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Environmental Guidelines for Social Funds

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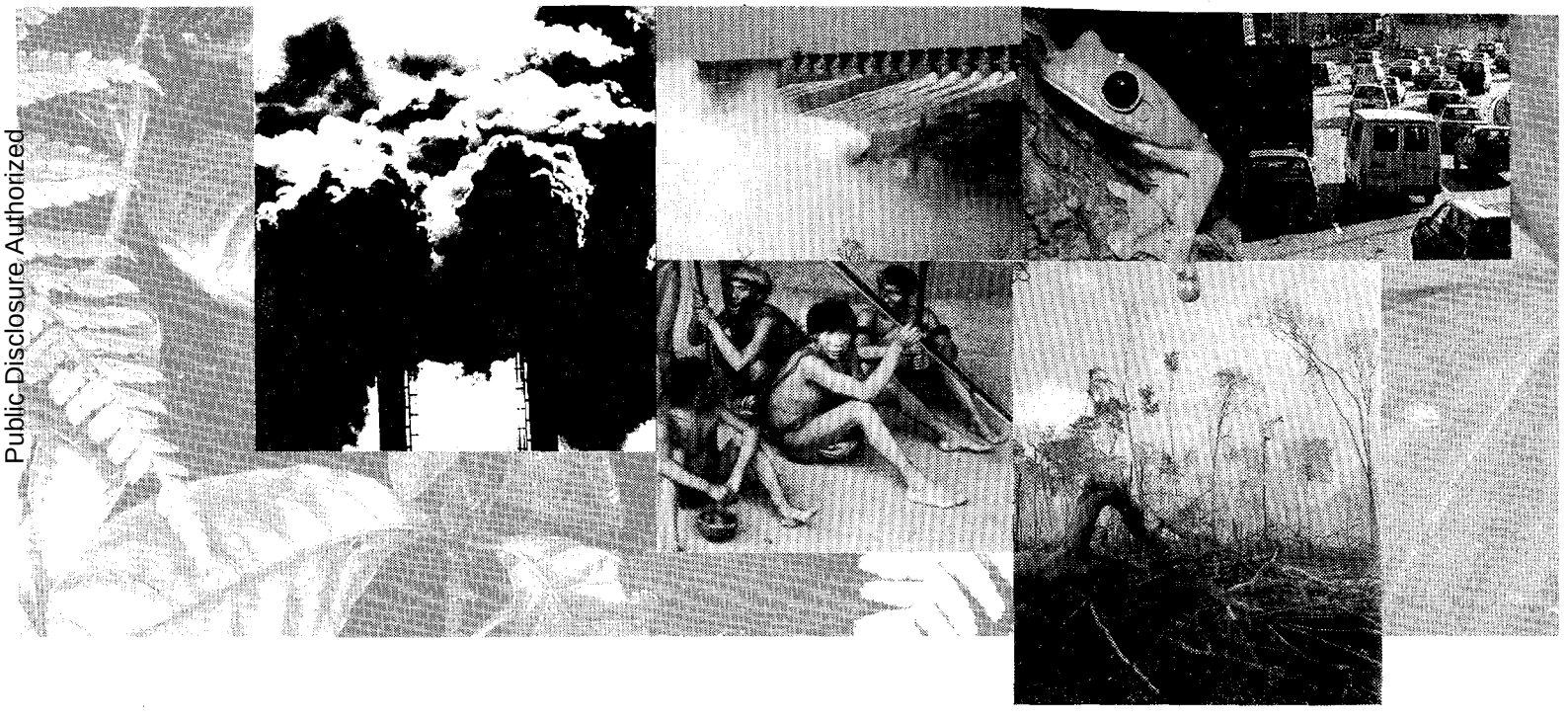

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The World Bank
Latin America and Caribbean Regional Office
Environmentally and Socially Sustainable Development SMU

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Environmentally and Socially Sustainable Development Sector Management Unit

This technical paper series is produced by the Environmentally and Socially Sustainable Development Sector Management Unit (Maritta Koch-Weser, Director) of the Latin America and Caribbean Regional Office.

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Foreword

This document is an introduction to the incorporation of environmental considerations into World Bank social funds (SFs) in Latin America, the Caribbean, and other regions. The target audience is management staff and technical staff of social funds, as well as World Bank task managers of these projects. Rather than providing all the information necessary to design detailed operational procedures for an SF, this document is intended to serve as a "jumping off" point for staff in the establishment and implementation of environmental assessment procedures.

Some aspects of the SFs are distinctive, such as their status as a financial intermediary rather than an implementing agency. In other respects, however, and particularly from an environmental perspective, the challenges encountered are similar to those faced by the entire spectrum of demand-driven rural development projects. We expect therefore that the guidelines will be useful to many kinds of rural development projects and, to some extent, urban projects.

These guidelines are a contribution to the growing information infrastructure of the World Bank's Knowledge Management System in the area of environmental assessment —the EANode. Additional material is available on-line, and future revisions and additions to the document will be made only on the electronic version.

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Acknowledgments

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Within the World Bank, we thank the task managers of social fund projects who helped us by providing comments or useful background information. In particular, Mr. Willem Struben, task manager for social fund projects in Honduras, Nicaragua, and Panama, supported the workshop in Nicaragua. Mr. William Partridge, former chief of the Environment Unit for Latin America and the Caribbean, provided helpful support during early preparation of this report. Mr. Olav Kjorven, formerly of the World Bank's Environment Department, also participated in the Nicaragua workshop and provided valuable assistance throughout the subsequent elaboration of these guidelines. Useful comments were provided by Peter Brandriss, Juan David Quintero, Olga Corrales, and Martin Ochoa.

Abbreviations and Acronyms

AGETIP*	Agence d'Exécution de Travaux d'Intérêt Publique contre le Sous-Emploi
DIF*	Demand-driven investment fund
EA*	Environmental assessment
ER*	Environmental review
LCSES	Environmentally and Socially Sustainable Development Sector Management Unit (Latin American and the Caribbean Region, World Bank)
FONCODES	Peru National Fund for Compensation and Social Development (Fondo Nacional de Compensación y Desarrollo Social)
FOPAR	Argentina Participatory Social Investment Fund (Fondo Participativo de Inversión Social)
GEF	Global Environment Facility
IDB	Inter-American Development Bank
IDA	International Development Association (World Bank Group)
LEA*	Limited environmental assessment
MARENA	Ministry of the Environment (Nicaragua)
NEAP	National environmental action plan
NGO	Nongovernmental organization
OD	Operational directive
OP	Operational policy
SF*	Social fund
SMU	Sector management unit
TOR	Terms of reference
TRABAJAR	Argentina National Public Works Program

* See Glossary for definitions.

Glossary

AGETIP: An AGETIP (*Agence d'Exécution de Travaux d'Intérêt Publique contre le Sous-Emploi)* is a special type of social fund where management not only selects eligible subproject proposals and channels financing to them, but also assumes responsibility for executing the selected subprojects on behalf of the subprojects' sponsoring agency (typically a municipality). AGETIPs are directed primarily at urban areas, and are nonprofit private associations.

DIFs and Social Fund-Related Subprojects: Subprojects that meet only some of the social fund criteria below are known as social fund-related subprojects or demand-driven investment funds (DIFs).

Environmental Assessment (EA):[1] The process of managing the environmental aspects of a policy, strategy, program, or subprojects from the earliest stages of identifying potential actions to their completion and evaluation. The process encompasses identification of potential adverse environmental impacts; assessment of these impacts and comparison to impacts of alternative approaches; design and implementation measures and plans to avoid, minimize, mitigate, or compensate for adverse impacts; and development of associated management and monitoring measures. EA considers natural and social aspects in an integrated way.[2]

Environmental Assessment Report: A suggested environmental assessment instrument—rarely necessary in an SF subproject—to identify and assess major potential environmental impacts of proposed subprojects, evaluate alternatives, and design appropriate mitigation, management, and monitoring measures (generally in the form of an environmental management plan). World Bank Category "A" projects usually require an EA report.

Environmental Review (ER): A suggested environmental assessment instrument in which the subproject is likely to have minimal impacts but should be reviewed with a simple and standardized checklist of possible impacts and appropriate mitigation measures.

Environmental Screening:[3] The process of identifying, as early as possible, the potential adverse environmental impacts of a proposed subproject; assigning an environmental category indicating the level of anticipated impact and corresponding level of environmental assessment required; and identifying the most relevant EA instruments

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1. See also *Environmental Assessment Sourcebook Update,* "No. 1: The World Bank and Environmental Assessment: An Overview" (1993).
2. This and some other definitions here are taken from or adapted from the Glossary section of the *Environmental Assessment Sourcebook Update*.
3. See also *Environmental Assessment Sourcebook Update,* "No. 2: Environmental Screening" (1993).

needed to address potential impacts and environmental issues associated with the subprojects. In this document we recommend that the screening process indicate whether further environmental assessment is required for each subproject, and if so, which of the three environmental instruments (ER, LEA, or EA report) should be used.

Limited Environmental Assessment (LEA): An instrument that assesses whether a subproject is likely to cause environmental impacts that merit consideration by an environmental specialist, and determines what special mitigation measures are needed. Detailed checklists, customized for different subproject types, would normally be used and supplemented on a case-by-case basis, possibly by field visits.

Monitoring:[4] Technical and institutional activities that are implemented by the SF or the executing agency to measure and evaluate environmental (including health and socioeconomic) changes induced by a project. The overall objective is to identify predicted and unanticipated changes to the physical, biological, and social environment brought about by the project.

Social Fund (SF):[5] Quasi-financial intermediaries that channel resources, according to predetermined eligibility criteria, to small-scale subprojects for poor and vulnerable groups. Subprojects are proposed, designed, and implemented by public or private agencies such as local governments and nongovernmental organizations, or by the community groups themselves. Social funds are in-country agencies that possess two unique features: (1) they themselves do not identify, design, and implement subprojects, but rather exercise investment programming authority—that is, the power to select or reject subproject proposals solicited from public organizations, private organizations, and/or community groups based on pre-determined criteria; and (2) the agencies enjoy special status in terms of, for example, an independent legal persona, control over the subproject approval process and/or exemptions from prevailing public sector rules and regulations relating to issues such as civil service salary schedules, procurement, and/or disbursement.

