

Soot-Free Urban Bus Fleets in Lagos – Opportunities and Challenges

PRESENTATION BY

OLUKAYODE TAIWO

LAGOS METROPOLITAN AREA TRANSPORT AUTHORITY @ ACHIEVING CLEAN BUSES FLEET: INTERNATIONAL SEMINAR

ECOMOBILITY SEMINAR, JOHANNESBURG

OCTOBER 5 2015



The Mega City

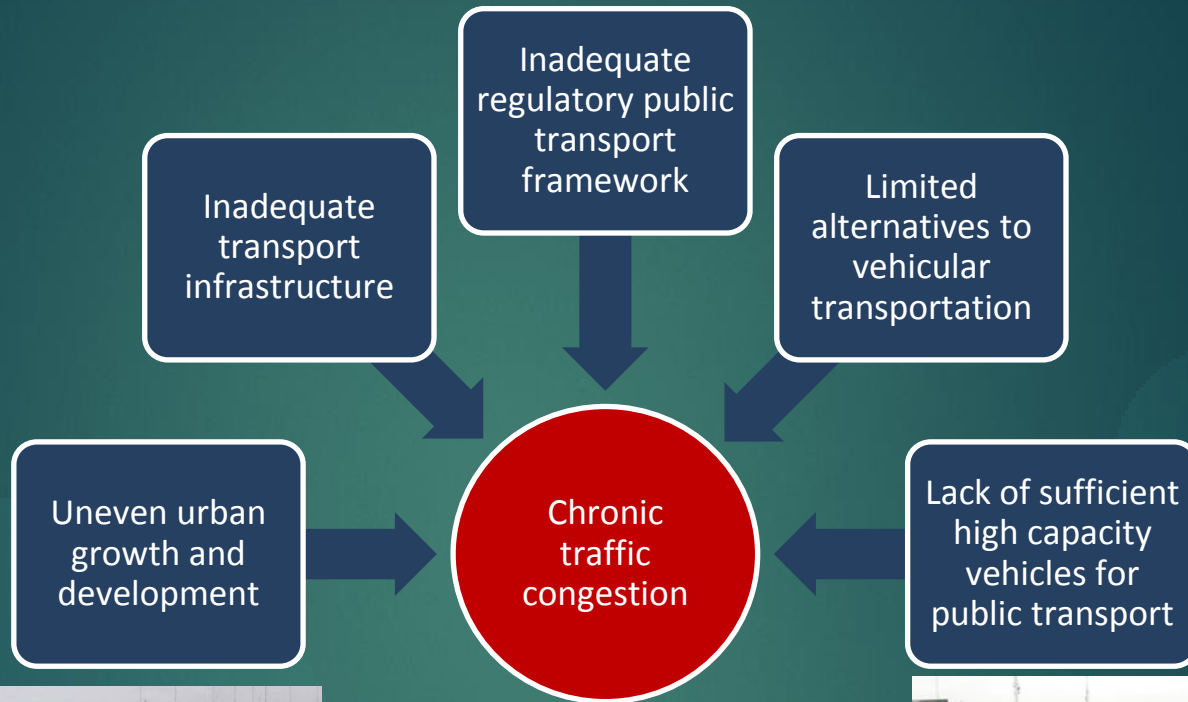
- Lagos is the most populous city in Africa – over 20 million inhabitants
- Bigger in population than 23 countries in Africa – Benin Rep., Mali, Botswana etc.
- Hub of nation's economic, commercial and industrial activities.
- Contributes 20% of Nigeria's GDP
- Larger economy than Ivory coast, Ghana, Madagascar etc.
- 45% of nation's skilled manpower reside in the city.



