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USAID'S INVESTMENTS IN ADDRESSING LAND-BASED SOURCES OF MARINE POLLUTION – REPORT PREPARED FOR THE SECOND INTERGOVERNMENTAL REVIEW MEETING OF THE GLOBAL PROGRAMME OF ACTION (GPA)

FISCAL YEARS 2001 TO 2005
BEIJING, CHINA
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JAMES HUTCHINS / ENVIRONMENT INTERNATIONAL

Addressing land-based sources of pollution protects coastal and marine environments, such as the one seen here in Dar-es-Salaam, Tanzania.

Introduction

Healthy coastal and marine ecosystems provide a wealth of goods and services to billions of people. It is no coincidence that more than half of the world's population lives and works within 200 kilometers of a coast. These high-energy zones support some of the planet's highest biological productivity, and thus some of the highest economic output per unit area found anywhere on the globe. People are attracted to coasts for many different reasons, but for hundreds of millions living in developing countries, coastal resources are first and foremost about food security and livelihood.

Yet, the contribution of coastal and marine resources to sustainable development is often overlooked or undervalued. Population growth and agricultural and urban development are taking place at rapid rates in many coastal areas, resulting in competing land uses and increased pressure on coastal and marine environments. Evidence for this is found in the unprecedented rate of coastal habitat loss or degradation, the destructive fishing and over-harvesting of marine resources, and the excessive pollution loads that are allowed to enter coastal and marine waters. While governments everywhere are pressed to focus on a range of social and economic development objectives, it is unfortunately often the case that these environmental costs are not adequately factored into the policies, plans, budgets, and programs designed to spur development.

The U.S. Agency for International Development (USAID) is committed to assisting developing countries to reverse these trends by investing in the infrastructure, technical capacity, and - most importantly - governance processes that are needed to proactively confront marine pollution and other "costs" of development. Although there are different challenges to be addressed in every country, experience demonstrates that without diligent attention to the appropriate policy framework, laws, institutions, budgets, technical capacity, and decision-making processes, chances for sustainable success at minimizing the environmental costs of development are exceedingly low.

LAURA MILLER / CHEMONICS INTERNATIONAL

View of the clearator, Karang Pilang Water Treatment Plant II in Surabaya, Indonesia.

This report provides a snapshot of USAID investments during the past five years in assisting developing countries to address land-based sources of marine pollution. It is prepared for participants of the Second Intergovernmental Review of the Global Programme of Action (GPA) for the Protection of the Marine Environment from Land-Based Activities. Investments included in this report were typically one component of broader, integrated, and often inter-sectoral activities focusing on some aspect of natural resources management. USAID investments are reported herein as "estimated obligations" and represent a close approximation, but nevertheless an estimate, of the actual expenditures of the Agency in the categories of development assistance described herein. These categories include:

- Wastewater treatment;
- Watershed management and integrated water resources management (IWRM);
- Coastal resources management;
- Clean production and pollution control; and
- Reducing environmental impacts from agriculture and aquaculture.

USAID OBLIGATIONS

In the five-year period from fiscal years 2001 to 2005, USAID's investments in addressing land-based sources of pollution exceeded one billion dollars, and are summarized as follows:

CATEGORY	INVESTMENT (USD)	NUMBER OF COUNTRIES
Wastewater Treatment	$465,338,000	34
Watershed Management and IWRM	$353,407,000	44
Coastal Resources Management	$108,700,000	16
Clean Production and Pollution Control	$25,767,000	11
Water Management for Agriculture and Aquaculture	$286,526,000	48
TOTAL	**$1,239,738,000**	

WASTEWATER TREATMENT

Municipal wastewater contains a broad spectrum of contaminants from different sources, including human sewage, "gray water," pesticides, detergents, lubricating oils, and industrial wastes. The threat to marine ecosystems from this type of pollution is especially acute in the developing world where wastewater treatment infrastructure is severely lacking. Fortunately, investments in wastewater treatment can provide a high return, with benefits that have many social, economic, and environmental dimensions.

