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**Private Sector Development
Environmental Strategy:
USAID/Tunisia**

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ACRONYMS

AICHE	American Institute of Chemical Engineers
AID	Agency for International Development
ANPE	National Agency for the Protection of the Environment
APEP	Action Planning for Environment Protection
ASCE	American Society of Civil Engineering
ATPNE	Tunisian Association for Protection of Nature and the Environment
DSP	Development Studies Project
EEC	European Economic Community
EIS	Environmental Impact Statement
EMENA	Europe/Middle East/North Africa (former World Bank vice presidency)
EP3	Environmental Pollution Prevention Project (AID)
EPAT	Environmental and Natural Resources Policy and Training Project (AID)
FODEP	Pollution Control Fund
GDP	Gross Domestic Product
GEF	Global Environmental Facility
GIS	Geographical Information Systems
GOT	Government of Tunisia
ha	Hectare
HG	Housing Guarantee
IRSIT	Regional Institute of Information Sciences and Telecommunications
LARSEN	Regional Laboratory of Environmental Sciences
MEAT	Ministry of Environment and Land Development
METAP	Mediterranean Technology Adaptation Project
MOS	Monthly Operational Plan
MTPS	Management Training for the Private Sector project
NEPS	National Environmental Protection Strategy
NGO	Nongovernmental Organization
ONAS	National Office of Wastewater
PD&S	Project Development and Support (AID)
PEP	Private Enterprise Promotion project (AID)
PID	Project Identification Document
PPES	Private Provision of Environmental Services project
PRE	Private Enterprise
PRIDE	Project in Development and the Environment
PSDE	Private Sector Development Environmental strategy
PSPP	Private Sector Pollution Prevention
TD	Tunisian dinars
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
UTICA	Tunisian Union of Commercial Industries and Craftsmen
WASH	Water and Sanitation for Health project
WB	World Bank

WEC
WEF

World Environment Center
Water Environment Federation

SECTION I INTRODUCTION

A. Background

The primary focus of the USAID/Tunisia program is to expand and energize Tunisia's private sector. This is being accomplished through projects directed at improving the policy, regulatory, and management approaches of Government of Tunisia (GOT) agencies; decentralizing responsibilities and authority to lower levels of government; and delivering training and technical assistance to the Tunisian private sector.

The principal projects in the mission portfolio are two new five-year private sector related initiatives and a combined grant/housing guarantee program currently under design. The Private Enterprise Promotion Project (PEP) focuses on privatization of government-owned enterprises and financial market development. The Management Training for the Private Sector Project (MTPS) provides business management and development assistance for small and medium size firms. The grant/HG Private Provision of Environmental Services Project (PPES) will support GOT efforts to improve urban environmental services by accelerating decentralization and increasing private sector participation in delivery of urban environmental services. These three projects together reflect a closely coordinated three-pronged strategy to hasten and strengthen development of the private sector in Tunisia.

There is also a Development Studies Project (DSP) aimed at assisting the GOT to implement its medium term economic adjustment program by supporting selected analyses needed to formulate and implement the next stage of the program. In addition, Mission Project Development and Support (PD&S) funds can finance studies to support the existing mission program and new initiatives.

In numerous studies over the past several years Tunisia and the international donor community have concluded that the country has critical environmental and natural resource problems that, together with structural economic problems, are adversely affecting Tunisia's economic and social development prospects. In response, the GOT has begun to expand and accelerate environmental and economic restructuring programs, and has requested increased donor assistance for doing so. Three key areas in which the GOT is seeking more environmentally related assistance are ⁽¹⁾ privatization, ⁽²⁾ private enterprise development, and ⁽³⁾ urban development.

In 1992 AID's Near East Bureau formulated and promulgated its Natural Resource and Environment Strategy and the Water Resource Strategy for the Near East. The strategies encourage USAID/Tunisia and other missions to address key natural resource and environmental issues, concentrating attention on those pertaining to water conservation and quality. The Near East Bureau set out the following four priority approaches for achieving its environmental objectives in the region:

- The NE Bureau will provide technical support to missions and countries in the

areas of natural resources and the environment to amplify and extend mission program initiatives.

- Missions and the bureau should suggest and promote common approaches to common problems in the region and should cooperate with existing donor programs wherever possible.
- Missions and the bureau should emphasize support to critical policy reforms and the development of institutional capability.
- The use of services and technologies from U.S. private sector and academic institutions should be emphasized.

USAID/Tunisia has recently had its budget reduced below the level of recent years, requiring it to concentrate its program efforts, reexamine staffing, and consider extending some current initiatives rather than undertaking new ones.

B. Strategy Development Approach

In response to present country needs, new AID priorities, and the realities of program downsizing, USAID/Tunisia has opted to address environmental concerns to the extent possible through its current portfolio, including the PPES now under design, rather than attempting to mount an independent environmental program. The mission believes that environmental concerns can be addressed significantly through its private sector and closely related urban development initiatives, and that incorporating environmental considerations will in turn strengthen those initiatives. The environment represents an important market for private sector expansion even as improved management of environmental resources is essential to sustain private sector development.

The USAID/Tunisia Private Sector Development Environmental (PSDE) Strategy was developed to ensure the most efficient, effective allocation of scarce mission resources. The PSDE Strategy is the outcome of a mission effort involving direct hire staff, environmental and development specialists from the NE Bureau Project in Development and the Environment (PRIDE), and consultations with GOT personnel and the Tunisian private and NGO sectors. We believe this strategy to be innovatively responsive to prevailing circumstances, and possibly instructive for other Near East missions. The following sections of this report present USAID/Tunisia's PSDE Strategy, and are structured as follows:

- Section II: The Private Sector Development Environmental Strategy
- Section III: Priorities for Near-Term Implementation
- Section IV: Relationship of PSDE Strategy to Mission Programs
- Section V: Relationship of PSDE Strategy to the NE Bureau Natural Resource and Environment Strategy
- Section VI: Relationship of PSDE Strategy to GOT Environmental Programs
- Section VII: Relationship of PSDE Strategy to Other Donor Programs
- Section VIII: Involving the U.S. Private Sector

We have included several annexes that provide background, reference, and other information that may interest some readers:

- Annex A: Basic Information on the Tunisian Economy and Environment
- Annex B: Tunisian Environmental Legislative/Regulatory Framework
- Annex C: Illustrative Statements of Work (for three strategy elements)
- Annex D: Related Centrally Funded AID Projects
- Annex E: Improving Solid Waste Management in Tunisia
- Annex F: Reference Bibliography
- Annex G: USAID/Tunisia PRISM Program Objective Tree

SECTION II
THE PRIVATE SECTOR DEVELOPMENT
ENVIRONMENTAL (PSDE) STRATEGY

A. PSDE Strategy Framework

In the past, the environmental sector has not been a priority target for USAID/Tunisia program resources. The recent emphasis on environmental concerns in Tunisia and in AID, and the real threat that environmental degradation now poses to Tunisia's sustained economic development, has caused the mission to reexamine its strategic focus and project portfolio with new urgency. The result is a two-level coordinated approach to addressing environmental concerns within the context of USAID/Tunisia's private sector development, privatization, and urban development focus.

The mission portfolio of PEP, MTPS, PPES, and DSP offers an excellent platform for undertaking a well-targeted environmental program. USAID/Tunisia's approach has been to capitalize on the complementary capabilities of its projects to create an integrated support framework for a PSDE Strategy. The strategy addresses key private sector and environmental concerns through training and technical assistance to strengthen the private sector, on the one hand, and related GOT institutions, policies, regulations, and procedures on the other. In developing its PSDE Strategy, USAID/Tunisia first determined that the actionable elements of its environmental strategy should:

- Focus primarily on the private sector, and take advantage of the growing global and Tunisian environmental market, consumer environmental sensitivity, and need for improved urban environmental services to strengthen development of that sector.
- Help establish the conditions necessary for continued expansion of Tunisia's private sector in both domestic and export markets, including tourism.
- Logically extend and reinforce already planned project activities.
- Encompass a range of activities from no additional funding to relatively modest additional funding, with concomitant additional mission management responsibilities.
- Be undertaken on an incremental basis as funding resources, management capacities, and other circumstances permit.
- Integrate and make maximal use of available mission, NE Bureau, and centrally funded project, management, and technical resources in a coherent program.
- Respond to GOT, mission, NE Bureau, and AID environmental priorities.

- Reflect the comparative advantage of U.S. public and private environmental expertise and the related competitive advantage of U.S. environmental firms.

To meet these criteria the PSDE Strategy requires two levels of activities and support. The first comprises initiatives that USAID/Tunisia can carry out with no material change or with modest modifications in its current and planned project portfolio, and for which no additional NE Bureau support is required. The second level includes complementary and more resource intensive activities that can be carried out only with the assistance of centrally funded R&D and NE Bureau projects; these are activities for which the mission requires NE Bureau support to access the necessary project resources.

While many strategy elements may be clearly of one type or the other, no permanent separation can be made between the two categories overall. The division of primary responsibilities between the mission and the NE Bureau will have to be fluid as implementation of the PSDE Strategy proceeds, program priorities shift, funding resources fluctuate, and management capacities change in both the mission and AID/Washington. For this reason continuing coordination and cooperation between the mission and the NE Bureau is required to advance the PSDE Strategy, and through it, the regional environmental priorities of the bureau in Tunisia. The PSDE Strategy requires, and is the basis for, a working mission/bureau partnership on the environment.

USAID/Tunisia's overall program strategy focuses on energizing Tunisia's private sector so as to expand employment, enterprise, and exports, and improve urban environmental services. The mission aims to achieve this by helping to privatize public enterprises; expand, liberalize, strengthen, and upgrade financial markets; increase private sector trade and investment; increase private sector provision of public services; increase Tunisian competitiveness in selected export subsectors; and improve private entrepreneurial and managerial skills. To incorporate environmental concerns in a way that is both significant and practicable, the mission focuses on large polluting government-owned enterprises that can be privatized, small and medium-size enterprises that can become much more efficient through pollution prevention techniques and technologies, and privatizing and improving urban environmental services.

To help achieve this focus, USAID/Tunisia adopted the following overall environmental guidelines, in addition to the operational criteria mentioned above, as a basis for identifying specific, actionable PSDE Strategy elements:

- Wherever possible, incorporate environmentally related training and technical assistance activities directed at improving business opportunities for Tunisian and U.S. environmental firms in project plans.

- Emphasize and reinforce pollution prevention,¹ including energy conservation and waste minimization.
- Introduce the concept of total environmental accounting wherever possible in public and private sector training and technical assistance delivered through mission projects.
- When helping the GOT transfer responsibility and authority for services to the governorate and municipal levels, emphasize environmentally appropriate urban and industrial solid waste management.
- Look for ways to help the Tunisian private and public sectors avoid repeating the environmental mistakes of the U.S. and other countries, and thereby save two decades of time and costs associated with environmental degradation.

Starting with the operating criteria and environmental guidelines mentioned above, the mission examined and compared priority environmental needs in Tunisia with the purposes, scopes, and operating capabilities of the projects in its portfolio. This led to three basic cross-cutting themes for the PSDE Strategy:

- **Develop the private sector** by expanding the roles of private enterprise in environmental management and improving enterprise performance.
- **Prevent pollution** by reducing it at the source and improving urban environmental services.
- **Institutionalize improved environmental practices** by helping upgrade legal and regulatory frameworks and the capability to administer them on the public sector side, by fostering a market-driven dynamic of improved environmental performance on the private sector side, and by offering collaborative frameworks and shared learning experiences for public and private sector representatives.

