

Learning from First-Generation Strategic Environmental
Assessments Supported by the World Bank

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Abbreviations

BP	Bank Procedure (World Bank)
CAS	Country assistance strategy
CEA	Country environmental analysis
CTS	Comprehensive transport strategy
EA	Environmental assessment
EEAA	Egyptian Environmental Affairs Agency
EER	Energy-environment review
EIA	Environmental impact assessment
EPA	Environmental protection agency
EU	European Union
GDP	Gross domestic product
IAIA	International Association for Impact Assessment
ICR	Implementation completion report
MCSM Project	Mine Closure and Social Mitigation Project (Romania)
MLEA	Microlevel environmental assessment
MMRDA	Mumbai Metropolitan Region Development Authority (India)
MUTP	Mumbai Urban Transport Project (India)
NAMR	National Agency for Mineral Resources (Romania)
NEA	Nepal Electricity Authority
NEAP	National environmental action plan
NGO	Nongovernmental organization
NHDP	Nepal Hydropower Development Project
OD	Operational Directive (World Bank)
OP	Operational Policy (World Bank)
PDF	Power development fund
PIA	Project implementing agency
PLEA	Programmatic-level environmental assessment
PT+DM	Public transport plus demand management
SAL	Structural adjustment loan
SEA	Strategic environmental assessment
SECAL	Sector adjustment loan
SLEA	Sectoral-level environmental assessment
TDF	Tailings disposal facility
TMF	Tailings management facility
WATSAL	Water Sector Adjustment Loan (Indonesia)

Executive Summary

Strategic environmental assessment (SEA) refers to a range of analytical and participatory approaches that aim to integrate environmental considerations into policies, plans, and programs and evaluate the interlinkages with economic and social considerations. The World Bank *Environment Strategy*, 2001, highlights the importance of SEAs as an upstream analytic tool to address complex cross-sectoral environmental issues and help integrate environmental and sustainability considerations into sector policies, plans and programs. This paper undertakes an in-depth analysis of selected strategic environmental assessments supported by the World Bank during the period 1996–2003—what we refer to here as “first generation” SEAs. Until now, no thorough review of first-generation SEAs had been performed.

Analysis presented in the paper is based on experience with a set of case studies of first generation SEAs in the spirit of learning from this earlier experience, in particular from the relatively better examples. The selection of case studies was initially guided by International Association for Impact Assessment (IAIA) criteria for good-practice SEAs—that is, SEAs that are integrated, sustainability led, focused, accountable, participative, iterative, and influential. However, because of lack of information, these criteria could not be strictly applied, and the report team therefore relied heavily on available documentation and on the advice of colleagues and experts. In assessing each of the case studies, its context, institutional base, methodologies, and process of preparation and consultation were examined. While the paper is mainly based on interviews with SEA team members and available documents, and does not benefit from interviews with partner-country stakeholders, it nevertheless provides important insights into how SEA practice within the Bank has evolved, the types of results that can be linked to SEAs and lessons for future preparation of SEAs.

The analysis shows that SEAs have helped integrate environmental issues into Bank projects and in a number of instances have served as important decision-making tools for consideration of alternatives based on environmental and sustainability considerations. Several factors emerge as important for positive results; these include the organizational base in which the SEA process is anchored; World Bank involvement through such means as safeguard policies and analytical and advisory activities; visibility of the sector; significant participation by relevant stakeholders; and contextual features linked with the timing and preparation of the SEA. The paper shows why these factors are important and draws lessons for the next generation of SEAs.

1. Introduction: Definitions and Methodology

The proactive integration of environmental considerations into policies, plans, and programs—a process broadly referred to as strategic environmental assessment (SEA)—is a key element of sustainable development. Although the main responsibility for addressing environmental issues prior to undertaking development activities lies with countries themselves, the World Bank and other development organizations have played a crucial role in supporting such efforts. In the Bank, SEAs have been undertaken in the course of implementing the institution’s safeguard policies, as part of analytical and advisory activities and training, and in the context of the recently approved Operational Policy (OP) 8.60 relating to development policy lending (see box 1). These efforts have resulted in a large body of analytical work.

Even though SEA practice is growing and evolving, it is important to learn from the first generation of SEAs and similar assessments, and particularly from the better examples. So far, no thorough review of these past SEAs has been performed. This report seeks to fill the gap. Specifically, it takes an in-depth look at a selection of SEAs supported by the World Bank during the period 1996–2003 and draws lessons from them on how to integrate environmental issues at the strategic level, where “strategic” refers to the integration of environmental considerations at the earliest stages of decision making on policies, programs, and plans.¹

In this chapter, we define strategic environmental assessment and discuss the approach used to select and assess the case studies considered here. Chapter 2 presents the five case studies that were chosen for analysis, and chapter 3 summarizes the main findings and lessons from the study.

What is strategic environmental assessment?

There is considerable debate in the literature and in the development community regarding what constitutes strategic environmental assessment, the range of tools that can be designated as SEAs, and the appropriate methodologies for undertaking these types of assessment (see OECD 2006). An early definition of SEA refers to it as the “formalized, systematic, and comprehensive process of evaluating the environmental effects of a policy, plan, or program and its alternatives, including the preparation of a written report on the findings of that evaluation, and using the findings in a publicly accountable decision-making” (Therivel and others 1992). A recent note defines SEA as “a participatory approach for upstreaming environmental and social issues to

¹ The focus here is on World Bank experience. A detailed review of case studies looking more broadly at international experience is outside the scope of this paper and should be made the subject of a separate study.

influence development planning, decision-making and implementation process at the strategic level” (Ahmed, Mercier, and Verheem 2005). Despite the debate over the specifics and boundaries of SEA, it is increasingly recognized as a continuum of approaches rather than a single, fixed approach (see OECD 2006). For the purposes of this paper, we understand SEA as a range of analytical and participatory approaches that integrate environmental considerations into policies, plans, and programs and evaluate the interlinkages with economic and social considerations (from OECD 2006, 30). In the World Bank, work similar to SEAs can have a variety of labels—energy-environment reviews, sectoral environmental assessments, regional environmental assessments, or transboundary environmental analyses. Here, all these are considered SEAs to the extent that they enable scrutiny of environmental and social concerns at broad decision-making levels and the integration of these concerns into decision making.

Box 1 Contexts in which strategic environmental assessments (SEAs) have been performed in the World Bank

- *Environmental assessment policy and safeguard policies.* Since 1989, the Bank’s environmental assessment policy (OP/BP 4.01) may require an SEA for large sectoral investment projects and regional projects. The borrower carries out the SEA, and the Bank has a review function.
- *Analytical and advisory services.* Analytical and advisory activities typically form the backbone of the dialogue between the Bank and a borrower, often in the context of the preparation of the country assistance strategy (CAS). Examples include energy-environment reviews (EERs), which are typically financed by the Bank and are carried out in close coordination with the country involved.
- *Capacity building and training.* The Bank assists clients in building capacity to carry out SEAs in response to their own legislation or their own needs.
- *Development policy lending.* This is a new application, recommended as good practice for integrating environmental concerns into macroeconomic and sectoral reform lending. SEA in this context is not yet fully developed, since the relevant policy (OP/BP 8.60) became effective only in September 2004.

Source: Ahmed, Mercier, and Verheem 2005.

Note: BP, Bank Procedure; OP, Operational Policy.

<<end box 1>>

Unlike other strategic analytic tools such as country environmental analysis (CEA), strategic environmental assessment has emerged from experience with addressing environmental and, in some cases, social and economic concerns at the level of policies, plans, and programs. (See table 1 for a comparison of CEA and SEA.) Given this history, the approach that has dominated analysis of environmental issues at the strategic level has been derived from experience with environmental impact assessment and has followed a somewhat linear typology involving the scoping, screening, impact assessment, mitigation, and monitoring of the environmental implications of projects and plans. Although political-economy issues are just as relevant at the

project level as at the level of policy analysis, assessment of political processes underlying management of environmental concerns has typically been a missing issue in SEAs.

Table 1 Country environmental analysis and strategic environmental assessment compared

	<i>Country environmental analysis (CEA)</i>	<i>Strategic environmental assessment (SEA)</i>
Definition	CEA is a country-level environmental analytical tool that seeks to integrate environmental considerations into development assistance strategies and programs and to guide institutional reform and capacity-building efforts. Key building blocks of CEAs include determination of environment development priorities linked with growth and poverty reduction, and assessment of institutional and organization capacity, both with respect to environmental institutions and also linked with environmental and development priorities (see the CEA concept note, World Bank 2002b).	SEA refers to a range of approaches and tools for integrating environmental and social considerations at the policy, plan, or program level.
History	CEA has developed from the history of such instruments as national environmental action plans (NEAPs), national strategies for sustainable development (NSSDs), country environmental strategy papers (CESPs), and country environment profiles.	SEA has emerged from experience with applying environmental impact assessment (EIA) methodologies to programs, plans, and policies.
Level of analysis and priority setting	Environmental and development priorities are established across sectors at the national or subnational level.	The traditional emphasis has been on key environmental risks within a sector or region; newer approaches tend to determine priorities within sectors even if more than one sector is being addressed.
Focus and advantages	The typically cross-sector focus allows a broad perspective and assists in determining priorities at the country or subnational level. Analysis of institutional and organizational issues is undertaken both with respect to environmental institutions more broadly and with respect to key environmental-development issues established as priorities in the CEA.	The focus tends to be on a specific sector. The main strengths are twofold: SEA opens a dialogue among key stakeholders on environmental issues relating to a particular sector, and it has the potential to integrate economic, social, and environmental issues in the analysis.
Similar tools	Country social analysis; institutional and governance review.	Poverty and social impact analysis; social impact assessment.
Analysis of institutional and governance issues	Institutional analysis, undertaken with respect to the main environmental and development priorities, is a key analytical component of CEA.	Institutional and governance issues may or may not be addressed; for policy SEAs they are a principal component.
Client counterpart	Typically ministries of environment; in some cases ministries of finance and planning have also been main champions for CEA.	Sector ministry or agency where the program, plan or policy is located; in some cases, environmental ministries or agencies.

