institutional structure to regularly monitor environmental and social compliance in ADB-financed projects after completion reporting. Fund allocations for that purpose are inadequate. Even if safeguard documents require a continuous flow of funds from project revenues for mitigation measures, this may not happen, especially when the responsibility for mitigation measures falls to an agency other than the project owner, and the project owner's responsibility is limited to only providing funding. This has been the case with the Nam Leuk hydropower project in the Lao PDR where the responsibility of the executing agency is limited to providing funding for the maintenance of Phou Khao Khouay biodiversity conservation area. The lack of national and corporate oversight over the environmental performance of the hydropower sector, especially after completion, also contributed to the ineffective environmental impact mitigation measures in the case of the Kali Gandaki hydroelectric project.

25. Risk statements in RRPs and DMFs, and related assurances, have recognized the complex nature of energy sector operations, whether pursued through project or program modalities.[4] Risks from different cases relate to the fiscal effects in the sector: budget allocations for investment and maintenance; compensation payments to sector agencies for subsidized services and power purchases; the continuing drain on the government budget if reforms are not effected; and, in one case, the crowding out of other, especially social, expenditures by investment requirements, to be addressed through annual macroeconomic framework reviews. Also related to fiscal relationships, a further set of risks addressed the autonomy of sector agencies, including board composition in some cases, and establishment of independent regulators. Connected to them were common conditions on financial ratios, in part dependent on the way in which tariffs are formulated and set (to recover costs and provide resources for continued expansion), but increasingly in the context of market structures for different service providers. Risks and mitigation measures have also been addressed as part of the more recent process of sector restructuring, including uncertain private sector investment interest, and public awareness campaigns relating to sector reforms. In the particular cases of hydropower projects, provisions were made for local consultation mechanisms where there were likely to be substantial social impacts, and a post-completion environmental audit in one case.

[4] Of the eight RRPs concerned, five did not include a DMF.

3. Factors Affecting Sustainability in the Energy Sector

26. The case reviews identified the following overall lessons for promoting the sustainability of energy sector projects.

(i) The sustainability of outcomes from the institutional, technical, financial, and environment point of view critically depends on overall sector governance and the regulatory framework. In countries with weak institutional and regulatory regimes, specific investment projects are less likely to be sustainable.
(ii) Policy interventions to improve sector governance and the institutional framework require a broad-based consensus among key stakeholders. When designing reform programs, it is therefore important to have broad-based dialogue with all the important stakeholders before agreeing on the road map for sector reform.
(iii) Policy interventions that do not take into account the political economy and the implementation capacity of the country concerned, and do not address the most critical problems facing the sector are unlikely to be sustainable in the long run even if they achieve short-term outcomes.

D. Summary of Cases in the Education Sector

1. Selection of Cases

27. Three completed projects—one each in nonformal education, primary education, and secondary education—in Bangladesh were selected to assess sustainability in detail. Bangladesh represents a good case in which the completed project in each education subsector had a follow-up project supported by ADB; thus, more information is available. In addition, lessons and recommendations to enhance sustainability could be identified for the follow-up projects, which are ongoing. The cases were assessed through a mission for the purpose in mid-2010. They were approved between 1995 and 1999; completion reports were within the period for which basic data was used for this evaluation (Table A6.3).

Table A6.3: Summary for Education Sector Cases

Loan No.	Project Name	Loan Approval Date	PCR Date	PCR Rating on Sustainability	PPER Date	PPER Rating on Sustainability
BAN-1390	Nonformal Education	29 September 1995	Aug 03	Most Likely		
BAN-1521	Second Primary Education Sector	22 May 1997	Jul 05	Likely		
BAN-1690	Secondary Education Sector Improvement	22 June 1999	Jun 08	Likely		

BAN = Bangladesh, PCR = project completion report, PPER = project performance evaluation report.
Source: ADB IED database.

2. Summary Findings on Sustainability in the Education Sector

28. The three education projects represent education as a public good provided by the public sector. Thus, they require continued government financing of recurrent costs after project completion rather than substantive cost recovery from schemes generated by the projects themselves. Nonetheless, the projects should also try to involve local community stakeholders to help mobilize local resources to support and sustain key project outputs and outcomes.

