

Infrastructure Growth And Sustainable Development: Review Of Lagos City Profile

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Abstract

Lagos City is one of the fastest-growing megacities in the world, with a population of over 20 million people. Over the past few decades, the city has experienced significant infrastructure growth, including the construction of new roads, bridges, airports, and other transport facilities, as well as the expansion of housing, commercial, and industrial areas. While this growth has brought many benefits to the city, it has also created significant challenges, including environmental degradation, traffic congestion, and social inequality. This paper reviews the infrastructure growth and sustainable development of Lagos City, with a focus on the relationship between infrastructure and sustainability. The article starts out by giving a quick summary of the municipality's profile, including its history, population, and economic structure. It then examines the current state of infrastructure in Lagos and its impact on economic, social, and environmental sustainability. The study employs a literature review approach, drawing on various academic and non-academic sources to gather relevant data and insights. The findings indicate that while Lagos has made significant progress in infrastructure development, there are still several gaps and challenges that need to be addressed to ensure sustainable development. These include inadequate funding, poor governance, lack of citizen participation, and environmental degradation. To address these challenges, the paper proposes potential solutions that could promote sustainable infrastructure development in Lagos. These solutions include increased public-private partnerships, improved governance, community engagement, and investment in green infrastructure. The paper also highlights the importance of leveraging new technologies, such as digital infrastructure, to improve the efficiency and sustainability of infrastructure systems in Lagos. Altogether, the paper concludes that sustainable infrastructure development is critical to achieving sustainable development goals in Lagos and other rapidly growing cities. The paper recommends that policymakers, planners, and stakeholders prioritize sustainable infrastructure development as a key strategy for promoting economic growth, improving quality of life, and protecting the environment in Lagos City.

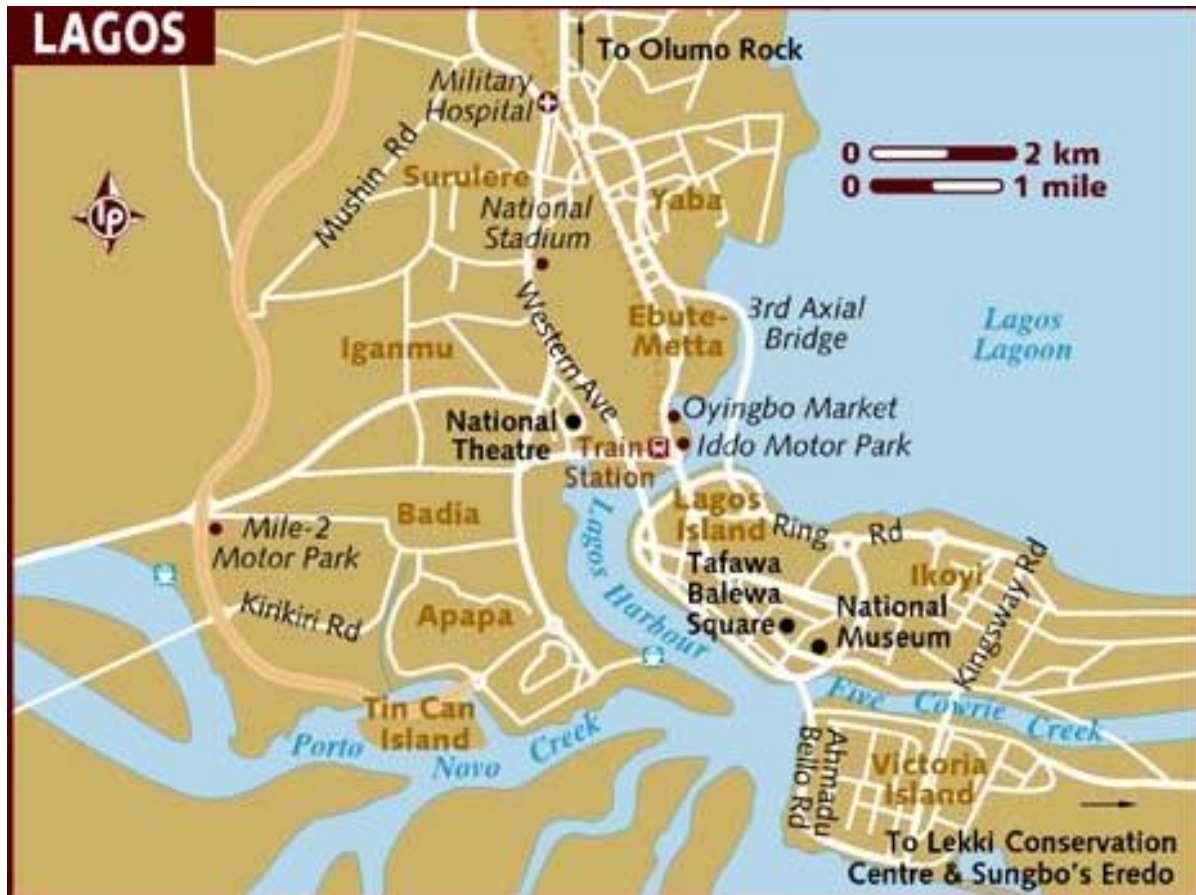
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I. INTRODUCTION: LAGOS CITY

Lagos, Nigeria is one of the fastest-growing cities in the world, with a population of over 21 million people. As the economic capital of Nigeria, Lagos is a hub for business and commerce, attracting people from all over the country and beyond (Xiao & Adebayo, 2020). However, with rapid urbanisation comes a host of challenges, including infrastructure deficits and environmental degradation. The connections between the expansion of infrastructure and environmentally friendly growth in Lagos, Nigeria, will be investigated in this study.



Map of Lagos Metropolitan Area

BACKGROUND:

Location: Located on the southwestern coastline of Nigeria, Lagos is the economic and industrial capital of the Country. It has a daytime population of about 10 million people.

Geography: Lagos experiences almost a year-round rainy season. Temperature varies from 21 to 32 Degrees Celsius.

Historical Development: The vast amount of hospitable and industrious people in and around Lagos accounted for the rapid development and industrialization of the City. European adventurers and traders, who transacted in Slavery and other items arrived on the shores of Lagos as early as the 14th Century.

Regional Significance: Through Lagos and other coastal cities, many Africans departed the Continent for the plantations of America, Europe, and the Caribbean.

Aim and Objectives

The aim of this study is to examine the link between expanding physical assets and environmentally friendly growth throughout Lagos, Nigeria. The research will look at how infrastructure growth can contribute to sustainable development in Lagos and the challenges and opportunities associated with this.

