

FINAL REPORT

**ENVIRONMENTAL REVIEW OF ELIGIBLE EXPENDITURES
UNDER THE PRIVATE PARTICIPATION IN
ENVIRONMENTAL SERVICES
HOUSING GUARANTY PROGRAM**

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By

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LIST OF ACRONYMS AND ABBREVIATIONS

ANPE	National Environmental Protection Agency (<i>Agence Nationale de Protection de l'Environnement</i>)
APAL	Agency for Protection and Development of Coastal Areas (<i>Agence de Protection et d'Aménagement du Littoral</i>)
ARRU	Agency for Urban Rehabilitation and Renovation (<i>Agence pour la Réhabilitation et la Rénovation Urbaines</i>)
CGDR	General Commission for Regional Development (<i>Commissariat Général de Développement Régional</i>)
CITET	International Center for Environmental Technology in Tunis (<i>Centre International des Technologies de l'Environnement de Tunis</i>)
CNE	National Commission for the Environment (<i>Commission Nationale de l'Environnement</i>)
CPSCCL	Local Government Loan & Support Fund (<i>Caisse des Prêts et de Soutien aux Collectivités Locales</i>)
DGCPL	Direction Générale des Collectivités Publiques Locales
EIA	Environmental Impact Assessment
GOT	Government of Tunisia
GTZ	German technical cooperation agency (<i>Gesellschaft für Technische Zusammenarbeit</i>)
HG	Housing Guaranty
MEAT	Ministry of Environment and Land Use Planning (<i>Ministère de l'Environnement et de l'Aménagement du Territoire</i>)
METAP	Mediterranean Environmental Technical Assistance Program
MDE	Ministry of Economic Development (<i>Ministère du Développement Économique</i>)
MEH	Ministry of Public Works and Housing (<i>Ministère de l'Équipement et de l'Habitat</i>)
ONAS	National Sanitation Agency (<i>Office National d'Assainissement</i>)
PNAQP	National Sanitation Project for Low-Income Neighborhoods (<i>Projet National d'Assainissement des Quartiers Populaires</i>)
PNRQP	National Project for Rehabilitation of Low-Income Neighborhoods (<i>Projet National de Réhabilitation des Quartiers Populaires</i>)
PPES	Private Participation in Environmental Services Program (<i>Programme de Participation du Secteur Privé dans les Services Environnementaux</i>)
STEP	Treatment plant (<i>Station d'épuration</i>)
UNCHS	United Nations Center for Human Settlements

ABSTRACT

This environmental review of eligible expenditures under the Housing Guaranty-V (HG-V) program is funded by USAID and has been carried out by ICMA consultant Fadhel Ghariani under the Municipal Development and Management Project. It covered a sample of 37 projects, using the environmental impact checklist. The main conclusion is that on the whole these projects are not having serious adverse impacts on the environment. In a few cases harmful effects on the environment have been found but they are limited in scope, usually temporary, and reversible. In almost all cases, measures have been taken to mitigate or attenuate them.

EXECUTIVE SUMMARY

This environmental review of eligible expenditures under the Housing Guaranty-V (HG-V) program covers the procedures followed by the Tunisian agencies concerned and their capacity for carrying out environmental assessments. A sample of 37 projects, costing a total of approximately 20 million Tunisian dinars, was studied using the statement of environmental impact, an instrument developed with assistance from USAID.

The main conclusion drawn from this review is, as expected, that on the whole these projects are not having serious adverse impacts on the environment. However, there are a few cases in which neighborhood living conditions have been improved at the expense of harmful effects on the natural environment. Fortunately, these harmful effects are limited in scope, they are usually temporary, and their impact is reversible. In almost all cases, steps have been taken to mitigate or attenuate them.

The institutional framework for environmental protection in Tunisia has been set up gradually over the last decade. At present, it comprises chiefly the following bodies:

the Ministry of Environment and Land Use Planning, created in November 1991
the National Environmental Protection Agency (ANPE), created in August 1988
the Agency for Protection and Development of Coastal Areas (APAL), created in 1995
the International Center for Environmental Technology in Tunis (CITET), created in 1996
the National Commission for Sustainable Development, created in October 1993
the National Commission for the Environment (CNE), created in 1978

Tunisia has both public- and private-sector institutional capabilities for environmental impact assessment (EIA). The main public agencies involved—ANPE, the National Sanitation Agency (ONAS), the Agency for Urban Rehabilitation and Renovation (ARRU), and the Local Government Loan & Support Fund (CPSCL)—have the human resources and skills necessary to follow up on EIAs. The private sector also possesses appreciable capabilities in assessing environmental impacts. International consulting firms are brought in for certain specialized studies; they usually work in association with local firms. A number of training activities have been undertaken, at the initiative of the public agencies, to further strengthen capabilities in the public and private sectors.

Three national programs received HG-V funds:

the National Sanitation Project for Low-Income Neighborhoods (PNAQP), implemented by ONAS

- the National Project for Rehabilitation of Low-Income Neighborhoods (PNRQP), implemented by ARRU
- the PDUI, implemented by the General Commission for Regional Development (CGDR).

There is neither a formal framework for the EIA nor any clear regulatory obligation to do

it for projects funded by eligible expenditures of the HG-V program, most of which involve urban rehabilitation. Considerations of an environmental nature were nonetheless taken into account in identifying and designing the projects. The PNAQP projects are undertaken following a feasibility study, and on the basis of identification forms that include environment-related indicators. For PNRQP rehabilitation projects, the terms of reference for the studies provided for the drafting of a preliminary report including a brief statement of project impact on the environment.

EIAs are governed in Tunisia chiefly by decree #91-362, but there is some ambiguity as to its application in the case of urban rehabilitation projects.

Following the recommendations of the first annual review of the Private Participation in Environmental Services (PPES) Program, carried out in 1994, a new instrument was developed with the assistance of USAID and the active involvement of the main agencies concerned. It consists of a short checklist, designed specifically for rehabilitation projects and called the “statement of environmental impact assessment of urban rehabilitation projects” (see Appendix C for a sample). A procedure for its use was recommended during a training seminar held in 1996 to disseminate this new instrument.

While regulations do not yet exist to make use of the impact statement mandatory, the instrument has been adopted by the main agencies involved as follows:

The CPSCL has published a new version of the practical guide to local government investment projects (June 1997). This new guide, which has been in force since January 1998, stipulates that the results of the environmental assessment of a project are among the general criteria for project approval. The guide provides that an impact statement be done for all infrastructure, using the verification checklist drawn up under HG-V.

ONAS and the funding agency for the third sanitation project for low-income neighborhoods have agreed that the assessment of project impact on the environment will be made using the verification checklist prepared under the HG-V.

The ARRU has incorporated the statement of environmental impact into the terms of reference for urban rehabilitation studies.

Key Findings

This review was done in part by applying the statement of environmental impact to a sampling of 37 neighborhoods selected in agreement with the agencies concerned. Of these, 28 belong to the PNAQP, eight are in the PNRQP, and one is part of the PDUI. The total number of participant households is 34,167, and the total cost of the works involved is 19,821,000 dinars. These works were effected during 1993–1997. Their geographical distribution covers all regions, to allow for possible region-specific features. Large cities were given priority, since it is in these that the effects are most perceptible. The key findings of the review were:

Impacts during construction are relatively slight, and are related primarily to the stirring up of dust and to the noise created by heavy machinery. Another factor that sometimes arises is the abandonment, in or around the neighborhood, of unused, damaged pipes, which are unsightly.

Impacts following project completion revealed by the checklists were the following:

18 cases with no special negative impact or with positive impact;
11 cases of untreated wastewater discharge into the environment, including 5 that will last for more than 2 years and 6 that will last for a shorter time;
9 cases of proximity to a sensitive area (lake, sebkha, or other) or modification of an oued (dry riverbed).

It should be emphasized that the 18 cases with no special negative impact have had important positive impacts on the environment in terms of improved living conditions, improvement of the situation regarding wastewater discharge into the environment, and better access to the dwellings.

Most of the cases of untreated wastewater discharge are temporary in nature and add only small additional volumes, which are often negligible in comparison with existing discharge. The situation where there is no project is not without its own effects on the environment, since it often involves a risk of groundwater pollution or wastewater spill, usually into the same environment. Furthermore, roads cannot be built in the non-project situation, a fact that perpetuates difficulty of access to the neighborhood and prevents proper garbage collection.

Naturally, disturbances caused during the works are transitory in nature. The ONAS and ARRU specifications limit the disturbances caused by worksites, but these are oriented more toward impact on neighborhood life than on the environment. Contractors are obliged to remove unused materials such as damaged pipes.

With regard to effects following completion of work, attention focused on discharge of untreated wastewater into the natural environment. Of the 37-city sample for which statements of impact were drawn up, 11 had a wastewater collection system that discharges wastewater without treatment. These represent 11 percent of the total number of dwellings in the sample.