During the period 2001 to 2005, USAID invested $465,338,000 in wastewater treatment in 34 countries in Africa, Asia, the Caribbean, Europe, Eurasia, Latin

America, the Near East, and the Middle East. The majority of investment was made in the Near and Middle East (Lebanon, Jordan, Egypt, and West Bank/Gaza), where more effective water resources management frameworks are a pressing need.

ILLUSTRATIVE USAID ACTIVITIES

As-Samra Wastewater Treatment Plant Project, Jordan

This USAID activity is focused on replacing the existing As-Samra wastewater treatment plant. The new plant will be operated and maintained according to a 25-year Build-Operate-Transfer (BOT) agreement implemented through a public-private partnership. When complete, this plant will significantly improve the watershed by meeting Jordanian standards for effluent discharge. The plant will serve two million Jordanians, help improve the health of the local population, and substantially increase water availability for use in agriculture in the Amman and Zarqa regions.

The Samra Plant Consortium was formed to construct, operate, and maintain the plant for the next 25 years. The consortium will construct the new wastewater treatment facilities, and will modify and expand the Ain Ghazal pre-treatment facility. Together, these improvements will replace the overloaded and inadequate existing waste stabilization pond treatment system. When complete, the facility will treat 267,000 cubic meters of wastewater per day. Ownership of the plant will transfer to the Government of Jordan after 25 years.

The total budget for the project is $169 million, almost half of which has come from USAID ($78.1 million). The remainder of the project's funding comes from the Government of Jordan ($13.9 million), the Samra Plant Consortium ($17 million), and a bank consortium ($60 million).

The As-Samra Wastewater Treatment Plant Project is innovative in a number of different ways. The project is the first public-private partnership in financing and management of a public infrastructure and the first public-private partnership for a wastewater treatment facility in the Middle East. This is also the first USAID-financed public-private infrastructure project worldwide. Based on the project's design and implementation to date, USAID anticipates that this activity will serve as a model for future investments.

Design-Build Water and Wastewater Improvements, Montenegro

USAID funded the Design-Build Water and Wastewater Improvements Project to provide water and wastewater system improvements in Budva, Kotor, and Cetinje, Montenegro. Under this $8 million project, USAID funded the design and construction of a variety of infrastructure improvements, including additional water storage, repairing transmission lines, and upgrading pump stations. The project enhanced water supply in all three cities and prevented wastewater overflows to beaches in Budva and to sensitive coastal ecosystems and historically significant areas in Kotor - a UNESCO World Heritage Site.

WATERSHED MANAGEMENT/ INTEGRATED WATER RESOURCES MANAGEMENT

USAID is investing in a wide range of activities targeting Integrated Water Resources Management (IWRM). Marine ecosystems are at risk from multiple stressors, including many that derive from poorly managed watersheds. Sediments, chemicals, and other pollutants runoff the land when watersheds have been deforested, over-

GIANCARLO NAVARRO / CHEMONICS INTERNATIONAL

Watershed management has direct impacts for aquatic ecosystems and local, as well as downstream, communities.

RICHARD VOLK / USAID

Moderating flows of water laden with sediment, such as the one seen here in Morocco, is often one of the outcomes of watershed management.

built, and have lost their natural vegetative buffers along river and stream banks. The link between IWRM and the prevention of marine pollution is strong, as watershed management activities (e.g., water quality standards, soil erosion best practices) moderate marine pollution and promote the health of downstream habitat, including mangroves, seagrasses, and coral reefs.

Over the five-year period, USAID invested $353,407,000 in 44 countries in Africa, Asia, the Caribbean, Europe, Eurasia, Latin America, the Near East, and the Middle East for watershed and integrated water resources management.

ILLUSTRATIVE USAID ACTIVITIES

Manejo Integrado de Recursos Ambientales (MIRA), Honduras

MIRA is a $23 million program being implemented in Honduras over a four-year period aimed at strengthening the local capacity to create and administer watershed management plans. The program will also stimulate policy reform related to the integrated management of natural resources.

