

PROJECT HISTORY IN SOLID WASTE
Solid Waste Management, including Medical Waste Management

Feasibility Study for Solid Waste Management, & Design of Landfill

Client: Urban Community of the Wilaya of Fez, Morocco

Location of the Project: City of Fez, Morocco

Period of Completion of the Project: 1997 - 1998



===== **Improvement Project** =====

- The main goal of this project was to study, for the first time, the different possible alternatives for a better management of the solid waste in the Wilaya of Fez.
- The Wilaya of Fez (population 800,000 inhabitants), has a lot of problems managing its solid waste, although the city spends a lot of money annually to improve the collection of solid waste. However, municipal solid waste is often not collected and accumulates in ditches around the city. This situation not only threatens the population's health, but also has a negative impact on tourism in the City, which is a highly regarded historic site.
- To address this problem, the Urban Community of the Wilaya of Fez retained Sadat International, Inc. (SII), an affiliate of Sadat Associates, Inc. (SAI) to conduct a feasibility study to determine alternative methods of waste management.
- The medical waste management component focused on the collection, treatment, and disposal of medical waste (both unregulated and regulated), and included training and awareness programs.

=====Services Provided=====

▪ Evaluation of the present situation

➤ Characterization

SII completed weighing and sorting campaigns and analysis of waste to determine the quantity and quality of the waste produced and establish forecasts for future productions.

➤ Evaluation of existing collection systems

This study was used to evaluate the present collection routes, zones as well as the frequency of collection of solid waste.

➤ Evaluation of existing organizational structure

Existing organizational structure for solid waste management were assessed by analyzing the human, equipment and financial means.

▪ Alternative methods of solid waste management

➤ Optimization of collection systems

Optimization studies were conducted for the collection routes, zones and frequency of collection.

➤ Study of applicable technologies

This study was focused on the treatment, composting and recycling of waste.

➤ Selection of the recommended alternative

SII recommended the construction of a new sanitary landfill.

▪ Evaluation of the impacts on the environment

SII assessed the impact of the landfill on surface water, ground water and developed remedial measures to mitigate those impacts.

▪ Economic and financial analysis

➤ Personnel, equipment and financial needs

The personnel, equipment and financial needs necessary for a good solid waste management were evaluated.

➤ Cost recovery

The different cost recovery methods, like taxes, fees, sale of sub-products, etc. were also evaluated.

▪ Analysis of institutions, regulatory and administrative structures

SII recommended institutional and administrative measures as well as modification of the

regulations for achieving better waste management.

- **Landfill design**

- **Solid Waste Master Plan**

SII directed the solid waste master plan study for the City of Fez, Morocco. This work included optimization of collection routes, recycling and transfer stations design, waste treatment scenarios, composting and co-composting, institutional and financial studies, cost analyses and cost recovery, rate studies, and financing alternatives.

- **Landfill design**

SII directed the design of the new controlled landfill for the City of Fez, Morocco. This work included bottom liner and capping system design, leachate management, gas management and co-generation, development of landfill operation procedures and manuals, closure and post closure operation and maintenance plans, cost analyses, and cost recovery.

=====Follow-up on the Project=====

Success of the Feasibility Study
The Urban Community of Fez elected to construct a
new sanitary landfill, as recommended by SII



Other Similar Projects

- **11 Provinces, Tunisia**

*Feasibility Studies for Solid Waste Management
Design of Sanitary Landfills*
Provinces of Gafsa, Gabes, Medenine, Jerba (Section 2)
Provinces of Tataouine, Kebili, Tozeur (Section 3)
Provinces of Kairouan, Mahdai, Sidi Bouzid, Kasserine (Section 5)

- **Grand Bizerte, Tunisia**

*Feasibility Study for Solid Waste Management
Design of Controlled Landfill*

- **City of Fez, Morocco**

*Feasibility Study for Solid Waste Management
Design of Controlled Landfill*

- **City of Abidjan, Côte d'Ivoire (no Medical Waste Management Component)**

*Feasibility Study for Solid Waste Management
Design of Controlled Landfill*

- **New City of Sidi-Abdellah, Algeria (no Medical Waste Management Component)**

*Feasibility Study for Solid Waste Management
Design of Controlled Landfill*