For these 11 cases, projects involving construction of or connection to treatment plants are planned or are being implemented, with the exception of a single case in which the treatment plant was not covered under the 9th Plan (1997-2001), but will probably be built during the 10th Plan (2002-2006). Five of the 11 cases will be eliminated before the year 2000. Since these stations were recently built or are still being built, an EIA has been or will be done for them.

The nine cases of proximity to a sensitive area include two cases of strongly sloping land, two cases of proximity to a sebkha (salt lake), four cases of proximity to an oued, and one

case of diversion of an oued. This category is provided to draw attention to possible impacts on sensitive natural areas near the project zone, and does not mean that a negative impact actually exists. Five of these cases have been evaluated here in greater detail (see section 8.4).

Recommendations

To improve existing capabilities with respect to EIAs of urban rehabilitation projects, the following recommendations are made:

ANPE should follow the initiatives taken to adopt the impact statement, and see that the application procedure recommended by the January 1996 USAID seminar be implemented.

ANPE should evaluate this procedure following a three-year observation period and make any necessary improvements.

The CITET and the National Center for Further Training and Retraining for Regional and Municipal Staff should undertake training on environmental assessment of urban rehabilitation projects for the staff of the concerned agencies, local government, and private consulting firms.

The concerned public agencies and project promoters should disseminate information on the results of environmental assessments, especially to the authorities concerned with the execution of abatement measures and authorities involved in inspection.

The concerned public agencies and project promoters should monitor enforcement of the abatement measures recommended by the EIA.

On the legal and regulatory level, it is also strongly recommended that when the decree on EIAs is revised, urban rehabilitation projects be incorporated into a third category of project with an impact evaluation procedure based on the impact statement.

It is also recommended:

that the tender documents for works contain specific clauses related to environmental impact abatement during the works stage

that the checklist be completed by verifying impacts during project implementation.

ENVIRONMENTAL REVIEW OF ELIGIBLE EXPENDITURES UNDER THE PRIVATE PARTICIPATION IN ENVIRONMENTAL SERVICES HOUSING GUARANTY PROGRAM

1 BACKGROUND

The goal of the USAID PPES/HG-V program is to support economic growth and social stability by improving the environmental quality and housing conditions in urban areas, particularly in low-income neighborhoods. With US\$3.6 million in funding for technical assistance, supported by a US\$40-million HG loan program during the project lifetime (1993-1997), the PPES program aimed at improving the coverage and effectiveness of urban environmental services in Tunisia through increased private-sector participation.

As a prerequisite to all financial assistance, USAID was obliged to comply with the environmental assessment procedures provided for under title 22 of the U.S. federal regulations code, section 216. In addition, the Initial Environmental Examination prepared by USAID/Tunis in 1993 recognized that certain elements of the HG-V program might have adverse impacts on the environment, resulting in a positive threshold decision.

Lastly, section 6.05 of the program agreement between USAID and the GOT (procedures of environmental assessment) stipulates that “the borrower agrees that all investments under this Agreement shall be made in accordance with the Borrower's current procedures for environmental assessment or with any other strengthened procedures that the Borrower may in future adopt.”

The environmental compliance of urban environmental activities (formerly HG projects) for Tunisia was evaluated in August 1997, resulting in the recommendation that a succinct report, similar to an audit report, be drafted examining the compliance of government programs benefiting from HG-V funding with the USAID-approved Tunisian environmental procedures.

2 PURPOSE OF THE ACTIVITY

The aim of this activity was to make an environmental review of eligible expenditures under the PPES-HG-V program and to verify their compliance with USAID-approved Tunisian environmental assessment procedures. The review also describes a sample of environmental assessments made by the Government of Tunisia (GOT) for specific project sites. This activity follows up on the recommendation of the environmental compliance review done by USAID in August 1997.

3 METHODOLOGY

Based on the above goal, steps in the activity included the following:

1. Preparation of the work plan and methodology.
2. Review of available documentation, especially:

- the PPES project document
 - the program agreement
 - the global environmental assessment of the program (June 1993)
 - the annual reviews of the PPES program for 1994, 1995, 1996, 1997
 - the reference guide for EIA of urban rehabilitation projects
 - the review of environmental compliance (August 1997).
3. Interviews conducted in the main agencies and institutions concerned; namely, ANPE, ONAS, ARRU, CGDR, and CPSCL. These interviews involved examination of the following points:
 - presentation of the goal of the environmental review
 - any environmental assessments the institution may have carried out
 - a review of the goal of the impact statement and the reasons for which it was developed
 - the application of the impact statement
 - identification of the sites to be reviewed
 - any negative impacts noted or reported
 - any measures of mitigation that may be envisaged.
 4. Filling out of the checklists for the sites identified.
 5. Study of the checklists: verification of coherence, identification of sites to be visited, interviews and clarifications from project heads.
 6. Visits to selected sites and on-site observation of any impacts attributable to the project.
 7. Gathering of information and documentation on measures of mitigation and programs projected.
 8. Study and analysis of information and documents.
 9. Preparation of the report.

4 DESCRIPTION OF THE PROGRAMS AND THE PRINCIPAL INSTITUTIONS CONCERNED

Three national programs received HG-V funds:

- the National Sanitation Project for Low-Income Neighborhoods (PNAQP), implemented by ONAS
- the National Project for Rehabilitation of Low-Income Neighborhoods (PNRQP), implemented by ARRU
- the PDUI, implemented by the General Commission for Regional Development (CGDR).

The CPSCL mobilized approximately half the funds allocated to these programs during the 8th Plan. These programs and institutions are presented briefly below.

4.1 ONAS and the PNAQP

ONAS is a public utility created in August 1974, currently under the oversight of the Ministry of Environment and Land Use Planning (MEAT). ONAS's principal task is to protect water resources in the areas for which it is currently responsible: 111 communes, representing approximately 75 percent of the country's urban population. ONAS is responsible for the management, operation, maintenance, replacement, and construction of any structures used for sanitation, such as treatment plants, outfall sewers, pumping stations, and wastewater collectors. To make service more accessible to the public, ONAS has a widely decentralized organization, which comprises five regional divisions. In the cities not served by ONAS, public sanitation services are managed by the communes. If requested, ONAS provides them with help and technical assistance.

ONAS also carries out secondary tasks such as promoting the distribution of treated wastewater and treatment plant sludge; executing comprehensive projects involving treatment of wastewater, rainwater, garbage, and other waste; and executing individual and rural sanitation projects for central and local governments.

Upon observing the favorable impact of the first project, which involved 72 low-income neighborhoods, the GOT launched the second sanitation project for low-income neighborhoods, which involved 216 neighborhoods in 111 communes. The project included the laying of 454 km of pipes inside these neighborhoods, the installation of 69 km of sewer mains for connection to existing systems or discharge, the construction of 30 pumping stations, and the connection of 51,500 housing units to wastewater services. The project cost an estimated TD 35 million and was carried out between 1992 and 1997.

4.2 ARRU and the PNRQP

ARRU is a public agency created in 1981 to carry out urban rehabilitation and renovation for the improvement of neighborhood housing conditions and community facilities and to foster better use of urban land. ARRU carries out operations for the state, for local governments, and on its own. It is responsible for executing the PNRQP, a program to improve housing conditions in 223 low-income neighborhoods in 136 communes. The works to be built under PNRQP include roads, sanitation and drainage systems, drinking water, electricity, and gas supply. The total cost of the program is estimated at TD 50.5 million.

ARRU executes the sanitation components of its programs in close coordination with ONAS regarding both studies (identification of connection locations, design standards, etc.) and actual works. ONAS participates in approving the work done by contractors.

4.3 CGDR and the PDUI

CGDR is a public agency created in 1981. Its responsibilities were redefined in 1994 to include, in particular, participating in the drafting and implementation of regional development policy and strategies, monitoring their execution, and providing the regional authorities with assistance in the design and preparation of development plans and programs. CGDR is responsible for the execution of the PDUI, a program to improve living conditions in low-income urban areas. Program activities include:

- activities designed to promote economic vitality in the neighborhoods of intervention
- reinforcement of community facilities designed to improve neighborhood living conditions
- improvement of basic infrastructure (sanitation, roads, street lighting, etc.).

CGDR acts as contracting authority under the PDUI, and assigns to ARRU and ONAS or to the municipalities the components for which they should be responsible. The Ezzouhour project selected for application of the checklist in this study was the responsibility of ARRU.

4.4 The Local Government Loan & Support Fund (CPSCL)

The CPSCL is a public establishment that raises funds to help finance local government investment programs through loans and subsidies. It helps the local communities identify their investment projects, evaluate feasibility, perform studies, and execute and monitor the projects.

Local government investment in the PNAQP, PNRQP, and PDUI projects during the 8th Plan totaled approximately TD 63 million, of which the fund mobilized TD 34.5 million for the PNRQP and the PDUI.