Moreover, there has been much greater concern about predicting and mitigating negative environmental consequences than about using the SEA to address positive development outcomes. More recent “institution-centered” SEAs recognize the importance of political-economy processes and the need to balance power relations and stakeholder motivations and interests in bringing about policy reform. They focus on putting in place institutional mechanisms that can lead to sustainable development outcomes in the long run. A recent Bank publication (World Bank 2005b) reviews Bank and non-Bank policy SEAs and presents conceptual thinking regarding institution-centered SEAs. Experience with this approach is developing and will enrich existing experience with SEAs.

Methodology

The original aim of the paper was to identify a set of good-practice SEAs according to a number of criteria (see box 2). The case studies were chosen through a staggered selection process that relied on available documentation and on consultation with colleagues and experts. The process was inherently subjective and relied on the team’s best judgment. The team started by screening 71 case studies of SEA-type activities supported by the Bank between 1996 and 2003. In the first, coarse reading of the set of projects, the questions asked were these: Did the report clearly present and analyze the key environmental issues associated with the addressed strategic decisions? According to its objectives (as stated in the report or as understood from the material), did the study have the potential to upstream environmental and social considerations and influence the particular strategic decision or future decision-making processes? Did the report provide clear evidence that an appropriate attempt was made to involve in the study all the key stakeholders—the affected and interested environmental and sectoral public and government bodies? Did the report include a meaningful analysis of alternatives, and was the level of detail sufficient to indicate that different alternatives were seriously considered?

Box 2 Characteristics of a good-practice strategic environmental assessment

Initially, seven criteria were proposed for selecting good-practice SEAs for in-depth study. One was that the SEA should be influential. The other six criteria are those of the International Association for Impact Assessment (IAIA): a good SEA is integrated, sustainability led, focused, accountable, participative, and iterative. These characteristics are explained as follows:

Integrated. The SEA ensures an appropriate environmental assessment of all strategic decisions relevant for the achievement of sustainable development; it addresses the interrelationships between biophysical, social, and economic aspects; and it is tiered to policies in relevant sectors and (transboundary) regions and, where appropriate, to project environmental impact assessment and decision making.

Sustainability led. The SEA facilitates identification of development options and of more sustainable alternative proposals.

Focused. The SEA provides sufficient, reliable, and usable information for development planning and decision making; it concentrates on key issues of sustainable development; it is customized to the characteristics of the decision-making process; and it is cost- and time-effective.

Accountable. The SEA is the responsibility of the lead agencies for the strategic decision that is to be taken; it is carried out with professionalism, rigor, fairness, impartiality, and balance; it is subject to independent checks and verification; and it documents and justifies how sustainability issues were taken into account in decision making.

Participative. The SEA informs and involves interested and affected public and government bodies throughout the decision-making process; it explicitly addresses their inputs and concerns in documentation and decision making; and it has clear, easily understood information requirements and ensures sufficient access to all relevant information.

Iterative. The SEA ensures availability of the assessment results early enough to influence the decision-making process and inspire future planning, and it provides sufficient information on the actual impacts of implementing a strategic decision to help in judging whether the decision should be amended and to provide a basis for future decisions.

<<end box 2>>

The application of the criteria turned out to be difficult and subjective; as the team came to realize, it was difficult fully to determine the extent to which SEAs had been sustainable and influential solely on the basis of a desk review and interviews with task managers. The original objective was therefore revised to identify a selection of better-practice examples that were noteworthy and provided fruitful lessons.

As a result of the initial reading, 25 SEA-type activities were selected. Several of these were dropped because they were environmental assessments rather than SEAs. A detailed desk review of documents relating to 18 projects was then undertaken (see appendix A for a list).²

² Brief reviews of each of the 18 projects have been prepared and are available from the team on request or at “Strategic Environmental Assessment Toolkit,” <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/ENVIRONMENT/0,,contentMDK:20885941~menuPK:2450778~pagePK:148956~piPK:216618~theSitePK:244381,00.html>.

The aims of the desk review were (a) to define the background, rationale, objectives, and methodology of the assessment, (b) to identify potential good-practice elements, and (c) to determine what additional information had to be collected for rating purposes. After discussions with task team leaders and team members, the SEAs were rated on a scale of 1 to 5, with 1 representing satisfactory. This rating led to the selection of five cases for further study:

- SEA for the Water Sector Adjustment Loan, Indonesia
- Sectoral environmental assessment for the Mine Closure and Social Mitigation Project, Romania
- Environmental assessment for the Mumbai Urban Transport Project, India
- Sectoral environmental assessment for the Nepal Hydropower Development Project
- Energy-environment review, Arab Republic of Egypt

Three of the cases focus on programs and two (Egypt and Indonesia) on policies. The cases chosen represent interventions in four sectors: transport, mining, water, and energy.

Analysis of the case studies was based on available documentation such as the SEA reports themselves, project appraisal documents, and implementation completion reports. It also drew on detailed interviews with task managers and team members linked with each of the selected cases. The main focus was on understanding the context, objectives, methodology, process, results, and factors in success of each assessment. Several of the cases discussed here were prepared as environmental assessments and sectoral environmental assessments, but because of their upstream nature, they have been regarded as strategic environmental assessments.

This review has several limitations.

1. Because of resource and time issues, partner-country stakeholders were not interviewed to determine why the selected cases were noteworthy and how results in each case have (or have not) been sustained in the longer term. Omitted, for example, is any discussion from the perspectives of policy elites as to why they supported integration of environmental issues into the projects and policies discussed here. Moreover, field evidence of the actual utilization of the SEA was not part of this review. In the future, having partner-country stakeholders contribute to the analysis will be important.

2. Political-economy considerations, although crucial in explaining why environmental issues became integrated at the project, plan, or policy level and how they shaped development outcomes, receive only peripheral discussion in this review. An analysis reflecting these considerations would require in-depth, microlevel analysis of the circumstances surrounding each case—something it was not possible to undertake for this paper.

3. Statistical conclusions were not an objective of this review. In particular, no analysis by sector or region was conducted; such an undertaking would require a much larger sample.

4. The review considered SEA and SEA-type activities during the period 1996–2003. Analyses of more recent examples are not included here but are being prepared as short dissemination notes (see, for example, Sanchez-Triana and Enriquez 2006). A comprehensive review of SEAs from 2004 onward is planned.

2. Analysis of the Case Studies

In this chapter we discuss each of the five case studies and highlight factors that contributed to positive and environmentally sustainable results.

Case 1: SEA for the Indonesia Water Sector Adjustment Loan

The strategic environmental assessment for the Indonesia Water Sector Adjustment Loan (WATSAL) was prepared in the late 1990s to support policy and institutional reforms in the water sector.³ At the time Indonesia, along with several other East Asian economies, was undergoing a severe economic and financial crisis. The Suharto government, much criticized for its lack of transparency and accountability, had been overthrown, and an interim government led by President B. J. Habibie had taken office. The new administration was much more inclined toward policy reform in a number of sectors. One of these was the water sector, which was ridden with difficulties that included lack of coordination between agencies; poor accountability, transparency, and stakeholder participation in management; increasing water shortages and conflicts; fiscal problems, including failure to recover costs; watershed degradation and sedimentation; lack of reliable hydrological and water quality data; absence of management agencies at the river basin level; and worsening water pollution. In addition to being reform oriented, the new government supported greater dialogue with the regions, local governments, and civil society. In this broader context of political and economic transition, discussions between the government of Indonesia and the World Bank regarding a water sector adjustment loan began in mid-1998. Budget support to the government in the form of a sector adjustment loan was planned; this loan was linked to a range of policy and institutional reforms in the water sector.

At that time, the Bank's safeguard policies were under review. According to the World Bank Operational Policy on environmental assessment (OP 4.01), only investment loans and Bank projects were subject to an environmental assessment and other safeguard policies; sector and macroeconomic policy reforms, including sector adjustment loans (SECALs) and structural adjustment loans (SALs), were exempt. Operational Directive (OD) 8.60—a precursor to the new OP 8.60 on development policy lending—stated, however, that analysis of adjustment loans should consider environmental implications, since sound environmental management was a key objective of the Bank's assistance to countries. In anticipation of changes in Bank policy regarding assessment of the environmental implications of development policy lending operations

³ For details, see Indonesia (1999); World Bank (2000a).