The 29 actionable elements that have been formulated for the PSDE Strategy all reflect at least one of these cross-cutting themes, and in many cases all three.

B. PSDE Strategy Elements

The following table lays out the actionable elements of the USAID/Tunisia Private Sector Development Environmental Strategy. The elements are organized under the strategic categories of:

¹ Pollution prevention, as used here, includes the use of cleaner production technologies and waste minimization actions. Pollution prevention emphasizes high rate of return investments in manufacturing processes and urban services that involve the use of non-polluting raw materials, more complete use of raw materials, reclamation, and recycling. Pollution prevention and clean technology measures minimize the pollutants that enter the environment and decrease the need for end-of-pipe treatment and residuals disposal.

- **Stimulating demand** for private sector environmental services and technologies.
- **Fostering private sector supply** of environmental services and technologies.
- **Improving the performance** and efficiency of private enterprises.

Under each of these categories, the elements related to training are shown, followed by those that represent technical assistance activities.

Table columns to the right of each strategy element show:

- The related mission project and project component into which the strategy element will be incorporated or that it will complement.
- Where relevant, the related centrally funded R&D or NE Bureau project from which, with NE Bureau assistance, the mission might acquire funding and technical support for the strategy element.
- Overall private sector development and/or environmental objective to which the strategy element will contribute.
- Mission PRISM Program Outcome to which the strategy element will contribute (the USAID/Tunisia PRISM Program Objective Tree is provided in Annex G).

TABLE 1
USAID/Tunisia Private Sector Development Environmental Strategy: Actionable Elements

STRATEGY ELEMENT	RELATED MISSION PROJECT COMPONENT	RELATED R&D OR NEAR EAST PROJECT	OBJECTIVE TO WHICH IT CONTRIBUTES	PRISM OUTCOME TO WHICH IT CONTRIBUTES
Stimulating Demand for Private Sector Environmental Services and Technologies				
Training				
1. Pollution prevention* site visits/internships in counterpart U.S. factories for senior managers of Tunisian factories in major polluting industries.	MTPS: Overseas training	EP3 PRIDE	More pollution prevention techniques and technologies utilized	1.1 Increased productivity/quality in Tunisian private firms
2. Pollution prevention workshops for GOT policy/regulatory agencies and factory operators jointly.	MTPS: Management skills training	EP3 PRIDE PSP	Shared appreciation of pollution prevention over pollution treatment	1.1 Increased productivity/quality in Tunisian private firms
3. Training for municipal personnel in selecting and managing contractors for solid waste operations and management, and also ONAS personnel to contract for wastewater operations and management.	PPES: Institutional development	PRIDE EPAT WASH	More private sector participation in providing municipal services	1.2 Responsive policy and institutional environment for private provision of public services

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STRATEGY ELEMENT	RELATED MISSION PROJECT COMPONENT	RELATED R&D OR NEAR EAST PROJECT	OBJECTIVE TO WHICH IT CONTRIBUTES	PRISM OUTCOME TO WHICH IT CONTRIBUTES
Technical Assistance				
4. Help the GOT develop general terms and conditions for type and timing of pollution prevention activities to be undertaken by new owners of privatized facilities, for incorporation into privatization sale agreements.		EP3 PRIDE	Pollution prevention measures introduced in association with privatization of government enterprises	1.1.1 Reduced role of government in productive sector
5. Incorporate environmental due diligence assessments into analyses of factories that are candidates for privatization.	PEP: Studies and analyses	EP3	Pollution prevention measures introduced in association with privatization of government enterprises	1.1.1 Reduced role of government in productive sector
6. Help selected representative municipalities design private sector-based integrated solid waste management systems.	PPES: Institutional development		More private sector participation in providing municipal services; improved solid waste management	1.2.1 Increased private sector participation in delivering environmental services
7. Help GOT analyze, determine feasibility of, and develop multimedia environmental management policies and regulations.	DSP	PRIDE EPAT	Reduced environmental pollution	1.2 Responsive policy and institutional environment for private provision of public services

STRATEGY ELEMENT	RELATED MISSION PROJECT COMPONENT	RELATED R&D OR NEAR EAST PROJECT	OBJECTIVE TO WHICH IT CONTRIBUTES	PRISM OUTCOME TO WHICH IT CONTRIBUTES
8. Assist the GOT to formulate pollution prevention legislation and regulations.**	DSP	EP3 EPAT PRIDE	Reduced environmental pollution; more private sector efficiency	1.2 Responsive policy and institutional environment for private provision of public services
9. Assist municipalities in selecting and managing contractors to operate and manage solid waste systems, and also ONAS for municipal wastewater contractors.	PPES: Institutional development		More private sector participation in providing municipal services	1.2.1 Increased private sector participation in delivering environmental services
10. Assist ONAS to develop an operational long-term wastewater privatization plan, including the necessary advance studies.	DSP PPES: Institutional development		More private sector participation in providing municipal services	1.2.1 Increased private sector participation in delivering environmental services
11. Feasibility study and plan for a demonstration project of privatizing solid waste and wastewater management in smaller municipalities. **	PPES: Pilot projects		More private sector participation in providing municipal services; better solid waste and wastewater management in smaller cities	1.2.1 Increased private sector participation in delivering environmental services

STRATEGY ELEMENT	RELATED MISSION PROJECT COMPONENT	RELATED R&D OR NEAR EAST PROJECT	OBJECTIVE TO WHICH IT CONTRIBUTES	PRISM OUTCOME TO WHICH IT CONTRIBUTES
12. Explore the needs and means for incorporating awareness of environmental benefits of privatization into the PEP Information, Education, and Communication subcomponent.	PEP: Information, education, and communication	EPAT PRIDE	More demand for pollution prevention and control in privatized enterprises	1.1.1 Reduced role of government in productive sector
13. Incorporate environmental monitoring in PEP Follow-up/Evaluation Program.	PEP: Follow-up and evaluation		Better environmental monitoring	1.2.1 Increased private sector participation in delivering environmental services
14. Include representatives of environmental/sustainable development interests on the PEP Privatization Committee and the MTPS Committee or on an ad hoc basis as required.	PEP MTPS		More demand for pollution prevention and control in privatized enterprises	1.2.1 Increased private sector participation in the delivery of environmental services
15. Establish a pollution prevention and control "twinning" program among Tunisian/American training organizations and/or trade and professional associations.	MTPS: Training institutions	PRIDE EP3	More demand for pollution prevention and control by private enterprises	1.1.2 Strengthened private sector business support service providers
16. Design pollution prevention protocol for the EIS process for new facilities and plant expansions.		EP3	More demand for pollution prevention and control by private enterprises	1.1 Increased productivity/quality in Tunisian private firms

STRATEGY ELEMENT	RELATED MISSION PROJECT COMPONENT	RELATED R&D OR NEAR EAST PROJECT	OBJECTIVE TO WHICH IT CONTRIBUTES	PRISM OUTCOME TO WHICH IT CONTRIBUTES
Fostering Supply of Private Sector Environmental Services and Technologies				
Training				
17. Train private environmental consultants in prefeasibility and feasibility studies to help firms prepare applications to ANPE for financing pollution prevention and control equipment from the Industrial Pollution Fund (for pollution prevention equipment, joint application for financing may be made to the Industrial Restructuring Fund of the Ministry of Economy).	All USAID/Tunisia private sector activities	EP3 PRIDE	Increased supply of private sector environmental services; more pollution prevention and control equipment utilized	1.3 Broadened and deepened financial market
18. Train private environmental consultants in pollution prevention assessments, to help small and medium-size enterprises reduce pollution and increase efficiency through no/low capital cost innovations.	MTPS: Consulting firms	EP3 PRIDE	Increased supply of private sector environmental services; more pollution prevention and control measures utilized	
19. Train private environmental consultants in specialized pollution prevention areas, such as tanneries, metal finishing, textiles, and various types of food processing, to enable firms in major polluting industries to meet current and future environmental regulations and improve efficiency.	All USAID/Tunisia private sector activities	EP3 PRIDE	Increased supply of private sector environmental services; more pollution prevention and control equipment utilized	1.1.2 Strengthened private sector business support for service providers

STRATEGY ELEMENT	RELATED MISSION PROJECT COMPONENT	RELATED R&D OR NEAR EAST PROJECT	OBJECTIVE TO WHICH IT CONTRIBUTES	PRISM OUTCOME TO WHICH IT CONTRIBUTES
20. Train private environmental consultants in environmental "due diligence" components of analyses of factories that are candidates for privatization.	All USAID/Tunisia private sector activities	EP3 PRIDE	Increased supply of private sector environmental services; more demand for pollution prevention and control in privatized enterprises	1.1.2 Strengthened private sector business support for service providers
21. Train private firms in operating and managing municipal solid waste and wastewater systems.	MPES: Institutional development	WASH PRIDE	Increased supply of private sector environmental services	1.2.1 Increased private sector participation in delivering environmental services

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STRATEGY ELEMENT	RELATED MISSION PROJECT COMPONENT	RELATED R&D OR NEAR EAST PROJECT	OBJECTIVE TO WHICH IT CONTRIBUTES	PRISM OUTCOME TO WHICH IT CONTRIBUTES
Technical Assistance				
22. Help to conduct a study of intellectual property rights protection for pollution prevention and control techniques and technologies: recommend legal and enforcement improvements if protection is found inadequate; publish report for circulation in U.S. and elsewhere if protection is found adequate.	DSP	PRIDE	Increased availability of U.S. environmental expertise and technology	1 Strengthened public, administrative, and legal accountability
23. Help local businesses enter or expand into Tunisian recycling and waste management markets identified in the PRIDE Private Sector Environmental Business Profile.	PPES: Institutional development		Increased private sector supply of environmental services and products	1.2.1 Increased private sector participation in the delivery of environmental services

STRATEGY ELEMENT	RELATED MISSION PROJECT COMPONENT	RELATED R&D OR NEAR EAST PROJECT	OBJECTIVE TO WHICH IT CONTRIBUTES	PRISM OUTCOME TO WHICH IT CONTRIBUTES
24. Study financing mechanisms for development of environmental businesses.	DSP	PRIDE EP3	Increased private sector supply of environmental services and products	1.3 Broadened and deepened financial market
25. Assist U.S. companies to pre-qualify for import duty exemptions for pollution prevention and control equipment imports to Tunisia, including possible joint venture arrangements with Tunisian firms.		PSPP	Increased availability of U.S. environmental technology	1.1 Increased productivity/quality in Tunisian private firms
Improving the Performance and Efficiency of Private Enterprises				
Training				
26. Train plant managers in pollution prevention self-assessments to help enterprises reduce pollution and increase efficiency through no/low capital cost innovations.		PRIDE EP3	Increased use of pollution prevention measures; improved production efficiency	1.1 Increased productivity/quality in Tunisian private firms
27. Train trainers to train senior plant managers in total environmental accounting, to help enterprises reduce pollution, meet current and future environmental regulations, and increase efficiency as they consider new equipment, processes, or product lines.**		PRIDE EP3 EPAT	Increased use of pollution prevention measures; improved production efficiency	1.1.2 Strengthened private sector business support service providers

STRATEGY ELEMENT	RELATED MISSION PROJECT COMPONENT	RELATED R&D OR NEAR EAST PROJECT	OBJECTIVE TO WHICH IT CONTRIBUTES	PRISM OUTCOME TO WHICH IT CONTRIBUTES
28. Arrange training in U.S. facilities for scientists from LARSEN/ENIS (Sfax) and other environmental laboratories serving industry.	MTPS: Overseas training	PRIDE	Increased use of pollution prevention measures; improved production efficiency	1.1 Increased productivity/quality in Tunisian private firms
Technical Assistance				
29. Help MEAT, including ANPE and ONAS, develop procedures and guidelines to ensure that Industrial Pollution Fund addresses pollution prevention.		EP3	Increased use of pollution prevention measures; improved production efficiency	1 Strengthened public, administrative, and legal accountability

* Pollution prevention, as used here, includes the use of cleaner production technologies and waste minimization actions. Pollution prevention emphasizes high rate of return investments in manufacturing processes and urban services that involve the use of non-polluting raw materials, more complete use of raw materials, reclamation, and recycling. Pollution prevention and clean technology measures minimize the pollutants that enter the environment and decrease the need for end-of-pipe treatment and residuals disposal.