5 ANALYSIS OF THE NATIONAL CONTEXT OF ENVIRONMENTAL ASSESSMENTS

5.1 The Institutional Framework for Environmental Protection

The establishment of Tunisia's institutional framework for environmental protection has been marked by the following events:

- The creation, in 1978, of the National Commission on the Environment (CNE), which is responsible for defining and drafting overall environmental policy in the framework of the economic development plans, in collaboration with the relevant ministry departments.
- The creation, in August 1988, of the National Environmental Protection Agency (ANPE), the first autonomous agency with general and cross-sectoral competence, which participates in the drafting of government policy regarding conservation and the promotion of environmental law, pollution abatement, and promotion of training and research activities.

- The creation, in November 1991, of the Ministry of Environment and Land Use Planning, which proposes general environmental policy; is responsible for coordination, follow-up, and monitoring of state and local government conservation activities; combats pollution and damage; and works to improve the quality of life.
- The creation, in October 1993, of the National Commission on Sustainable Development, which coordinates the different national actors in development with a view to reconciling economic and social development with natural resource conservation.
- The creation, in 1995, of the Agency for the Protection and Development of Coastal Areas (APAL), a public agency responsible for enforcing government policy regarding coastal protection. APAL works for better management of coastal areas, carries out studies on coastal protection and the development of natural areas, and observes ecosystems.
- The creation, in 1996, of the International Center for Environmental Technology in Tunis (CITET), a public agency of an industrial and commercial nature within MEAT. The center is a national agency whose responsibilities include promoting environmental knowledge and technology to promote sustainable development in Tunisia and in the African and Mediterranean regions.

5.2 The Legal and Regulatory Framework for Environmental Assessments

EIAs are governed chiefly by decree #91-362 of March 13, 1991, which specifies the requirements and procedures that apply to the assessment of environmental impact in Tunisia. Other important laws also govern conservation, among which the following might be mentioned:

- law #83-87 on the protection of agricultural land
- decree #85-56 on the regulating of discharge into the environment
- the water code
- the urban development and land planning code
- the forest code
- the heritage code
- laws governing national reserves and parks; dangerous, unsanitary, or noxious establishments; and regulations for quarries

Decree #91-362 defines two categories of projects:

- For projects of the first category (listed in annex 1 to the decree), an EIA must be carried out. Two classes of activity should be mentioned here: (20) urban development works, which, depending upon interpretation of the decree, could include the building and installation of infrastructure, land subdivision for housing, and rehabilitation; and (21) water conduits and structures for the regulation of watercourses.

- In the case of projects belonging to the second category (listed in annex 2 to the decree), a descriptive summary must be provided. This summary includes the possible effects of the project on the environment and the conditions under which the projected operation responds to environmental concerns. ANPE then decides whether or not an impact assessment will be required.

Certain projects that might affect the environment do not fall into either of these two categories; urban rehabilitation projects (as ONAS and ARRU interpreted the decree) are among these.

Article 7 stipulates that any substantial modification or extension of an existing project must fulfill the provisions of the decree. Article 9 of the decree specifies the content of the impact assessment.

Between 1991 and 1995, ANPE received 3,132 EIAs. In 1994 alone, it received 1,028 such assessments, 34 percent of which were for industrial projects, 20 percent for urban development, 14 percent for quarries, 12 percent for gas stations, 7 percent for tourism, 6 percent for petroleum exploration, and 7 percent for miscellaneous.

5.3 Institutional Capability To Carry Out Environmental Assessments

ANPE employs approximately 15 skilled staff who are assigned to work on EIAs. Given the constantly increasing number of studies being submitted, ANPE needs to strengthen its ability to review EIAs and to follow up on their conclusions.

The Tunisian private sector includes appreciable capabilities for carrying out EIAs. In the case of certain specialized studies, international consulting firms are called in, usually working in association with local consulting firms. Even so, in the field of EIAs there is a need for still greater capabilities among local consulting firms and for better professional organization of assessors.

In the field of training, ANPE regularly holds training activities related to environmental assessments. Four seminars and training courses were held in 1992 in Tunis and its suburbs under the METAP I and II programs. A UNDP training program was attended by some 50 ANPE experts, and by experts from other government agencies and from consulting firms involved in environmental assessments. Training of trainers was also held in November 1997 at CITET. Informative and participatory workshops have been held with the assistance of the German technical cooperation agency (GTZ). Since 1992, ANPE staff have also attended several training courses, workshops, and round tables on EIA and environmental management abroad (in Algeria, Japan, Switzerland, Egypt, Germany, Jordan, Austria) (see list in Appendix F).

ONAS and ARRU have the human resources and skills required to monitor EIAs, which at present are limited to certain categories of project.

The CPSCL has approximately 13 engineers, and recently held training for them at CITET on environmental issues. The training addressed four themes: wastewater management and treatment techniques, solid waste management, management of the urban environment, and impact assessments and the law. The CPSCL plans to repeat this training in 1998. The CPSCL is also planning to assign one of the trained engineers to environmental issues; this engineer will participate in a more thorough cycle of training on the environment.

5.4 Environmental Assessments Performed by the Main Institutions Concerned

The principal agencies concerned currently carry out some environmental assessments. These are done for projects or project components for which impact assessments are mandatory.

With respect to ONAS, since the regulations came into force requiring EIAs it has been a requirement that all treatment plant projects undergo an EIA at the same time as the detailed design. The EIA is carried out according to terms of reference that are recommended by ANPE and that must be submitted for approval by ANPE. As of late 1995, some 20 impact assessments had been done for new plants or extensions of existing plants.

Sectoral and specific EIAs are also carried out for major ONAS projects; for example, the study done for the fourth urban sanitation project. A study is also underway concerning the effluents of the 40 plants discharging along the coast. The purpose of this study is to assess the impacts of the waste discharged and to evaluate plant functioning with a view to drawing up a priority program to reduce the impact of waste disposal on the coast.

The 1995 report on the state of the environment concludes, for the sanitation sector, that: "ONAS is increasingly moving away from a 'hygienist' approach to sanitation, which chiefly provides systems that carry pollution away from the immediate vicinity of the population, toward a more comprehensive environmental approach that includes the impact structures will have on the environment and affects the definition of priorities for action. Its concerns begin with neighborhood sanitation and extend to cover every aspect up to the final destination of treated wastewater." (MEAT, 1995)

ARRU carries out EIAs for certain components of rehabilitation projects (such as wholesale markets and slaughterhouses), and the CGDR, in its tender documents, specifies that the project promoter must carry out EIAs for some components.

Finally, MEAT has, since 1993, commissioned and published an annual National Report on the State of the Environment, which focuses on a different theme each year. The 1996 report, for example, includes chapters on developments in the institutional and legal framework, the pressure exerted on the environment by human activities, the state of natural resources, and conservation programs.

6 ENVIRONMENTAL ASSESSMENTS OF PROJECTS WITH HG-V FUNDING

6.1 Programmatic Environmental Assessment of HG-V

The global environmental assessment of the HG-V done in 1993 (by Pamela G. Jenkins and Christine Bernardeau, of PRIDE) before program implementation, concluded that the programs projected to receive money from the PPES would have no significant negative effects; that the environmental review procedures in place were adequate for suitably reducing any negative environmental impacts; and that ANPE had adequate in-house capabilities to ensure that the environmental impacts of PPES projects would be minimized or sufficiently mitigated, provided the Tunisian agencies responsible for carrying out these projects complied with the obligation of obtaining ANPE approval for every project.

6.2 Existing Elements of Impact Assessment

While no formal framework exists for these assessments, environmental considerations have in fact been taken into account in the selection of neighborhoods for the PNAQP. For PNRQP projects, a succinct impact statement is provided in the preliminary project statement. These elements of environmental assessment are discussed below.

PNAQP projects are carried out following a feasibility study and on the basis of identification forms that include environment-related indicators.

During the project identification stage, ONAS, responding to requests made by the regional and local authorities, inventoried 672 neighborhoods in which there were sanitation problems. Preliminary surveys were done in these neighborhoods to determine whether they met the main criteria of low income and bad sanitary conditions.

These criteria made it possible to identify 300 neighborhoods to be subjected to a detailed survey on the following main points, some of which reflect environmental concerns:

- geographical location (with respect to the development plan and the sanitation master plan)
 - availability of studies
 - more detailed verification of the state of sanitation and the standard of living of the households concerned
 - technical data such as topography, groundwater depth, vulnerability to flooding, nature of the terrain, point of wastewater discharge or connection, likely effects of the project downstream from the discharge point, etc.
 - information on the physical aspects of planned structures (the state of the network within the neighborhood and the state of the connections)
 - specific information such as the existence of a potable water system and the existence of land ownership or other particular problems.

