



Lagos_Nigeria

African Green City Index

Background indicators

Total population (million) ^{1e}	10.6
Administrative area (km ²) ¹	3,600
Population density (persons/km ²) ^e	3,000

1) Lagos State, e = EIU Estimate

Lagos, located on the southwest coast of Nigeria, is the most populous city in the African Green City Index, with an estimated urban agglomeration of 10.6 million people. It is made up of Lagos Island, the original city, and the Mainland, which is comprised of rapidly growing settlements. Lagos has a large concentration of multinational companies and is home to almost half of Nigeria’s skilled workers. It is one of Africa’s five biggest consumer markets and boasts a higher standard of living than anywhere else in Nigeria. Nevertheless, rapid urbanisation and population growth have introduced significant challenges for its water, waste management and sanitation infrastructure, and have put pressure on the energy supply and traffic management. However, officials are keen to transform this mega-city into a first-class busi-

ness centre, and in the last decade have established a dedicated environmental authority and invested heavily in a mass transit plan. Lagos ranks average overall in the Index, with its best performance in the energy and CO₂ category, where it ranks well above average. This is driven by better-than-average levels of electricity access, a very low rate of per capita electricity consumption and low levels of CO₂ emissions from electricity use. Lagos also places above average in the waste category due to a comparatively low rate of waste generation, although challenges still remain in waste management. The city’s transport, water, sanitation, air quality and environmental governance results are average. Land use, where Lagos ranks below average, remains a particularly challenging area for the city because of the demands of a rapidly

growing population, which is expected to increase by 33% by 2020, according to the UN. **Energy and CO₂: Well above average** Lagos State as a whole consumes roughly 45% of the country’s energy and is responsible for a significant portion of its carbon footprint. In the city, incinerated solid waste, bush burning, domestic cooking, vehicles and electricity generators are the main sources of CO₂ emissions. Still, Lagos performs comparably well on most indicators in the category. For example, UN Habitat estimates that just under 100% of households have access to electricity, more than the Index average of 84%. In addition, Lagos has one of the lowest per capita electricity consumption levels in the Index, at 0.8 gigajoules, compared with the average of 6.4 giga-

joules. Per capita CO₂ emissions from electricity consumption, at an estimated 36 kg, also are well below the Index average of 984 kg. Just over a quarter, 27%, of the city’s electricity is generated from hydropower. Nevertheless, Lagos faces electricity shortages and blackouts are common, forcing households and industries to rely on generators as an alternative power supply. **Green initiatives:** For the past three years the state government has organised and hosted an annual three-day International Summit on Climate Change, which demonstrates its commitment to improving sustainability and mitigating its environmental impact. Officials have also been looking at ways to capitalise on global carbon credit trading schemes, such as the Kyoto Protocol’s Clean Development Mechanism,

Resources to champion the city’s electricity challenges and ensure the development of the state’s natural mineral resources. **Land use: Below average** The World Bank estimates that two-thirds of Lagos’s residents live in informal settlements, compared with the Index average of 38%. Only an estimated 20% to 40% of development in Lagos is carried out with government approval. Demand for land in Lagos has skyrocketed in line with the city’s rapid population growth, and as a result there are relatively few green spaces. They measure an estimated 34 square metres per person, compared with the Index average of 74 square metres. Policies to contain urban sprawl are weaker than in many other cities in the Index, and there are no clear policies protecting existing environmentally sensitive areas from

Performance

	well below average	below average	average	above average	well above average
Energy and CO ₂					
Land use					
Transport					
Waste					
Water					
Sanitation					
Air quality					
Environmental governance					
Overall result					

The order of the dots within the performance bands has no bearing on the cities’ results.

under which developed countries can invest in developing nations in exchange for carbon emissions credits. In 2010 the Lagos State government kicked off its National Carbon Credit Awareness Campaign to raise awareness around the potential benefits of carbon trading. It also supported the National Carbon Train, a campaign to encourage low carbon emissions and the potential for earning carbon credits. As part of this the Lagos State Environmental Protection Agency has established a Carbon Credit Centre to deal with carbon credit consultations, transactions, applications and trading, and also to promote clean energy deals. In addition, the city is piloting various renewable energy schemes, including solar street lights and wind turbines. Moreover, in July 2011 the Lagos State government created a Ministry of Energy and Mineral

development, although the state government has initiatives in place to plant trees and improve green spaces (see “green initiatives” below). **Green initiatives:** In 2008 the Lagos State government, in collaboration with the Clinton Climate Initiative, embarked on a beautification programme for its major open spaces and highways. A year earlier it had started an aggressive tree planting campaign, with the commitment to plant a million trees within four years, which should have a positive impact on air quality. Within two years over 500,000 trees had been planted. On top of this the state government called on the private sector to partner with it in the greening of public spaces. A parks and garden agency is being established to drive this programme forward.