29. The common assessment is that the physical outputs of the three projects (for example, schools, classrooms, and other buildings and facilities) currently are *likely* sustainable. As they depend mostly on continued recurrent cost financing by the government after project completion, the relevant consideration is the overall recurrent budget for these subsectors. Recently, the share of the recurrent education budget for the three subsectors is around 87%. For nonformal education, the share increased from 1% before the project to 7% at project completion. For primary education, it increased from the mid-2000 level of 34% to 38%. For secondary education, it declined from the mid-2000 level of 49% to 42%.

30. Greater attention should be given to O&M funding for schools, and to empowering local stakeholders, including decentralized school management committees and other community groups. Apart from helping to mobilize local resources for the projects' physical outputs, empowering local groups will help sustain the projects' institutional outcomes, including strengthening the role of nonformal education learning centers for continuing education, and strengthening the decentralized functions of primary and secondary education school management committees to monitor teacher performance to improve education quality. The institutional outcomes were found *likely* to be sustainable in two cases, and *less likely* for nonformal education.

31. The subsector-specific outcomes are most difficult to sustain. Some key outcomes have not been fully achieved. Overall, sustainability currently is rated *less likely* in nonformal education, *likely* at borderline in primary education, and *likely* for secondary education. In the nonformal education subsector, the adult literacy rate remained low over the project period 1995–2001, increasing only slightly from 47% to 50%, and recently it increased to 53.5%. This still leaves 3.5 million people illiterate. The corresponding female literacy rate also remained low during the project period, increasing from 38% to 44%, and recently to 48%. In terms of broader impacts, only 30% of project learners were self-employed. In the primary education subsector, the cycle dropout rate remained high, decreasing only slightly from 51% to 49% over the project period (1997–2003) and recently to 45%. In the secondary education subsector, the dropout rate remained high, but the secondary school certificate pass rate at the end of grade 10 showed a large improvement, increasing from 35% to 57% over the project period (1999–2006), and recently to 78%. While sustainability for the primary and secondary education projects overall currently is deemed *likely,* that for nonformal education has notably fallen and is now deemed *less likely*.

32. All three of the project RRPs had a DMF, but the risk indicators specified in the DMF were found to be too broad and did not provide useful information related to project sustainability. However, some risks and assurances toward project sustainability included the following. Staff recruitment is a substantial risk to continued education improvements. Staff and their costs are partially met under project expenditures and would be integrated into the regular budget at project completion. In support of the government's commitment to decentralization and for resource mobilization, community involvement in school management was further promoted. To enhance sustainability of outcomes, reforms toward a more practical curriculum and joint ventures between local and international publishers were pursued. An additional assurance related to environmentally sound construction of schools, and sound administrative, financial, engineering, environmental, and O&M practices.

3. Factors Affecting Sustainability in the Education Sector

33. The following lessons have been identified as common factors—both positive and negative—affecting sustainability in the three education subsectors.

(i) **Strong government ownership and political commitment.** Strong government ownership and political commitment are reflected in continued financial, institutional, and policy support to improve basic education. The Government's initiative in preparing and recently approving the New Education Policy is a good example, and provides the basis for implementing various reforms at all levels of education.

(ii) **Long-term continuity of ADB support.** While long-term continuity of development partners' support helps sustain project outputs and outcomes, a follow-up project should be taken as an opportunity to develop new activities, building on the success of previous projects. It should not be used to accommodate activities that were delayed and could not be implemented in the previous project.

(iii) **Lack of identification of specific measures to sustain the projects at the design stage.** The projects lacked built-in measures for sustaining project outcomes and impacts. Such measures should be ensured during project design, for example, (a) government commitment to finance major recurrent costs of key project outputs and outcomes, particularly for education subsectors producing a public good; (b) preparation of regular O&M plans for project schools and other buildings; (c) identification of potential local stakeholders to be involved in strengthening school management committees for primary and secondary schools, and learning centers for nonformal education, and for mobilizing local resources; and (d) requirements for retaining staff trained by the project.

(iv) **Lack of appropriate mix of modalities.** The project mind-set and procedures resulted in ignoring activities after project completion, while ad hoc provision of advisory TA resulted in piecemeal and ineffective policy and institutional reforms. A more appropriate approach, for example, a program approach, in close coordination with development partners and a mix of modalities, should be explored to facilitate policy and institutional reforms in a sustainable manner.