Following detailed surveys, the final choice is made on the basis of criteria that include the environmental impact of the structures to be built. Neighborhoods in which a system risks creating a significant impact on a neighboring region are not retained, nor are those in which the capacity of the system downstream is inadequate. The detailed survey eliminated 47 neighborhoods because of the environmental impacts they risked generating, or because of land ownership problems or wide dispersal of housing. Projects were retained because of positive impacts they would have on the environment, such as the elimination of waste disposal in the natural environment (e.g., oued Gariana, sebkhâ Sejoumi).

The feasibility study underscored the positive impacts, among which the following may be mentioned: the opening of roads to facilitate drainage or the construction of roads permitting access by garbage trucks, the discharge of wastewater into the ground, with the risk of polluting the groundwater table. On the whole, the project should:

- improve sanitation for 51,500 low-income households
- lead to a 6 percent increase in the rate of connection of the urban population to the public sanitation system
- prevent above-ground spill of some 6 million cubic meters of wastewater per year, 4 million of which would be connected to treatment plants and made available for possible reuse.

For the PNRQP rehabilitation projects, the terms of reference call for the drafting of a preliminary statement that is to include a statement regarding project impact on the environment.

An example of one of these preliminary statements was reviewed. It was the statement for road works in the Mongi Slim neighborhood in the Siliana commune (URAM-GIC, November 1994). The impact statement included in this statement is relatively succinct, describing the initial environmental state of the neighborhood in terms of solid waste, green areas, sanitation, drainage, industrial waste, type of housing, agricultural land, and the oued banks. The statement underscores the impact the project would have on the environment: improvement of drainage and of the condition of the roads, which would then allow access for garbage collection trucks. Also, the statement includes a recommendation to move the point of discharge into the oued farther away, to avoid erosion of the banks.

6.3 PPES Annual Reviews

The annual reviews of the PPES evaluated the progress made in developing and applying procedures to assess the environmental impacts of urban rehabilitation activities. The following are the conclusions of the four reviews.

The first annual review concluded that the procedures in force were suited to the Tunisian economic and environmental context, and the review team considered that they might also be capable of neutralizing any negative impacts of the HG-V activities. The team

nonetheless noted a certain ambiguity regarding the interpretation of decree #91-362 by the main agencies concerned (ANPE, ARRU, and ONAS) and made the following three recommendations:

- Although the activities proposed for HG-V funding do not meet the requirements of the EIAs, their nature is such that ANPE's customary procedures will not prevent them. As recommended in the global environmental assessment of the program done in June 1993, USAID should follow the ANPE procedures that are appropriate to the Tunisian context.
- USAID should meet with high-level staff of ANPE and other agencies to discuss developing a simplified EIA procedure that could be applied to HG-V projects.
- USAID should closely follow the revision ANPE is now making of decree #91-362 and, if pertinent changes with implications for HG-V projects are made, should respect the new provisions.

The second and third reviews of the PPES emphasized the growing number of EIAs being submitted for approval by ANPE, which ensures that all development projects complete an EIA. The reviews noted that with the help of USAID, an abbreviated version of the impact assessment had been developed to determine whether or not a more thorough study would be required, and recommended that this abbreviated version be used for projects funded under the HG-V and for other GOT development projects. These reviews noted that ANPE lacks staff to keep up with the number of assessments.

The fourth and last review of the PPES noted that the EIAs had been institutionalized by Tunisian law, that ANPE was making significant progress every year in the numbers of projects assessed, and that an impact statement is required for rehabilitation projects.

7 THE IMPACT STATEMENT FOR REHABILITATION PROJECTS

7.1 Needs Identification and Development

It is a recognized fact that in most cases urban rehabilitation projects have a relatively favorable impact on the environment. Nonetheless, negative impacts from certain types of projects are possible. Current regulations covering impact assessments do not call clearly for EIAs for urban rehabilitation projects, which is why it has been considered necessary to define a new instrument to assess such impacts. This new instrument is a checklist to be drawn up by project promoters, accompanied by a statement explaining the measures to be taken to mitigate any negative effects. This kind of verification will help improve the quality of rehabilitation projects and will make project promoters more aware of environmental concerns, without causing them significant additional excess costs. A manual will help them draft the statement and the case studies with little extra effort. The manual will also propose the terms of reference for this assessment, which are to be incorporated into the terms of reference for the studies.

Requiring the statement will not cause project delays, since the statements will usually be approved by the agencies concerned (ONAS and ARRU) at the same time as the detailed project studies, unless these agencies consider that the problems raised make it necessary to obtain the opinions of other institutions.

The checklist will conclude with one of the following declarations:

- The proposed project should have no significant impact on the environment and may thus be carried out.
- The project could have significant impact on the environment, but given the mitigating measures that have been added to it (described in an annex to the checklist), it should no longer have significant effects. The project may be carried out with the above-mentioned mitigating measures.
- The project may have a significant effect on the environment. Considering its sensitive nature, the project and the planned mitigating measures must be submitted to ANPE for its opinion.

A sample checklist is given in Appendix C.

7.2 Procedure for Setting Up Monitoring and Evaluation

A seminar on concerted action and training in EIAs of urban rehabilitation projects was held in Tunis (Hôtel Diplomat) on January 31, 1996, with USAID's assistance. The seminar, which was attended by 24 participants from the main institutions concerned, provided an opportunity to present and discuss a manual for environmental assessment of urban rehabilitation projects.

There was consensus on the desirability of this new instrument, which will contribute to improving the quality of urban rehabilitation projects, and on the checklist form, which ensures simplicity of use.

At the end of the seminar, the participants recommended that the institutions concerned with this instrument (chiefly ARRU, ONAS, DGCPL, CPSCL, the Ministry of Public Works and Housing [MEH], and the Ministry of Economic Development [MDE]) include provisions for EIAs in the terms of reference for relevant project studies. Assessment of environmental impact and the mitigating measures advocated to minimize negative effects should be submitted to ANPE for advice in the case of projects that include one or more of the following conditions:

- discharge of untreated wastewater into the watershed over a period of more than two years
- proximity of a sensitive area (lake, sebkha, or other), a protected site, or a monument
- modification of an oued or a water system.

The project promoter may also take the initiative of soliciting ANPE's opinion in cases not listed above.

Following presentation of the project, accompanied by the planned measures of mitigation and compensation, ANPE may, within a reasonable period:

- accept the proposed measures and give a favorable decision
- give a favorable decision provided certain measures are added
- recommend a more detailed EIA.

Since the checklist is a new instrument and involves a new procedure, the PPES review team recommended that ANPE evaluate this instrument and the described procedure after a pilot period of approximately three years, and then make any necessary modifications.

In a second stage, when regulations on impact assessments (decree #91-362 of March 13, 1991) are updated, a third category of project could be introduced. This would follow a procedure for EIA similar to that proposed above, and the checklist could include another annex listing the projects, including those of urban rehabilitation, to be applied by means that would be set by departmental order.

7.3 Adoption of the Impact Statement

At present, no law or regulation makes the statement mandatory for urban rehabilitation projects. The principal agencies concerned have, however, taken the following initiatives to apply the impact statement to rehabilitation projects.

The CPSCL has published a new version of the practical guide to local government investment projects (June 1997). This new guide, which has been in force since January 1998, stipulates that the results of the environmental assessment of a project are among the general criteria for project approval. The guide provides that an impact statement be done for all infrastructure projects, using the verification checklist drawn up under HG-V. Special projects such as those involving slaughterhouses and wholesale markets must comply with the regulation that provides for the preparation of an EIA.

ONAS and the funding agency for the third sanitation project for low-income neighborhoods have agreed that the assessment of project impact on the environment will be done using the verification checklist prepared under the HG-V.

ARRU has incorporated environmental assessment into the terms of reference for urban rehabilitation studies in the form of the impact statement developed under the HG-V.

8 ENVIRONMENTAL ASSESSMENT OF A SAMPLING OF PROJECTS

8.1 Choice of the Sample

The sites to be assessed using the checklist were selected with reference to:

- the contribution in eligible expenditures
- project size, since large-scale projects are likely to have the greatest impact
- breakdown by type (PNAQP, PNRQP, PDUI)
- distribution by year
- geographical distribution

The terms of reference provided for the assessment to involve four sites per year, or a total of approximately 16 sites. There were 37 sites selected by agreement with the agencies concerned to apply the statement of environmental impact. The corresponding works were spread over the four years of the program.

The participant neighborhoods are home to 34,167 households, and the total cost of the works was TD 19,821,000. Of the 37 neighborhoods, 28 belong to the PNAQP, eight to the PNRQP, and one to the PDUI. The corresponding works were executed between 1993 and 1997. The geographical distribution of the sites covered all regions, to allow for possible region-specific features. Also, large neighborhoods were favored, since these are where effects are most perceptible.

This exercise was used to increase awareness of the statement of environmental impact and to familiarize the engineers of the relevant agencies. The five regional departments of ONAS, six project heads in ARRU, and two CGDR senior staff were involved in the exercise, and engineers from ONAS and ARRU filled out the checklist. The impact statement, its purpose, and the reasons for its use were explained to all residents interviewed.

