

New Technique for Comparing Risks Facilitates Environmental Priority Setting

This article is based on an interview with Stuart Sessions, whose company, Environomics, Inc., is a member of the consortium that is implementing PRIDE.

Developing countries are beginning to use a new risk assessment methodology to target scarce resources for environmental problem solving. Developed by the U.S. Environmental Protection Agency (EPA) and used in the United States since the mid-1980s, the technique is producing results that in some cases differ markedly from those of traditional environmental analyses.

The premise of the approach is that countries should tackle their worst environmental problems first. The method provides a systematic way to determine which environmental problems facing a country really are the most serious by estimating the ultimate risks posed by each, said environmental economist Stuart Sessions of Environomics.

Environomics applied the techniques in Bangkok, Thailand, in an analysis carried out for the AID Office of Housing and Urban Programs. As a PRIDE subcontractor, Environomics can lend its expertise to AID missions and Near East governments through PRIDE buy-ins.

Traditionally, environmental problems have been compared by using intermediate indicators. To judge the severity of air or water pollution, for example, analysts have typically examined the proportion of pollution sources that comply with discharge limits, the volume of pollutants emit-

ted, their concentration in ambient air and water, and compliance with air and water quality standards.

However, none of these measures captures the ultimate impact of the pollution, Sessions said. The real reason to abate sewage effluents in rivers, after

continued on page 2



Egyptian woman draws water: Reliance on underground sources may pose lesser risks

all, is not to meet government standards but to reduce adverse effects on human health, ecological systems, and economic and social well-being.

National priorities usually determine what category of risk is measured. In the United States, health concerns often have top priority. Developing countries may worry less about health and more about the economy. For example, cleaning up polluted water, especially around scenic beaches, may take precedence in a country that relies heavily on revenues from tourism, even if the problem has relatively little effect on the health of residents.

EPA advises governments to measure three types of risk. "Risks to human health, the environment, and social and economic equality are all very different and important," said Richard Corbe Worden, EPA Office of Strategic Planning and Environmental Data. (The office is preparing a "Road Map to Comparative Risk Projects," scheduled for release this summer.)

In conducting a comparative risk assessment, Sessions said, analysts typically address several questions for each problem: What are the sources of the pollution? How much is being emitted or discharged? What are the concentrations of the pollutant in the air, water, or food? What doses are humans receiving through air, water, or food? Finally, what are the adverse effects?

The source of pollution might be a city that dumps sewage into a river. The degree of risk to human health depends on both residents' proximity to the pollutant and their exposure to it. The daily habits of people who live in or near a source of pollution are considered. If the average person drinks two liters of river water a day, each containing one microgram of a pollutant, he ingests two micrograms of the pollutant per day. Those who rely on underground sources rather than the river for drinking water, how-

ever, may not be exposed at all. The final stage in the process is to analyze the probability of experiencing adverse effects (cancer, for example) from the pollutant. Some pollutants are more potent than others and represent a greater threat to human health.

Risk-based priority setting provides a basis for making choices and targeting scarce resources in developing countries. It can help a country with limited funds for environmental programs target its resources. Nonetheless, many judgments have to be made in that process, Sessions said.

Risk Management

The risk assessment phase in the comparative risk process ends with a ranking of environmental problems facing a country by their relative seriousness. But one must still decide what to do about each problem—which strategies to pursue and how to implement them. These issues are addressed in the second stage of the process, called risk management. The procedures in this stage are far less quantitative than those for risk assessment. Experts have developed schemes to score various risk management strategies for speed and ease of implementation, cost-effectiveness, and other factors, but have reached no consensus on a single analytical approach to risk management.

All phases of the comparative risk process should be conducted in-country, according to Sessions. Embarking on projects in close cooperation with local academics, scientists, and ministry officials is the best way to make judgments that are consistent with host-country preferences. (EPA has developed training courses and seminars to this end, and AID is adapting them so that decisions can be made in the context of developing country concerns.)