Transport: Average

With over six million cars on the road every day, thoroughfares are congested and polluted. The public transport system, consisting mainly of tens of thousands of privately owned buses, is not directly controlled by city officials. Rail networks are limited, although the city introduced bus rapid transit in 2008 to tackle the huge mass transit challenges (see “green initiatives” below). As a result, the city’s public transport network is considerably shorter than the Index average, measuring 0.1 km per square kilometre, compared with the Index average of 2.7, though due to data availability private operators were not included. However, the state has a comprehensive urban mass transport policy in place and has awarded contracts for two new rail lines. The Lagos State Waterways Authority is considering using the city’s waterways for transport and has built jetties intended for ferry transport.

Green initiatives: In March 2008 the Lagos State government introduced bus rapid transit in conjunction with the private sector. This was promoted as an affordable, reliable and safe means of travelling while significantly reducing congestion on the city’s roads. The buses, running in dedicated lanes, can reduce journey times by 30%. In 2010 there were 220 buses in operation and 120 million passengers used the system in the two years of operation, reducing carbon emissions by an estimated 13%.

Waste: Above average

Lagos generates an estimated 276 kg of waste per capita annually, less than the Index average of 408 kg. Municipal solid waste is disposed of at the state’s three landfills and two temporary sites. City officials have stated a goal to make Lagos Africa’s cleanest city by 2012, and are working with the World Bank and the Clinton Climate Initiative to establish modern, efficient

waste management infrastructure. Still, only an estimated 10% of the city’s rubbish is currently collected. Waste pickers operate informally, although the city has tried to curb their activities.

Green initiatives: The Lagos Megacity Project is the overarching waste policy of the state government. One of the most notable initiatives of the past decade was the waste-to-wealth programme to convert various types of waste into usable materials. The programme was introduced in 1999 but has gathered momentum in recent years. As part of this programme, Lagos has established one of the biggest compost plants in Africa and converts 800 tonnes of municipal solid waste into fertiliser each day. In addition, the city has established four small-scale plastic-recycling plants, which convert 30 metric tonnes of nylon or plastic waste materials into usable products like shopping bags. In April 2011 the state waste management authority announced that it had installed 20 recycling banks across the state, with 1,000 more to come within two years.

Water: Average

Lagos has one of the lowest water consumption figures in the Index, at 90 litres per person per day, compared with the Index average of 187 litres. An estimated 88% of the population has access to potable water, versus the Index average of 91%. The city’s main water sources are local rivers and it does not suffer from water scarcity relative to the other 14 cities in the Index. Still, the delivery system to provide water to end users is insufficient, with treatment plants suffering from electricity shortages and pipe infrastructure that doesn’t meet the needs of the population. Ten additional mini-waterworks were unveiled in February 2011 and five more are under construction, but no target date for completion has been set. The city has forecasted that these plants,

along with improved electricity supply to the water plants, will dramatically improve Lagos’s water delivery system. Desalination plants are not currently in use, though the city has considered this as a long-term strategy.

Green initiatives: The World Bank is currently conducting a water initiative across the states of Lagos and Cross River called the Second National Urban Water Sector Reform Project. It has several aims: to improve the reliability of water supplies produced by the water treatment works in Lagos; to increase access to piped water networks in four cities in Cross River State; and to improve the commercial viability of urban water utilities in Cross River and Lagos states. The project was approved in 2005 and is expected to end in May 2013. Some of the practical outcomes of the project will be the installation of safe and suitable housing for pumps and generators; hiring better-trained chemists, biologists and water scientists for laboratory work; completely fencing-off the perimeter of water treatment plants; using better and more secure man-hole covers; and conducting more frequent testing of water before it is pumped out for distribution.