(the new designation for SECALs, SALs, and so forth), the environment and rural development units in the Bank's East Asia and Pacific Region agreed to support preparation of a pilot environmental assessment for the Indonesian loan. Although the assessment was characterized as an environmental assessment, in spirit it was much closer to a strategic environmental assessment (SEA) and will be referred to as such in the following analysis.

Objectives

Since the SECAL did not involve a set of projects necessitating physical investments, a conventional environmental assessment was not possible (World Bank 2000a). What the assessment did address was a sweeping set of policy and institutional reforms in the water sector. These included establishment of a national water council or apex coordinating body; strengthening of provincial and river basin water resources management committees and basin management units; creation of new river basin management agencies; establishment of a system of water rights; introduction of a changed regulatory framework and the use of fiscal incentives to abate river and reservoir pollution by industrial and urban effluents; development of a national water resources management information system and database; and irrigation reform, including transfer of secondary canals to water users associations. The main objectives of the assessment were to provide information on the potential consequences of the reforms; to assess environmental risks associated with the reforms; and to prescribe mitigation and monitoring procedures to ameliorate any significant adverse impacts. The assessment was prepared by the government of Indonesia in accordance with the requirements of the Bank's Operational Policy on environmental assessment as part of project preparation, rather than in response to a national law or policy requirement.

Institutional base of the assessment

The SEA was prepared under the overall responsibility of Indonesia's National Development Planning Agency (Badan Perencanaan Pembangunan Nasional, BAPPENAS) and the Interagency Task Force on Water Sector Policy Reform. The task force operated under the joint chairmanship of the National Development Planning Agency and the Public Works Ministry. Its membership included representatives from the Ministries of Home Affairs, Public Works, Mining and Energy, Forestry, and Agriculture; the two existing river basin organizations; two provincial public works departments; the research organization Indonesian Institute of Sciences; and two nongovernmental organizations (NGOs). Making the SEA part of the overall responsibility of the task force enabled close linkage between the SEA process and the proposed reforms and thus

created the institutional space for greater consideration of alternatives and for horizontal accountability.

Methodology

The main methodological tool used for the assessment was a consultation process involving a wide range of stakeholders and designed to determine the environmental risks associated with each reform area and propose mitigation options. Consultations were conducted at the national, provincial, *kabupaten* (district), and local levels. A national consultation held in Jakarta brought together organizations such as the Chamber of Commerce, consumers' associations, NGOs, and academics with environmental expertise. In each of three selected provinces—West Sumatra, West Java, and South Sulawesi—three field meetings were held in representative districts. The overall process was managed by two national NGOs with expertise in both social and environmental issues, with locally hired facilitators operating in each province (Indonesia 1999). Participation of representatives from different sectors in a national policy reform process was particularly innovative at the time, given the more technocratic and top-down policy culture that had reigned until then.

Consultations were held in two phases. In the first, the consulted groups were informed of the planned policy reforms, and inputs were solicited from the participants. Later, at the end of SEA preparation, results were shared with the same groups, and final recommendations were sought. An informal NGO meeting was held in Bandung to address environmental concerns that might not have been raised by local water users and other participants.

The consultations led to identification of benefits and risks and to the consideration of alternatives to various reform measures. For instance, one of the reforms being considered was the creation of new river basin management agencies. The benefits would be greater autonomy in basin-centered management and better correlation of management activities with levies and taxes collected. A risk was that making revenue generation a priority could be a strong disincentive for environmental protection and for protecting the rights of less powerful stakeholders at the river basin level (World Bank 2005a, 14). To address this issue, it was determined that annual reports on activities, finances, and work plans would be published, thus subjecting the river basin management authorities to greater public scrutiny. Closer coordination with the national apex body proposed by the WATSAL reforms was suggested to ensure long-term budgetary support for conservation activities. Many of the concerns raised through the consultation process had

already been addressed in the program documentation, reinforcing the validity of the reform agenda.

The consultation process made it clear that many of the “environmental risks” being cited were in fact related to institutional and governance issues. Some of these concerns pertained to individual reform items, and others were generic to the reform process as a whole. Among the outstanding issues were overlapping regulations, weakness in implementation of environmental regulations, overruling of regional governments by higher levels of authority in policy implementation, lack of transparency and accountability in all areas, and weak capacity of water users associations to handle the roles and responsibilities proposed under the reforms (see World Bank 2005a).

The use of consultation at various administrative levels to assess environmental risks and alternatives was somewhat different from traditional stakeholder analysis. In general, stakeholder analysis is a tool used to identify the interests and incentives facing different groups and stakeholders and the likely winners and losers resulting from reforms. A key aspect is to analyze the political dynamics and power relations that surround social groups. In the WATSAL case, the main object of analysis was not who was for or against particular reforms; rather, the objective was to determine through consultation with stakeholders the environmental risks of proposed policy and institutional reforms. These risks were then taken into account in modifying the reform agenda.

In addition to consultations, a review of Indonesia’s environmental impact assessment system (AMDAL) and the procedures applied in water sector interventions was undertaken. While not extensive, it highlighted several weaknesses of the EIA system, especially with respect to large projects undertaken by sector ministries, and the reasons for its limited effectiveness. The problems included insufficient capacity of consultants preparing AMDAL reports; failure by central-level representatives to involve provincial government representatives enough in the environmental assessment (EA) process; neglect of monitoring responsibility by the central environmental ministry after approval of EA reports; and inadequate budgets for monitoring. The SEA did not make recommendations for improving the EA process, since there was an ongoing program to strengthen the Environmental Impact Management Agency (BAPEDALDA) through Asian Development Bank funding (World Bank 2005a, 26).

Results

SEA consultations and reporting took approximately four months and were able to inform the design of the reform process without delaying the preparation and approval (in May 1999) of the loan. The target group for the SEA was the interagency task force, which drafted the sectoral environmental assessment on the basis of the results of the first round of consultations. Many of the suggestions that emerged from the consultations were incorporated into the final design of the loan's reform agenda. Thus, the SEA process created a vehicle for learning and for improvement of a proposed set of policy reforms through inclusion of environmental governance issues.

An important long-term institutional change that resulted from the SEA process was the introduction of participation in policy reform. As a result of the SEA experience, the task force and sector agencies decided that most key reforms would be subjected to public consultations. The principle of public consultation is, accordingly, now part of the new water resources law (World Bank 2005a, 11). Given such results, a World Bank Quality Assurance Group (QAG) panel rated the SEA “highly satisfactory” (World Bank 2005a, 11).

Many of the issues that were highlighted in the preparation of the Indonesian assessment had to do with strengthening the policy and institutional capacity of various public sector agencies in the water sector, at both the national and regional levels. The SEA process thus provided a basis for institutional strengthening through the WATSAL. Issues that emerged from the consultative risk assessment were not always addressed in the WATSAL; an example was neglect of watersheds and watershed management (where the Ministry of Forestry is the lead agency). In terms of longer-term policy and institutional changes, however, the success of the SEA is linked to the success of the WATSAL. As the implementation completion report (ICR) for the project shows, many of the institutional reforms, such as the adoption of a national water resources management policy based on principles of sustainable integrated water resources management, were achieved. Others—for example, establishment of an effective national regulatory framework for control of water pollution, where implementation modalities were not realized—had limited success.

Factors in the success of the assessment

A number of factors enabled this pioneering SEA to be influential:

- *Political timing.* Receptivity to a participatory approach to policy reform was heightened in the context of the significant economic and political transitions taking place in the country.

- *Institutional base.* Making the SEA part of the overall responsibility of the task force on WATSAL provided the institutional mechanism for accountability that gave the SEA findings the potential to be incorporated into the water sector policy reforms. The use of local NGOs to lead the consultation process further strengthened ownership. Political backing of the task force by the National Development Planning Agency and the Public Works Ministry, as well as the inclusion in the task force of representatives from a range of sector ministries and agencies, were critical to the success of the SEA.
- *Complementary objectives.* Many of the findings of the SEA risk assessment complemented the objectives of the reform and did not require too many changes in program documentation. Thus, no unexpected winners and losers emerged as a result of the SEA recommendations. This outcome highlights the importance of undertaking stakeholder analysis at the earliest stages of project design.

Case 2: Sector environmental assessment for the Romania Mine Closure and Social Mitigation Project

Mining is a key economic sector in Romania, which has large reserves of metals, salt, uranium, lignite, and hard coal. In 1989 when output was at its peak, 278 mines were in operation; the mining sector provided direct and indirect employment to almost 10 percent of the population and covered 17,500 hectares of land (World Bank 1999, 2). In 1998, 90 percent of all mining activity was carried out by highly subsidized state-owned enterprises whose primary focus was on increasing production. Mining activities gave rise to numerous environmental issues—including discharge of contaminated water, release of fugitive dusts from handling and storage, contamination resulting from oil spillage, land subsidence, and radiological hazards—but these had been mostly neglected (World Bank 1999). In 1998 the government of Romania introduced a comprehensive strategy for reforming the mining sector that involved modernizing it, reducing subsidies, ceasing activities in mines that were dangerous or where reserves were becoming exhausted, and addressing employment and social mitigation measures for workers in mining regions. This plan was supported in the World Bank 1997 country assistance strategy and culminated in the Bank-supported Mine Closure and Social Mitigation (MCSM) Project.