8.2 Global Assessment of Impacts

As with any infrastructure project, impacts may occur during construction or after the beginning of service delivery.

Impacts during construction are relatively slight, and are related primarily to the stirring up of dust and to the noise created by heavy machinery. Another factor that sometimes arises is the abandonment, in or around the neighborhood, of unused, damaged pipes, which are unsightly.

Impacts following project completion revealed by the checklists were the following:

- 18 cases with no special negative impact or with positive impact;
- 11 cases of untreated wastewater discharge into the environment, including 5 that will last for more than 2 years and 6 that will last for a shorter time;

- 9 cases of proximity to a sensitive area (lake, sebkha, or other) or of modification of an oued.

For the 18 cases with no particular negative impact, wastewater is connected to a treatment plant in which the additional impact due to the water treated is usually slight, given the size of the projects. In the case of some recently built or recently extended plants, these effects are taken into consideration in the impact assessments approved by ANPE. For these 18 cases, the environmental impacts are favorable because of the improvement in living conditions, amount of waste-water discharged into the natural environment, and accessibility.

Most of the cases of untreated wastewater discharge are temporary in nature and add only small additional volumes, which are often negligible in comparison with existing discharge. The situation where there is no project is not without its own effects on the environment, since it often involves risk of groundwater pollution or wastewater spill, usually into the same environment. Furthermore, roads cannot be built in the non-project situation, a fact which perpetuates the difficulty of access to the neighborhood and prevents proper garbage collection.

The nine cases of proximity to a sensitive area include two cases of steeply sloping land, two cases of proximity to a sebkha (salt lake), four cases of proximity to an oued, and one case of diversion of an oued. This category is provided to draw attention to possible impacts on sensitive natural areas near the project zone, and does not mean that a negative impact actually exists. Five of these cases are discussed in section 8.4 below.

8.3 Measures for Abatement

Naturally, disturbances caused during the works are transitory in nature. The ONAS and ARRU specifications limit the disturbances caused by worksites, but these are oriented more toward impact on neighborhood life than toward the environment. Contractors are obliged to remove unused materials such as damaged pipes.

With regard to effects following completion of work, attention focused on discharge of untreated wastewater into the natural environment. For the PNAQP, the feasibility study estimated that 6 million cubic meters of wastewater would be collected from the neighborhoods to be improved and that 4 million cubic meters would be treated.

Of the 37-city sample for which statements of impact were drawn up, 11 had a wastewater collection system that discharges wastewater without treatment. These represent 11 percent of the total number of dwellings in the sample.

For these 11 cases, projects involving construction of or connection to treatment plants are planned or are being implemented, with the exception of a single case in which the treatment plant was not covered under the 9th Plan (1997-2001), but will probably be built during the 10th Plan (2002-2006). Five of the 11 cases will be eliminated before the year

2000. Since these stations were recently built or are still being built, an EIA has been or will be done for them.

The effort being made with respect to wastewater treatment is reflected in the number of treatment plants, which has been growing steadily since ONAS was created. As an example, the number doubled from 25 to 50 between 1991 and 1996, and is expected to reach 75 in 2001. By the year 2006, all communes with a population over 10,000 are expected to be connected to a treatment plant. The ratio of treated water to the total volume of water collected, which reflects efforts related to treatment, increased appreciably from only 75 percent in 1993 to 92 percent in 1996.

The majority of plants carry out secondary biological treatment. Three processes are common: activated sludge, oxidation channel, and oxidation pond. The sludge is usually treated by aerobic stabilization. In 1995, the average treatment output was 93 percent BOD₅ with an average concentration of 34 mg/liter of BOD₅.

ONAS is making great efforts to attenuate the impacts of and reduce the pollution generated by the treatment plants it operates. The measures undertaken for this purpose include (1) increasing the capacity for reutilization of treated water; (2) improving the functioning of the treatment plants; and (3) moving discharge further away by installing outfall sewers (Sousse, Djerba, and Hammamet).

In addition, since approximately half the equipment in the treatment plants is over ten years old, ONAS has begun a needs assessment for all existing treatment plants in order to draw up a program of priority rehabilitation and extension works.

8.4 Summaries of the Environmental Impact Assessments for a Selection of Projects

After the checklists were analyzed, a more detailed evaluation was made for 17 neighborhoods, including those in which untreated wastewater was discharged into the natural environment, on the basis of site visits or discussions with a project official.

Each of the summaries presented below includes a description of impacts, a comparison of the situation without the project, the measure or measures taken to eliminate or attenuate possible impacts, and a conclusion.

Cité El Mansoura—Dar Fadhal—Ennacim and Ardh El Beji—Ariana

Project impacts: Construction of the sewer system by ONAS has made it possible to collect wastewater and connect it to the system that goes to the treatment plant. Because the land is flat, this is done through pumping stations. The ONAS works also made it possible for ARRU to build roads and improve drainage in the neighborhoods. The neighborhoods are now accessible to garbage collection trucks and public transportation.

The water treated by the Choutrana treatment plant is either reused in agriculture or discharged into the sea north of the Raoued zone. The impact on the environment is studied in the impact assessment of the works related to the extension of the Choutrana plant.

The situation without the project: All four neighborhoods mentioned are located on the “La Soukra” plain, north of Ariana. All have running water but had no wastewater disposal systems. Autonomous sewer systems are not appropriate here, since the groundwater level is high. Discharged wastewater remains in the neighborhood because the land is flat. When it rains, the neighborhood becomes impassable, and rainwater, mixed with wastewater, stagnates. Without the project, groundwater pollution is inevitable. Less wastewater is drained off to the treatment plant, and there is therefore less treated water to discharge in case of non-reuse.

Abatement measures: Possible measures are provided for in the impact assessment for the extension of the treatment plant.

Conclusion: The works in these neighborhoods have had numerous positive impacts in eliminating groundwater pollution and in improving accessibility, living conditions, and sanitation. The additional water reaching the treatment plant is insignificant in terms of plant capacity, and an EIA has already been done for the extension of this plant.

Cité Oued Roumine—Menzel Abderrahmane

Project impacts: A visit to the neighborhood and discussion with the project official at ARRU confirmed the positive impact of the project on living conditions in the neighborhood, through improved sanitary conditions and improved accessibility of the neighborhood and the housing. Project impact on the environment lies chiefly in the wastewater disposal system. The project has made it possible to channel wastewater and to discharge it into the same oued, downstream from the neighborhood. The oued flows into the lake of Bizerte.

The situation without the project is characterized by: (1) above-ground flow of wastewater into Oued Roumine, which flows into the lake of Bizerte, and (2) bad sanitary conditions and difficult access, especially when it rains

Abatement measures: ONAS is now building the connections to the Bizerte treatment plant, which was just put into operation in October 1997 and for which an EIA was done and was approved by ANPE.

Conclusion: The impact of discharge into the lake of Bizerte is temporary in nature. In addition, the non-project situation also involves discharge, although admittedly of lower volume, into the same environment. The small volume of discharged water makes it reasonable to assume that the impact will not be irreversible given renewal of the lake waters by the tides. The impact assessment for the Bizerte treatment plant takes into account the impact of the treated waters after connection to the treatment plant.

Cité Erraja—Mateur

Project impacts: The project made it possible to replace and extend the wastewater system and to improve rainwater drainage. The building of roads improved access to housing, particularly for garbage collection. The project resulted in a slight increase (less than 10 percent) in the flow of wastewater channeled to and discharged into Oued Joumine, which receives all the wastewater from Mateur and flows into Lake Ichkeul.

The situation without the project is characterized by frequent flooding and stagnation of wastewater in the neighborhood, which is on flat land. The previous system was obsolete and often overflowed, and a number of segments passed under housing. ONAS operations officials estimate that the neighborhood used 50 percent of their resources, while the length of the neighborhood's system (5.8 km) represents only slightly more than 10 percent of the system length for the entire city.

Abatement measures: Studies for the treatment plant have just begun, and the plant is planned to begin operations in the year 2000. An EIA for the plant has been made and approved by ANPE.

Conclusion: The volume discharged into the oued is slight in comparison with that from the entire city of Mateur, and does not risk aggravating the situation. Its impact is temporary. An impact assessment for the eventual solution of connection to a treatment plant has already been approved.

Cité Louatia—Menzel Temime

Project impacts: Wastewater from the neighborhood, which comprises 113 housing units, is connected to the system of the city of Menzel Temime (approximately 7,000 housing units). This system flows into a sebkha, which in turn is connected to the sea. The discharge point is near an inhabited area. Negative impacts related to discharge consist of stagnating water and bad smells.

The situation without the project is characterized by negative impacts and health risks within the neighborhood. The effect on the sebkha is only minor, given the respective volumes. Since the neighborhood is on flat ground and has no road system, wastewater can seep into the ground, although it is not certain that it can reach the groundwater that is used for irrigation, since the groundwater table lies relatively deep below the surface.