To accomplish this, MIRA promotes the creation of stakeholder dialogues that involve local authorities, private businesses, other donors, NGOs, and the beneficiary communities, with the objective of building consensus on future vision and priority actions that are needed to achieve that vision.

The policy component is one of MIRA's cornerstone activities, as it promotes the technical and institutional integration of better natural resources management within a watershed management framework. This component strengthens the application of laws and regulations, while building local capacity for sound governance of natural resources.

The focus initially is on the strengthening of national environmental policies, especially in the water and forestry sectors. MIRA is working in 12 of the 21 major watersheds of Honduras.

Morocco Water Resources Sustainability (WRS) Project

The goal of the Morocco Water Resources Sustainability project was to demonstrate best management practices for improved water resources management, while integrating regulatory concerns, financing options, and public participation.

Pilot activities included:

- Construction of a chromium recycling plant for the tanneries of Dokkarat in Fez, with safety training for plant operators;
- Planting of tens of thousands olive, acacia, and carob trees in the Nakhla watershed and the installation of retention ponds to promote improved water resources management. These activities were estimated to result in a 20 percent reduction of soil losses;
- Construction of a wastewater treatment and reuse plant in Drarga, with a billing system and computer software for tracking expenses and revenue. Most of the water treated by the plant is reused for irrigation purposes; and
- Assistance to the Moroccan Ministry of Environment to develop norms and standards for wastewater reuse and release of chromium effluents into water bodies. Impact assessments led the Ministry to draft the National Law on Mitigating Environmental Impacts, approved by Parliament in 2002.

USAID / BANGLADESH

A water channel in Bangladesh is reclaimed from sediment. When combined with reforestation and ecosystem restoration activities, long-term improvements are seen in improved freshwater flows to estuaries, increased water available for irrigation, enhanced habitat for fish, increased fish catch, and improved livelihoods.

Management of Aquatic Ecosystems through Community Husbandry (MACH), Bangladesh

In the vast wetlands of Bangladesh, inland fisheries provide food and income for perhaps 70 million rural households. Here, the extensive rivers and floodplain wetlands of the Ganges-Brahmaputra delta rank third in global freshwater fish production behind China and India. In the 1990s, several projects working with the Department of Fisheries and national NGOs began addressing two negative trends affecting the wetlands: a decrease in area due to environmental degradation in the watershed, and the concentration of income among a handful of leaseholders.

USAID designed and implemented a sustainable wetland resource management program through the MACH project (MACH translates as "fish" in Bengali). The project focused on the ecologically sensitive integration of biologically diverse watersheds and habitats through participatory approaches that recognize the dependence of local communities on these resources. Activities included:

- Policy-level coordination among the government ministries, the NGO community, and donors, and the creation of the Bangladesh Wetlands Network;
- Contour planting of about 600,000 trees, which stabilized river banks to reduce sedimentation, improve soil fertility, and restore rare local species;
- Influenced the views of industries toward wetlands, and promoted clean production technologies;
- Created co-management arrangements for wetland resources between local communities and government officials; and
- Provided alternative livelihood opportunities to nearly 4,000 families, with significant reduction of pressure on fishery resources.

Ridge to Reef Watershed Project (R2RW), Jamaica

R2RW interventions focused on reducing hillside deforestation, pollution, and land erosion through integrated approaches that address natural and man-made causes of land and water degradation in the Great River Watershed west of Montego Bay and the Rio Grand Watershed.

The project utilized a participatory approach to identify, prioritize, and achieve local ownership of actions. At the local level, the project worked to establish and empower watershed management committees. At the national level, the project worked to achieve more effective communication, coordination, and implementation of watershed management. Institutional strengthening was provided to the National Integrated Watershed Management Council (NIWMC) and to the National Environment and Planning Agency's (NEPA) Sustainable Watersheds Branch.

In the Rio Grand Watershed, the project cooperated closely with the Coastal Water Quality Improvement Project (CWIP) and the Environmental Audits for Sustainable Tourism (EAST) project.

