



Alexandria

Alexandria is the second-largest city in Egypt and a major economic centre, extending about 32 kilometres along the coast of the Mediterranean Sea in the north-central part of the country. Alexandria is an important industrial centre because of its natural gas and oil pipelines from Suez. Alexandria is also a popular tourist destination.

The Environmental Department of the Municipality is not in charge of SWM services, but there are more than 200 staff members in the Department and about 100 staff members who have been trained in SWM.

Information

Population*	4.79 million (2015)
Population growth (annual %)*	2.0 (2010-2015)
Area (km ²)**	2,679
Climate**	Hot desert climate
Main industries**	Natural gas, oil, tourism, international shipping, international trade
Currency***	USD 1: EGP 17.27 (Egyptian pound) (March 2019)

Sources: * United Nations, Department of Economic and Social Affairs, Population Division (2018). World Urbanization Prospects: The 2018 Revision, Online Edition.

** Wikipedia, Alexandria, accessed 19 March 2019, <<https://en.wikipedia.org/wiki/Alexandria>>

*** Oanda.com

Current SWM Situation

Item	Outline
Institutional System	
Legal system	<ul style="list-style-type: none"> ● The municipality has a code/regulation on municipal solid waste management.
Policy/Plan	<ul style="list-style-type: none"> ● No plan.
Implementation system	<ul style="list-style-type: none"> ● All aspects of SWM operations are undertaken by the private sector: sweeping (city centre, public areas and residential areas), collection, transfer station, transport from the transfer station to the disposal site, final disposal, and recycling. ● The work of the private sector is performed under a contract, but this system is not running well because the contract is unclear. The Ministry of Environment entered into a general contract for the period 2017-2019 for two cities (including Alexandria) but there is no specific contract with the city authority. In addition, the monitoring of the work is not conducted properly, as no monitoring procedures have been established.
Technical System	
Waste generation amount & characteristics	<ul style="list-style-type: none"> ● 15,000 m³/day or 5,000 tons/day (as of 2016), which is calculated by the weighbridge at the disposal site and/or transfer station, and estimated by multiplying population and waste generation rate. ● Composition of waste: food waste 50%, plastic 7%, paper 11%, textile 6%, wood 5%, rubber and leather 4%, metals 8%, glass 10%, ceramics 5%. This composition is known from a detailed waste composition survey conducted by donor agencies, universities and consultants.
Storage and discharge/ Collection and transportation/ Road sweeping	<ul style="list-style-type: none"> ● Amount of waste collected: 3,500 tons/day. ● 700,000 people, or 15% of the city's residents, are covered by waste collection services. ● Private sector companies are hired for the transportation of waste from the transfer station to the disposal site. Collection vehicles are the property of the private companies. ● There is a sweeping service in the city centre (three times a week). ● There are three transfer stations in the city. ● 2,000 tons/day of waste is transported from the transfer station to the disposal site (measured by the weighbridge at the transfer station). ● There are 20 trailers (capacity of 4 m³). Of these, 70% are functional. ● There are two dump trucks (capacity of 4 tons). They are functional 70% of the time. ● There are 12 container trucks. Of these, 10% are functional. ● There are 75 small trucks. Of these, 2% are functional. ● 20% of the compactor trucks and 80% of the other waste collection trucks are functional. ● The malfunction is due to lack of maintenance. ● Collection vehicles are also not running properly due to a lack of fuel.
Intermediate treatment/ Recycling	<ul style="list-style-type: none"> ● There is a recycling/treatment facility. It is a composting facility. ● Separate collection is practiced. ● Self-disposal is not practiced.

Item	Outline
Final disposal	<ul style="list-style-type: none"> ● There is one final disposal site, ten kilometres from the city centre. It has a capacity of 3 million tons. ● 1,000 tons/day of waste is delivered to the final disposal site. ● The disposal site has the following equipment: bottom liner, leachate collection pipe, weighbridge, tyre washer, gate, fence, and drainage to prevent rainwater from entering the waste disposal area. ● The disposal site is operated 24 hours/day and has daily operation plans. ● Operations include: compaction of waste, covering waste with soil or other material immediately or within a week, and intermediate soil cover for areas which are not used for several months.
Financial system	<ul style="list-style-type: none"> ● Total revenue and expenditure amounts are unknown. ● Expenditure for services: <ul style="list-style-type: none"> » Collection and transportation: EGP 10 million. » Sweeping: EGP 8 million. » Treatment/recycling: EGP 8 million. » Final disposal: EGP 11 million. ● Waste collection is charged with electricity bills: <ul style="list-style-type: none"> » Household waste: EGP 20. » Commercial waste: EGP 150. » Institutional waste: EGP 3,000.
Environmental and social considerations	<ul style="list-style-type: none"> ● Data not provided.
Donor support	<ul style="list-style-type: none"> ● There is no donor support at present.
Areas for improvement (in order of priority)	<ul style="list-style-type: none"> ● Expansion of refuse derived fuel (RDF) production lines. ● Assistance in developing fertiliser plants. (The existing fertiliser plant was established in 1997 with a grant from JICA.) ● Assistance for producing electrical energy from waste, especially in landfills and transfer stations. ● Assistance in developing monitoring mechanisms in accordance with the modern advanced methodology for integrated and sustainable SWM in light of SDGs through training programmes.

Waste Amount at Each Stage of Waste Flow*

Waste flow	Amount ** (ton/day)	Remarks
① Waste generation	5,000	Waste generated at houses, offices, shops, restaurants, etc.
② Discharge to collection	3,500	Waste discharged for collection services.
③ Self disposal	N/A	Disposal at generation sources, such as burning and burying.
④ Recycling at source	N/A	Reuse of materials, composting, sold to recyclers.
⑤ Collection and transport	2,000	Waste amount collected and transported.
⑥ Clandestine dumping	N/A	Waste illegally disposed of in unknown location.
⑦ Treatment	N/A	Material recycling, composting, incineration, etc.
⑧ Recycling/Reduction	N/A	Recycled and/or reduced waste amount by material recycling, composting, incineration, etc.
⑨ Residue	N/A	Residue from treatment facilities.
⑩ Final disposal site	1,000	Waste amount brought into disposal sites.
⑪ Recycling	0	Recycled at disposal sites.
⑫ Final disposal	1,000	Waste amount finally disposed of at disposal sites.

* Based on the waste flow chart on page.

** Figures include estimated value.