Lagos State

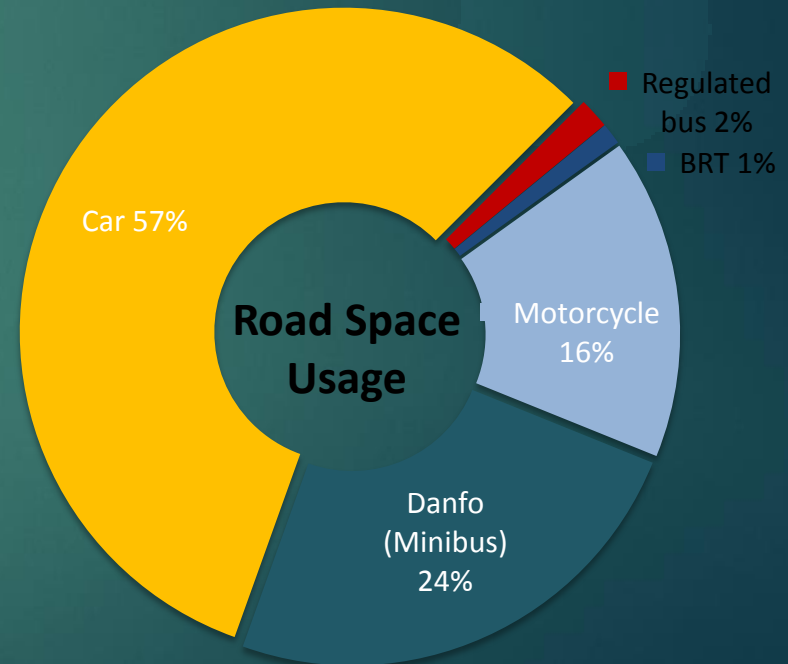
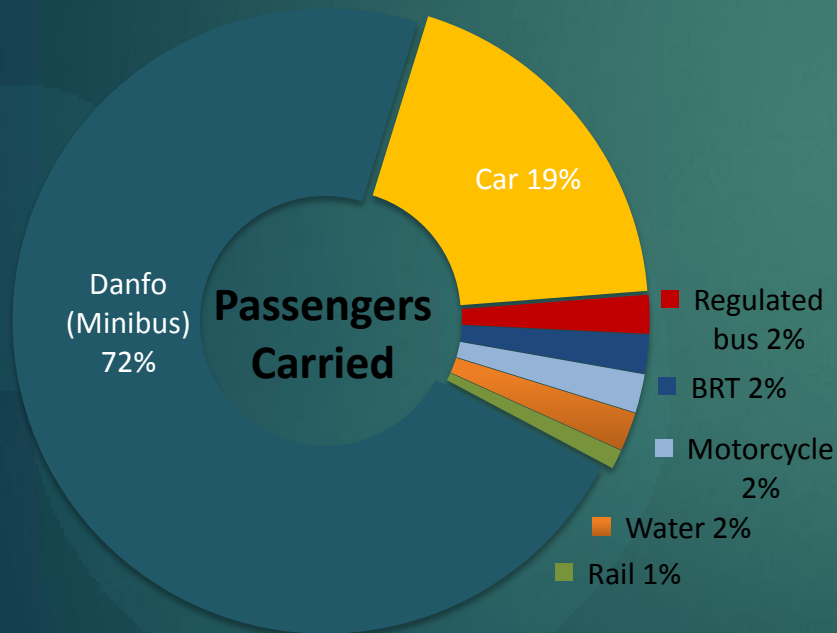