34. More general lessons could also apply to other sectors.

(i) **Lack of specific information on risks to sustainability in the project's design and monitoring framework.** Risks to sustainability and mitigation mechanisms identified in the DMF were generally too broad and could not be linked to measures needed to sustain the project since these measures were normally not identified during project design. Loan covenants provided more information related to project sustainability.

(ii) **Lack of results-based sustainability assessment.** Once a project is completed, there is no more project. What remains visible and tangible are the project's physical outputs, which have been the focus of sustainability assessments in PCRs. However, beyond what can be physically seen are the more important aspects of the project—institutional and sector-specific outcomes and impacts—that need to be sustained since these are related to results achieved. Thus, for a sustainability assessment to be results-based, it should focus more on assessing sustainability of the project's institutional outcomes and sector-specific outcomes and impacts.

E. Summary of Cases in Water Supply and Sanitation and Irrigation Sectors

1. Water Supply and Sanitation Subsector

a. Selection of Cases

35. Two water supply projects in Viet Nam were selected for review as part of a broader evaluation of ADB's Water Policy and Operations. The projects illustrate a range of issues as the relevant water supply companies are seeking to expand their coverage area and increase their tariffs while striving to meet the full costs of their networks. Given the PRC's wide experience in WSS projects, the Harbin Water Supply Project was also reviewed. The Harbin Project represents an integrated solution to the severe water quality problem in Harbin City. The three projects were approved between 1995 and 2003. The PCRs all fall within the 2001−2009 period (Table A6.4). Two of the PCR sustainability ratings were *likely* and one *less likely*. A PPER for one of the projects in Viet Nam rated the project as *likely*.

Table A6.4: Summary for Water Supply and Sanitation Sector Cases

Loan No.	Project Name	Loan Approval Date	PCR Date	PCR Rating on Sustainability	PPER Date	PPER Rating on Sustainability
VIE-1361	Provincial Towns Water Supply and Sanitation	17 August 1995	Dec 2005	Less Likely		
VIE-1514	Second Provincial Towns Water Supply and Sanitation	27 February 1997	Dec 2006	Likely	Dec 2008	Likely
PRC-1995	Harbin Water Supply	11 March 2003	June 2009	Likely		

PCR = project completion report, PPER = project performance evaluation report, PRC = People's Republic of China, VIE = Viet Nam.
Source: ADB IED database.

b. Summary Findings on Sustainability in the Water Supply and Sanitation Subsector

36. The two WSS projects in Viet Nam were completed a few years ago. Two main factors have supported their continuing sustainability. The first is partly exogenous to the project; the increasing affluence of the country and major urban centers. An incentive for the local government is to expand coverage and increase the supply period where currently it is less than 24 hours (as in Ninh Binh). Water is seen as an essential good, and recent trends in tariffs indicate that the provincial people's committees of the towns support the concept of viable water companies. Combined with further internal and project-related investment, the companies are expanding coverage to nearby communes, a move that underpins financial viability. The second factor is the strong capacity of the water companies to manage their networks effectively. Considerable efforts have been made to reduce nonrevenue water, and to improve leak detection, e.g., by subdividing the network in Thanh Hoa. However, nonrevenue water remains close to 30% and requires ongoing attention, e.g., (i) completing rehabilitation of water mains, (ii) installing meters for all connections, and (iii) deploying specialist leak detection teams and equipment.

37. Three main factors have supported the sustainability of the urban water supply projects in Harbin, PRC. The first is institutional reforms that have consolidated the implementing agency, the Harbin Municipal Water Supply Construction Company, with the Tap Water Company, together with wastewater treatment facilities. This consolidation will ensure smooth coordination among different functions. Second, Harbin City is following the national guidelines

on water tariffs issued by the Ministry of Construction, which requires water supply companies to increase tariffs progressively toward achieving full cost recovery. It was noted that Harbin had not increased its tariffs in accordance with loan covenants, but since it is required to follow the national guidelines, it is only a matter of time before water tariffs in Harbin achieve full cost-recovery levels. Third, there is an appropriate balance between estimates of the financial internal rate of return (FIRR) and economic internal rate of return (EIRR) in the PCR—7.6% and 14.5%, respectively—showing that project benefits were accruing to both the company and its customers.

