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ENVIRONMENTAL AND NATURAL RESOURCE MANAGEMENT IN PERU: A STRATEGY FOR A.I.D. ASSISTANCE

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Programs, Methods, Target Funding Levels, and Possible Sources of Funds: *Joint Effects Not Considered.*

Issue	Programs	Target Funding Levels[2] Next 1 - 4 Years	Coming 3-10 Years	Sources of Funds
Agriculture and Forestry	Action programs (both). Pilots (both issues).	30.0 to 36.0. 3.0 to 6.0.	70.0. 15.0.	PL480-II,III; 0349; 0353; 0372; new starts.
Biodiversity	Action programs; policy.	8.0 to 20.0	20.0 to 50.0	0341;0343;0780; other USG; central; PL480-III; new starts.
Industry	Norms; studies; strengthening; pilots.	4.0.	7.0 to 20.0.	PL480-III; 0343; 0349; 0353; new starts; earmarks.
Urban	Baselines, norms; policy; TA; training. Pilots.	10.0 to 13.0.	7.0 to 14.0.	PL480-II (PRISMA),III; 0349;0335;0340;0772; 0366;0319. New starts; earmarks.
Policy and Normative	Norms; strengthening; studies, plans; pilots.	5.0 to 11.0.	3.5 to 7.0.	0343; 0349; PL480-III; new starts.

[2]. Totals, in millions of dollars. Funds to the proposed foundation are not necessarily additive to funds to programs in the seven main issues: Targeted funding levels could be achieved through the foundation or to programs reserved to an issue of choice.

Coasts	Baselines; policy; pilots.	1.0 to 4.0.	2.5 to 10.0.	0343; PL480-II,III; new starts.
Totals		61.0 to 94.0	125.0 to 186.0	
Foundation	Any program, any issue	30.0	70.0	ESF; earmarks; central.

Programs, Methods, Target Funding Levels, and Possible Sources of Funds: *Joint Effects Considered.*

Issue	Programs	Target Funding Levels[3] Next 1 - 4 Years	Coming 3-10 Years
Agriculture, Forestry, and Biodiversity	Action programs and pilots. Normative and policy.	40.0 to 60.0. 2.0.	90.0. 2.0.
Industry, Urban, and Coasts	Studies, audits, and action plans. Normative and policy. TA and training. Awareness. Pilots.	4.0. 2.0. 3.5. 0.5. 0.0.	1.5. 2.0. 3.0. 1.2. 21.0.
Totals		52.0 to 72.0.	120.7.

[3]. Totals, in millions of dollars.

ENVIRONMENTAL AND NATURAL RESOURCE MANAGEMENT IN PERU: A STRATEGY FOR A.I.D. ASSISTANCE

CHAPTER I. THE SETTING

BACKGROUND

Peru is a country rich in natural resources and environmental amenities. Growth in Peru's economy and the welfare of its present and future generations depend directly on its environment and resources. Yet poverty, insecurity, and rapid population and economic growth threaten Peru's environment and natural resource base as never before.

USAID Peru has been active in its attention to environmental and natural resource management. The 1994 ENR portfolio included at least $20 million of ENR-related funding distributed across the Mission's 23 projects and the Title II and Title III programs. Indeed, USAID assistance in certain ENR program areas, for example, sustainable agriculture in the uplands or support for protected areas, has been path breaking. At the same time, the orientation of USAID funding in environmental and natural resource management has, for a variety of circumstances related to recent political history in both Peru and the United States, followed an overall Mission strategy oriented toward social safety net programs and a focus on poverty and food security for the least privileged members of the Peruvian society.

Today in Peru, past political and economic realities are being dynamically transformed at a pace seldom seen. Current realities include economic liberalization, rapid economic growth led in substantial part by exports, decentralization, GOP downsizing, political stability, and a rapidly improving internal security situation. These realities have already started to cause important environmental effects, which are expected to intensify in coming years.

USAID Peru's 1995 - 96 Action Plan is built on the idea of integrated actions to address Peru's complex and interrelated set of environmental problems. In harmony with the 1995-96 refocusing exercise, environmental and natural resource actions should target the direct participation and empowerment of small agricultural producers, the urban poor, and micro enterprises in actions that essentially provide a social safety net, target poverty alleviation, and develop micro-enterprise within a vigorous export sector. Importantly, the Action Plan also proposes a geographic focus on Peru's highlands and eastern lowlands, largely because sectoral level poverty indicators are much less favorable there than on the coast. In harmony with the current Action Plan, the present Strategy endorses a near-term continuation of the ENR strategy implied by the 1995-96 Action Plan.

Over a medium to longer term, using poverty and geographic indicators as the primary criteria to target sustainable environmental and natural resource management

programs is questionable, given Peru's current political stability, its focus on world markets, its rapid economic and population growth, and the symbiosis between these and a stable and productive environmental and natural resource base. At this time in history, the moment is right for a medium-term change in strategic vision. While likely levels of available resources will leave ample room for poverty to remain a focus, a forward and proactive vision must depart from awareness of the Peruvian environment's vulnerability to and role in the Country's continued likely rapid economic and population expansion. It must recognize present and likely political realities in both countries. A sound program for strategic development assistance must rest on a coherent vision of sustainable use and protection of Peru's environment and natural resources, given the likely growth and political scenarios. This document proposes that strategic vision, which may be described as "Growth and Environmental Management Together."

Technical analysis has defined seven main issues in environmental and natural resource management in Peru: Unsustainable agricultural practices; forest destruction; the threat of biodiversity loss; environmental destruction from targeted industrial sectors, especially mining, fisheries, and energy; urban pollution from solid waste, contaminated water, and the untreated discharge of sewage directly into the environment; an inadequate legal, regulatory, and normative framework relating to environmental and natural resources management; and the degradation of Peru's water and unique coastal resources. Each of these seven main issues is further categorized by principal problems and programmatic approaches to them. Over the medium to longer term, the present strategy proposes an action agenda targeted on alleviating actual and potential conflict between rapid economic and population growth and the sustainable and rational use of the environmental and natural resource base on which growth and the welfare of present and future Peruvian populations will depend. An implied operational approach is based on a triage: a coherent and adequate policy-legal-regulatory framework, appropriate enforcement mechanisms, and incentives to avoid environmental and natural resources degradation and depletion. Over the near to medium term, AID actions should target the root constraints to sustainable, broad-based growth posed by environmental limits, within overall considerations of funding, staff capabilities, and the actions of other donors.

Whether short or long, operational approaches should follow a common strategic vision, whether leveraging funds from existing projects and programs, designing new programs, or funding programs where matching funds are provided by the implementing agency. The objective is sustainable development that enhances the capacity of the whole Peruvian society to improve its quality of life without compromising the needs of future generations. Moving toward this objective, AID should seek partnership with other donor organizations to complement and reinforce similar objectives and to coordinate like programs. AID should strengthen Peruvian non-governmental and private voluntary organizations chartered in natural resources and the environment. AID should look for pilot targets of opportunity, where innovative and cost-effective programs can have multiple impacts across several issues and problems and point the way for much larger development interventions: The idea of AID as catalyst and leader.

Finally, any strategy must recognize limits. For USAID Peru, critical limits are posed by the size of the country program, the size of the programs that can be targeted in whole or in part at the main environmental and natural resource management issues analyzed here, and by the number and technical expertise of Mission staff. These limits are embodied in the priority ranking scheme set out in Chapter II.

The Strategy for Environmental and Natural Resource Management in Peru is organized in four main sections. The remainder of this chapter suggests forth the case for a distinct strategic objective, "Improved Environmental and Natural Resource Management." The second section suggests a two-phase operational approach for USAID Peru's environmental and natural resources management programs, and proposes a framework for setting program priorities. The third chapter identifies main issues and recommends programs and methods to tackle those issues: It is section three that presents a comprehensive overview of environmental matters as they relate to Peru's economic growth and social development. Options for an overall ENRM program are laid out. Programs tailored to individual issues are proposed for both the near-term and the medium to longer term. Rationale for the priority of each program are presented in terms of the priorities suggested in Chapter II. Proposed programs and methods are related to ongoing and planned USAID programs as well as those of other main development institutions. The strategy seeks to identify a unique role for USAID, but also recommends that ongoing successful action programs continue (whether or not they are unique), and depends on close coordination between USAID and other principal donors. Finally, Chapter four summarizes the strategy and lays out two-phase targeted levels of assistance.

THE ENVIRONMENT MUST BE A STRATEGIC OBJECTIVE

The current USAID Strategy for Sustainable Development -- a vision intended to orient all U. S. development assistance worldwide -- begins with protecting the environment. The Latin America Bureau gives the same weight to environmental protection in its Strategy: "USAID will emphasize...maintaining a viable balance between guarding the environment and meeting the needs of economic and human growth by ...approaches which limit pollution, health hazards, and destruction of the environment."

The emphasis on protection and sustainable use of natural resources and the environment is deserved because it is fundamental to development. The importance of the protection and sustainable use of the environment in Peru's development requires that the environment be paramount in any credible development strategy for Peru. It is not possible to achieve broad-based growth, protect human health, stabilize population, or build lasting democracy without equal attention to the environment.

Peru is at a critical crossroads in its efforts to become a modern and prosperous state. USAID Peru now manages the largest country program in the Latin America Bureau. The program has been involved in many of the issues and problems analyzed in this strategy, with 1994 funding to all of them probably exceeding $20 million. The mission has not yet

developed an overall guiding vision for or coherent organization of its approach to the programs that would be unified under this strategic objective. According to the November, 1994 PRISM team, efforts to include these programs under strategic objective no. 2, "Encouraging Broad Based Sustainable Economic Growth," had resulted in, "a strategic objective that was unfocused, not objectively verifiable, and well beyond the Mission's manageable interest. This composite SO obscured the specific and achievable development objectives in each of the three (existing) program areas." A separate, strategic objective for environmental and natural resources management brings sharpness and clarity to the whole USAID Peru program and unifies successful ongoing programs.

USAID Peru has shown past leadership in environmental and natural resource management. Successful USAID programs have later been emulated by other development organizations, or by Government of Peru agencies. Analysis reveals continued opportunities for USAID leadership, but the credibility of the effort before intended beneficiaries, GOP, and other donors is lessened without formal adoption of improved environmental and natural resources management as a distinct strategic objective. In its 1995 - 96 Action Plan, USAID Peru enunciates an operational approach to development that calls for partnership with other international donor organizations and for USAID reinforcement of the programs of Peru's public and private development institutions. Environmental protection as a strategic objective facilitates this operational approach. It makes the USAID commitment credible with its sister national and international institutions, many of whom require benign environmental effects in any development assistance.

It sometimes occurs that earmark funds become available for use by missions. This strategy advocates opportunistic and aggressive behavior by the Mission in the pursuit of those funds. The symbolic power of a distinct objective to improve ENRM will be of assistance to the mission at such times of opportunity, which have occurred recently in renewable energy and women's programs, and from the global environmental facility.

The weight of natural resource and environmental concerns in Peru, the position of the country program as the largest in Latin America, coherence and focus in the country program, and the credibility of the U. S. commitment before its sister development organizations dictate that adequate attention to improved environmental and natural resource management -- that is, its protection and sustainable use -- is no longer possible by simply incorporating environmental concerns as a part of ongoing Mission strategy relating to growth, health, population, and democracy. The credibility of the Agency's commitment to the fundamental role of the environment in development can only be maintained by elevating environmental concerns to the same level as other strategic areas.

CHAPTER II. SETTING PRIORITIES

In Peru, the main issues involving environmental and natural resource management, and possible programmatic approaches, are many and large. Limited resources are available, even though many institutions are involved. In this time of changing priorities and budget austerity, these considerations are especially important to USAID. Regardless of need or the seriousness of the problem, priorities must be set. This chapter suggests a framework for setting priorities.

The framework is a funneling and filtering exercise which proceeds in stages. In the first stage, short term and medium-to-longer term[1] visions to orient the USAID Peru program are proposed. These follow the discussion in the previous chapter. In the second stage, specific priority criteria to filter issues, problems, and programs are suggested. These filters are applied to the seven main ENRM issues, so that specific programs are ranked by high or medium priority and for the short or medium term. The filtering exercise is illustrated in two diagrams.

GENERAL APPROACH

In the short term, strategic assistance to environmental and natural resource management may follow the current orientation of the AID Peru Mission: Safety net programs, food security, poverty alleviation for small agricultural producers and the urban poor, and micro enterprise development, as discussed in Chapter I. This orientation shows that most current environmental and natural resource management programs are on target, regardless of term orientation.

In environmental and natural resource management, over the longer term, continued rapid growth in Peru's economy and population are expected to greatly exacerbate current problems and lead to new problems that may not be acute as yet. It is therefore proposed that USAID Peru proactively anticipate these problems: Where is the growth in Peru's economy going, what problems are implied, and how can USAID begin now to get ahead of those problems? In this longer term orientation, the role of AID as leader and catalyst and the use of AID's scarce resources to leverage much larger levels of assistance and attention, are paramount. Diagram 1 illustrates this program vision time line.

SPECIFIC PRIORITY CRITERIA FOR ISSUES, PROBLEMS, AND PROGRAMS

Five specific criteria are proposed for any given environmental and natural resource management issue, problem, program, or method. In successive order, these are:

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[1]. Here, short-term is defined as the coming one to four years, and medium-to-longer term is defined as three to ten years.

First Filter: Program Cost.

Any proposed program or method must fit within the budget realities of USAID Peru. However, USAID may profitably work on key parts of much larger programs, in an attempt to focus the attention of other funding institutions on an important, if costly, problem. Here, AID may take a catalytic role, or use its limited resources to leverage much larger levels of development assistance.

This filter selects out large infrastructure projects. But, it does not rule out, for example, policy or research attention to the planning, coverage, or design of such projects.

Second Filter: Seriousness of Problem, Need for Program, Potential Impact

Environmental and natural resource management programs should have potential to favorably impact either: (1) Narrow populations or geographic regions of interest who are experiencing a severe need; or (2) larger populations suffering from a common problem which may not be urgent but affects large numbers of people.

In terms of seriousness and need, the present Strategy views all seven environmental and natural resource management issues discussed in Chapter III as equal over the medium-to-longer term. Specifically, a coherent vision of environment and development in Peru must equally balance green and brown issues.

Third Filter: Is There a Unique Role for USAID?

Given the ongoing actions of other public and private development institutions in the environmental and natural resource management arena, are there holes and gaps in ongoing or planned attention to major issues, or gaps in programs, where USAID may play a unique role? What catalytic role can USAID play, so that other organizations can begin action to build on successes of (pilot) USAID programs?

Fourth Filter: Programs are Within the USAID's Implementation Capabilities

Any proposed program or method must be bound by likely levels of Mission funding and the capability of Mission staff to manage programs. In terms of financial resources, the presumption is that they are not likely to increase. However, existing sources of funding -- and existing programs -- may be retro fitted according to the strategic priorities defined here. Leveraging means, in part, that resources may be drawn from ongoing programs, or, in part, that AID may fund programs contingent on "matches" from organizations funded. Also, new programs may come on line and replace existing ones, without increasing the overall level of development assistance provided by USAID Peru.

Similar considerations apply to mission staff: Numbers are not likely to increase. In terms of staff capabilities, programs and methods require technical capability in

management. Over the short term these are somewhat fixed. However, over the medium-to-longer term, the technical competence of staff may change through normal rotation.

Fifth Filter: Can a Program Potentially Cause Multiple Favorable Impacts Across Several Issues ?

Finally, the highest priority is reserved for programs and methods that will potentially cause multiple favorable outcomes against the seven specific ENRM issues. Desired outcomes generate income and employment; improve the quality of life for present and coming generations of Peruvians; improve indicators of population, health, and social well being; enhance the ability of the environmental and natural resource base to support growth and improve the population and health indicators; improve food security; are good investments of scarce development funds as measured by a threshold rate of return on investment; or enhance the status of women in Peruvian society.

At the same time, the Mission may seek programmatic approaches that are participatory, promote pluralism, and advance social equity.

It is not reasonable to expect a given program need not meet all these criteria, but, given its available resources and the scope of the environmental and natural resources management issues in Peru, the Mission should be able to restrict funding to programs which do result in multiple favorable impacts across several ENRM issues.

CHAPTER III.
INDIVIDUAL ISSUES, RECOMMENDED PROGRAMS, AND PRIORITIES

UNSUSTAINABLE AGRICULTURAL PRACTICES

Agriculture -- from production through processing and sales -- is a main source of income and employment for more than half of Peru's population, yet much of Peru's agriculture is based on a destructive and unsustainable exploitation of natural resources and the environment. Paramount among these unsustainable practices are four main problems: Soil degradation and loss; agricultural micro-enterprises whose products are environmentally unsound; inefficient small-scale irrigation; and the use of upper watersheds for crop and pasture production rather than for trees.