The availability of local personnel and resources for risk management is a key concern. For example, in Bangkok,

Environomics ranked lead from gasoline and microbiological contaminants from human waste as equally serious in terms of their impacts on human health. However, it was far easier to plan control measures for lead. Much of the problem with lead is caused by a few refineries producing leaded gasoline—all run by large companies capable of adopting abatement measures. Sewage problems, on the other hand, involve thousands of miles of in-adequate sewer lines and numerous government agencies that share responsibility for administering and operating them. Thus, it made sense to tackle high-risk problems where progress could be made more readily. (For details on the Bangkok study, see page 3.) □

Contents

3
In Bangkok: Ranking Environmental Health Risks

4
PRIDE Opens Office in Eastern Europe

5
In Jordan: PRIDE Reviews Environmental Legislation

6
Calendar

8
PRIDE Activities

WEC Disseminates Low-cost Anti-pollution Methods

Insert: A Primer on PRIDE

Letter from AID

Dear Colleagues:

Welcome to the first issue of *EnviroNet*, the newsletter of PRIDE. PRIDE supports the Near East Bureau and field missions of AID, offering them an unusual tool for fostering environmentally sound development and public awareness of environmental issues in the region.

Rapid population growth, urbanization, and industrialization have brought on the worst environmental problems in the region's history. These countries are at a crossroads in their development, and a commitment to resolving environmental concerns is taking hold. Through PRIDE, AID hopes to foster this new commitment, supporting Near East countries in their efforts to help themselves.

We are proud of the contributions PRIDE is making to USAID's commitment and leadership in promoting sound economic development while highlighting environmental issues, as illustrated in this inaugural newsletter.

EnviroNet is written for USAID staff and contractors, as well as our overseas colleagues working with government agencies, nongovernmental organizations, private sector firms, and others concerned with environmentally sound development. The PRIDE team welcomes your comments.

Gilbert Jackson, Environmental Coordinator
Near East Bureau for AID

In Bangkok: Ranking Environmental Health Risks

A study that ranked environmental health risks in Bangkok was one of the first applications of a new comparative risk methodology outside the United States. (See page 1.) In the summer of 1990, AID and the U.S. Environmental Protection Agency (EPA) financed a project to evaluate the human health risks caused by environmental problems in the capital of Thailand. Environomics, a subcontractor on PRIDE, carried out the project.

Thai government officials had been concerned about a variety of environmental problems and the limited domestic resources for mitigation programs, according to Stuart Sessions, an author of *Ranking Environmental Health Risks in Bangkok, Thailand*. Problems affecting residents in Bangkok included air pollution from cars and factories, water pollution from household sewage and industry, hazardous waste, and pesticide residues.

The study revealed some surprising con-

Several problems were found to have a minimal impact on health, while a single pollutant, lead, was found to pose a major threat.

clusions. Several suspected major problems, such as pesticide residues in foods and hazardous waste, were found to have relatively little impact on health. By contrast, a single pollutant, lead, was found to pose a major threat, especially to children. Over half a million adults and children who live in Bangkok may suffer cardiovascular ailments and learning dis-

abilities as a result of exposure to lead, the study found.

To confirm the apparent severity of the problem, the study recommended a large sampling of residents to determine levels of lead in the blood and correlation of the results with socioeconomic data to determine the groups most affected. After reviewing the study, the government of Thailand last year accelerated by several years its planned phaseout of lead in gasoline used in motor vehicles; automobile emissions constitute one of the principal means by which humans are exposed to lead.

Lead can also be absorbed through water and food. Probable sources in the environment, in addition to automobiles, include industrial emissions, corroded water distribution pipes, and leaded paints and soils. Many foods contain high concentrations of lead absorbed from contaminated soil or irrigated water during the growing season,

continued on page 4

PRIDE Office Opens in Warsaw

PRIDE has opened an office in Warsaw, Poland to link U.S. businesses that market environmental goods and services with opportunities in Eastern Europe. The office aims to help emerging Eastern European democracies abate pollution and restore the environment, as well as promote American business in the region.

The first task of Ken Macek, the environmental business specialist who heads the office, was to identify a market niche for American technology or expertise in Czechoslovakia, Hungary, and Poland, the three countries initially targeted. He has identified groundwater and wastewater treatment technology, for example, as a major area of opportunity.

Macek is working with a nongovernmental organization that distributes an environmental newsletter to 4,000 industrial enterprises in Czechoslovakia, and a trade association that

serves 130 suppliers of environmental goods and services in Hungary. In Poland, he is developing a list of environmental companies to contact.

A second step will be to facilitate links between Eastern European enterprises and U.S. companies seeking partners. To locate appropriate U.S. firms, he will use a network of U.S. environmental firms developed by AID's Capital Development Initiative (CDI) project. CDI provides technical assistance and feasibility funds to stimulate private sector development in the environment and other areas. □

Dr. Macek can be reached at RCG/Hagler, Bailly, Inc. ul. Nowiniarska 1, #28, 00-235 Warsaw, Poland. Telfax: 48-2-635-4531.

Ranking Environmental Health Risks... *from page 3*

or from auto exhaust and dust in marketplaces.

As adapted to conditions in Bangkok, the analysis required three steps: estimating the incidence and severity of disease caused by each environmental problem; developing a common denominator for all illnesses and injuries as a basis to rank health problems; and ranking them by the health risk they pose.

Each environmental problem in the city was ranked in one of three categories. A high-risk label was assigned to lead, as well as airborne particulate matter and infectious and parasitic organisms causing microbiological diseases. Medium risks included airborne carbon monoxide and metals other than lead. Lower risks included toxic air pollutants, ozone, surface water contamination, food contamination with pesticides and metals, and solid and hazardous waste disposal.

Regarding the high-risk problem of par-

ticulate matter, the study team recommended a thorough emission inventory to establish the relative contributions from different sources. For other high-risk problems of microbiological disease, the team suggested the Bangkok Metropolitan Water Authority investigate methods to increase the amount and reliability of water supplied to households. Adequate supplies and pressure would reduce infiltration of contaminants into leaking water pipes and minimize the need for residents to store water under often unsanitary conditions.

Study results were incorporated into the USAID Management of Natural Resources Project in Thailand. The Thailand Development Research Institute, a prestigious organization that studies environmental policy, used the study in its reports to the Thai government. The entire study process was reviewed to determine the applicability of EPA's comparative risk methodology to urban areas in other developing countries. □

Software Directory Available

The 1992/93 edition of the Environmental Software Directory is scheduled for release in July 1992. The directory describes more than 500 software packages, on-line systems, and databases dealing with hazardous substance management, ground water/soils, mapping/geophysical information, water/wastewater, air pollution, ecology, resource inventories, regulatory compliance, and other environmental topics.

The directory cites hardware and software requirements, technical support information, points of contact, and costs of each system. The new edition can be obtained at a cost of \$75 by contacting:

Veronica Deschambault
Donley Technology
Box 335
Garrisonville, VA 22463
Telephone: (703) 659-1954

A Primer on PRIDE: Introduction to Team Members and Four Components

P RIDE promotes AID's goal of fostering better environmental/natural resource (ENR) management by providing the agency's Near East (NE) Bureau and missions and host-country institutions with technical, analytical, and informational assistance.

The many obstacles to achieving that goal include degraded and depleted water resources, urban and industrial pollution, untenable energy production and use, and unsustainable agricultural practices. PRIDE works to overcome these constraints by fostering efficient use of resources, especially water and energy; minimizing waste and preventing air, soil, and water pollution; increasing local accountability in addressing ENR issues; and encouraging private sector solutions wherever possible. PRIDE works through four components: strategic planning, policy analysis, the private sector, and environmental education.



Components 1 & 2 Strategic Planning and Policy Analysis

Larry C. Morgan, senior resource economist and chief of party and a Chemonics senior economist since 1985, oversees PRIDE's strategic planning and policy analysis components. He has over 20 years of experience in macroeconomic policy analysis and strategic planning in resource management, institutional development, and agriculture in Asia and the United States. He has led multidisciplinary teams that develop strategic plans and analyses and implement programs to support sustained development. He taught resource and environmental economics at the University of Tennessee and Texas A&M University.

Strategic planning can help local deci-

sion makers strengthen their capacity for environmental management. The process involves defining a long-range goal, identifying problems preventing its attainment, allocating resources, and last, developing programs and projects to overcome problems. These steps

■ ■
PRIDE
*emphasizes the
transfer of
approaches
that protect ENR
without
compromising
sustained
development.*
■ ■

will be followed as PRIDE helps design country environmental strategies within AID's environmental strategy framework.

In February a core-funded PRIDE team developed an ENR strategy for USAID/Egypt, which will serve as a prototype for developing strategic planning methods and materials to solve ENR problems in other Near East countries.

PRIDE will develop an analytical framework for identifying ENR problems and assessing their impacts on health, productivity, quality of life, and sustainability; evaluate potential policy changes; provide technical

assistance; stimulate technology transfer; and use performance indicators to monitor programs and projects.

PRIDE will also demonstrate relative risk reduction and other strategic planning techniques to prioritize environmental problems, thereby helping missions and host-country agencies decide how to allocate ENR resources. Improved ENR analyses, based on strategic planning principles, will lead to better decision making and ultimately, more efficient use of ENR.



Under the policy analysis component, PRIDE analyzes the impact of market failures, inappropriate policies, and institutional weaknesses on ENR goals and demonstrates alternative policies. It promotes economic analysis of policies and their relationship to ENR by evaluating alternative policies, assessing institutional capacities, and finding ways to strengthen them; identifying information gaps; and improving local data systems. The transfer of tools and methods, using other AID resources when appropriate, enables local institutions to continue such analysis.

PRIDE's policy analysis component has two parallel purposes: to promote modern economic analysis of ENR policies, and to recommend policy reform options. Innovative methods of ENR policy analysis emerging in the United States are tested, adapted, and demonstrated. The strategic planning process drives the policy activities. PRIDE responds to field mission needs for ENR studies as a means to introduce its techniques and tools.

PRIDE emphasizes the transfer of policy analysis tools and approaches that hold promise for protecting ENR without compromising sustained development. These policies, like the strategies they support, must consider local policy, the legal and regulatory framework, political exigen-

continued on back

cies, and specific ENR priorities and available resources.



Component 3 Private Sector

James D. Westfield, private sector specialist, oversees PRIDE's environmental private sector component. He has over 25 years of experience in environmental engineering both overseas and in the United States. He has been an owner and principal in firms that fabricate and supply international equipment as well as consulting businesses. He has extensive experience in several PRIDE countries and expertise in businesses and industries dealing with the environment and pollution prevention/control.

The standard definitions of environmental private sector are inappropriate in the countries where PRIDE is working. Defining this term in the PRIDE context was a prerequisite to determining how the project would help the environmental private sector develop.

Under the PRIDE definition, the private sector includes organizations and institutions that are neither owned (more than 50 percent) nor managed by a government or government-controlled entity. The private sector also encompasses government entities targeted for privatization, private voluntary organizations, nongovernmental organizations, and individuals not employed by a government. The environmental private sector comprises businesses that provide services or manufacture equipment for the environment, or that adversely affect the environment.

After defining the basic concept, PRIDE devised a plan to carry out its objectives for project countries: to institute an environmentally conscious and active private sector, and to support self-sustaining private sector investment in envi-

ronmental management and pollution prevention and control. A basic premise of the plan is to support the local private sector development and activities. PRIDE will identify opportunities in the environmental private sector and inform the U.S. private sector about them.

Given the relatively brief span of the project (1991-96) and the rapid pace of



PRIDE
calls on
EnviroNet
readers to share
ideas on
environmental
education.



current events, the focus will be on short-term and mid-term issues, and a limited number of resources. PRIDE will draw on a wide span of private sector approaches and collaborate with other AID projects when possible. Finally, PRIDE will work with USAID missions to develop private sector environmental initiatives, as new projects or parts of ongoing projects.



Component 4 Environmental Education

John L. Woods, institutional and information specialist, oversees PRIDE's environmental education/communication component. He has 32 years of professional experience in technology transfer, education, and organizational de-

velopment. Dr. Woods' academic background includes development communications, human resources development, and management. He has worked overseas for more than 17 years with USAID projects, the UN development system, and private foundations.

The goal of PRIDE's environmental education (EE) component is to facilitate the flow of information about the environment, thus influencing attitudes and encouraging participation in innovative environmental programs.

In the United States, EE has evolved within individual professions. For example, public relations experts produce public awareness campaigns; educators create EE curriculum; computer specialists develop EE management information systems; trainers run EE human resource development programs; librarians develop EE clearinghouses. This fragmented approach is inappropriate in the Near East where EE is a new field. In NE countries, PRIDE supports the development of programs that integrate the various approaches.

A first step in each program is to gain the support of top political leaders for ENR initiatives. The next step is to enlist the help of managers in the public and private sectors and NGOs in developing environmental programs. These programs will inform the private sector about the profits and business opportunities in environmental goods and services.

To help host countries develop EE programs, PRIDE will conduct needs assessments and establish methods by which cooperating countries and the United States can share information and expertise. PRIDE calls on *EnviroNet* readers and other knowledgeable individuals in the United States and countries of the Near East and Eastern Europe to participate in developing innovative environmental education programs by sharing ideas and experiences. □

In Jordan: PRIDE Reviews Environmental Legislation

Overseas consultants must often abandon preconceived ideas about their assignments, as Peter Trick learned when he arrived in Jordan to examine environmental legislation in January. Trick is a corporate vice president of Science Applications International Corp. (SAIC), a member of the PRIDE consortium.

An environmental lawyer for 15 years, Trick was prepared to analyze Jordanian laws, regulatory practices, and institu-

Rather than perusing documents, Trick decided to investigate how they are implemented and enforced in real life. "In theory it sounded feasible to read an entire set of laws, but in reality it was a daunting task," he said. He collected the documents for later review and had only key portions translated for use in-country. While in Jordan, he devoted most of his time to interviewing more than 30 individuals in ministries, parastatals, and nongovernmental organizations.

report makes general recommendations for enhancing the draft law. For example, the draft law would preempt most existing laws on the environment, but Trick advises retaining most of the laws. Some government officials had expressed concern about losing the authority they had been granted under existing laws that are working well and need not be revoked, according to Trick.

He recommends reorganizing the draft

Trick's job was to analyze legal and regulatory practices, locating impediments to progress toward passage of comprehensive environmental legislation.

tions affecting the environment and to recommend modifications to a draft environmental law the Hashemite Kingdom is reviewing. USAID commissioned the analysis in response to a request from the Government of Jordan through its Ministry for Municipal and Rural Affairs and the Environment (MMRAE).

Trick expected to spend most of the 23-day assignment pouring over legal documents. He also expected the weather to be milder than a typical Washington, DC winter.

Not only did rain, snow, and winds of up to 75 mph prevail throughout his stay (unusually inclement weather for the region), but unanticipated conditions in the work environment forced him to change his plans. Most of the legal documents were in Arabic only. The laws and regulations did not necessarily reflect existing practices. Overlap and duplication of environmental responsibilities were common.

Consultants must be flexible, adapting their studies to real conditions, according to Trick. This and other lessons from Trick's legislative review offer insights that may be useful to other Near East countries contemplating new environmental legislation.

According to Trick's report, the Hashemite Kingdom is making progress in strengthening environmental protection. A national environmental strategy for Jordan was approved in 1991. In addition, Jordanian officials have worked for 12 years to develop a comprehensive environmental law. Draft laws were prepared in 1981, 1987, and 1989, but none has received sufficient cabinet support to be approved. Trick's job was to analyze legal and regulatory practices and other circumstances to locate political and other barriers impeding further progress.

As Trick's interviews and discussions progressed, a consensus began to emerge on directions for the report, he said. The

law by grouping similar provisions, such as those on land use, under one title. In addition, licensing provisions could be placed under one title and standard-setting provisions under another.

Further, he recommends devoting a specific title to intergovernmental roles to eliminate overlap in environmental responsibilities. The title would designate the specific tasks of individual agencies in environmental protection, oversight, and sanctions in cases when a ministry fails to perform its job. Creating this title could be the most significant accomplishment of the environmental act, according to Trick's report, helping to relieve political tensions among ministries involved in environmental issues.