38. The environmental risks to sustainability foreseen by the PCR and the PPER in Viet Nam now seem largely to have been overcome. The only significant risks for the centers visited as of 2010 are (i) a possible future (but unlikely) reversal of the decision by the local government to support semi-autonomous (equitized) water companies; and (ii) inadequate provision for depreciation/amortization, which may threaten the ability of the companies to engage in the next round of major investment or renovation without further external assistance. The first risk is considered minor, but the second requires ongoing assessment of long-term financial needs on a company-by-company basis.

39. Of the five water and irrigation projects, only the last in each category had a DMF. For the WSS projects in Viet Nam, apart from common assurances on financial ratios and operations, assurances provided that tariffs would follow the conclusions of a national tariff study, and meet all costs including part of future capital requirements. Nevertheless, guidelines were still required on retention of amortization and funding of future investments, and major hotels were required to contribute to capital costs also. In the PRC, risks stemmed from possible lack of public support for tariff increases, and adequate quantity and quality of source water. Tariffs were expected to be sufficient to allow full autonomy of the supply organization, while poor households would be connected, and supplied with a meter and water, without any charges. Assurances included full autonomy for the water supply organization, and construction of a wastewater treatment plant and sewers in the city.

c. Factors Affecting Sustainability in the Water Supply and Sanitation Subsector

40. Key approaches for promoting sustainability in these cases are the following.

(i) **Water production.** By expanding on a cost-effective basis, and, where relevant, using local financial resources for expansion, a company can achieve rapid self-funded expansion of its production or network. Water sales can be increased by expanding and infilling the network. An externally funded project can take several years from concept to completion.

(ii) **Network management.** Installing a meter for every connection where possible allows volume-based charging. Consumers are more willing to pay for 24-hour water of high quality than for intermittent supply or poor quality water. Reduction of nonrevenue water, including effective leak detection, is desirable.

(iii) **Tariffs.** Negotiated tariffs should allow long-term viable O&M and rehabilitation, with support from national policies and local administration. Adoption of block tariffs (as in Thanh Hoa and other project towns) as a pro-poor and pro-conservation measure is justified so long as the financial viability of the water company is not jeopardized.

(iv) **Commitment**. Both the government and ADB showed commitment to careful assessment and project design during loan processing, including cost estimates,

financing plan, and clear and detailed procurement and implementation plans, which helped speed up project development.

41. A positive factor relating to but not a direct part of these projects was the conduct of a benchmarking survey in Viet Nam between 2004 and 2007. Identifying good and bad performance (for example, in terms of cost per cubic meter or staffing) allows water companies to see how their performance compares with that of other towns. The Association of Water Companies in Viet Nam is a good vehicle for organizing dissemination of information as well as providing the industry with a more or less unified voice. Such associations could be considered for establishment and support in other DMCs.

42. The risks to sustainability include the following.

(i) The support of the people's provincial committees in Viet Nam for the newly equitized companies, in terms of the establishment of viable tariff regimes, may decline.
(ii) The separation of the WSS functions as now evolving is seen as undesirable in most circumstances. Management and operation of the system are similar, while revenue from sanitation can be related to water fees and collected at the same time.
(iii) Some water companies run unrelated businesses such as tourist hotels. While those can contribute to revenue in principle, it is a high risk activity as (a) it can distract management attention, and (b) it may disguise poor performance in water sales. It would seem more relevant for companies to divest themselves of non-water-related assets and apply the proceeds to network expansion or performance improvement.

2. Irrigation Subsector

a. Selection of Cases

43. Two irrigation projects, the Irrigation and Flood Protection Rehabilitation Project and the Red River Delta Water Resources Sector Project, were selected for sustainability assessment, as part of a broader evaluation of ADB's Water Policy and Operations. The two illustrate the importance of funding for maintenance, getting the incentives right, and managing environmental considerations. They were approved between 1993 and 1994. Their PCRs fall within the period 2001–2009 (Table A6.5). One PCR was rated *likely.* The other one was rated *less likely*, but was upgraded to *likely* in the PPER.