1. Main Problem Area: Soil Degradation and Loss

Soil degradation begins when the land is subject to a more intensive exploitation than its inherent capability will support. Eventually, a decline in productivity results, this is defined by lowered crop, tree, and pasture yields. The impact on crop yields and moisture retained in the soil can be dramatic. Effects can combine to lower the profitability of agriculture: Yields fall, employment falls, and the risk of crop failure increases. Farmers are driven away from many profitable crops, whose production becomes too risky. The volume, variety, and quality of foods produced falls. The incomes of farm families fall, their food insecurity increases, and they are driven to migrate. In Peru, these impacts fall disproportionately on women, the young, and the elderly who remain in rural areas while men migrate. Soil degradation and loss are especially serious hillside areas between about 1500 and 3700 meters because they contribute at least in part to down slope problems including seasonal shortage of water and intermittent flooding.

Programs and Methods

Soil conservation programs should be targeted at the most problematic ecosystems: Eroded jungle areas formerly under coca but now abandoned and overpopulated mountain watersheds used by the rural poor and intensively over exploited in relation to their inherent productive capability.

Programs should be managed at watershed or micro-watershed level. High payoff interventions include low cost, non-labor intensive methods such as infiltration ditches, slow formation terraces, gully control, living barriers, small bunds and small rock walls along slope contours, and contour crop furrows. Agroforestry -- crop-tree rotations -- is suitable for lowland areas. These programs depend on field based extension, and cannot succeed with out extension agents operating in benefitted communities.

These programs can be implemented through awareness raising and technology

transfer using locally managed outreach programs. Peru (like other countries) has had prior success using both public and private organizations, but dedicated and committed non-goyernmental organizations working in education and agricultural extension have proven highly cost-effective and have been a preferred means to control soil problems due to cost-effective coverage and large impact. In Peru today, such organizations usually work in partnership with Government of Peru programs, especially the National Soil Conservation and Watershed Management Project (PRONAMACHCS). Soil conservation is implemented as a part of package community development programs that also include highly applied training in recommended practices, crop improvement programs (such as seed improvement and seed banks, integrated pest management, and other production improvement programs), community storages, rural community potable water programs, and nutrition and family health programs. They usually use para-technicians who live in the target program areas and do the extension. These para-technicians are back stopped by a few more highly trained professionals, usually agronomists, hydrologists, or agricultural engineers. More discussion of successful hillside soil conservation problems is found in Annex A.

2. Main Problem Area: Environmentally Unsound Agricultural Micro-enterprise

USAID Peru's sustainable economic growth program is now focused on the direct participation of small agricultural producers and micro-enterprises in export and other quality-aware markets that are now increasingly sensitive to product wholesomeness. The quality requirements of these markets require the increased use of potentially problematic inputs. Potential problems that may result include toxic residues from pesticides; microbiological contamination (such as e-coli, listeria, or salmonella); and heavy metal contamination (such as mercury, lead, or copper). The problem is not confined to foreign markets because some production intended for export inevitably finds its way into national markets. In addition to the impacts on human health, a potentially serious impact is that Peru's products may acquire a bad reputation in international markets, damaging the whole export-oriented growth strategy.

Programs and Methods

Ultimately, micro-enterprises themselves and the trading companies and processing industries they sell to must learn to deliver clean and wholesome products to higher priced but more discriminating markets. USAID can take a leadership role by assisting specific trading companies and processing industries to assemble information on health and quality norms and standards in target markets. It can support outreach programs operated for micro suppliers by those same businesses. Those outreach programs would make agricultural micro suppliers aware of standards, how to meet them, and provide technical assistance: Alternative processing techniques and clean manufacturing programs. AID can also support the installation of quality control laboratories and testing equipment (at processing and trading companies) intended to serve large numbers of small businesses. AID can support programs that get norms, standards, and clean knowledge to agricultural micro-enterprises.

3. Main Problem Area: Inefficient Small Scale Irrigation in the Sierra

In highland areas between approximately 1500 and 3700 meters elevation, water (from rainfall and moisture retained in the soil) is perhaps the most limiting agricultural resource. Small irrigation systems typically generate multiple favorable impacts, resulting in often-dramatic rural employment and income generation. Because small irrigation programs are often the single most popular development intervention among the rural highland poor, small scale irrigation infrastructure is often used in package community development programs to effect other kinds of programs, such as soil conservation, afforestation, or crop improvement.

However, the impact of small irrigation systems in the highlands is often limited by poor engineering (rustic systems are often designed and built by campesinos) and worse system management. Rustic water capture and transmission structures reduce the quantity and quality of water, often resulting in fights over water. System maintenance is inadequate, water is lost in the system, and flash floods destroy intakes precisely when scarce water is most abundant. Wasteful on-farm water management practices can result in waterlogging, salinization, and command areas that are a fraction of design.

Programs and Methods

Many management problems associated with small highland systems are associated with lack of participation and control by water users. A common approach is to divest system control to democratically formed user groups. Technical assistance in engineering and hydrology is often required to solve technical problems. Methods to improve the efficiency of small highland irrigation systems resemble methods for soil conservation and afforestation: Awareness raising and technology transfer using locally managed outreach programs that are cost effective and result in divestiture of water allocation, scheduling, pricing, and policing to local democratic user groups.

There is no doubt that small scale irrigation is very popular with beneficiaries and makes an immediate and large impact on their income and employment levels. But these very characteristics call into question the need for high level donor support: Irrigation is so profitable that farmers usually will pay for it themselves. A short-term safety net and food security program orientation provides ample rationale to continue support for these programs. The strategy of getting ahead of Peru's natural resource problems that are associated with economic and population growth signals more attention to soil conservation and afforestation.

4. Main Problem Area: Lack of Tree Cover on Upper Watersheds

Pressure to collect fuel wood and continued expansion of livestock and crop production in the face of ever increasing population have contributed to the progressive loss

of tree cover in Peru's highland areas. Tree cutting for fuel wood, plowing, and the renewal of pastures by burning makes today's absence of tree cover striking. Luxuriant tree cover on upland areas traps and retains rainfall. Tree cover brakes the down slope progression of frost, arrests down slope soil movement and soil loss into streams, increases water infiltration and the storage of moisture in the soil, and increases the permanence of mountain streams. More available soil moisture permits the production of higher value crops down slope and extends growing seasons. In short, a luxuriant tree cover up slope facilitates a *permanent* increase in the productivity of soil and water down slope. The present need for and popularity of small scale highland irrigation systems derives in part from the loss of tree cover on upper watersheds: if upper areas were forested, irrigation would be less necessary in lower areas.

Programs and Methods

There are at least two successful and current approaches to upland afforestation in Peru. One approach is to plant trees within package community development programs (see Annex A). Another approach involves the making of a contract between some type of community organization and a private company, a NGO, or a public institution. In this latter arrangement, the trees are planted on community land using seedlings, credit, and other inputs provided to the community organization under the contract, and, once mature, are shared between the contracting parties under terms established by the contract.

Either approach usually requires specialized nurseries and credit arrangements because of the expense involved in producing and transplanting tree seedlings, especially for extensive tree plantations. Many organizations operate tree nurseries in Peru, and the credit is often part of the contract between the community organization and the development institution. Finally, applied research, analysis, and evaluation is necessary because the development of tree cover over deforested highland areas is still relatively new in Peru. Ongoing afforestation programs concentrate on variety and fertility trials; production systems, especially planting densities and pruning regimes; pasturage within tree plantations; and similar highly applied research. *There are significant differences in the performance of tree plantations among these variates in the Andes.*

5. Ongoing and Planned AID Projects in Sustainable Agriculture

Ongoing AID projects that are contributing or could contribute to sustainable agricultural programs include PL 480 Titles II and III; Employment and Natural Resource Sustainability (0341); Policy Analysis, Planning, and Implementation (0343); Micro-enterprise and Small Producers Support (0349); PVO Support (0353); and IPM for Andean Communities (0372). It is difficult to disaggregate expenditures under these projects that specifically fund sustainable agriculture. According to the June, 1994 Semi Annual Review, at least ten million dollars appear to have been expended on sustainable agriculture in general, mostly under the Altura CARE Project (about $3 million), the agricultural sector production and productivity portions of the ADRA/OFSA Project (about $3 million), and

additional amounts under the Micro-enterprise and PVO Support Projects and the CARITAS PL 480 Project.

There are two planned AID project starts that will fund actions in sustainable agriculture, Counter Narcotics and Sustainable Development (CSD) and Sustainable Environmental and Natural Resource Management (SENRMP). The former is expected to include about $20 million for actions that generate employment and income (some $7 million of this from the PL 480 programs). The latter is expected to include about $11 million for all environmental and natural resources actions, including soil, water, and forestry programs (among others).

Distinguishing features of the AID projects, when compared at least to the larger multi lateral programs, are that they work in the private sector; strengthen NGO's and so create environmental pluralism; and sometimes leverage additional funds via matches from the implementing NGO institutions. Poverty is a specific criteria in targeting USAID programs.

6. Other Donors: Ongoing and Planned Projects in Sustainable Agriculture

The Inter American Development Bank and the World Bank both have major agricultural programs in Peru. The IADB is implementing the Irrigation Subsector Project ($200 million) and Phase I of the Agricultural Sector Services Strengthening Project. Phase II of that Project is under design, with an estimated budget of $170 million. The Bank is also in the identification stage for a possible project involving integrated development of Madre De Dios and a second possible project involving forestry in Cajamarca. The World Bank Monthly Operational Summary lists the Structural Adjustment II Project, estimated at $150 million and the Irrigation Subsector Project, also estimated at $150 million.

The large multi lateral donor programs tend to concentrate activity in public sector institutions. For example, elements of the IADB and IBRD projects mentioned will provide considerable resources to INRENA, CONAM, and PRONAMACHCS. The development of non-governmental organizations who advocate sustainable resource use in agriculture -- environmental pluralism -- is promoted to a minor degree. Large public sector programs cannot match the private sector in terms of implementation speed or efficiency, nor do they tend to engage in the continuous process of internal evaluation and program adaptation that is characteristic of some NGO's. Continuing to develop the capability of NGO's to advocate, execute, and evaluate sustainable environmental and natural resources management programs is one of the surest ways to secure long term sustainable ENRM use within Peru's development.

7. Priority Programs

Moderate Scenario: No Change in FY 1994 Funding to Sustainable Agriculture (1994 funding estimated at about 10 million dollars)		
Priority	Next 1 to 4 Years: Continue Safety Net, Poverty Alleviation to Targeted Sectors	Coming 3 to 10 Years: Anticipate Economic, Population Growth. ENRM in Support
High	Hillside soil conservation, gully control, afforestation, small scale irrigation, crop improvement, pest management, small infrastructure, agroforestry and related ag. extension in NGO package programs.	Using the same NGO framework, emphasize investments that *permanently* restore soil and water resources: Soil conservation and afforestation in the uplands; agroforestry in the lowlands.
Medium	Awareness and information about norms and standards in quality-aware markets; sources of contaminants (with processors, trading companies who purchase from ag. micro-enterprise).	Labs, tests, standards, prevention, outreach programs at plant level. Technical assistance.

Enhanced Scenario: Any Increase Over FY 1994 Funding to Sustainable Agriculture		
Priority	Next 1 to 3 Years: Continue Safety Net, Poverty Alleviation to Targeted Sectors	Coming 3 to 10 Years: Anticipate Economic, Population Growth. ENRM in Support
High	Continue with same programs.	Continue with same programs.
Medium	Continue with same programs.	Continue with same programs.

Rationale

Cost: Package NGO programs are relatively small and discrete and afford the advantage that they can be implemented in increments. The programs advocated do not necessarily require an increase over present or planned funding commitments. **Need:** The decline in agricultural productivity caused by the degradation of Peru's agricultural resource base -- soil and water -- affects millions of the country's poorest citizens and seriously compromises the Country's efforts to sustain growth over the longer term. **USAID role:**

NGO programs are not a primary focus of the larger multi lateral banks, and offer the advantages of speed, efficiency, program continuity, and act as an applied research laboratory for the design and implementation of present and coming programs. **USAID capabilities:** A continuation of these sustainable agriculture programs at about their present levels will not require increased funding, new staff, or different capabilities than those possessed by present staff. In addition, a number of existing projects have resources already being used for sustainable agriculture: Significant opportunities exist to leverage funds from ongoing programs against the strategic agenda in sustainable agriculture. **Impact:** Applied research elsewhere has shown that soil and water programs generate significant amounts of employment and income in relation to money invested, and generally show high rates of return. These effects occur in part because crop yields rise and greater volumes of (food) commodities are produced. Women are disproportionately involved in hillside agriculture in Peru. Most importantly, soil and water conservation permanently enhance the productive capacity of the resource base, for those who participate directly in programs, and for persons adjacent to and down slope from them.

DEFORESTATION

Peru as a whole is a tropical country where coastal, upland, and eastern lowland forests cover a total area of 821,515 square kilometers (Km^2), about 64% of Peru's total national area of 1,285,216 Km^2. About 85% of this area (700,000 hectares, or almost 55% of the national area) is eastern lowland jungle. At present, destructive systems of management and use prevail over much of this area, including at times parks and protected areas with important roles in the preservation of biodiversity and the stability of the earth's climate. The value of the forest is reduced due to an inappropriate set of public management incentives. Forest planation and natural regeneration programs fall victim to indiscriminate colonization and burning. There have been recent incidents where the rights of indigenous peoples have been infringed. The destructive pattern of use incides disproportionately on women, the majority of whom live in poverty. These problems, which are closely linked to main issues involving agriculture, biodiversity, and the legal and normative framework, are discussed in turn.

1. Main Problem Area: Inadequate Incentives

Laws, norms, and rules on land adjudication require that land be worked to gain property title. This induces migrants coming from the highlands and the coast to fell and burn. A typical pattern of subsistence agriculture becomes established in areas best suited to forestry, and colonists tend to favor premontaine areas (ceja de selva). The process of disorganized migration and occupation of the jungle, the low value of the forest, the lack of economic opportunities in the highlands and the coast, the degraded condition of soils in traditional areas, and the extreme poverty of the migrants has caused the migration toward the jungle where the newcomers convert the forest and protected areas to unsustainable crop and cattle activities. This is worsened by the illegal cultivation of coca.

The indiscriminate felling of forests initiates a process of soil degradation wherever access is open along roads, rivers or other routes. This has produced erosion and loss of productivity, deterioration of micro basins and basins reducing employment and increasing migration. Thus, habitat and the long term conditions enabling sustainable agroforestry and forestry are being destroyed. Effectively, neither forest management nor forest planning exits, nor do functional forest recovery programs. The whole functions under an inadequate legal, regulatory, and normative framework.

Programs and Methods

Public and private sector institutions chartered in sustainable forest management are weak. One set of programs at the central level would help the Congressional Commission on the Amazon and the Environment in the design and enforcement of laws and norms covering water, soil, and forest Resources). The newly created National Environmental Council is another institution that will require strengthening in specific areas (see Technical Annex B) and this would afford AID, jointly with the Inter American Development Bank, the opportunity to influence the important area of uniform standards and norms for environmental analysis on main issues of interest. Another public sector institution, INRENA, is also weak, specifically in the Forestry and Rural Environment Directorates and their capacities to facilitate the development and enforcement of laws and norms for a sustainable administration of protected areas.

At the local level, regions and municipalities are weakly able to carry out the ecological regulating and zoning of the high jungle. Local reforestation committees can be aided to
apply models of forest agriculture, according to ecological guidelines, on small plots. This will encourage a sustainable use of the natural resources. Again, AID can strengthen those NGO's that are working on secondary-type forests so that they can take upon the training, extension and spreading of sustainable forest agricultural activities.

AID has been involved with forest policy and its economic impacts at sectoral and macro levels, and can continue this tradition in Peru by supporting, through public or private institutions, technical analysis and policy analysis and dialogue specifically in economics to improve the analysis and the efficiency of the legal, regulatory, and policy devices for the sustainable management of forests. On the technical side, improvement in natural forest management technologies oriented toward production.

AID may also sponsor awareness campaigns, featuring the links between deforestation and the decline of productivity and income.

2. Main Problem Area: Pressure on Protected Areas, Production Forests, and Indigenous Areas

Peru's protected areas, production forests, and native territories are constantly

invaded by migrant farmers who fell, clear, and burn, destroying any attempt to manage these lands in a sustainable fashion. Local leaders are frustrated and unable to counteract invasions due to the lack of enforcement mechanisms and the non-existence of even minimum conditions of security, power, or authority to protect these lands.

In the case of production forestry, the situation is aggravated because of the change in the land use from forestry to subsistence agriculture. At times, lack of access to markets and the inadequate incentive structure cause poor farmers to even eliminate forest species with a high commercial value and resort to illegal coca growing and eventually abandon those plots. Soils erode and species are lost. All of these factors cause changes in the ecosystem that eventually produce economic and social dislocations.

This set of problems are, in part, the reason why lumber contractors do not comply with their forest management plans. Thus, they high-grade, until the immediate potential of the forests is exhausted. Immediately afterwards come the farmers with their invasions and their disorganized occupation of the lands, eventually degrading and exhausting the ecosystem. Examples of this can be seen in the basins of the Huallaga, Ucayali and Apurimac rivers.

Programs and Methods

Support the efforts of NGO organizations and cooperatives, to develop and manage micro-enterprises that produce forest products using environmentally benign technologies and forest management systems, such as the Yanesha Cooperative. "Green" certification of their products is the objective.