Sanitation: Average

An estimated 83% of the population has access to sanitation, compared with the Index average of 84%. While there are no major wastewater treatment facilities in the city, Lagos State operates five smaller wastewater treatment plants serving about 500,000 people, a fraction of the total population. The state government set out a five-year sanitation plan in 2010, which includes a goal to improve water treatment infrastructure. In addition, the government conducts inspections of septic tanks and has ordered the removal of prohibited pit latrines (a dry toilet system that collects waste in large containers).

The exact nature of enforcement is unknown, but noncompliance is subject to prosecution.

Air quality: Average

Lagos has high concentrations of pollutants such as carbon monoxide, sulphur dioxide and nitrogen oxides, which explains why respiratory ailments due to air pollution are not uncommon. Some monitoring of air quality is conducted in non-industrial locations around the city, but this system is far from complete. All pollutants are regularly monitored in industrial areas. Nevertheless, with a rapidly expanding population, a limited public transit network and an economy centred largely on refining petrochemicals, Lagos faces major challenges in improving air quality. The newly established National Environmental Standards and Regulation Enforcement Agency, and the vision of a cleaner and healthier environment they intend to deliver, are positive steps forward.

Green initiatives: The Nigerian government has a long-standing ban on the import of cars

more than five years old. While the government has not put any other specific measures in place, such as monitoring emissions from cars and generators, preventing very old cars from entering the country is expected to have a positive effect on air quality over time.

Environmental governance: Average

The Lagos State Environmental Protection Agency, created in 1996, oversees and implements environmental policy for the city. In addition, citizens, non-governmental organisations and other stakeholders have been involved, to some extent, regarding decisions on projects with major environmental impact. One such organisation, Environmental Rights Action, regularly collaborates with the state government on major environmental issues and sometimes serves as an unofficial watchdog. Most laws that deal with the environment are not passed without a public hearing in the State House of Assembly. In 2008 the state government conducted a baseline review

on water, sanitation and transport, though it is unclear how the results of that study were used.

Green initiatives: In 2006 the World Bank started an initiative, the Lagos Metropolitan Development and Governance Project, which aims to invest in critical infrastructure to increase access to basic urban services. It includes programmes to improve the professional capacity of the Lagos State Urban Renewal Authority to assess, develop, plan and coordinate a city-wide infrastructure programme, and to support public finance and budget reforms. The project is expected to end in September 2013. In another initiative, the National Environment Standards and Regulations Enforcement Agency launched a competition on environmental protection in July 2011 for senior secondary schools, in an effort to improve sanitation awareness. The competition is aimed at encouraging school children to adopt healthful environmental practices.

Quantitative indicators

Category	Indicator	Average	Lagos	Year*	Source
ENERGY and CO ₂	Proportion of households with access to electricity (%)	84.2	99.8 ^e	2003	UN Habitat
	Electricity consumption per capita (GJ/inhabitant)	6.4	0.8 ¹	2010	Lagos Bureau of Statistics
	CO ₂ emissions from electricity consumption per person (kg/person)	983.9	35.9 ^{2e}	2009	Lagos Bureau of Statistics
LAND USE	Population density (persons/km ²)	4,578.1	2,957.2	2010	EIU calculation
	Population living in informal settlements (%)	38.0	66.0 ^{1e}	2006	World Bank
	Green spaces per person (m ² /person)	73.6	33.8 ^e	2009	Lagos Commissioner for the Environment
TRANSPORT	Length of mass transport network (km/km ²)	2.7	0.1	2009	Lagos Metropolitan Area Transport Authority
	Superior public transport network (km/km ²)	0.07	0.01 ³	2010	Lagos Metropolitan Area Transport Authority
WASTE	Waste generated per person (kg/person/year)	407.8	276.0 ^e	2009	Lagos Waste Management Authority
WATER	Population with access to potable water (%)	91.2	88.2 ^e	2003	UN Habitat
	Water consumption per person (litres per person per day)	187.2	90.1	2009	GM Water Corporation
	Water system leakages (%)	30.5	30.0 ^{4e}	2009	GM Water Corporation
SANITATION	Population with access to sanitation (%)	84.1	82.9 ^e	2003	UN Habitat

All data applies to Lagos unless stated otherwise below. * Where data from different years were used only the year of the main indicator is listed. e = EIU Estimate. 1) Lagos State. 2) National electricity generation mix used to estimate city level CO₂ data. 3) There are no subway, tram or light-rail lines. 4) Unclear whether data refers to “unaccounted for water” or “system leakage”.