** Illustrative statements of work for these three strategy elements are found in Annex C.

As can be seen in the table, a number of PSDE Strategy elements have been identified that would contribute materially to the mission's private sector development focus and better environmental management, but that do not fit neatly into any of the four basic projects in the mission portfolio. These include, in particular, strategy elements related to:

- Training and technical assistance for GOT programs to support private sector development (other than those related to privatization of government enterprises and urban services).
- Training and technical assistance to address the special financing needs of small and medium-size enterprises.

On reviewing the 29 PSDE Strategy elements listed above, representatives of MEAT, ANPE, and ONAS suggested three additional elements. While closely related to those listed, the suggested additional elements also represent training and technical assistance for GOT in support of private sector environmentally related development. Therefore, USAID/Tunisia, while supportive of the proposed elements in principle, has been unable to link them to projects currently in its portfolio. The recommended additional elements are:

- In element #1, include GOT officials responsible for pollution regulation and enforcement together with senior factory managers in site visits to U.S. counterpart factories to learn about pollution prevention techniques and technologies in major polluting industries.
- Relative to element #17, provide training for ANPE personnel to work with firms and consulting engineers to: develop terms of reference for preparing the applications, help prepare the applications, review the applications, and collaborate in bringing the new technologies on line.
- Provide general technical assistance to ANPE and ONAS for interacting with and supporting private sector environment-based development.

SECTION III

PRIORITIES FOR NEAR-TERM IMPLEMENTATION

The table in the previous section identifies 29 actionable elements in the PSDE Strategy. An analysis of these was conducted that led to designating 10 of the elements as high priority for near term implementation. The analysis first entailed four elimination steps as follows:

- Strategy elements most marginally related to the current mission portfolio and strategic objectives were eliminated.
- From the remaining set, the elements least likely on the basis of their nature to be funded from any source in the near term, even with the active support of the Near East Bureau, were eliminated.
- From the remaining set, the elements most likely to require large amounts of mission funding in the near term were eliminated.
- From the remaining set, the elements most likely to impose a management and administration burden significantly beyond what can be absorbed by expected near term mission resources were eliminated.

At this point a positive selection criterion was applied to the remaining set of elements, without further consideration of funding requirements or management and administrative burdens. Priority was assigned to the elements that:

- Represent the launching of a process, rather than reinforce an ongoing process or help complete a process.

In other words, first a set of four *eligibility* criteria for near-term implementation were applied, and then a *preference* criterion was applied to the set of elements eligible for near-term implementation. The preference criterion reflects a strategic preference for elements that lay the groundwork for others that could be implemented later; for activities that GOT the private sector, or other donors might pursue, or for processes that would likely continue on their own. The strategic emphasis is on laying foundations, on demonstrations, and on high multiplier effects for private sector development and incentive-based pollution management through private sector development. It is not surprising that this process resulted in eight out of ten high priority actionable elements that are aimed at stimulating demand for, rather than fostering supply of, private sector environmental services and technologies.

The following table lists the 10 PSDE Strategy elements designated high priority for near-term implementation. A brief explanation of the strategic role of each is provided in the right column of the table. An asterisk (*) indicates that an illustrative statement of work for the strategy element is provided in Annex C. The order in which the priority strategy elements are listed below is not meant to suggest relative priorities or implementation

sequence. They are simply listed in the same order in which they appear in the table in Section II, and the numbers in parentheses are the numbers they have in that table.

TABLE 2
High Priority Actionable Elements of the PSDE Strategy
 (Order does not indicate relative priorities or implementation sequence.)

Actionable Elements	Strategic Roles
a) Hold pollution prevention workshops for GOT policy/regulatory agencies and factory operators jointly. (#2)	The workshops will help build a shared appreciation of pollution prevention and a partnership for creating a regulatory environment that fosters pollution prevention among regulators and regulated.
b) Help GOT develop general terms and conditions for type and timing of pollution prevention activities to be undertaken by new owners of privatized facilities, for incorporation into privatization sale agreements. (#4)	The general terms and conditions, which will include the terms of government support, will help seize the opportunity presented by the privatization process to introduce cleaner production technologies into major Tunisian industries.
c) Incorporate environmental due diligence assessments into analyses of factories that are candidates for privatization. (#5)	The assessments will provide a basis for special terms and conditions for pollution prevention and control that would be included in privatization sales agreements together with the general terms and conditions mentioned above, and thereby serve the same strategic role.
d) Help GOT analyze, determine feasibility of, and develop multimedia environmental management policies and regulations. (#7)	The policies and regulations will ensure that pollution is not transferred from a regulated medium to an unregulated or less regulated medium, and thereby encourage adoption of pollution prevention and control techniques and technologies.
e)* Help GOT formulate pollution prevention legislation and regulations. (#8)	The legislation and regulations will hasten the movement away from an exclusive concentration on pollution treatment to more environmentally and economically cost-effective pollution prevention.
f)* Prepare feasibility study and plan for a demonstration project of privatizing solid waste and wastewater management in smaller municipalities. (#11)	The feasibility study and plan will lay the groundwork for undertaking such a pilot project through PPES or another mechanism; the pilot project, in turn, will help devise and test approaches to improving solid waste management in smaller Tunisian municipalities.
g) Include representatives of environmental/sustainable development interests on the privatization committee and the MTPS Committee or on an ad hoc basis as required.	Representatives of interests, such as ATPNE, will help ensure that natural resource management considerations, and particularly pollution prevention and control potentials, are accounted for in the process of selecting candidate establishments for privatization, and in assistance provided through MTPS.

Actionable Elements	Strategic Roles
h) Train private environmental consultants in pollution prevention assessments, to help small and medium-size enterprises reduce pollution and increase efficiency through no/low capital cost innovations. (#18)	Once trained, the consultants will promote their services among a size class of enterprises that can generally avoid environmental penalties and increase efficiency through pollution prevention innovations entailing minimal investment.
i) Train private firms to operate and manage municipal solid waste and wastewater systems. (#21)	The training will expand the number of qualified firms that can compete for municipal environmental service contracts from municipalities and ONAS.
j) Train trainers to train senior plant managers in total environmental accounting. (#27)	The training will develop a cadre of trainers for demonstrating to senior plant managers the need and means for incorporating environmental costs into cost accounting; for calculating the real and comparative net benefits of alternative pollution management approaches; and through this for helping enterprises reduce pollution, meet current and future environmental regulations, and increase efficiency as they consider new equipment, processes, or product lines.

As mentioned, the order in which the PSDE Strategy elements are shown above does not indicate relative priority. Indeed, the implementation sequence will be determined largely by the degree to which limited mission program funds can leverage funding from other sources, and by the actual nature of new related, centrally funded projects, such as the Private Sector Pollution Prevention Project, EP3, and GreenCom. With regard to leveraging mission funds, it is worth noting that if funding can be found for the \$3 million PPES grant component, it will leverage \$50 million in loan guarantees for municipal environmental infrastructure among other things.

SECTION IV

RELATIONSHIP OF PSDE STRATEGY TO MISSION PROGRAMS

A. Overview

The existing mission assistance program in Tunisia focuses on private sector development to support economic and political transformation with sustained economic growth. There are three major projects in the mission's current portfolio: the Private Enterprise Promotion Project (PEP), the Management Training for the Private Sector Project (MTPS), and the Development Studies Project (DSP). In addition, USAID/Tunisia has requested a new combined grant/HG program, Private Provision of Environmental Services (PPES), aimed in large part at increasing private sector participation in municipal development and the provision of urban services.

The 29 PSDE Strategy actionable elements shown in the table in Section II are designed to: a) stimulate demand for private sector environmental services and technologies; b) foster private sector supply of environmental services and technologies; and c) provide additional environmentally related actions that improve the efficiency of private sector enterprises. In doing so, they reflect three strategic cross-cutting themes that tie environmental concerns closely to the mission portfolio:

- **Developing the private sector** by expanding the roles of private enterprise in environmental management and improving enterprise performance.
- **Preventing pollution** by reducing it at the source and improving urban environmental services.
- **Institutionalizing improved environmental practices** by helping upgrade legal and regulatory frameworks and the capability to administer them on the public sector side, by fostering a market-driven dynamic of improved environmental performance on the private sector side, and by offering collaborative frameworks and shared learning experiences for public and private sector representatives.

B. Private Enterprise Promotion Project (PEP)

The purpose of PEP is to expand private sector employment and income by assisting the GOT to select and carry out privatization of state-owned enterprises and improve the efficiency of financial markets. The PSDE Strategy works hand in hand with PEP by strengthening the prospects for viability of privatized enterprises through pollution prevention innovations and seizing the special opportunity presented during privatization for integrating pollution prevention into the industrial activities. Additionally, introducing pollution prevention and cleaner technology into newly privatized enterprises will decrease their environmental liabilities. Five PSDE Strategy elements are directly related to PEP:

- Assist the GOT to develop general terms and conditions for type and timing of

pollution prevention activities to be undertaken by new owners of privatized facilities, for incorporation into privatization sale agreements.

- Incorporate environmental due diligence assessments into analyses of factories that are candidates for privatization.
- Incorporate awareness of potential environmental benefits of privatization into the PEP Information, Education, and Communication subcomponent.
- Incorporate environmental monitoring in the PEP Follow-up/Evaluation Program.
- Include representatives of environmental/sustainable development interests on the Privatization Committee under the PEP project.

C. Management Training for the Private Sector (MTPS)

The primary target group of the MTPS project is owners and managers of small and medium private sector firms. These firms include training organizations, consulting firms, and professional associations. The principal activities supported under MTPS are:

- Policy studies
- Information, education, and communication campaigns
- Project assistance strategies
- Diagnostic studies of small and medium-sized enterprises
- Direct assistance to small and medium-sized enterprises

PSDE Strategy elements link with the MTPS needs and objectives by encouraging greater production efficiency in target firms and providing training to environmental firms so that they have sufficient expertise to assist private sector needs industry in pollution prevention activities. Matching U.S. resources, such as pollution prevention technology and marketing of environmental services, with Tunisian private sector needs will take advantage of the primary strengths of U.S. firms to deliver the needed technical assistance to Tunisian enterprises. These services are aimed at responding to the increasing requirements of environmental controls and the requirement to produce exports in an environmentally sensitive manner. Furthermore, MTPS allows for Tunisian scientists from environmentally related institutions to work with their counterparts in the United States. Ten PSDE Strategy elements directly relate to MTPS:

- Conduct pollution prevention site visits and internships in counterpart U.S. factories for senior managers of Tunisian factories in major polluting industries.
- Conduct pollution prevention workshops for GOT policy/regulatory agencies and

factory operators jointly.