Supervision: Any activity directed towards ensuring that the executing agency implements subprojects responsibly, regarding agreed environmental safeguards and the need to address unanticipated environmental problems. This involves visiting subproject sites, meeting with beneficiaries, and reviewing environmental monitoring reports.

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4. See also *Environmental Assessment Sourcebook Update,* "No. 14: Environmental Performance Monitoring and Supervision" (1996).
5. Definition as presented in the "Portfolio Improvement Program Review of the Social Funds Portfolio," May 1997.

Environmental Guidelines for Social Fund Subprojects

Douglas J. Graham, Kenneth M. Green, and Karla McEvoy[1]

INTRODUCTION

Social funds (SFs) in Latin America were originally designed to alleviate the impact on the poor of reduced income and employment caused by the debt crisis and structural adjustment measures implemented during the late 1980s and early 1990s. Bolivia led the way with the creation of the *Fondo Social de Emergencia* (FSE) in 1986, less than a year after the start of a comprehensive structural reform program. The World Bank currently provides or is planning to provide financing to about 20 traditional SFs in Latin America and the Caribbean, and also finances several SF-related projects that support demand-driven investment funds (DIFs) and AGETIPs (see Glossary) in the region.

Social fund projects represented about 3 percent of the total number of active Bank projects at the end of fiscal 1996. Regionally, sub-Saharan Africa accounts for the largest number of Bank-financed social funds, as well as the highest lending volume, with 27 SF projects approved up to the end of fiscal 1996. This represents about 44 percent of total Bank lending for social funds between 1987 and 1996. The Bank's Latin America and Caribbean Region had 15 social fund projects by the end of the same period, accounting for about 31 percent (more than $400 million) of total Bank lending for SFs in the 1987-96 period (World Bank 1997).

The types of subprojects financed by SFs vary widely, from rural roads, to community centers, to basic water and sanitation systems. For example, the portfolio of the Argentina Pilot Social Fund (*Fondo Participativo de Inversión Social, FOPAR*) financed 1,085 subprojects in two years; 33 percent of these were community centers, 17 percent were basic sanitation/latrine subprojects, and 11 percent were small community civil works (FOPAR 1997). Further information on specific SFs and SF-related projects can be found on the social fund page *(http://wbln0023/institutional/socfunds.nsf)* of the Bank's internal web site, or by searching the Bank external web site *(http://www.worldbank.org/)*.

An issue that has attracted increasing attention in the last few years is the environmental impact associated with the large number of subprojects financed by SFs. Since most SFs have been established as temporary institutions to provide social services, they are often exempt from national norms for environmental assessment (EA). Often where SFs are active, there are no national environmental policies or regulations in place. In the early

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years of SFs, most donors, including the World Bank, did not promote rigorous environmental assessment requirements because the subprojects were small in scale and not thought to have significant environmental impacts. More recently, however, as a result of growing environmental awareness on the part of both SF managers and donor institutions, most SFs have developed environmental assessment processes.

While every SF will be distinct and every subproject will have particular environmental issues, this document provides a framework for donors and financiers, as well as managers and technical staff within the SFs, to better appreciate environmental assessment needs and design high-quality environmental evaluation systems. Additional models and best-practice material related to environmental impact assessment will be incorporated into the electronic version of this document.

The focus of the document is small-scale rural infrastructure subprojects, and it is expected to be useful for a wide range of rural development interventions. Though many environmental issues associated with urban subprojects are addressed in this document, the emphasis is on rural development subprojects, and thus some specifically urban environmental or social issues may be excluded.

The first chapter of this document provides an introduction to the environmental issues associated with SFs. The second chapter provides recommendations and best practices for incorporation of environmental considerations at each stage of the typical SF subproject cycle. Finally, Chapter 3 provides an overview of management issues that must be addressed to ensure that the overall process functions as intended.

1. ENVIRONMENTAL IMPACTS OF SOCIAL FUNDS

1.1 Environmental Assessment of Social Fund Projects in the World Bank

The World Bank has several policies governing environmental assessment (EA) of projects. Operational Policy (OP) 4.01 on Environmental Assessment (revised version issued in January 1999) is the central document that defines the Bank's environmental assessment requirements. The *Environmental Assessment Sourcebook* (World Bank 1993) and its updates provide technical guidance (Box 1.1).

A screening process for all World Bank projects classifies them into one of four environmental assessment categories. Projects in category "A" potentially cause significant and possibly irremediable environmental impacts. Category "B" projects cause lesser impacts, which are often essentially remediable or mitigable. Category "C" projects can be expected to have little or no environmental impact. All social fund projects within the World Bank have traditionally been classified as category "B"

Box 1.1 World Bank Policies and Guidance on Environmental Issues

The World Bank has various mandatory EA guidelines in the form of Operational Directives (ODs) or the more recent Operational Policies (OPs). In addition to OP 4.01, there are other directives that cover a number of specific environmental issues, including:

- Pesticide Management (OD 4.03)
- Conservation of Natural Habitats (OP 4.04)
- Water Resources Management (OP 4.07)
- Indigenous Peoples (OD 4.20)
- Involuntary Resettlement (OD 4.30)
- Management of Cultural Property (OPN 11.03)[a]
- Forestry Management (OP 4.36)

Particularly useful *Sourcebook Updates* related to environmental issues include:

- No. 1, The World Bank and Environmental Assessment: An Overview (1993)
- No. 8, Cultural Heritage in Environmental Assessment (1994)
- No. 5, Public Involvement in Environmental Assessment: Requirements, Opportunities and Issues (1993)
- No. 16, Challenges of Managing the EA Process (1996)
- No. 18, Health Aspects of Environmental Assessment (1997)
- No. 20, Biodiversity and Environmental Assessment (1997)

a. A new Operational Policy on Cultural Heritage (OP 4.11) is being developed and will be issued shortly.

because they result only in small-scale, largely remediable impacts. However, social fund projects will now be placed in the new category "FI," created for projects where financial intermediaries are responsible for the preparation, appraisal, and implementation of subprojects.

The SFs tend to receive funding from a variety of sources and need to comply with environmental guidelines from multiple financiers that have their own requisite environmental assessment procedures. For example, between 1993 and 1995 the Peruvian Social Fund (FONCODES) received funding from the World Bank, the Inter-American Development Bank (IDB), and eight other multilateral and bilateral donors. This can complicate the environmental assessment process, though many smaller donors will generally accept environmental assessment procedures supported by and acceptable to the World Bank or IDB. These two organizations usually coordinate environmental requirements for cofinanced SFs.

1.2 Overview of Environmental Impacts Caused by Social Fund Subprojects

Positive impacts of SF subprojects are considered briefly in Section 1.3. The most important negative impacts (and typical mitigation measures), by principal subproject category, are discussed in Section 1.4 and in Tables 1.1 to 1.7.

This document considers not only impacts to the physical and biological environment, but also to the social environment of the affected community. For example, construction of a rural road, with an obvious impact on the biophysical environment, may also affect the social fabric of a community by bringing increased traffic into the area.

1.3 Positive Environmental Impacts

Many subprojects financed by SFs can have a positive impact on the surrounding environment if they are well designed. Latrines, for example, can help decrease human waste contamination of rivers and streams; slaughterhouses do the same with animal waste. Both types of subprojects can help decrease the spread of disease and improve public health. Another way in which SFs can have a positive impact on the environment is through financing subprojects whose principal justification is to produce a positive environmental impact. Environmentally beneficial subprojects represent a small part of SF portfolios (usually less than five percent), but their importance is growing, and in some cases requirements are in place to establish a minimum number or percentage of such beneficial subprojects.

The benefits of this type of subproject often will be long-term rather than short-term, and will not be limited to the members of the local community. Because mechanisms do not exist to ensure compensation from the entire range of beneficiaries, it usually will not be "economically justifiable" to carry out such subprojects, thus limiting the interest of individuals or the private sector financing them. Below are a few examples of environmentally beneficial subprojects that are being financed by social funds in Latin America and the Caribbean:

- Forestry and Reforestation: This encompasses expansion of forest cover to stabilize soils, improve microwatershed conservation, and enhance production of firewood. Activities may involve various forms of reforestation or agroforestry. A vast amount of literature is available for designing subprojects of this type; see for example the recent IDB paper by Fortin and Engelberg (1997).

- Improved Pasture and Grazing: These are considered environmental subprojects if their focus goes beyond simply enhancing short-term revenue from cattle to emphasizing long-term management of pastures and surrounding environments. Subprojects may involve control of overgrazing by reducing the number of animals in a particular area, preventing soil erosion, improving fodder production by reseeding or replanting, and adopting such management practices as providing water, rotating grazing stock by use of fences, changing grazing patterns, etc.

- Protected Areas: This can include delimitation of protected areas, support for park or protected area management, and patrolling.

- Ecotourism: These subprojects, which generate immediate benefits to some communities, generally are long-term investments that require incremental financing to be viable. Since they directly protect natural habitats or provide incentives to do so, they can be classified as environmental subprojects.

- Others: Some SFs have financed improved cooking stoves and solar energy projects. The former entails financing of stoves that are designed to improve the way wood is burned by regulating air intake and combustion. The goal of this type of projects is to reduce the demand for firewood (a strictly environmental concern), and improve public health by decreasing the level of indoor air pollution.

The preparation and implementation of environmental subprojects raises a number of institutional and methodological questions for SFs. Since SFs are by definition institutions with short-term agendas, in some cases it may be inappropriate for them to become overly committed to environmental subprojects that require long-term investments. Furthermore, the SF may not have access to the technical expertise required to prepare, implement, and supervise some environmental subprojects. Generally speaking, critical ingredients for a successful SF portfolio of environmental subprojects include support from upper management, partnerships with NGOs or line ministries that can provide needed technical expertise, support from local communities, and selection of subprojects that do not require extensive recurrent costs for maintenance (or having mechanisms in place to provide for such maintenance).

The SFs may also generate environmental benefits through a variety of other mechanisms:

- Generation of environmental assessment guidelines that are then used by other organizations or line ministries, or are adopted by the country's environment ministry for more general use;

- Training of environmental specialists, thus increasing the availability of environmental professionals in the country; and

- Improved awareness and concern for environmental issues on the part of beneficiaries and local communities.