USAID / BANGLADESH

A reforestation component under the MACH project in Bangladesh worked to slow erosion by planting trees near waterways and on hillsides.

RICHARD VOLK / USAID

Ensuring flows of clean freshwater streams is one of the primary objectives of the South Caucasus Water Program.

South Caucasus Water Program, Armenia, Azerbaijan, Georgia

The South Caucasus Water Program is working to increase regional cooperation in the management of shared water resources by protecting the environment and ecosystem processes, enhancing the trust and confidence among nations, achieving tangible social and economic benefits to communities, and promoting democratization and decentralization of governance systems. USAID's implementing partner works directly with the environmental ministries of the Republic of Armenia, the Republic of Azerbaijan, and the Republic of Georgia.

Watershed degradation, increased demand for freshwater, inadequate treatment of wastewater, and climate change are contributing to new levels of concern for the water security of the South Caucasus region. Land drainage for agricultural purposes has destroyed significant wetland resources in all three countries. Pollution from industry, agriculture, mining, and urban/domestic waste is a growing source of environmental stress throughout the Kura-Aras Basin. The successful management of the shared water resources of the South Caucasus is critical to the social, economic, and ecological prosperity of Armenia, Azerbaijan, and Georgia—and an essential precursor to regional peace and cooperation. Technical cooperation activities initiated among these nations are being used to increase synergies between a broader number of government units, including those responsible for pollution abatement, water, forestry, agriculture, and protected areas.

COASTAL RESOURCES MANAGEMENT

Promoting sustainable coastal and marine resources use is crucial for securing livelihoods, fisheries, and food resources, and for biodiversity conservation. Many integrated coastal management programs incorporate marine protected areas as cornerstones for local participation and improved governance. Good governance practices foster leadership, accountability, participation, equity, and transparency in information gathering and decision-making. A sound governance approach to coastal resources management ensures that a range of political, institutional, administrative, social, and economic systems is in place to sustainably develop, manage, and protect coastal resources at multiple levels, and at scales appropriate to the resources to be managed in a proactive manner.

USAID coastal resources management activities typically include:

- Reduction of land-based sources of pollution and improved coastal watershed management;
- Habitat and biodiversity conservation through threat mitigation;
- Co-management of resources by both the public and private sectors;
- Strengthened management of parks and protected areas;
- Sustained livelihoods, employment diversification, and income generation;
- Reduction of negative impacts from international trade and destructive fishing practices; and
- Sustainable tourism and fisheries.

From 2001 to 2005, USAID invested $108,700,000 in 16 countries in Africa, Asia, the Caribbean, Latin America, the Near East, and the Middle East for coastal resources management.

JERRY BAUER

USAID promotes integrated approaches to managing terrestrial and coastal/marine resources, as found in USAID's Ridge to Reef Watershed Project in Jamaica.

ILLUSTRATIVE USAID ACTIVITIES

Coastal Water Quality Improvement Project (CWIP), Jamaica

Coastal zone ecosystems in critical economic areas of Jamaica are experiencing serious environmental stress and degradation. The proper management of coastal zones is intrinsically linked to the sustainability of the tourist sector. Reversing trends in coastal zone degradation, especially coastal water quality, requires commitment from various government agencies, NGOs, hotels, other businesses, and local communities to ensure long-term economic vitality integrated with a healthy environment.

CWIP, which ended in 2003, was a six-year partnership between USAID and the Government of Jamaica's National Environment and Planning Agency (NEPA). The $7.7 million activity promoted sound environmental practices through integrated coastal zone management, including activities to improve wastewater treatment and solid waste disposal across all sectors of society, and across all levels of government. The project had five distinct but interrelated project components, directly improving coastal zone management, wastewater treatment, and solid waste disposal in the target sites.