The study's goals are to:

- i. Look at Lagos's infrastructure as it is right now. and identify areas of need for development.
- i. To analyze the impact of infrastructure growth on sustainable development in Lagos, including economic growth, social development, and environmental sustainability.
- ii. To identify the challenges and opportunities associated with infrastructure growth and sustainable development in Lagos, including funding, governance, and stakeholder engagement.
- iii. To explore best practices and case studies of infrastructure development for sustainable development in other cities that could be applied to Lagos.
- iv. To make recommendations for policies and procedures that will promote environmentally friendly development and infrastructural growth in Lagos.

Broadly, The study attempts to advance knowledge of Lagos City's relationship with the expansion of infrastructure and environmentally friendly growth and to provide insights for policymakers, practitioners, and stakeholders on how to promote sustainable infrastructure development in the city.

II. RESULTS AND DISCUSSION

Literature Review

A comprehensive literature review will be conducted to identify key concepts and theories related to infrastructure growth and sustainable development, as well as relevant case studies and best practices from other cities.

Methodology

- a. This study will use a mixed-methods methodology that combines both quantitative and qualitative approaches. The following steps will be taken in the study:
- b. **Data Collection:** Data will be collected through surveys, interviews, and Discussion groups involving participants from the public and corporate sectors as well as grassroots groups, and community members. The surveys will be administered using online tools, while the interviews and focus group discussions will be conducted in person or via video conferencing platforms.
- c. **Data analysis:** Quantitative as well as qualitative analysis techniques will be used to examine the acquired data. While descriptive statistical tools will be used for evaluating the data that is quantitative, analysis of content will be used to analyze the qualitative data.
- d. **Synthesis of Findings:** The findings from the data analysis will be synthesized to identify key themes and trends related to infrastructure growth and sustainable development in Lagos.
- e. **Recommendations:** Based on the findings, policy and practice suggestions will be presented to support the environmentally friendly advancement of infrastructure in Lagos. The study will use a purposive sampling technique to select participants for the surveys, interviews, and focus group discussions. The sample will include representatives from the government, private sector actors, civil society organizations, and community members. Additionally, the study will consider ethical issues like informed permission, anonymity, and personal information privacy.

1. Development of Infrastructure in Lagos

Infrastructure development is essential for the growth and development of any city, and Lagos is no exception. The Lagos State government has made significant investments in infrastructure development in recent years, including the construction of new roads, bridges, and public transport systems (Ogunbiyi, 2021). In addition, the government has invested in the provision of basic services such as water and electricity, as well as the expansion of health and education facilities.

One of the most significant infrastructure projects in Lagos is the Lagos State Light Rail Transit Project. This project aims to provide a modern, efficient, and environmentally friendly mode of transportation for the people of Lagos (Uwaegbulam, 2023). The first phase of the project, which runs from Mile 2 to CMS, was completed in 2021, and work is ongoing on the second phase.

1.1 Beyond Infrastructure Development in Lagos

Infrastructure growth in Lagos has been a critical driver of economic development in the city. Lagos is a hub for business and commerce, attracting people from all over the country and beyond (Abass, 2021). As such, the city has seen significant investments in infrastructure development, such as:

1.1.1 Transportation: Lagos has one of the most extensive transportation networks in Nigeria, with a variety of modes of transportation, including buses, taxis, and motorcycles. The government has invested in the construction of new roads, bridges, and flyovers to facilitate connectivity to various areas of the metropolis and reduce congestion caused by traffic. The Lagos State Light Rail Transit Project is another significant infrastructure project aimed at providing a modern, efficient, and environmentally friendly mode of transportation. Other forms of infrastructure development include Shelter, Social Development, Environment, and other issues arranged in the chapters below.

CHAPTER 1: SHELTER

Security of Tenure: There is improved security of tenure. There is no impediment to the security of tenure. This is because of good governance and the evolving democratic institution. Figure 1 shows no official impediments to housing. While this may be true on Victoria Island, Ikoyi, and other exotic places, there is very little on the ground to show for this in Mainland Lagos.

2. Promote the right to adequate housing

qualitative data 1: housing rights

country level

1. Does the Constitution or national law
 promote the full and progressive realisation of the right to adequate housing ?
 include protections against eviction?

2. Are there particular impediments :

to owning land ?
 to inheriting land and housing ?
 to taking mortgages in their own names ?
 to women owning land ?
 to women inheriting land and housing ?
 to women taking mortgages in their own names ?
 to particular groups owning land ?
 please name the groups
 to particular groups inheriting land and housing ?
 please name the groups
 to particular groups taking mortgages in their own names ?
 please name the groups

Figure 1. Rights to Adequate Housing in Lagos, Nigeria

1. Provide security of tenure

indicator 1 - tenure types

city and country levels

Type of tenure:	1993	1998	1993	1998
	% of all households	% of all households	% of women-headed households	% of women-headed households
1. Formal Ownership:				
Owned	19.8%	22.5%	12.8%	15.0%
Purchasing (mortgage)	21.2%	21.5%	22.6%	25.6%
sub-total	41.0%	44.0%	35.4%	40.6%
2. Tenancy:				
Private rental	23.5%	22.5%	19.8%	20.7%
Social Housing	21.8%	25.0%	27.7%	27.4%
Sub-tenant	5.2%	1.5%	9.5%	6.3%
sub-total	50.5%	49.0%	57.0%	54.4%
3. Squatter:				
without rent	3.5%	2.7%	2.9%	2.4%
with rent	2.5%	2.3%	2.2%	2.2%
sub-total	6.0%	5.0%	5.1%	4.6%
4. Other				
homeless	1.8%	1.5%	1.9%	0.0%
other	0.7%	0.5%	0.6%	0.0%
sub-total	2.5%	2.0%	2.5%	0.4%
TOTAL (should be equal to 100%)	100.0%	100.0%	100.0%	100.0%

please provide sub-totals if information is not available for the requested level of detail.

Figure 2. Tenure Types in Metropolitan Lagos Under Various Ownership Types

Figure 2 shows Tenure Types and ownership of properties, but the hard fact is that there are more tenure types than can be documented in Lagos. A lot needs to be done to ensure that basic individuals can truly lay claim to a category of property.

Right to Adequate Housing: There is no documented right to adequate housing. Whenever it is the government agency carrying out any program of eviction, it attracts a lot of public outcry.

indicator 2 - evictions
city and country levels

number of evicted households:	1993	1998	past five years 1993-1998
men-headed households	-	-	-
women-headed households	-	-	-
all households	-	-	-
% of evicted from squatter settlements	0%	0%	0%

Explain the main reasons of the decrease or increase in the number of evictions:

Figure 3. Evictions in Lagos – No Official Records Available for Evictions

There are legal means of documenting ownership of properties. These include inheritance and direct application for the acquisition of a Certificate of Occupancy among others.