Transport Challenges



Observed travel demand patterns

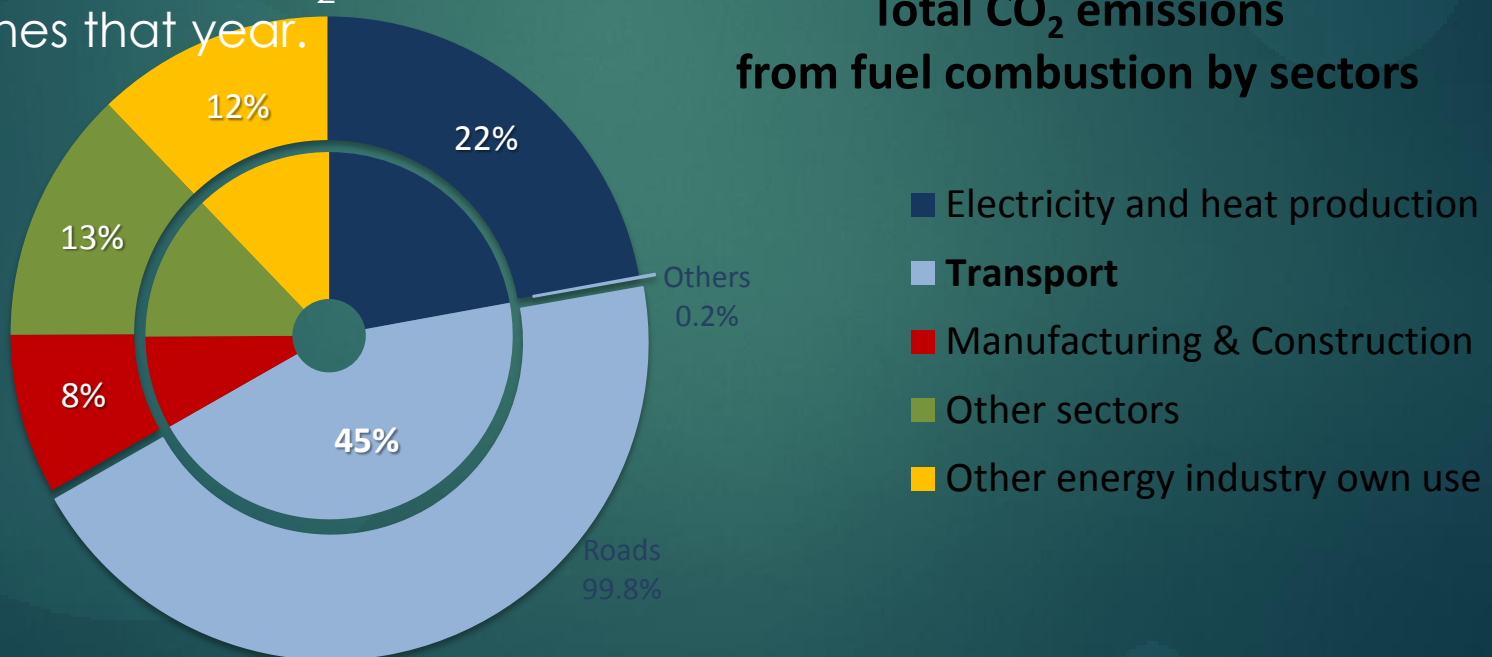
- ▶ Demand for trips in Lagos Metropolitan Area by all modes (including walking) was ~22million per day.
- ▶ Walk trips accounted for 40% of total trips in Metropolitan Lagos.
- ▶ About 97% of all transit in Lagos are done by road.



Nigeria

- ▶ In 2011, Nigeria had the fourth highest CO₂ emission from fuel combustion in Africa after South Africa, Egypt and Algeria respectively.
- ▶ The transport sector, with a 45% share, was the largest contributor to a nationwide CO₂ emission from fuel combustion of 52.8 million tonnes that year.