Abatement measures: The treatment plant has been planned and funded. The call for tenders is now being published, and the plant is scheduled to go into service in the year 2000.

Conclusion: The proportion of water added by the neighborhood has only a slight additional impact in comparison with that of the entire city. Also, this impact is temporary and will end when the treatment plant is put into operation. An EIA of the treatment plant has

been made.

Beni Malek—Menzel Temime

Project impacts: Wastewater from this neighborhood, which comprises approximately 100 dwellings, drains to an existing discharge into an oued. The added quantity is equal to the volume already existing. The city has 1,100 housing units, is characterized by a low sewer connection rate, and is located some 18 km from Menzel Temime. The project will cause negative impacts related to wastewater stagnation, since the oued is not cleaned out, and to bad smells. Water from the oued is not used. The oued passes through the forest of Dar Chichou before reaching the sea, located some 9 km away. The oued bed is sandy, so that water seeps in and does not reach the sea. The groundwater is used for irrigation, and there are no indications regarding possible pollution.

The situation without the project is characterized by stagnation and seepage of wastewater in the neighborhood, since the land is flat and there are no roads. Pollution of the groundwater is possible.

Abatement measures: No treatment plant is planned for this neighborhood, which is not served by ONAS, nor are there plans for it to be. Neither the municipality nor the population has made any claims or requests for service.

Conclusion: Seepage of untreated wastewater will occur with or without the project, but there are no indications regarding possible groundwater pollution. Considering the permanent nature of this seepage and the fact that no satisfactory ultimate solution is envisaged, it is recommended that possible groundwater contamination be verified and that the quality of the groundwater be monitored regularly.

Cité Sidi Saad—Mornag

Project impacts: This neighborhood, with 336 housing units, is connected to the city sewer system, which discharges into Oued Miliane and then enters the sea in the southern suburbs of Tunis. The city accounts for some 20 percent of the total discharge from Mornag, but the oued also receives wastewater from Naassene, a locality upstream that adds less wastewater than does Mornag. There is no swimming area at the oued mouth, and the oued water is highly visible because of its color. The neighborhood is bounded by the oued. It has running water but no roads.

The situation without the project: Since the area is flat, there is a risk of wastewater seepage into the groundwater, which is used for irrigation, in addition to the health risk within the neighborhood.

Abatement measures: The system which connects Mornag to the existing South Miliane treatment plant is planned in the Southern Tunis component of the fourth sanitation project

for Greater Tunis, funded by the World Bank. The contract for the study is now going through the approval process, and the system is planned to begin operations in 2001.

Conclusion: The additional impact resulting from the project in the form of discharge into the sea is temporary, and is probably reversible, given the currents. An impact assessment has been done for the connection to the South Miliane treatment plant, and has been approved by ANPE.

Cité du Lycée—Gaafour

Project impacts: The city of Gaafour has only recently begun to be served by ONAS. The region is flat, and ARRU intervened with ONAS to build roads. The neighborhood has running water. Wastewater from the neighborhood is discharged into Oued Mallaha, which also receives untreated wastewater from all 2,000 housing units in the city of Gaafour. The additional wastewater from the neighborhood can be estimated at around 15 percent. The wastewater flows into the oued downstream from the Siliana dam toward the city of Siliana, but without creating any great disturbance. A single case of irrigation using water from the oued was noted by the authorities, and was punished by destruction of the irrigated plants.

The situation without the project: There would be a risk of wastewater seepage into the groundwater, since the roads that prevent it could not have been built until the sewer system was in place. Furthermore, there would be a health risk within the neighborhood because of above-ground flow of wastewater.

Abatement measures: The Gaafour treatment plant is part of the project for 11 cities of the Medjerdah catchment area, funded by the German cooperation agency. The study phase is now coming to a close, and the treatment plant is planned to begin operations in 2001. The project provides for reuse of treated water in irrigation.

Conclusion: With or without the project, some of the wastewater will seep into the ground. Prevention of the risk of agricultural reuse of untreated water will depend upon the vigilance exercised by the authorities. The impacts and risks related to flow in the oued are temporary in nature. The eventual solution includes the Gaafour treatment plant, for which an impact assessment has been done and approved by ANPE.

Cité El Asfouria and Cité Bir Thelj—Le Kef

Project impacts: These neighborhoods have running water, and ARRU built the roads after the sewers had been put in. The area is on a slope and the land is rocky, so seepage is slight. Wastewater is discharged into Oued Ettine, which flows into Oued Mellegue. The entire city of Le Kef, which comprises around 10,000 dwellings, discharges approximately 6,000 cubic meters of water per day at the same point. This discharge causes negative impacts all along the oued. There have been cases of irrigation using untreated wastewater, particularly in times of drought. In 1995, punitive action was taken on 11 occasions against farmers irrigating with the untreated water, and their crops were plowed back into the ground. The impact of the additional wastewater from these two neighborhoods is very slight in comparison with the total volume of discharge from the city.

The situation without the project: There is pollution in the neighborhood, particularly above-ground flow of wastewater toward the inhabited areas downstream, as there is no seepage. The neighborhood of El Asfouria lies on a large road linking Tunisia with Algeria (GP 5D), and the lack of sewers causes pollution of this road.

Abatement measures: The treatment plant is now being built with the help of Belgian cooperation, and is planned to go into service in late 1998.

Conclusion: The additional impact due to discharges from the two neighborhoods is slight compared with the city's entire discharge. This impact is temporary, and will disappear when the treatment plant goes into service. An EIA has been made for this plant and has received ANPE approval.

Cité Ennacim—Sers

Project impacts: The city of Sers will be served by ONAS starting in 1998. The neighborhood is connected to the city sewer system, which discharges into an oued and gives rise to negative impacts (smells and stagnation downstream).

The situation without the project: There is a risk of groundwater pollution, since the land is flat and there are no roads, and there are health risks within the neighborhood.

Abatement measures: The treatment plant is planned under the 9th Plan (1997-2001). The plant is planned to go into service in 2002.

Conclusion: This impact is temporary and will disappear when the treatment plant goes into service; an impact assessment will be made for this plant and submitted to ANPE for approval.

Cité Ettahrir—Enfidha

Project impacts: Wastewater is discharged into Oued El Khirat, which flows into the sea some 2 km distant. The neighborhood's contribution represents slightly less than 30 percent of the quantity discharged by the city. A large part of the water in the oued seeps into the subsoil downstream.

The situation without the project: The region is flat and there are no roads, a fact which favors stagnation of wastewater and generates a risk of groundwater pollution.

Abatement measures: The Enfidha treatment plant is planned under the 9th Plan, and should go into service in 2002.

Conclusion: This impact is temporary and will disappear when the treatment plant goes into service; an impact assessment will be made for this plant and submitted for approval by ANPE.

Cité Sidi Hacine—Tunis

Project impacts: The Sidi Hacine neighborhood is located on the western periphery of Tunis, on the shores of Sebkha Eijoumi, on flat land which is subject to flooding and has a surface water table that communicates with the sebkha. The rehabilitation project, which has involved 858 housing units, has made it possible to collect wastewater and drain it, provisionally, into the sewer system that is connected with the chief treatment plant in Tunis (the Choutrana plant), awaiting construction of the Western Tunis treatment plant. The neighborhood already had running water. The building of the road system improved access to the neighborhood and circulation within it, making garbage collection possible. The impacts of the project are favorable both for the inhabitants and for the environment, especially the sebkha water level. It should, however, be mentioned that certain roads run quite near the water, favoring unauthorized disposal of fill and construction waste.

The situation without the project: The area is flat, encouraging stagnation of wastewater and seepage into the groundwater, which communicates with the sebkha. Failure to build the roads would have perpetuated the problems of access and unsanitary conditions due to solid waste, and would not have facilitated access for trucks responsible for unauthorized solid waste disposal.

Abatement measures: ARRU plans for planting to be done in the immediate vicinity of the sebkha; this will have to be planned with the local authorities. In addition, a seminar was held in connection with the Sustainable Cities program of the UNCHS for the entire Sejoumi region, and proposed a plan of action for sustainable development of the Sejoumi zone.

Conclusion: Overall, the impact of the project is favorable. The problem of unauthorized waste disposal can be corrected and will not last beyond the time it will take to execute the

planting program.

Cité Sidi Bou Ali—Hammamet

Project impacts: The project has made it possible to connect the wastewater to the existing treatment plant SE2, which is part of the PPES pilot project for private sector participation and which includes a rehabilitation component. It has also improved stormwater drainage.

The situation without the project: Before the project, wastewater flowed above ground and entered Oued Sidi Bou Ali, which flows into the sea 200 m from the neighborhood. The wastewater, however, seeped into the ground and did not reach the sea.

