

Project for the Improvement of Garbage Collection Equipment in the City of Managua



Project Sites Managua

1. Background of Project

The urban infrastructure of Managua, the capital of Nicaragua, had not been adequately developed until the 1990's, since it was destroyed by the earthquake in 1972 and afterwards suffered from civil war and economic crisis. Lack of adequate roads hindered waste collections and caused very poor environmental and sanitary conditions there.

Since the early 1990's, the authorities of Managua City have tried to address these situations. However, as 52% of the waste collection trucks owned by the city authority were obsolete at that time, and since it was impossible to acquire alternative parts, these trucks could not be used for the long term.

In order to cope with the situation, the Government of Nicaragua, which has set forth an environmental conservation policy, made a request to the Japanese Government for a Grant Aid to cope with this situation in Managua.

2. Project Overview

(1) Period of Cooperation

FY1991

(2) Type of Cooperation

Grant Aid

(3) Partner Country's Implementing Organization

Municipality of Managua (ALMA)
 Ministry of Health (MINSA)
 Ministry of the Environment and Natural Resources (MARENA)

(4) Narrative Summary

1) Overall Goal

The environmental and sanitary conditions of Managua are improved.

2) Project Purpose

The Managua citizens will be provided efficient collection and disposal services of solid waste.

3) Outputs

Equipment and vehicles necessary for the disposal of solid waste will be provided.

4) Inputs

Japanese Side

Grant	403 million yen (E/N amount)
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Nicaraguan Side

Facilities

3. Members of Evaluation Team

JICA Nicaragua Office
 (Commissioned to local consultants headed by Mr. Alejandro Maltez Montiel).

4. Period of Evaluation

18 December 2000 – 10 March 2001

5. Results of Evaluation

(1) Relevance

The project has been confirmed to be consistent with the Nicaraguan governmental policy on the environment, which prioritizes greening movements, although the did not directly has conformity with it. Also, it responded to the high demands of the Managua citizens to improve waste collection facilities, which would serve sanitary development, urban development, environmental conservation, job creation and streetscaping. Thus, this project was confirmed to be largely relevant.

(2) Effectiveness

64% of the waste collection vehicles owned by Managua city authorities were replaced with new vehicles and new waste disposal equipment was introduced. This upgrading enhanced the waste collection rate from 55% before the project to 77% in 1995. Also, the enforcement of the project led to practice in disposal activities, such as the removal and compression of waste. Moreover, in order to prevent a breakdown of the supplied equipment, the systems for periodical equipment inspection and parts management in the Managua authorities were established.

Therefore, it can be concluded that the goal of this project has been accomplished.

(3) Efficiency

The operation rate of the provided facilities was high, since the technical level necessary for operation of the equipment supplied was adequate and the Nicaraguan staff was selected properly. It is believed that the efficiency in the input of Japan's side was high.

(4) Impact

The enforcement of the project improved the collection and disposal of waste, resulting in a decrease of bad odor and diseases, and in an improvement in the cityscape.

Also, the introduction of new facilities created new employment opportunities in the Managua city authorities for the operation and maintenance of new facilities.

(5) Sustainability

By the enforcement of the project, the revenue of the city authorities in the collecting and disposal fee increased from 9 million yen in 1996 to 46 million yen in 2000. However, it was still insufficient to cover the operation and maintenance cost of facilities, which was 49 million yen for 1999.

Moreover, malfunctions were found in those supplied facilities due to high usage frequency, such as refuse collection vehicles. Difficulty remained in coping with machinery problems for the city authorities, who had a shortage of self-income and could not acquire financial support from the central government, while the procurement of some alternative parts was also difficult.

Therefore, the sustainability of this project is considered to be low, unless any improvement on these issues are made.

6. Lessons Learned and Recommendations

(1) Lessons Learned

The Managua authorities were able to receive very little support from the Nicaraguan Government in this pro-



A tractor at work in a dump site



After garbage collection, the collection vehicles are returned to workshop at Los Cocos to be washed and undergone minor maintenance

ject and not enough revenue was collected from the citizens as well. In future projects on the city government level, support and understanding of the central government and targeted people should be secured by encouraging them to participate in the project, starting at the planning stage.

(2) Recommendations

The Managua city authorities are in need of reconsidering the organizational management and securing of the revenue source. Especially, a collection system for the refuse collection fee from citizens and a budget allocation for the maintenance of supplied equipment should be improved. The authorities also need to strengthen cooperative relationships with the central governmental organizations and to create regulations and civic education on solid waste.

7. Follow-up Situation

Based on the request for a follow-up project in July 2001, overhauls of bulldozers and spare parts for refuse collection vehicles were provided.