**Total CO₂ emissions
from fuel combustion by sectors**



Lagos

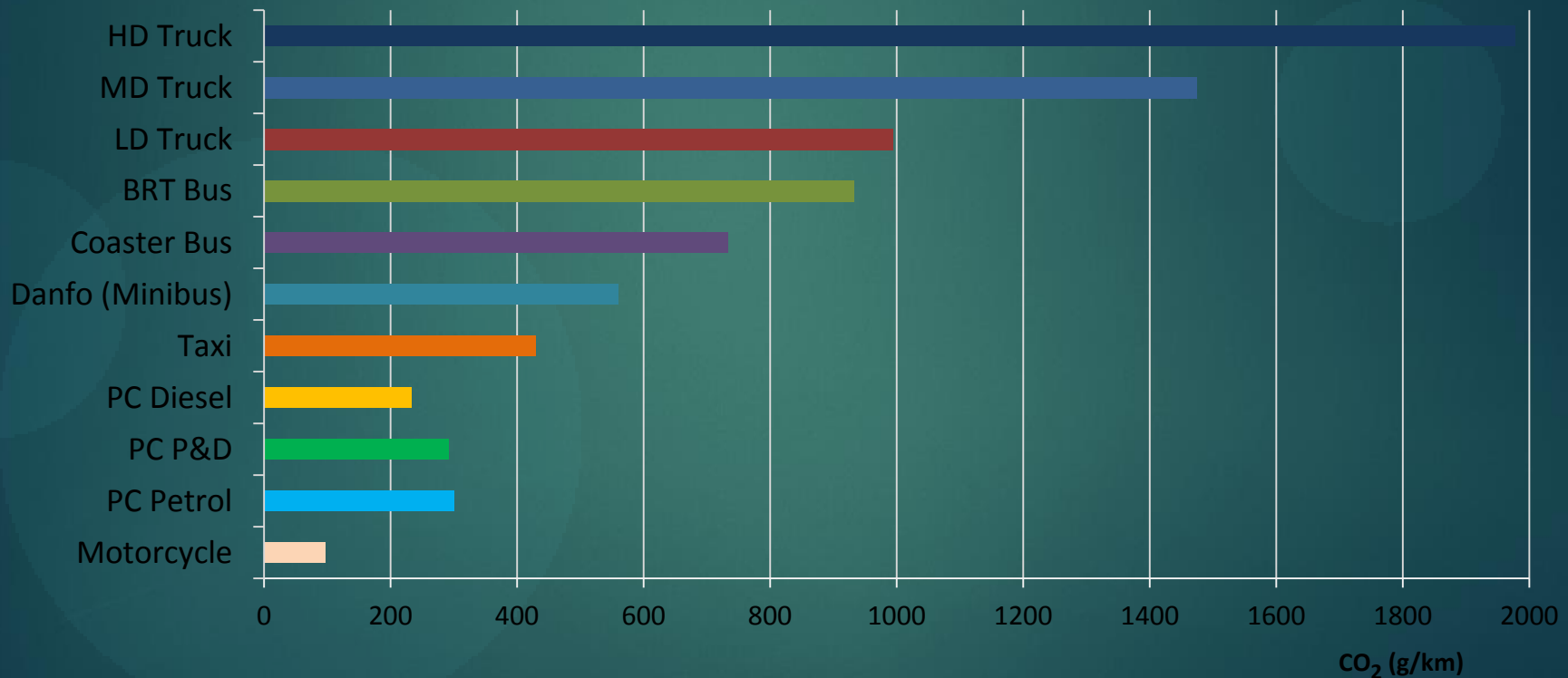
- ▶ The Lagos Air Quality Monitoring Study (2007-2009) revealed that vehicles contribute approximately **43%** to the total level of air pollution in Lagos.
- ▶ Over a quarter of the transport sector contribution to CO₂ emissions in Nigeria comes from Lagos alone.
- ▶ The emission factors for many Nigerian vehicles are close to the Euro 2 Standards, which is 3 to 4 times greater than European values.



Daily Average CO₂ Emissions in Lagos

- ▶ Below is a breakdown of emissions per vehicle category:

Daily Average CO₂ Emissions for each Vehicle Category



HD – Heavy Duty; MD – Medium Duty; LD – Light Duty; PC – Passenger Car; P&D – Petrol and Diesel

