

A Study on Solid Waste Management in the City of Buenos Aires and Greater Buenos Aires Focusing on its Current Operational Framework

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Introduction

The City of Buenos Aires, Capital of the Argentine Republic, along with the Greater Buenos Aires, is one of the largest urban metropolitan areas of the World and the third in Latin America, after Sao Paulo and Mexico DC, is well-known as "Metropolitan Area". It has historically been the political, economical and cultural center of Argentina, with a growing influence over the rest of the country. It is a 4,000 Km² surface, inhabited by over 13 million people. This area concentrates 40 % of the Argentine population, 60 % of all the industries established in the country and 50 % of housing garbage produced in Argentina. The structural problematic of the Metropolitan Area comprises various urban planning related matters, among which some specific environmental management issues have to be tackled. The lack of foresight regarding the disordered urban growth of this area, as well as ill-conceived planning policies, worsened the situation rather than improve it. However, after analyzing Metropolitan Area's arising urban problems, must be highlighted that the solid waste management system implemented in the above mentioned region, seems to be an exceptional case within which environmental conditions were indeed improved.

The Current Framework of the Solid Waste Management System in the Area-Study

Before 1977, there was an enforcement law (Law No.10,961/61) dated from 1961, prohibiting open dumps and scavenger's related activities in the Metropolitan Area; however, the lack of an urban policy planning did not allow to set up a "comprehensive solid waste management system" according to the needs of the region. Therefore, what Buenos Aires City Hall and Municipalities of Greater Buenos Aires did in order to deal with their solid wastes, was just to render services of collection of wastes. Thus, the garbage after being collected, was directly transported and dumped into "open disposal areas". This anarquic and ill-planned 'methodology' allowed for scavengers and pickers' unhealthy works of burning and removing the garbage, to take re-usable materials such as glass and metals.

CEAMSE stands for "*Ecological Coordination in the Metropolitan Area*" a State owned Company", set up by the Government of Buenos Aires Province and the Buenos Aires City Hall on May 6, 1977 aiming: to contribute to ensuring ecological balance and conservation in the Metropolitan Area, to eliminate environmental pollution and to clean up ground water by:

- Planning, designing and operating, itself or through contractors, the final disposal of solid wastes by means of "sanitary landfills".
- Organizing and operating, itself or through contractors, the collection of solid wastes of all kinds, including street-sweepings and tree clippings, in all municipalities and any municipalities in the Metropolitan Area, under agreements with each one.
- Planning, designing and operating, itself or through contractors, the treatment and disposal of hazardous solid or liquid waste of all kinds.
- Planning, designing and operating, itself or through contractors, the reclamation of low-lying or flooded lands in the Metropolitan Area.
- Planning, designing and operating, itself or through contractors, a system of green areas and recreational parks.
- Planning, designing and operating, itself or through contractors, the cleaning of all rivers and soil, the construction of parks, the construction of flood prevention works.
- Setting apart the necessary pieces of land within the Metropolitan Area to implement sanitary landfills and other works described above.

CEAMSE came into being by enforcement of Buenos Aires Province Government Law No. 9111, and Buenos Aires City Hall Law No.33,691, which provided of a comprehensive and adequate legal framework. The Board of CEAMSE is composed of 3 Directors elected by the General Assembly, functioning in fact as follows: one is appointed by Buenos Aires Province Government; one by Buenos Aires City Hall, and the third one by mutual agreement between the two parties. CEAMSE was legally empowered to take out loans, being the Company's starting capital an especial fund provided by both, the Buenos Aires City Hall and Buenos Aires Province Governments. Regarding operating revenues, planning and consultancy services rendered by CEAMSE to the municipalities, and tariffs levied mainly for sanitary landfilling, transfer and haulage of solid waste to disposal centers, treatment and disposal of liquid waste and street-sweeping, allow the Company for self-financial operability and management.