1.4 Negative Environmental Impacts

Social funds finance a tremendous variety of different subproject types (see Table 2.1), posing a special challenge to those responsible for evaluation of potential impacts. However, rural infrastructure and social services subprojects constitute the vast majority of investments by Bank-supported social funds in Latin America and the Caribbean. These typically include subprojects in categories such as rural roads, water supply and treatment, bridges, small irrigation systems, schools, health posts, markets, slaughterhouses, and solid waste collection services. What follows is not intended to be a comprehensive discussion of all types of subprojects, their impacts, and their mitigation measures. Rather, we wish to highlight the most common impacts that can be expected in the types of subprojects that are typically financed by SFs.

Indirect Impacts

The environmental assessment procedures of SFs need to consider not only direct impacts but also indirect impacts caused by a chain of results set in motion by the SF subproject. The most typical example would be construction of a new road in an undisturbed natural habitat. The construction of the road itself may result in negligible impacts, but it might facilitate an influx of colonists and subsequent significant loss of natural habitats. As another example, a small irrigation subproject could result in unforeseen health impacts from agricultural runoff into canals and streams, growth of aquatic weeds, expansion of snail populations, and outbreaks of schistosomiasis (snails being a vector of this disease).

Cumulative Impacts

Because many SFs and other demand-driven investment funds finance large numbers of subprojects, the question of cumulative impacts merits special consideration. Individual subprojects may have negligible impacts, but when tens or hundreds of similar subprojects are executed, their cumulative impact may be significant. In the World Bank social fund in Ethiopia, only small-scale irrigation subprojects are being financed, but collectively they represent a very large investment; consideration of these effects on a regional basis is being undertaken by the Ethiopian SF and the World Bank.

Rural Roads

Most SF road subprojects involve rural road rehabilitation rather than outright construction of new roads. Road rehabilitation or maintenance subprojects do not usually result in major impacts; however, this does not mean they should be exempt from environmental assessment procedures during subproject planning. A World Bank handbook on environmental aspects of road maintenance and environment (Lantran and other 1994) provides comprehensive guidance. Table 1.1 summarizes the most typical impacts and their mitigation measures.

Impacts from road rehabilitation may occur on-site during construction (erosion along road bed) or at nearby or remote areas such as quarries where construction material is being obtained or transported. Impacts occurring during operation (for example, noise nuisance and safety hazards) should be considered if road upgrading significantly changes traffic patterns.

In those rare instances where a new road is to be built by an SF, especially in an area of undisturbed natural habitat, a full environmental impact assessment is generally in order, a discussion of which goes well beyond the scope of this report. For guidance on EA reports, see the *Environmental Assessment Sourcebook* (World Bank 1993), and *Roads and the Environment: A Handbook* (World Bank 1994). In addition, the transportation or public works ministries in almost every country in Latin America have now developed fairly comprehensive guidelines for evaluation of impacts caused by road projects.

Bridges and River Fords

Typical small-scale bridge construction subprojects supported by SFs include permanent structures with a pier support bridge structure or a shore-to-shore suspension span. Construction materials may include poured reinforced concrete, steel support beams, wood, or combinations of these materials. Table 1.2 shows some typical impacts of these subprojects.

Impacts during construction are usually associated with disturbance to banks and streambeds. Erosion of streambanks may adversely affect aquatic habitats and water quality locally and downstream. The use of heavy construction equipment in or near water bodies may result in hazardous substance contamination from fuel, lubricants, and greases. Site restoration after construction, including revegetation of riverbanks, may be required to minimize long-term impacts.

Drinking Water Supply

There are generally three types of small-scale rural water supply subprojects supported by SFs in Latin America and the Caribbean: tube wells (hand pumps), natural springwater collection and distribution systems, and underground pump and distribution systems. Table 1.3 summarizes the most frequently encountered environmental impacts of these subprojects in SFs.

Most of the environmental considerations with regard to water supply subprojects involve avoiding water contamination. Measures need to be taken to ensure initially good water quality. During operation of the system, measures need to be taken to prevent contamination from agricultural activities, grazing animals, and human settlements.

Testing of the water supply should be performed regularly to detect any contamination to the system, and this should be done in conjunction with periodic chlorine treatment. Hence, proper training of technicians is critical to ensure that adequate maintenance occurs.

Wastewater Treatment

The most common SF sanitation subprojects in rural areas involve the construction of latrines and small-scale sewage collection systems. Table 1.4 summarizes the most frequently encountered environmental impacts of these types of subprojects.

Social funds finance the construction of both traditional pit latrines and compost latrines. Compost latrines are designed so that waste can decay properly and eventually be used to enrich the soil of agricultural crops. Each has specific technical requirements for siting, type of construction, use, and sanitary measures. Contamination of home well sources is of great concern with pit latrine construction; in some cases, pit latrines have been promoted in areas with compacted and impermeable substrates. These conditions lead to poor absorption, frequent runoff (particularly in the rainy season), and little if any improvement in health.

Review of the El Salvador social fund revealed how a lack of training may have resulted in negative environmental impacts. In a project consisting of the construction of compost latrines, the beneficiary community did not receive proper guidance on the care and maintenance of the facilities. Consequently, the compost was removed before it had time to decay sufficiently and allow the anaerobic conditions to kill infectious bacteria. The compost extracted too soon from the sealed latrine compartments therefore may have caused human health problems when used as fertilizer on gardens or when deposited as refuse near the homestead (Green 1996).

Sewage collection subprojects generally involve the construction of underground collection tubes, and home and building hookups. In many instances the sewage collection system is designed and constructed without any type of treatment at the end of the pipe. There may be a straight discharge into a nearby body of water, which may adversely affect the aquatic environment by increasing nutrients, decreasing levels of oxygen due to organic material, and threatening aquatic life with toxic chemicals. Treatment can include simple removal of debris with screens at the discharge point, use of settlement ponds, or simple aeration systems.

Solid Waste Collection

Social fund financing is increasingly being used to provide waste collection receptacles and to purchase garbage collection trucks. Not so common, but highly desirable, is the

design and construction of sanitary landfills. Table 1.5 summarizes the most frequently encountered environmental ramifications of solid waste subprojects.

Removed garbage is often transported to dumping grounds or landfills. The garbage streams contain all types of household and other wastes, some of which are hazardous. Collection workers usually have no special training or protection for handling these wastes, and the same is true for landfill operators and human scavengers who may be sorting through the debris. Burning of waste is also common in rural landfills. This can create smoke, dust, and harmful gases, further degrading air quality already compromised by emissions from waste decomposition.

A particularly important environmental consideration in the case of landfills is the contamination of surface waters or aquifers. Landfills often are improperly sited, which along with inadequate design and improper operation, can lead to flooding, seepage, and contamination of groundwater or surface waters (see *Environmental Assessment Sourcebook Update,* "No. 21: Environmental Hazard and Risk Assessment," 1997). Sound design and siting studies are crucial for this type of subproject, and it is also important to organize training seminars for solid waste workers and beneficiaries.

Small-Scale Irrigation

Irrigation and drainage subprojects are designed to manage water for enhancing agricultural production. There is a wide range of irrigation schemes that can accommodate many variations in the source and availability of water, type of climate, and form of agriculture. Irrigation subprojects include a variety of structures: dams, ponds, reservoirs, wells, pumping stations, canals, ditches, and pipelines. Construction of irrigation channels includes excavation and earthworks, which can be of elementary design or more sophisticated concrete networks. Table 1.6 summarizes the most frequently encountered environmental impacts of small-scale irrigation subprojects.

Irrigation subprojects often intensify agricultural production in the irrigation zone, and environmental problems may result from increasing use and concentrations of agrochemicals. Such agricultural intensification can also cause accelerated nutrient loading of receiving waters, resulting in algal blooms, proliferation of aquatic weeds, and deoxygenation. Other impacts from irrigation subprojects include waterlogging and salinization of soils, degradation of downstream surface water systems, and biotic and chemical changes to aquatic ecosystems.

Extraction of water from reservoirs or pumping from groundwater have the potential to cause significant hydrological disturbances. Diverting water from river systems, especially during seasonal low flows, can cause changes to riverine ecology, fisheries, and aquatic vegetation. Extensive withdrawal from groundwater sources in excess of the normal rate of aquifer recharge will result in the lowering of the water table and create threats to the subproject's long-term sustainability. This is of particular concern in arid regions.

Irrigation schemes may also cause an increase in waterborne diseases, because disease vectors proliferate in irrigation canals under some circumstances. If canals are not properly maintained, animal and human waste may be deposited into irrigation systems and spread communicable diseases. The incidence of schistosomiasis, malaria, and onchocerciasis has increased in some regions of the tropics and subtropics due to irrigation works.

Social problems may arise because of multiple demands for limited water resources. Water rights issues cause disruption of historical land use practices, and irrigation subprojects lead to new agricultural schemes affecting changes in land tenure and arable land. Conflicting demands for water and inequities in distribution can also cause problems.

Minor Construction Subprojects

Social funds typically finance a great variety of small construction subprojects. Most common among these are schools and health posts. It is rare that such small construction subprojects will cause significant impacts; however, they should be screened for potential environmental considerations such as involuntary resettlement, contamination from waste materials during construction, disturbances during construction (dust, noise, etc.), and environmental contamination during operation of the facilities (caused, for example, by inadequate sanitation facilities).

Slaughterhouses are financed by some SFs, and can improve sanitation and hygiene conditions by replacing or substituting for open-air meat processing facilities that typically are very unhygienic. Yet the relatively minor construction subprojects that are involved warrant special study because of unique environmental considerations and potential impacts. Potable water and adequate waste drainage and collection are mandatory for such a facility. Animal waste, blood, and unused carcass parts must be disposed of in a sanitary and hygienic fashion. Stray dogs and other animals can become a problem, noise and odors from the facility can severely affect people living in adjacent neighborhoods, and the volume and concentration of delivery vehicles can also disrupt nearby communities.

Another minor construction subproject category with a special suite of environmental considerations is that of health posts. Potential problems associated with the handling and disposal of medical waste must be addressed during the design of the subproject and monitored during operation of the facility. See *Environmental Assessment Sourcebook Update,* "No. 18: Health Aspects of Environmental Assessment" (1997), and the World Bank Technical Guidance Note on healthcare waste management (1998) on the Bank's internal web page at www-lite.worldbank.org/fpsi/infra/urban/solid_wm/sw_home.htm.