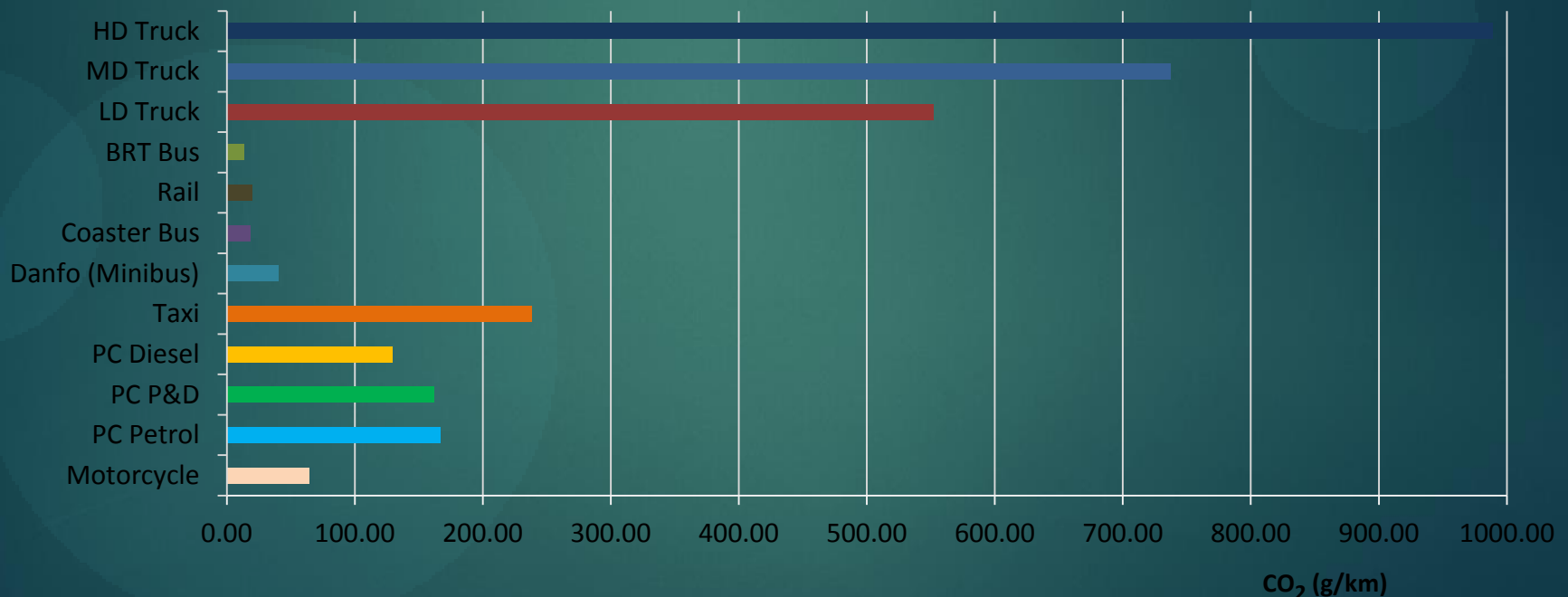
Source: LAMATA GHG Emissions Handbook



Daily Average CO₂ Emissions in Lagos

- ▶ However, in actual terms, the emission per passenger is lower for vehicles with high occupancy rates (e.g – Buses)