CWIP achieved several results relevant to controlling land-based sources of pollution, including:

- Creating a public participation model with community groups and the National Water Commission to provide oversight for the management of local wastewater systems;
- Strengthening the capacity of the National Water Commission to create effective public – private partnerships for wastewater treatment;
- Preparing and supporting the environmental management system's (EMS) policy and action strategy;
- Demonstrating an action planning approach to mobilize local partners integrated into local government planning processes;
- Designing and building the first community recycling plant in Jamaica and integrating it into the solid waste collection system;
- Creating and guiding partnerships among NGOs, communities, private sector organizations, and government agencies for monitoring coastal water quality;
- Disseminating information linked to the monitoring program to increase community awareness and understanding of coastal zone issues;
- Developing a beach and marina certification program for pilot sites, supported by the national water quality monitoring program; and
- Completing dozens of environmental audits for small and medium enterprises.

JERRY BAUER

Ensuring water quality promotes healthy coastal ecosystems in the Montego Bay Marine Park in Jamaica; it is also a vital component of local economies that rely on tourism

Environmental Audits for Sustainable Tourism (EAST) Project, Jamaica

The Environmental Audits for Sustainable Tourism activity promoted improved environmental management practices in the tourism and manufacturing sectors in Ocho Rios, Negril, Montego Bay, and Port Antonio through the adoption of a corporate environmental management system. Through a series of environmental audits, the project compiled data for hoteliers, hospitality training institutions, and a number of manufacturers in identifying and implementing environmental best management practices. The project was successful in:

- Conducting environmental audits—including 36 audits in the tourism sector and five audits in manufacturing entities that have supplied the tourism sector;
- Developing and facilitating implementation of the "green" curriculum at the Runaway Bay HEART Hotel and Training Institute, as well as two EMS training courses for the hotel and attraction sectors;
- Convening a Green Hotel Conference and Educational Symposium in 2002 to facilitate the exhibition of green goods and services and expansion of eco-consciousness in the hospitality training curriculum;
- Providing institutional support toward the development of Runaway Bay Institute as a center for education in sustainable development;
- Developing a model for improved environmental practices, which is being adopted regionally and globally (e.g., in the Caribbean, South and Central America, Egypt, and Fiji);
- Facilitating the transfer of lessons learned from the first phase of the project to other businesses in Jamaica and the wider Caribbean through USAID's Regional Environment Program;
- Working with tertiary institutions (e.g., HEART and the University of West Indies) to include best management practices in tourism education curricula; and
- Developing and implementing a pilot plan for Port Antonio/Portland as a model for a green tourism destination program.

RICHARD VOLK / USAID

Thousands of communities around the world, such as this one in Tanzania, depend upon fishing for their livelihoods. This makes the maintenance of healthy coastal and marine ecosystems a cornerstone to the socioeconomic stability of a region.

Sustainable Coastal Communities & Ecosystems (SUCCESS) Program, Global

The SUCCESS Program is a five-year initiative of the University of Rhode Island's Coastal Resources Center (CRC), implemented in partnership with the University of Hawaii and additional implementing partners. It is supported through a Leader with Associates (LWA) Cooperative Agreement with USAID. The program emphasizes a participatory, issue-driven and results-oriented process that integrates the topics of coastal management, fisheries, and aquaculture.

The program's overarching goal is to help coastal communities improve both their quality of life (e.g., health, income, education) and their physical environment through good governance. This is a global program implemented in selected regions and countries, with an emphasis in East Africa and Latin America. There are four main components to this program: achieving tangible, on-the-ground results; increasing capacity through training; establishing regional learning networks; and applying science to management and good governance. On-the-ground activities are currently being undertaken in Tanzania, Ecuador, and Nicaragua.

The program's focal points are:

- Improved human well-being through healthy ecosystems and sustainable resource management in rural and peri-urban coastal environments;

- Ecosystem-based management and sustainable enterprises in coastal fisheries;
- Ecosystem-based, low-impact aquaculture that generates sustainable enterprises and improves human well-being; and
- Well-planned enterprises and management of natural resources conflicts in urban areas.

Tanzania Coastal Management Partnership (TCMP)

TCMP is a partnership of donor interests in collaboration with the National Environment Management Council (NEMC) of the Government of Tanzania. USAID helped to establish the partnership in the late 1990s and with subsequent investments during the past five years.