- Establish a pollution prevention and control "twinning" program among Tunisian/American training organizations and/or trade and professional associations.
- Train private environmental consultants in prefeasibility and feasibility studies to help firms prepare applications to ANPE for financing pollution prevention and control equipment from the Industrial Pollution Fund (for pollution prevention equipment, joint application for financing may be made to the Industrial Restructuring Fund of the Ministry of Economy).
- Train private environmental consultants in pollution prevention assessments, to help small and medium-size enterprises reduce pollution and increase efficiency through no/low capital cost innovations.
- Train private environmental consultants in specialized pollution prevention areas, such as tanneries, metal finishing, textiles, and various types of food processing, to enable firms in major polluting industries to meet current and future environmental regulations and improve efficiency.
- Train private environmental consultants in environmental due diligence components of analyses of factories that are candidates for privatization.
- Assist local businesses to enter or expand into Tunisian recycling and waste management markets identified in the PRIDE Private Sector Environmental Business Profile.
- Train trainers to train senior plant managers in total environmental accounting, to help enterprises reduce pollution, meet current and future environmental regulations, and increase efficiency as they consider new equipment, processes, or product lines.
- Arrange training in U.S. facilities for scientists from LARSEN/ENIS (Sfax) and other environmental laboratories serving industry.

D. Development Studies Project (DSP)

The purpose of the DSP is to help the GOT carry out its economic structural adjustment. The DSP's major components are aimed at helping the GOT to:

- Prepare the Eighth Five-Year Plan, which concentrates on private sector reforms and regional decentralization.
- Design future joint USAID/Tunisia development activities.

- Finance policy development studies and activities that would support structural adjustment.

The PSDE Strategy incorporates the goal of economic structural adjustment with strategy elements that provide technical assistance to Tunisian institutions. Methodologies for accomplishing the necessary legal, regulatory, and management changes for private sector industrial pollution prevention and increasing privatization of environmental services are emphasized. Furthermore, the PSDE Strategy pursues the goals of the DSP program by helping the private sector become more competitive by incorporating pollution prevention technologies in their operations. Five PSDE Strategy elements are directly related to the DSP:

- Assist GOT in analyzing, determining feasibility of, and developing multimedia environmental management policies and regulations.
- Assist the GOT in formulating pollution prevention legislation and regulations.
- Assist ONAS in developing a plan for operational long-term wastewater privatization, including the necessary advance studies.
- Help conduct a study of intellectual property rights protection for pollution prevention and control techniques and technologies: recommend legal and enforcement improvements if protection is found inadequate; publish a report for circulation in the United States and elsewhere if protection is found adequate.
- Study financing mechanisms for developing of environmental businesses.

E. Private Provision of Environmental Services (PPES)

PPES proposes to provide loan guarantees for infrastructure and grants to GOT institutions. The purpose is to help them and municipalities increase private sector involvement in, and improve delivery and quality of, municipal environmental services, particularly solid waste management and wastewater treatment. PPES technical assistance and training will support three types of activities:

- Policy analysis and development
- Institutional development
- Pilot projects to encourage privately owned solid waste systems and wastewater management networks

The project is specifically designed to provide environmental services in low-income areas. The PSDE Strategy parallels PPES by pursuing improved delivery of environmental services, specifically integrated solid waste management, improved wastewater management, and mechanisms to privatize (and therefore fund) these services. Six PSDE Strategy elements

are directly related to PPES:

- Train municipal personnel to select and manage contractors for solid waste operations and management, and also ONAS personnel to contract for wastewater operations and management.
- Assist selected representative municipalities to design private sector-based, integrated solid waste management systems.
- Assist municipalities in selecting and managing contractors to operate and manage solid waste systems, and also ONAS to do the same for municipal wastewater contractors.
- Assist ONAS to develop an operational long-term wastewater privatization plan, including the necessary advance studies.
- Conduct feasibility study and plan for a project to demonstrate privatizing solid waste and wastewater management in smaller municipalities.
- Train private firms to operate and manage municipal solid waste and wastewater systems.

SECTION V
RELATIONSHIP OF PSDE STRATEGY TO NE BUREAU NATURAL
RESOURCE AND ENVIRONMENT STRATEGY

The mission strategy framework incorporates NE and other bureaus' participation and action as a part of its design. The second level in the framework includes complementary and more resource-intensive assistance from AID/Washington that could be provided through centrally funded, special purpose environmental and natural resource projects. This joining of NE Bureau and other centrally funded environmental actions with those of the mission reflects the substantial agreement between bureau and mission environmental philosophies and priorities, and complementarity of available program mechanisms. Because of this, PSDE Strategy actionable elements include both joint and separate mission and bureau initiatives.

Although both the NE Bureau and the mission now have environmental strategies, the former responds to agency and regional issues and priorities and is not specifically tailored to any individual mission program or portfolio. USAID/Tunisia's PSDE Strategy is designed to reflect these same agency and NE Bureau environmental priorities, but it is oriented to mission program objectives and projects in the most environmentally conscious way.

The NE Bureau has identified four priority issues relating to the environment and natural resources in the Near East:

- Degradation and depletion of water resources
- Urban and industrial pollution
- Environmentally unsound energy production and use
- Unsustainable agricultural practices

While all four of these are concerns in Tunisia, only the first two fit into the USAID/Tunisia portfolio. The actionable elements of the PSDE Strategy primarily relate to ways centrally funded and mission resources can be combined and directed to addressing both water resource and urban and industrial pollution problems in Tunisia. Strategy elements provide training and workshops in a variety of subjects relating to water degradation and depletion and urban (solid waste and sewage) pollution. Many technical assistance strategy elements also address these areas, especially with regard to urban and industrial pollution prevention and clean technology applications.

The four strategic objectives of the NE Bureau environmental strategy are:

- a) Fostering efficient resource use
- b) Promoting pollution prevention in the industrial sector
- c) Increasing empowerment and accountability of sub-national and other nongovernmental entities
- d) Emphasizing private sector solutions

These closely parallel the central themes of the PSDE Strategy. The first, third, and

fourth objectives match those established for the existing portfolio. The second objective, relating to industrial pollution prevention, is possibly the most dominant theme in the PSDE Strategy. The specific elements of the PSDE Strategy emphasize demand (relating to objectives c and d above), supply (relating to b and d above), and efficiency (relating to a above).

In early 1993 the Near East Bureau determined that its environmental strategy will concentrate on issues related to water conservation and quality. This has little practical effect on the close complementarity of mission and bureau strategies: improvements in water use efficiency and quality in Tunisia will be the primary environmental benefits of the PSDE Strategy.

However, in concentrating on water conservation and quality it is important not to lose sight of the relationship between water and other environmental concerns. For example, wastes withheld from water sources to preserve water quality may instead be burned, increasing air pollution levels, or dumped at sites where they seep into underground water sources. Indeed, improperly managed urban residential and industrial solid wastes can contaminate water sources. The PSDE Strategy not only addresses water issues directly through elements related to industrial pollution prevention, but also through elements related to developing multimedia standards, improving urban environmental services, and other less direct but closely associated concerns.

As the table of actionable elements in Section II indicates, the PSDE Strategy is closely related to the two Near East Bureau regional environmental projects. The Project in Development and the Environment (PRIDE) has helped develop the PSDE Strategy, and could play a role in many of its elements. The Private Sector Pollution Prevention (PSPP) project being launched in late FY 1993 or early FY 1994 shares its basic purposes—private sector development and industrial pollution prevention—with the PSDE Strategy. USAID/Tunisia expects to work closely with these centrally funded NE Bureau projects to implement its PSDE Strategy.

SECTION VI
RELATIONSHIP OF PSDE STRATEGY TO GOVERNMENT OF TUNISIA
ENVIRONMENTAL PROGRAMS

The Tunisian government's National Environmental Protection Strategy (NEPS) is built around a sustainable development concept that aims to guarantee the stability of natural resources in the country. It has the following three objectives:

- Contain environmental pollution and damage within acceptable limits in the long term.
- Organize the use of natural resources to assure renewal and the maintenance of acceptable quality
- Establish measures to protect and develop natural and human sites which are in danger of disappearing.

The GOT's specific environmental actions are based on these fundamental principles:

- Prevention is the best policy.
- The polluter pays.
- Environmental costs of all actions must be identified and internalized.

The urgency of certain environmental problems has prompted the GOT to emphasize selected programs to reconstitute and restore severely damaged environments.

For this, the GOT has developed an Action Plan for Environmental Protection (APEP). NEPS and APEP have been translated in part into specific programs and projects in Tunisia's Eighth Five-Year Economic and Social Development Plan (1992\1996), and were presented to the international donor community and discussed at the 1992 UN Conference on Environment and Development in Rio de Janeiro, Brazil.

Many GOT agencies are involved in managing the environment. The agency most directly involved in the areas corresponding to the PSDE Strategy is the Ministry of the Environment and Land Use (MEAT), which is the principal GOT agency dealing with environmental issues. Under the ministry, but with autonomous status are the National Office of Wastewater (ONAS), which handles the sewerage infrastructure of the country, and the National Agency for the Protection of the Environment (ANPE), which is responsible for controlling pollution from other sources, including industry, and which will be the principal technical entity involved in the newly created national pollution control fund (FODEP). In addition to MEAT, other ministries involved in related environmental activities are the Ministry of Plan and Regional Development and the Prime Ministry, which are the counterpart organizations for a number of mission projects including PEP and MTPS.

The NEPS has discrete natural resources, pollution control, land use planning, and

support elements. In designing the PSDE Strategy, the mission has selected those elements of the NEPS that match agency priorities and that can support or reinforce the mission's private sector development and privatization objectives. The following four key actions in the pollution control element and two actions from other elements form the fundamental correspondence between the NEPS and the PSDE Strategy:

- Combat priority industrial pollution through curative and preventive actions and develop financing mechanisms to assure that the polluter pays;
- Institute impact studies, databases and equipment provision measures to establish control of existing and prevent future pollution;
- Promote municipal control and disposal of domestic, hazardous, and toxic wastes and institute policies to support this;
- Expand urban and rural sanitation infrastructure;
- Consider environment constraints in all general and specific development and infrastructure studies;
- Create training and information/education programs to increase awareness of environmental issues.

The PSDE Strategy has a number of elements that directly respond to and help implement of the GOT priorities noted above. Specifically, the following elements in the PSDE Strategy stimulate demand for and increase the supply and efficiency of private sector environmental services and technologies:

- Arrange site visits to plants that are U.S. leaders in applying pollution prevention.
- Provide pollution prevention training for personnel from MEAT, ONAS, ANPE, environmental consultants, and private firms in a variety of technical and financing-related fields.
- Provide technical assistance to help ONAS implement innovative operation and management approaches for managing wastewater infrastructure.
- Offer assistance to industries and businesses to support recycling of materials and wastes.
- Fund studies to identify appropriate financing mechanism for environmental protection projects.
- Develop protocols for priority pollution prevention and control actions by government and the private sector.

The above illustrates how a few of the 29 PSDE Strategy actionable elements relate to GOT environmental priorities and actions. Each of the six priority GOT environmental actions listed earlier has been shown to be directly addressed and supported by both training and technical assistance elements of the USAID/Tunisia PSDE Strategy. Furthermore, implementation of the PSDE Strategy elements will be through mission projects with a variety of GOT counterparts. These counterpart organizations are the key GOT agencies responsible for implementing major parts of the NEPS. Although not originally designed to do so, the focus, participants, projects, and individual actions programmed in the current mission portfolio are ideally suited to support their main purpose as well as to serve as a platform for action-oriented pollution prevention, clean technology, and other environmental initiatives directed to cities and industries by the U.S. government and U.S. private sector.