**Daily Average CO₂ Emissions per Passenger by Vehicle Category
(Passenger Carbon footprint)**

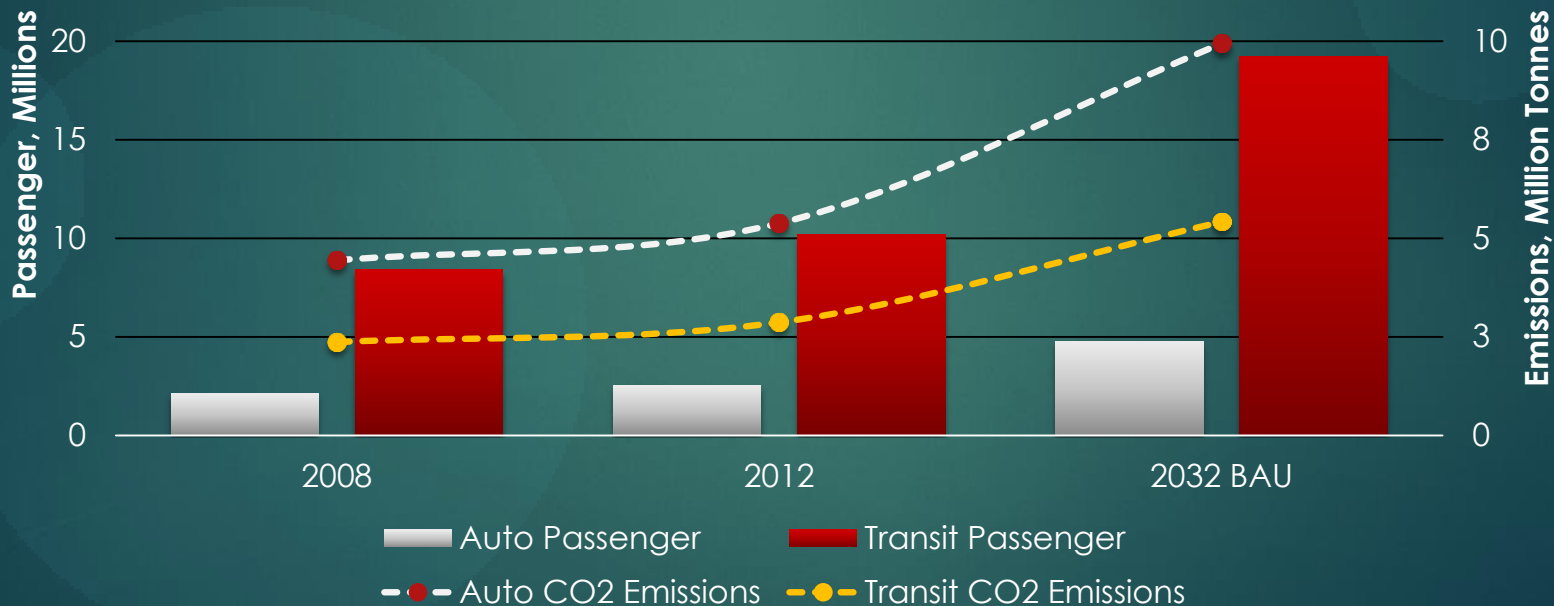


HD – Heavy Duty; MD – Medium Duty; LD – Light Duty; PC – Passenger Car; P&D – Petrol and Diesel

CO₂ Emissions in Lagos

- ▶ By the year 2032, CO₂ emissions by the transport sector in Lagos are estimated to exceed 15 Million tonnes per annum if measures are not put in place to curtail it.

Without Implementing Strategic Transport Master Plan (STMP)



The Big Moves in Lagos towards a Sustainable Urban Transport System

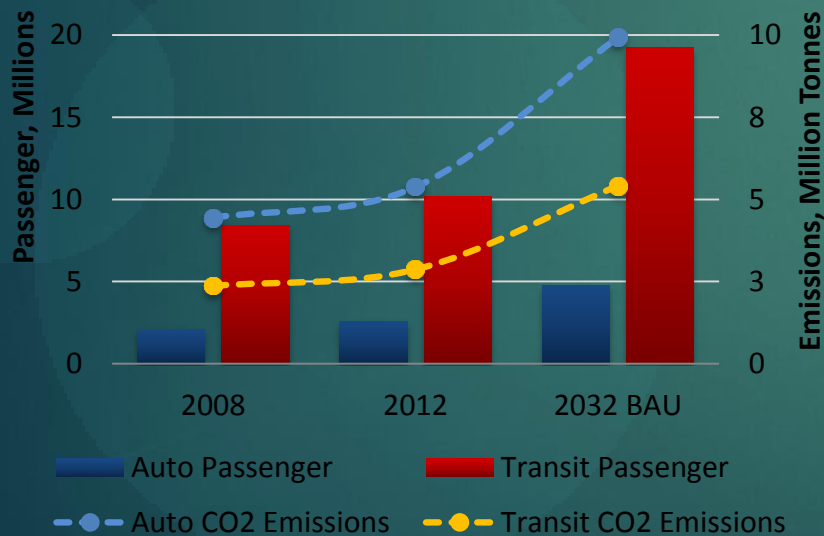
- ▶ Develop a fully integrated mass rapid transit system to cover activity centers identified Strategic Transport Master Plan (STMP) of the mega city region
 - ▶ **Six** Rail Lines — **One** Monorail Line
 - ▶ **16** BRT Routes — Over **20** water routes
 - ▶ Key road projects
- ▶ Introduce a common ticketing system to aid integration of public transport modes.
- ▶ Develop the waterways transport network to integrate with Rail and BRT.
- ▶ Develop a ring road around Metropolitan Lagos to take pressure away from the mainland.
- ▶ Use of ITS technology to optimize the transport network.