Access to Land: Access to land is improving – especially from a gender-balanced point of view.

3. Promote equal access to land
Indicator 4: Land price-to-income ratio

city level
1993

	Land price			Income	Land price to income ratio
	Minimum price of 1 m2	Maximum price of 1 m2	Median price of 1m2	Median Household income per month (US \$ 1993)	
Highly developed land	\$14	\$30	\$22	\$150	0.15
Developed land	\$8	\$20	\$14		0.09
Raw land	\$1	\$4	\$3		0.01

city level
1998

	Land price			Income	Land price to income ratio
	Minimum price of 1 m2	Maximum price of 1 m2	Median price of 1m2	Median Household income per month (US \$ 1998)	
Highly developed land	\$20	\$45	\$33	\$200	0.17
Developed land	\$10	\$22	\$15		0.08
Raw land	\$3	\$6	\$5		0.03

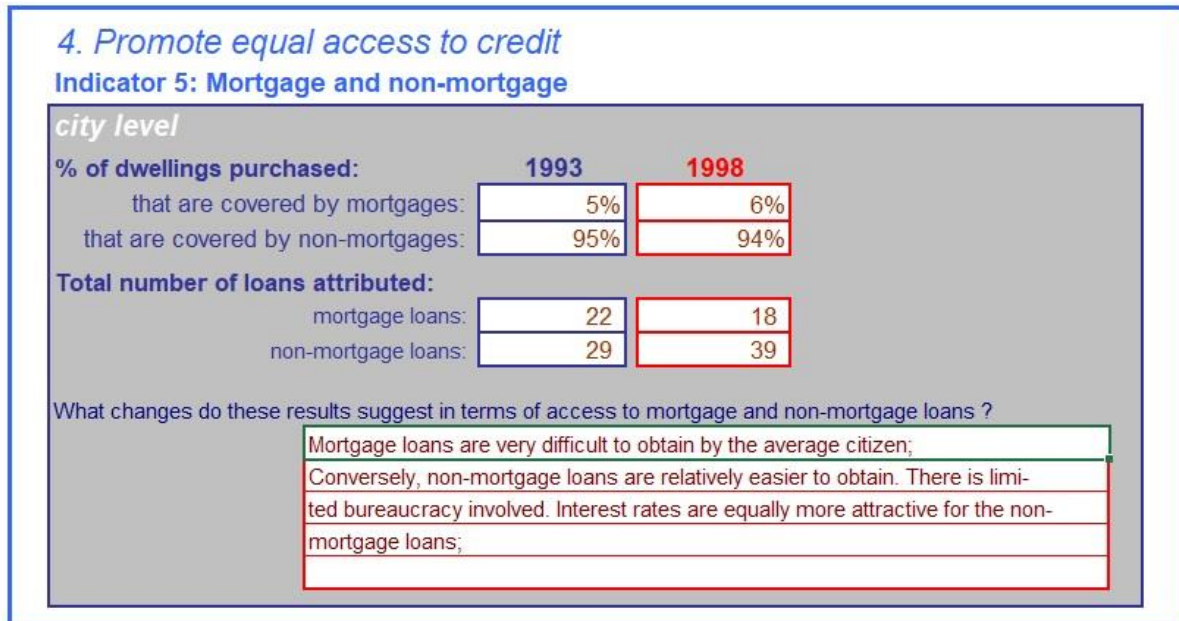
What changes do these results suggest in terms of land affordability ?

The changes suggest that land is relatively more affordable; In spite of the increase in prices of land, income levels are comparatively higher; although the country was still under military dictatorship, programme of democratisation was already in place; the economy of Lagos has always been healthy due to its strategic location - and its role as a Federal Capital

Figure 4. Access to Land in Lagos

Figure 4 is the official position but there are many layers of corrupt local owners who go about collecting money from unsuspecting new buyers making land ownership very difficult

Access to Credit: Other than poverty and low income, there are no obvious impediments to credit



Access to Basic Services: This is improving considerably.

Electricity: Lagos faces significant challenges in the provision of electricity due to the insufficient capacity of the national grid. To increase the supply to the municipality of electricity and water, the authorities have made an investment in building fresh power plants and renovating those that already exist (Oladipo, 2023). The Lagos State Electricity Board has also implemented a program to provide prepaid meters to consumers to ensure transparency and accountability in billing.

Health and Education Facilities: The Government of Lagos State has made investments in the municipality's health and educational infrastructure. This phenomenon includes building new first-rate medical facilities, constructing additional healthcare facilities, and renovating current ones (Egbewunmi, 2023). By doing teacher preparation programs and the distribution of educational materials, the authorities have also started up an initiative to raise the state's educational standards.

In summary, infrastructure growth in Lagos has been significant, and the government's investment in this area has been commendable. However, more needs to be done to address the infrastructure deficits in the city, particularly in the areas of sanitation, waste management, and affordable housing.

5. Promote access to basic services

Indicator 6: access to water

city and country levels

% of households with access to water :

	1993	1998	
all settlements	24.7%	25.7%	within 200 m from the house
informal settlements	7.0%	15.4%	within 200 m from the house

What changes do these results suggest in terms of access to water ?

these results suggest an overall improvement in terms of access to water.
 In the informal settlements, the improvement in access to water is due to the efforts of the community based organisations and Non-governmental Organisations in the supply of pottable water in the rural and peri-urban areas.

Indicator 7: household connections

city and country levels

% households connected to :		1993	1998	<u>Only households directly connected within their house</u>
<u>in all settlements:</u>	water	24.7%	25.7%	
	sewerage	3.5%	12.1%	
	electricity	33.7%	41.4%	
	telephone	n.a	n.a	
<u>in informal settlements:</u>	water	22.7%	24.1%	
	sewerage	1.2%	7.1%	
	electricity	28.5%	34.8%	
	telephone	n.a	n.a	

What changes do these results suggest in terms of access to services ?

Access to basic services are seen to have improved.
 This is largely due to self help by the individuals themselves rather than any government intervention.
 The prolonged intevention of military in the political arena of Nigeria brought untold hardship to the citizenry

CHAPTER 2: SOCIAL DEVELOPMENT AND ERADICATION OF POVERTY

Health and Safety: Facilities have improved especially for Primary Health Care. Awareness programs are also being organized by the stakeholders like UNICEF, WHO and Health Departments and Parastatals of the Central and Local Governments (World Health Organization, 2023). The result is a reduced Infant Mortality Rate and healthier citizenry.

6. Provide equal opportunities for a safe and healthy life

Indicator 8: under-five mortality

city and country levels

	1993	1998	
female	9.87%	8.64%	number of death for children below 5 years old during the year/ average number of live birth during the last 5 years
male	11.74%	10.56%	
TOTAL female and male	21.61%	19.20%	

What are the reasons of the increase or decrease of child mortality ?

If there is no notable change, what is planned to improve the level of child mortality ?

The reasons for the decrease of child mortality border on improved health-care. Considering the human and material resources of the country, the figures are outrageous. However, under the present political dispensation, there is some hope for improvement - this however depends largely on strong moral courage and political will of the leadership.

Indicator 9: Reported crime rates

city level

	1993	annual number of victims			
		male	female	all	
Homicides	n.a	n.a		245	/1000 population
Rapes	n.a	n.a		7,427	/1000 population
Thefts	n.a	n.a		3,158	/1000 population
	1998				
Homicides	n.a	n.a		250	/1000 population
Rapes	n.a	n.a		6,116	/1000 population
Thefts	n.a	n.a		3,371	/1000 population

What are the reasons of the increase or decrease of crimes ?

Do these results reflect the safety conditions for the population ?

Increase in the reported cases are due to the desire of the average citizen to get rich quick; the increase in the crimes reported reflect the monetary instinct of the offenders/criminals

These results reflect an increase in the level of sophistication of the offenders

There is urgent need to beef up the security unit of the society as a whole

Qualitative data 2: urban violence

city and country levels

In the city or the country, are there:

	1993	1998
a) areas considered as dangerous or inaccessible to the police	no	no
b) violence at school	no	no
c) an official policy against domestic violence	yes	yes
d) a crime prevention policy	yes	yes
e) a weapon control policy	yes	yes
f) victim of violence assistance programme(s)	no	yes

Social Integration: There is an obvious reduction in Poor Households. Similarly, there is a reduction in the number of Poor Women-Headed Households.

Poverty: Despite its economic growth, Lagos remains one of the poorest states in Nigeria, with a poverty rate of over 30%. Poverty leads to social inequality and reduces the ability of citizens to access fundamental amenities including housing, healthcare, and education (HUMAN RIGHTS WATCH, 2021). By doing the delivery of social services, the Lagos State government is implementing action to combat impoverishment and the creation of

employment opportunities. Additionally, the state government has put in place programs to combat impoverishment, which includes the Lagos State Employment Trust Fund, which offers funding to start-ups and small-scale enterprises.

Poverty in Lagos

Poverty remains a significant challenge in Lagos, despite its economic growth and development. According to the National Bureau of Statistics, Lagos has a poverty rate of over 30%, making it one of the poorest states in Nigeria (National Office of Statistics, 2022). The high poverty rate is attributed to a range of factors, including:

- i. **Unemployment:** Lagos has a high rate of unemployment, particularly among youth and women. The lack of employment opportunities reduces the ability of individuals to access basic necessities such as food, housing, and healthcare.
- ii. **Informal Economy:** The informal economy in Lagos is significant, with a large number of individuals engaged in activities such as street vending, petty trading, and artisanal activities. These activities are often low-paying and lack job security, leading to poverty.
- iii. **Poor Access to Basic Services:** Access to essential services including medical care, educational opportunities, and housing is a problem for many Lagos citizens. This reduces their ability to improve their livelihoods and escape poverty.
- iv. **High Cost of Living:** Lagos is one of the most expensive cities in Nigeria, with high costs of housing, transportation, and food. This makes it difficult for low-income earners to make ends meet. The Lagos State government has implemented several poverty reduction programs aimed at addressing these challenges. These include:
 - a. **Employment Programs:** Startups and small-scale businesses can receive cash from the Lagos State Employment Trust Fund, creating employment opportunities for individuals. The government has also implemented programs to promote vocational training and skills development.
 - b. **Social Services:** Through the development of basic services like healthcare and education, the state government has increased a connection to these services and rehabilitation of primary healthcare centres and schools.
 - c. **Housing:** The Lagos Affordable Accommodation Project seeks to offer low-income earners in the city inexpensive housing. The government has also implemented programs to improve access to mortgage financing for individuals.
 - d. **Social Safety Nets:** The Lagos State government has implemented social safety net programs such as the Lagos State Social Protection Policy and the Lagos State Conditional Cash Transfer Program to provide support to vulnerable individuals and households.

Altogether, poverty in Lagos remains a significant challenge, but the Lagos State government is taking steps to address the issue through poverty reduction programs and social safety nets. More needs to be done to ensure that these programs reach the most vulnerable and marginalized individuals in the city.

7. Promote social integration and support disadvantaged groups

Indicator 10: Poor households

		1993		1998	
		Total number ('000)	% of households	Total number ('000)	% of households
Households		1,634		1675-	
Women-headed households		310		NAV	
Poor households		-	48.1%	-	53.0%
Poor Women-headed households		-	39.9%	-	58.5%

		1993	1998
Poverty line in US\$ / month:		US\$ / month	US\$ / month
one person		NAV	NAV
two persons		NAV	NAV
average household		NAV	NAV

Definition of poverty-line 1993:	Poverty line is a relative poverty line defined as two thirds of the National mean per capita expenditure
Definition of poverty-line 1998:	Poverty line is a relative poverty defined as two thirds of the National mean per capita expenditure

Support to Disadvantaged Groups: The population of Poor Women-Headed Households has reduced. This suggests improved access to housing and infrastructure by women. The Central Government is also equipping public schools and rural infrastructure for the benefit of disadvantaged Groups.

Gender Equality: There is an overall improvement in the gender balance. A national awareness drive is on to develop literacy programs for women and the girl-child.

8. Promote gender equality in human settlements development

indicator 11: female-male gaps

city and country levels

1993 data	female	male	1993 female-male gap	
Primary school enrolment ratio	43.7%	56.3%	12.6%	%
Secondary school enrolment ratio	45.9%	54.1%	8.2%	%
Tertiary school enrolment ratio	34.5%	65.5%	31.0%	%
Adult literacy rate	12.4%	15.3%	2.9%	%
Life expectancy at birth	55.0	51.5	3.5	years
Under-five mortality	52.50%	47.50%	5.00%	%
Unemployment	46.60%	53.40%	6.80%	%
number of elected or nominated councillor at the local level per 10,000	1	46	45	/10,000 population

city and country levels

1998 data	female	male	1998 female-male gap	
Primary school enrolment ratio	44.6%	55.4%	10.8%	%
Secondary school enrolment ratio	46.3%	53.7%	7.4%	%
Tertiary school enrolment ratio	37.5%	62.5%	25.0%	%
Adult literacy rate	13.1%	17.2%	4.1%	%
Life expectancy at birth	55.50	52.00	- 3.50	years
Under-five mortality	51.40%	48.60%	-2.80%	%
Unemployment	38.50%	48.70%	10.20%	%
number of elected or nominated councillor at the local level per 10,000	3.0	44.0	41.0	/10,000 population

What measures have been undertaken to reduce the female-male gaps ?