Encourage the effective control and management of both reserves and production forests by the effective delimitation and protection of their boundaries. Employment and income opportunities in boundary areas should be developed, in partnership with and for the benefit of the peoples living in the boundary areas. Women's programs are especially important, and can feature tree plantations for fuel wood located near to cooking areas, small animal rearing, and other kinds of agroforestry. The idea is to make people aware of ways to live in and use the forest without resorting to burning.

Sponsor, through public or private means, awareness raising and technology transfer programs that show how to manage and profit from forest and agroforestry land use systems, and so avoid the destructive cycle of felling, burning, clearing, and eventual abandonment. Awareness raising can be directed at the people living in boundary areas, and then use success stories in larger campaigns.

Pilot sites -- both production and preservation -- can be directly assisted, to provide examples of well-managed sites, where sustainable environmental management and growth can go hand in hand. Pacaya-Samiria and Tambopata-Candamo are examples of such sites.

3. Main Problem Area: Forest Fires and the Conversion of Forest to Agricultural Land by Burning

The felling an burning of jungle forests for agricultural conversion or due to the accidental spread of fires presently claims 300,000 forested hectares per year. As an example, in the central jungle (Oxapampa, Satipo and Chanchamayo) in a sloped area whose soils have a high forestry potential and are protected over three quarters of their area, the felling and burning reaches 30,000 hectares per year. In that region there are 263 registered communities and 298,000 inhabitants in an area that covers 52,700 Km^2. More than 80 thousand immigrants have settled in this ares since 1981..

The chaotic burning without any kind of ecological nor technological consideration has caused the loss of extremely valuable ecosystems and habitat for fauna and flora and harmed even man. There has been great loss of different types of woods and trees, medicinal plants, orchids, and other species. The deforestation exposes soil to rains and the washing away of nutrients and eventually the loss of fertility. Landslides, floods, and the loss of roads and bridges also occur. The longer term pattern is one of migration and an itinerant agriculture, with this destructive pattern repeated. Burning has often harmed crops, and trees planted or regenerated under development programs.

Reforestation and agroforestry projects financed by other donors and carried out by the Reforestation Communities, The Ministry of Agriculture and the NGO's do not consider the problem of burnings. For this reason 60 per cent of forest plantations and agricultural forestry plots have been burned in the Central Jungle.

Programs and Methods

Support through NGO's, bodies such as INRENA, PRONAMACHCS and the Reforestation Committees to study and propose forest exploitation systems and land use alternatives that do not require burning. Support for required modifications in laws and norms. Encourage INRENA, NGO's, and other institutions working in preservation and development in the eastern lowlands to design forest fire control systems. Also, training in fire control, awareness campaigns about the destruction caused by fires and the judicious use of fire.

A pilot program (at one or two selected sites), aimed at developing and gaining acceptance for land use systems that do not involve fire, and a program that would provide local fire control mechanisms including training and extension programs on mitigation, prevention, and control of agricultural burning, would be a first in Peru. Here, there is a niche and AID has an opportunity to lead.

4. Main Problem Area: Impact of Deforestation on Women

Women of all ages suffer from the absence of fuel wood and diminished income-

generating activities that are manageable while also caring for daily duties. Andean deforestation has exhausted nearby sources of firewood and women commonly must travel significant distances, endure physical hardship, and expend many hours daily gathering wood: It has been estimated that 500,000 Andean women spend an average of hours daily gathering wood. Manure is now burned as a wood substitute, this negatively impacts the soil because fertile organic matter that would ordinarily be returned to the soil is lost. In lowland forests, women traditionally obtained food, medicinal plants, firewood, and other benefits from kitchen gardens and the nearby forests. These opportunities, too, vanish with the forest.

Programs and Methods

Package community development programs in sustainable agriculture and forestry, of the type described in Appendix A often include kitchen garden, fuel wood, small animal, handicraft, and other income and quality of life programs targeted at women. Communal forestry and agroforestry programs should be designed for women, as women often implement these programs, especially those that are near the family home.

5. Ongoing and Planned AID Projects Related to Forestry

Ongoing AID projects that are contributing or could contribute to forestry include PL 480 Titles II and III; Employment and Natural Resource Sustainability (0341); Policy Analysis, Planning, and Implementation (0343); Micro-enterprise and Small Producers Support (0349); and PVO Support (0353). These are the same programs that fund sustainable agriculture, and again it is difficult to disaggregate specific expenditures for forestry. The Altura CARE Project the ADRA/OFSA Project, and the 0341 and 0780 (Tambopata-Cadamo) projects focus on priority problem areas signaled under this deforestation issue.

The AID starts in Counter Narcotics and Sustainable Development (CSD) and Sustainable Environmental and Natural Resource Management (SENRMP) have important forestry dimensions. The former is expected to include about $20 million for actions that generate employment and income. The latter is expected to include about $11 million for all environmental and natural resources actions, including soil, water, and forestry programs (among others). These new starts offer the advantage that programs can be targeted at the eastern lowland areas where deforestation is severe.

Distinguishing features of the AID projects, when compared at least to the larger multi lateral programs, are that they work in the private sector; strengthen NGO's and so create environmental pluralism; and sometimes leverage additional funds via matches from the implementing NGO institutions. Local participation is a norm among these projects, and poverty is a specific criteria in targeting.

6. Other Donors: Ongoing and Planned Projects in Forestry

The Inter American Development Bank and World Bank generally assist forestry within larger agricultural sector programs in Peru. So, at least portions of the IADB Agricultural Sector Services Strengthening Project and the IBRD Structural Adjustment II Project benefit forestry. The IADB is developing a Decentralization and Municipal Development Project (expected as a $70 million loan) that may be used to strengthen local governments, one of the high priority interventions needed in forestry. Other IADB identification stage projects are again relevant: Integrated development of Madre De Dios; a possible project involving forestry in Cajamarca; and a $10 million program for micro-enterprise that may focus at least in part on tourism.

Many bilateral programs work in forestry and protected areas. FAO and the country of Holland have been active in Peruvian forestry. Current projects cover all of the following subject areas: management and regeneration of Carob groves; development of jungle agroforestry systems; implementation of Peru's National Forestry Action Plan (also a priority item for the IADB and IBRD); biological controls for forest pests and diseases; and others. The document "Contribuciones de la C.T.I." describes other such programs.

As in agriculture, large multi lateral donor programs tend to concentrate activity in public sector institutions. Donor resources that strengthen INRENA, CONAM, and PRONAMACHCS in agriculture will also strengthen in forestry. The development of non-governmental organizations in forestry offers the same advantages as in agriculture: Continuing to develop NGO capabilities to advocate, execute, and evaluate sustainable forestry is one of the surest ways to secure long term sustainable ENRM use within Peru's development. There is a Peruvian NGO called The Reforestation Committees (Comités de Reforestación) which is made up of private sector loggers. The Minister or Director of INRENA sits on its board. There is also a NGO called the National Forest Development Network, which is made up of conservation and development organizations. NGO programs can also serve as vehicles for participatory mechanisms. While other bilateral donors assist forestry, the need and national area are large in relation to ongoing programs. USAID may make vital contributions in the policy arena, as well as via the identification and evaluation of forest exploitation systems and land use alternatives that do protect both reserves and production forests, do not require burning, and do result in feasible forest fire control systems.

7. Priority Programs

Moderate Scenario: About One Million Dollars Annually to Forestry[1]		
Priority	Next 1 to 4 Years: Continue Safety Net, Poverty Alleviation to Targeted Sectors	Coming 3 to 10 Years: Anticipate Economic, Population Growth. ENRM in Support
High	Package NGO programs: Andean reforestation by women for fuel wood; develop fire management, training in high jungle; participatory agroecological buffer zone development programs.	Continue Andean reforestation, fuel wood programs. Extend fire management and control programs, demonstrations. Extend buffer zone programs.
Medium	Institution strengthening, policy analysis to Environmental Commission of Congress, and INRENA.	Continue strengthening Commission, INRENA to manage forestry, water laws. Sustainable forestry incentive fund through National Forestry Development Network.

Enhanced Scenario: About 2.5 Million Dollars Annually to Forestry		
Priority	Next 1 to 3 Years: Continue Safety Net, Poverty Alleviation to Targeted Sectors	Coming 3 to 10 Years: Anticipate Economic, Population Growth. ENRM in Support
High	Enhanced funding, same package NGO programs: Andean reforestation by women for fuel wood; develop fire management, training in high jungle; participatory agroecological buffer zone development programs.	Continue enhanced levels, same programs.

[1]. In combination with funding for sustainable agriculture. The forestry programs described here would focus on Peru's eastern lowlands, especially the high jungle, or Ceja de Selva as well as on the highland programs described under sustainable agriculture.

Medium	Institution strengthening, policy analysis to Environmental Commission of Congress, and INRENA. Technical assistance.	Any additional strengthening of Commission, INRENA to manage forestry, water, environment laws. Enhanced funding to sustainable forestry incentive fund through National Forest Development Network.

Rationale

Cost: Like programs in agriculture, package NGO forestry programs, especially fuel wood programs for women, are discrete and can be implemented in increments. Fire and buffer zone management programs can be pilot laboratory programs, developed specifically to be replicated later over wider areas. **Need:** Continued loss of forests, fuel wood, and protected areas, and continued invasion of production forests, threaten whole Peruvian ecosystems, and continuously worsen the daily lives of millions of poor rural women. **USAID role:** Work through NGO's offers the same benefits as in agriculture, that is, NGO's are not a focus of the large multi lateral banks yet offer advantages of speed, efficiency, continuity, and regular adaptation. Pilots can lead to larger, more comprehensive programs and define new methods and approaches. AID should complement planned and ongoing IADB and IBRD assistance to INRENA and the new CONAM, extending but not duplicating their programs. **USAID capabilities:** The package NGO programs probably do not require much new funding, or altered staff numbers or capabilities, over present levels. Institution strengthening, and significant pilot programs in fire control or buffer zone management, may require new funding which can come from the projected CSD and ENRMP projects. **Impact:** Sustainable forestry, sustainable agriculture, and the preservation of biodiversity are closely interrelated. Successful programs suggest an appropriate legal, policy, and regulatory framework. Over the medium to longer term, sustainable forestry protects the income and employment of those employed in forestry. Aforestation normally leads to marked improvements in the quality of life. The programs advocated have the potential to markedly improve the quality of life for tens of thousands of rural Peruvian women.

THE THREAT OF BIODIVERSITY LOSS

Peru is a country rich in biodiversity and has been designated one of only eight Global Environmental Facility (GEF) priority countries. Yet, this richness is threatened by a series of problems and the threats are expected to worsen as current explosive population and industrial growth continue. Institutions with authority over the environment are weak. The national system of protected areas is regularly subordinated to other GOP or industrial interests. Populations living in and around protected areas do not effectively participate in their management, so efforts at protection fail. Peru has no biosecurity system. Ecotourism

is booming in Peru and focused on protected areas, but these areas are not ready to receive the growing number of visits.

All environmental and natural resource management issues have some relationship to biodiversity loss. As Peru's population and economy grow, its biological diversity will play an important role, and should be managed according to this goal: Use and manage the biodiversity to the degree possible while preventing its loss.

1. Main Problem Area: Environmental Authority Is Divided Among Sectors, With the Ministry Over Protected Areas Being Assigned a Lower Priority in National Decision-Making

One of the most fundamental barriers to achieving environmental and related Biodiversity protection in Peru has been the sectoral approach to all regulation and protection activities. Without any central environmental authority, each sector is left to address environmental issues under its relevant Ministry. For example, the Ministry of Energy and Mines has an environmental office which sets the standards and guidelines for petroleum extraction and mining activities. What is alarming is that protected areas have no over-riding priority in the decision-making process. Mining, petroleum, industrial, transportation, or fisheries activities can take place in a protected area if the activity complies with the standards set by the interested government agency. This self-auditing process is too vulnerable to political pressures and vested interests.

With the recent passage of the law creating a central authority, the National Council on the Environment (CONAM), a major step towards preventing the loss of biodiversity has been taken. The critical step, however, is not CONAM's creation but how it will operate and face the problems described above. An analysis of this problem from the legal standpoint appears in the normative section of this chapter.

The urgent need for CONAM to coordinate and raise the level of environmental decision-making above the sectoral level does not replace the continuing need for each sector to strengthen its environmental regulations and expertise. The law in its present form appears to give CONAM authority to propose regulations but the Ministries must still approve or adopt them for enactment. Enforcement and compliance mechanisms are unclear at best.

Programs and Methods

To effectively face the threat of biodiversity loss in Peru, the single greatest need is the creation of a political and institutional priority for the environmental. The purpose is not to make biodiversity the preeminent consideration in all situations but rather to guarantee its place among the factors considered.

Tools for reaching this goal include supporting the Ministry environmental divisions

in their urgent development of contamination standards and guidelines for environmental impact studies, or supporting CONAM in this process if in fact CONAM will be creating cross-sectoral standards. This support can be quickly accomplished through TDY's from existing projects (PAPI). TDY funds should be included in the proposed SENRMP.
The exact functions and organizational structure of CONAM are not yet defined. The next months will be critical in making CONAM an effective environmental agency. USAID should proceed immediately to coordinate with other donors to provide technical support and political prestige for the new agency.

A method for achieving priority status for environmental concerns in the political arena is to encourage high-level dialog starting with an international meeting on the topic of "the need for environmental regulations in order to attract foreign investors and participate in international trade". This meeting would feature speakers from major industrial sectors, focusing on industries being privatized (e.g. mining, fisheries, petroleum), and the speakers would come from potential investing countries. More description of this idea is in Technical Annex C.

A long term technical advisor with access to TDY specialists and centrally-funded technical projects could be included in a new Environmental and Natural Resource Project, which is proposed for 1995. In the meantime, the Mission will have to rely on outside consultants to carry out these first steps.

2. Main Problem Area: The Integrity of Peru's National Protected Areas Is Subordinate to Other Ministerial or Industrial Interests.

Peru currently has over 40 protected areas consisting of national parks, national forests, national sanctuaries, historical sanctuaries, and reserves (national, hunting, or communal areas). The different levels of protection are explained in detail in the Annex Glossary.

The institutional weaknesses discussed above are one cause of this problem, but in fact there has been very little budgetary or political support from within the Ministry of Agriculture or other GOP institutions. For example, INRENA has sometimes relied on foreign donors or NGO's to even pay the salaries of their park staff, fund transport costs in protected areas, hire game wardens (guarda bosques), and carry out any community outreach.

In early 1995, the USAID centrally-funded project, Parks in Peril, will begin support of Paracas, a Ramsar site. Starting in 1995 other donor support to protected areas appears to be increasing significantly. With multiple funding sources, the next phase of protected areas management in Peru will require much coordination and some strengthening of GOP agencies with jurisdiction over protected areas so that the programming of new funds follows long term goals.

Fortunately a national plan -- the Plan Director -- is being developed for protected areas under the auspices of GTZ. This plan has been developed in a participatory manner and will be presented in a meeting in March, 1995. Regional meetings, consultations with government agencies and private institutions, an analysis of approaches in other countries, and years of experience of the team have contributed to the development of the Plan Director. The Plan addresses the improved management of the areas, institutional structuring and support, mechanisms for generating funding, and the need for additional legal authority. USAID may wish to coordinate funding following the Plan.

An endowment fund has been created (FONANPE) to finance the operations and long term protection and sustainable use of protected areas. To date this fund has received US$5 million from the Global Environmental Facility (GEF) and smaller amounts through debt swap negotiations with Canada ($500,000), Switzerland, Holland, the Czech Republic, Australia, Great Britain, and France. The US could contribute Economic Support Funds (ESF) to PROFONANPE, which permits the targeting of contributions to specific programs.

Protecting biodiversity through the sustainable management of protected areas of Peru is therefore the perfect subject for high-level collaboration and coordination among donors as well as the Peruvian government, environmental NGOs, and private sector interests such as industry and tourism. Most urgently, coordination with the communities living in and around these protected areas must be accomplished.

Programs and Methods

Support of Pacaya-Samiria reserve should be continued by extending the project for two more years (funding from the initial project would cover this additional period). With this extension, USAID may continue to support the Peruvian Foundation for Nature Conservation (FPCN), and also take the opportunity to explore the use of other NGOs in new areas of focus, such as community involvement. This broader approach should definitely be incorporated into any future projects that support protected areas. A broader approach may require that new USAID management responsibilities be supported from project funds.

A unique and catalytic role for USAID Peru can be to coordinate donor action, the Plan Director, and PROFONANPE. This coordination would seek to assure attention to the whole protected areas system, the development of a responsive set of policies, and the funding of master plans for protected areas, recreational use plans, and a national strategy for tourism (this set of plans has already been developed). This coordination should start at the march, 1995 national "Plan Director" meeting. USAID Peru could organize a round table among donors to immediately follow that national conference.

There is lobbying from environmental groups for the backlogged ESF contribution to go into FONANPE. If this is done, the funds should be used as leverage to focus interest on developing a mechanism for the return of funds generated by the park system, back to the system. This can be done by putting a condition on the funding or by earmarking initial

funds for assistance in developing such a financial mechanism. This area is a priority for long term objectives, regardless of whether ESF funds are available.