Table 1.1 Typical Impacts and Mitigation Measures of Road Subprojects Financed by Social Funds in Latin America and the Caribbean

Environmental and Social Components	*Impacts*	*Mitigation Measures*
Physical Environment		
Soils	• Erosion of lands downslope from roadbed or borrow areas • Landslides, slips, and slumps	Construction in dry season; protection of soil surfaces during construction; revegetation or physical stabilization of erodible surfaces
Water Resources	• Creation of stagnant water pools • Increased sediments into streams • Clogging of drainage works • Decline in water quality • Increase in runoff and flooding conditions • Introduction of hazardous wastes	Special attention to drainage; prevention of erosion; consideration of alternative alignments; retention ponds; proper disposal of oil and other hazardous materials
Air Quality	• Dust during construction	Dust control by water or other means
Acoustic Environment	• Noise disturbance	Restrict construction to certain hours
Biological Environment		
Natural Habitats	• Disturbance of natural habitats • Disturbance to protected areas	Consideration of alternative alignments or sites (especially for new roads)
Fauna and Flora	• Disruption or destruction of wildlife • Threats to rare and endangered species • Increased road kills because of higher speeds and traffic volume	Minimize loss of natural vegetation during construction; alternative alignments; various special measures for sensitive species
Social Environment		
Aesthetics and Landscape	• Marred landscapes • Debris	Restoration of vegetation; cleanup of construction sites
Historical/Cultural Sites	• Degradation of sites • Disturbance to structures	Alternative alignments and/or sites Special measures to protect cultural heritage sites
Human Health	• Transport of hazardous substances • Traffic accidents • Pedestrian accidents	Regulation of transport of materials Safety designs (signage)
Human Communities	• Involuntary resettlement • Social change (new roads) • Loss of buildings, property, or economic livelihood	Compensation as per OD 4.20

Table 1.2 Typical Impacts and Mitigation Measures of Bridge and River Ford Subprojects Financed by Social Funds in Latin America and the Caribbean

Environmental and Social Components	*Impacts*	*Mitigation Measures*
Physical Environment		
Soils	• Degradation of riverbanks through excavation and erosion	Protection during construction; erosion prevention using plastic fencing; revegetation or physical stabilization
Water Resources	• Creation of stagnant water pools • Increased sediments into streams • Decline in water quality • Changes to hydrological regime (e.g., increased flooding) • Introduction of hazardous wastes	Construction during dry season; minimized erosion of riverbanks; minimal disruption of natural streamflows
Air Quality	• Dust during construction	Use of water to minimize dust generation
Biological Environment		
Natural Habitats	• Disturbance of natural habitats (especially aquatic)	Careful siting (especially new structures)
Fauna and Flora	• Loss or degradation of vegetation (including aquatic vegetation) • Disruption or destruction of wildlife (especially fish) • Disturbance to spawning areas of fish (stream bottoms) • Threats to rare and endangered species	Faunal inventories; no construction during breeding season
Social Environment		
Aesthetics and Landscape	• Marred landscapes • Debris	Cleanup of construction sites
Human Health	• Traffic accidents • Pedestrian accidents	Adequate regulation and signposting
Human Communities	• Involuntary resettlement • Loss of buildings, property, or economic livelihood	Compensation as per OD 4.20

Table 1.3 Typical Impacts and Mitigation Measures of Water Supply Subprojects Financed by Social Funds in Latin America and the Caribbean

Environmental and Social Components	*Impacts*	*Mitigation Measures*
Physical Environment		
Soils	• Degradation of soil cover	Protection during construction; revegetation or physical stabilization
Water Resources	• Contamination of water resources • Overexploitation of aquifers • Inadequate wastewater disposal • Introduction of hazardous wastes • Creation of stagnant water pools	Adequate protection from livestock; minimal distance from human settlements and agricultural areas; regional water use planning; proper drainage near pumping stations; community participation; links to sanitation subprojects
Acoustic Environment	• Noise disturbance from pump station if near a home	Siting studies
Biological Environment		
Natural Habitats	• Disturbance of natural habitats	Siting studies
Fauna and Flora	• Loss or degradation of vegetation • Disruption or destruction of wildlife	Protection of vegetation during construction
Social Environment		
Aesthetics and Landscape	• Marred landscapes • Debris	Cleanup of construction sites
Human Health	• Waterborne diseases • Chemical imbalances in delivery system	Correct design and adequate training; testing procedures
Human Communities	• Involuntary resettlement • Loss of buildings or property	Compensation as per OD 4.20

Table 1.4 Typical Impacts and Mitigation Measures of Latrines and Domestic Wastewater Sewage Subprojects Financed by Social Funds in Latin America and the Caribbean

Environmental and Social Components	*Impacts*	*Mitigation Measures*
Physical Environment		
Soils	• Degradation of soil cover	Erosion control during construction
Water Resources	• Point source pollution at discharge of pipe • Water quality degradation (deoxygenation) in receiving surface waters • Contamination of subsurface water resources	Select appropriate technology for wastewater treatment; settling ponds, screens, or aeration systems; siting studies; incorporation into larger wastewater systems; adequate training in maintenance of latrines or disposal systems; alternative siting; monitoring programs
Biological Environment		
Natural Habitats	• Disturbance of natural habitats	Alternative site
Fauna and Flora	• Loss or degradation of vegetation • Disruption or destruction of wildlife	Alternative site
Social Environment		
Aesthetics and Landscape	• Unpleasant odors	Include odor-control technology in design
Human Health	• Disease transmission • Accident risk during construction • Sewer gas leaks • Improper use of night soil from composting toilets	Select appropriate technology; training and monitoring programs, community participation, operation and maintenance plans
Human Communities	• Impacts may be concentrated downstream in other communities	Adequate consultation and participation of all potentially affected communities

Table 1.5 Typical Impacts and Mitigation Measures of Solid Waste Collection/Disposal Subprojects Financed by Social Funds in Latin America and the Caribbean

Environmental and Social Components	*Impacts*	*Mitigation Measures*
Physical Environment		
Water Resources	• Point source pollution from landfill • Seepage of contaminants into aquifers • Contamination from clandestine dumping	Adequate siting studies; good design standards; consideration of alternative sites; ensuring adequate drainage; community participation; training
Air Quality	• Particulate contamination from burning garbage • Increase in haze and smog	Spread and cover garbage at landfill site; prohibit or minimize burning
Biological Environment		
Natural Habitats	• Disturbance or loss of natural habitats	Adequate siting studies
Fauna and Flora	• Loss or degradation of vegetation • Disruption or destruction of wildlife	Adequate siting studies
Social Environment		
Aesthetics and Landscape	• Unpleasant odors • Marred landscapes near landfill site • Garbage littered about in towns from inefficient collection services	Provide complete collection and disposal service; pilot collection systems; cost recuperation; proper design of collection or disposal systems; recycling programs; community participation
Human Health	• Methane and other noxious chemicals emitted • Disease transmission from animal and insect vectors • Hazardous particulates emitted during burning • Safety and health hazard from medical and industrial wastes	Separate disposal system for medical or hazardous wastes; gas recovery systems; safety procedures implemented; training of workers and beneficiaries; operation and maintenance plans
Human Communities	• Involuntary resettlement • Unpleasant living conditions adjacent to site (e.g., frequent movement of trucks)	Compensation as per OD 4.20; control of zoning; attention to route selection for waste transfer vehicles

Table 1.6 Typical Impacts and Mitigation Measures of Small-Scale Irrigation Subprojects Financed by Social Funds in Latin America and the Caribbean

Environmental and Social Components	*Impacts*	*Mitigation Measures*
Physical Environment		
Soils	• Increase of soil erosion • Soil waterlogging as a result of improper drainage • Increased salinization	Proper siting of irrigation subprojects; extension and training in crop selection and agricultural technology; careful design and appropriate selection of irrigation systems; adequate drainage
Water Resources	• Water quality degradation in ponds and reservoirs • Deoxygenation of receiving water • Clogging of canals from weeds • Inefficient water flow because of heavy sedimentation • Degradation of water systems receiving irrigation waters by nutrients, agrochemicals and salts • Depletion of aquifers from overexploitation • Disturbances to flow regimes	Control of agrochemical use; proper design of canals; monitoring of water quality; operation & maintenance plan; regional water use plans
Biological Environment		
Natural Habitats	• Disturbance of natural habitats • Disturbance to protected areas	Consideration of alternative sites; select appropriate design and crops
Fauna and Flora	• Disruption or destruction of wildlife • Algal blooms, proliferation of aquatic weeds	Provision of corridors of habitat for movement of animals
Social Environment		
Human Health	• Risk of waterborne diseases from artificial water flows (schistosomiasis, malaria, etc.) • Disease transmission from human and animal waste deposits in irrigation waters used on agriculture • Toxicity of pesticides	Education in proper sanitation and health practices; avoidance of stagnant waters; adequate treatment of irrigation waters; careful management of pesticides; integrated pest management (IPM) programs; protection of canals from livestock
Human Communities	• Involuntary resettlement loss of property • Conflicts over water use rights • Multiple land use demands on restricted water sources • Political and social problems associated with upstream land use and pollutant discharges	Compensation as per OD 4.20; good consultation and participation with affected communities; consideration of cumulative impacts

Table 1.7 Typical Impacts and Mitigation Measures of Minor Construction Subprojects Financed by Social Funds in Latin America and the Caribbean

Environmental and Social Components	*Impacts*	*Mitigation Measures*
Physical Environment		
Soils	• Contamination from waste materials	Protection of soil surfaces during construction; control and daily cleaning of construction sites; provision of adequate waste disposal services
Water Resources	• Clogging of drainage works • Decline in water quality due to contamination • Introduction of hazardous wastes	Special attention to drainage; proper disposal of oil and other hazardous materials; adequate sanitation and disposal system for waste (especially markets, slaughterhouses, schools)
Air Quality	• Dust during construction • Degraded interior air quality (e.g., caused by cooking stoves) • Odor problems (e.g., markets, slaughterhouses)	Dust control by water or other means; appropriate design and siting of subproject.
Acoustic Environment	• Noise disturbance during construction or operation	Restrict construction to certain hours
Biological Environment		
Natural Habitats	• Disturbance of natural habitats	Consideration of alternative alignments or sites
Fauna and Flora	• Loss or degradation of vegetation • Disruption or destruction of wildlife	Minimize loss of natural vegetation during construction; consideration of alternative sites; various special measures for sensitive species
Social Environment		
Aesthetics and Landscape	• Debris	Cleanup of construction sites; provision of adequate solid waste disposal systems
Historical/Cultural Sites	• Degradation of sites • Disturbance to structures	Consideration of alternative sites; special measures to protect buildings and other cultural resources/areas
Human Health	• Construction accidents • Medical wastes from health posts	Specially designed systems for disposal of medical wastes
Human Communities	• Involuntary resettlement • Loss of buildings, property, or economic livelihood • Disruption due to greater traffic flows	Compensation per OD 4.20; good siting; community participation in environmental assessment

2. INCORPORATING ENVIRONMENTAL ASSESSMENT INTO THE SOCIAL FUND SUBPROJECT CYCLE

2.1 Generalized Social Fund Subproject Cycle

All of the SFs operate within a well-defined mandate and in accordance with operational procedures, usually documented in a detailed operational manual. The operational manual defines the steps required to implement subprojects and usually includes a series of standard procedural forms, reviews, and measures to ensure accountability.

