

Khartoum State is one of the eighteen states of Sudan. Although it is the smallest state by area (22,142 square kilometres), it is the most populous (5,274,321 in 2008 census). It contains the country's two largest cities by population, Omdurman, and the city of Khartoum, which is the capital of the state as well as the national capital of Sudan. Khartoum contains offices of the state, governmental, and non-governmental organisations, as well as cultural institutions, and the main airport. There are seven localities in the Khartoum state and each locality has Cleaning Offices under the Government Locality.*

SWM services are managed in the state by the Khartoum State Cleaning Corporation (KSCC). This organisation is in charge of waste collection and transportation. However, because of insufficient systems and the deterioration of the equipment, the collection rate remains around 75% of the total waste volume. Therefore, waste mostly remains in the city, which is damaging the hygienic environment, mainly in the low-income areas.

Source: * Wikipedia, Khartoum (state), accessed 28 November 2018, <[https://en.wikipedia.org/wiki/Khartoum_\(state\)](https://en.wikipedia.org/wiki/Khartoum_(state))>

Information

Population	5,274,321 Metropolitan Area (2008 census); 10 million in 2018
Population growth (annual %)	6.6 (2008-2018)
Area (km ²)*	22,142
Climate*	Hot arid climate
Main industries*	Printing, glass manufacturing, food processing, and textiles
Currency**	USD 1 : SDG 47.50 (Sudanese pound) (February 2019)

Sources: * Wikipedia, Khartoum, accessed 28 November 2018, <<https://en.wikipedia.org/wiki/Khartoum>>

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Current SWM Situation

Item	Outline
Institutional System	
Legal system	<ul style="list-style-type: none"> ● Khartoum State Environmental Protection Law of 2008: regulates waste management at the state level. ● Solid Waste Management Regulation of 2013. ● Environmental impact assessment (EIA) system is applied to final disposal sites in the state under the Khartoum State Environmental Protection Law.
Policy/Plan	<ul style="list-style-type: none"> ● The Master Plan for SWM in the state was prepared in 2013.
Implementation system	<ul style="list-style-type: none"> ● Constitutionally, SWM is the responsibility of the local government. ● Khartoum State Cleaning Corporation (KSCC): in charge of managing SW in the state (street sweeping, collection and transportation, transfer station, recycling facilities, final disposal site) and preparation of the SWM Master Plan. KSCC has 104 staff in administration and 400 staff in operation. There are seven municipal cleaning offices in the state and more than 5,000 staff are working in operation. ● Ministry of Health in Khartoum State: in charge of formulation of law on medical waste. ● Ministry of Environment in Khartoum State: in charge of formulation of law on general environment. ● Local governments: in charge of coordination among stakeholders. ● Ministry of Finance in Khartoum State: in charge of budgeting SWM.
Technical System	
Waste generation amount & characteristics	<ul style="list-style-type: none"> ● Waste generation amount: 5,000 tons or 10,000 m³/day (estimated by multiplying population and waste generation rate). ● Waste generation rate: 0.5 kg/person/day (study conducted by JICA, 2013). ● Waste collection amount: 3,500 tons/day, of which 1,000 tons/day directly transported from household to disposal sites and 2,500 tons/day transported from the transfer stations to disposal sites (data from weighbridge at transfer stations and dump sites, 2018). ● Waste collection coverage rate: 75% based on population. ● Waste characteristics: food 50%, paper and plastics 13%, metals 5%, glass 8%, cardboard 5%, rubber, wood and textile 4%, ceramics, soil, rubble, ash, and diapers: 3%, biomedical, oil filters, batteries: 1.5%, others: 3.5% (study conducted by JICA, 2013).
Storage and discharge/ Collection and transportation/ Road sweeping	<ul style="list-style-type: none"> ● Private sector participates in provision of road sweeping and waste collection services. ● There is no informal sector involved in waste services. ● Community is informed of how to discharge waste such as collection day and time through public bulletin by KSCC. ● Road sweeping service is provided by Localities in the city centre, public areas and residential area. ● House-to-house collection in residential area is conducted three times a week, while commercial and institutional waste is collected daily. ● Hauling distance from the city centre to a transfer station is about 8 km, from city centre to a disposal site is about 20 km. ● The KSCC has 220 compactor trucks of 7 m³, 100 roll-off trucks, 30 tippers, and 20 trailers of 75 m³. ● There are three transfer stations already, and five new transfer stations are under construction. ● There are 20 trailers of 75 m³ for transporting waste from transfer station to disposal site, of which 75% are functional and 25% are non-functional due to lack of maintenance and spare parts. ● There are ten 18 m³ dump trucks, of which 80% are functional and 20% are non-functional due to lack of maintenance and spare parts. ● Waste separation at source is not practiced.

Item	Outline
Intermediate treatment/ Recycling	<ul style="list-style-type: none"> ● There is no Materials Recovery Facility (MRF) but one composting facility with capacity of 1,000 tons/day in Omdurman dump site. ● There are six waste dealers and nine industrial scale recyclers in the state. ● Only 5% of collected waste streams are recycled (data from factory).
Final disposal	<ul style="list-style-type: none"> ● There are three dump sites and all are managed by the KSCC. ● Taiba disposal site: <ul style="list-style-type: none"> » Area: 2.5 km². » Operation hours: 24 hours. » Waste disposal amount: 600 tons/day (estimated by multiplying collection truck capacity and number of trips). » Facility: open dumping. » Operation: no compaction but covering with soil immediately. ● Omdurman disposal site: <ul style="list-style-type: none"> » Area: 4 km². » Operation hours: 24 hours. » Waste disposal amount: 1,500 tons/day (weighbridge data at the disposal site). » Facilities: weighbridge, gas removal pipe (but not working) and composting facility. » Operation: compaction and soil covering immediately. ● Hatab disposal site: <ul style="list-style-type: none"> » Area: 5 km². » Operation hours: 24 hours. » Waste disposal amount: 1,400 tons/day (estimated by multiplying collection truck capacity and number of trips). » Facility: open dumping. » Operation: compaction and soil covering immediately. ● There are about 800 illegal waste pickers in the above three disposal sites.
Financial system	<ul style="list-style-type: none"> ● Total revenue and expenditure for the waste service: Data not provided. ● KSCC charges waste collection fee of SDG 50/month for households independently from other public services. Coverage rate is only 25% in household. ● There is no tipping fee for waste disposal. ● Large generators such as factories are charged a collection fee per ton. ● Ministry of Finance provides budget for SWM.
Environmental and social considerations	<ul style="list-style-type: none"> ● There is no policy or law for supporting the informal sector.
Donor support	<ul style="list-style-type: none"> ● JICA dispatched specialists in 2011, and developed the Master Plan on WM in 2013. The technical cooperation was launched in 2014 to renew the Master Plan and to improve waste collection and transportation, as well as operations of transfer stations, disposal sites, and administrative organisation. ● Japanese Government provided 96 collection vehicles around the same time, which generated a synergistic effect with technical cooperation.
Areas for improvement (in order of priority)	<ul style="list-style-type: none"> ● Financial issues: need trailers to transport waste from transfer station to dump site. ● Technical issues: need capacity building and training centre for operation workers. ● Legal issues: implementation of laws on SW. ● Social issues: need public education on SW. Community should be involved in cleaning work.

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	N/A	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	3,500	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	3,500	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.