As a first phase of the restructuring of Romania’s mining sector, the MCSM Project aimed (a) to permanently close 29 uneconomic mines in a socially and environmentally sustainable manner and undertake environmental remediation of mine sites; (b) to identify measures for mitigating social hardships resulting from restructuring of the sector, including support for diversified

employment opportunities; and (c) to bolster mining sector agencies and introduce a modern mining licensing system. A sector environment assessment was prepared specifically to inform the environmentally sustainable closure of selected mines. (This SEA-type analysis is considered an SEA for the purposes of this study.) Since the restructuring of the sector had involved unemployment of more than 80,000 mining sector workers and had been accompanied by significant discontent among laborers and labor unions, a social assessment was undertaken as part of project preparation to examine the social impact of restructuring and government efforts to address these impacts; to consider the views of mining communities and displaced workers; and to identify alternative employment and development possibilities (e.g., worker retraining, access to credit).

Objectives

The objectives of the sectoral environmental assessment for the MCSM Project were to evaluate environmental impacts with respect to past, present, and future mining operations; to review and make recommendations regarding the existing legal framework and institutional strengthening of relevant agencies; and to develop a mitigation plan for addressing priority environmental issues in the mining sector. Initially, the study focused mainly on state-owned mines still in operation, but additional work was done to cover environmental issues linked with both privately operating mines and mines that were nonoperational (closed or in the process of being closed).

Institutional base for the assessment

The responsibility for carrying out the SEA rested with the leading counterpart government agency, the National Agency for Mineral Resources (NAMR). This arrangement provided an institutional basis for ownership and learning from the SEA. The SEA was supervised in close cooperation with the Ministry of Water, Forests and Environmental Protection (MOWFEP) and the Ministry of Industry and Commerce (MOIC). Both ministries were actively involved in SEA preparation; for instance they took the main responsibility for issuing questionnaires (discussed below) to mining entities and local environmental protection agencies (EPAs). The SEA was undertaken by international consultants and took over a year to be completed. Since Romania was part of the European Union (EU) harmonization process, the preparation of the SEA was unofficially observed by EU authorities.

Methodology

Prior to the preparation of the SEA, no comprehensive overview of environmental issues linked with the mining sector existed. Moreover, there was little technical expertise with respect to environmental remediation and closure of mines, especially in leading sector ministries such as the NAMR. To address these issues, the SEA for the MCSM Project focused on two main tasks: identifying risks and carrying out institutional analysis.

1. *Establishing a baseline and identifying the mine subsectors with the greatest environmental risks through questionnaires and field visits.* At the beginning of the study, scoping was carried out to determine the main environmental issues for the mining sector as a whole. On the basis of this information, a questionnaire was designed and was sent to mining companies and local environmental agencies. It asked for basic information regarding mine types and status (closed, active, closure applied for); ownership; the area covered by mine activity (open pit, underground, processing, waste disposal) and the mine sector; basic parameters (such as area and depth) of the mines; the associated stocks and flows; environmental issues related to specific mine subsectors (e.g., coal, sulfur, base metals, salt, uranium); and types of mitigation measures for addressing waste and pollution. In addition to the surveys completed by the EPAs, about 265 mining companies returned their questionnaires. The information provided was supplemented and verified through site visits to approximately 16 selected mines.⁴

Data from the questionnaires and field visits eventually led to systematic determination and prioritization of environmental risks across the mining sector. This was done through an approach that involved identifying (a) an object with potential environmental implications, (b) the pathways of pollution, and (c) the affected receptors (see Wardell Armstrong 2003, p. 60–61). On the basis of this information, the relative environmental impacts linked with each mining subsector were determined, thus providing information to assist decisions such as how to prioritize environmental remediation and in which subsectors. For example, when the focus was on subsectors, the uranium subsector had the highest environmental risks, but when the analysis looked at sector object—such as open pits, underground mines, in situ leaching, mineral processing, dumps, and tailings disposal facilities—open pit mining in the coal sector carried the

⁴ In some cases there were discrepancies between questionnaires and information from site visits. For example, the questionnaire results showed high compliance figures for some items (e.g., water pollution) considered to be important environmental issues for the sector as a whole, but the site appraisals did not support these findings and showed poor compliance at the mine level.

greatest environmental risks. A ranking list of all mines and all objects, showing relative overall risks, was produced, allowing preparation of short- and long-term action plans, with their estimated costs.

2. Conducting institutional analysis. An important aspect of the Romania SEA was institutional assessment of the mining sector, particularly with a view to evaluating its capacity for environmental management. This task included assessment of relevant mining laws, environmental laws, the main water law, and solid waste legislation and the extent to which these laws addressed mining waste; air pollution control law; laws relating to construction and planning and how they applied to mining activities; and EIA law. In addition, the review covered institutional functions and mining-related capacity of selected agencies, including the NAMR, the ministries responsible for the economy, agriculture, environment, transport, and health, and relevant parastatals. Many of the institution-related questions were addressed as part of the questionnaires and field visits and were able to shed light on licensing, enforcement, and monitoring issues affecting mining-related activities. For instance, in one of the field visits it was found that environmental inspectors were typically assigned to the branch or company level and not to the mine level, implying that they had numerous responsibilities in addition to monitoring. Combined with poor awareness and lack of funds, this situation contributed to weak environmental performance. In addition, it became apparent that responsibilities and resources for environmental monitoring and protection were often unclear. Another important finding was that environmental management in privately owned firms was not necessarily better than in state-owned firms.

On the basis of detailed analysis of both institutional and technical issues, the SEA suggested a mining sector environmental action plan that provided clear guidance on the types of intervention needed, who should be responsible, targets, and cost estimates. The methodology for considering environmental issues described above shows that the SEA was sustainability led and identified development options and more sustainable alternative proposals.

Although the Romania SEA did not rely on broad-based stakeholder analysis (as was the case in Indonesia), it did involve extensive discussions with officials in key ministries, mine owners and workers, NGOs, and other relevant stakeholders, through site visits to individual mines and in national workshops. The World Bank's involvement apparently provided the context for bringing

together a range of stakeholders with varying interests and perspectives in meetings and workshops.

Results

Preparation of the SEA cost about \$275,000, or about 0.6 percent of project costs. The assessment was completed in 12 months. For all the parties, it was the first experience with an assessment of this scope covering various regions of the country. An immediate change that occurred during the preparation of the SEA was that the main mining companies hired environmental managers (personal communication, task team leader). The SEA provided the analytical basis for the environmental remediation programs associated with mine closures and thus substantially contributed to project design. It included a master cleanup plan that allowed the government of Romania to assess the cost of the plan and lay the groundwork for its implementation. Creation of a database of environmental issues linked with specific subsectors will enable decision makers to undertake similar assessments in the future. The SEA resulted in new legislation related to safety of dams, including tailings management facilities (TMFs), but local authorities were not prepared to enforce it. The Hazard Risk Mitigation Emergency Preparedness Project (approved in 2004) is seeking to build the capacity of relevant stakeholders to manage TMF issues properly through one of its components, Risk Reduction of Mining Accidents in the Tisza Basin. This project basically stemmed from one of the short-term measures proposed in the SEA.

Factors in the success of the assessment

Although mining was a difficult sector to work in, the SEA yielded important results, for several reasons:

- *Visibility and urgency.* Mining was an important and highly visible sector in Romania, and the government was planning to restructure it even before the EU applied pressure in this direction. The MCSM Project supported these efforts, and the focus of the SEA was entirely aligned with the project's broader development objectives. Accordingly, the government of Romania took full responsibility for the SEA, which received the support from sectoral ministries that is critical if an SEA is to be successful.
- *Value as model.* The SEA was the first systematic analysis of environmental issues in the mining sector, and mining was the first sector to follow the SEA approach. The value of the assessment to decision makers in the mining sector was therefore tremendous.
- *Encouragement of capacity building.* Most of the measures proposed in the SEA regarding institutional strengthening are already implemented or under implementation.

About 150 representatives of various institutions (central and local government, mining operators, and mining design institutes) attended environmental management training; an assessment of the technical and logistical capacity of environmental authorities was carried out; and, under the follow-up closure project, environmental manuals are being prepared. All these measures increased awareness of environmental issues associated with the mining sector, leading to changes in the mentality and perspective of relevant stakeholders.

- *Usefulness of technical support.* The success of the SEA had less to do with the scope of participation than in the Indonesian case and much more to do with the greatly needed technical analysis and consideration of alternatives provided by the team of Bank and international consultants. Implementation of several of the recommendations of the SEA, which started with the Mine Closure and Social Mitigation Project, has continued with the follow-on Romania Mine Closure, Environment and Socioeconomic Regeneration Project.

Case 3: Environmental assessment for the Mumbai Urban Transport Project, India

The Mumbai Metropolitan Region (MMR), with a population of 14 million and an area of 1,467 square kilometers, is one of the largest and most crowded areas in urban India.⁵ As elsewhere in India, public transport plays a dominant role in the MMR. In 1993, during peak hours, rail and bus services combined carried 88 percent of the region's motorized trips (7 percent of trips were by private vehicles and 5 percent, by taxis). Given the heavy reliance of urban transport on public investment and its links to growth and poverty reduction, improving public sector performance in transport was recognized as crucial by the World Bank's 2001 country assistance strategy and by India's Ninth Five-Year Plan.