There is considerable variety in procedures from one fund to another and different names may be used for various stages, but a generalized SF subproject cycle is presented in Figure 2.1. Critical steps in the SF subproject cycle include targeting and promotion, subproject formulation, appraisal, approval, implementation, and monitoring and evaluation. As summarized in Figure 2.2 and described in the following sections, environmental issues need to be considered at each of these steps.

2.2 Targeting and Promotion of Subprojects

Targeting Goals

SFs have carefully established targeting goals for their portfolio of subprojects. Targeting and promotion are critical to attaining the overall goals for which the SFs are established, and typically are focused on ensuring that the subprojects reach the poor. Multilateral and bilateral donors and lenders are usually very interested in helping develop appropriate targeting mechanisms. Various kinds tools are used, such as national poverty maps to locate the neediest communities in the country. In some countries with significant indigenous populations, targeting mechanisms must take into consideration the need to make special efforts to promote subprojects in indigenous communities (Box 2.1). It is equally important to ensure that women are targeted, since they are often the caretakers of natural resources (Box 2.2).

In addition to poverty and geographic foci, most SFs predetermine the allocation of funds between various subproject types. These vary with the area of the country, local capacity, community-based demands, activities of other governmental and nongovernmental organizations, and the capacity of the SF itself. As discussed in Section 1.2, there is increasing demand for the SFs to include environmentally beneficial subprojects such as reforestation and ecotourism in their portfolios, sometimes with a predetermined funding allocation. This is currently the most important way that environmental considerations are reflected in the targeting and promotion stage. There are, however, other environmental considerations worth noting at this stage.

Box 2.1 Ensuring Adequate Targeting and Participation of Indigenous Peoples

Culturally sensitive targeting and ensuring the participation of indigenous peoples is important. Understanding cultural norms and traditions helps define the types of subprojects, as well as the most appropriate subproject design for indigenous communities. Careful selection and design of subprojects in turn contributes to the environmental sustainability of community works.

The importance of targeting indigenous groups is illustrated in the social assessment carried out during preparation for the Community Development and Reconstruction Project (FONAPAZ) in Guatemala. The communities affected by this demand-driven program are almost entirely Mayan, with a strong cultural traditional of respecting the earth. According to Mayan cosmology, the world is a place of perfect balance where there are no more and no less resources than needed, and where individuals only extract from nature the resources needed to secure their daily subsistence.

Given this belief, tree nursery production for commercial purposes probably would not be an ideal subproject for the FONAPAZ program to promote. The social assessment report for FONAPAZ cautions that if such subprojects are to be promoted and be lucrative, their success "would depend on the philosophical aim of nurturing the land and protecting the soil and Mother Earth, rather than making a profit."

Source: Traa 1997.

Box 2.2 Gender Issues in Social Funds

There is some indication that women are not well targeted across subproject types in SFs (Awad 1997). This is an important issue from an environmental standpoint because women typically use natural resources as much as or more than men, and are the best source of information on the status of these resources in the community. To promote women's involvement in SF subprojects, an understanding of their concerns, traditions, and place in society is necessary.

The social assessment carried out for FONAPAZ in Guatemala also illustrates the importance of targeting women. Through this assessment it was learned that communal washhouse subprojects that FONAPAZ staff wanted to promote probably would not be successful. The purpose of such washhouses was to reduce contamination of water resources from laundering clothes in rivers and streams. However, the social assessment uncovered women's feelings about such a project:

> Individual prefabricated washtubs would be more desirable than communal ones. Washing clothes in the river is a social event which women of all ages would like to preserve. When given the possibility to do the washing in either prefabricated washboards at their home or in communal wash houses, the response was that (a) women would always go to the river because of the tradition of "courting and falling in love while washing clothes in the river"; and (b) individual installations are preferred over communal ones.

Since communal washhouses are not the answer in this case, alternative solutions are being found. Providing individual washboards for use in the home is expected to make a difference, as will training on the environmental and health effects of washing in the river.

Source: Traa 1997.

Figure 2.1 Generalized Social Fund Subproject Cycle

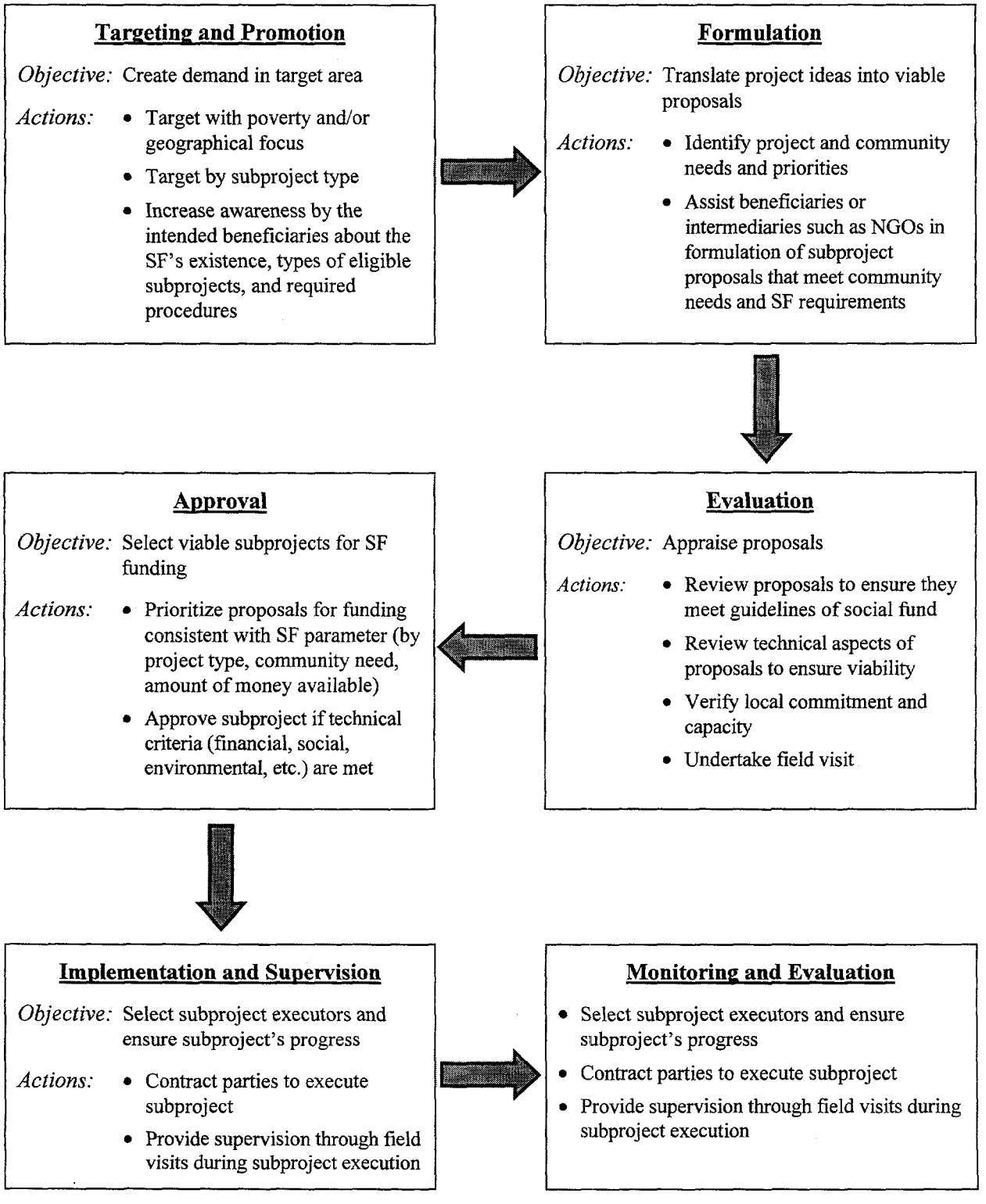
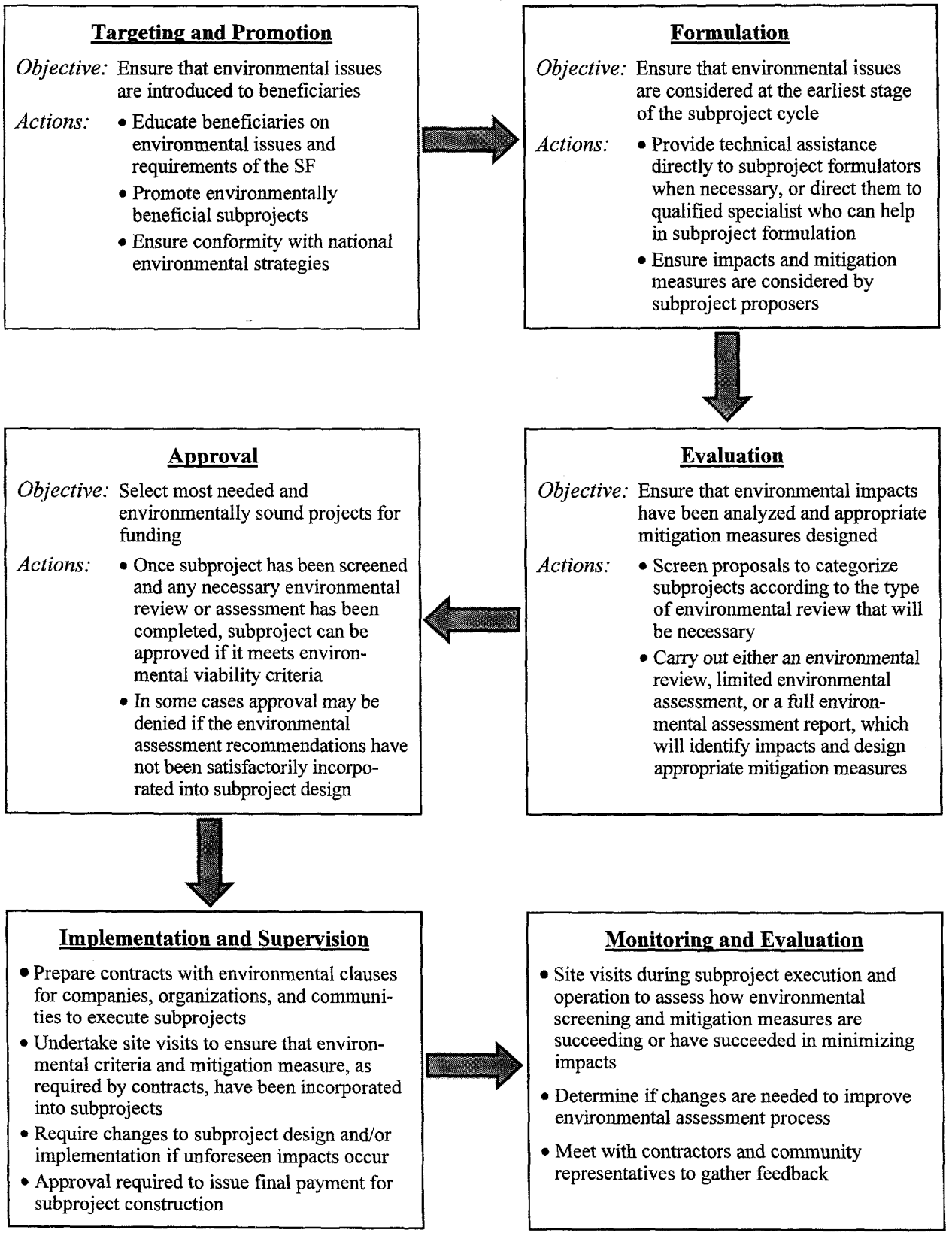