At the City and Country levels, education in general has been given a boost, with a lot of attention on the education of the girl child. A lot of avoidable deaths and deprivation suffered by the female population are traceable to the neglect faced by the female population as a whole. This was more aggravated by the prolonged military rule in the country. With a democratic government in place, it has started correcting most of the ills of the governance inherited from the military administration as well as cultural bias against the girl-child and the female population.

CHAPTER 3: ENVIRONMENTAL MANAGEMENT

3.1 Population: The daytime population of Lagos is about 22 million, although permanent residents are only about 12.8 million. About 54% of the population are males while the remaining 46% are females.

9. Promote geographically-balanced settlement structures
indicator 12 - urban population growth

city and country levels

The annual growth rate should be taken for the last five years (1993-1998).
 If another reference period was taken for the calculation, please indicate:

starting year: **1993** ending year: **1998** for the period

	Male population	Female population	Total population	
1993				
Metropolitan area*	242.305	216.300	458.605	in thousand population
Urban Agglomeration*	NAV	NAV	NAV	in thousand population
National Urban	NAV	NAV	NAV	in millions
National	47.086	47.015	94.101	in millions
1998				
Metropolitan area*	NAV	NAV	NAV	in thousand population
Urban Agglomeration*	NAV	NAV	NAV	in thousand population
National Urban	NAV	NAV	NAV	in millions
National	54.136	54.055	108.190	in millions
Growth rate:				
Metropolitan area*	3.50%	3.50%	3.50%	in percentage
Urban Agglomeration*	3.00%	3.00%	3.00%	
National Urban	NAV	NAV	NAV	
National	2.83%	2.83%	2.83%	

* see definitions in the companion guide

Geographical Balance: Metropolitan Lagos has facilities for the needs and benefit of diverse populations from urban centers, neighborhoods and peri-urban areas. This accounts for the high rural-urban migration being experienced. With a rich historical culture, Lagos is endowed with tourist attractions and historical monuments (Osayomi, et al., 2022).

Water Supply and Demand: Water supply is grossly inadequate for the needs of the City. The Federal and State Governments are presently looking into ways of solving the perennial problem of water shortage in the City of Lagos (Daramola, 2021). The demand-supply can be better managed.

Water Supply: The administration of Lagos State has made investments in the development and enhancement of the water supply infrastructure, including the building of new water treatment facilities and the renovation of the ones that already exist. Additionally, the authorities has started an undertaking to increase the capacity of the Adiyari Waterworks to provide more potable water to the city (Izuora, 2023).

10. Manage supply and demand for water in an effective manner

Indicator 13: Consumption of water

city level			
daily household consumption / person:			
	1993	1998	
in all settlements	30.00	45.00	liters/pers./day
in informal settlements	20.00	22.50	liters/pers./day
What measures have been taken for reducing water consumption or increasing the water supply ?			
Is the demand-supply for water managed in an effective manner ?			
There is the obvious need to increase the water supply - this is being done through the provision of enabling infrastructure to lay more pipes, providing more boreholes especially in the informal settlements. Efforts are also being to encourage community participation in the rural water supply schemes.			
The demand-supply for water supply is not effectively managed.			

Indicator 14: Median price of water

city level			
	1993	1998	
highest price	\$7.50	\$10.00	US\$/m3 (1000 liters)
lowest price	\$3.50	\$5.00	US\$/m3 (1000 liters)
median price in all settlements	\$5.00	\$7.50	US\$/m3 (1000 liters)
optional:			
median price in informal settlements	\$6.50	\$8.00	US\$/m3 (1000 liters)
What do these results suggest in terms of water affordability for the population ?			
Have any new water pricing policy been undertaken in the last 5 years ?			
These figures suggest higher pay for a unit volume of water in 1998 relative to 1993			
There has not being any official water pricing policy in the last five years.			
However, the gradual devaluation of the local currency (Naira) has compelled State Water Boards to increase the Tarriffs charged for pottable water.			

Urban Pollution: Urban pollution is on the increase because of improved economic and industrial activities. Environmental degradation poses a great challenge to the Government and people of Lagos.

3.2. **Climate Change:** In order to lessen the effects of climate change, quick action is needed. Lagos is susceptible to climate change effects like weather extremes and rising sea levels. To coordinate activities to address the effects of warming temperatures in the state, the Lagos State Government established the Lagos State Climate Change Committee (OLALEYE, AYODELE, & ARIYO, 2021). The government has also started initiatives to support efficiency in energy use and alternative sources of energy, like the installation of solar panels in public structures.

Lagos, Nigeria, and its inhabitants are suffering significantly as a result of rising temperatures. The city is susceptible to the impacts of climate change, including increased temperatures, increasing sea levels, rainstorms, and soil erosion. The following are some consequences of global warming in Lagos:

- i. **Flooding:** Lagos experiences frequent flooding, particularly during the rainy season. Climate change has worsened this problem, with more intense and frequent rainfall events leading to flash floods that inundate communities and disrupt economic activities.
- ii. **Sea-Level Rise:** Being a city on the coast, Lagos is susceptible to the effects of rising sea levels brought on by changes in the climate. The waterfront erosion in the city could get worse as a result of increasing levels of water which could affect infrastructure and displace residents.
- iii. **Heatwaves:** Lagos is one of the hottest cities in Nigeria, with temperatures often exceeding 30 degrees Celsius. Climate change is expected to increase temperatures, leading to more frequent and severe heat waves that could have significant health impacts on residents.
- iv. **Food Insecurity:** Climate change is affecting agricultural production in Lagos and other parts of Nigeria. Droughts, floods, and other extreme weather events are reducing crop yields and affecting food security. The authorities are putting into action a number of steps to combat the impacts of warmer temperatures in Lagos, including:
 - i. **Flood Control Measures:** The Lagos State government has implemented various flood control measures, including dredging of waterways, construction of drainage systems, and the building of flood retention ponds.
 - ii. **Climate-Smart Agriculture:** The Lagos State government is promoting climate-smart agriculture practices that are adapted to the changing climate. These include the use of drought-resistant crops, irrigation, and soil conservation techniques.
 - iii. **Renewable Energy:** To lower emission levels of greenhouse gases and lessen the consequences of environmental degradation, the Lagos State government is supporting the usage of energy from renewable sources like wind and solar power.
 - iv. **Awareness as well as Education:** The Lagos State government is raising awareness and teaching locals about the consequences of global warming and what they might be able to do about it to adapt to the changing climate and mitigate its impacts.In general, Lagos is significantly impacted by worldwide warming, but the government is taking steps to address the issue through various initiatives and measures. To make the city robust to the consequences of the changing climate, additional work must be undertaken in order to continue to thrive in a changing climate.