The Bank-supported Mumbai Urban Transport Project (MUTP) was designed to support urgently needed physical investments in the rail and road system and to strengthen the institutional capacities required for sustainable transport development, particularly in traffic management, the bus system, road safety, emission control, and resettlement and rehabilitation. The MUTP had three main components: improvement of railway systems; management and network impact of road transport; and resettlement of the affected population. A comprehensive transport strategy (CTS) was prepared in 1994 by the Mumbai Metropolitan Region Development Authority

⁵ For background for this section, see MMRDA (2001); World Bank (2002c). The review in this report is based on available documentation and does not take into account the implementation phase of the project. To more accurately capture the story, additional assessment of the implementation phase needs to be considered.

(MMRDA) to provide a strategic framework for the transport sector. The CTS proposed four strategic options: (a) do the minimum, (b) emphasize public transport, (c) emphasize public transport plus demand management, and (d) undertake road investment. In keeping with Ministry of Environment and Forests regulations and Bank safeguard policies, environmental assessments of these options were undertaken. The assessments were conducted over a period of seven years and were consolidated into a single report in 2002.

A sectoral-level environmental assessment (SLEA) of the four transport options proposed by the CTS was carried out to determine the transport strategy of the MMR and to assess which of the options were most environmentally sustainable. Based on the assessment of the impacts of the options on air quality, noise, ecology, resettlement, and traffic efficiency, the MMRDA selected the public transport plus demand management (PT+DM) option. This strategy involved placing high priority on investment schemes aimed at promoting public transport, especially on suburban highways; developing roads and roads over bridges in suburban areas to relieve road congestion; and relieving congestion in the Island City (the core city) through demand management measures. In view of its upstream nature, for the purposes of this paper the sectoral-level environmental assessment is regarded as an SEA.

Objectives

The implicit objectives of the assessment were to identify strategic alternatives for the urban transport sector of the Mumbai Metropolitan Region; to select the best alternative, on the basis of environmental and social criteria; to assess the environmental and social impacts of the subprojects; and to draw up plans and recommendations to ensure good implementation.

Institutional base for the assessment

The SEA was housed in the Mumbai Metropolitan Regional Development Authority (MMRDA), which was the counterpart client agency for the Mumbai Urban Transport Project.

Methodology

The SEA methodology had three distinct parts: assessment of the environmental impacts of the four strategic options proposed by the CTS; public consultation; and assessment of institutional capacity.

Assessment of environmental impacts. For each subregion of the Mumbai Metropolitan Region, the potential environmental implications of each of the four options were assessed with respect to air quality, noise, ecological effects (impact on wetlands, coastal waters, and so on), social effects (displacement of people), and transport service. The assessment used 13 indicators. Baseline data relating to these factors were collected to provide a basis for comparison of changes in environmental quality under each potential CTS option. The PD+DM option emerged as the preferred alternative. Based on the findings of the sectoral environmental assessment, subprojects that were subsets of the PD+DM option were selected for the MUTP. Subprojects were screened to determine the need for programmatic-level environmental assessment (PLEA) or microlevel environmental assessment (MLEA). For instance, PLEAs were carried out for small, generic subprojects such as flyovers and station area traffic improvement schemes, while MLEAs provided detailed analysis of individual projects that were expected to have significant environmental implications relating to traffic, land use, water quality, noise, ecological resources, and quality of life. Thus, the SEA was integrated; it addressed environmental issues upstream; and it shaped more sustainable selection and decision making at the plan and project levels.

Public consultation. As part of the preparation for the multistage environmental assessment, public consultations were held at various stages of the process. For instance, a survey of public attitudes was carried out during the preparation of the CTS. Respondents were asked to select a package of schemes from a long list of road and rail projects, staying within a given budget. The outcomes of these surveys provided important input into preparation of the draft CTS. The four proposals listed in the CTS were shared with NGOs, government agencies, and project implementation agencies (PIAs). These, overall, recommended PM+DM as the preferred option, and their recommendations were reflected in the MTUP that was eventually implemented. Public consultation was undertaken at several of the later stages of the seven-year assessment, and feedback was incorporated into the decision-making process. Participation was intensive under the SLEA; it involved a variety of methods (attitude surveys, meetings, and workshops), and it brought together NGOs, implementing agencies, and government agencies.

Institutional analysis. A policy and institutional assessment, undertaken as part of the SLEA, included identification of key transport and environment sector policies, central government regulations relating to vehicular pollution, emission standards for different types of vehicles, trends in transport policies (e.g., policy with respect to use of liquefied petroleum gas as auto fuel), and actions taken by courts to phase out old vehicles, encourage use of cleaner fuels, and

provide financial incentives for environmentally friendly measures by vehicle owners. The assessment identified key organizations involved in the transport sector and their mandates, including project implementation agencies such as the MMRDA, the Municipal Corporation of Greater Mumbai, and the Public Works Department. The assessment of organizations, however, was at the descriptive level and did not deal with internal processes within organizations or with any difficulties these organizations might have in addressing environmental issues linked with their mandates. Budget estimates for training needs for environmental management in concerned organizations were provided.

Results

The design of the Mumbai Urban Transport Plan was consistent with the selected strategic option. At the sectoral level—through the preparation of an environmental management plan—policy, regulatory, and administrative measures were proposed to mitigate the environmental impacts identified by the sectoral-level environmental assessment. Cost estimates for implementation of project-specific environmental management plans were provided. A monitoring plan was prepared that addressed environmental quality, resettlement issues, and traffic movement, and the MMRDA established an independent monitoring panel and a coordination committee. At the project level, the defined parameters were used to monitor ambient air quality, noise levels near sensitive locations, replantation success, and traffic volume and characteristics. A reporting system to implement the environmental management plan was established to create accountability in the system. The assessment yielded economies of scale, and the use of the environmental baseline and the analysis led to easier and faster environmental impact assessment of subprojects.

The assessment for the Mumbai Urban Transport Project, which took place over seven years, yielded many benefits related to analysis of alternatives and their operational selection, coordination with subprojects, integration of social dimensions, and involvement and influence of stakeholders. The SEA pointed out the need for institutional strengthening of the MMRDA, but the extent to which such strengthening has taken place needs further analysis. Private sector contractors, for instance, were made more accountable through the incorporation of environmental management plan requirements into the contractual agreement, along with the provision of penalties to be levied if the contractor failed to comply with the conditions. Follow-up analysis that goes beyond the available documentation and considers the views of stakeholders involved in the implementation phase of the project is needed to further substantiate the extent to

which environmental issues were considered in project implementation and the sustainability of the SEA results. This is particularly important given the long history of the MUTP.

Factors in the success of the assessment

Three main factors underlie the positive results linked with the sectoral-level environmental assessment for the Mumbai Urban Transport Project:

- *Complementary role.* The assessment provided input into a strategy that already had been prepared by the MMRDA. It helped in choosing among the strategic options on the table and enabled environmental impact assessments of projects to be more cost-effective.
- *Participation and accountability.* The process of carrying out the assessment involved sharing information and inviting input into decision making by a range of stakeholders at various stages of the process. It helped build accountability into the preparation of the assessment and the Mumbai Urban Transport Project.
- *Institutional base.* Because the assessment was carried out by the MMRDA, its recommendations were relatively easy to incorporate into the MUTP and into the MMRDA's own activities.

Case 4: Sectoral environmental assessment for the Nepal Hydropower Development Project

Nepal has vast hydropower resources, estimated at about 43,000 megawatts in the late 1990s.⁶ In 1997 only a small part (522 megawatts) of this potential resource had been developed; about 112 megawatts of production was under construction. According to the 2001 census, only 40 percent of the population had access to electricity, and there were significant disparities in access between urban areas (90 percent) and rural areas (30 percent). Nationally, power demand was expected to grow more than 10 percent annually into the first decades of the twenty-first century.

Recognizing the importance of access to energy for growth and poverty reduction, especially in rural areas, the government of Nepal has made development of the country's hydroelectric potential one of its key development objectives. Nepal's revised hydropower development policy (as of 2001) calls for sustainable development of hydropower resources and the creation of a more competitive environment for private sector participation. The Nepal Hydropower Development Project (NPDP) was designed to meet some of these goals. It also supported a key goal of the World Bank country assistance strategy: to promote basic infrastructure to improve economic growth and resource utilization.

⁶ For the project SEA, see Nepal (1997).

The NPDP had three components. One of these was support for a power development fund (PDF) that was set up to supplement private and other public financing available for the development of Nepal's power sector. To be eligible for funding through the PDF, all projects go through a process that recognizes technical, financial, economic, social, and environmental concerns. In 1995 the Bank had withdrawn its support for the Arun 3 hydropower project because of environmental and social concerns raised by NGOs. Given this history, when the Bank committed to providing support to Nepal for the NPDP, an up-front agreement was made to carry out an environmental assessment. A sectoral environmental assessment was prepared to incorporate environmental and social criteria into the selection of electricity supply options and projects to be supported by the PDF (Nepal 1997, 2). The assessment was also intended to help reduce costs to private and public investors of advance planning and preparation by screening out investment options that might pose high environmental and social risks. Because of the reach of the sectoral assessment, it is treated as an SEA in this discussion.