Annex B contains a brief review of the Tunisian environmental legislative and regulatory framework.

SECTION VII

RELATIONSHIP OF PSDE STRATEGY TO OTHER DONOR PROGRAMS

In December 1990, the GOT organized a roundtable of international donors based on the Action Plan for Environmental Protection (APEP) developed by ANPE. The APEP focuses on a series of projects that will be of major benefit to the environment, to be executed in the short to medium term. The projects focus on regions faced with serious pollution problems, such as Greater Tunis and the Gulf of Gabes. The goals of these projects are to eliminate industrial pollution in Gabes and Sfax and to improve sanitation and waste disposal services. Other projects identified include the protection of potable and irrigation water resources in the Mejerdah catchment basin and the northeastern region by improving sanitation systems and household waste disposal. Also identified in the APEP are projects related to the coastline and the tourist zones. These projects include sanitation and solid waste management in the main coastal cities, and industrial pollution control for enterprises located on the coast.

The mission did not identify the environment as a priority in the past; therefore, the current portfolio places few or no program resources in this area. Other bilateral and multinational aid programs have provided support to environmental protection. The most significant include the following:

- The Mediterranean Environmental Technical Assistance Program (METAP), funded by UNDP, EIB, WB, and EEC, addresses the environmental policy, institutional requirements, and investment-related needs of Mediterranean countries.
- The Tunisian Hazardous Waste Management Study, beginning in 1993, will diagnose the hazardous wastes generated throughout the county, identify appropriate treatment for each type, and establish criteria for a pilot hazardous waste site.
- The Environmental Financing Study focuses on the "polluter pays" approach.
- The Tunis Solid Waste Management Study will help improve the efficiency and quality control of the solid waste disposal system in greater Tunis.
- German (KFW and GTZ) bilateral aid has mainly focused on assistance to the ONAS sanitation programs in the Mejerdah basin and plans to provide assistance to ANPE for studies that parallel the METAP program. The GOT hopes to work with the Germans to establish and fund (through grants and loans) the Pollution Control Fund (Fonds de Dépollution, or FODEP).
- Sweden and Holland have agreed to pay off portions of the GOT's outstanding debt used for environmental projects; additionally, Sweden has participated in sanitation programs.

- Belgium is helping the GOT finance wastewater treatment stations.
- Japan has provided the GOT with environmental aid through METAP and has outfitted the environmental lab at the Ecole Nationale d'Ingénieurs de Sfax.

Other countries have provided limited environmental aid in additional areas such as desertification control and environmental research.

The actionable elements in the USAID/Tunisia's PSDE Strategy aim to:

- Stimulate demand for private sector environmental services and technologies.
- Foster private sector supply of environmental services and technologies.
- Provide additional environmentally related actions that improve the efficiency of private sector enterprises.

The PSDE Strategy and the mission portfolio focus on private sector development and better environmental management, which correspond to the needs of the GOT and the programs of the other bilateral and multinational aid programs.

The PSDE Strategy concentrates on providing training and technical assistance in two principal areas: private sector pollution prevention and control, and private sector delivery of urban environmental services. The strategy complements existing bilateral and multinational aid programs by addressing specific needs expressed by the GOT that other donors are not supporting. The strategy also addresses areas where additional resources are needed, such as delivery of urban environmental services.

SECTION VIII INVOLVEMENT OF U.S. PRIVATE SECTOR

The U.S. environmental private sector is a mature and extensive element of the U.S. economy. The sector includes companies and individuals providing services and products, especially equipment, that affect the quantity and quality of the nation's natural resources.

Services range from defining national environmental policy to engineering, construction, and operation of water supply or/waste treatment facilities. Typical U.S. environmental products range from clean manufacturing technology for industry to non-polluting raw materials and intermediate and off-spec product reclamation and recycling processes. The consulting services segment of the environmental private sector has been working overseas for many years and has established a limited set of associations and business relationships in the Near East and Tunisia.

The U.S. private sector environmental equipment and products introduced and known in this part of the world tend to be limited to those related to industrial energy conservation and municipal water and wastewater supply and treatment. A key, rapidly growing element of this sector are businesses involved in pollution prevention and clean technology consulting, manufacturing, and servicing. The United States is a world leader in this area and the range of services and technologies it offers could address many priority Tunisian needs and problems. Although U.S. environmental private sector business offers some of the most advanced and widely applicable environmental services and products in the world, they are not well known or applied in Tunisia.

To encourage the introduction of appropriate U.S. private sector environmental services and products in Tunisia traditional and unique links to the U.S. business community will be strengthened or established. For Tunisia, a particularly appropriate segment of the U.S. industry is the pollution prevention and clean technology service and product industry. The GOT and Tunisian environmental NGO and private sector entities reviewed in the strategy development process were almost unanimous in their expression of need for and interest in pollution prevention related services and products. This is clearly a segment of the U.S. private sector with much to offer and established services and products tailored to Tunisian needs and PSDE Strategy elements.

No single trade or professional organization in the U.S. represents the pollution prevention and cleaner technologies segment of U.S. environmental business. This diverse segment comprises many small firms and businesses. The approach to linking U.S. and Tunisian suppliers and users, therefore, must employ contact and involvement mechanisms directed at and through professional, commercial, and industrial organizations.

At the organization level, contact should be initiated among U.S. and Tunisian government, trade associations, service and technology suppliers, and user groups.

TABLE 3
Counterpart Types of U.S. and Tunisian Organizations

U.S. Side	Tunisian Side
U.S.-Arab Chamber of Commerce	U.S.-Tunisian Chamber of Commerce
State environmental trade and development coordinators, environmental business councils	Regional chambers of commerce and UTICA
U.S. professional societies, such as AICHE, ASCE, and WEF	Conseil de l'Order des Ingénieurs
U.S. environmental trade associations; Water and Wastewater Manufacturers Association	FNAC and other Tunisian federations and business groups
Individual U.S. service and technology product suppliers	Tunisian consultants, industry sales agents, environmental service and product suppliers, and industries in need of pollution prevention and cleaner technology services and products

The principal ways to establish links among the above organizations is to build on the information services provided by the Commercial Counsellor's office of the U.S. Embassy and to tap into AID Near East, R&D, and P&E Bureau programs and projects offering trade and investment services. PRIDE has published *Developing Environmental Business in the Near East: A Guide to U.S. Government Resources*. Additionally, these projects have developed information, contacts, and mechanisms that can help introduce the U.S. environmental private sector to Tunisia.

A second way to establish links is through existing mission projects. Furthermore, PRIDE is in the process of researching and preparing a profile of the Tunisian environmental business sector. This profile will identify the current supply of and demand for private sector environmental services and products in Tunisia. It will also project the supply and demand over the next 5-10 years and identify the best long- and medium-term prospects for environmental business. A major part of this effort will be a survey of companies supplying and using environmental services and products. This effort, to be completed by the end of 1993, will be a useful input to mission projects.

Because the mission portfolio focuses on private sector development, its projects already encourage many of the linkages suggested above. Therefore, the approach chosen for linking with and involving the U.S. environmental private sector conforms to and reinforces the overall mission approach to the U.S. private sector.

ANNEX A
BASIC INFORMATION ON THE TUNISIAN ECONOMY AND ENVIRONMENT

This annex briefly summarizes the status of economic development and the environment in Tunisia. Numerous studies and reports on these subjects have been issued in recent years, a number of which are listed in the Reference Bibliography (Annex F). The purpose of this annex is only to give the interested reader a quick overview as background to the main body of the report.

A. Economic Development

A1. Agriculture

Agriculture plays a vital role in the Tunisian economy. It comprises about 15 percent of Tunisia's GDP, much less than at independence. It employs around 26 percent of the active population and ensures the country's food security. It is also responsible for regional development and the containment of rural exodus. The government regards the increase of agricultural production as one of its most important economic objectives in order to reduce food imports (mainly grain) and increase export earnings. It therefore allocated TD 2,000 million (19.2 percent of the total capital budget) under the 1987-91 Five Year Plan and provided structural measures to revitalize the sector, as well as cyclical measures to counter the results of the difficult climatic and natural conditions (drought, locust plague, etc..) which occurred during 1988 and 1989.

Annual agricultural production varies widely, due to climatic patterns, largely the irregular rainfall. The actual growth rates are always linked to the previous season's performance, such as the 27 percent growth rate recorded in 1990, which is due to the drought of 1988-1989. The growth was mainly the result of a record cereal harvest, and to a lesser extent, olive oil production and export. The major production sectors are livestock (29 percent of production), tree farming including olives (28 percent), cereals (14 percent), and fisheries (7 percent).

A2. Fishing

The fishing sector is of capital importance to Tunisia's social and economic development. The industry, which employs around 40,000 people throughout Tunisia's 43 fishing ports, is centered in Sfax where much of the catch is preserved and processed. Fishing continues to expand; the Ministry of Equipment and Housing has begun implementing plans to develop new fishing ports. Foreign aid for fisheries expansion has been obtained, and Tunisia has recently made several moves to establish transnational fishing companies by setting up joint ventures with Algeria, Mauritania, and Italy.

A3. Tourism

Tunisia is ideal for tourism with its coastline, pleasant climate, and archaeological and

cultural heritage. In fact, the industry has established itself as the single largest source of foreign exchange. It also accounts for between 4 and 5 percent of GDP and almost one quarter of exports in goods and services.

Since 1989, however, this sector has declined because of both the increased supply of touristic areas on the international market and the Gulf crisis. The government is keen to encourage further growth of tourism. The most important developments are around the coastal resorts of Sousse, Monastir, and Hammamet, although efforts are now under way to encourage greater investment in the desert regions to the south. A new investment code for tourism was introduced in early 1990, offering further incentives to local and foreign investors.

A5. Manufacturing

The manufacturing sector has been growing in significance. This sector comprises about 15 percent of GDP and generates about 69 percent of total merchandise export earnings. It employs around 336,000 people or 17 percent of the active population. The performance of the manufacturing sector is particularly important since it is relied upon to offset the reduction in the energy sector's share of exports. The manufacturing sector consists primarily of textiles, clothing, and leather industries, as well as the mechanical and electrical engineering sectors. Textiles, clothing, and leather account for around one third of capital investment.

Government efforts to attract investment from the private sector and from overseas began to yield results in 1989-1990, but the Gulf crisis dealt a sharp blow to this new investment. The government is trying to sell off many public sector companies, but this has proved to be difficult.

A6. Urbanization

The rural conditions of widespread rural unemployment, the rigorous and unpredictable climate, and inadequate health, education, and other social services have prompted steady internal migration to the cities, particularly Tunis. Urban population is estimated at 54 percent, with an average annual rate of 4.4 percent since the last population census in 1984.

Tunis, with the fastest growth rate in the country, is the undisputed economic and political capital, providing half of all non-agricultural jobs. It is also the home to a major portion of productive and social infrastructure and services. Demographers believe, however, that the growth of towns like Gabes and Gafsa reflects a change in the direction of internal rural migration. More Tunisians are moving to regional centers closer to their villages of origin, rather than to Tunis. The government is reorienting its development projects to favor regional centers in an attempt to reduce migration to Tunis.