CEAMSE is concerned with the solid waste management of twenty-two municipal districts of the Buenos Aires suburbs and Buenos Aires City, and applies the "Sanitary Filling Method", which demands suitable lands highly waterproof clays. There are three "Transfer Stations" in Buenos Aires City: Pompeya, Flores and Colegiales, which receive wastes delivered by the Buenos Aires City Hall through private contractors (MANLIBA and CLIBA) and Municipal Authority (General Directorate for Urban Cleaning, DGLU). These transfer stations went into operation in April 1979, having capacity to handle 180 tons of refuse per hour. SYUSA is the argentinian company which built and operates the transfer stations. MANLIBA (Mantenga Limpia a Buenos Aires) is responsible for 65% of all waste collected, collecting an average of 1,850 tons of waste daily, which according to the contract, has to be hauled and dumped at Colegiales or Nueva Pompeya transfer stations. This company is a joint venture of Waste Management, Inc., a U.S. company (51% of shares) and Impresit Sideco, an argentine construction company, and it was awarded in 1981 with a contract valid for ten years for garbage collection and street-sweeping. MANLIBA operates in the northeast part of the city, which includes the business district and the city's wealthiest and most populated area (around 2,000,000 people), with a quite large fleet composed of compactor trucks, dumper trucks, roll on-roll off trucks for special services, street-sweepers, vacuum trucks, mini-collection trucks and mini-street sweepers. The contract between the Buenos Aires City Hall and MANLIBA is valid for ten years (it was recently re-extended for one more period) and stipulates that all waste collected by the company has to be transported and dumped at Nueva Pompeya or Colegiales transfer stations.

CLIBA (Environmental Engineering) is an argentine company which belongs to two civil and road construction companies, Benito Roggio e Hijos S.A. and Ormas S.A.I.C.I.C. In 1987, this company was awarded by Buenos Aires City Hall Authorities after public bidding, with a contract for solid wastes collection and street-sweeping services, valid for 5 years and renewable for a further 5 years. According to contract, costs are assessed on the basis of weight alone, regardless of the length of curbside blocks served. CLIBA is responsible for the western section of the city, with around 600,000 inhabitants, collecting an average of 600 tons per day, which have to be taken to the Flores transfer station. Company's equipment comprises compactor trucks, dumper trucks, street-sweepers, vacuum trucks and roll on-roll off trucks.

DGLU (General Directorate for Urban Cleaning) serves the southern part of the city, which is populated by around 400,000 people. This municipal personnel operate compactor trucks, dump trucks, roll on-roll off trucks for special services and street-sweepers, collecting an average of 550 tons daily taken to the Flores transfer station.

Each municipality from Greater Buenos Aires would, individually, collect the garbage of its jurisdiction, carrying such wastes to sanitary landfills operated by CEAMSE. In case of solid waste from industries, CEAMSE accepts the ones which would not imply a risk, upon the presentation of an "Affidavit" by its generator and subject to a periodical control thereof. There are presently four waste final disposal centers (Sanitary Landfills): # I Northern Final Disposal Center, located in General San Martín Municipal District; # Gonzalez Catan, placed in La Matanza Municipal District; # Villa Dominico, situated in Avellaneda Municipal District and La Plata II, located in Ensenada Municipal District. All of them are located in the Province of Buenos Aires.

Summary and Findings

The study suggests to consider the following relevant issues arising within this system of solid waste management:

- Economic recovery in Argentina during the last three years, lead to a sharp increase in consumption of goods in the area-study, so, generation of garbage increased too. Therefore, new planning for "sanitary landfills" is required because they will be filled sooner than previously planned.
- There is a high percentage of municipal garbage that is not being collected, which shows some deficiencies in the residential curbside collection system in several municipal districts.
- The illegal dumping of wastes into non-authorized disposal areas is increasing. There are more than 100 dumps of this kind; it is a 600 Ha. (Hectares) surface and over 5 million/m³ of wastes.
- The Municipalities are not allowed to participate within CEAMSE's decision making process.
- Homeowners do not separate waste materials "at the source", there is no selective collection of garbage, and moreover, there is no Unit Operations for the separation and processing of waste materials of any kind. Therefore, further steps to begin a basic recycling program of wastepaper, glass and metals must to be taken.
- A treatment plant for hazardous industrial wastes is necessary in the Metropolitan Area.
- An "Integrated Solid Waste Management Program" has to be set up.

Key words: CEAMSE, Sanitary Filling Method, Transfer Station, Selective Collection, Recycling Program, Integrated Solid Waste Management Program.