Objectives

Building on a 1997 study that looked at alternative technology options in the short to medium term, the sectoral environmental assessment was designed to examine the cumulative impacts of multiple projects planned in the medium to long term and thus lay a basis for development options in the power sector in Nepal. The assessment had two main objectives: to identify the medium-scale hydropower projects with the greatest potential in the sector, and to provide an environmental impact assessment framework for future subprojects. The prevailing practice of environmental assessment in Nepal focused on project-specific issues but did not effectively address cumulative impacts or overall policy for and sustainable use of water resources. The assessment was meant to integrate environmental and ecological considerations at every level of the development process, from policy setting and strategy formulation through design planning, implementation, and operation of projects; to consider strategic, long-term, least-cost planning; and to improve the public consultation process.

Institutional base for the assessment

The assessment was conducted by the Ministry of Water Resources in collaboration with the Ministry of Population and Environment. The Department of Electricity Development, the Nepal Electricity Authority, and the Alternative Energy Promotion Center were involved in implementation. The assessment was carried out in close consultation with an interagency

steering group consisting of representatives from key relevant ministries. It cost close to a million dollars (personal communication, Mudassar Imran).

Methodology

The sectoral environmental assessment mounted a broad review of Nepal's hydropower potential; hydropower policy; the existing power system and its past and future load growth; and export potential. It explored alternative generation options, prospects for fossil fuels, renewable energy sources, and demand-side management. The main approach was to incorporate environmental and social criteria into the selection of power supply options. This was carried out in three phases.

- Phase I consisted of two steps: (a) coarse screening of all available medium-size hydroelectric projects and (b) fine screening and ranking to select projects for full feasibility studies.
- In phase II full feasibility studies, including site-specific environmental assessments, were conducted for the selected projects.
- In phase III detailed design and tender documents for two projects were to be prepared. These projects would be selected by the Nepal Electricity Authority through generation expansion planning and system studies.

Phase one involved screening and ranking 138 potential hydropower sites in the 10 megawatt–300 megawatt range on the basis of technical and economic criteria and environmental and social criteria. A coarse screening was first done to weed out the least acceptable projects. The main technical and economic criteria included economic supply costs, assessment of site-specific risks related to geology and hydrology, and fit of the potential project with power system needs (see appendix B, table B-1). Environmental and social criteria (appendix B, table B-2) included physical impacts (e.g., land take, watershed conditions), biological impacts (e.g., adverse effects on aquatic habitat), and social and cultural issues. Many of these criteria were developed through stakeholder discussions.

Twenty-four subprojects, were selected as a result of the coarse screening. They were further screened and ranked using the same criteria as in the coarse screening, but somewhat refined (see appendix B, tables B-3 and B-4). In this part of the analysis, the level of detail and accuracy in investigations underpinning the assessment of ratings was increased, and additional environmental and social indicators were added to harmonize with World Bank policies and requirements. The subprojects were subjected to further investigation and data collection. Technical, environmental, and social information was updated, and subproject layouts were

examined in detail. Plans and information were brought to the pre-feasibility study level to provide sufficient detail and enough consistency between projects to allow meaningful comparisons. This involved considerable data collection in the field, as well as interviews and consultations with local stakeholders.

Individual parameters or clusters of parameters were weighted and were assigned a score between 1 and 3. The weighted scores were then added up and transformed into composite ratings of between 0 and 100 for the technical and economic dimension and for the environmental and social dimension. On the basis of the ratings, seven medium-size hydropower subprojects were selected for full feasibility studies.

The seven subprojects were considered during the least-cost system expansion planning, and four were identified as the preferred options for initial development. Two of these subprojects, the Rahughat Khola and Kabeli A Hydro Power Projects, were chosen for PDF funding (World Bank 2003b, 25).

To ensure full compliance of projects submitted for PDF support with World Bank environmental and social policies, an environmental assessment policy framework and a process guide were developed by the Ministry of Population and Environment, the Ministry of Water Resources, and the World Bank. The relevant ministries drew up a licensing process that was intended to be efficient and credible both to private investors and to stakeholders who might be affected by projects. A “one-window” facility was set up; the Ministry of Water Resources (the licensing authority) was to be the one and only governmental institution to be approached by project sponsors or promoters and was to handle all coordination and necessary clearances from other relevant agencies. The study defined the environmental assessment process to be followed by projects eligible for the PDF.

Open consultations with government stakeholders, the professional community, NGOs, and the interested public were extensively pursued throughout the preparation of the hydropower project. This ensured transparency and created a vehicle for stakeholder feedback and inputs. The consultation plan listed the principal governmental, nongovernmental, and private sector stakeholders in power development in Nepal and their likely interest in the phase I work. From this list, a group of primary stakeholders was selected for direct involvement in the process. These stakeholders had a national perspective, as against interest in specific projects in one area

only. Efforts were made to incorporate participation throughout the environmental impact assessment process, including monitoring. Furthermore, it was planned that during project implementation a project information center, holding all information relevant to that project, would be established at each project site.

The methodology of the screening and ranking was made public, as was project-related information. Efforts were made to provide the reports in the Nepali language. Through newspaper notices and establishment of the public information center, secondary stakeholders and the general public were informed of the project work, given access to all documents and reports, and invited to provide inputs.

Results

The screening and ranking method used for the assessment contributed to making the optimal choice of subprojects from the viewpoint of electricity supply while minimizing the environmental and social costs. By considering environmental and social risks at the earlier stages of decision making, it helped avoid incurring project selection costs, which can often be high, at a later stage.

The assessment process resulted in capacity building both in the Nepal Electricity Authority and in the government agencies that participated in the interagency consultative group. The assessment also contributed to greater transparency and broader stakeholder participation in decision making. The screening and ranking method used is an adaptive tool and can be periodically updated—for example, in advance of each five-year planning cycle. The framework and criteria can be amended as needed as the context changes. The method can be reapplied whenever growing electricity demand requires the selection of environmentally and socially sound projects.

Through broad stakeholder participation and a consensus-building approach, the assessment helped ensure broad public endorsement of projects and avoid costly delays. To a certain extent, it assisted in project optimization and feasibility design, including environmental and social mitigation measures.

Factors in the success of the assessment

Among the reasons for the positive development results linked with the assessment were the following:

- *Appropriate methodology.* The technical approach used in screening and ranking facilitated subproject selection.
- *Ownership.* Given the history of the unfunded Arun 3 project, a certain amount of pressure to buy into the assessment was felt. Even though the assessment was somewhat “imposed,” the screening process demonstrated its usefulness and gradually built ownership of the process.
- *Stakeholder participation.* Participation involving the public sector, the private sector, and civil society was crucial in gaining support and balancing different perspectives in the process of narrowing down subprojects and identifying those that would eventually be funded through the PDF.

Case 5: Egypt energy-environment review

The Arab Republic of Egypt has considerable oil and natural gas resources, and energy is a key sector of the country’s economy. The energy sector is a major source of income, generates a large share of Egypt’s foreign currency, and consequently has a great influence on the balance of payments. The production, supply, and use of energy in all sectors have significant environmental implications, including discharges of wastes to water and, most significantly, air pollution.

Agriculture, another key sector of the economy, produces about 200 million tons of residues each year. Although some of these residues are used as animal feed or fertilizer, a significant fraction—about 20 percent—is disposed of using methods (e.g., burning in fields and homes) that lead to air pollution and high environmental and health impacts.

Although the country’s national environmental action plan (NEAP), updated in August 2002, highlighted the energy sector and agricultural residues as having important environmental implications, it did not provide detailed analysis or policy proposals on how to deal with the situation. An energy-environment review (EER) was therefore prepared to provide guidance. The EER was consistent with the Bank’s approach, elaborated in *Fuel for Thought* (World Bank 2000b), that emphasizes integration of environmental considerations into Bank support for energy sector development in client countries. The EER was prepared in a context of broader support for environmental issues by the president of Egypt who has stressed integration of environmental

sustainability into economic development at the highest strategic levels. The EER conducted in Egypt is treated here as an SEA.

Objectives

The objective of the EER was to integrate environmental concerns into energy sector development in Egypt. At the time of preparation of the EER, the Egyptian government had already taken a number of important steps to address environmental concerns in the energy and agriculture sectors. These included widespread use of natural gas, introduction of lead-free gasoline for 90 percent of consumers, and major decreases in the quantities of pesticides used in agriculture. Several existing studies had highlighted air pollution from these sectors as critical (see World Bank 2002a). The studies found, for instance, that the mean estimate of local environmental damage costs attributable to air pollution from the energy and agricultural residues sectors was 6.5 billion Egyptian pounds per year in 1999–2000 (US\$1.4 billion per year). This amounted to about 45 percent of damage costs from all environmental degradation and cost the Egyptian economy about 1.5 percent of its gross domestic product (GDP), corresponding to 100 Egyptian pounds per capita per year (World Bank 2003a). The Egypt EER therefore specifically looked at viable policy options for addressing air pollution arising from these two sectors and sought to draw up an action plan for the energy sector on the basis of cost-benefit analysis.