B. Environment

B1. Industrial Pollution

Since the 1950s, the GOT has given priority to the industrial sector and Tunisia has experienced rapid industrialization. The industrial base, comprising around 30 percent of GNP, includes phosphate mining and processing, steel, textiles, and agribusiness.

Because Tunisian industry initially neglected environmental protection, industrialists' level of awareness in this area remains very low. Until the beginning of the 1970s, industrial pollution affected only one part of the southern suburbs of Tunis, which were not yet densely populated and which were devoted to industry. However, ecological ravages in certain regions such as Sfax, Gabes, and the coastal areas clarified the seriousness of the situation. Furthermore, studies of the industrial zone of Ghannouch in the Gabes region showed economic potential, including agriculture, fisheries, and tourism, had been squandered in favor of freewheeling industrialization and the associated pollution.

Since the political change in 1987, efforts have been made to set up a national strategy to gradually reduce industrial gases and wastes entering the environment. The suspension of the chemical industry in Sfax marked the beginning of the campaign to inventory forms of pollution. The Environmental Protection Agency's (ANPE) prime concerns are to conceive and set up a regulatory and financial apparatus capable of encouraging and requiring industries to transform and improve their installations.

B2. Solid Waste Management

The Ministry of Public Health has identified solid waste disposal as a public health priority. Unsanitary conditions are rife in many large urban centers as a result of rapid urbanization. Further, due to inadequate human and financial resources, there are difficulties in extending sanitation facilities to all cities and rural localities. Tourist areas also suffer solid waste problems.

Solid wastes from the city and industries have also been a concern for the Ministry of Environment and Land Development (MEAT). Current household waste treatment services consist mainly of removing wastes and dumping them in specified municipality-controlled locations, which usually lack sanitary landfills. The major problems concerning management of household solid waste occur after collection. Most dumps for household refuse are illegal with no scientific or technical bases to account for the environment; they do not operate satisfactorily.

There is very little control of hazardous wastes, some of which may be deposited illegally in municipal sewers. Of particular concern is the disposal of radioactive materials. MEAT has, however, initiated establishment of supervised dumps at administrative centers of governorates. A national cleanliness and hygiene program aims to enhance municipalities and develop a national strategy based on regional master plans for household and industrial solid waste management and disposal. The plans being developed include upgrading of household

waste collection and development of controlled landfills for clusters of municipalities.

B3. Wastewater Management

Tunisia's dry climate, high water mobilization rate, and high risks of water resource degradation make water a vital issue for the country. Optimum management of this vital resource is a priority, especially given its role in eliminating unsanitary conditions and environmental pollution, as well as in maintaining public health. Considerable infrastructure devoted to this issue has been or is being constructed.

In 1974, the GOT transferred responsibility for wastewater management from municipalities to a specially created Central National Sanitation Agency (ONAS). Since then, the quality of wastewater has gradually improved. ONAS now operates in 56 of the country's 250 municipalities, reaching 65 percent of the population. The coastal regions and large cities receive the major benefits of the wastewater infrastructure (particularly construction of treatment plants). ONAS intends to increase the number of treatment plants and plans to implement wastewater treatment projects for small municipalities. At present, individual families or clusters of families carry out wastewater disposal in areas not served by ONAS. These arrangements create severe problems since they pollute water tables or waterways, particularly in spontaneous settlements.

B4. Coastal Zone Management

Protection of the marine environment and the coastal fringe is important not only for the fishing sector but for tourism. Unfortunately, Tunisia's coastline, which is characterized by intensive tourist activities, is suffering from both natural and manmade problems. The coastline is naturally regressing, a condition compounded by extraction industries depositing sediment on the beaches. Uncontrolled use of coastal land and abuse of fisheries resources are the major sources of damage. Water plant communities are also suffering from alarming deterioration due to industrial pollution, both urban and maritime. The sea contains bacteriological pollution from household wastewater discharges associated with urban growth and tourism. Open beaches are relatively clean compared to bays, creeks, and lagoons. Overall, however, the bacteriological quality of water along the coast is acceptable.

Existing environmental projects are primarily designed to reinforce and set up filtration plants in tourist areas that are already extensively developed or areas expected to expand in the next decade, such as Mahdia and Tabarka. Another anticipated project is the equipping of five ports to combat hydrocarbon pollution, such as Jerba and Hammamet. At present, no ports are adequately equipped to combat pollution, even on a small scale.

B5. Desertification

Given a climate that includes constant dryness, frequent strong winds, and torrential rainfall, Tunisia's ecosystems are naturally fragile. Furthermore, soil resources are constantly being degraded through erosion and desert encroachment due to a combination of natural and man-made causes. Desertification in the center and south is advancing rapidly

because of wind erosion and, to a lesser extent, water erosion and increased soil salinity. The resulting change leads to an irreversible reduction of vegetation which leads to topsoil erosion, resulting in a desert-like landscape. Desertification results in the loss of 8,000 ha of relatively productive land each year.

Compounding this natural deterioration is the excessive or poorly controlled use of land. In fact, a major cause of desertification is poor land management as seen, for example, in the rangelands where vast areas are used for grain production each year and left barren without protection during drought. Excessive grazing also results in irreparable damage. Furthermore, entire forests have disappeared, mainly because they are used as a source of firewood. Reforestation and forest preservation absorb the majority of credits allocated by the Ministry of Agriculture for the environment, and prevention of desert encroachment is the GOT's oldest and most sustained program of environmental activity.

ANNEX B
THE TUNISIAN ENVIRONMENTAL
LEGISLATIVE AND REGULATORY FRAMEWORK

The Tunisian environmental legislative and regulatory framework can be generally characterized as follows:

- A cohesive integrated legal framework for environmental protection has yet to be developed.
- Environmental responsibilities are spread among a wide range of agencies.
- Environmental legislation is only partially applied and enforced.

However, recent developments hold promise for an improved legal and regulatory framework, a more coherent environmental institutional framework, and as a result improved environmental management.

A. The Legislative and Regulatory Framework

Tunisia's "environmental code" is embodied in a wide range of legal texts covering generally unrelated laws, regulations, decrees, and other types of legal decisions. As a result Tunisian environmental law has little consistency or cohesion and many gaps and overlaps. Other problems in the country's environmental law include outdated standards and regulations; a set of standards and regulations relating to water pollution only; and inadequate coverage in areas that are covered by laws and regulations, such as water management and historical sites management. Tunisian environmental laws can be collected into three broad categories: protection of the natural environment, protection of human settlements, and pollution control.

A1. Protection of the Natural Environment

- Forestry land is protected by the *Forestry Code*, originally promulgated in 1966. The code was revised in 1988 to incorporate environmental protection concerns. At the time it was revised, additional legislation was completed and updated governing the related areas of hunting, flora and fauna protection, and humid zone management, in accordance with relevant international conventions to which Tunisia is a signatory.
- Agricultural land protection is covered under a law passed in 1983 that governs management of land that is, has the potential to be, or is capable of being farmed or used as rangelands or forests.
- Inland waterways are governed by a number of different laws, the most important of which is the *Water Code* (1975). Among other measures, this code includes a

series of prohibitions on pollution of surface water and underground water. It also includes general provisions on urban wastewater treatment and individual sanitation, as well as stipulations on the general conditions (specified by decree in 1985) governing the discharge of substances into the environment. The *Water Code* was backed up by adoption of four official Tunisian water quality standards, and (in 1988) the Tunisian standard governing discharge of effluents into the environment. A *Revised Water Code* is now being drafted. The new version will place greater emphasis on protection of the marine environment and its living resources.

A2. Protection of Human Settlements

Over the years a series of legal provisions have also been introduced to protect Tunisia's archeological and cultural heritage. The most recent and major of these is a 1986 law on protection of archeological resources, monuments, and natural and urban sites. The *Urban Code* (1979) and four procedural documents (1980) govern urban development. Despite the code, lack of actual controls has resulted in continued expansion of spontaneous settlements on agricultural land near urban centers.

A3. Pollution Control

Pollution is governed by various laws and regulations that deal primarily with:

- Waste, with a number of provisions on specific products such as the decree governing the recovery of used motor oil.
- Classified establishments, the monitoring and supervision of which are governed by a chapter of the labor legislation.
- Chemicals, covered only by a 1961 law governing the sale and use of pesticides for agricultural purposes.
- Noise levels, subject to both national and local regulations.
- Ionizing radiation, protection from which is covered by three different laws governing matters such as the possession of sources of radiation and general principles and conditions for protecting against exposure to ionizing rays.
- Urban environment, covered in part by laws such as those mentioned above and in part by the *Municipalities Law* (1975, revised 1985), which delegates powers for protection of the municipal environment to Presidents of Municipal Councils.

B. Agencies Involved and Enforcement

As implied by the foregoing, numerous Tunisian government agencies with differing concerns and responsibilities handle environmental matters. There is virtually no coordination

among them on environmental protection. The Ministries of Agriculture, Defense, Interior, Public Works, Public Health, and Economics and Finance all have units of different types and at different administrative levels with environmental responsibilities.

Due partly to the fragmented and uncoordinated legislation and institutional environmental responsibilities, existing laws and regulations are only partially applied, and when applied, only partially enforced. Lack of application and enforcement is also a consequence of inadequate staff and funding; the liberal waiver authority under many laws; and the common reference in laws to implementing decrees that are slow to be developed or simply never issued. Moreover, many environmental laws use the word "may" with regard to action to be taken by government authorities, in effect giving those authorities discretion to act rather than compelling them to act.

C. Recent Changes

In recent years the GOT has developed a National Environmental Protection Strategy (NEPS) and an Action Plan for Environmental Protection (APEP). NEPS and APEP have been translated in part into specific programs and projects in Tunisia's Eighth Five Year Economic and Social Development Plan (1992/1996), and were presented to the international donor community and discussed at the 1992 UN Conference on Environment and Development in Rio de Janeiro, Brazil. A National Agency for the Protection of the Environment (ANPE), created in 1988, developed the APEP. In 1991 the Ministry of Environment and Land Use Planning was established to span ANPE, the National Office of Wastewater (ONAS), and other environmental concerns. These represent significant first steps toward coordinating the legal and enforcement aspects of environmental protection.

ANNEX C
ILLUSTRATIVE STATEMENTS OF WORK

Following are three abbreviated statements of work for PSDE Strategy elements identified in Section II: Assist the GOT to Formulate Pollution Prevention Legislation and Regulations (#8); Feasibility Study and Plan for a Demonstration Project of Privatizing Solid Waste Management in Smaller Municipalities (#11); and Training of Trainers to Train Senior Plant Managers in Total Environmental Accounting (#27). Included also is a discussion of the conditions that make Tunisia an ideal site for an EP3 Country Support Program. The three abbreviated statements of work represent a variety that can be used as models for others; in addition, the three PSDE Strategy elements used as illustrations are designated high priority for near term implementation (see Section III), and so the guidance presented here can be put to immediate use. The material related to EP3 can be used to promote an EP3 Country Support Program in Tunisia that could encompass many of the PSDE Strategy actionable elements.

A. Help GOT Formulate Pollution Prevention Legislation and Regulations (#8)

A1. Objective

This element will help the GOT study a variety of ways to encourage and support pollution prevention and clean technology use in urban and industrial applications. It will provide sample legislation and regulations from other countries along with analyses of the impacts of these approaches. Finally, it will help the GOT decide the course it wishes to follow and will provide continuing technical assistance for implementation.