Trick proposed enhancements to environmental programs in areas such as aquifer protection, land use planning, antiquities preservation, and mining reclamation. For example, the report

continued on page 6

Calendar

June 21-26

**The North African Environment at Risk:
Conference on Environmental Sustainability and Economic Development**

Tangiers, Morocco

Contact Dr. I. William Zartman, Director, African Studies Program

SAIS, Johns Hopkins University, Washington, DC 20036

Tel: (202) 663-5676 Fax: (202) 663-5656

July 7-10

Living with Industry: the Next 10 Years (an examination of the relationship between economic development and the environment and quality of human life)
Huddersfield, UK

Contact Dr. A.S. Trescott, Dept. of Geographical & Environmental Sciences

The Polytechnic, Queensgate, Huddersfield HD1 3DH, UK

Tel: (484) 422288, ext. 2349 Fax: (484) 516151

July 12-16

URISA '92

(conference agenda includes use of information systems in environmental disciplines)
Washington, DC

Contact the Urban and Regional Information Systems Association

900 Second St., NE, Suite 304, Washington, DC 20002

Tel: (202) 289-1685

Aug. 19-22

**Industrial and Third World Environmental Assessment:
The Urgent Transition to Sustainability**

Annual meeting of the International Association for Impact Assessment

Washington, DC

Contact the IAIA Executive Office, PO Box 70, Belhaven, NC 27810

Tel: (919) 964-2338

Oct. 17-21

A World Congress for Education & Communication on Environment & Development

Toronto, Canada

Contact the World Congress, 110 Eglinton Avenue West, 3rd Floor, Toronto, Canada M4R 1A3

Tel: (416) 482-9212 Fax: (416) 482-9601

In Jordan... *from page 5*

makes recommendations for comprehensive water planning, an explicit agricultural policy, and legal changes to institute a cultural resource assessment as part of development initiatives.

His report devotes a full chapter to alternative institutional roles for MMRAE, where the Department of Environment

is located. This ministry should have central authority to alleviate the gaps and redundancies that have plagued environmental activities in the past. MMRAE should be empowered to conduct policymaking, planning, implementation, compliance, and oversight for every area of environmental protection in Jordan, according to the report. As the

central environmental authority, it should be the final guardian against pollution.

The report also recommends changes in more than 30 articles in the draft legislation where technical standards and regulatory procedures are inappropriate, language is vague and misleading, or statutes are inconsistent. □

News from the Field

As part of a new strategic focus on the environment, USAID/Jordan has created an Office of Water, Environment and Agribusiness (WEA). Carl A. Dutto is director of the office, and Abdullah Ahmad is the environmental officer.

*

Because of the high priority placed on water issues in Jordan, the donor community recently began quarterly meetings to coordinate assistance, review policies, and discuss the Kingdom's capital investment needs in the water sector. The first meeting drew representatives from multilateral agencies including the European Community, European Investment Bank, World Bank, UN Development Programme; and bilateral agencies in Britain, Canada, France, Germany, Italy, Japan, and the U.S. USAID Mission Director T. William Oliver and Dr. Dutto represent AID at these meetings.

*

A USAID/Jordan project in cultural and environmental management was recognized as an example for other countries by the Conference on Computer Applications in Archeology

held in Denmark. The project provided a small grant to the American Center for Oriental Research in Jordan to facilitate coordination between the Department of Antiquities and donor agencies. It also produced a computerized inventory of archeological sites. The project aims to help protect these sites from neglect and destruction so they can contribute to the cultural heritage and national development through tourism. The USAID project officer is Abdullah Ahmad.

*

Barry Hill, an agriculturalist formerly of AID's Africa Bureau, is being posted to USAID/Tunisia to head the mission's Office of Agriculture and Agribusiness Development and serve as environmental officer.

*

USAID/Egypt is creating an environmental coordination division within the Program Development and Support Office in Cairo. Richard Rhoda, formerly of the USAID/Cairo Science and Technology Office, will head the division and coordinate implementation of the mission's environmental strategy. □

The Project in Development and the Environment (PRIDE) is funded by the U.S. Agency for International Development (AID). PRIDE's objective is to help AID design and implement programs that foster the agency's environmental and natural resources strategy for sustainable economic growth in the Near East and Eastern Europe. PRIDE provides AID and participating countries with advisory assistance, training, and information services.

The prime contractor of the consortium that is implementing PRIDE is Chemonics International. The subcontractors are RCG/Hagler, Bailly, Inc.; Science Applications International Corporation; Capital Systems Group, Inc.; Environomics, Inc.; Industrial Economics, Inc.; Lincoln University; and Resource Management International, Inc.