Abatement measures: The rehabilitation operation has taken the project's impact on the SE2 treatment plant into account. The impact of the additional treated water will be reduced by the Ministry of Agriculture's program of treated wastewater reuse, which calls for irrigation measures for 204 hectares (the perimeters of Beni Khiair and Bir Faiedh) by around the year 2001.

Conclusion: The project's impact on the environment will be relatively favorable, eliminating exposed wastewater flow in the neighborhood and discharge into the oued. The additional impact on the treatment plant and the treated water are temporary, and have been addressed in the projects for plant rehabilitation and reutilization of treated water.

Cité Essaada—Mohamdia

Project impacts: The neighborhood is densely populated, and the land slopes steeply with certain low points where rainwater stagnates. The PNRQP project, which concerned roads and drainage, improved access and facilitated garbage collection. Initially, wastewater was collected and discharged into an oued near the neighborhood, under the PNAQP project. The system of connection to the South Miliane treatment plant built under a different ONAS project went into service in 1997.

The situation without the project is characterized by erosion of the soil due to the steep slope; difficulties in garbage collection; and above-ground flow of wastewater, which goes into the oued, with stagnation at certain low points.

Abatement measures: Roads and drainage structures have lessened the impact of erosion and flooding in low points. The impact of the discharge was eliminated when the system of connection to the treatment plant was inaugurated in 1997. An impact assessment of the plant's extension has been made and approved by ANPE.

Conclusion: The project will have a relatively favorable impact on the environment, lessening erosion of the soil and facilitating access for garbage collection. The elimination of

the wastewater flow in the neighborhood and in the oued under the PNAQP has also had a favorable impact. The additional impact on the treatment plant has been taken into consideration through an impact assessment.

9 CONCLUSION AND RECOMMENDATIONS

This environmental assessment of eligible expenditures under the PPES/HG-V program has examined the national context for environmental assessments and the assessments that have been made by the chief institutions concerned. It has also applied an environmental impact checklist to a sampling of projects. This assessment has led to the following conclusions and recommendations:

Certain elements of environmental assessment exist in the procedures followed for project identification and development, particularly with respect to feasibility studies for the PNAQP and preliminary studies for the PNRQP. Environmental considerations have been taken into account in selecting the neighborhoods, but there was no formal framework, nor any clearly established regulatory obligation.

The PPES should be given credit for developing the impact statement for urban rehabilitation projects and for holding a training and discussion seminar on the subject, which recommended a procedure for the application of this statement. This new instrument complements the procedures for environmental assessment and could be used for other types of projects besides those related to urban rehabilitation.

The Tunisian authorities have been highly receptive to this instrument and have shown a great sense of responsibility for environmental management, participating actively in its design and finalization. The main agencies concerned adopted the instrument before being legally obliged to do so.

On the institutional level, with respect to applying the impact statement for rehabilitation projects, the distribution of roles among the different agencies appears appropriate and should make it possible to identify negative impacts and to add abatement measures to projects. ONAS, ARRU, and the CPSCL have already taken initiatives to adopt this environmental assessment procedure. It is recommended that:

- ANPE follow these initiatives and see that the application procedure recommended by the January 1996 seminar is implemented;
- ANPE evaluate this procedure following a three-year observation period and make any necessary improvements;
- CITET and the National Center for Retraining and Further Training of Regional and Municipal Staff develop training on environmental assessment of urban rehabilitation projects for the staff of the concerned agencies, local government, private consulting firms, and

contractors;

- the relevant public agencies and project promoters disseminate information on the results of environmental assessments, particularly among the authorities responsible for executing abatement measures and those responsible for inspection;
- the relevant public agencies and project promoters be responsible for monitoring application of the abatement measures recommended in the impact assessments.

On the legal and regulatory level, the current laws and regulations do not clearly specify that EIAs must be made for urban rehabilitation projects, although these can have negative effects on the environment that counteract the improvements they effect in neighborhood living conditions. It is thus strongly recommended that when the decree on EIAs is revised, urban rehabilitation projects be incorporated into a third project category, with an impact assessment procedure based on use of the impact statement.

It is also recommended that:

- tender documentation contain specific clauses regarding abatement of environmental impact during the works stage.
- the checklist be completed by a verification of impacts during the works.

An environmental assessment was made of a sample of 37 projects funded by HG-V, using the environmental assessment checklist. This made it possible to confirm that the impact of these projects on the environment is favorable, with the exception of a few cases in which improvement of neighborhood living conditions has been achieved at the expense of a negative impact on the natural environment. Fortunately, assessments showed that these negative impacts were or are limited, usually temporary in nature, and reversible. Measures of mitigation or abatement have been taken in almost all cases, and other impact assessments have addressed or will address the residual effects on the treatment plants.

APPENDIX A

SUMMARY TABLE OF THE NEIGHBORHOODS SURVEYED

Examen environnemental des dépenses HG-V - Récapitulatif

N° Programme sensible	Ville Modification oued	Cité STEP	Coût 1000 DT	Nbre ménage	Rejet brut	Rejet net
1	PNRQP	Goulette	Malja	778	520	NonNonNon
Existe						
2	PNRQP	Tunis	Sidi Hcine	2694	858	NonOuiNon
Existe						
3	PNRQP	Msaken	Ennour	950	960	NonNonOui
Existe						
4	PNRQP	Mateur	Erraja	864	1300	OuiNonNon
2000						
5	PNRQP	Mzel Abderrahmane	Oued Roumine	627	500	OuiNonNon
Existe						
6	PNRQP	Hammamet	Sidi Bou Ali	616	815	NonOuiNon
Existe						
7	PNRQP	Mohamdia	Essaada	665	908	NonOuiNon
1997						
8	PNRQP	Tunis	Hrairia Soltani	560	640	NonNonNon
Existe						
9	PNAQP	Ariana	Mansoura	251	260	NonOuiNon
Existe						
10	PNAQP	La Marsa	Slama - Tabeuk	253	88	NonNonNon
Existe						

11	PNAQP	Ariana	Sidi Sofiane - Der	217	515	NonNonNon
Existe						
12	PNAQP	Ariana	Ennacim Ardh Beji	373	540	NonNonNon
Existe						
13	PNAQP	Ariana	Dar Fadhal	373	262	NonNonNon
Existe						
14	PNAQP	La Marsa	Harrouche	255	82	NonNonNon
Existe						
15	PNAQP	Jendouba	Bourchadette	198	95	NonNonNon
Existe						

N°	Programme sensible	Ville Modification oued	Cité STEP	Coût 1000 DT	Nbre ménage	Rejet brut	▲
16	PNAQP	Gaafour	Lycée	284	300	OuiOuiNon	
2001							
17	PNAQP	Le Kef	Asfouria	95	89	OuiNonNon	
1998							
18	PNAQP	Sers	Ennacim	275	250	OuiNonNon	
2002							
19	PNAQP	Le Kef	Bir Thalj	107	84	OuiNonNon	
1998							
20	PNAQP	Sfax	Bafrani - Touta	212	368	NonOuiNon	
Existe							
21	PNAQP	Nefta	Guettaya	224	288	NonOuiNon	
Existe							
22	PNAQP	Enfidha	Ettahrir	440	445	OuiNonNon	
2002							
23	PNAQP	Ksar Helal	Hlel	191	91	NonNonNon	
Existe							
24	PNAQP	Sidi Bouzid	Ennour Ouest	275	636	NonNonNon	
Existe							
25	PNAQP	Kasserine	Ezzouhour	563	805	NonNonNon	
Existe							
26	PNAQP	Metouia	Metouia	454	338	OuiNonNon	
2002							
27	PNAQP	Gafsa	El Guetna	453	88	NonOuiNon	

Existe

28	PDUI	Kasserine	Ezzouhour	4 141	18 000	NonNonNon
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Existe

29	PNAQP	Ettadhamen	7 Novembre	450	1 000	NonNonNon
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Existe

30	PNAQP	Oued Ellil	Cité El Malaab	90	120	NonNonNon
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Existe

31	PNAQP	Ettadhamen	Frechich et Lycée	500	1 000	NonNonNon
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Existe

32	PNAQP	Ettadhamen	2 Mars	500	1 050	NonNonNon
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Existe

N° Programme sensible	Ville Modification oued	Cité STEP	Coût 1000 DT	Nbre ménage	Rejet brut	⚡
33 2001	PNAQP Mornag	Sidi Saad	352	336	OuiNonNon	
34 Existe	PNAQP Ben Arous	Ennacim 1&2	197	239	NonNonNon	
35 X Plan	PNAQP Mzel Temime	Beni Malek	168	100	OuiNonNon	
36 2000	PNAQP Mzel Temime	Louatia	95	113	OuiNonNon	
37 Existe	PNAQP Mzel Bouzelfa	Garbouj	81	84	NonNonNon	
19 821			34 167			

PNAQP: Programme National d'Assainissement des Quartiers Populaires
PNRQP: Programme National de Réhabilitation des Quartiers Populaires
PDUI: Programme de Développement Urbain Intégré