3.3 Urbanisation: Lagos City's fast urbanisation has resulted in the growth of squatters and unofficial colonies, which lack basic services and infrastructure. The authorities of Lagos State have started initiatives to address the housing deficit in the city, such as the Lagos Affordable Housing Project, which aims to provide affordable housing to low-income earners (FIELD STUDY OF THE WORLD, 2020).

Broadly, In order to be environmentally friendly, Lagos must strike an acceptable compromise between improvement in society, economic expansion, and preservation of the environment. In order to tackle the issues the city is facing, the Lagos State government has taken some action, but more needs to be done to ensure that the growth of Lagos is sustainable and benefits all its citizens.

Urbanisation in Lagos

Urbanisation in Lagos has been rapid and significant, with the city experiencing one of the highest rates of urbanisation in Africa. One of the biggest metropolitan areas in the entire globe, the population of this city increased from a little more than one million in 1950 to over 20 million in 2021 (Koko, Yue, Abubakar, Hamed, & Alabsi, 2021). This rapid growth has led to several challenges and opportunities for the city.

One of the challenges of urbanisation in Lagos is the strain on infrastructure and services. The city's rapid growth has outpaced the development of infrastructure, leading to congestion, traffic, and inadequate housing. Numerous locals are currently in informal neighborhoods where they have restricted access to necessities like running water, power, and sewage.

Another challenge of urbanisation in Lagos is the impact on the environment. The rapid expansion of the city has led to deforestation, soil erosion, and pollution of the air, water, and land. The city's open spaces and green areas have also been significantly reduced, leading to a loss of biodiversity and ecosystem services.

However, urbanisation in Lagos has also presented several opportunities, including economic growth and job creation. The city has a vibrant and diverse economy, with opportunities in various sectors such as finance, trade, and services. The city's port is also a major hub for trade and commerce in West Africa.

Challenges of Urbanisation: To address the challenges of urbanisation in Lagos, the government has implemented various initiatives, including:

- i. **Infrastructure Development:** The administration of Lagos State is making investments in the construction of construction projects including roads, bridges, and public transportation mechanisms. to ease congestion and improve mobility.

- ii. **Housing Development:** The government is also promoting the development of affordable housing to address the housing deficit in the city and improve living conditions for residents.
 - iii. **Environmental Sustainability:** The Lagos State government is implementing initiatives to promote environmental sustainability, including waste management, tree planting, and renewable energy.
 - iv. **Urban Planning:** The Lagos State government is developing urban planning strategies to guide the growth of the city and ensure that it is sustainable and resilient.
- Altogether, urbanisation in Lagos presents several challenges and opportunities. The government is taking steps to address the challenges and harness the opportunities of urbanisation to ensure that the city is sustainable, livable, and prosperous for its residents. Figures below are the data from the 'Istanbul+5' for the United Nations (UN-Habitat) on how to Reduce Urban Pollution, Waste-Water Treated, and Solid Waste Disposal in Lagos.

11. Reduce urban pollution

Indicator 15: Air pollution

city level	1993		1998	
	number of days exceeding WHO standards during the year	average annual concentration (micro g / m3)	number of days exceeding WHO standards during the year	average annual concentration (micro g / m3)
Sulfur dioxide (SO ₂)	NAV	NAV	NAV	NAV
Nitrogen dioxide (NO ₂)	NAV	NAV	NAV	NAV
Ozone (O ₃)	NAV	NAV	NAV	NAV
Carbon monoxide (CO)	NAV	NAV	NAV	NAV
Lead (Pb)	NAV	NAV	NAV	NAV

WHO standards:	Averaging time	WHO Guidelines value	
	Sulfur dioxide (SO ₂)	24 hours	125
Nitrogen dioxide (NO ₂)	1 year	40	micro g / m3
	1 hour	200	micro g / m3
Ozone (O ₃)	8 hours	120	micro g / m3
Carbon monoxide (CO)	8 hours	10,000	micro g / m3
Lead (Pb)	1 year	0.5	micro g / m3

Indicator 16: Wastewater treated

city level

	1993	1998
	NAV	NAV

% of wastewater results should include primary, secondary and tertiary treatments

What do these results suggest in terms of quality of life for the population ?
 What measures have been undertaken to correct the trend ?

The data required is not available. However, it is apparent that there is increase in the water pollution due to carelessness and uncontrolled industrial activity.
No measures have been taken so far, but the situation is now being addressed by the relevant authorities.

Indicator 17: solid waste disposal

city level

	1993 % of solid wastes	1998 % of solid wastes
Sanitary landfill	NAV	NAV
Incinerated (in incineration plants)	NAV	NAV
Open dump	NAV	NAV
Recycled	NAV	NAV
Burned (openly)	NAV	NAV
other	NAV	NAV
TOTAL	NAV	NAV

What measures have been undertaken to reduce the impact of solid wastes on the environment ?

A shocking revelation of data situation reveals little or no attention at updating statistical data on the situation of solid waste disposal. The only hope is in the promise of updating the record by the relevant agencies
Waste management and recycling is a sure source of environmental conservation. The new democratic dispensation in the country now opens up a lot of hopes for addressing issues of importance to habitable life.
Although we have a Federal Environmental Protection Agency, whose mandates includes waste and pollution monitoring, a Ministry has now been created also.

Disaster Management: A Federal Environmental Protection Agency (FEPA) is in place, and a Federal Ministry of the Environment is also working to establish government policy on the issue of the Environment and check possible threat to habitable life. Building Codes and regulations are also being reviewed (Yahaya, Bello, & Mohammed, 2021).

12. Prevent disasters and rebuild settlements

Qualitative data 3: disaster prevention and mitigation instruments

city and country levels

In the city or the country, are there:

- a) building codes based on hazard and vulnerability assessment ?
- b) hazard mapping ?
- c) disaster insurances for public and private buildings ?

Are disaster insurances compulsory for public buildings ?