The TCMP goal is to establish a foundation for effective coastal governance in Tanzania. From 1998 to 2003, the USAID-funded activities of TCMP worked to achieve the following goals:

- Develop a National Integrated Coastal Management (ICM) Strategy to be applied to coastal management at both the national and local levels;
- Demonstrate cross-sector mechanisms for addressing emerging coastal economic opportunities;
- Build human and institutional capacity while creating enabling conditions for ICM;
- Support ICM planning and activities, and provide mechanisms to balance national and local interests;
- Promote integrated and sustainable approaches to the development of major economic uses of the coast to optimize benefits and minimize negative impacts (e.g., mariculture);
- Develop and use an effective coastal ecosystem research, monitoring, and assessment system to allow already available - as well as new - scientific and technical information to inform ICM decisions; and
- Increase institutional effectiveness for coastal management through improved human and institutional capacity.

ISTOCK.COM / MAGGY ZDEB

Industrial facilities using outdated technology often emit pollutants that make their way into coastal ecosystems.

CLEAN PRODUCTION & POLLUTION CONTROL

USAID addresses point and non-point source pollution through the promotion of cleaner production of goods and services. Cleaner production is a business management technique that directs attention toward inefficiencies and waste that erode profits and competitiveness, reducing the environmental sustainability of business ventures as well as the economic viability of a company. Indeed, to modernize effectively and participate in an open economy, firms need to incorporate environmental considerations into daily operations and adopt measures that improve the use of water, natural resources, materials, and energy. When aggregated on a national scale, clean production adds to economic growth while decreasing effluent loads to airsheds, watersheds, and ultimately, coastal areas.

MIGUEL FRANCO / PA GOVERNMENT SERVICES

USAID carried out a scoping assessment for a cleaner production audit at this coastal fish meal plant in Paracas, Peru.

USAID has been active in promoting clean production activities for more than a decade, and has worked to raise awareness, strengthen institutions, and build technical and government capacity at the local and national levels. This is accomplished through training, demonstration projects, environmental audits, and a range of public-private partnerships.

During the period 2001 to 2005, USAID invested $25,767,000 in 11 countries in Asia, the Caribbean, Europe, Eurasia, Latin America, and the Near East in clean production and pollution control.

ILLUSTRATIVE USAID ACTIVITIES

Cleaner Production Support, Peru

The objective of the Cleaner Production Support Project was to provide support to the Government of Peru and its industrial sector in reducing the negative effects of industrial pollution, while creating a clear and stable policy, legal, and regulatory framework for industry. USAID's implementing partner worked directly with the National Environmental Council, the Ministry of Industry, and the Ministry of Fisheries. The project built upon work initiated under USAID/Peru's Sustainable Environmental and Natural Resources Management Project, which supported the Clean and Efficient Industrial Production (CEPCOM) Program.

The project focused on a number of activities that promoted cleaner production. Technical assistance was provided in how to conduct clean production assessments, and included demonstration projects that introduced new best practices for achieving pollution prevention, waste reduction, and ultimately, the enhanced efficiency and competitiveness of industry. The project strengthened the institutional capacity of the National Environmental Council, Ministry of Industry, and Ministry of Fisheries to complete the regulatory framework and sector-specific policies, regulations, and guidelines.

Institutional strengthening was also carried out with Peru's clean production center. A $2 million loan guarantee supported the development of a facility to help small and medium-scale enterprises invest in cleaner technology. The project also provided information dissemination and outreach activities for industry.

Methane to Markets (M2M) Partnership, Global

Since 2004, USAID has participated in this 17-nation partnership focused on advancing the capture and productive use of methane as a clean energy source. Through the Presidential Initiative, USAID is working closely with the USEPA, DOE, and State, and our host-country and private sector partners to capture methane released from landfills, coal mines, oil and gas operations, and agricultural waste. Of particular importance to water, methane capture and utilization activities promote better agricultural and urban waste management practices, which also result in reducing the pollution of water resources. Although 2005 was mostly a planning year for the partnership, USAID has already begun actively supporting M2M activities in Ukraine, Russia, Mexico, Brazil, and India that will shortly result in verifiable methane emissions reductions.