APPENDIX B

SUMMARY TABLE OF NEIGHBORHOODS WITH UNTREATED OUTFALL

Récapitulatif - Cités avec rejet sans traitement

N°	Programme brut	Ville STEP	Cité	Coût	Nbre ménage	Rejet
19	PNAQP	Le Kef	Bir Thalj	107	84	
Oui	1998					
17	PNAQP	Le Kef	Asfouria	95	89	
Oui	1998					
35	PNAQP	Mzel Temime	Beni Malek	168	100	
Oui	X Plan					
36	PNAQP	Mzel Temime	Louatia	95	113	
Oui	2000					
18	PNAQP	Sers	Ennacim	275	250	
Oui	2002					
16	PNAQP	Gaafour	Lycée	284	300	
Oui	2001					
33	PNAQP	Mornag	Sidi Saad	352	336	
Oui	2001					
26	PNAQP	Metouia	Metouia	454	338	
Oui	2002					
22	PNAQP	Enfidha	Ettahrir	440	445	
Oui	2002					
5	PNRQP	Mzel Abderrahmane	Oued Roumine		627	
500	Oui	Existe				
4	PNRQP	Mateur	Erraja	864	1300	

Oui 2000

3 761
3 855

APPENDIX C

ENVIRONMENTAL IMPACT CHECKLIST FOR AN UPGRADING PROJECT

(Case study on the neighborhood of El Asfouria - Le Kef - Tunisia)

Environmental Impact Checklist for an Upgrading Project

I - Brief description of the project:

Project title: Wastewater project of Asfouria neighborhood (2^{eme} PNAQP)

- City: Le Kef
- Number of households benefiting from the project: 89
- Median income (if available): 2000 TD/an
- Total cost of planned works: 95 M DT
- Geographical area served: 10 ha
- Age of the neighborhood: 15 years

Planned works:

	Yes	No
1) Infrastructure services:		
- roads	x	
- sanitation	x	
- rainwater drainage runoff & flood protection		x
- potable water	x	
- electrical supply	x	
- street lighting		x
2) Restructuring of the urban fabric		
- Demolition/relocation of inhabitants		x
- Land ownership regularization		x
3) Building improvement		x
4) Construction of community facilities		x
5) Improvement of sites & services		x
6) Housing construction		x

Compliance of the project with urban development management plans:

	Yes	No
1) Is the area of intervention covered by a Development Plan ?	x	
2) Does the area of intervention belong to a vast operation for which an EIA has already been performed ?		x
3) Is the area of intervention located in a region covered by a sanitation master plan?	x	
4) Is the area of intervention located in a region covered by a potable water supply master plan	x	
5) Is the area of intervention located outside a legally restricted area of archeological, ecological or military constraint ?	x	

II. Possible effects of the rehabilitation activities on the environment:

	Yes	No
Will the area of intervention require land expropriation ?		x
Will the rehabilitation project be carried out in a particular physical environment (steep slopes, likelihood of flooding, difficult access, watercourse overflow, etc.), or near a sensitive region (lake, sebkha) or a protected site ?		x
Will the rehabilitation project lead to discharge of wastewater or polluted rainwater into the natural environment (lake, sea, sebkha, fertile land) for more than 2 years ?		x

Impacts on the environment:

	Yes	No
Will the building of roads:		
1) change the water flow (modification of an oued or a natural drainage system, increase in solid matter transported, flow modification, etc.)?		x
2) cause a worsening of erosion on surrounding land ?		x
3) worsen the clogging of existing sewers ?		x
4) lead to the felling of trees ?		x
5) intrude upon an archeological site ?		x

	Yes	No
In building the sewerage component		
1) Will the sewerage system to be built in the neighborhood be connected to a treatment plant		x
2) If pumping is used, will the overflow be discharged into the natural environment (groundwater table, oued, or other)?		x
3) Will connection of housing to the sewerage system require that the dwellings be raised so as to correspond to the level of the system ?		x
4) Is there a groundwater table (surface water) which is used for the neighborhood drinking water supply?		x

If there is no connection to a treatment plant, final discharge into the natural environment will be into:

	Yes	No
- a Sebkha		
- a lake		
- the sea		
- an oued	x	
- agricultural land		
- other milieu		

	Yes	No
In building the rainwater drainage component:		
1) will rainwater drainage exacerbate erosion outside the area of intervention ?		x
2) will the drainage system change existing watercourse beds ?		x

	Yes	No
For potable water		
1) Is the neighborhood potable water supply accompanied by an acceptable sewerage system?	x	

	Yes	No
For electrical supply and street lighting		
1) will installation of the electrical or street lighting system require pruning or felling trees?		x

	Yes	No
For the urban restructuring component:		
1) if there is to be expropriation, will those displaced be taken in charge by a relocation or other program?		

	Yes	No
For the building improvement component:		
1) will facades be subject to architectural or landscaping requirements ?		

	Yes	No
For the component involving construction of community facilities, sewerage-served sites or housing:		
1) will the land to be used for these components be land intended for urban use ?		
2) will the building of these components cause strong urban pressures on neighboring agricultural land that is not intended for urban development (aggravation of the situation concerning abandonment of farm land)?		

III. Summary opinion concerning the impacts the rehabilitation activities will have on the environment:

The summary opinion regarding EIA for the urban rehabilitation operation should be formulated in one of the following three forms:

The proposed project should have no significant impact on the environment, and may thus be carried out.

The proposed project might have had significant impact on the environment, but given the mitigating measures that have been added to it, which are described in an annex to the checklist, it should no longer have significant effects, and the project may be carried out with the above-mentioned mitigating measures.

The proposed project may have a significant effect on the environment; considering its sensitive nature, the project and the planned measures of mitigation will be submitted for approval by ANPE.

IV. Measures of mitigation decided upon

The treatment plant is under construction with the Belgian cooperation and is expected to be operational by the end of 1998.

APPENDIX D

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APPENDIX E

PERSONS INTERVIEWED

ONAS

Hassen Ben Mustapha	Chef de Département Nord-Est
Mohamed Hlioui	Chef de Département Sud
Habib Lahouar	Chef de Département Centre
Habib Omrane	Chef de Département Nord Ouest
Nejib Abid	Sous-directeur de la planification et statistiques
Hamed Atallah	Chef de service au département Grand Tunis
Mouldi Ben Brahim	Directeur des Etudes et Travaux au Département Nord-Est
Daoud Ayed	Directeur des Etudes au Département Développement
Hamouda Abdelmajid	Chef de division au Département Grand Tunis
Hichem Gobji	Chef de service au Département Grand Tunis
Moncef Kamoun	Directeur des études et travaux au Département Grand Tunis

CGDR

Najeh Drissi	Directeur Général
Jedidi	Directeur chargé du PDUI
Makhlouf	Cadre au CGDR

ANPE

Mohamed Ghourabi	Chef de Département
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ARRU

Fathi Mansouri	Chef de Département Développement
Noomane Hachicha	
Fayçal Sghaier	
Mohamed Ali Gaigi	

CPSCL

Semir Chaabba	Directeur des études et suivi
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USAID/RHUDO - TUNIS

Fathi Kraiem	
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APPENDIX F

TRAINING EVENTS RELATED TO EIA AND ENVIRONMENTAL MANAGEMENT ATTENDED BY ANPE STAFF

Participation de l'ANPE aux manifestations relatives aux études d'impact

Manifestation	Date	Lieu
Formation des formateurs sur les études d'impact sur l'environnement en Gestion et planification de l'environnement	15/6-3/7/92	Tunisie
Gestion et planification de l'environnement	29/11-2/12/92	Tunisie
Gestion et planification de l'environnement	7-18/12/92	Tunisie
Programme de formation à l'éducation environnementale	14-25/9/92	Tunisie
Etude d'impact sur l'environnement	2-12/12/92	Egypte
Séminaire sur les études d'impact	18-19/04/93	Algérie
Les études d'impact sur l'environnement	17/5-13/6/93	Suisse
Cours de formation sur l'administration et gestion de l'environnement	4/10/93-11/11/93	Japon
Impact environnemental des rejets radioactifs	8-12/5/94	Autriche
Atelier sur les études d'impact sur l'environnement des projets de	27/5-3/6/94	Jordanie
Table ronde: Etudes d'impact sur l'environnement et activités pétrolières	23/06/94	Tunisie (ETAP)
Atelier régional sur l'évaluation environnementale	17-24/10/94	Tunisie
Etat de l'environnement dans le monde arabe	17-21/10/94	Tunisie (ALECSO)
Les études d'impact sur l'environnement	18/11-02/12/94	Egypte
Formation professionnelle dans le domaine de la protection de	1/10-31/12/94	Allemagne
Séminaire sur les études d'impact sur l'environnement	18-19/5/95	Tunisie
Programme de formation et de perfectionnement en matière	Mars-Oct-Nov 96	Tunisie (CITET)