3. Main Problem Area: The Ways Protected Areas Are Presently Managed Are Not in the Best Interests of Local People and Therefore Will Fail.

The majority of protected areas in Peru have no formal community involvement or participation in decision-making. Pressures from grazing, cutting fire wood, clearing for agriculture, and so forth will abate only when the interests of a protected area become the interests of its nearby population. A population that sees benefits from the natural resource base accruing to outsiders will take on the characteristics of an aggrieved population. While it would be inappropriate to hand over conservation programs to local populations without their training, the non-participation of these populations over time will lessen the effectiveness of any effort for biodiversity protection.

USAID Peru is providing multiple-year support for the operation of the Pacaya-Samiria protected area. The project has resulted in a significant improvement in the protection of the area from poachers and in the compilation of baseline and GIS information for the area; it has been less successful in promoting local economic growth and community participation. A more successful example of community involvement might be the Tambopata-Candamo reserve where a community organization is also being supported by the USAID/Peru FADEMA Project. This community is participating in decisions about the use of the resource base and has a clear sense of the need for sustained management. Yet, in terms of the stated goals of USAID the project has been much less successful.

This raises an important issue for consideration by all donors -- how to quantify the success of community involvement in conservation-oriented programs. Income generation is obviously one important indicator. There are numerous opportunities for native communities residing in or around protected areas to be encouraged, trained, or supported in becoming service providers to increasing numbers of tourists. An indicator difficult to measure but vitally important, is the sense of ownership, empowerment, and participation that a community feels.

Programs and Methods

The Mission should seek expert advice and specialized training in participation methodology. This training could be offered to USAID staff, NGOs, GOP officials and community leaders.

For sustainable results from programs in protected areas, USAID/Peru should develop new indicators for activities and projects making community participation an explicit objective. Methods such as "full cost accounting of resources", factoring in social benefits, environmental risks, etc. are relevant to this process. PRISM may be able to assist in this activity. The MES team recommends giving preference to consortia and joint ventures:

Groups with diverse expertise (including community organizing) should be preferred over individual organizations in protected areas funding. This will broaden the expertise and human resource-base for achieving the project goals.

4. Main Problem Area: The Lack of Biosecurity Measures in Peru Represents a Potentially Devastating Threat to Biodiversity.

Peru's biological diversity must also be protected from biological threats. Exotic species introduced into Peru can have a devastating effect by out-competing or directly destroying native species or ecosystems.

The security of biological resources, or biosecurity, is addressed in part by the plant and animal quarantine program (SENASA) under the Ministry of Agriculture. In 1993, USAID financed a review of this system. A strategy was prepared to strengthen the quarantine system, but to date it has not been implemented.

The exportation of endangered species as defined under CITES is one aspect of biosecurity. A program that prevents entry of new fish and wildlife species without some consideration for potential impact is another important aspect. In Peru, this latter authority is almost non-existent. Both programs are under the jurisdiction of INRENA, within the Ministry of Agriculture. That institution must develop a stronger role in biosecurity.

In the meantime, new pests and diseases enter Peru, causing considerable damage or eliminating market opportunities. The blue tongue disease entered via sick sheep brought in from Brazil. This disease can affect other livestock species, such as camelids. Strong protection of the integrity of biological resources in Peru is an essential aspect of maintaining biodiversity.

Programs and Methods

Low cost activities to strengthen existing quarantine and CITES programs (SENASA and INRENA), such as developing insect collections to assist in identification of pests and preparation of training materials, can be included in existing USAID projects. These activities could be overseen by the LAC TECH Regulatory Specialist on a TDY-basis. USAID can support development of policy and methods approaches through the institutions related to biodiversity e.g. the Biodiversity Commission, SENASA, INRENA, etc.

A larger project would be necessary to oversee and prioritize the steps towards strengthening SENASA and the CITES control sections of the Ministry of Agriculture.

The new regional Environmental Officer for USAID could obtain information on programs in other countries, for example, Ecuador. Participating in technical meetings will keep professionals up to date on quarantine and biosecurity issues.

5. Main Problem Area: Peru Is Not Prepared for the Returning Level of Tourism and Its Increasing Focus on Protected Areas

Peru has been a popular tourist destination for years because of its rich cultural and archaeological heritage. After reaching a peak number of foreign visitors of approximately 350,000 visitors in 1988, terrorism caused a precipitous decrease to 270,000 in 1992. With current political stability, 500,000 foreign tourists are expected in 1995, well above the estimated lodging capacity of 400,000 per annum.

Private travel agencies estimate as much as 90% of the tourists visiting Peru include the historical sanctuary of Machu Picchu in their travels. As many as 95% may visit at least one protected area. With increasing interest in tropical forests, half of the tourists using Peru's travel agents have included a short tour to the jungle.

There is regulatory and institutional confusion regarding who plans tourism activities in and around the protected areas. Institutions involved include the National Institute of Culture (INC); INRENA; the Tourism Agency within the Ministry of Industry, Tourism and International Commerce (MITINCI); and PROMPeru, a new agency designed to promote Peru and improve its image.

There is a growing interest in collaborating to support a long term approach to tourism in and around protected areas. A volunteer working group consisting of private travel businesses, NGO's, and the Plan Director staff has drafted regulations for three parks in an effort to get some standards set by the government. These regulations include details on camping permits, latrine construction, trail markers, and so forth. To date, there are no such regulations for protected areas.

Most experts in Peru agree that the concentration of visits at specific sites is an urgent problem. For example, approximately 15 to 18,000 visitors (both foreign and national) annually walk along the Inca Trail, so that on peak days a person wanting to enjoy nature may encounter 200 other hikers on the trail.

National tourists are an important source of both revenue and environmental damage in Paracas, because of its easy access to Lima. As the economic situation improves in Peru, national tourists will increasingly visit Peru's protected areas, just as foreigners.

Programs and approaches

Support existing efforts at coordination among the various GOP agencies, NGO's, and private businesses and associations working on ecotourism. Provide technical support to establish carrying capacity parameters and suggest ways to reduce the impact of visitors to fragile sites. Train the existing tourism industry to work in ecotourism; train communities that want to provide services for this sector; train government officials who will make decisions about tourism which would impact protected areas. Create feedback systems for

information on the tourist sector so that investment and management decisions will be based on an accurate profile of the targeted clientele.

Support coordination among donors, the Plan Director, and PROFONANPE to ensure coverage of all protected areas and responsive policies and funding for those plans already developed (master plans for protected areas, recreational use plans, national strategy for tourism).

Use the possible ESF contribution to FONANPE to develop a mechanism for the return of funds generated by the park system back to it. This can be done by putting a condition on the funding or by earmarking initial funds for assistance in developing such a financial mechanism.

6. Ongoing and Planned AID Projects in Biodiversity

The Employment and Natural Resource Sustainability Project (0341) and FADEMAD (Tambopata-Candamo -- 0780) strengthen Peru's protected areas system and are already part of the country program and fit the LAC Bureau and world-wide strategies which define support of protected areas as one method to protect biological diversity and lessen global climatic changes.

Community participation is a fundamental methodology for the country program. Participation is particularly important as Peru rebuilds its democratic systems and recovers from social unrest. Programs to more fully involve local communities in decisions on natural resource use could be supported by CLASP II, the PVO Support Project, the Special Development Activities Fund, the new Local Governments Project, and any follow on to the Private Sector Institutional Reform or Private Sector Management Improvement Projects.

Policy discussions can be supported by PAPI and PL 480 - III. The proposed SENRMP will include funding for biodiversity programs. CSD may also be relevant because of the geographic focus and the generation of contaminants by the narcotics industry.

Central projects include BSP - Conservation of Biological Diversity and the Environmental Planning and Institutional Capacity (EPIC) Project, now being developed as a follow-on to the Environmental Planning and Management Project.

7. Other Donors: Ongoing and Planned Projects in Biodiversity

Related Inter American Development Bank (IADB) projects include a $14.8 million loan to generally strengthen public sector agricultural institutions and the $1.8 million loan to strengthen CONAM.

Spain supported the Tourism sector with a 1993-95 tourism investment promotion project. Little funding was directed towards ecotourism or to support collaboration between

tourism and protected area management agencies during the years of political instability when the number of visitors dropped.

The Ministry of Economy is asking Germany to direct US$7 million in debt swap towards the tourism industry. This is not yet decided. This amount would be in addition to GTZ support to the FONANPE endowment.

Perhaps the greatest source of matching or leveraged funds for the tourism industry is the private sector. The private sector is ready and anxious to work in this growing category of tourism and would doubtless pay for training if offered and organized by USAID. The public is also a willing source of revenue from park entry fees and related purchases. Private business is also a potential source of funds if concessionaire arrangements can be made. Companies in Peru have expressed interest in joint ventures with US business in order to transfer experiences to Peru in park services and management through concessionaire arrangements.

7. Priority Programs

Moderate Scenario: About 2.0 Million Dollars Annually to Biodiversity*		
Priority	Next 1 to 4 Years: Coordinate, Initiate Development of Central Environmental Authority and Protected Areas Plan	Coming 3 to 10 Years: Anticipate Economic Growth, Prevent Future Degradation of Protected Areas
High	Support initial development of CONAM; coordinate *Plan Director* implementation. Finance work in tourism sector: technical carrying capacity determinations for protected areas; data collection.	Achieve political and institutional priority for environmental issues; environmentally friendly approaches to tourism; mechanisms to return funds from tourism, protected areas to sector.
Medium	Continue support for current programs, carry out training in community participation, develop broader indicators for full environmental costs (social costs).	Coordination among donors: May include regular meetings, e-mail bulletin board, or support to the GOP donor coordination office.

Enhanced Scenario: About 5.0 Million Dollars Annually to Biodiversity*		
Priority	Next 1 to 4 Years: Coordinate, Initiate Development of Central Environmental Authority and Protected Areas Plan	Coming 3 to 10 Years: Anticipate Economic Growth, Prevent Future Degradation of Protected Areas
High	Same programs, more staff resources. Community participation aspects as high priority.	Moderate scenario, plus: National ecotourism plan developed with participation of tourism sector. Continue CONAM support; Full coverage of protected areas.
Medium	Moderate scenario, plus: Strengthen quarantine and CITES biosecurity programs ($1.0 per year, five years)	Moderate scenario, more resources.

* This figure does not include funds that may be directed towards the endowment fund for protected areas, PROFONANPE.

Rationale

Cost: The moderate scenario represents approximately current funding levels from both the country and central budgets. New activities, therefore, are designed to be low cost with higher impact - catalytic and coordinating activities. The funding level for the enhanced scenario could be reduced or phased down if early accomplishments include working with the GOP to create the self-generating fund for the protected areas. **Need:** Internationally, Peru is a priority country for biodiversity protection. The need to protect and sustainably use these biological resources may seem futuristic but is actually urgent because some of the resources are already overused or even in danger of extinction. Responding now reduces the possibility of higher long-term cost by preventing possibly irreversible damage. **USAID role**: Coordination and leadership are required in the preservation biodiversity in Peru. USAID is already providing leadership through its project funding, and this should continue. There is a void in coordination, particularly in protected areas projects, and it can be filled in several ways. USAID can strengthen the GOP donor coordination office, a respected NGO, or some other agent respected by other interested donors who are increasingly concerned over duplication, competition, and gaps in programs in the age of shrinking assistance budgets. USAID can become a leader in promoting coordination between tourism and conservation at this critical time in Peru's economic development. By working now to establish appropriate policies and a mechanism for self-financing of protected areas, USAID will prevent expensive and possibly irreversible damage to protected areas and will potentially leverage funds from tourism, a private source not fully tapped at this time. USAID Peru can take advantage of its experiences in other countries such as Belize, where ecotourism has become an important source of income for buffer zone communities, particularly for women. USAID can also maximize funds by coordinating with other US agencies such as our own National Park Service. **USAID capabilities:** Biodiversity as a field of study is new enough that USAID field staff should not be expected to know the details of concepts or technical methodology available for carrying out the recommended actions. Training of the USAID staff in skills such as community organizing is highly recommended. However, even with additional training, access to reference materials, and experience in this field, the current USAID staff in Peru could not carry out all of this work without additional manpower from either a specialist brought in under the new environmental project, TDY consultants (private or government) who can return on a periodic basis, or staffing in an NGO or GOP office working on these programs.

ENVIRONMENTAL DESTRUCTION BY TARGETED INDUSTRIAL SECTORS

Today in Peru, public economic policy centers on the privatization of state-owned enterprises, the elimination of trade barriers, the stimulation of investment, and the participation of Peruvian and foreign investors on an equal basis. The government is actively pursuing privatization in energy, fisheries, mining, urban services, telecommunications, and

other sectors. But, these policies have raised relevant questions about liability for past environmental abuses, and more importantly, what plans need be put in place to insure that future industrial behavior will be responsible and not continue business as usual, that is, environmental abuse and destruction by Peruvian industry.

The Peruvian economy is heavily dependent upon exports of naturally occurring resources such as gas, oil, minerals, metals, and seafood products. To address environmental problems it is useful to understand the context of these industries as Peru attempts to reconcile their growth with sound environmental management.

Privatization will bring more environmentally savvy companies, many will come with an environmental ethic. Industry generally prefers a clear set of rules, and Government is attempting to provide these. But, the focus is too heavily on end-of-pipe controls rather than pollution prevention and the creation of incentives to reduce or eliminate the *production* of pollutants. This provides USAID/Peru with the opportunity to lead and catalyze in a context where industry is being aggressively stimulated as it transitions from pervasive state invention and government ownership to competition and private ownership. An indicated strategy places a clear set of norms and enforcement mechanisms is place, but seeks compliance not by prescribing technology but by emphasizing prevention in the context of profits. Within such a strategy, main problems include a present lack of effective industry regulations and norms; the lack of an effective environmental authority and compliance mechanisms; uncontrolled hazardous wastes; and a lack of knowledge and incentives for compliance and prevention.

1. Main Problem Area: Lack of Effective Industry Regulation Concerning the Environment

Specific industries, such as fisheries, energy, and mining, discharge pollutants directly into the environment and consequently cause great collateral damage. Peruvian industry is almost unregulated, whether from lack of regulations and norms or from lack of enforcement. Consequently it is unaccountable. A general description of the wastes from several selected industries is in Technical Annex D. Rather than stimulate investment, particularly by non-Peruvians, this situation actually inhibits it. Environmentally aware investors know that, sooner or later, the public will hold them accountable.

Programs and Methods

Concern with industrial pollution is relatively new to USAID, and concern with the mitigation, abatement, and prevention of negative environmental impacts is relatively recent on the part of several other major donors. So, the most immediate need is knowledge of the problem. This knowledge can then be used to design norms, enforcement mechanisms, outreach campaigns, and incentive structures. Baseline studies, comparative risk assessments, and action plans are standard means to address this constraint. Regulations should provide for incentives to prevent pollution, but also enforce violations.

Specifically, USAID can assist in formulating regulations to encourage prevention over end-of-pipe controls. One model is provided by the US Pollution Prevention Act of 1990. This is a short law passed by Congress that offers a basis for incentives for prevention, reuse, recycling, and reduction of toxics. AID can also sponsor technical assistance to audit plants and recommend low cost prevention options that are profitable and cost saving.

2. Main Problem Area: Lack of an Effective Environmental Authority and Compliance Mechanisms

The problem is not unique to industry and is discussed in general in the section on the legal, regulatory, policy, and normative framework (below). Industry needs from government a multi sectoral approach to regulation and compliance and a signal that the parties will work together cooperatively to reduce environmental destruction. A lack of accountability to a central authority leads to a lack of consistency. Industry builds up a resistance to adherence to laws and remains unaware of alternative technologies which can be profitable. Again, the November 23, 1994 creation of CONAM is an important first step.

Programs and Methods

Programs are similar to those discussed under the normative framework heading, and involve strengthening CONAM and selected sectoral institutions; public participation; outreach; policy dialogue; and information dissemination. Programs specific to problem industries would stress baseline studies, comparative risk assessments, technical norms and standards, and action plans. Compliance and incentive structures would be put in place to motivate adoption.

Other major donors are sponsoring similar efforts (both cross sectorally and sectorally). AID collaboration with them is important. AID can assist the Government of Peru and other actors to not imitate the mistakes of the end-of-pipe control approach now unpopular in industrialized nations, but rather to develop standards and regulations based on prevention and economic incentives and geared towards Peruvian financial and administrative capacities. This approach would set a national goal of minimizing waste generation and preventing pollutants, and deal simultaneously with the collection, treatment, recycling, and disposal of wastes.

3. Main Problem Area: Uncontrolled Toxic and Hazardous Wastes

There is no program in Peru to control toxic and hazardous wastes, which are discharged uncontrolled directly into the environment throughout the formal and informal sectors. The discharges cause great damage to Peru's water systems and in its periurban areas. They damage other industry, such as ecotourism. There is a need to identify, segregate and control toxic and hazardous wastes particularly in small and medium sized firms. The first priority must be to regulate disposal and the second is to prevent and cleanup. A longer discussion of toxic and hazardous waste is found in Technical Annex D.