	1993	1998
a) building codes based on hazard and vulnerability assessment ?	yes	yes
b) hazard mapping ?	no	no
c) disaster insurances for public and private buildings ?	yes	yes
Are disaster insurances compulsory for public buildings ?	yes	yes

What measures and actions have been undertaken in terms of disaster prevention and mitigation ?

Is the capacity for post-disaster response effective at the city level ? What are the mechanisms in place ?

Measures of disaster prevention and mitigation include geographical information studies to determine the possibility of any large scale ecological disasters in the near or foreseeable future. However, Nigeria has not experienced any large scale ecological disaster in recent past. The worst threat so far has been cases of earth tremour and other seasonal problems of flooding, erosion and man-made disasters like fire outbreak, bush burning among others. At the city level, the capacity for post-disaster response is not effective. Mechanisms include telecommunications, fire services, and security alert outfit

Transports: Noticeable increase in users of private cars, motorcycle, train, mini-bus, walking and other means. A reduction is noticed in percentage of bus transport due to improved taste and lifestyle.

13. Promote effective and environmentally sound transportation system

Indicator 18: travel time

city level

	1993	1998	
average travel time	90	60	in minutes for a one-way trip

What do these changes suggest in terms of quality of life for the population ?

What policies have been undertaken in order to make the transportation system more effective?

These changes suggest improved quality of life for the population. To make transportation system more effective, there is the introduction of government assisted mass-transit services. These include the provision of bus transport services in the city as well as on the long distance (inter-city). Other policies include the phasing out of the vehicles that do not conform with road-worthy standard tests. The organised private sector is also involved in the provision of 'OKADA' - (a public transport service by means of a motorcycle). There is a bright prospect for usage of speedboats and motorised canoes.

indicator 19: transport modes

city level

% of work trips undertaken by:

If details are not available, please provide the sub-total for each main category.

		1993	1998	
1. <u>Private motorised:</u>	Private cars	NAV	NAV	% of all work trips
	Motorcycle	NAV	NAV	% of all work trips
	sub-total	45.00%	51.00%	% of all work trips
2. <u>Train and tram:</u>	Train	NAV	NAV	% of all work trips
	Tram	NAV	NAV	% of all work trips
	sub-total	3.00%	2.50%	% of all work trips
3. <u>Bus and minibus:</u>	Bus	NAV	NAV	% of all work trips
	Minibus	NAV	NAV	% of all work trips
	sub-total	50.00%	45.50%	% of all work trips
4. <u>Non-motorised:</u>	bicycle	NAV	NAV	% of all work trips
	walking	NAV	NAV	% of all work trips
	others	NAV	NAV	% of all work trips
	sub-total	2.00%	1.00%	% of all work trips
	TOTAL	100.00%	100.00%	should be equal to 100%

Local Environmental Planning: The Lagos State Government is working with the World Bank, the United Nations Environment Program (UNEP), and the Federal Government to sanitize environmental management.

14. Support mechanisms to prepare and implement local environmental plans and local Agenda 21 initiatives

qualitative data 4: local environmental plans

country level

1. How many cities have established long-term strategic planning initiatives for sustainable development, involving key partners?

2. Is this process institutionalized at the national level and/or has there been any legislative change to support cities to engage in sustainable development planning processes?

city level

3. Has the city established a long-term strategic planning initiative for sustainable development, involving key partners?

4. Is the city implementing local environmental action plans involving key partners?

Please describe the major initiatives :

One major initiative of the City is the development of waste disposal system.
This was done through the state Ministry of the Environment. Although the adopted is not fool-proof, the initiative was well-commended by the population
Another initiative was the Bar-Beach sand bag project. Key partners were involved to keep the rising sea levels away from the dwelling places and commercial centres
This too is not without its problems, however, long term strategies are being worked out.

CHAPTER 4: ECONOMIC DEVELOPMENT

Micro-Enterprises and Small Businesses: More trustworthiness and predictability in government promotes startups and small businesses.

15. Strengthen small and micro-enterprises

indicator 20: informal employment

city and country levels

As part of the total workforce:	1993	1998	
% employed men	2.1%	2.8%	in the informal sector
% employed women	2.6%	3.7%	in the informal sector
% employed men and women	2.3%	3.5%	in the informal sector

What does this trend suggest ? What institutional changes have been undertaken to cope with the needs of the informal sector (fiscal policies, credit to small and micro-enterprises, legislations to protect the rights of employees, etc.) ?

Although the data available here is the 1995/1996 result, it is apparent that the situation is gradually improving. It is also indicative from available records that there is improved employment situation for men and women.
In spite of inconclusyive data, between 1994 and 1997, unemployment rates composite rate of 2 (1994), 1.8 (1995), 2.9 (1996), and 3.2 in 1997.
There is improved fiscal policies, credit facilities, and enabling legislation.

Informal Sector: Informal sector of the economy is developing – because of improved governance and the provision of services and infrastructure.

Productivity: There is an improvement in productivity. This is because of credibility in the democratic government and increased involvement in the economy by multinationals.

Employment: Equal employment opportunities exist for both men and women in the private and public sectors.

Public-Private Partnerships: Public-Private Partnership alliances are increasing. There are a number of initiatives to undertake joint programs of development in various parts of the Country.

16. Encourage public-private sector partnership and stimulate productive employment opportunities

qualitative data 5: public-private partnerships

city and country levels

1. Have some major public enterprises involving the delivery of services in cities established partnerships with private firms during the last five years at the city level?

How many ?

2. Have some major public enterprises involving the delivery of services in cities established partnerships with private firms during the last five years at the country level?

How many ?

Have public-private partnership become a more common practice in the last five years ?
Have they been effective ? Have they offered a greater flexibility in the management and higher degree of transparency, efficiency and accountability in their operation ?
Is the cost-recovery of services higher ?

Public-private partnership has improved considerably in the last five years.
They have been effective. They offer a greater flexibility in the management and higher degree of transparency, efficiency and accountability - especially in the new democratic dispensation. There is improved respect for rules and regulations
Obviously, the cost-recovery of services is higher under the new dispensation.

indicator 21: city product

<i>city level</i>		1993	1998	
City product	NAV	NAV	NAV	per person
Gross National Product	\$80	NAV	NAV	per person

Which method was used for the calculation of the city product (see definitions) ?

method A

method B

What do this trend suggest in terms of urban economic development ?
 Are cities economies growing more that national economies ? (compare trends of city product with trends in gross national product).