Water Management for Agriculture & Aquaculture

Effective water management in agriculture and aquaculture is vital to control the impacts of pollution in coastal and marine environments. Nutrient enrichment (nitrogen and phosphorous compounds) can be a major threat to the marine environment. Sedimentation caused by soil erosion, as well as agro-chemicals (i.e., insecticides, herbicides, and fungicides) used in agriculture, also threatens coastal and marine ecosystem function.

Effective use of water resources is embedded in many projects that promote sustainable food production, although it may not always be the only objective of a given activity.

SYLVIA MARIN / WWF

Agricultural operations near water courses, such as this one in the Caribbean, are often the source of non-point source pollution in the form of organic and inorganic inputs to production..

While primarily focused on food and livelihood security, investments in water resources for both agriculture and aquaculture also emphasize the moderation of environmental impacts of organic and inorganic inputs to food production.

Over the five-year period from 2001 to 2005, USAID invested $286,526,000 in 48 countries in Africa, Asia, the Caribbean, Europe, Eurasia, Latin America, the Near East, and the Middle East in water resources management for agriculture and aquaculture.

ILLUSTRATIVE USAID ACTIVITY

Technical Assistance for Agricultural Pollution Reduction, Romania

The Technical Assistance for Agricultural Pollution Reduction project in Romania (2002-2003) sought to address the non-point source pollution from agricultural operations. Water bodies had become heavily polluted due to high nutrient run-off, principally of phosphorous and nitrogen. High nutrient levels resulted in the degradation of water quality, with negative impacts on human health, flora, and fauna.

The project had five objectives:

- Evaluating water and soil quality with regard to nitrogen and phosphorus, and identifying and inventorying sources of nitrogen and phosphorus pollution from various sources;
- Developing solutions for reducing nitrogen and phosphorus discharges into water and soil;
- Introducing ecological management systems for chemical and organic fertilizers, reducing water and soil pollution by nitrates and phosphates;
- Improving the water and soil quality monitoring and control systems; and
- Providing technical and logistical support for facilitating the exchange of information among experts working in environmental and agricultural governmental units, as well as farmers, agricultural operators, and workers in animal and poultry breeding complexes.

RICHARD VOLK / USAID

Intensive aquaculture operations, such as this one shown here in Thailand, can be sources of nutrient enrichment for coastal and marine environments.

CONCLUSION

USAID remains committed to addressing the threats facing the world's coastal and marine ecosystems, including land-based sources of pollution. The Agency will continue to strategically invest in activities that enhance ecological resilience, economic and food security, human health, democratic governance, and political stability. Future investments in these activities will continue to emphasize an integrated, multi-sectoral approach adapted to the needs of local, national, and regional conditions.

APPENDIX:

USAID Estimated Obligations for Addressing Land-based Sources of Pollution Tables and Figures