Mining offers a microcosm of what can be wrong with the system. Mining industry tailings and water runoff travel down waterways. For example, Lima's La Atarjea potable water plant takes in water with lead concentrations of as high as 15 parts per million. There is a good chance that lead and other heavy metals (mercury) are pervasive throughout the ecosystem and possibly contaminate seafood and agricultural products. No real study has been conducted and information on the precise nature and gravity of the problem is lacking. Another potential mining related problem is the usage of mercury for the separation of gold in marginal or outlaw mining operations. The mercury is released into the aquatic environment. Other parts of Latin America with similar informal gold mining operations report hazardous levels of Mercury in fish and mother's milk (Brazil). Cases of neurological damage are being reported and are believed associated with vapors as well as contaminated food.

Fisheries is another important Peruvian industry and has long enjoyed a preferred status, permissive of serious environmental damage. To illustrate, some 6.8 million MT of anchovy was caught and 1.7 million MT of fish meal was produced in 1993. All process waste was discharged untreated back into the sea where the processing plants are located. This waste has such a high biodegradable oxygen demand that it locally overwhelms the affected marine ecosystems. In Paracas, the nature preserve and its potentially lucrative ecotourism industry is threatened. In Chimbote, discharge from fish meal and other industrial plants are believed to have caused serious health problems among significant populations. But, these wastes can be recovered and treated like another product stream, resulting in more profit and creating a secondary market for the recovered product, for example as animal feed. Many such production and byproduct recovery systems are known in the US and can easily be transferred to Peruvian industry.

Peru is a signatory to the Basel convention which is a aimed at preventing inter-country transport of hazardous wastes and a committee has been organized to address this issue. Normally municipal solid wastes in Peru consist of paper, plastics, glass, metals, and various household items. However mixed in with that waste is a significant amount -- estimated at 940 tons per day in Lima out of the total 4000 MT solid wastes daily -- of hazardous wastes containing chemicals, heavy metals, dioxin, polycyclic aromatic hydrocarbons and industrial wastes that can cause significant hazards to human health and the environment when improperly managed or, as in the case of Peru, ignored. Recently the Pan American Health Organization has estimated that Hazardous Wastes produced from health care facilities in Peru's hospitals amounted to some 6,700 Tons annually.

Programs and Methods

A staged approach to this problem is indicated, as follows: First, information and data must be developed; then, pilot prevention and control projects can be designed, together with awareness campaigns targeted at industry and policy makers; then, technology can be transferred. Tax, fiscal, and sanction compliance mechanisms are integral to a staged approach.

USAID can fund baseline studies and set up low cost monitoring programs to ascertain the extent of the problems downstream from energy, mining, and seafood processing operations. Baseline information is also needed on the nature, amount, and origin of hazardous solid waste within the municipal waste stream. Plant audits can point out areas where waste can be avoided, stopped, reused, recovered, and prevented, and hazardous waste separated, and collateral studies can reveal technologies suited to Peru. Case studies of US and worldwide success stories can be developed.

USAID can then support pilot programs for plants to prevent pollution, minimize wastes, and increase profits from by product recovery. Seminars and workshops can be conducted with industry to point out these techniques. Technology transfer programs, possibly involving bank credit, would be a final step.

USAID may seriously investigate the possibilities of obtaining funding for these programs via the GEF, other international conventions, and from central USAID earmarks.

The current charge of CONAM to develop technical norms and standards for target economic sectors is noted, the results can be applied to hazardous and toxic wastes. Policy dialogue with GOP can raise awareness of the problem and this approach to it, as well as help put in place a compliance and incentive structure.

4. Main Problem Area: Lack of Knowledge and Incentives for Compliance and Prevention

Managers may not know of processes and disposal methods which make greater use of current throughput or allow profitable by product recovery. The weak normative and enforcement framework does not stimulate clean industry. Tax, fiscal, and legal mechanisms which stimulate compliance and require polluters to pay are absent or not enforced.

Programs and Methods

AID can introduce the concept of pollution prevention through seminars, technology transfer, the development of pilot projects to show great savings and payoff in raw materials, labor, and energy through the concepts of recycling, reuse, operations maintenance, and by-product recovery. For example, fisheries technology known in the US recovers wastes prior to discharge and converts it to animal feed. This shows how waste can be avoided, and converted to an ancillary and economically attractive product line.

AID can also increase public awareness through low cost seminars and campaigns targeted at problem plants, industries, and municipalities. Once an incentive structure is in place, awareness campaigns can stress it.

AID can sponsor credit for pilot programs that illustrate environmental savings for specific industry groups from utilizing pollution prevention techniques, and assist by offering seminars and plant tours.

AID should assist the government to develop incentives and policies that will make industry more responsive, including tax and fiscal rewards and penalties; access to credit; and provision of technical assistance and training.

AID can dialogue about potential problems associated with environmental liability to help GOP and industry realize that a day of reckoning will come. This can be accomplished through low cost NGO outreach programs.

5. Ongoing and Planned AID Projects Related to Environmental Destruction by Targeted Industrial Sectors

USAID has not been directly involved with Peruvian industry in dealing with the main environmental problems discussed here, but a number of ongoing and planned projects are clearly related. These include the PVO Support Project (0353); the Policy Analysis, Planning, and Implementation Project (0343), and the Microenterprise and Small Producers Support Project (0349). PL 480 III is related via its purpose, "an overall policy framework conducive to economic stability and growth." The anticipated SENRMP will be active in problem areas related to industry.

A number of central projects and several earmarks are designed to address these problems, these include an earmark for renewable energy and the centrally funded PRIDE Project. The Mission may profitably seek involvement and funding from these central sources.

6. Other Donors: Ongoing and planned Projects to Targeted Industry and the Environment (Mines, Fisheries, and Energy Sectors)

The IADB and the IBRD have major ongoing and planned projects and programs in Peru which impact upon the issue and problems addressed here. The World Bank has a project with The Ministry of Energy and Mines (MEM, for $150 million) to revise the environmental laws in the mining and energy sectors; strengthen and train public sector officials in environmental regulations, assessments, and enforcement; and to privatize and reform tariffs. The IBRD has two structural reform loans to the Ministry of Finance (MEF -- $150 million) to improve market structures including water markets. Another IBRD loan to the Ministry of Education for $100 million supports public awareness in primary and pre primary education. The IADB loan to CONAM (Strengthening of Environmental Institutions, TC9304445, for $1.8 million) is discussed in the legal and normative reform section, below. An IADB loan closely related to the prevention and incentives strategy proposed here is PE0113, Multisector Global Credit Program ($ 130 million), which establishes a fund designed to offer a line of credit to the private sector to finance projects with high rates of return. Again, we stress that many pollution prevention investments are highly profitable. Another IADB design-stage project supports privatization of the Lima water system (PE0032, $140 million) and in part will finance institutional strengthening of enterprises that furnish water or sewage services. All of these multi lateral programs also

strengthen institutions. A judicious usage of their revenues would support clean technologies and show their economic attractiveness.

The document, "Contribuciones de la CTI" (November, 1994) lists a variety of smaller and highly targeted bilateral interventions from, among others, Germany, Spain, Japan, and the FAO.

Implementing our advocated programs through NGO's fosters public participation and pluralism, and is not specifically stressed in the large multi lateral programs.

7. Priority Programs

Moderate Scenario: About 1.0 Million Dollars Annually to Targeted Industry		
Priority	Next 1 to 4 Years: Problem Definition, Awareness, Education	Coming 3 to 10 Years: Implementation
High	Baseline technical, economic studies; CRA's; EIA's; action plans. Design incentives for prevention, compliance, enforcement. Related policy dialogue, strong regulatory, compliance framework in place. Donor coordination. Locate co-financing.	Set national goal: Minimize waste generation. Plant audits. Pilot prevention and cleanup: Highly targeted, for profit, for demonstration. Foundation.
Medium	Pilot awareness, education programs, prevention seminars (to plants, municipalities).	Sub-sector awareness, education, worker safety programs (to industry, regional government).

Enhanced Scenario: About 3.0 Million Dollars Annually to Targeted Industry		
Priority	Next 1 to 4 Years: Problem Definition, Awareness, Education	Coming 3 to 10 Years: Implementation
Both	Moderate funding level actions, plus: Develop a hazardous and toxic waste separation program.	Enhanced pilots: Audits, prevention, cleanup in plants, well documented for profit and demonstration. Toxics pilot program. Awareness, education to industry, government. Strengthen legal, fiscal, tax incentive programs.

Rationale

Cost: For highly targeted industry, or industrial sub sectors (mining, fisheries, energy), the recommended near-term interventions of running baseline studies and comparative risk assessments; planning; and policy dialogue are doable within parameters of ongoing projects and anticipated new starts. **Need:** Millions of Peruvians are unnecessarily exposed to preventable toxic and other waste streams. Mitigation and abatement can reduce mortality and morbidity from poor water, sanitation, and pollutants while enhancing the quality of life and stimulating growth industries (ecotourism). Peru needs to develop its resource base in a sustainable manner and also to produce energy in a sound manner. Control of discharge, especially via prevention and control of hazardous and toxic waste has the potential to benefit millions of less privileged Peruvians. **USAID Role:** By following the indicated strategy, USAID has an opportunity to lead and catalyze in a context where industry is being aggressively stimulated as it transitions from pervasive state invention and government ownership to competition and private ownership. The suggested strategy commits modest levels of resources in support of GOP and other donor efforts, but sets the agenda: Definition of the problem, a clear set of norms and enforcement mechanisms, and compliance via prevention and profit seeking. **USAID Capabilities:** The Strategy team finds that the recommended level of attention to brown issues would be new to the Mission and doubts that the technical knowledge of existing staff can support sound management of these programs. This will be especially true once a transition from the diagnostic and policy stage to pilot programs is underway. It may be necessary to add to the capabilities of existing staff through normal rotation. Areas of concern include technical standards and processes and approaches to prevention. **Impact:** Reduction of dangerous contaminants presently discharged directly into the environment has the potential to materially increase the well being of millions of Peruvians. Pollution avoidance and by product recovery hold profit potential for thousands of Peruvian businesses. A judicious choice of programs will impact agriculture, biodiversity, urban, and coastal issues. This issue is a classic cross-cutting intervention area.

THE URBAN ENVIRONMENT

Traditionally, USAID Peru's environmental concerns have primarily reflected a rural focus. More recently the Mission has shifted its focus to include urban environmental issues. The need to include "brown" issues on an environmental agenda can be broadly defined. Cities are both the engine of economic growth and a large source of environmental problems. They are the core of technology and employment. They function as administrative and financial centers, and are vital for the commercialization and industrialization of agricultural products and consumers goods. However, as urbanization takes place, natural resource capital, indispensable to sustainable economic growth, can be largely depleted. Indeed, as a result of urban expansion, water and soil resources are contaminated, water consumption is increased, and watersheds absorb hazardous residues and effluent from households and industries.

An urban agenda merits special attention since urbanization is an irreversible process

and is typically accompanied by severe degrees of poverty. At present, metropolitan Lima absorbs 150,000 people each year, most from Peru's most economically depressed areas. In 1981, only nine other Peruvian cities had 100,000 or more inhabitants; by 1993 this figure increased to 15. In 1993, population trends showed that 21 percent of Peru's households, or approximately 4.6 million people lived in extreme poverty; it is estimated that by the turn of the decade 3.4 million people will fall into the extreme poverty category. The impact of the poor on the environment is primarily related to the lack of urban services and improper use of the natural resource base.

Perhaps the most import reason for a broad environmental agenda is the impact of urbanization on city dwellers. During the decade of the 1980's attention to urban growth was down-played as a result of economic constraints experienced in the region. Diffuse capital investment projects were carried out and resulted in large deficits of environmental infrastructure. In many cities waste water, solid waste, and effluent from industries and vehicles are reaching intractable levels and are affecting morbidity and mortality rates especially among the urban poor concentrated in inadequate and overcrowded urban sites. Urban populations can be subjected to acute respiratory diseases resulting from various emissions and to a series of transmissible diseases associated with the lack of basic services. Within these groups women and children are among those at highest risk. This situation occurs even though research in developing countries has shown that even the poorest are willing to pay for improved municipal services.

At present, an increased focus on urban environmental problems is most appropriate. After the approval of NAFTA, Latin American countries are increasingly organizing themselves (i.e., G3, Mercosur, and AFTA) to compete effectively in international markets. The implications of free trade are increased exports, commercialization, and production. An urban environment focus will increase these opportunities as it tends to consolidate the natural resource base, capital infrastructure and production standards, and to eliminate environment-related obstacles that might be required as preconditions for adoption of international trade agreements.

1. Main Urban Problems

Rapid city-ward migrations are responsible for altering the spatial and social-economic landscape of many cities within a short time frame. Urban-rural migration is tied to a series of socio-economic factors. One of the most documented is the push-and-pull theory: As social and capital services are concentrated in urban centers and depressed rural areas cease to provide economic opportunities, a dynamic transfer of population takes place. In Peru, rural-urban migration has increased during the last 30 years due to these conditions. Through land invasions and squatting the poorest segments of the population have secured a place in undeveloped periurban areas. Through the late 1970's and 1980's, 77 percent of Lima's growth occurred in periurban settlements known as Pueblos Jovenes. It is estimated that 30 percent of Peru's total population lives in periurban areas. These settlements are

typically initiated without municipal approval nor the adequate provision of water, waste water, and solid waste services. In addition, large numbers of informal businesses operating in highly dense areas without adequate urban services exacerbate environmental problems in low income areas. According to the Inter American Development Bank, 60 percent of the labor force in Lima is considered informal.

As urban settlement and businesses expand, the institutional capacity to serve the population has decreased. The provision of urban services is related to government and private investments and access to foreign capital. The economic crisis faced by Peru during the last ten years has undermined the capacity of these sectors to undertake infrastructure programs. Formal access to credit and financial resources became limited. By 1991, Peru was affected by hyperinflation, deep recession, unsustainable levels of foreign debt, and a sharp decline in most social indicators. Moreover, most international financing programs that supported the provision of urban infrastructure --such as the USAID HG program--- were terminated or significantly reduced. National institutions responsible for the provision of urban services began experiencing difficulty as operating costs surpassed revenues. By 1991, the savings and loan system and other housing-related institutions were dissolved, and have not been replaced.

a. Wastewater and Sanitation

In Peru, there is a large shortfall of sanitary and wastewater systems which is one of the leading causes of surface and groundwater contamination and high child mortality rates. It is estimated that only 54 percent of the population has access to sanitation and only 35 percent has access to toilets. This situation is more critical in the poorer areas of the country. Families lacking sanitary services drain their wastewater into holes or directly onto the ground or defecate in open spaces. For Metropolitan Lima, the problem is exacerbated by the concentration or urban poor. For example, in northern Lima alone, over one million people do not have access to sanitation services appropriate to high density concentrations.

In Peru 90 percent of untreated wastewater discharges directly into rivers or the ocean, contaminating coastal and watershed areas. In Lima, it has been estimated that 960 cubic meters per minute of raw sewage from three major (Surco, Costnero, and Comas) and nine secondary outfalls discharge into the ocean producing great contamination along the city's coastal area.

b. Solid Waste, Including Hazardous and Toxic Solid Waste

Solid waste can be a contaminating element when refuse is disposed into rivers, watersheds, and open landfills with no leachate control. Most critical solid waste problems are found in Peru in poor urban areas. In spite of the fact that the amount of solid waste generated by the urban poor is less than that generated by more affluent income groups, the presence of uncollected refuse in periurban areas is many times more than in other formal communities. Uncovered dumping, unsanitary conditions, and bad smells are frequent

characteristics of these settlements. At present, this situation is exacerbated by the expansion of informal sector business. It is estimated that 8.5 tons of solid waste generated daily by the informal sector remains uncollected.

The lack of solid waste services for the urban poor is creating serious environmental problems. For example in Lima, from Callo to Chaclacayo there are large numbers of informal settlements that dispose of their solid waste directly into the Rimac River producing great levels of contamination. Similar solid waste disposal practices can be found in most urban areas, producing contamination in rivers that are the main source of drinking water for multiple downstream communities. The lack of solid waste collection is worsened by the presence of very few sanitary landfills in Peru. Typically, solid waste is disposed into municipal landfills or illegal dumps with limited or no sanitary standards, and this creates serious environmental problems.

c. Potable Water

Although access to potable water is at the top of the agenda of most national and international agencies, poor natural resource management practices are currently contributing to the contamination and deterioration of important watersheds. Contamination of potable water sources can lead to the permanent loss of valuable high-quality drinking water and the presence of fecal bacteria, heavy metals, and other contaminants which can be conducive of serious health risks.

Throughout the country, only 54 percent of the total population has access to piped water and only 40 percent of the piped water meets bacteriological standards. Those connected to the main system experience large shortages. Centrally located standpipes for communal service are used extensively. In general, most of the urban poor depend on water supply by vendors whose price is approximately 10 times higher than piped water. Bad storage practices increase the vulnerability of these groups to water-related diseases.

d. Air Pollution

Urban transport has been identified as one of the major sources of air pollution in cities. Vehicle emissions are due to high rates of motorization, poorly-planned traffic management and other factors such as fuel quality, the age and condition of the vehicle fleet, and land-use patterns. One of the main problems associated with urban transportation is the content of lead and particles present in the air. In Peru's larger cities, emissions from motorized vehicles reach unacceptable levels. For the last seven years, motor vehicles have not had to pass inspection and exhaust emission controls. There are many cities that exhibit large amounts of air pollution resulting from vehicle emissions. The Direccion de Salud Ocupacional and the Direccion Tecnica de Salud Ambiental have conducted several tests and determined 1994 concentrations of particulates in suspension between 150 and 250 micrograms/m3. Acceptable standards are 100 micrograms/m3.