Table A6.5: Summary for Irrigation Sector Cases

Loan No.	Project Name	Approval Date	PCR Date	PCR Rating on Sustainability	PPER Date	PPER Rating on Sustainability
VIE-1259	Irrigation and Flood Protection Rehabilitation	26 October 1993	July 2004	Less Likely	September 2005	Likely
VIE-1344	Red River Delta Water Resources Sector	13 December 1994	December 2002	Likely		

PCR = project completion report, PPER = project performance evaluation report, VIE = Viet Nam.
Source: ADB IED database.

b. Summary Findings on Sustainability Assessment in the Irrigation Subsector

44. The sustainability of the irrigation sector in Viet Nam seems likely. O&M of the main system (primary and secondary) infrastructure is now funded from the central budget through provincial allocations to their irrigation and drainage management companies (IMCs). Sustainability is largely a function of the adequacy and continuity of budget allocations. With only 2 years experience, three IMCs reported that the timing of budget release had substantially improved, compared with the earlier reliance on irrigation service fees (ISFs) collected by farmer organizations. Budget releases were timed appropriately to meet minor maintenance needs and to allow spring (dry season) irrigation to be completed, and were higher than under the ISF system. At present, regular budget allocations are reportedly sufficient for routine repair and maintenance, but larger repairs or main structure rehabilitation remains dependent on specific project budget allocation. The IMCs are considered effective managers of their irrigation systems.

45. Maintenance of the tertiary to on-farm systems is the responsibility of the agricultural service cooperatives (ASCs). The ASCs continue to collect fees at a level agreed upon by their members, employ water bailiffs, and undertake maintenance. Cooperative membership is based on the commune where the farmer using irrigation resides, not on hydraulic boundaries. The ASCs in general seem to be collecting sufficient fees to run their tertiary systems, at a level about half of the previous full ISF. A negative factor is the loss of potential for long-term farmer ownership of irrigation infrastructure.

46. For the irrigation projects, a major risk was the effects of floods and typhoons during construction, which are mitigated by providing for flood discharges. Risks were also seen in relation to continued farming during construction, limited loss of land to non-farming activities, and maintaining the current fee recovery system. In the first case, a work plan for O&M and cost recovery would be prepared; in the second case, new monitoring and evaluation procedures would be instituted, and a suitable training institution identified. It was assumed that rice prices would remain stable, agricultural inputs available, and crop productivity improved.

c. Factors Affecting Sustainability in the Irrigation Subsector

47. Threats to sustainability of lowland irrigation systems in the Red River delta are mostly out of project control. They include (i) the inability to undertake major self-funded main system renovation when needed; to date such activities have been undertaken through externally funded projects, but in the future will need to be locally financed; (ii) increasing intrusion of salinity into estuaries, owing to a rise in sea level and excessive extraction of groundwater; and (iii) in the longer term, reduced river flow owing to construction of main river dams on the Mekong and Red rivers. However, dams can also even out wet and dry season flows, particularly if used for flood storage and irrigation rather than hydropower, and may limit salinity ingress to estuaries.

48. Internationally, there has been a strong move toward farmer ownership of irrigation assets. Such ownership, which is held to be the most efficient and sustainable option, leads to elimination of government support. This needs to remain a long-term target in Viet Nam, which may need to move back toward a user-pays system in the future.

F. Summary of Cases in the Financial and Small and Medium-Sized Enterprise Sectors

1. Selection of Cases

49. This summary is based on a review of ADB-assisted programs in the financial sector including SME development. Detailed cases were for four programs, including ones with two or three subprograms, and one project. The operations were approved between 1996 and 2004 (first subprograms), and at completion had sustainability ratings ranging from *most likely* to *unlikely*. With one exception, dates of PCRs were in the last 2 years (Table A6.6). Determining sustainability is more difficult for programs than for projects because of an undefined "life" for programs, the long time required to show the outcomes and impacts of reforms, and problems in attribution. Most of the programs, including two program clusters, were completed only recently and PPERs were completed only for two, which confirmed a *most likely* sustainability rating in one case and downgraded the other to *likely*.