Cumulative by Technical Sector and Region

FIGURE 1: ESTIMATED USAID OBLIGATIONS BY TECHNICAL SECTOR, FY 2001 TO 2005

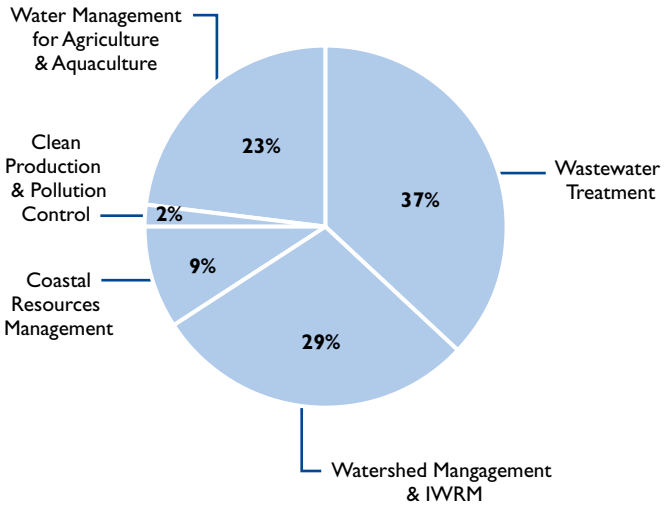

FIGURE 2: CUMULATIVE ESTIMATED USAID OBLIGATIONS BY REGION, FY 2001 TO 2005

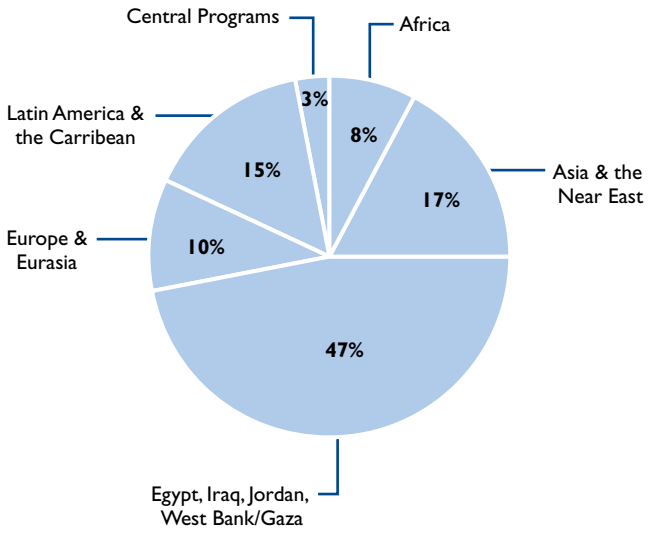

TABLE 1: ESTIMATED USAID OBLIGATIONS BY TECHNICAL SECTOR, FY 2001 TO 2005

TECHNICAL SECTOR	2001	2002	2003	2004	2005	TOTAL
Wastewater Treatment	$138,293,000	$46,389,000	$105,599,000	$106,886,000	$68,171,000	$465,338,000
Watershed Management	$75,935,000	$101,544,000	$65,998,000	$60,971,000	$48,959,000	$353,407,000
Coastal Resources	$26,319,000	$26,835,000	$30,943,000	$13,724,000	$10,897,000	$108,700,000
Clean Producti	$9,265,000	$11,143,000	$860,000	$60,000	$4,439,000	$25,767,000
Water Manage	$28,078,000	$11,289,000	$112,853,000	$92,696,000	$41,610,000	$286,526,000
	$277,890,000	$197,200,000	$316,253,000	$274,337,000	$174,058,000	$1,239,738,000

TABLE 2: CUMULATIVE ESTIMATED USAID OBLIGATIONS BY SECTOR AND REGION, FY 2001 TO 2005

REGIONS/OPERATING UNITS	WASTEWATER TREATMENT	WATERSHED MANAGEMENT & IWRM	COASTAL RESOURCES MANAGEMENT	CLEAN PRODUCTION & POLLUTION CONTROL.	WATER MANAGEMENT FOR AGRICULTURE & AQUACULTURE	TOTAL
Africa	$5,864,000	$40,534,000	$5,158,000	$4,022,000	$41,124,000	$96,702,000
Asia & the Near East	$42,484,000	$51,433,000	$22,646,000	$6,661,000	$84,602,000	$207,826,000
Egypt, Iraq, Jordon, West Bank/Gaza	$368,727,000	$102,109,000	$39,044,000	$8,091,000	$74,227,000	$529,198,000
Europe & Eurasia	$28,464,000	$68,618,000	$0	$2,415,000	$28,380,000	$127,877,00
Latin America & the Caribbean	$19,506,000	$83,332,000	$31,509,000	$4,578,000	$42,429,000	$181,354,000
Central Programs	$293,000	$7,381,000	$10,343,000	$0	$15,764,000	$33,781,000
TOTAL	$25,767,000	$465,338,000	$353,407,000	$108,700,000	$286,526,000	$1,239,738,000

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