Figure 2.2 Environmental Assessment Process of a Social Fund Subproject



Consistency with National Strategies

A more indirect but possibly more important way to incorporate environmental considerations into SFs at the targeting and promotion stage is to ensure that SFs are broadly consistent with national environmental strategies or regional land use plans. In most SFs, there does not appear to have been any serious attempt to conform with national environmental strategies.

National environmental strategies come in many forms, such as national environmental action plans (NEAPs) supported by the World Bank and other donors, national sustainable development strategies, national conservation strategies, tropical forest action plans, national biodiversity strategies, etc. (World Bank 1995; Lampietti and Subramanian 1995). Although by definition SFs are and should be demand-driven at the subproject level, broad targeting goals can be legitimately influenced by national strategies that have benefited from a process of national consultation and participation and for which a broad national consensus has been reached. Taking into account national strategies may help to influence, for example, the relative allocation of funds to water or sanitation subprojects, or to influence the portfolio of environmental subprojects.

By taking into account national strategies, social funds might sometimes modify targeting of funds to geographically limit some types of investments. This might be desirable if national environmental strategies implied the need for focusing particular types of development in certain areas. In Nicaragua, for example, the government is promoting, with support from the World Bank and the Global Environment Facility (GEF), the Atlantic Biological Corridor. This project supports an environmentally oriented land use planning vision for the country's Atlantic slope. Areas that are considered core sections of the corridor and particularly important for biodiversity conservation are not, therefore, appropriate for SF investments that would encourage in-migration.

Promotional Programs

Poor communities, by nature of their isolation and their very poverty, may have little opportunity to learn about programs designed to help them. Therefore, many of the SFs have established promotional programs to disseminate information about the fund to intended beneficiaries. This component is often supported by a promotion and training capacity within the fund that acts as an extension program. In general, beneficiaries are provided information about the types of subprojects, the selection criteria, and required procedures. Participation in social funds has been explored in detail for World Bank-financed social funds (Schmidt and Marc 1995; Narayan and Ebbe 1997).

It is important to include environmental considerations in training and extension programs. Providing training in environmental awareness and environmental requirements of the SFs will help local beneficiaries better appreciate environmental concerns and may help local communities better prepare environmentally low-impact subprojects. This process of awareness involves local communication networks, mayors, local government councils, indigenous leaders, religious organizations, and community cooperative associations. Many countries have NGOs operating at the local community level, and these afford opportunities for efficient dissemination mechanisms.

2.3 Subproject Formulation: Screening

Subproject formulation includes both the identification of fundable subprojects and transformation of subproject concepts into subproject application documents. Across different SFs and even within a country, subproject formulation may be undertaken by a great variety of actors. Ideally, this will be a local community-based organization, but assistance is often augmented by contracted NGOs, governmental organizations, or by SF staff.

The formulation step is designed to ensure the preparation of a subproject proposal that will be essentially complete and ready for appraisal or technical evaluation by the SF. Consequently, it is important for the formulator to screen environmental impacts at this point in the subproject cycle, develop alternative designs if possible, suggest mitigation measures, and put in place plans for monitoring the subproject.

Environmental screening entails classifying subproject proposals into one of several categories of likely environmental impacts, and serves two very important purposes. On the one hand, it helps identify early in the subproject cycle those subprojects with potential environmental impacts so that adequate attention can be given to the development of appropriate mitigation measures. On the other hand, an effective screening can identify subprojects which have few or no environmental consequences so that they can be excluded from unnecessary and costly environmental review. A great variety of screening categories and procedures are possible and are in use. For most SF subprojects, however, we recommend four possible screening categories, which are described more fully in the following sections:

- No further environmental assessment
- Environmental review (ER)
- Limited environmental assessment (LEA)
- Environmental assessment report (EA report)

The large number of subproject proposals typically received by SFs mandates that the environmental screening process be standardized to some degree, otherwise this part of the evaluation can create bottlenecks in subproject processing. This is particularly true for SFs processing a very large number of subprojects (for example, FONCODES in Peru approved 17,208 subprojects from 1991 to 1995, and the TRABAJAR project in Argentina, a public works program, expects to fund 16,000 subprojects within two years). The initial screening of proposals, using a standardized process, can be done by nonspecialists; an environmental background is not necessary if screening procedures are simple and clear. It is important, however, that all proposals be subjected to this screening and placed in the appropriate environmental category.

Screening can be accomplished using a generic checklist that covers all types of subprojects where little or no information about specific subprojects is provided. In such a checklist, subproject type is essentially the sole basis for determining what kind of environmental assessment is required. Table 2.1 is a hypothetical example of such a checklist. This type of generic approach is certainly useful for quickly eliminating certain types of subprojects from any further environmental consideration, and can cover all conceivable SF subprojects.

Table 2.1 Generic Screening Checklist

Subproject Type	*Recommended Environmental Assessment Approach* [a]			
	None	*ER*	*LEA*	*EAR*
New Bridges and Rural Roads			✓	✓
Rehabilitation of Bridges and Rural Roads			✓	
Wastewater Treatment				
Fewer than 100 persons		✓		
Fewer than 1,000 persons			✓	
More than 1,000 persons; existing or planned treatment system			✓	
More than 1,000 persons; no treatment system				✓
Drinking Water Supply				
Fewer than 100 persons	✓			
More than 100 persons; little or no possibility of aquifer contamination		✓		
More than 100 persons; possibility of aquifer contamination			✓	
Schools, Commercial Centers, etc.				
Minor rehabilitation	✓			
Rehabilitation w/ major construction or waste disposal considerations		✓		
New constructions			✓	
Health Centers				
Rehabilitation		✓		
New constructions			✓	
Latrines				
Fewer than 100 persons		✓		
More than 100 persons			✓	
Slaughterhouses and Markets			✓	
Small-Scale Irrigation Subprojects				
Rehabilitation; no new construction of canals		✓		
Construction of new canals			✓	
Electrical Supply Systems	✓			
Solid Waste Disposal				
No construction of new waste disposal facilities			✓	
Construction of new waste disposal facilities				✓
Small Community Works (sidewalks, pedestrian bridges, etc.)	✓			
Forestation/Reforestation				
Fewer than 100 hectares	✓			
More than 100 hectares		✓		
Protected Areas/Parks				
No infrastructure construction		✓		
Construction of new infrastructure			✓	
Ecotourism Subprojects				
No infrastructure construction		✓		
Construction of new infrastructure			✓	
Improved Cooking Stoves	✓			
Construction of Small Animal Production Centers (fish farms, etc.)	✓			
Flood Protection Barriers				
Only rehabilitation of existing barriers			✓	
Construction of new barriers				✓
Institutional Strengthening and Community Development	✓			

a. ER = Environmental Review. LEA = Limited Environmental Assessment. EAR = Environmental Assessment Report. The suggested EA instruments are only recommendations; special circumstances in a given subproject may impose use of a stricter instrument, but it probably would never be appropriate to "downgrade" the recommended EA instrument or approach.

2.4 Subproject Formulation: Impact Assessment

The screening process leads to a decision on the appropriate level of environmental assessment for the subproject. The four recommended categories mentioned in the last section—no review, environmental review, limited environmental assessment, and environmental assessment report—are explained in more detail below. At this stage in subproject formulation the following issues need to be addressed: evaluation of possible impacts, consideration of alternatives, mitigation measures, and supervision and monitoring arrangements. A variety of tools can be used in addressing these issues, including matrices, checklists, and reports. Below we make some recommendations as to the most appropriate tool for each level of analysis; other proposals and examples will be available with the electronic version of this report.

SFs have evaluated the relative significance of environmental impacts in several ways. Some use just a presence/absence indication of impact and others use an indication of the degree of impact (moderate, significant, or highly significant). Some SFs have developed fairly complex numerical approaches to quantifying impacts; generally we do not think such approaches are practical for SFs. Ultimately, determination of the degree of impact is subjective, and it is important that the system be simple and easy to use.