Table A6.6: Summary for Financial and Small and Medium-Sized Enterprise Sectors

Project Name	Loan No.	Approval Date	Date of Loan Closure	PCR Date	PCR Rating on Sustainability	PPER Date	PPER Rating on Sustainability
Financial Sector Programs							
Financial Sector Program (Viet Nam)	1485-VIE	Nov 1996	Dec 1999	Dec 2001	Most likely	Dec 2003	Most likely
Financial Sector Program (Cambodia)				May 2008	Most likely	Jun 2009	Likely
- Subprogram I	1859-CAM	Nov 2001	Dec 2003				
- Subprogram II	1951-CAM	Nov 2002	Aug 2005				
- Subprogram III	2185-CAM	Sep 2005	Oct 2007				
Small & Medium-Sized Enterprise Development Programs							
SME Development Program (Viet Nam)				Dec 2009	Most likely		
- Subprogram I	2095-VIE	Oct 2004	Dec 2006				
- Subprogram II	2284-VIE	Dec 2006	Mar 2009				
Industrial Competitiveness & SME Development Program (Indonesia)	1738-INO	Mar 2000	Dec 2004	Dec 2008	Likely		
SME Export Development Project (Indonesia)	1978-INO	Dec 2002	Sep 2008	Sep 2009	Unlikely		

CAM = Cambodia, INO = Indonesia, PCR = project completion report, PPER = project performance evaluation report, SME = small and medium-sized enterprise, VIE = Viet Nam.
Source: ADB IED database.

2. Summary Findings on Sustainability Assessment in the Financial and SME Sectors

50. Good program design, preceded by a thorough analysis of issues and constraints, a careful formulation of policy responses, and sequencing of reforms tailored to the specific context and in consultation with a range of stakeholders, is essential for subsequent sustainability of outcomes. An example of faulty diagnostics and a design that was not relevant and therefore unsustainable is the SME Export Development Project. The project also illustrates the danger of adopting a standard approach that did not adequately take into account the specific conditions affecting SMEs at the time. Successful SME development programs, on the other hand, were preceded by substantial preparatory work and, sometimes, by extensive policy dialogue with all stakeholders. The design of a program needs to be validated continuously by reviewing the results throughout implementation and to ensure on program completion that the

reforms are producing the desired results. Policies that are ineffective or have adverse consequences should be changed or scrapped.

51. Implementing major sector reforms in a single stroke is not advisable, but neither does undertaking piecemeal reforms make sense. The review suggests it is most effective to place individual short- to medium-term sector programs within a long-term overall vision and development strategy for the sector accepted by the national authorities. Such a strategy provides stronger direction, improves program design and effectiveness, and provides momentum for continuing reforms, which, in turn, reinforces the sustainability of reforms already implemented.

52. The reviews showed that periods of 1−3 years for implementation are often not enough for complex reform programs. While it may be long enough to complete the required policy actions, it usually takes much longer for line agencies to fully implement and operationalize new laws, rules, and procedures. Human capacity and institutional development, in particular, takes more time than anticipated and support is usually needed for longer than provided. Much of the actual implementation of policies—in the case of SME programs, the registration of enterprises, issue of licenses, and quality certification—is done by provincial and local institutions. The capacities and capabilities of local institutions also warrant examination to determine their capacity development needs. TAs are, therefore, a key input for implementing policy and institutional reforms. ADB had provided one or more associated TAs with each program. However, the PCRs frequently report that progress on capacity development was slow.

53. Engagement during program implementation was insufficient. While there was policy dialogue with the governments leading up to loan approval, there was relatively little policy dialogue during implementation, which focused primarily on monitoring compliance with policy conditions. Studies have shown, however, that policies that work well in one country may have poor, unintended, or negative results in others. It is therefore necessary to enhance the level of engagement during implementation to identify gaps in the program, correct for unintended consequences of policy measures, build ownership and constituencies, and monitor how government agencies operationalize the reforms. Since ADB's ability to directly influence policies ends when the loan is closed, the implementation period is important for making midcourse correction and undertaking mitigating measures to enhance the sustainability of reforms.

54. Continuing engagement enhances sustainability. It can take several forms, e.g., supporting reforms through multiple program loans, preferably within a long-term development strategy. Another, which ADB has recently started to use in a limited way, is a post-program partnership framework under which dialogue is continued even after loan closure, with the possibility of further funding. Currently the main focus of TAs is on helping governments comply with policy conditions. Extending the role of TAs beyond loan closure to continue to build capacity and operationalize reforms would improve TA effectiveness and sustainability. The issue of funding for continued capacity development and effective functioning of organizations was raised in several PCRs, but no answers have been provided.