Institutional base for the assessment

The EER was prepared through an intensive process of consultation between the Egyptian Environmental Affairs Agency (EEAA) and the World Bank. Unlike some of the other SEAs discussed in this paper that were produced as part of project preparation and responded to the Bank's safeguard policies, the Egypt EER was an analytical and advisory activity that was prepared to guide implementation of the country's national environmental action plan, particularly relating to the energy and agricultural residues sectors. The EER, which was carried out between December 2001 and October 2002, cost approximately \$300,000.

Methodology

The EER looked at policies designed to reduce environmental impacts relating to six areas: refineries, power generation (including new and renewable energy), fuel switching, energy efficiency, transport, and agricultural residues. Policies already being implemented, policies in the planning stage, and potential options for the future were all considered.

Specifically, a large number of policies, all demonstrating substantial reductions in urban air pollution at reasonable cost and having a significant impact within the next 10 years, were subjected to cost-benefit analysis. The study was the first EER prepared in the Middle East and North Africa Region to use cost-benefit analysis. The analysis incorporated the opportunity and damage costs of energy to assess policy options.

- Opportunity costs reflected value to Egypt for subsidized energy (customer price plus value of subsidy). Comparison between market prices and opportunity costs for various fuel types such as industrial fuels (e.g., natural gas, heavy fuel oil, liquefied petroleum gas, kerosene, gas oil) and electricity were calculated. The study estimated that on average, consumers of energy paid for only 55 percent of their energy consumption in 1999–2000.
- Damage costs included costs of pollutants to human health. Five local pollutants were studied—various measures of particulates (PM₁₀, PM_{2.5}, total suspended particles), sulfur oxides, nitrogen oxides, nonmethane volatile organic compounds, and carbon monoxide—as well as two global pollutants, carbon dioxide and methane.⁷ The analysis was conducted for a 10-year period (2002–12). Local damage costs by pollutant, by fuel, and by sector were combined to identify the main contributors. The study found that three areas each contributed 20 percent of damage: industry (sulfur dioxide emissions from consumption of fuel oil), transport (sulfur dioxide, nitrogen oxide, and PM₁₀ emissions from consumption of gas oil), and power generation (sulfur dioxide emissions from consumption of fuel oil). Two additional sources—carbon monoxide from gasoline consumption in transport and PM₁₀ emissions from burning of agricultural residues—each accounted for more than 10 percent of damage costs.

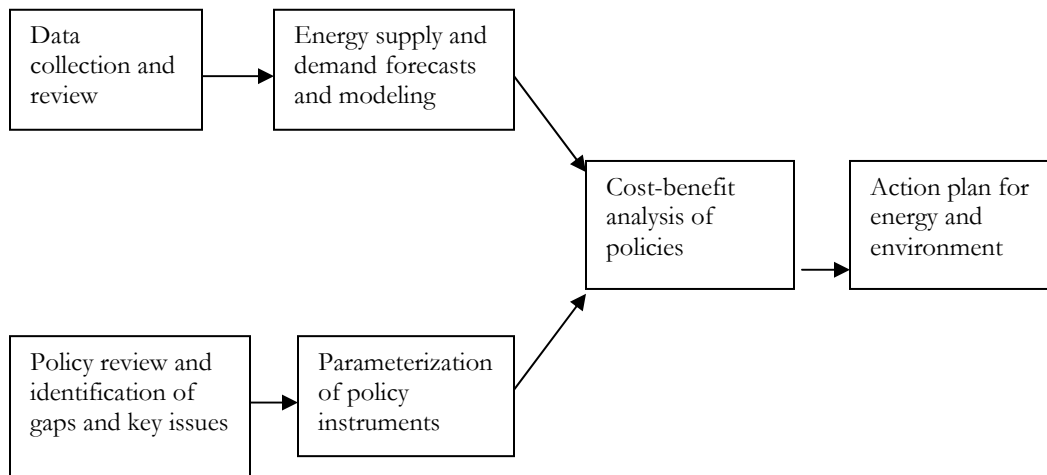
On the basis of this analysis, 19 policies aimed at reducing damage costs were suggested. These were classified in three groups: those that were cost-effective without taking into account reduced damage costs; those that were cost-effective when local damage costs were included; and those that were cost-effective when the effect on the global environment was taken into account. Five of these policies were recognized as having the potential to reduce local damage costs by over 100 million Egyptian pounds per year in 2010–11: fuel substitution, promotion of industrial energy efficiency, exhaust emission standards for existing vehicles, centralized collection of

⁷ PM₁₀ refers to particulate matter 10 microns or less in aerodynamic diameter; PM_{2.5} refers to particulate matter 2.5 microns or less in aerodynamic diameter.

agricultural residues, and catalysts for new gasoline vehicles. In addition, a policy aimed at readjusting energy prices to reflect opportunity costs was recommended.

The preparation of the EER was based on consultation with many stakeholders, including the Ministries of Petroleum and of Electricity and Energy and representatives from the private sector. Participation was intensive and technical in nature. Six project workshops were held during the study; among them were three workshops covering cost-benefit analysis in specific crucial sectors and a draft action plan workshop. Institutionally, several line ministries, including Electricity and Energy, Transport, Agriculture, Local Development, and Petroleum, played a key role. Figure 1 shows the process graphically.

Figure 1 Steps in the preparation of the Egypt energy-environment review



Source: World Bank 2003a.

Although the study determined environmentally sustainable policy options on the basis of cost-benefit analysis, the team briefly looked at which policy options had support from key constituencies and were politically more viable. For example, the EER recommended a larger price increase on heavy fuels than on diesel, as the former is only used in industry, while diesel is used more widely for transport and heating. A more in-depth political-economy analysis could have complemented the analysis undertaken under the Egypt EER.

Results

The study recommended the adoption of a policy for readjusting energy prices to reflect their opportunity costs, and it selected a package of 19 policies aimed at reducing damage costs. Within the constraints of a limited budget, the EER allowed the selection of more cost-effective policies carrying the least economic cost. The EER demonstrated to policy makers that reducing fuel subsidies would be good for the economy and the environment. This may have contributed to the price increases for gasoline, heavy fuels, and diesel fuel that were adopted as of July 2005.

The EER study had several notable results. First, the findings were used by the World Bank to advance its policy dialogue in the pollution control sector. The Egypt Second Pollution Abatement Project, cofinanced by the World Bank and five other international financing institutions, has used the EER as a justification for providing US\$162 million for curbing industrial pollution. Second, the EER enabled the Carbon Business Finance Unit to commit to the purchase of US\$50 million in carbon emission reductions. Third, the EER helped the Bank persuade the government of Egypt to ratify the Kyoto Protocol. The outcome of the EER was included in the country environmental analysis for Egypt.

Factors in the success of the assessment

The Egypt EER led to concrete follow-up actions:

- The determination of policy alternatives using cost-benefit analysis enabled quantification of relative costs and benefits of different policy options, taking into account environmental sustainability considerations.
- The process of preparation and follow-up was crucial in using the analysis to persuade the Egyptian government to ratify the Kyoto Protocol.

3. Conclusions and Lessons

This review of selected first-generation strategic environmental assessments shows that the SEAs have had a variety of results. They have helped integrate environmental issues into Bank projects and have, in a number of instances, served as important decision-making tools for consideration of alternatives based on environmental considerations. Some SEAs contributed to institutional strengthening. While evidence for longer-term policy and institutional change is difficult to document because of the limitations of this study, it was possible to see it in, for example, Indonesia. The more typical example of institutional strengthening in the cases reviewed is scaling up of environmental capacity within sector agencies (e.g., the Nepal Electricity Authority).

In some cases the SEA process helped link state and civil society actors in the monitoring and implementation of environmental management plans. It is not possible to substantiate on the basis of available evidence the extent to which these processes became integrated into the broader organizational structures of specific agencies.

The analysis highlighted some factors that were important for positive results. These include the following:

- *The institutional base for SEAs.* In most cases the SEA was located in the sector ministry and was the responsibility of an interagency task force that included staff from environmental ministries and agencies. This was crucial for buy-in. Such an institutional setting enabled political backing from sector ministries and agencies and created room for learning through the SEA process. It also made possible intersectoral coordination (even though perhaps temporary) by bringing representatives from environmental and sectoral ministries together in the task forces.
- *The role of the World Bank.* As is well documented (see Grindle and Thomas 1991), international actors play a crucial role in catalyzing or driving policy changes in developing countries. Whether through Bank safeguard policies or through analytical and advisory activities that aim to mainstream environmental issues into sectoral decision making, the role of the Bank in helping to integrate environmental issues into sectoral planning is undeniable.

- *Visibility of the sector.* The visibility of the particular sector and its importance to the country were important to the utilization of SEAs. Two good examples are the mining sector in Romania and the energy sector in Egypt.
- *Consultation and participation.* Although the nature of consultation varied in the cases reviewed, in all of them SEA preparation involved significant participation by relevant stakeholders. This was crucial to the transparency of the SEA process and the identification of the SEA's priorities.
- *Alignment between the objectives of the project and the SEA.* In, for example, Indonesia and Romania the analysis resulting from the SEAs was well aligned with the broader objectives of the associated projects. By helping identify alternatives and options from an environmental standpoint, the SEAs contributed to strengthening the overall project objectives.
- *Context.* The results of an SEA process are shaped by the historical and political context in which the SEA is formulated and implemented. For example, the case study of the Indonesian SEA shows how regime change and the openness to reform of the new government influenced the atmosphere for the SEA.