All environmental evaluation analyses should also be concerned with the identification of mitigation measures: feasible and cost-effective actions that can reduce negative environmental and social impacts. The impact assessment should provide details on the proposed mitigation measures for each subproject and how they will be implemented and financed. Analysis of the cost of mitigation measures is critical to subproject costs in budget preparation activities.

Environmental Review (ER)

Environmental review refers to the very simplest level of environmental assessment. For most SFs, an ER will be sufficient for the majority of subprojects. It does not generally require sophisticated environmental expertise and can be adequately completed by the proposing organization.

An ER should move beyond what is required at the screening stage by requiring the use of a checklist (Table 2.2) to address the general kinds of impacts the subproject in question could have. The ER should lead to a set of mitigation measures which will be specific to the type of subproject in question but not necessarily to the individual subproject. Only one generic checklist for all types of subprojects is necessary at the ER level. The SF would, however, need to prepare supporting material that outlines typical impacts and mitigation measures of each type of subproject (see representative tables provided in this report).

Limited Environmental Assessment (LEA)

An LEA is required for subprojects considered likely to have some environmental impacts that need to be reviewed by an environmental specialist. An LEA form will be specific to the subproject type, and mitigation measures recommended by the specialist would be incorporated at the design stage. Table 2.3 provides an example for one kind of subproject.

Table 2.2 Example of a Generic Environmental Review (ER) Checklist

Type of Expected Impact	*Description of Impact*	*Proposed Mitigation Measure*
PHYSICAL ENVIRONMENT		
Increased soil erosion?		
Increased sediment load into receiving waters?		
Likely contamination of surface or subsurface waters?		
Excessive dust or noise during construction?		
BIOLOGICAL ENVIRONMENT		
Removal or disturbance of natural vegetation?		
Subproject in core or buffer area of a protected area?		
Disruption or disturbance of animals or any locally important animal habitat?		
SOCIAL ENVIRONMENT		
Aesthetic degradation of a landscape?		
Degradation or disturbance of an historical or cultural site?		
Transport or use of toxic substances that poses a risk to human health?		
Involuntary displacement of individuals or families?		
Economic losses to individuals or families because of the subproject?		

Table 2.3 Limited Environmental Assessment (LEA) Form: Example for Potable Water Subprojects

Please use short descriptions to respond to the following:

1.0 General Description of Subproject

1.1 Subproject Objective

Current situation of community with respect to potable water, related problems, and expected beneficiaries.

1.2 Construction Phases, or Subproject Components

Cleaning the source area, removal of vegetation around source area, digging of well, etc.

1.3 Alternatives Rejected by Subproject Presenters

Initially considered XXX but rejected due to unstable soils.

2.0 Baseline Description of Affected Environment

2.1 Description of Physical-Chemical Environment

Water	***Air***	***Soil***
Qualitative characteristics of supply source, quality, uses, necessity for sanitary protection, accessibility by humans and animals, protection of water source from contamination.	Characteristics of wind currents, presence or absence of dust.	Slope grades, uses of soil, stability, permeability, signs of erosion.

2.2 Description of Biological Environment

Flora	***Habitats and Communities***
Type of vegetation coverage in proposed area.	Forests, natural or protected areas, wildlife refuges.

2.3 Description of Socioeconomic Environment

Historical Aspects	***Aesthetic Aspects***	***Public Health Aspects***	***Infrastructure***
Location of cemeteries, archeological ruins, historical and cultural sites.	Characteristics of the countryside, views.	Mortality and morbidity associated with water consumption, presence of mud, disposal of soapy water, etc.	Access to supply source, plants, and tanks, principal economic activities, drainage systems in the community.

3.0 Identification of Negative Environmental Impacts

3.1 Impacts on the Physical-Chemical Environment

Water	***Air***	***Soil***
Overexploitation of water source, Stagnation of water, etc.	Creation of dust, noise.	Erosion, etc.

3.2 Impacts on the Biological Environment

Flora	***Habitats and Communities***
Impacts on trees or vegetation.	Impacts on natural areas, protected areas, or wildlife refuges.

3.3 Impacts on the Socioeconomic Environment

Historical	***Aesthetic***	***Public Health***	***Infrastructure***
Impacts on monuments, archeological ruins, etc.	Alteration of the countryside, vistas, etc.	Health risks from the formation of water retention areas, etc.	Impacts on drainage systems, etc.

4.0 Mitigation Measures

Impact	***Mitigation Measures***
Description of impact.	Would generally have one or more pages with details on proposed mitigation measures, including costs and recommendations for supervision and monitoring.

Often the environmental specialist will also visit the proposed site to assess baseline conditions and potential site-specific impacts. For subprojects requiring an LEA, it will be important to monitor the work, both during construction and operation, to ensure that mitigation measures are implemented and that no unforeseen negative impacts are occurring.

Environmental Assessment Report (EA Report)

An EA report would be required in the event of significant direct or indirect impacts; such a subproject would generally be subject to national requirements for an EA. Social fund projects very rarely need a full environmental review; normally a subproject requiring this kind of environmental analysis would be refused funding by an SF. Subprojects most likely to require an EA report include large-scale irrigation subprojects, micro-dams, new roads, and subprojects in critical natural habitats or protected areas.

An EA report requires the involvement of a highly skilled environmental expert or team of experts and usually takes some time to complete. Several site visits would most likely be involved, subproject-specific measures would have to be planned, and a detailed supervision and monitoring plan developed. Developing terms of reference (TORs) for the environmental specialist would be critical, and they would most likely need to be written by an environmental specialist. The study itself would probably be contracted out and implemented by a third party, and the relevant line ministry would be an integral part of the study.

2.5 Appraisal and Approval of Subproject Proposals

Subproject Appraisal

Once formulated, a proposal must be submitted to the appropriate SF administrative office for appraisal. The appraisal process is initiated with an examination of the subproject's eligibility according to the operational guidelines of the SF. A critical requirement is that the subproject benefits from community commitment in terms of investment sharing or in-kind contributions. In certain cases, depending on the type of subproject, accompanying technical feasibility information is required from other specialists (for example, water supply systems) or other government authorities. In many cases, particularly in more complex subprojects, fund staff undertake a field visit and submit a report as part of the appraisal process. When additional technical or feasibility studies are required, the SF usually has funds available to commission these studies.

The environmental assessment of subprojects should ideally have been undertaken during project formulation so that the SF environmental specialist must only review the EA documents (screening decision, checklists, studies, etc.) and determine whether the suggested environmental measures are appropriate. Typically, however, the quality of environmental analysis during project formulation is such that the SF environmental expert may have to do much of the required analysis or return the proposal to the formulator with specific guidance as to how to undertake a satisfactory environmental assessment. Where significant impacts are predicted and a field visit is mandatory, it may be appropriate to contract a consultant to undertake a more detailed environmental

assessment. In the event of obvious and significant environmental problems, the proposal should not be allowed to pass through the evaluation stage in the subproject cycle until these problems are adequately addressed.

Subproject Approval

The typical SF subproject cycle usually admits three possible outcomes of the appraisal stage: acceptance, request for reformulation, or refusal. The decision whether to approve the subproject must be based on a broad range of criteria determined by the SF to allow it to best accomplish its mandate as a poverty reduction financing mechanism. These will include nontechnical elements such as conformity with targeting guidelines and evaluation of community support and commitment. Technically and financially the subproject must be sound and sustainable. Typically there is little consideration of environmental feasibility at this stage, therefore it is important to adequately address these issues during project formulation and appraisal. However, a mandate at the approval stage to evaluate environmental aspects of the subproject creates an important check on the quality of work of the project evaluation unit; therefore SFs should ensure a minimum capacity for environmental review at the project approval stage. We recommend that SFs include an explicit evaluation by SF management of subprojects that have been through an EA report, and a sampling of subprojects at the level of an LEA or its equivalent.

2.6 Subproject Implementation

Upon approval, and depending on the SF, numerous administrative actions are required for management review, financial commitments, contracting, and allocations of funds. Arrangements are made for contracts to be prepared and signed by appropriate parties and financing agreements signed with implementing agencies or beneficiary representatives. Implementation arrangements can be made with various parties. Procedures for procurement, disbursements, reporting, and the need to maintain accounts are mandatory. The implementing agency is the entity that is legally entrusted with the task of executing the subprojects. These may include subproject management committees representing the beneficiary community, voluntary organizations, private contractors, or local government organizations. Agreements and procedures for maintaining the assets created by the funds, and responsibilities and arrangements for covering recurrent costs must be included in this component.

Most of the arrangements regarding construction, implementation, and monitoring are contained in a legal contract signed between the SF and the implementing agency. It is critical that the results of the previous EA process (special mitigation measures, design specifications, supervision plans, and monitoring arrangements) be duly incorporated into the legal contract.

In addition to special measures that may need to be included in the contract, most SFs will find it very advantageous to prepare a standard set of environmental clauses to be included in each contract. If necessary, these could be prepared individually for different categories of subprojects.

2.7 Environmental Monitoring and Evaluation

Monitoring is the systematic measurement of how a subproject is performing; it is part of the overall supervision of a subproject. In this document, we refer to environmental monitoring only; that is, review of the environmental impacts of a subproject and whether and how well mitigation measures are being implemented during construction. Evaluation, as used in this document, refers to the *ex post* review of how well a subproject has addressed environmental considerations once it is in operation.

Subproject Monitoring

Monitoring will usually involve field visits. For the purposes of environmental objectives it is important to determine that mitigation measures are being properly implemented, that environmental contractual measures are being respected, that construction is proceeding in accordance with the agreed design standards, and that no unforeseen negative impacts are occurring as a result of subproject execution. Monitoring has been separated from implementation in the Generalized Social Fund Subproject Cycle depicted in Figure 2.1, but actually the monitoring process begins with supervision of implementation. In fact, the bulk of monitoring activities may take place during that part of the subproject cycle.