55. A related issue is the future funding of operating costs. While many policy actions require no further funding once they are completed, financing is still required to cover the expenses of certain activities after loan closure. These may include government expenditures, for example, for supervising banks and other financial institutions or policy coordination units for SME development; and expenditures by commercial enterprises, for example, for better risk management, listing fees, and quality certification charges. PCRs point to delays or the non-

allocation of counterpart funds for program expenses even during the implementation period. The future financing of these expenditures is not really addressed in the loan documents, perhaps because each expense is viewed as a marginal impost on the budget.

56. The fundamental importance of government commitment for the successful implementation of a program and its future sustainability was universally recognized and cited as the main, even the only, risk to implementation and sustainability. During appraisal, a government's implementation of earlier policy reforms was taken as an indicator of government commitment to future reforms. This analysis needs to be more rigorous to identify the incentives or disincentives for governments (including provincial and local government entities) to implement proposed reforms, as well as constituencies for or against those reforms. The program can then incorporate suitable measures to promote support, such as building participation and constituencies during project implementation. Evaluation of the extent of commitment and measures taken to reinforce it was generally limited, with overreliance on policy conditions that had been met. The two interesting instances of actions to reinforce sustainability were (i) extensive preparatory work with stakeholder consultation to promote ownership and commitment to the program, and (ii) strengthening the independence of key organizations to make it more difficult for the government to undermine or backtrack on reforms.

57. A related issue bearing on sustainability is the origin or ownership of the reform program, specifically whether reforms are driven by the government's own recognition of the need for changing the policy environment. It is important to have a key domestic constituency in favor of reforms. For example, the sustainability of the Industrial Competitiveness and Small and Medium Enterprise Development Program in Indonesia would have been less likely without the support of pro-reform technocrats within the government.

58. While there is a mandatory section in RRPs on risks to the program at appraisal, the discussion is often generic, including reference to the commitment and capacity of various stakeholders. A more detailed discussion of risks to and incentives for future sustainability is also needed at completion to strengthen the rating assessment. A more thorough assessment of risks would provide a check on project design, identify mitigating measures that were still needed, and provide early warning of program failure. A common risk for the financial sector and SME development programs was the required coordination among government agencies, which needed to be managed. Communication must also be maintained with the other development partners and also the private sector, partly to ensure that private sector compliance costs were manageable. A key issue in assessing sustainability of outcomes is the response to reforms of the real sector; it was acknowledged that effectiveness would be enhanced in a context of broad-based growth, which was occurring in the early to mid-2000s.

3. Factors Affecting Sustainability in the Financial and SME Sectors

59. This review has identified the following considerations as important factors for promoting the sustainability of programs in the financial and SME sectors.

(i) Good program design and formulation is essential. Sustainable programs are based on a thorough analysis of issues and diagnosis of constraints, a careful formulation of policy responses and sequencing of reforms tailored to the specific context and in consultation with a range of stakeholders.
(ii) Who initiates the reforms and when they are undertaken matters. Whether the reforms are driven by the government's own recognition of the need for changing

the policy environment or whether they are largely donor-driven affects the level of ownership of reform programs and ultimately their sustainability.

(iii) Major sector reform programs involve legislative, rule, and operational changes in the sector as well as in complementary areas. As a result, the time frame envisaged for completing individual programs is often insufficient for implementing all the agreed-upon policy actions; often, some of the unfulfilled conditions are met after loan closure. Human and institutional capacity development, in particular, normally takes more time than anticipated.

(iv) The capacity development needs of government institutions should be given greater attention. Extending the role of TAs beyond loan closure to continue to build capacity and implement reforms would improve the effectiveness and sustainability of the reforms.

60. A review of project documents and interviews with staff revealed differences in the way programs are rated and in the approach adopted by individual evaluators. One approach is to tie the assessment of sustainability closely to the fulfillment of planned outputs. An alternative approach is to assess the sustainability of a program focusing on the sustainability of reforms that are implemented. This is analogous to the way efficiency of investment projects is assessed by computing the revised economic rates of return only for the components that are implemented. Specific guidance for assigning a particular sustainability rating to a program should be provided.