2. Programs and Methods

Extensive literature indicates that the urban poor are one of the most important elements of an urban environmental agenda for developing countries. The urban poor have the worst of both worlds. They experience the problems of both underdeveloped and industrialized populations. With limited access to basic infrastructure, these social groups occupy fragile sites in periurban areas, and thus become an important non-point source of water and air pollution at the same time that they themselves are exposed to severe health risks. A framework for an urban environmental strategy should be periurban areas that exhibit large environmental problems, have populations ranging from 3,000 to 10,000 people,[2] and exhibit high child morbidity and mortality. Key players should include municipalities, decentralized public health institutions, the private sector, NGO's, and other grassroots organizations. After programs are designed, their implementation will require technical assistance, training, and funding for project implementation.

Programs and methods should be small-scale, low-cost, and replicable, for example the formation of micro-enterprises for water, sewage, and solid wastes; construction of water and sewage programs using self-help and appropriate technologies; and construction of oxidation ponds and small wastewater treatment plants. Peru already has successful projects of this nature, implemented by local institutions such as Empresas Municipales de Aguas Potables in Chillon and Ancon, Direcciones Regionales and Unidades Tecnicas de Salud, Instituto de Libertad y Democracia, Centro de Investigaciones y Proyectos Urbanos y Regionales, Centro de Estudios y Promocion del Desarrollo, Instituto para la Democracia Local, Instituto Peruano de Economia Social, Alternativa, Natura, Centro de Estudios y Promocion Comunal del Oriente, and Escuela Superior de Administracion Publica.

The resources available to confront Peru's urban environmental problems are limited. Activities funded by USAID should pass the filters suggested in Chapter 2, particularly cost, need, and multiple impacts. Such opportunities exist in abundance in the form of interventions directed at reducing water and air pollution and health risks in periurban areas through the improvement of sound-environmental infrastructure.

a. Implementation Framework

Contracting of Consulting Firms: USAID Peru for the first time will include urban issues it its environmental agenda and but has staff limits in this area It is suggested that an US urban environmental firm and a like Peruvian firm should be contracted to support the preparation of the recommended action plan, rapid impact assessment studies, provision of technical assistance, and implementation of suggested programs.

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[2]FONCODES serves communities with less than 3,000 while FONAVI serves communities with more than 10,000 people. The range of 3,000-10,000 reflects the population that have limited access to government sector assistance.

Preparation of an action plan: An action plan should be prepared to determine specific geographical areas, key institutions, and players, budget allocation, and human and economic resources that should be considered in the implementation of the urban strategy. Within this activity, a number of rapid assessments should take place directed at identifying specific problem areas, target populations, and ranking of environmental and health problems. These assessments should build on already prepared studies by the decentralized units of the Ministry of Public Health, municipalities, and NGOs. This preliminary activity should include the redefinition of the strategic objectives described as Objective 4 in Peru's 1995-96 Action Plan, specifically to include urban issues and indicators consistent with urban environmental problems. The preparation phase should include a review of urban environment projects prepared and undertaken by local agencies or community-based organizations, to guarantee bottom-up solutions to critical environmental issues. This approach may also reveal leveraging opportunities for USAID/Peru.

Policy Dialogue and Policy Reform: The process of preparing and implementing an urban environmental strategy offers USAID Peru the opportunity for policy dialogue with key government officials, private sector individuals, and NGOs and community leaders. Emphasis should be on the need to continue the decentralization process, devolve resources to municipal governments, and privatize urban environmental services. As privatization progresses in Lima, in can be encouraged in other major cities. In smaller communities the creation of co-owned and co-managed small scale water, sewage, and solid waste enterprises should also be supported.

Policy reforms should be directed at increasing the access of municipalities to private loans; expanding the supply of public services through full cost recovery and introducing adequate pricing and systematic collection systems; increasing the participation of NGOs in municipal programs, facilitation of property rights, land acquisitions, registration, transfer of tiles, and expansion of private commercial loans to low-income individuals; promoting the systematic use of environmental impact assessments and cost-benefit analysis in project formulation; endorsing policies that avoid excessive reliance on regulation alone and promoting instead market-based incentives to change people's behavior; and introducing a natural resource curricula for primary and secondary schools.

b. Project areas

Technical Assistance: Technical assistance and training should be provided to municipalities for the improvement of their administrative and operational capacities in the provision of urban services: Indicated areas include strategic planning, municipal finance, environmental management, and poverty alleviation programs. Institutional reforms should facilitate privatization (involving small business and micro-enterprises), expand access to private sector loans, promote greater interaction between municipalities and NGOs, and increase opportunities for sustainable maintenance and operation of urban infrastructure by introducing appropriate pricing and revenue collection procedures.

Technical assistance and training should be provided to the decentralized units of the Ministry of Public Health to strengthen their capabilities to reduce the exposure of the urban poor to health risks in areas of high environmental contamination and lack of infrastructure. Specific training should be provided to improve the capabilities of these decentralized units in the preparation of community oriented research activities, methods for rapid identification of high health risks, improvement of information systems, data collection, and preparation of epidemiologic assessments.

Technical assistance provided to NGOs and community-based organizations should be oriented at strengthening their administrative and technical capacities. Special support should be given to NGOs for expanding their knowledge in low-cost and self-help technologies, and in project preparation and management; collecting community information and preparing environment-related special studies (i.e., environmental and health risk assessments); promoting community resource mobilization; and strengthening NGO abilities to negotiate with local authorities on behalf of grassroots organizations. Institutional reforms should be oriented at the adoption of projects that will secure their long-term financial sustainability and increase NGO access to private sector loans.

Pilot Co-owned and Co-managed Small Scale Water and Sewage Enterprises: Support should be given to municipalities, decentralized units of the Ministry of Public Health, NGOs, and grassroots organization for the creation of small scale water and sewage companies. These small-scale companies should be oriented at improving the present social imbalances in the supply of basic services and future inequalities that might arise from privatization initiatives adopted throughout the country. Within this activity, resulting enterprises should be co-owned and co-managed by both local authorities and communities. Projects should be partially implemented with contributions from the public sector and the community (in the form of cash or labor). Specific training should be oriented at administrating, operating, and maintaining these companies, and at establishing adequate pricing and systematic collection systems. As a precondition of this activity, local authorities should be supportive of collective negotiations through a NGO already operating in the area. Projects should include the participation of women. To fund these pilot businesses, revolving funds can be created or private sector lending promoted. Methods to facilitate commercial financing can be identified.

Micro-enterprises to Minimize Solid Waste: Support should be given to NGOs and private lending institutions to create small businesses, such as small solid waste, recycling, and landfill companies. These will decrease water, air, and soil contamination and at the same time become an important source of income for informal sector members. Banks can be encouraged to adopt flexible guarantees for loan approvals, such as the ones provided by the Property Registry System. In addition, support can be given by establishing loan guarantees or revolving funds. Less conventional methods, such as credit based on users' declared willingness to pay for better services, can be funded as soft loans. As a precondition of these activities, NGOs should establish a coordinated program with municipalities in order to avoid potential conflicts or duplication of activities. The

formation of micro-enterprises should address pollution prevention issues and employment opportunities for women.

Community Awareness Training: Formal and informal training should be targeted at families in periurban areas, to carry out the activities included in the urban environmental strategy. Training should focus on pollution prevention, conservation and management of watersheds and coastal areas, improving the quality of surface and ground water, and decreasing the disposal of untreated excreta or wastewater directly on land or into surface water. It also should focus on the use of appropriate material and self-help schemes for the implementation of low-cost urban infrastructure projects. In addition, training should be directed at increasing community participation in the decision making process; the administration of small-scale enterprises; changing people's behavior in terms of sanitation; reducing health risks by improving potable water and sanitation practices; decreasing high infant mortality and malnutrition caused by diarrheal and parasitic diseases; and providing greater understanding in the use and adoption of alternative technologies directed at the preservation of the environment and the provision of infrastructure.

3. Funding Mechanisms

Urban programs can be funded from the new SENRMP, ongoing projects, and central USAID programs. Programs can be leveraged by contributions from local government and communities in cash, technical assistance, or labor and by working in coordination with other international donor programs.

a. The New Sustainable Environmental and Natural Resource Management Project

This project can support preparation of the action plan and various studies recommended within this subsection. In addition, the new SENRMP will fund policy dialogue and the preparation of background policy materials. It is anticipated that meetings and workshops will take place during this early stage. Following these preliminary activities, the project can fund pilot water and wastewater micro-enterprises. To a lesser degree funding should be allocated for training activities since it is expected that other USAID/Peru projects can be devoted to this purpose.

b. Relation to Ongoing Peru Projects and Country Program:

During action plan preparation, review of the current USAID Peru portfolio will more closely identify Mission projects that can leverage implementation funds. Support should be pursued from programs that have traditionally supported rural and other sectoral activities beyond the urban environment. The rational for this approach is that urban environmental issues are cross cutting: An improved urban environment can influence the rates of rural-urban migrations, strengthen agricultural market towns, decrease child morbidity and mortality rates, and facilitate the participation of women in projects and development activities. It is anticipated that project indicators will be adjusted to encompass

urban environmental issues. The following USAID/Peru projects can support the proposed urban environmental strategy:

Integrated Child Health and Nutrition Program for At-Risk Families (PRISMA-Title II): Support the provision of public-private health care institutions operating at the community level in areas of high environmental risks. Provide support for the provision of environmental-related infrastructure and services which make use of self-help technologies. Support research, health risk assessments and information systems. Support the strengthening of NGOs' institutional capabilities in the area of environmental management, health-care related services, nutrition, and reduction of child mortality.

Local Government Development Project (527-0371): Support the provision of technical assistance and training for local governments, NGOs, and community based organizations in the areas of administration, community development planning, budgeting, project planning, management, and administrative procedures. Support the involvement of NGO's and other community-based organizations in the implementation of municipal government projects. Promote stronger linkages between local government and local community organizations. Support the implementation of small, basic service projects and revenue generation activities in a participatory way by communities and local governments.

Microenterprise and Small Producers Support (527-0349): Support the establishment of a revolving fund for the creation of micro-enterprises directed at the minimization of solid waste and other related urban services. Support training in the management and operation of micro-enterprises.

Monetization Program (Title III): Support the creation of revolving funds to establish micro-enterprises directed at solid waste minimization interventions. Support the establishment of co-owned and co-managed enterprises.

Private Volunteer Sector (527-0335): Provide technical assistance and training to NGO's and other grassroots organizations in areas related to institutional building; project preparation; accounting systems; resource mobilization; management, operation, and maintenance of small community-owned enterprises; research, and data collection and analysis; and preparation of environmental and health risk assessments. Support training of public officials to expand their capacity to adopt privatization programs and to increase their capacity to operate co-owned and co-managed enterprises. Support project activities oriented at the creation of micro-enterprises derived from the minimization of solid waste.

Peruvian Peace Scholarship Project (527-0340): Support the participation of municipal officials in seminars and short-term courses in the area of strategic planning, natural resource management, administration, municipal finance, and poverty alleviation programs. Support the participation of NGO's in seminars and short courses in environmental management, health, natural resource management, and self-help

technologies. Support formal training of technical municipal staff, key leaders (especially women) from NGO and grassroots organizations in areas of engineering, sanitary engineering, health, and business and administration courses to support activities related to public and privately co-owned water, sewage, and solid waste enterprises. Support short- and long-term training programs for professional staff working in areas of high child morbidity and mortality rates, in the fields of statistics, program formulation, health risk assessments, epidemiology, and other community-oriented water and sanitation practices. Support the participation of environmental NGO leaders in courses directed at the development of primary and secondary school curricula.

Private Sector Institution Reform (598-0772): Support the preparation of workshops oriented at increasing the level of commercial loans granted to informal sector members. Support programs to expand public private partnerships in the areas of service delivery, consensus building between public and private sectors, fund raising, and mobilization of voluntary work. Support the creation of micro-enterprises to minimize solid waste, for example solid waste collection and disposal, recycling, prefabricated elements for sanitation projects. Support municipal governments to improve their capacities to formulate policies, expand urban service delivery, undertake financial planning, price, tax, and collect revenue, especially through the creation of co-owned and co-managed water and sewage enterprises.

Project 2000 (527-0366): Support decentralization and cost recovery activities. Support programs to address acute respiratory illness and diarrheal diseases in areas of high air and water pollution. Support projects undertaken with a large community self-help component. Support water and air monitoring in areas of high health risks.

Reprosalud (new): Support education programs that establish the relationship between environmental management, health, and income. Support the dissemination of key information to reduce child mortality and morbidity. Provide training courses in transmissible diseases resulting from air and water borne microorganisms. Support the preparation of community oriented research activities, methods for rapid identification of areas of high health risks, improvement of information systems, data collection, and preparation of epidemiologic assessments. Provide training for the creation, operation, and maintenance of micro-enterprises that positively impact family health and income through pollution abatement. Support labor intensive projects in communities exposed to high health risks as a result of limited access to basic services. Support public- and privately-operated enterprises and labor intensive projects in areas of high health risks. Support the implementation of projects using innovative and self-help technologies in the implementation of water, sewage, and solid waste enterprises. Support women in obtaining credit to initiate micro-enterprises. Support the training of community women to manage key community-oriented programs.

Strengthening Health Institutions Project (527-0319): Support the provision of public-private health care institutions operating at the community level in areas of high

environmental risks. Provide support for the provision of environmental-related infrastructure and services which make use of self-help technologies. Support research, health risk assessments, and information systems. Support the creation and strengthening of NGO's in the area of health-care related services, nutrition, reduction of child mortality. Support pilot-demonstration projects especially for women's groups to increase community understanding in the use of appropriate technologies and in increasing the access to better drinking water and sanitation.

c. Other USAID programs

Support pilot HG programs as a means to finance urban-environmental infrastructure in periurban areas. Coordination should involve appropriate Peruvian guarantee authorities and members of the Wiese Bank. The importance of involving the Wiese Bank is that this institution has an impressive track record lending to low-income families for small-scale urban infrastructure and micro-enterprises. A HG program can enlarge the lending portfolio of Bank Wiese. Central projects such as Women in Development and others established to promote free trade can support the proposed urban environmental strategy.

4. Relation to the Ongoing Programs of Other Development Institutions

The Inter American Development Bank (IADB) and the World Bank (IBRD) both have major urban environmental programs in Peru. IADB projects include: Decentralization and Municipal Development Program, to support decentralization by financing investment projects in urban areas ($50 million); Support for the Basic Sanitation Sector Program, to strengthen the sanitation sector and improving enterprises that provide water and sewage services (120 million); Neighborhood Improvement Program, finance the construction of basic urban services (i.e., electricity, water, and sewage) and other basic social services ($70 million); Housing Sector Program directed at reorganizing the institutional, legal, and administrative aspects of the housing sector. The IBRD is in the process of implementing the Water Privatization Rehabilitation and Management Program directed at modernizing Peru's regulatory framework, attract private operators to manage Lima's water service, reduce supply bottlenecks resulting from unreliable and unpredictable services, and minimize health hazards (150 million).

An USAID urban environmental agenda directed at the urban poor and periurban areas is most appropriate, given the IADB and IBRD attention to large scale urban environmental infrastructure projects. The proposed USAID Peru urban environmental agenda is an important step in improving urban environmental infrastructure in areas that have limited coverage within large scale infrastructure and privatization programs. Recommended USAID Peru urban strategy programs also promote a broad participation of all sectors in the delivery of sound environmental infrastructure.

Finally it is important to note that the European Economic Community and the governments of Germany, Holland, Italy, and Spain are providing grants to several NGO's working on small-scale urban programs in Lima and several secondary cities. These projects are typically small, so large numbers of urban areas will remain unserved in the future. Within this framework, USAID action on urban environmental programs is urgently needed.

5. Priority Programs

Moderate Scenario: About 2.5 Million Dollars Annually for Four Years; About 1.0 Million Dollars Thereafter		
Priority	Next 1 to 4 years: Undertake small scale, low-cost replicable projects and technical assistance	Coming 3 to 10 years: continue replication of project and technical assistance; update urban environmental strategy
High	Preparation of action plan, rapid impact assessment studies. Policy dialogue and reforms. TA, training to municipalities and NGOs.	Continue creation and replication of small scale water and sewage companies and solid waste recycling and land fill companies; add new programs according to updated urban environmental strategy
Medium	Creation of water and sewage companies; creation of solid waste, recycling, landfill micro-enterprises.	