Environmental mitigation measures and specific monitoring requirements should be determined or at least outlined during project formulation and finalized during project evaluation. It is common, however, for a substantive gap to exist between what is proposed as mitigation measures and what is actually carried out in the field. It is important, therefore, that monitoring requirements be adequately reflected in contractual obligations, and that sanctions for noncompliance with mitigation measures are spelled out in these contracts (see Wiens and Guadagni 1996; World Bank 1997). A standardized form should be developed by the SF for environmental monitoring. This form/report must be completed in parallel with the SF subproject reporting cycle and submitted to the appropriate environmental specialists or oversight agency.

For monitoring purposes it is important to have some environmental capacity available within the SF at the project implementation level (usually through an environmental unit). Monitoring work may also be contracted out to specialists. Government ministries or departments may, in some cases, play a role in monitoring activities.

Most importantly, the community must have made arrangements for one or more persons to be responsible for monitoring a subproject's performance during operation and for ensuring that no negative environmental effects are resulting from the subproject. For example, in potable water subprojects, at least one member of the community, perhaps selected on a rotating basis, should be responsible for ensuring that the water reservoir is properly protected. This individual should, when possible, be trained in performing basic water quality tests. Such commitment from the community is critical to the overall sustainability of the subproject, and particularly to the environmental soundness of the work.

Subproject Evaluation

As defined here, subproject evaluation refers to the *ex post* review of a subproject to determine if it has met its stated objectives. From an environmental perspective, evaluation looks at the final negative environmental impact (which is a result of how well expected impacts were minimized and how unexpected impacts were handled) and at the positive environmental benefit. Were the expected benefits fully realized? Two types of evaluation are of interest: evaluations of individual subprojects, and evaluation of the entire portfolio.

Most SFs include site visits by fund staff as part of the evaluation process. Upon completion of each subproject, a final report is submitted. Follow-up is directed at two key elements: the physical state of the subproject, and the extent of beneficiary use and satisfaction with the subproject.

From a social and environmental perspective, the evaluation process must also look at the success or failure of subprojects in terms of how known environmental impacts were minimized, and evaluate the significance of unsuspected or unexpected impacts. If problems are identified, the evaluation report should assist beneficiaries in resolving the problem. The evaluation process should also be designed to promote changes in the targeting and promotion stages, and possibly to suggest changes in other institutional areas.

In addition to the traditional monitoring and evaluation of subprojects that is required, social fund managers should also consider undertaking an environmental review of the entire portfolio. Ideally, there should be annual reviews performed by an in-house environmental specialist. Additionally, the Bank recommends that an independent evaluation be performed by an outside environmental expert every two to three years. This independent review can be undertaken in conjunction with World Bank mid-term review missions.

3. MANAGEMENT ISSUES

The previous sections provided technical insights into the environmental assessment process, but even the best procedures are ineffective in the absence of a well-designed management structure. Issues covered in this chapter include the importance of understanding the EA process in the national context, and other essential elements related to institutional structure, staffing, and training.

3.1 Consideration of the National Context

The state of development of national legislation and regulations concerning requirements for EA is highly variable. Some countries have established comprehensive legislation and procedures for development subprojects, including small-scale infrastructure subprojects. In all cases, the SF must operate within the context of some preexisting legislative and technical EA capacity in the country. This context must be carefully evaluated and considered when establishing or evaluating the EA process of an SF.

In most Latin American and Caribbean countries there is a tendency to maintain a normative role in the ministry or institution responsible for EA, but to delegate responsibility for carrying out EA to the governmental sectoral institutions (ministry of transportation, ministry of energy, etc.). In a few cases, such as Nicaragua, the SF has formally negotiated an understanding with the central environment ministry defining their respective roles. This is highly recommended. The SF can be delegated authority to undertake the required EA, or can be mandated to do so in cooperation with another environmental regulatory government agency.

In several countries, procedures and agreements that have been established between the SF and other government agencies to provide technical support for environmental assessments have been less than satisfactory. This is due in large part to workloads in government agencies that prevent allocation of sufficient staff to assist in the SF subproject evaluation process. Furthermore, the staff trained in environmental units in larger ministry sector offices are not able to practically transform environmental assessment techniques from large-scale subprojects to the smaller-scale rural infrastructure and other types of social fund subprojects.

In most countries, even where there is substantive EA capacity, there has been less attention paid to the relatively minor impacts associated with SF subprojects. The SFs will therefore often need to initiate their own procedures and standards. This should always closely coordinated with the central environment ministry to ensure consistency across sectoral ministries and to allow a faster diffusion of best-practice information.

In fact, in most countries with social funds, there are no initiatives or policies for environmental assessments for small-scale rural infrastructure subprojects. Another important consideration is that with the shift to decentralized government policies throughout the region these subprojects are becoming the administrative responsibility of local governments. Therefore, local governments must assume major responsibility for

direct oversight of these subprojects. In reality, local governments often do not have the technical capacity to provide such services.

3.2 Codification of Procedures

All SFs have developed comprehensive operational manuals. In the case of World Bank–funded projects, completion of the operational manual is invariably a requirement for disbursements under the subproject. In order to accord it the importance it merits, the environmental review process must be incorporated into the operational manual.

The operational manual should include explanations of the stages in the subproject cycle where environmental considerations need to be included. Checklists and matrices should be included as annexes.

3.3 Institutional and Staffing Considerations for the Environmental Function

A great variety of institutional arrangements are possible for the environmental function within an SF. A decision might be made to build up environmental capacity in relevant units or, more commonly, to focus responsibility on a separate environmental unit (or individual).

When a decision is made to form an environmental unit there is always considerable uncertainty as to whether the unit should be closely associated with one of the SF technical units (frequently the evaluation unit), located at a higher level such as the office of the executive director, or associated with a project quality unit. Often, there will be a tendency to push the environmental review process into an independent and solitary unit (or an isolated individual) detached from the mainstream of SF operations. A common concern expressed by those working within such a structure is that this administrative and decisionmaking structure diminishes the role and effectiveness of the environmental specialists or environmental units. Conflict has often arisen over contentions that the environmental review process is ignored or that it is included as part of the subproject cycle in an ineffective fashion. This can also promote the perception that the environmental review is yet another obstacle to be overcome in subproject processing, instead of being seen as an integral part of the technical evaluation of the proposal, and critical to project sustainability.

No single solution will be appropriate for all SFs, and the optimal answer will often be a function of complex internal institutional considerations. However, a few general remarks may be useful when considering this question. Unlike most aspects of SF operations, the environmental function needs to be taken into consideration at almost every operational level. The expertise required for this function is generally poorly represented in SFs, which are mostly staffed with administrative, procurement, or engineering specialists. These two points are strong arguments in favor of an environment unit that is not tied to a single operational unit and that is high enough in the institutional hierarchy to be able to intervene effectively throughout the SF. A unit attached to the office of the director is often a good solution; however, the SF director (or manager) must be very supportive for this arrangement to be effective. A centralized unit still requires a strong understanding of

environmental issues at each of the operational units (subproject formulation, evaluation, etc.) and there will likely be a need for an internal training program for the SF.

Because of personnel and resource constraints, it will rarely be possible to staff an environment unit with more than one or two persons, and in a smaller SF it may even be justifiable to have this position filled on a part-time basis by a consultant or appropriately trained member of the SF's staff. Some SFs have a special environmental unit (for example, Honduras, El Salvador, and Nicaragua) and others have hired one or several environmental specialists under contract (as in Panama). In many cases, the costs of operating a functional environmental unit were not considered in the original planning and design of the SFs. Since many of the SFs are now moving into their second or third phases, financiers are now reconsidering this situation and have been willing to allocate additional funding for establishing, equipping, and implementing these units.

3.4 Training of Staff

Environmental training for SFs should focus on three target audiences: The SF staff, beneficiaries, and executing agencies.

Training for Social Fund Staff

Creating better appreciation of the environmental evaluation process in SFs is almost always a high priority. There is an important need to provide general environmental awareness training for all staff, and more specific training for those individuals dealing directly with environmental issues.

Educating the SF staff requires a special effort to convey the message of improved environmental planning so that staff can understand how these issues relate to their existing work assignments and responsibilities. This teaching must be conducted with a solid appreciation of current work flows within the fund. Such sensitization must begin at the top, with the social fund's senior management. Experience shows that these people respond best to training with a finely tuned focus. In those funds that rely on decentralized regional offices, there would also be a need to focus on regional training to integrate central administrative and technical staff with their counterparts in the field.

Training Beneficiaries and Executing Agencies

Training of beneficiaries can make the difference between well-functioning, sustainable subprojects and those that languish in disuse and disrepair. Local government officials and staff, community leaders, NGO representatives, and contractors can be brought together for one-day workshops. There the focus should be on environmental issues related to improved subproject formulation and design at a local administrative and technical level. Insight on these issues by using actual subprojects is highly recommended. See also *Environmental Assessment Sourcebook Update*, "No. 5, Public Involvement in Environmental Assessment: Requirements, Opportunities and Issues" (1993).

The majority of SF subprojects work is implemented through contracts to the private sector. Contractors, construction companies, and local enterprises have learned to work with SF guidelines and requirements. There is, however, ample opportunity to provide

further training to these audiences in the form of workshops and manuals on environmental evaluation. Training teams, working with the environmental unit of the SF, can lead sessions lasting one to two days in each of the regions of the country. Attendees should gain a better understanding of the issues related to environmental and public health considerations in subproject planning, design, and implementation. These workshops should target municipalities, private sector construction operations, NGOs, and other relevant stakeholders.

A viable training team might consist of a senior environmental specialist familiar with environmental assessment issues in small infrastructure subprojects, a senior civil engineer familiar with how social investment fund subprojects are administrated and implemented, and a meeting facilitator who is responsible for logistical planning and facilitation. In certain situations the training team might also include an anthropologist or other social scientists familiar with the community structure, organization, and cultural norms of the target groups. This is proving particularly helpful with the preparation of the Community Development and Reconstruction Project (FONAPAZ) in Guatemala, where the communities affected are almost entirely indigenous. Understanding local cultural norms helps focus the design of the environmental assessment process.

The form in which training takes place may differ from country to country and from target group to target group, and the most appropriate manner of delivering training should be carefully determined by SF staff. In many cases, workshops will be necessary; in others, booklets, manuals, and other written materials may suffice. Often an interactive, hands-on training will be most helpful, particularly when working with beneficiaries. It is essential that the proper beneficiaries, such as women, receive training. An open forum, or townhall meeting, may be necessary as part of the training activities or when setting up the ideal method of communication.

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