A2. Related Projects

The principal technical and financial support for this PSDE Strategy element could be provided through the centrally funded PRIDE, EPAT, or EP3. PRIDE has already provided general environmental legislation and regulation development help to Egypt and Jordan. Because of the GOT's urgent need for this type of assistance, another possible source for this element might be DSP funding.

A3. Scope of Work

The work has four basic tasks:

- Consolidate information on international pollution prevention and clean technology legislation and regulation.
- Work with GOT to analyze existing legislation, regulatory code and enforcement/incentive systems; evaluate adequacy; and identify changes needed.
- Recommend specific changes to and additions in the current system.

- Continue assistance to GOT to develop and implement the selected initiatives.

A4. Timing, LOE, and Staffing

The first three tasks can be accomplished in four months and the remaining task could take up to another six months. If PRIDE or EPAT were used to perform this work, the activity could start immediately. EP3 is not likely to be ready to perform this type of work for at least a year. The LOE required for this strategy element would be approximately eight person-months. This assumes that two professionals working together provide the technical assistance.

One expert should understand environmental legal systems based on the French Code and environmental and pollution prevention legislation and regulation development and application. The second expert, to be used less extensively, should understand the details of private sector needs to rapidly adopt pollution prevention and clean technology in place of end-of-pipe treatment. Much of the early work in task 1 can be performed in the United States.

A5. Immediate Actions for the Mission

Even though this element is a high priority for near term implementation that closely supports the privatization process, it cannot be funded through the PEP project as currently formulated, nor through other mission projects. Therefore, the first immediate action for the mission is to secure funding through the DSP, for which it is an ideal activity.

Mission management should determine how this type of activity fits into the priorities for actions to be taken under the PSDE Strategy. Because it is the foundation for much of what the GOT and the PSDE Strategy propose, it is likely to be high on the priority list. It would also be helpful to work with the NE Bureau to determine what central project assistance can be mobilized.

A6. Local Counterparts

The logical counterparts would be the MEAT and the ANPE. A representative of UTICA and ATPNE might also be included in selected activities under this strategy element.

B. Feasibility Study and Plan for Demonstration on Privatizing Solid Waste Management in Smaller Municipalities (#11)

Note: PSDE Strategy element #11 also refers to wastewater management, and some of what is described below would apply for privatizing wastewater management as well. Generally, however, a feasibility study and plan for a wastewater management pilot project would be rather different in nature and would have to be carried out separately.

B1. Objective

The aim of the study and plan is to examine the feasibility of and develop a plan for a pilot project to:

- Demonstrate the feasibility of privatizing integrated solid waste management services in smaller municipalities.
- Improve the delivery of solid waste services by incorporating user fees and other private financing mechanisms.
- Incorporate reduction, reuse, recycling, and appropriate disposal technologies in the demonstration project; and) develop and test a model that would be replicable in other smaller Tunisian municipalities.

B2. Relationship to Mission Strategy

This feasibility study and pilot project plan addresses the strategy of the proposed Private Provision of Environmental Services (PPES) project. PPES proposes to support the GOT by improving urban environmental services through increased involvement of the private sector. PPES assists low-income households affected by the inadequate supply of urban environmental infrastructure. This PSDE Strategy element is also consistent with the mission's overall goal to support private sector development.

B3. Scope of Work

This strategy element has 11 basic tasks:

- Select the pilot municipality. Working with the GOT, the mission staff identify potential model municipalities.
- Identify potential solid waste service providers.
- Design an integrated solid waste management system that includes collecting, processing, recycling, composting, disposal, and market infrastructure for recycling.
- Design an educational program that addresses litter control, recycling, and disposal.
- Develop the necessary regulatory and enforcement program to implement an integrated solid waste management program.
- Develop costs for implementing the integrated solid waste management program.
- Develop financing alternatives for funding the solid waste management system.

- Develop contract vehicles for the delivery of the solid waste collection, recycling, and disposal services.
- Draft the feasibility study and pilot project plan.
- Review the plan with the municipality, the GOT, the mission, and other parties, including the public.
- Finalize the plan and assist with first implementation steps.

B4. Timing, LOE, and Staffing

The 11 tasks can be accomplished in 12 months. This activity would begin upon approval of the PPES project. It is anticipated that the feasibility and pilot project plan will be undertaken using PPES grant funds, pro bono services from the major packaging and product industries, and GOT resources. The feasibility study and pilot project plan would require a LOE of 18 person-months accomplished over a 12-month period.

Once the feasibility study and pilot project plan is completed, PPES HG funds could be used to provide the capital to develop the infrastructure for the low-income portion of the collection processing, recycling, and disposal systems.

Staffing required would include experts in solid waste management including collection, recycling, and disposal technologies (LOE: 12 months); education/curriculum development experts with knowledge of Arabic and French (LOE: four person-months); and expertise in developing legislation and regulations (LOE: four person-months). Local environmental consulting firms would be used wherever possible so as to transfer the process of developing an integrated solid waste management system to the host country

C. Immediate Actions for the Mission

Incorporate this PSDE Strategy element into the PPES PID. Mission staff could begin identifying GOT, institutional, municipal, and private sector participants in the initiative and developing its outlines further so they could move quickly should funding become available.

- Training of Trainers to Train Senior Plant Managers in Total Environmental Accounting (#27)

C1. Objectives

This PSDE Strategy element will ultimately result in the transfer to industry of the approach and procedures used in industrial process and product total environmental accounting. It will lead to demonstrating to senior plant managers that each raw material, waste emission, and product has an environmental cost that must be recognized and built into industrial operating and cost accounting. It will also demonstrate the real and comparative costs, benefits and pay-back periods of typical end-of-pipe treatment, reclamation/recycling,

pollution prevention, and clean technology applications. Finally, it will deliver materials and transfer technical and training skills to others in Tunisia who can continue to offer the training.

C2. Related Projects

This PSDE Strategy element fits into the Training Institutions component of the MTPS project. However, funding for this activity could also be provided through the centrally funded PRIDE or EP3 projects. PRIDE and WEC, a key component of PRIDE, are working together in other countries to deliver courses related to the subject area. They are also developing French language training materials. When EP3 is underway, it could also develop, offer, and transfer this training course. It would be possible to combine resources from both central and mission projects to develop a training program that would both meet the requirements for Tunisia and be useable in other countries.

C3. Scope of Work

This PSDE Strategy element entails seven basic tasks:

- Develop a preliminary course outline, prospectus, and materials.
- Identify the universe of trainees and training organizations.
- Complete materials with local training group participation.
- Present a pilot training program using expatriate trainers.
- Evaluate the pilot experience and modify the training program accordingly.
- Conduct a second training program using both expatriate and local trainers.
- Present course using all local trainers.

C4. Timing, LOE, and Staffing

The seven tasks can be accomplished in six months. If PRIDE/WEC were used to perform this work, the activity could start immediately and it might be possible to have some of the level of effort provided through pro bono services from WEC consultants. It is likely that EP3 will not be ready to perform this type of work for at least one year. The LOE required for this strategy element is approximately eight person-months.

The specialists required are a total environmental accounting specialist, a training materials preparation specialist, and two trainers, at least one of whom must be knowledgeable in total environmental accounting and the other in industrial operations. Both trainers must speak French, and at least one should be familiar with Tunisia, its economy, and its accounting procedures.

C5. Immediate Actions for the Mission

This PSDE Strategy element should be programmed as an early activity under the MTPS project. It would also be helpful to work with the NE Bureau to attempt to mobilize PRIDE and/or EP3 resources.

C6. Local Counterparts

Because the training materials will be transferred to one or more local training organizations, it is important to identify candidates as early as possible. The design of the MTPS project and the ongoing PRIDE private sector profile development process have identified candidate private sector firms that can act as counterparts and provide training services.

D. EP3 Country Support Program

Tunisia is uniquely positioned for the introduction of pollution prevention concepts and technologies. The GOT is committed to environmental restoration and protection, and reduction of industrial pollution through pollution prevention and control. The GOT has instituted strong environmental legislation, particularly in the area of water quality, and requires that new and expanding industries prepare Environmental Impact Statements. In addition, it is trying to build a policy and regulatory structure based on the "polluter pays" principle and is beginning to enforce water quality and pre-treatment requirements. Both the GOT and Tunisian industry have recognized the benefits of environmental protection to support a healthy economy.

Tunisia possesses an important industrial base which accounts for 30 percent of GNP. The major industries are phosphate mining and processing, steel, textiles, food processing, metal finishing, and tanneries, which include four of the five EP3 priority target industry categories. The majority of heavily polluting industrial facilities are concentrated in the regions of Tunis, Bizerte, Sousse Mahdia, Sfax, Gabes, and Gafsa. These industry "hot spots" would be prime targets for EP3.

Tunisia has a good base of environmental institutions that could support a pollution prevention center, including the following:

- Institut Régional des Sciences Informatiques et des Télécommunications (IRSIT), was established using USAID/Tunisia funding and operated as a quasi-public organization. IRSIT maintains a major communications and computer network with the ability to access international networks and translate from English to Arabic or French. IRSIT also has expertise in Integrated Information Systems, using Geographic Information Systems (GIS) for land analysis and urban management projects. IRSIT maintains relations with universities and industrial and research centers worldwide.
- Laboratoire Régional des Sciences de l'Environnement (LARSEN), located in

Sfax, provides pollution testing, research, and experimentation services to area industries.

- Union Tunisienne de l'Industrie du Commerce et de L'Artisanat (UTICA) is a federation of major industry associations. It includes chemical manufacturers, tanneries, metal processors, and other industry groups.

Tunisia has a growing environmental movement centered around Association Tunisienne pour la Protection de la Nature et de l'Environnement (ATPNE). ATPNE is a member-supported NGO that, among other things, works as an industry watchdog by reviewing development projects and working with the government environmental and development laws and regulations.

As described in the EP3 Project Paper, an EP3 Country Support Program in Tunisia would promote pollution prevention and cleaner production primarily by:

- Providing a broad range of technical assistance, training, and information services for environmental awareness and pollution prevention at the plant, industry category, and national levels.
- Strengthening and expanding in-country sources of technical expertise for pollution prevention, including establishing national programs of pollution prevention training, information, and technical assistance.
- Identifying, promoting, and expanding sources of financing for pollution prevention technology, and creating linkages between Tunisian firms and agencies and U.S. suppliers of pollution prevention expertise and equipment.
- Helping to improve national environmental policies, laws, regulations, and their implementing institutions so as to expand incentives for cleaner production.

ANNEX D
RELATED CENTRALLY FUNDED AID PROJECTS

The following pages contain tables entitled the Overview and Description of Centrally Funded Projects.