The cases reviewed offer important lessons for future SEAs. Factors important in the success of SEAs are outlined below. (See box 3 for a summary in the form of a checklist.)

1. *Clear development objectives.* A clear definition of development objectives helps target the work and build client buy-in. It can go a long way toward improving environmental and social outcomes. In the case of the Egypt EER, the objective was to integrate environmental concerns into the development of the country's energy sector. The Indonesia SEA sought to address environmental risks linked with reform in the water sector.

2. *A serious determination of alternatives.* The approach and methodology varied in the cases discussed. The Indonesia SEA used a very broad participatory and consultative process. For the Nepal hydropower project, alternatives were assessed through screening and ranking based on technical, economic, environmental, and social criteria, and the Egypt EER applied cost-benefit analysis. In future work some of these approaches can be combined with political-economy analysis to assess opposition and support and the viability of different policy options.

3. *Use of a combination of environmental and social analysis.* Several cases included some aspect of social analysis along with environmental analysis, but the two kinds of analysis tended to be carried out separately. For example, in the Romania mine closure project, a separate social assessment was done to examine the impact of mine sector restructuring on displaced workers and vulnerable communities.

4. *Institutional analysis.* Many SEAs, even those that were program and plan based, included some element of institutional analysis. For instance, although the Romania case was not a policy SEA, institutional analysis, despite its limitations, was an important aspect of the assessment. Even though the analysis did not look at issues such as informal rules and regulations, it was an important precursor to more in-depth, institution-centered SEAs. In the Indonesia case, although assessing institutional issues through consultation was not the objective, the consultations made it clear that institutional and governance issues were at the heart of management of environmental risks.

5. *Consultation and participation.* In the SEAs reviewed, consultation took many forms—from information sharing, to information sharing plus solicitation of feedback and weighing of policy options, to consultation and participation as the main methodology for risk analysis. There was also variation in the scope of the participatory process. In some cases consultation was mainly at the level of senior government officials and was primarily used to influence decision making at the highest levels. In others, as in Indonesia, the scope was much broader; consultations were conducted at the national, provincial, and local levels.

6. *Context and use.* SEAs can be applied, for example, to policy reform, as in Indonesia; to project preparation, as in Nepal; or as an analytical basis for furthering sectoral recommendations of a national environmental action plan, as in Egypt. SEAs could also be produced in the context of project implementation, although there was no such instance in the cases reviewed.

Several SEAs were prepared to meet World Bank safeguard policies (OP/BP 4.01 on environmental assessment), but this is not invariably the case. The Egypt EER, for instance, was undertaken as part of the implementation of the Bank's *Fuel for Thought* energy-environment strategy. The Egypt EER also shows that SEA-type analysis can have a variety of names. What is important is that SEAs are part of a longer-term process of learning and adaptation and of setting up mechanisms to achieve environmentally and socially sustainable results (World Bank 2005b).

Box 3 Checklist for strategic environmental assessment teams

Objectives. The development objectives of the SEA should be clearly defined

Motivation. SEAs should proactively integrate environmental and social issues into policies, programs, and plans and should not necessarily be driven by the need to satisfy procedural requirements.

Focus. SEAs should combine environmental, economic, and social analysis.

Analysis of alternatives. Analysis of alternatives is a crucial aspect of SEAs.

Context and use; when to do an SEA. There are several potential points at which SEAs can be undertaken:

- Upstream of sector-specific policy reforms (as in Indonesia)
- Project preparation
- Project implementation

Results. SEAs are not mere documents but are part of a longer-term process of engagement. Thus, the end result should be to enhance the sustainability of sector reform by incorporating environmental and social considerations in that process. The specific term “SEA” is not very relevant; the process and the approach taken matter more.

Participation. Consultation and participation are crucial aspects of SEA preparation.

Institutional base. Interagency task forces based in relevant sector ministries can be important in building partner-country ownership.

<<end box 3>>

Appendixes

Appendix A. SEAs and SEA-type assessments reviewed and analyzed after second screening for this study

<i>Country</i>	<i>Project</i>
Romania	Mine Closure and Social Mitigation Project
Cameroon	Forestry and Environment Sector Project
Yemen	Sana'a Basin Water Management Program Project
Ghana	Road Sector Development
Philippines	First National Roads Improvement and Management Project
Bhutan	Urban Development Project
Indonesia	Bali Urban Infrastructure Project
Indonesia	Water Sector Adjustment Loan Project
Ethiopia	Road Sector Development Program
India	Gujarat State Highway Project
Nepal	Medium-Sized Hydropower Development Strategy
Pakistan	National Drainage Program Project
Poland	Hard Coal Sector Adjustment Loan Project
Egypt, Arab Rep. of	Energy-Environment Review
Brazil	Ceara Water Resources Management Pilot Project (PROGERIRH)
Colombia	Water Sector Reform Project
India	Mumbai Urban Transport Project
Mozambique	Transfrontier Conservation

Appendix B. Criteria used in screening and ranking project sites for the sectoral environmental assessment conducted for the Nepal Hydropower Development Project

In all, 74 adverse environmental impact factors and 16 enhancement factors were considered. Each was scored on a scale of 0–3, with 0 meaning not significant and 3 meaning potentially significant.

Coarse ranking criteria and criteria weights

Table C-1 Technical and economic ranking criteria

<i>Criterion</i>	<i>Scoring system</i>	<i>Weighting (percent)</i>
Economic supply cost	Based on discounted cost/discounted energy (in U.S. cents per kilowatt-hour); includes civil engineering, E&M transmission, road access, environmental mitigation, and cost contingencies	75
System fit for medium-term supply (25 percent)		
Project size	Based on installed capacity in three size ranges reflecting what is needed in the project basket for system planning	3
Firm energy contribution	Based on ratio of firm to average energy production from the project	10
Flexibility of dispatch	Based on ROR, PROR, or storage and ability to dispatch at peak or seasonally	7
Regional location	Based on regional supply-demand balance	5
Total		100

Note: E&M, electrical and mechanical; PROR, peaking run-of-river; ROR, run-of-river.

Table C-2 Environmental and social ranking criteria

<i>Criterion</i>	<i>Scoring system</i>	<i>Weighting (percent)</i>	
		<i>ROR/ PROR</i>	<i>Storage project</i>
<i>Physical environment</i>			
Land take	Based on amount of land required for the project facilities, reservoir, and access roads	17	14
Watershed condition	Based on ICIMOD classification of watersheds in Nepal	17	14
Downstream impacts	Based on potential for adverse downstream impacts (for storage projects only)	—	14
<i>Biological environment</i>			
Biodiversity impact	Based on potential for adverse impacts by the project on sensitive biological areas	17	14
Aquatic system impact	Based on length of river stretch and aquatic habitat adversely affected	14	14
<i>Sociocultural environment</i>			
Number of project-affected persons	Based on estimated number of persons directly and indirectly affected by the project in terms of relocation or other disturbance	27	23
Cultural sensitivity	Based on potential for adverse sociocultural impacts by the project	8	7
Total		100	100

Note: ICIMOD, International Center for Integrated Mountain Development; PROR, peaking run-of-river; ROR, run-of-river.

Fine ranking criteria and criteria weights

Table C-3 Technical and economic ranking criteria (refined)

<i>Criterion</i>	<i>Scoring system</i>	<i>Weighting (percent)</i>
Economic supply cost	Based on discounted cost/discarded energy (in U.S. cents per kilowatt-hour); includes civil engineering, E&M transmission, road access, environmental mitigation, and cost contingencies	65
<i>Project risk</i>		
Schedule risk	Based on length and difficulty of construction of roads, bridges, and transmission connection to the grid	3.1
Risk of glacial lake outburst flood (GLOF)	Based on type and number of GLOF hazard lakes	2.3
Sediment risk	Based on degree of sediment-related issues for PROR and storage projects	2.3
Hydrological risk	Based on availability of a gauging station and length of records	2.3
<i>System fit for medium-term supply</i>		
Project size	Based on installed capacity in three size ranges reflecting what is needed in the project basket for system planning	3
Firm energy contribution	Based on ratio of firm energy production to average energy production from the project	10
Flexibility of dispatch	Based on ROR, PROR, or storage and ability to dispatch at peak or seasonally	7
Regional location	Based on regional supply-demand balance	5
Total		100

Note: E&M, electrical and mechanical; PROR, peaking run-of-river; ROR, run-of-river.

Table C-4 Environmental and social ranking criteria (refined)

(percent)

<i>Qualitative environmental and social criteria</i>	<i>Physical environment weight</i>	<i>Biological environment weight</i>	<i>Social environment weight</i>
Project site and selection	8	8	10
Construction phase impacts	8	8	10
Operation phase impacts (long-term)	6	6	10
Enhancement factors	8	8	10
Total	30	30	40

Note: Each category in the table contained factors. The scores for these factors (0 to 3) were summed, and the sums were multiplied by the weighting out of 100 for that category.

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