Environmental Impact

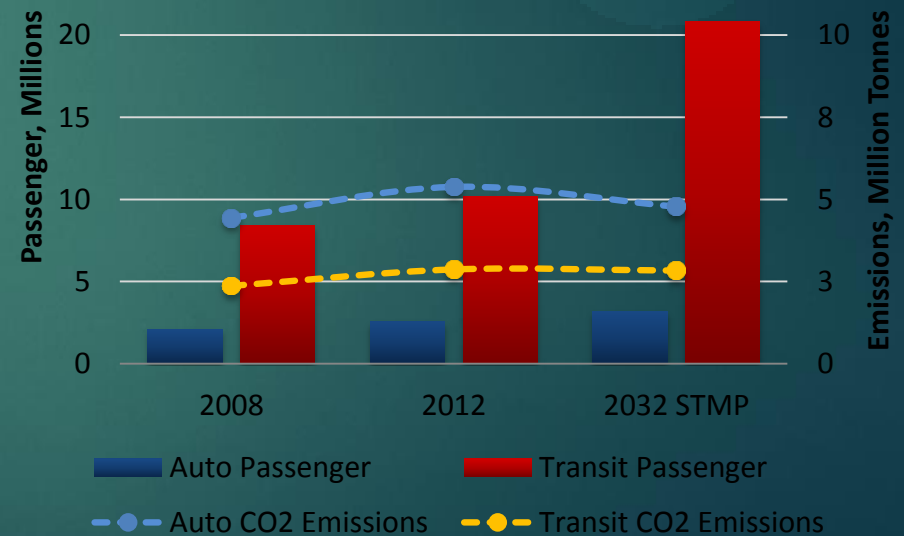
CO₂ Emissions in Lagos

- Execution of projects within the STMP will result in an emission level less than 8 Million tonnes per annum, which represents over **50%** reduction in emissions from the 2032BAU level.

Without Strategic Transport Master Plan (STMP)



With Strategic Transport Master Plan (STMP)



Financing/Working with Manufacturers

- ▶ Lagos State government commenced discussions with Nigerian Independent Petroleum Company (NIPCO) on conversion of some diesel buses to CNG
- ▶ Only about 5000 vehicles use CNG as fuel in Nigeria since the inception of the project in 2009
- ▶ CNG buses is already in use at Benin city, Edo State of Nigeria
- ▶ LAMATA is proposing five CNG buses on its BRT corridor for test run. Only about 500 vehicles run on CNG in Lagos

Key barriers and challenges to date

- ▶ Nigeria is a gas-rich country, usage of CNG will help reduce Governments' dependence on the importation of refined products
- ▶ However, use of CNG powered buses is still at infancy in the country
- ▶ Lack of political will to support investment in the use of CNG to power vehicles
- ▶ The moderate achievement in this regard is from few private investors

Key barriers and challenges to date

- ▶ The cost of conversion and availability of gas are some of the major challenges of this scheme
- ▶ Cost of conversion to become CNG compatible cost between \$1000 and \$1,500

Next Steps

- ▶ It is believed that a policy direction from the Central government could accelerate use of CNG to power vehicles in Nigeria.
- ▶ Advocacy from UNEP and groups such as this to create awareness that CNG powered vehicles as economical, safer, flexible and eco-friendly

Thank You