Overview of Centrally Funded Projects

PROJECT	NUMBER	PACD	CORE	BUY-IN	EXPERIENCE
Coastal Resources Management (CRM)	936-5518	1995	13.8M	7.0M	Asia, LAC
Conservation of Biological Diversity (CBD)	936-5554	1997	11.6M	18.4M	Asia, LAC, Africa, NE, Europe
Environmental and Natural Resources Policy and Training (EPAT)	936-5555	2001	35.5M	35.5M	Asia, LAC, Africa, NE, NIS
Environmental Planning and Management (EPM)	936-5517	1994	20.6M	9.0M	Asia, LAC, Africa, NE
Environmental Planning and Management II (EPM II)	936-5562	2003	20.0M	10.0M	Asia, LAC, Africa, NE, Europe, NIS
Environmental Pollution Prevention Program (EP3)	936-5559	1997	<20M	?	LAC, Asia
Forest Resources Management II	936-5556	2000	30.0M	15.0M	Asia, LAC, Africa, NE, Europe, NIS
Forestry/Fuelwood Research and Development	936-5547	1995	35.0M	5.0M	Asia, Africa
Environmental Education and Communication (GREENCOM)	936-5839	2001	10.2M	14.3M	N/A
Water and Sanitation for Health (WASH III)	936-5973	1993	12.3M	12.3M	Services in over 60 countries
Irrigation Support Project for Asia and the Near East (ISPAN)	398-0298	1994	13.0M	13.0M	Asia
Project in Development and The Environment (PRIDE)	398-0365	1995	6.0M	8.0M	NE

Description of Centrally Funded Projects

PROJECT	PROJECT DESCRIPTION	AGREEMENTS	PROJECT OFFICER
(936-5518) Coastal Resources Management	<p>The CRM project aims to strengthen the capacity of public/private institutions to manage coastal resources more efficiently, with emphasis on regional planning.</p> <p>Inputs:</p> <ul style="list-style-type: none"> • Technical assistance • Education and training 	University of Rhode Island	<p>R&D/ENR:</p> <p>John Wilson Mike Philley (703) 875-4539</p> <p>Director: Stephen Olsen (URI) (401) 792-6224</p>
(936-5554) Conservation of Biological Diversity	<p>The CBD project goal is to improve the capacities of developing countries to identify the need and economic potential of conserving/managing biological resources.</p> <p>Inputs:</p> <ul style="list-style-type: none"> • Technical assistance • Biodiversity research • Training • Information and evaluation network of conservation activities <p>CBD is implemented through the Biodiversity Support Program (BSP)</p>	<p>BSP Consortium</p> <ul style="list-style-type: none"> • World Wildlife Fund • The Nature Conservancy • World Resources Institute 	<p>R&D/ENR:</p> <p>Sy Sohmer (703) 875-4669</p> <p>BSP Director: Kathy Saterson (202) 861-8330</p>

D-3

<p>(936-5555) Environmental and Natural Resources Policy and Training (EPAT)</p>	<p>EPAT aims to assist policy makers in LDCs to recognize the strong relationship between economic policies and environmentally sustainable development. Special areas of implementation are policy analysis, institution strengthening, workshops/seminars.</p> <p>Inputs:</p> <ul style="list-style-type: none"> • Technical assistance (Winrock International) • Economic policy research (MUCIA) 	<p>Winrock International MUCIA</p>	<p>R&D/ENR: Russ Mischeloff (703) 875-4046</p> <p>Directors: Stan Peabody (Winrock) (703) 525-9340</p> <p>Will Chandler (MUCIA) (703) 841-0026</p>
<p>(936-5517) Environmental Planning and Management (EPM)</p>	<p>The EPM goal is to strengthen environmental planning through better management and conservation of natural resources in LDCs. EPM has identified its components as: Developing NRM strategies and assessments, NGO support, NRM data management, and sustainable agriculture.</p> <p>Inputs:</p> <ul style="list-style-type: none"> • Technical assistance • Resource policy research 	<p>World Resources Institute (WRI)</p>	<p>R&D/ENR: John Wilson (703) 875-4539</p> <p>Cooperator: Walter Arensberg (WRI) (202) 638-6300</p>
<p>(936-5562) Environmental Planning and Management (EPM II)</p>	<p>EPM II will continue implementation of EPM's goals. The main components continue to be those of EPM.</p> <p>Inputs:</p> <ul style="list-style-type: none"> • Technical assistance • Resource policy research 	<p>WRI</p>	<p>See EPM</p>

<p>(936-5559) Environmental Pollution Prevention Program (EP3)</p>	<p>EP3 provides technical field support in industrial pollution, prevention and control. Main components are:</p> <ul style="list-style-type: none"> • Pollution prevention audits • National cleaner technologies programs • Investment promotion • Pollution prevention training <p>Inputs:</p> <ul style="list-style-type: none"> • Technical assistance • Training 	<p>Main Contractor (TBD)</p> <p>PASA/RSAA: USEPA</p>	<p>R&D/ENR: Dan Deely (703) 575-4323</p> <p>Cooperator: Jim Gallup USEPA (703) 875-4323</p>
<p>(936-5556) Forest Resource Management II</p>	<p>FRM II was designed to strengthen the capacity of forestry and natural resources institutions in LDCs through private/public sector initiatives. Main components are:</p> <ul style="list-style-type: none"> • Forestry Support Program (FSP) • Private sector development through Southwestern Center for Forest Economics Research (SCFER) and AID/PRE <p>Inputs:</p> <ul style="list-style-type: none"> • Technical assistance • Training (ST) 	<p>USDA/FS SCFER USDA/OICD Peace Corps</p>	<p>R&D/ENR: Carl Gallegos (703) 875-4062</p> <p>Cooperators: Gary Wetterberg (USDA/FS)</p> <p>Bruce Crosan (USDA/OICD)</p> <p>George Mahaffy (Peace Corps)</p>
<p>(936-5547) Forestry/Fuelwood Research and Development (F/FRED)</p>	<p>The project goal is to enhance forestry/fuelwood and agroforestry in LDCs.</p> <p>Inputs:</p> <ul style="list-style-type: none"> • Regional research support • Database development • Training • Technical assistance 	<p>Winrock International</p>	<p>R&D/ENR: Ian Morrison (703) 875-4076</p> <p>Cooperator: Thomas Niblock (703) 525-9430</p>

<p>(936-5839) Environmental Education and Communication Project (GREENCOM)</p>	<p>GREENCOM is designed to provide communications and education support for AID environmental objectives by promoting public awareness and support for new environmental policies and practices.</p> <p>Inputs:</p> <ul style="list-style-type: none"> • Research and development • Technical assistance • Training 	<p>Core and Q contracts have not been awarded.</p>	<p>R&D/ED: Tony Meyer (703) 875-4782</p>
<p>(936-5973) Water and Sanitation for Health (WASH II)</p>	<p>The project aims to provide technical assistance, services and information in urban and rural water supply and sanitation to directly support the prevention of water-borne disease. (TA, TR, R, IN)</p>	<p>Camp Dresser & McKee International, Inc.; Associates in Rural Development Inc.; International Science and Technology Institute, Inc.; Research Triangle Institute; Training Resources Group; University of North Carolina at Chapel Hill; University Research Corporation</p>	<p>R&D/H/CD: Julie Klement (703) 875-4477</p>

<p>(398-0298) Irrigation Support Project for Asia and the Near East (ISPAN)</p>	<p>The purpose of this project is to provide assistance in water resources management and to examine broad regional policy and strategic issues and trends in water resources management. (TA, TR, R, IN)</p>	<p>Camp Dresser & McKee International, Inc.; Care; Cornell University; Development Alternatives Inc.; Harza Engineering Co.; International Science and Technology Institute, Inc.; Training Resources Group; University of Arizona</p>	<p>Asia DR/TR: Tim Martin <i>Miller</i> (202) 647-0915 (NE/DR/TR): Herb Blank (202) 663-2460</p>
<p>(398-0365) Project in Development and the Environment (PRIDE)</p>	<p>This project offers technical, analytical, and informational support for the AID objectives of fostering ENR management consistent with sustainable economic growth.</p>	<p>Prime: Chemonics International Subcontractors: Science Applications International Corp.; Resource Management International; Lincoln University; Capital Systems Group, Inc.; RGG/Hagler, Bailly, Incorporated; Environomics, Inc.; Industrial Economics</p>	<p>NE/DR/ENR: Dwight Walker (202) 663-2493</p>

ANNEX E
IMPROVING SOLID WASTE MANAGEMENT IN TUNISIA

Following are suggestions for improving collection, recycling, and disposal of solid waste in Tunisia. These suggestions are based on limited observations and discussions with GOT personnel over a two-and-a-half week period, and do not reflect the conclusions of a thorough study.

A. Collection

- Most municipal collection, where it exists in Tunisia, is done on a daily basis. Weekly pickup should be explored to improve efficiencies by, reducing truck use and mileage, for example.
- Explore improved residential trash receptacles.
- Explore better use of dumpsters to facilitate convenient disposal for residents in densely populated areas.

B. Recycling

B1. Develop Markets for Recycling

Quality of material going to markets (limited recycling markets) seems poor, because material is being scavenged from dumps and no uniform procedures or programs for collecting recyclable are in place. Materials, therefore, have low market value.

A major industrial development initiative could be explored in the following areas:

- Scrap metal: Scrap metal uses around the country should be studied and inventoried. Collected scrap could then be directed to those markets. Markets and collectors could be brought together in a systematic manner, which would improve financial aspects and allow for new companies to enter the market.
- Plastic sorting, cleaning, and grinding: Many firms within Tunisia are using imported plastic resin, mainly from Saudi Arabia and Europe, to make plastic products in-country. It may be appropriate for companies to buy recycled plastics from Tunisian reclaimers, and then grind, clean, and pelletize the plastic for sale to the in-country plastic industries.
- Newspaper: The newspaper mills in Tunisia are highly polluting and need major overhaul. The country also lacks large amounts of fiber. Therefore, the possibility of developing a de-inking mill that could be furnished by in-country newspapers and/or inexpensive waste newspaper from the EEC should be investigated.

- **Scavenger network:** Tunisia has a relatively large scavenger network for industry materials like corrugated (cardboard boxes) and scrap metal. It may be appropriate to work with this network to help organize it into a more efficient system. The benefits could include better quality control, which would lead to higher market value for materials.
- **Packaging and product manufacturers:** Tunisia's solid waste strategy includes increasing the responsibility of package and product manufacturers in the area of solid waste management, though nothing yet has been accomplished.

B2. Improve Design of Packaging of Cans

Soft drink cans are presently made of steel and use flip-top lids. These heavy-gauge cans are an inefficient use of the resource. Also, the market for this material is very limited as compared to aluminum. Further, the flip-top can, compared to the international standard push-top, creates a litter problem which is especially problematic in beach and resort communities. The industry should be questioned about possibly modifying this container.

- Large amounts of PVC in the plastic container stream may cause a problem in any collection program initiated for PET soft drink containers.
- There are large quantities of refillable and returnable containers on the Tunisian market (for water, soft drinks, and beer), but in the last two years, one-way containers have made a major inroad. Government and industry should investigate mechanisms to retain the reusable and refillable market share. The use of the plastic refillable containers that are now being used in Europe should be investigated.

Industry should be asked for assistance in developing pilot collection and recycling programs for their products.

The GOT needs to explore mechanisms through which the packaging and product industry would take greater responsibility for its packaging and products by internalizing the cost of collection, disposal, and recycling. Countries throughout the world are investigating mechanisms to share the cost of waste management with industry. Countries to look at include the United States (state governments), Germany, Canada, and other EEC countries.

The GOT and municipalities need to investigate mechanisms for charging residents for disposal, based on the amount of material they produce. This will lead to source reduction.

Municipalities and the GOT need to investigate the use of composting to address the food waste portion of the waste stream. Observations indicate this component is fairly large.

Public education programs are needed on litter control, recycling, and enforcement of dumping laws. The packaging and product industry should work with the GOT to develop and fund this program.

C. Control Landfills (dumps)

- Prohibit burning at dump facilities.
- Implement controls on existing facility operations, including site cover requirements.
- Enforce national standards for facility operations, including site cover requirements.
- Increase enforcement against illegal dumping and littering.
- Prevent hazardous waste from mixing with non-hazardous industrial and residential waste.

ANNEX F
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ANNEX G
USAID/TUNISIA PRISM PROGRAM OBJECTIVE TREE