Enhanced Scenario: About 3.5 Million Dollars Annually for Four Years; About 2.0 Million Dollars Annually Thereafter		
Priority	Next 1 to 4 years: Undertake small scale, low cost replicable project and technical assistance	Coming 3 to 10 years: continue replication of projects; update urban environmental strategy
High	Moderate scenario, plus: Decentralized units of the Ministry of Public Work assistance and training	Continue creation and replication of small scale water and sewage companies and solid waste recycling and land fill companies; add new programs according to updated urban environmental strategy
Medium	Moderate scenario, plus: community awareness, vehicle emission controls.	

AN INADEQUATE LEGAL, REGULATORY, POLICY, AND NORMATIVE FRAMEWORK

Each of Peru's main environmental and natural resource management issues has a significant normative dimension. If sustainable long-term ENR use requires a coherent and adequate policy-legal-regulatory framework, appropriate enforcement mechanisms, and incentives to avoid environmental and natural resources degradation and depletion, the first of these is not presently in place. Public policy towards the environment has been largely nonexistent. The creation of CONAM and continued pressure from international and Peruvian environmental organizations are now acting to improve the framework. These efforts require priority attention.

1. Main Problem Area: Inappropriate Legal and Regulatory Framework

At a time of market liberalization, deregulation, and strong orientation to growth led by the private sector, Peru's environmental legislation is a patchwork. Despite the significant improvements enacted on November 23 of this year, the environmental law remains weak and continues a sectoral approach to environmental impact analysis and environmental norms. Laws that promote investment and those that protect the environment are not compatible. The absence of standard protocols and terms of reference for environmental impact analysis continues, although The National Environmental Council -- CONAM -- is now charged with this task. Rather than encouraging private investment, this approach generates uncertainty among investors, who would prefer to face a clear set of rules. Finally, it is difficult to access existing information about environmental laws, norms, and standards.

Programs and Methods

Institution strengthening and technical assistance: Mechanisms for public participation must be developed, as the legal and regulatory framework evolves to become more compatible with economic growth. CONAM will need assistance to develop and implement technical norms and standard protocols and terms of reference for environmental impact analysis. Policy dialogue with the Congress should focus on mechanisms to standardize environmental norms and environmental impact analysis; reward efforts to prevent degradation and pollution; and require mitigation and abatement of any negative environmental effects of development investments. At some point, both enforcement and cross-sectoral harmony must be achieved in environmental codes and norms.

2. Main Problem Area: Weak Institutions

Planning, regulating, controlling, and enforcing laws and norms are undertaken by weak sectoral institutions, who understand neither the environmental consequences of development investments, nor how to analyze these consequences, nor how to prevent or mitigate them. Therefore, sectoral responsibilities to apply and enforce laws and norms are poorly carried out. Local governments are particularly weak. There is little or no inter

sectoral coordination.

Programs and methods

The Peruvian Government's capacity to understand the environmental ramifications of development investments and to undertake environmental analysis, and the subsequent dissemination of results, must be strengthened. This is especially important at national level (in the Congress, the judiciary, and CONAM), but is also important at sectoral level, for example in the Ministries of Agriculture, Finance, Health, Mines, and Industry and in municipalities. Private organizations, for example, industry or NGO associations, can also be strengthened in environmental analysis: This would provide a pluralistic point of view. In these actions, mechanisms for public participation must be developed. CONAM is required to prepare a national environmental action plan. CONAM is required to name a technical commission that will establish national norms and standards for contaminant limits. Both efforts would be excellent candidates for support.

One alternative to achieve institutional strengthening would be to provide support from institutions who can provide ongoing advisory services, help prepare laws and standards, and otherwise be on call. Training is a second mechanism. Both imply technical assistance.

3. Main Problem Area: Lack of Public Participation and Deficient Rights in Access to Public Information

Public hearings, round tables, debates, and other mechanisms that promulgate draft environmental laws and norms are virtually unknown in Peru. The public -- individual citizens, citizen groups, interested institutions, even local government -- often remains ignorant of environmental laws and norms, and almost never has a chance to help shape the norms before they are adopted. Jurisdiction over environmental norms is centered in Lima, thus marginalizing regional and local authorities. If the Peruvian constitution of 1993 recognizes the right of access to information, there are no regulations which permit public sector employees to decide when they can make information available to the public. All of this keeps the public in the dark, and leads to rules that do not respond to social realities and often do not address the reality they seek to regulate. It discourages compliance and enforcement. Courts, with all their deficiencies, are left to solve conflicts originating in environmental damages.

Programs and Methods

Public hearings and public awareness campaigns should be required as a part of making and enforcing environmental norms and laws. An on-line environmental information system would promote public participation, access to information, and stronger institutions. Arbitration, rather than lawsuits, can be encouraged as a means to conflict resolution.

4. Main Problem Area: Loss of Financial Resources

The weaknesses of public sector institutions who regulate the environment, until CONAM the absence of a central environmental institution, the lack of a Peru environmental action plan, and like structural deficiencies have often made it difficult or impossible for donors to channel resources. The Executive Secretary for International Technical Cooperation of the Ministry of the Presidency, the main entity for the channeling of donor resources, has lacked coordination mechanisms with other sectors. The Budget Law requires income from visits to protected areas or donations to public institutions to flow to the Public Treasury. There is no guarantee that such funds will be used in support of either the sectors that generate the funds or the institutions of interest. The ability of the public sector to formulate projects has been weakened through downsizing.

Peru does not have a fund which can accumulate and channel financial resources for general environmental management, except for the National System of Protected Areas (SINANPE) and the related fund, PROFONANPE. These are restricted to protected areas. Many donors have suggested that Peru establish a fund whose objectives are broad enough to encompass the full range of Peru's environmental issues.

Programs and Methods

Create a national environmental trust fund, with participation from the public, donor, and private sectors, as a trustee for designated environmental and natural resource management actions. Formal new legislation which reserves at least a major part of revenues from protected areas to the management of those areas. Strengthen the Executive Secretary for International Technical Cooperation in its ability to channel resources and dialogue with the main ministries and private organizations dealing with the environment. Specifically for protected areas, support PROFONANPE.

5. Main Problem Area: Lack of Adequate Judicial Mechanisms for Defense of the Environment

The Peruvian constitution recognizes the right to live in a healthy environment, and the July, 1993 Civil Procedures Code permits legal action in the public interest, whether initiated by persons damaged or by third parties. Judicial injunction is the mechanism, but is commonly used only to stop harmful actions. The law does not provide for indemnity (penalty), nor are there incentive mechanisms to reward non-polluters or industries who stop or prevent pollution. In the judiciary, the lack of knowledge of environmental matters has been elsewhere noted as a problem.

Programs and Methods

Judicial strengthening through training of judges and prosecutors in environmental matters. The design of complementary legal mechanisms that penalize polluters and reward

pollution prevention. A greater use, supported in law, of arbitration to solve conflict (as opposed to lawsuits and injunctions). Greater public access to legal environmental actions, such as public hearings and freer and more rapid access to public information. Public education about the constitutionally recognized right to a wholesome environment.

5. Ongoing and Planned AID Projects Related to the Normative Framework

Most ongoing AID projects have an interest in an adequate legal, regulatory, policy, and normative framework. Chief among ongoing programs are the Policy Analysis, Planning, and Implementation Project (PAPI - 0343); PL 480 Title III; and the Micro-enterprise and Small Producers Support Project (0349). PAPI has supported the Ministry of Industry and Tourism in its strategic efforts to promote ecotourism and has assisted in the training of members of the Peruvian Congress. Both PAPI and PL 480 - III would be suitable vehicles for programs to set technical norms for contaminants and pollutants; prepare standards for environmental analysis; set jurisdictions between national and local governments; make an environmental action plan; and develop participatory mechanisms. The projected SENRMP is expected to have a major policy dimension, and CSD will surely be involved in policy reform.

AID has influence in the policy arena, and has prior experience using the influence in successful policy reform efforts. Environmental and natural resources policy reform can be advocated in concert with the other large donors (for example, in the development of technical emission standards; in EIA protocols; and in providing training and technical assistance). Here, AID's may encounter unique opportunities, for example in pilot programs, the foundation, studies, or information systems. However, concerted and coordinated action with other major donors will be more important, especially in support of IADB and IBRD policy reform efforts in CONAM, INRENA, and the Ministries of Agriculture, Mines, Energy, Industry, and Tourism.

6. Other Donors: Ongoing and Planned Projects Related to the Normative Framework

Major contributions toward a more adequate normative framework are either ongoing or planned by The United Nations Development Program, The United Nations Environmental Program, The World Bank, The Inter American Development Bank (IADB), and Germany Technical Cooperation (GTZ), among others. Probably the most significant effort is a small IADB project of $1.8 million designed specifically to strengthen CONAM (and contingent on passage of the new Environmental Law, which took place November 23.) This project specifically intends to support the preparation of an national environmental action plan for Peru, to support the promulgation of technical norms and standards for contaminant limits, and to seek cross-sectoral norms and standards for environmental impact analysis. The loan will generally support policies and regulations on environmental protection and the use of natural resources, strengthen the institutional capacities of government agencies to control and follow up on compliance with the policies and regulations, and support the decentralization of environmental jurisdictions. A second small

IADB loan to FONCODES intends to develop a database and information system on natural resources. A large IADB loan in preparation will strengthen services provided to the agriculture sector by the Ministry of Agriculture. This loan, expected to total $150 million, contains specific action to greatly strengthen INRENA.

The World Bank has a program to assist the development of environmental action plans, and is in discussions with the Executive Secretariat of International Cooperation of the Ministry of the Presidency about supporting a NEAP for Peru. Ongoing IBRD loans for structural adjustment ($150 million, to the Ministry of Finance), for irrigation ($150 million, to the Ministry of Agriculture), and for energy privatization ($150 million, to the Ministry of Energy and Mines) also support ENR policy and normative actions.

Several bi-lateral donors are interested in the development of a more adequate normative framework. For example, GTZ is supporting the preparation of a master plan for the national system of natural areas protected by the state, (SINANPE).

In the area of normative reform, AID should seek to complement, reinforce, and work in concert with these programs. In the specific case of CONAM, it is likely that actions funded by the 1.8 million dollar IADB loan can be significantly extended.

7. Priority Programs

Moderate Scenario: About 1.25 Million Dollars Annually for Four Years; About 0.5 Million Dollars Annually Thereafter		
Priority	Next 1 to 4 Years: Put an Enabling Normative Framework in Place	Coming 3 to 10 Years: Strengthen the Framework
High	Develop cross-sectoral EIA norms; set technical standards for pollutants and contaminants. Strengthen CONAM, courts, Congress: Training and technical assistance.	Studies. Continue strengthening the legal, judicial frameworks. Public access to information
Medium	Studies: Valuation of Peruvian environmental patrimony.	

Enhanced Scenario: About 2.75 Million Dollars Annually for Four Years; About 1.0 Million Dollars Annually Thereafter		
Priority	Next 1 to 4 Years: Put an Enabling Normative Framework in Place	Coming 3 to 10 Years: Strengthen the Framework
High	Moderate scenario, plus: NEAP[3]; foundation; enhanced strengthening. Develop public information system.	Continue to endow the foundation; continued training, technical assistance.
Medium	Moderate scenario, plus: Pilots -- municipal applications of environmental norms, analysis, standards.	Pilots.

Rationale

Cost: The programs advocated are affordable under a combination of funding from existing projects, specifically 0343, 0349, and Title III, plus moderate resources from the new sustainable environmental and natural resources management project. Any long-term technical assistance or significant training would come from the new project. **Need:** The existing legal, regulatory, policy, and normative framework must be viewed as a major constraint to action on all seven main issues. Reforms are fundamental to achieving favorable outputs in all seven areas. **USAID role:** In the normative issue, it is crucial that AID complement, reinforce, and work in concert with the actions of other development organizations. Creation of the foundation, pilot projects, and studies that establish the analytical basis for policy and normative initiatives, are areas where AID may have a special niche. **USAID capabilities:** Concerning funding, variable levels of new funds may be required to support the foundation, any significant levels of technical assistance or training, and any significant pilot programs. For both the foundation and pilot programs, ESF and earmark funds may become available on an opportunistic basis from central sources and earmarks. Immediate assistance to CONAM -- to help set standards, technical norms, or to support the NEAP -- may be doable under existing sources of funds. The new project would support training and technical assistance, and perhaps pilot projects. The scope of the policy arena may require increased attention and technical capacities from USAID staff. Impact: Normative reforms can and will have major impacts across all seven main issues, for example those that will result from setting protocols for environmental analysis, establishing technical standards for contaminant limits, doing a NEAP, establishing the foundation, and the strengthening. Today, such reforms are viewed as necessary prerequisites to attain

[3]. National Environmental Action Plan.

favorable outcomes from action programs.

THE DEGRADATION OF WATER AND COASTAL RESOURCES

Safe and sufficient water resources are always essential for sustainable development, particularly so in Peru. Marine and water resources are quite significant in economics and as suppliers of the national diet. In reality, water resources are relevant to all of the other sections of this chapter. The need for proper management and protection of watersheds is touched on in the section on sustainable agriculture and forestry. The degradation of water resources is discussed further in the sections on industrial and urban issues.

This section on water and coastal resources aims to flag topics warranting additional attention. The MES Team did not attempt to evaluate the situation in Peru in depth because of limitations on time to develop the strategy, lack of specific expertise on the strategy team, and principally because coastal issues have already been assigned a low priority by USAID Peru. Without funding available, less emphasis was placed on this area. The Team highly recommends that if coastal issues rise in priority for the Mission then further analysis be carried out prior to developing a work plan for this issue.

1. Main Problem Area: Contamination of Water Resources

A variety of sources of contamination threaten water resources in Peru.

a. Microbiological Contamination

Cholera, caused by a water and food borne bacterium *Vibrio cholerae*, had not been present in South America for almost a century when the seventh pandemic strain hit Peru on January 23, 1991. (Minor outbreaks occurred in the US in 1973 and 1981 in Gulf shipping areas.) Although the spread of the disease from its origin in India did not begin until 1817, an eighth pandemic may be developing already with a strain more virulent than the one Peru suffered from so heavily. The first year of the South American epidemic, 81% of the 441,000 cases occurred in Peru.

In only the first ten weeks the economic impact of the cholera outbreak (believed to have started in Chimbote from contaminated seafood) was an estimated $1 billion in lost exports and tourism. The human cost is more difficult to quantify.

Not all microbiological contamination causes such dramatic effects, yet even in the United States there are increasing numbers of deaths and morbidity from causes such as certain strains of E. coli, Listeria, Salmonella, and other water and food borne diseases. Many childhood deaths in Peru are still due to rapid dehydration from bacterial or viral illness.

With pollution sometimes comes new diseases and ecological risks. The impact of pollution on immune systems for example is not yet understood, although it has been observed in a number of species. During the past few years, marine mammals have been decimated by bacterial infections, viral diseases, fungal diseases and other plagues in many parts of the world.

The phenomena of red tides, which are algae blooms of various colors, has been reported for centuries. Paralytic shellfish poisoning, however, was first reported in California in 1920. The increasing severity of red tides off the coast of Peru may be linked to the industrial and sewage discharge into the coastal waters. A 1993 international forum on this problem supported the theory that, although naturally occurring organisms, the blooms of microscopic algae are directly related to increasing contamination in ocean waters around the world.

This trend is also shown with the figures compiled for an earlier conference on this phenomena. All known incidents of people poisoned by shell fish following red tides for the seven decades prior to the experts' meeting in October, 1987, totaled 82. Between October, 1987, and June, 1989, when the next conference was held, 59 cases were reported. Not only is the incidence of red tides increasing, but also the virulence of its impact on human health. Toxin-producing plankton species are spreading around the globe.

b. Inorganic Contamination

Peru's rivers and coastal waters are frequently found to be contaminated with inorganic toxins and pollutants such as heavy metals and hydrocarbons. Although these compounds occur in nature, it is industrialization that is creating the high levels found in Peru. In the sierra the main polluter is without a doubt the mining industry. In addition to the impact on local populations, this contamination affects the coastal populations dependent on the montaine water sheds. The cost in terms of human and ecological health has not really been considered in USAID Peru portfolio or priorities to date.

Even with proper facilities available for water treatment, there is an economic cost to the country. According to the World Bank, upstream pollution increases the treatment costs for the Lima water supply, for example, by about 30%.

As an example of the impact of even small amounts of lead in excess of US standards, prenatal exposure above these levels can cause lower birth weights, premature births, and in more extreme cases irreversible depression of the physical and mental development (in both fetus and child). Adults exposed chronically can suffer from infertility, reduced kidney functioning, anemia, neurological damage, gastrointestinal symptoms, lethargy, hearing loss, and other symptoms lowering productivity.

The EPA sets 15 parts per billion (ppb) of lead in drinking water as the point at which corrective action must be taken. In the United States, the national average in

drinking water is 4 ppb. In fact, 15 ppb may still be too high to prevent health effects on vulnerable populations, particularly in situations such as Peru where other sources of lead remain prevalent. The Centers for Disease Control and Prevention (CDC) of the US Department of Health and Human Services have declared lead exposure one of the most serious environmental health hazards in the United States today. Although not evaluated under the limited scope of this strategy, the impact of lead and other heavy metal contaminants in water resources of Peru can only be severe.