The urban economic development is very dynamic;
In spite of the lack of specific figures, it is apparent that the trends of economic of Lagos show a healthier economic growth than the National economy for the
period under review.

indicator 22: unemployment

<i>city and country levels</i>		1993	1998	
% of total unemployed that are men	2.1%	2.8%	2.8%	in the total workforce
% of total unemployed that are women	2.6%	3.7%	3.7%	in the total workforce
% unemployed men and women	2.3%	3.5%	3.5%	in the total workforce

What do this trend suggest in terms of employment opportunities for men and women ?
 What are the impacts of unemployment on the urban economy and social development ?
 What measures have been undertaken to curb negative trends ?

It is important to note that the reference years here are 1996 and 2000.
There is improved employment opportunities for men and women
Unemployment brings a downturn on the urban economy and social development
These manifest in high crime rates, gangstarism, violence and insecurity.
The seriousness of the Federal Government on the Poverty Alleviation programme is yielding some useful dividents. Community based action programmes are also also being encouraged. This, coupled with improved distribution of the national wealth and resources will reduce the trend.

17. Promote decentralisation and strengthen local authorities

Qualitative data 6: level of decentralization

city and country levels

1. Can higher levels of government (national, state/provincial):

a. Close the local government ? *erase inappropriate*

b. Remove councillors from office? *erase inappropriate*

2. Can the local government, without permission from higher governments:

a. Set local tax levels ? *erase inappropriate*

b. Set user charges for services ? *erase inappropriate*

c. Borrow funds ? *erase inappropriate*

d. Choose contractors for projects ? *erase inappropriate*

3. Is the amount of fund transfers from higher governments known in advance of the local budget setting process ?

erase inappropriate

If yes, give a percentage:

Have major responsibilities, policy management, decision-making authorities and resources been decentralised at the local level ? If not, is there a process of decentralisation in place ?

Do you consider that decentralisation has improved the level of governance ?

Decentralisation at the local and National governments are now operational to a reasonable extent. There is the legal provision that the decentralisation must conform with.
Relatively, decentralisation has improved the level of governance. Although, there are some self-saeeking individuals who will do everything to reverse the trend, there is no doubt tht the populace are faring better now.

CHAPTER 5: GOVERNANCE

Decentralization/Strengthening of Local Authorities: At various levels of governance, the concept of separation of powers is emphasised. This allows the ordinary citizen to be heard and enhances overall development and credibility in government.

18. Encourage and support participation and civic engagement

Qualitative data 7: citizen involvement in major planning decisions

city level

Are cities involving the civil society in a formal participatory process prior to:

- a) new major roads and highway proposals ?
- b) alteration in zoning ?
- c) major public projects ?

	1996	2000
a) new major roads and highway proposals ?	no	yes
b) alteration in zoning ?	no	yes
c) major public projects ?	yes	yes

Has there been any progress in the area of local participation ?

Do you consider that participatory processes in place are adequate ? Are institutional and legal frameworks sufficient to ensure the right level of participation and civic engagement ?

There has been remarkable progress in the area of local participation;
 Participatory processes can be improved upon;
 The spirit and letters of institutional and legal framework are sufficient, but a prolonged dictatorial past would require a strong moral courage and political will to achieve the right level of participation and civil engagement.

Participation and Civic Engagement: Local participation and Civic Engagement have improved tremendously. This enhances a better image, foreign interest, and positive contribution to the economic affairs of the Country.

Transparency: Transparency is enhanced. This is because of the checks incorporated in the Country's democratic institution.

19. Ensure transparent, accountable and efficient governance of towns, cities and metropolitan areas

Qualitative data 8: transparency and accountability

city level

At the loval government level, are there:

- a) regular independent auditing of municipal accounts ?
- b) published contracts and tenders for municipal services ?
- c) sanctions against faults of civil servants ?
- d) laws on disclosure of potential conflicts of interest ?

	1996	2000
a) regular independent auditing of municipal accounts ?	no	yes
b) published contracts and tenders for municipal services ?	no	yes
c) sanctions against faults of civil servants ?	yes	yes
d) laws on disclosure of potential conflicts of interest ?	yes	yes

Has there been any progress in improving governance ?

What measures have been undertaken in this area ?

There has been a remarkable progress in improving governance;
 Measures undertaken in this area include greater openness, transparency, accountability, and recently the passing of the Anti-Corruption Bill by the National Assembly.
 Another important factor to note is the improved participation in 'self-rule' which is offered in the democratic system of governance.

Accountability: There is improved accountability. This is good for the people and enhances the overall image of the Country.

Efficiency: There is improved efficiency in the operations and governance of the City. This is because as the economic and industrial capital, it is the model of the ideals of the Country.

indicator 23: local government revenue and expenditures

city level	1993	1998	
local government revenue	\$16.56m	\$30.66m	in \$ US (3 years average)
local government expenditures	\$14.95m	\$28.50m	in \$ US (3 years average)
revenue less expenditures	\$1.61m	\$2.16m	in \$ US (3 years average)

What do these figures suggest ?
 What are the impacts of these trends in terms of delivery of services at the local level ?

These figures suggest a relatively healthy economy;
In spite of the economic depression and mismanagement, the Local Government is still in a position to break even.
These trends translate into greater investment by the local authorities;
Although it is difficult to measure the impact on the ordinary dweller in the state this is due to the population which readily overstretches the available infrastructure

Chapter 6: International cooperation

20. Enhance international cooperation and partnerships

Qualitative data 9: engagement in international cooperation

city and country levels	1996	2000
1. Is the country involved in international cooperation ?		
as receiver ?	yes	yes
as donor ?	yes	yes
2. For donor countries:		
what is the total amount provided to urban areas ?	NAV	NAV
In how many countries?	NAV	NAV
3. For recipient countries and cities:		
what is the total amount received by the country?	NAV	NAV
what is the total amount received by the city?	NAV	NAV
3. For cities:		
Is the city affiliated to one or more association of local authorities?	yes	yes
Is the city involved in direct city to city cooperation?	yes	yes

What do these figures suggest ?
 In which particular areas has international cooperation made progress (capacity-building, technology transfers, etc.) ?

Although there are no specific figures, the new democratic experiment opens the country to new avenues of international cooperation, and credibility. This implies that greater international involvements will be experienced through thekey partners - in international cooperation.
Progress in international cooperation includes capacity-building, technological transfers, grants-in-aid, among others.

Promote International Cooperation

III. CONCLUSION

Infrastructure growth and sustainable development are closely linked in Lagos, Nigeria. While the growth and progression of the city depend on the continued growth of the physical infrastructure, it must be done in a sustainable manner that does not compromise the environment or the well-being of future generations. The enhancement of infrastructure has received major funding from the Lagos State government and has taken steps to address environmental degradation and poverty. However, more needs to be done to ensure that the growth of Lagos is sustainable and benefits all its citizens.

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