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PRIDE Activities

Since PRIDE opened its offices in November 1991, the project's core staff has fielded nine teams to identify and address environmental problems in the Near East. In addition, PRIDE has sponsored a private sector workshop in Washington, DC where about 70 participants, including many representatives of the U.S. environmental private sector, made recommendations for PRIDE initiatives. Below is a list of PRIDE activities as of June 1, 1992. Team members mentioned were hired through Chemonics International unless otherwise indicated.

Global Environmental Facility (GEF) Review. Larry Morgan of PRIDE reviewed Jordan's Water Quality Improvement and Conservation Project to determine its eligibility for GEF funding. (November 1991)

Jordan Environmental Legislation Review. See page 5.

Egypt Environmental Strategy. A PRIDE team led by Larry Morgan with Eric Abbott and James Cummings-Saxton (Industrial Economics, Inc.), and John Priest developed a strategy statement for USAID/Cairo. John Woods and James Westfield of PRIDE worked with the team in Egypt on institutional and private sector issues, respectively. (February 1992)

Egypt Water Quality Impact Assessment. A PRIDE team comprising James Welsh of Resource Management International (Phase I leader) and Khalil Mancy of RCG/Hagler, Bailly completed Phase I. The Phase II team, with Robert Kelly of SAIC (team leader) and Welsh, is developing a water use plan. (February-June 1992)

Jordan Water Management/Conservation Plan. A PRIDE team developed this plan for the government under the aus-

ices of the Ministry of Water and Irrigation. Team members were E. Drannon Buskirk (team leader), E. Neil Biggs, Robert Kern, and John Teerink (RMI), Herbert Preul, and John Woods. The Phase II team, with Woods as leader, Buskirk, Biggs, Kern, Edmund Struzeski (SAIC), and Robert Moor (RMI), is preparing a project paper for the Water Quality Improvement and Conservation Project. (February-July 1992)

Egypt Private Sector Profile. PRIDE conducted a survey of the Egyptian private sector to assess its participation in environmental activities. The results provide useful information on market opportunities in environmental services for U.S. and Egyptian companies. PRIDE team members were James Westfield, and Suzanne Smith and Jan Mueller-Vollmer, both of RCG/Hagler, Bailly. (April-May 1992)

Tunisia Wastewater Treatment Technology. A PRIDE team with Ahmad Gaber (team leader), Bonneau Dickson, and Julie Bourns of PRIDE assessed small-town wastewater treatment needs and recommended appropriate technologies. (April-May 1992).

Private Sector Workshop. Jim Westfield with Bill Meade of RCG/Hagler, Bailly sponsored a PRIDE workshop in Washington, DC to open a dialogue with U.S. private sector representatives on environmental business opportunities in the Near East. (May 1992)

Clearinghouse Study. Raj N. Shah and Robert Crawford (Capital Systems Group, Inc.) prepared a scope of work for design of a PRIDE clearinghouse on environmental information systems for the Near East, assisted by Susan Shapiro and Ken Clark, also of CSG. (March-April 1992) □

WEC Disseminates Low-cost Anti-pollution Methods

Larry Stresf, an American chemical engineer who recently retired from a paint firm in Pittsburgh, visited Jordan and Tunisia in early May to assess environmental conditions in paint plants.

Mohamed Saidam, a Jordanian water engineer with special expertise in wastewater treatment and effluent reuse for irrigation, attended a seminar on environmental protection in Washington, DC in May and met his counterparts in U.S. government agencies.

The activities of the two engineers were sponsored by the World Environment Center (WEC), a nonprofit organization

in New York City which has a five-year agreement with AID to support the efforts of the PRIDE project. In the past decade, WEC has carried out more than 200 assignments for AID, many involving the exchange of expertise through workshops, study tours, internships, or visits such as those made by Stresf and Saidam.

Stresf is now making recommendations to Jordanian and Tunisian plant managers for implementing economical methods to minimize waste and prevent pollution. Saidam will present a seminar based on his experiences in the U.S. to the Jordanian Society for the Control of Environmental Pollution when he returns to Jordan. □