Vulnerable populations in Peru will be absorbing lead not only from the water supply, but also through ingestion of contaminated food products and inhalation due to the high air particulate levels, and their associated lead, in urban settings. Children are more vulnerable to lead poisoning than adults because they are more likely to ingest contaminated dirt or sources of solid lead and they drink more water per pound of body weight.

In the Amazon region, coca production areas have additional water pollutants of sulfuric acid and mercury from the coca paste process. This illicit industry dumps its waste directly into jungle rivers. Accidental petroleum releases into the river system have caused contamination from lead, hydrocarbons, and other components. Hydrocarbons can have similar impact on the kidneys as lead. Gold extraction in Madre de Dios has added mercury to those water ways. Even in protected areas, gold claims pre-existing the determination of the protected zone are legally mined with little or no controls. (Additional gold claims are no longer granted in protected areas.)

Leaching from unseparated hazardous waste, deposited in improperly managed land fills or simply dumped, is yet another source of heavy metals, in this case to the ground water. More information on this source of toxins appears in Technical Annex D in the industrial section.

Nephrotoxic heavy metals known to be present in potentially dangerous levels in the environment in Peru include lead, mercury, gold, copper, arsenic, and iron.

c. Agrichemical Contamination

In some ways, lack of economic resources has lessened the incidence of agrichemical contamination in Peru. The extensive pesticide and fertilizer use that has impacted US ground water quality in agricultural zones, for example, would only occur in plantation or high value crops in Peru due to the cost of these inputs. A map of potential hot spots for pesticide and fertilizer contamination easily could be drawn up based on the history of production for each area.

Of greater concern might be the impact of DDT which has accumulated from continued use as vector control in anti-malaria programs. Banned for agricultural use in Peru as in most parts of the world, DDT is still legally applied for health programs. There are insufficient controls on that stock, however. There should also be concern over use of

pesticides along the coastal production area where runoff could transport them to vulnerable marine communities where chronic effects may not be diagnosed for some time.

Despite the prominence in USAID portfolios world-wide, pesticide misuse is probably much less detrimental to the environment than are the other sources of pollutants discussed in this strategy. Baseline information needs to be established to test this theory. This information would allow USAID to pursue the most pressing needs with the funds available.

d. Ground Water Contamination

The coastal lands zone is the length of the country and from 25 to 40 miles wide. From approximately Trujillo south is primarily desert, except for irrigation projects. The MES Team did not review any data on ground water contamination. The agricultural industry has already observed salinization in the soils of the coastal zone, which is probably occurring from over pumping from ground water for irrigation projects, thereby causing an inflow of saline, ocean waters underground. This process will not only lower the quality of the soils but also ruin the source of drinking water from wells in the area.

e. Information Sources

A number of studies, research programs, and even public sector monitoring reports exist on water quality but no coordination is apparent. Coordination by the central planning agency disappeared with the elimination of that agency in the government restructuring two years ago. Apparently data was more substantial and centralized up until about 4 or 5 years ago. It is not clear where this data is kept presently.

Programs and Methods

USAID Peru has not yet acknowledged programmatically the linkage between contamination in watersheds serving major populations and human health, particularly health of the vulnerable populations of pregnant women and young children. This relationship is probably ignored due to lack of organized data on the environmental factors of interest. In addition, the indicators selected by such sources of funding as the P.L. 480 program under the Farm Bill, define needy populations and thereby influence USAID programs.

By supporting the coordination of existing water-quality monitoring programs and encouraging or carrying out the monitoring in areas (geographic or topical) not covered, USAID could attract the attention of other donors and possibly justify to their own funding source, Congress and taxpayers, additional criteria for health. This information collection and analysis activity could be designed to simultaneously strengthen an NGO or GOP agency to headquarter the information from previous years monitoring and make current data more available. As a useful start, local experts (an NGO or University program) should be used to review sources of data, including methodology for sampling, reliability of

laboratory tests, and financing sources. Simply standardizing the handling of data already being collected by a variety of agencies would be a significant contribution by USAID.

The more immediate link between biological contamination of water and human health is more fully recognized by USAID through programs on rehydration, child survival, and basic health. No single donor could provide the water treatment capabilities needed across the nation, yet some practices lessen the probability of infection and spread of common water-borne diseases. At the locations of several AID projects in Peru, the water supply must be recognized to be the closest river, without any form of treatment. Information on proper sanitation to prevent contaminating the water source with human waste, encouragement of catchment systems, and other topics could be presented by radio at a low cost to existing projects.

Political factors may not permit much in-country authority, yet there is a need to evaluate the indicators used for health and population programs, to explore if quality of life and morbidity could not be considered along with mortality (or live births). The current indicators discourage responding to problems that may lower economic productivity (e.g. malnutrition from absorption problems, diarrheal diseases) of a sector of society which most needs to increase income. In extreme cases, environmental factors may even lessen the physical and intellectual development of children (e.g. from lead poisoning) who then become a permanent "biological under class" with no opportunity for recovery. The Mission should work towards a more comprehensive view of health for the long term as part of the need to anticipate economic opportunities and population growth. This recommendation may require more work on the part of the Mission Director's office or even counterparts in Washington, DC, at this point in time than the Health Office itself.

Finally, after baseline data is compiled and analyzed, USAID Peru should reevaluate needs, assumptions, and priorities. The results of this research will orient appropriate follow up activities or the need for donor collaboration in critical areas.

2. Main Problem Area: Expanding Use of Coastal Resources Without An Overall Coastal Management Plan.

Peru already suffers the impact of over fishing, coastal deforestation, effects of irrigation projects on water availability, the sometimes conflicting interests of a shrimp industry versus mangrove protectionists, and other environmental issues common to many coastal nations in this day. Prior to the GOP restructuring, baseline data and monitoring of the marine industries was fairly strong. This continues to be the case for smaller species of fish that constitute the catch for fish meal. The commercial focus of the GOP agencies working on ocean and coastal issues will not balance out with concerns for habitat, biodiversity, and global environmental concerns without an example from other governments.

This inappropriate control over conservation and resource use by institutions

promoting exploitation of the same is not unique nor recent. Peru has been one of the leading producers of fish meal for decades and owes much of its affluence to this industry. World wide, about 30 million tons of the annual catch (100 million) is processed as fish meal. Peru's commodity has been sold first to Europe and the United States and now increasingly to China, a market that frankly will not demand environmental standards the way the US and Europe now might. Currently 40% of the fish meal production in Peru is through state owned companies. These are using outdated technology and equipment that is 15 years old.

Realistically, the fisheries industry and agencies of the GOP do not need funding; as much as $20 million a year is received from countries such as Japan to harvest from Peru's waters, within the exclusive economic zone defined by the Law of the Sea. What is needed is a more integrated and long term view of these resources, a more sustainable approach.

Programs and methods

Even though the wealth of the marine and coastal sectors has lead USAID to eliminate these areas from current programs, the Mission should provide support for some policy dialog, access to pollution prevention technology, and other low cost support in order to influence the sector. Supporting the long term view of coastal and ocean resources through training of GOP and university experts in the ecological view of these resources, support of professionals participation in international conferences on this topic, etc. is also an appropriate role for USAID.

If funding can be obtained, a pilot marine and coastal management plan should be supported by USAID and should include management of watershed, impact of population, need and criteria for infrastructure, integrated services, definition and development of institutional authority, community involvement, etc. Rather than covering a larger area on only one issue, USAID should use this as a model for an integrated plan and if necessary restrict the area covered in order to include all factors impacting the site. Five year goals would then be used to demonstrate the feasibility and economic benefits of such a plan.

This type of pilot program can be created by combining forces among projects. For example, the protected area Paracas is designated to receive funds from the centrally funded Parks in Peril. Other donors are also considering supporting this currently under-supported site. There are a range of issues to be addressed such as the contamination from the fisheries industry, the need for economic options due to over fishing off Peru in general, and the protection of a migrant bird population. To make sure that funds cover all of the needs in an orderly manner, a task force can be created among USAID projects and possibly with other donors, universities, GOP agencies, community leaders, and even private companies. USAID should consider using a coastal management expert on TDY for periodic visits to direct these disperse efforts.

In the long term, Peru must have a national coastal management plan. For the

present the pilot approach would be an excellent start.

3. Main Problem Area: Imminent Privatization of State Industries that Currently Control Coastal and Maritime Resources.

This is a period of much privatization of state industries in Peru. The fisheries industry is no different. The maritime industries have the added distinction of controlling some of the nation's natural resources as well. All guano production areas, for example, are by law under the control of PESCAPERU, a state-owned company up for privatization. This includes refuges, protected areas, islands, and so forth.

COMPRE, the National Privatization Committee, is in charge of all privatization. COMPRE is headed by the Minister of Energy and Mines. Each privatization project has a separate committee set up to handle the process. The privatization process is well developed in the mining sector. Protocols for Environmental Assessments and other regulations or laws have been developed in order to attract foreign buyers and projects from donors such as IADB. This preparation has not taken place for the fisheries sector, however. Fish quotas are currently tied to the state fish meal company which is to be privatized. The government is also selling businesses that have useful associated laboratories and research sites.

Programs and methods

There is an urgent need to analyze the opportunities for environmental organizations, ecological research programs, and protected area management to gain control of resources which may be insignificant to or even unwanted by the private buyers but would be a marvelous way to support USAID priorities and country goals. Analysis also is needed to prevent unintentional oversights that might pass national resources and resource control over to private interests.

4. Ongoing and Planned AID Projects in Water and Coastal Issues

USAID currently funds little activity targeted specifically at water and coastal issues. Water related problems are indirectly addressed in some health and rural development actions. Support for coastal issues was eliminated in the 1994 SAR because of a perception that the sectors of interest were fisheries and agribusiness, perceived to be lucrative. However, it is unlikely that private interests will be interested in, and may oppose solution to, the coastal and water problems identified here. Indeed, the issue is to take a longer-term view of marine diversity as a resource for growth, and the loss of the diversity as a negative impact on fisheries.

The recommended monitoring programs could be supported by the central project Environmental Health Center, formerly the WASH Project, or possibly by the PRIDE Project.

5. Other Donors: Ongoing and Planned Projects in Water and Coastal Issues

Mention of a number of institutions testing quality of water lead to the first recommended program (see above). Examples seem to be private or parastatal mining companies, some industries, INMARPE for coastal testing, and water treatment companies. The recommendation for an initial review of information stems from the fact that the MES Team could not discover all sources of water quality information and evaluate them during the development of the strategy.

For the eastern slope, the Instituto de Investigaciones de la Amazonia Peruana (IIAP) began a limited water monitoring program two years ago which has revealed high E. coli contamination even in supposedly potable water systems. Lead, mercury, sulfuric acid and other chemicals have been found in water samples from Tingo Maria, Madre de Dios, Iquitos, Pucallpa, and other Amazon sample sites. It is appropriate that IIAP's primary funding source is the petroleum tax, since this industry is one source of the pollution. USAID can leverage funds from IIAP and other Peruvian agencies to create a national program on monitoring to set the baseline data. At the same time this effort will acknowledge the expertise in IIAP, even though IIAP's constitutional level was eliminated in the last constitution, and will support laboratories with these skills and equipment. The first analysis of IIAP's data will be released in December (copy requested for Health Section, USAID).

The Director of IIAP expressed interest in a meeting with the MES Team in coordinating with USAID in order to better leverage each group's efforts and avoid duplication.

World Bank is reportedly working with USAID on gold mining techniques that create less damage to river systems and contamination. Single focus research or technology development can contribute a great deal at this stage of environmental management.

Numerous donors work with potable water and sewage treatment programs, as listed in the section on urban issues.

Moderate Scenario: $250,000 Annually to Water & Coastal		
Priority	Next 1 to 4 Years: Problem Definition, Policy Dialog on Privatization Projects, Coordination	Coming 3 to 10 Years: Pilot Coastal Management Plan, Support for Training, Change Indicators for Health Programs
High	Policy Dialog on privatization. Standardization of existing water quality information collection.	Coordination on projects constituting a pilot coastal management plan. Review of health program indicators.

Medium	Filling in gaps of water quality information collection. Coordination with other donors in coastal programs.	Training GOP, university professionals to get longer term vision in fisheries sector.

Enhanced Scenario: One Million Annually to Water & Coastal		
Priority	Next 1 to 3 Years: Problem Definition, Policy Dialog on Privatization Projects, Coordination	Coming 3 to 10 Years: Pilot Coastal Management Plan, Support for Training, Change Indicators for Health Programs
High	Same programs with more staff resources, quicker turn around time, wider publication of water quality program (meeting on results).	Same programs with more staff resources, option to finance pilot approach alone, or higher level of coordination.
Medium	Same programs with more resources to fill in gaps in baseline program.	Same as moderate scenario, plus: In-country consciousness raising of industry, professionals.

Rationale

USAID role: USAID can recover the synergy of coordination by taking the lead in the compilation of baseline data through support and collaboration with relevant Peruvian agencies. The problem should be better defined first, and then steps promoted to address the critical areas identified through monitoring. To define the extent and severity of the water contamination problem, a program should be designed for monitoring waters in key rivers for human water supply and for the maintenance of biodiversity. Lake Titicaca, a unique resource on the global scale, should be included in these studies. The need for a coordinating organization is also the case for the development of a pilot coastal management plan. Funding in the near future for a site as Paracas is almost guaranteed due to the priorities and interests of donor agencies around the world. Coordination in order to ensure that this funding is synergetic rather than duplicative is not so likely. USAID can also play a catalytic role in the privatization process, with some timely policy studies and dialog, that could result in finances saved or resources better utilized for decades to come. **USAID capabilities:** The strategy team was able to identify little or no current mission technical expertise specific to coastal issues. Several suggested programs would require highly technical guidance. The requisite expertise could be provided through agreement with other USG agencies, such as the Environmental Protection Agency, the National Oceanic and Atmospheric Agency, or the Centers for Disease Control. USAID may wish to collaborate with international organizations such as the Pan American Health or World Health Organizations for water problems and the IUCN or ICLAR for coastal problems. **Impact:** Projects protecting water resources will impact all Peruvians, but especially the poor who do not have access to treated water. Fisheries is a vigorous economic sector and will continue to experience periodic over fishing and red tides, with subsequent damage to the industry, if USAID and other donors do not induce the GOP to adopt normative reforms.

CHAPTER IV. STRATEGY SUMMARY

"Environmental and Natural Resources Management in Peru - A Strategy for USAID Assistance" results from analysis of seven main environmental issues, all identified as priorities in the LAC Regional Environmental Strategy[1], and all important in Peru. These issues are: Unsustainable agricultural practices; deforestation; the threat of biodiversity loss; environmental destruction by targeted industrial sectors; the urban environment; an inadequate legal, regulatory, policy, and normative framework; and the degradation of water and coastal resources.

To confront these issues, and to remove constraints to their solution, a two-phase strategy is designed. Over the next one to four years, the strategy proposes to continue ongoing ENRM programs that are high impact and cost effective. During this same period, the strategy proposes that USAID lay the groundwork for a broader spectrum of programs designed to anticipate the environmental effects induced by Peru's explosive economic and population growth. Then, during the next three to ten years, USAID assistance in improved environmental and natural resources management should harmonize growth with ENRM protection and use. This proactive stance leaves ample room for a continued concern with poverty and attention to the needs of less privileged Peruvian social sectors. It intends make present and anticipated explosive economic and population growth compatible with environmental and natural resource use and protection over the longer term. The ultimate objective is sustainable growth that enhances the capacity of the whole Peruvian society to improve its quality of life without compromising the needs of future generations.

Development investments are recommended in six broad categories: Action programs; pilot projects; policy and normative reforms; baseline studies, comparative risk assessments, action plans, and highly applied research; institution strengthening (training and technical assistance); and the founding of a Peruvian environmental foundation.

The programs, methods, target funding levels, and potential sources of funds analyzed in Chapter III and discussed at length in the Technical Annexes are summarized in two charts, below. The first chart shows programs and target funding levels by issue, separately, as they appear in Chapter III. *This information ignores the fact that several programs will impact across issues.* A program targeted at, say, policy and normative reform or financing pilot projects is certain to have joint and not separate effects on several issues and problems.

Accordingly, the second chart suggests total funding levels by program. This chart explicitly recognizes *joint effects* and is a more accurate estimate of the total cost of the programs proposed in this strategy.

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[1]. "Environment and Economic Development: A Strategy for Latin America and the Caribbean, 1991 -2000."

Mission Management

The strategy team finds that the technical expertise of present Mission staff may not be sufficient to manage new programs in the areas of technical norms and standards for specific pollutants, "cleaner" industrial processes, urban sanitation, and policy level approaches to pollution prevention. Because it is unlikely that Mission staff numbers can increase, programs directed at these areas are likely to require adding any missing technical expertise through normal rotation of staff.

To proactively anticipate growth, the strategy team finds that present strategic objective outcome indicators may need to be altered, or their interpretations broadened. This is especially true of health and the relation of hazardous and toxic pollutants and extreme levels of bacteriological contaminants to morbidity, mortality, and child survival.

A final concern involves establishing an internal management mechanism capable of coordinating ENRM programs. The present Mission structure would leave coordination of ENRM programs divided between offices. This is not a serious problem at present, but may become serious with broader involvement across the seven main ENRM issues. At a minimum, an internal coordinating committee can be established.