



Tema, locally nicknamed the “Harbour City”, is a city on the Bight of Benin and Atlantic coast of Ghana. It is located in the region of Greater Accra, 25 kilometres east of the capital city of Accra. Tema is the capital of the Tema Metropolitan District.*

Tema Metropolitan Assembly (TMA) collects and disposes of solid waste from institutions, commercial entities, and schools. Private operators collect solid waste from households and dispose of the waste at a landfill, under franchise agreements with TMA. TMA supervises and monitors these contractors and their operations. There is one composting facility, one biogas plant, and one sanitary landfill. The landfill is located 7.5 kilometres from the city and is managed by a private operator under a franchise agreement with TMA.

Source: * Wikipedia, Tema, accessed 6 March 2019, <<https://en.wikipedia.org/wiki/Tema>>

Information

Population	351,214
Population growth (annual %)	N/A
Area (km ²)	121
Climate*	Tropical savanna climate
Main industries*	Aluminium, steel, processed fish, refined petroleum, textile, chemicals, food products, and cement
Currency**	USD 1: GHS 5.09 (Ghanaian cedi) (March 2019)

Sources: * Wikipedia, Tema, accessed 6 March 2019, <<https://en.wikipedia.org/wiki/Tema>> ** Oanda.com

Current SWM Situation

Item	Outline
Institutional System	
Legal system	<ul style="list-style-type: none"> ● Environmental Sanitation By-laws, 2017. ● Licensing of Service Providers By-laws, 2017. ● Liquid Waste Collection and Disposal By-laws, 2017. ● Sullage and Storm Water Drainage By-laws, 2017. ● Litter Control By-laws, 2017. ● Control of Pollution By-laws, 2017.
Policy/Plan	<ul style="list-style-type: none"> ● National Environmental Sanitation Strategy Action Plan (NESSAP). ● Metropolitan Environmental Sanitation Strategy Action Plan (MESSAP). ● Revised National Sanitation Policy (2010).
Implementation system	<ul style="list-style-type: none"> ● TMA is responsible for formulating environmental sanitation by-laws, licencing service providers, litter control and control of pollution. ● TMA collects and disposes of waste from institutions and commercial entities. ● Private operators collect and dispose of household waste. ● The disposal site is managed by a private operator under a franchise agreement with TMA. ● TMA supervises and monitors the operations of private operators. ● Other institutions involved in SWM include: <ul style="list-style-type: none"> » Ministry of Sanitation and Water Resources: responsible for formulating sanitation policies and ensuring compliance. » Ministry of Health: responsible for medical waste. » Environmental Health and Sanitation Unit: enforces by-laws.
Technical System	
Waste generation amount & characteristics	<ul style="list-style-type: none"> ● The municipality generates 800 tons/day at the rate of 0.9 kg/person/day. ● The composition of the waste is as follows: <ul style="list-style-type: none"> » Organic waste 50.7%, plastics 26%, textile 7.2%, wood 1.2%, paper 14.9%
Storage and discharge/ Collection and transportation/ Road sweeping	<ul style="list-style-type: none"> ● Waste collection is 672 tons/day. ● About 70% of the residents have access to the waste collection service. ● The municipality uses the following vehicles for the collection service: <ul style="list-style-type: none"> » One compactor truck with a capacity of 15 m³. » One side loader with a capacity of 12 m³. » 323 skip containers with a capacity of 15 m³.
Intermediate treatment/ Recycling	<ul style="list-style-type: none"> ● 2% of the waste collected is recycled. ● There is one biogas plant.

Item	Outline
Final disposal	<ul style="list-style-type: none"> ● The disposal site is 7.5 km from the city centre. ● The site covers an area of 15 ha and has a design capacity of 500 tons/day. ● The site has the following features: weighbridge, bottom liner, leachate collection pipe, gas removal pipe, leachate treatment facility, landfill gas capture facility, tyre washer, gate, and fence. ● Waste is compacted and covered with soil. ● There is one composting plant. The plant treats 500 tons of faecal waste co-composted with solid organic waste per year.
Financial system	<ul style="list-style-type: none"> ● The municipality collects GHS 100,000/year. ● The charge for the waste collection service is GHS 23/ton for commercial waste and GHS 12/month for institutional waste. The tipping charge is GHS 24/ton. ● The total budget for waste management is GHS 3,735,000 (USD 778,125). ● The expenditure distribution is as follows: <ul style="list-style-type: none"> » 25% communal collection. » 40% vehicle maintenance. » 10% monitoring and evaluation. » 10% franchise collection and management. » 25% landfill management.
Environmental and social considerations	<ul style="list-style-type: none"> ● Communities are informed about how to discharge waste and about collection day and time.
Donor support	<ul style="list-style-type: none"> ● World Bank/International Development Association (IDA): Urban Environmental Sanitation Project, UESP2, Design and Construction of Landfill Site. ● JICA: capacity building on integrated solid waste management. ● World Bank/IDA: provision of sanitation facilities.
Areas for improvement (in order of priority)	<ul style="list-style-type: none"> ● Technical issues: planning final disposal sites and strengthening the waste management department with skilled staff. ● Institutional issues: prioritising solid waste management. ● Financial issues: availability of funds to operate. ● Legal issues: effective enforcement of the by-laws.

Waste Amount at Each Stage of Waste Flow*

Waste flow	Amount ** (ton/day)	Remarks
① Waste generation	800	Waste generated at houses, offices, shops, restaurants, etc.
② Discharge to collection	672	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	N/A	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	N/A	Waste amount brought into disposal sites.
⑪ Recycling	N/A	Recycled at disposal sites.
⑫ Final disposal	N/A	Waste amount finally disposed of at disposal sites.

* Based on the waste flow chart on page.

** Figures include estimated value.

Location of Waste Management Facility and Related Photographs:

