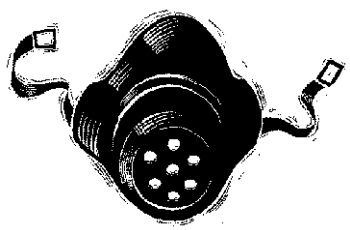

Setting the agenda for action

Anumita Roychowdhury

Centre for Science and Environment

Pan-Africa Dialogue on urban air quality and sustainable mobility

NEMA and Centre for Science and Environment
Nairobi: August 24-25, 2016

Media reportage on air pollution in cities of Africa…

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August 21, 2013 Premium Times

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Let Nema explain cause of air pollution in city

By Editorial

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10 toxic pollution success stories

Report highlights successful cleanups, including an e-waste zone in Ghana, a contaminated Mexican oil refinery and a lead-battery dumpsite in Indonesia.

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Agbogbloshie in Accra, Ghana, was the world's largest e-waste processing site and among the

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Measuring Africa's Air Pollution

APRIL 16, 2014

Green Column When Jenny Linden, an air quality scientist, tried to measure the

POLLUTION

London, L.A., Beijing, Delhi, Nairobi… Is Smog an Inevitable Urban Growing Pain?

By ANDREW C. REVKIN FEBRUARY 15, 2015 9:46 AM 36 Comments

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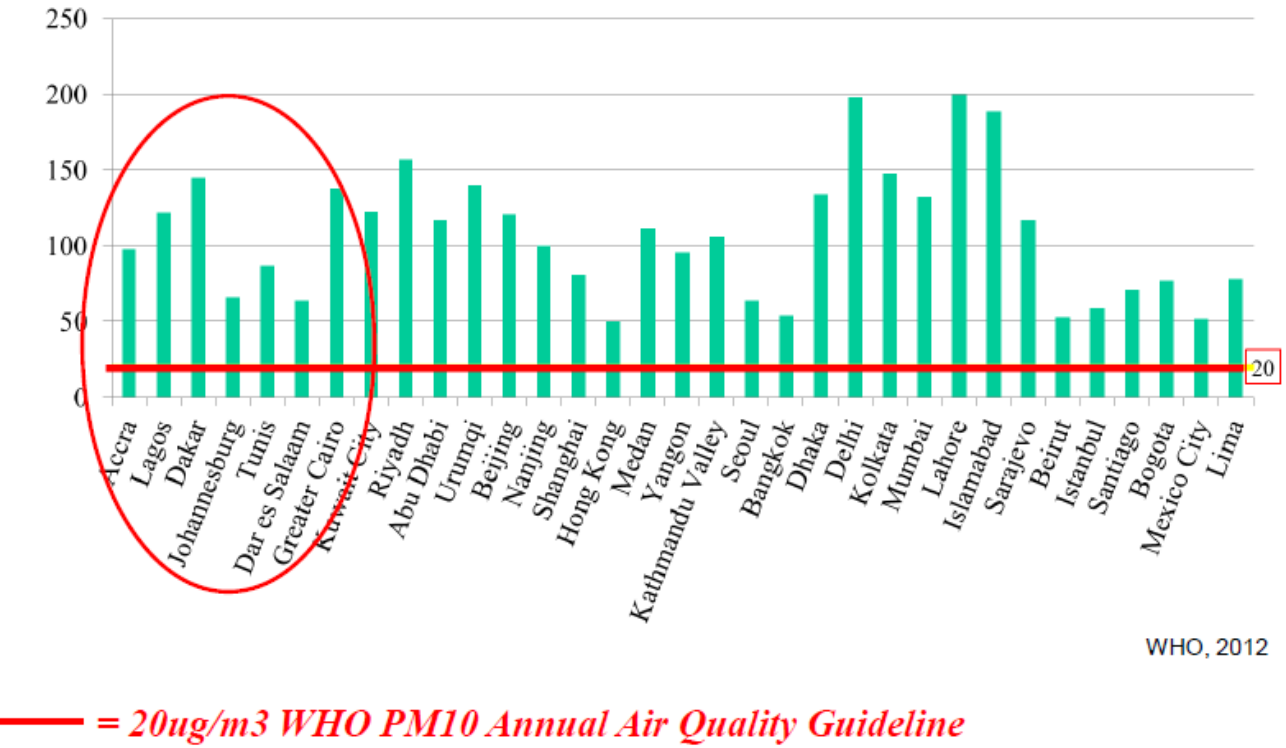
Nigeria smog: October, 2005

•**Wednesday, October 12, 2005: The first-ever smog in Lagos Nigeria, which lasted for more than six hours.**

This led LAMATA to facilitate the Lagos Air (vehicular emission) Quality Monitoring Study (LAQMS) in February 2007.

Evidence of growing crisis

Annual average particulate (PM10) levels well above WHO guideline

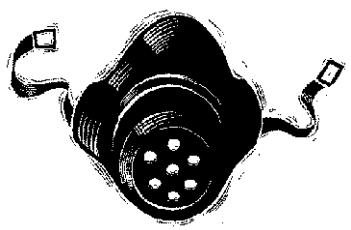


WHO, 2012

= 20ug/m3 WHO PM10 Annual Air Quality Guideline

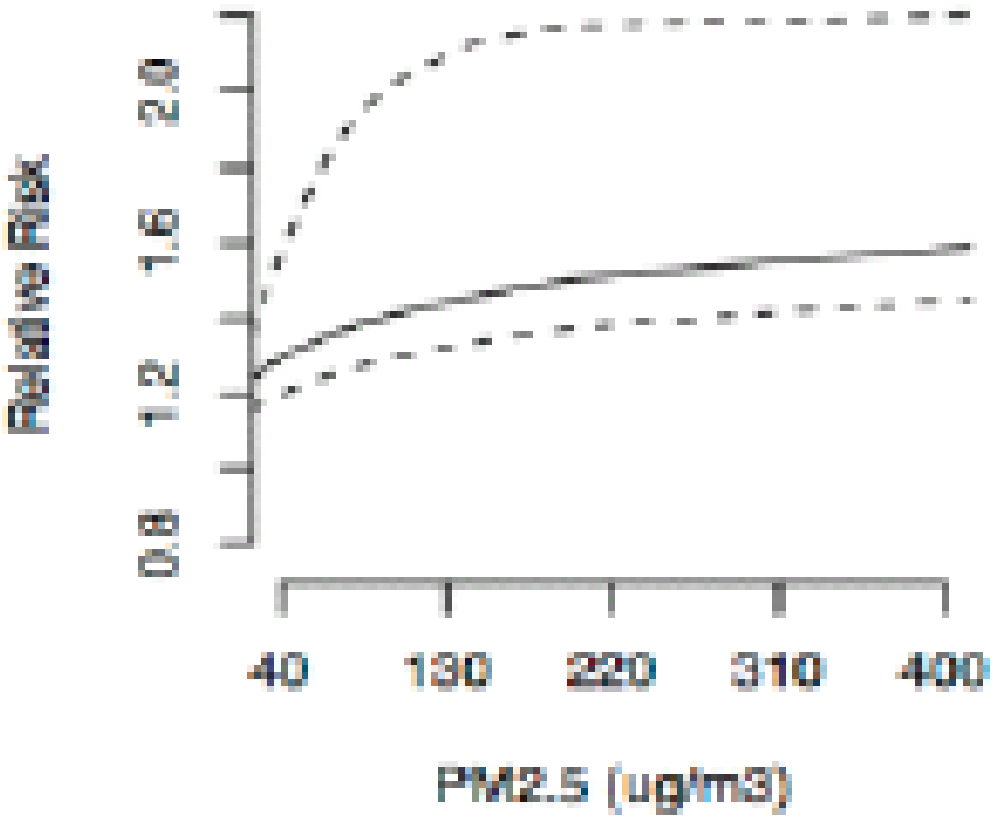
Levels in African cities lower than some of the worst hit cities in India.

But much higher than the stringent WHO guidelines.



Be warned …. Most of the health effects occur at lower levels

Integrated Exposure-Response function for Ischemic Heart Disease



HEI Global Burden of disease,

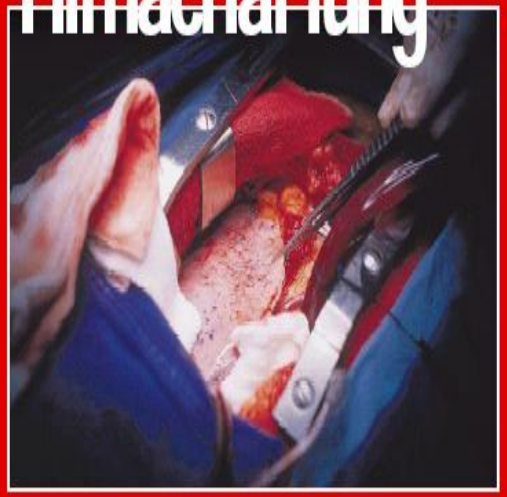
Our health matters

Bad air! We all know about it. But the fact that it gets into our bodies and inflicts fatal injuries is unknown to most of us. Surgeons who have the privilege of seeing inside us have a funny story to tell. They can tell, just by looking at the colour of the lungs, whether the person is from a dirty big city or not.

Actually a shocking tale!

Look at the spotless lung below. The fortunate owner comes from a relatively cleaner place.

Himachal lung



Look at these black spots on the lung. The unfortunate owner lives in Delhi and has been breathing polluted air. Air full of carbon particles which accumulate in the lungs (black spots). What you can't see is a cocktail of gases and tiny particles, even smaller than carbon that get into our bodies. Actually, you are getting polluted.

Delhi lung

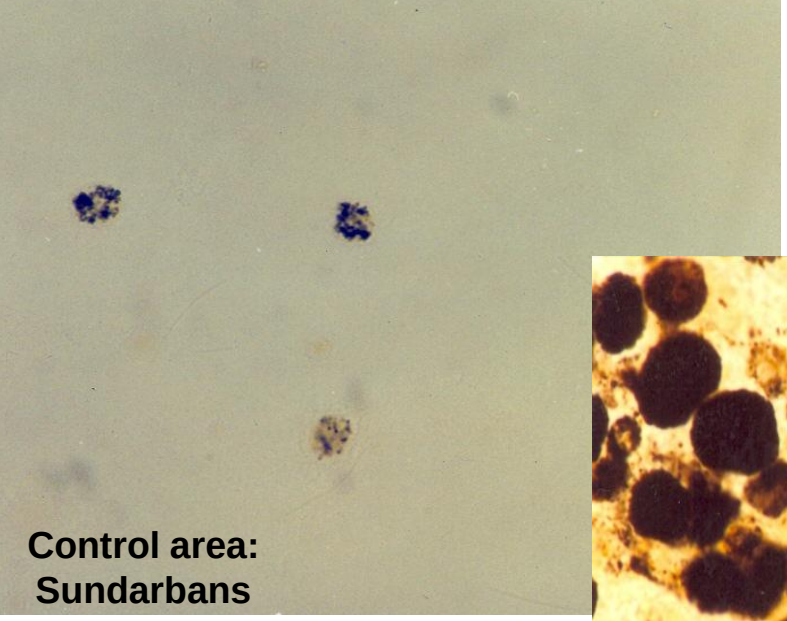
Capital punishment

Scary? But those cars are so sexy!

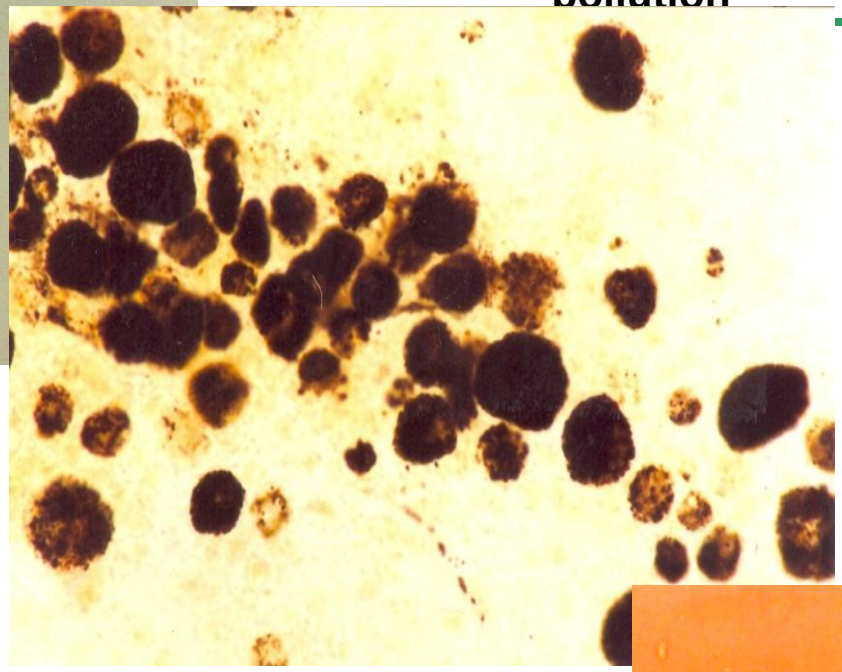
Source: CSE

Evidences of health impacts in India……

Alveolar macrophage - biomarker of air pollution



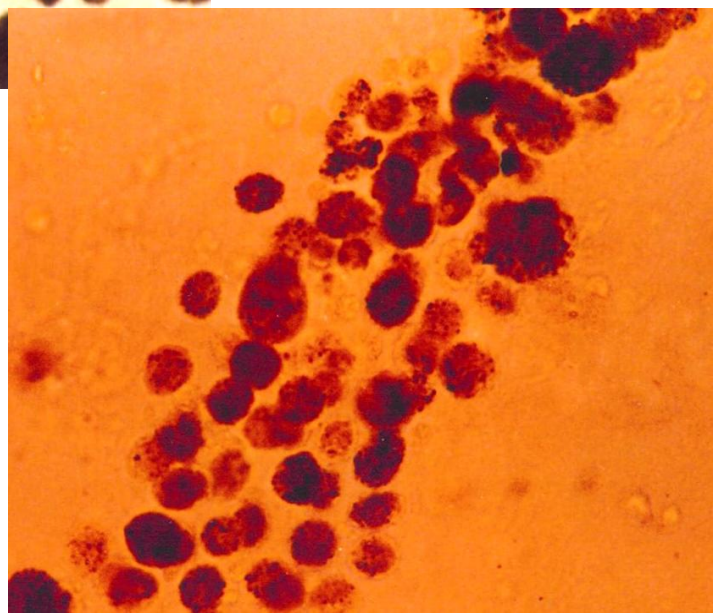
Control area: Sundarbans



Exposed group; Kolkata taxi driver

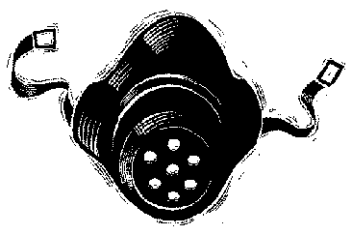
Increase in AM number

Larger AM – particle laden



Sputum cytology of a 14-year old girl in Delhi, showing abundance of particle laden AM

Source: CNCI



Jigsaw of health evidences from cities of Africa

Addis Ababa: Out of the top 20 leading causes of out patient visit by region in all health centers and hospitals of Addis Ababa, acute respiratory infections is of prime concern. Cases of acute respiratory infection increased from **148,000 in 2006-2007**, to **207,000 in 2007-2008**. Primary cause emissions from vehicles.

- Study has identified more than 18 air pollutant elements in highly polluted area affected by traffic air pollution.

In Ghana acute respiratory illness among the top 10 causes of out patient hospital visit. Africa reporting one of the highest death rates form non-communicable disease.

Nigeria: Study by Delta State University on ambient particulate pollution and health impact in Nigerian cities (2001-2006) show significant prevalence of **cough, catarrh, eye infection, asthma, chronic bronchitis etc. Linked to traffic pollution**

http://www.epostersonline.com/rcog2014/?q=node/2038&posterview=true

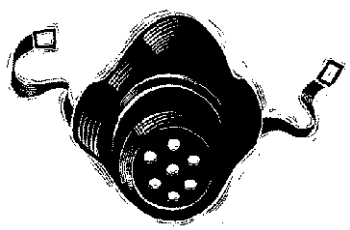
Health cost of air pollution in cities of Africa

UN Economic Commission of Africa: Cost of air pollution in a number of African cities can be as high as 2.7% of GDP.

Africa: About 176,000 deaths permature deaths due to air pollution. (GBD)

Kenya: Economic loss from illnesses and deaths due to vehicular pollution per year in Kenya is 115 million KSh. (University of Nairobi)

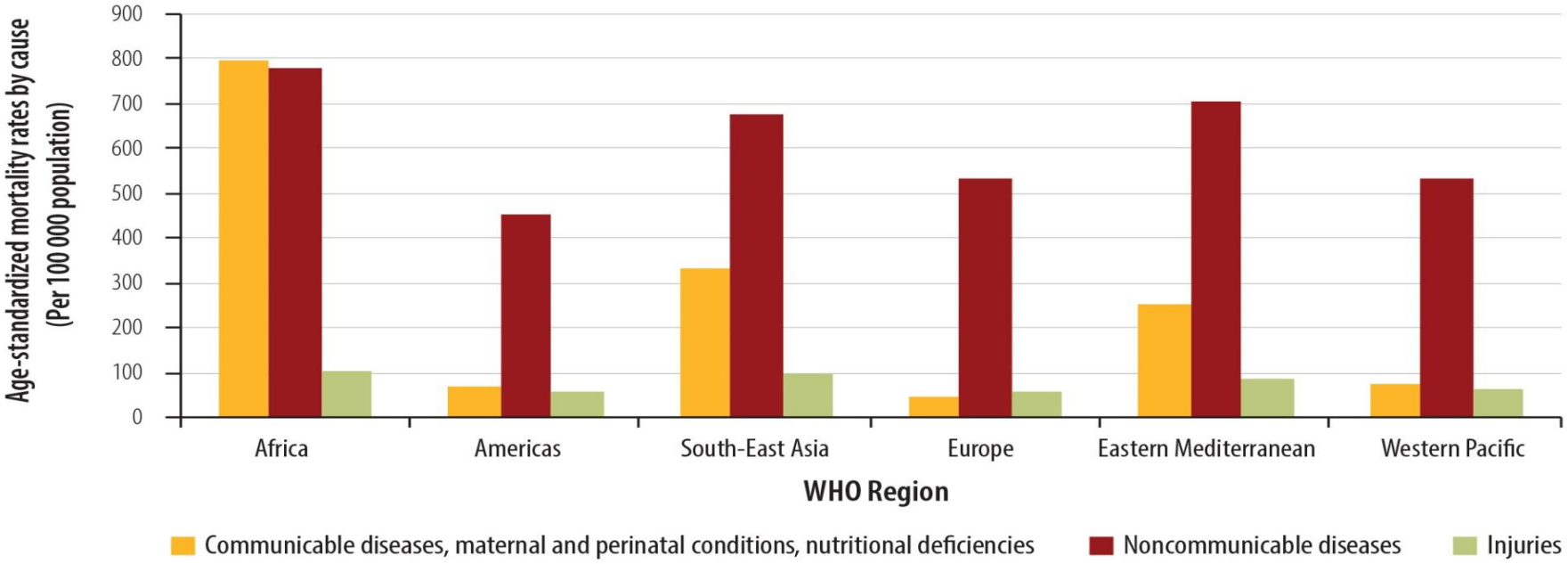
Nigeria -- 94% of population exposed to PM2.5 exceeding WHO guidelines. Air pollution damage costs about 1% of Gross National Income. (Green Data Book 2015, World Bank)

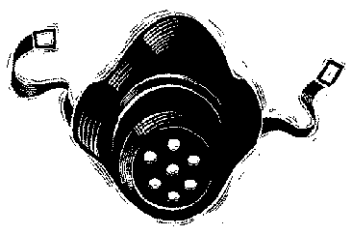


Africa: Rapid increase in death rate from non-communicable diseases

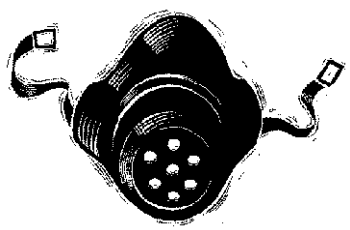
- In Sub-Saharan Africa NCDs to surpass infectious diseases by 2030
- NCDs are account for 24% of all deaths in Nigeria
- Cancer risk is increasing in all regions
- Air pollution associated with diabetes, heart and blood pressure
- Growing and ageing population to worsen health burden

Age-standardized Mortality Rates by Cause, WHO Regions, 2008





Need for early and sustained action....



Lessons from Delhi…

What has Delhi achieved?

First generation action 1998-2008

Enforced Euro II emissions standards in 2000, five years ahead of schedule, Euro III in 2005; unleaded petrol

Mandated pre-mix petrol to two- and three-wheelers

Implemented largest ever CNG programme: Largest ever public transport bus and three-wheeler fleet on natural gas

Capped the number of three-wheelers

Phased out 15 year old commercial vehicles

Strengthened vehicle inspection programme (PUC)

Efforts made to bypass transit traffic

Relocated polluting industry; Stricter action on power plants; two power plants on natural gas; Ban on open burning

Second generation action 2008 - 2012

Metro and bus system expanded

Euro IV standards in 2010; upgraded vehicle inspection

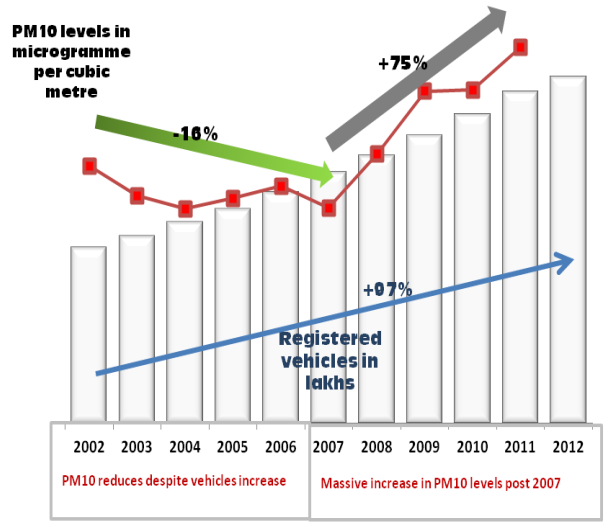
Tax on diesel and Air Ambience Fund

Marginal increase in parking prices in NDMC area

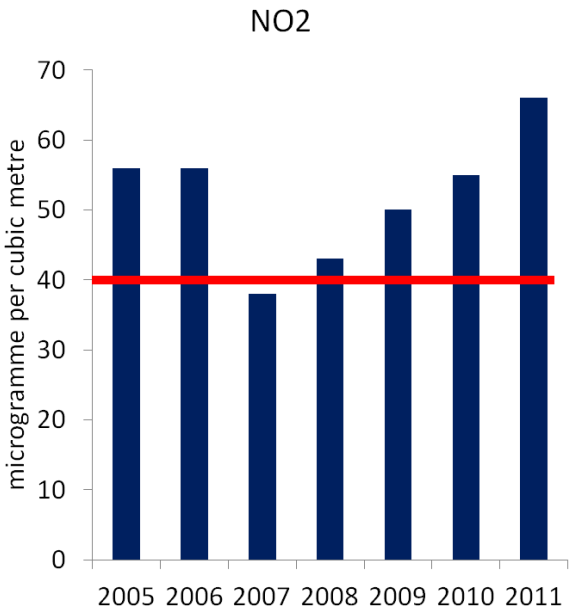
Stronger action on truck pollution and dieselisation

Challenge of maintaining the momentum: Lesson from Delhi

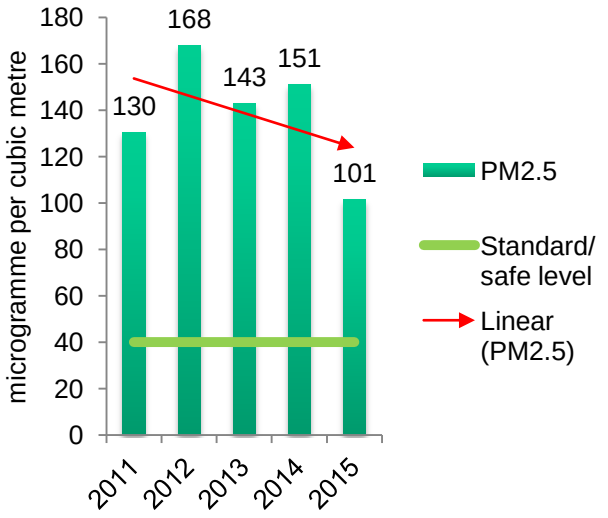
PM10: Decline and rise again



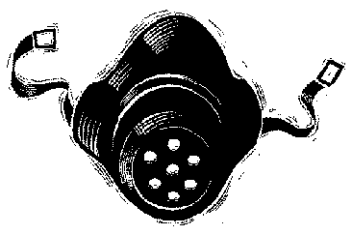
NO2 levels rising steadily



PM2.5: stabilsiing

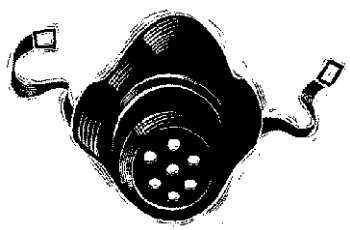


Based on CPCB data



Addressing issues of common concerns in Africa region.....

I) ....Air quality monitoring and management



Do we know enough about air quality?

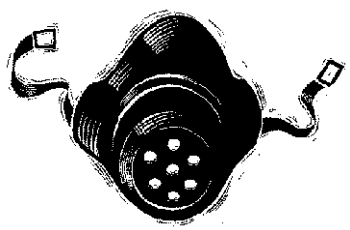
- **The WHO database on outdoor air pollution of 2013 has listed African countries that monitor particulates**

•Nigeria, Algeria, Botswana, Ghana, Madagascar, Mauritius, Senegal, South Africa, and Tanzania, Ethiopia and Zimbabwe.

•Egypt, Madagascar, Tunisia, and Morocco have published reports of PM monitoring data.

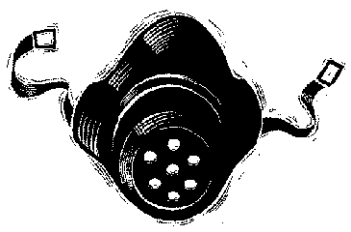
• Ethiopia and Nigeria have established urban air quality monitoring systems.

•More advanced action in Senegal, Ghana etc



Common questions in the region

- **Need air quality monitoring strategy**
  - Monitoring network design
  - Monitoring protocol
  - Monitoring of pollutants and meteorological factors
  - Quality control and assurance for credible data
  - Data reporting and pubic information system
  - Pollution forecasting
- **Alternative and affordable monitoring to create baseline data**
- **Pollution source assessment strategy**
- **Exposure management**
- **Clean air action plan to be implemented in time bound manner**
- **Set up institutional process for air quality management**



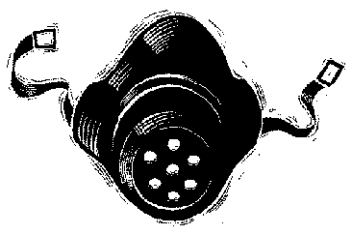
Evidence of change
Air quality Index in Senegal

The Senegalese Ministry of Environment and Sanitation has set up 5 fixed monitoring stations in Dakar. Air quality is communicated to the public through air quality index. Capacity to do pollution forecasting

Pollutant	Averaging time	Maximum Limit Value	
		WHO	Senegal
Sulphur Dioxide (SO_2)	1 hour 24 hours Year	500 (10 min) 125 50	- 125 50
Nitrogen Dioxide (NO_2)	1 hour Year	200 40-50	200 40
Ozone (O_3)	1 hour 8 hours	150-200 120	- 120
Carbon Monoxide (CO)	1 hour 8 hours	30 000 10 000	- 30 000 (24h)
Particles <10 µm (PM10)	24 hours Year	50 * 20 *	260 80
Lead (Pb)	Year	0.5-1,0	2

*) *EU limit values*

Air Quality Index (AQI) values…	Levels of Health Concern	Colors
When the AQI is in this range…	… air quality conditions are:	… as symbolized by this color:
0 – 50	Good	Green
51 - 100	Moderate	yellow
101 - 200	Unhealthy	Orange
> 200	Very Unhealthy	Red



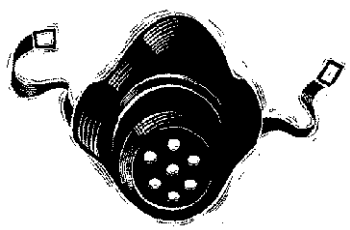
Air Quality Index and forecasting in Senegal

Pollution episode started on January 26th 2016

Alert message was sent to the press and hospitals (pneumology services)

« The air quality for today is very unhealthy (Red Index).
Desert particulate concentration started increasing yesterday.
This situation can last for the next 72 hours. »

Source: Aminata – Senegal)



Air quality index and health advisory in India

National Air Quality Index in India

Breakpoints for AQI Scale 0-500 (units: µg/m3 unless mentioned otherwise)

AQI Category (Range)	PM_{10} 24-hr	$PM_{2.5}$ 24-hr	NO_2 24-hr	O_3 8-hr	CO 8-hr (mg/m^3)	SO_2 24-hr	NH_3 24-hr	Pb 24-hr
Good (0-50)	0-50	0-30	0-40	0-50	0-1.0	0-40	0-200	0-0.5
Satisfactory (51-100)	51-100	31-60	41-80	51-100	1.1-2.0	41-80	201-400	0.5 –1.0
Moderately polluted (101-200)	101-250	61-90	81-180	101-168	2.1- 10	81-380	401-800	1.1-2.0
Poor (201-300)	251-350	91-120	181-280	169-208	10-17	381-800	801-1200	2.1-3.0
Very poor (301-400)	351-430	121-250	281-400	209-748*	17-34	801-1600	1200-1800	3.1-3.5
Severe (401-500)	430 +	250+	400+	748+*	34+	1600+	1800+	3.5

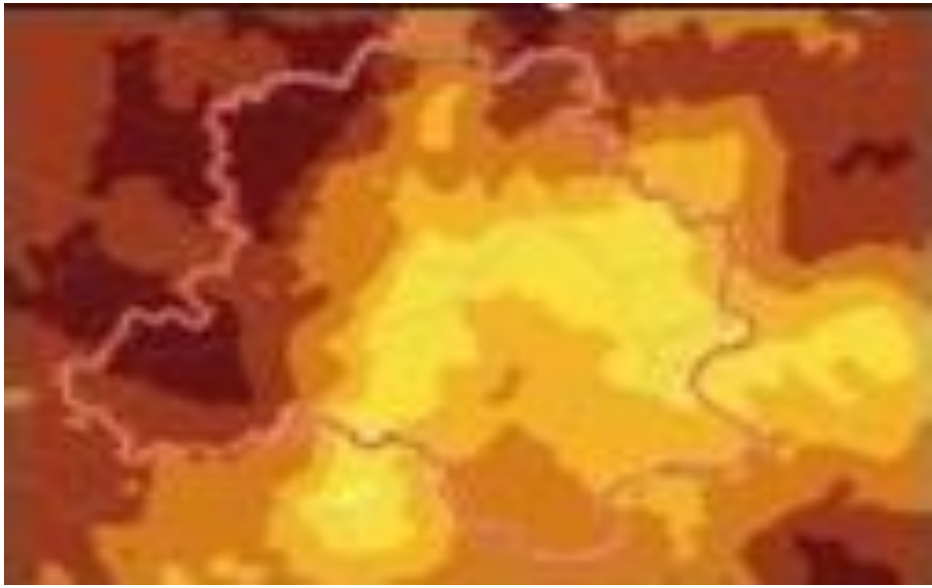
Health Advisory in India

AQI	Associated Health Impacts
Good(0–50))	Minimal Impact
Satisfactory (51–100)	May cause minor breathing discomfort to sensitive people
Moderately polluted (101–200)	May cause breathing discomfort to the people with lung disease such as asthma and discomfort to people with heart disease, children and older adults
Poor (201–300)	May cause breathing discomfort to people on prolonged exposure and discomfort to people with heart disease
Very Poor (301–400)	May cause respiratory illness to the people on prolonged exposure. Effect may be more pronounced in people with lung and heart diseases
Severe (401-500)	May cause respiratory effects even on healthy people and serious health impacts on people with lung/heart diseases. The health impacts may be experienced even during light physical activity

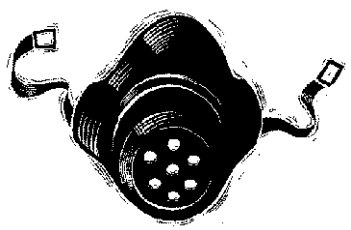
Impact of emergency action on peak pollution in Delhi

Aerosol Optical Depth: Pre Odd-Even Trial December 18 to 31, 2015

Aerosol Optical Depth : During Odd-Even Trial January 1 to 15, 2016



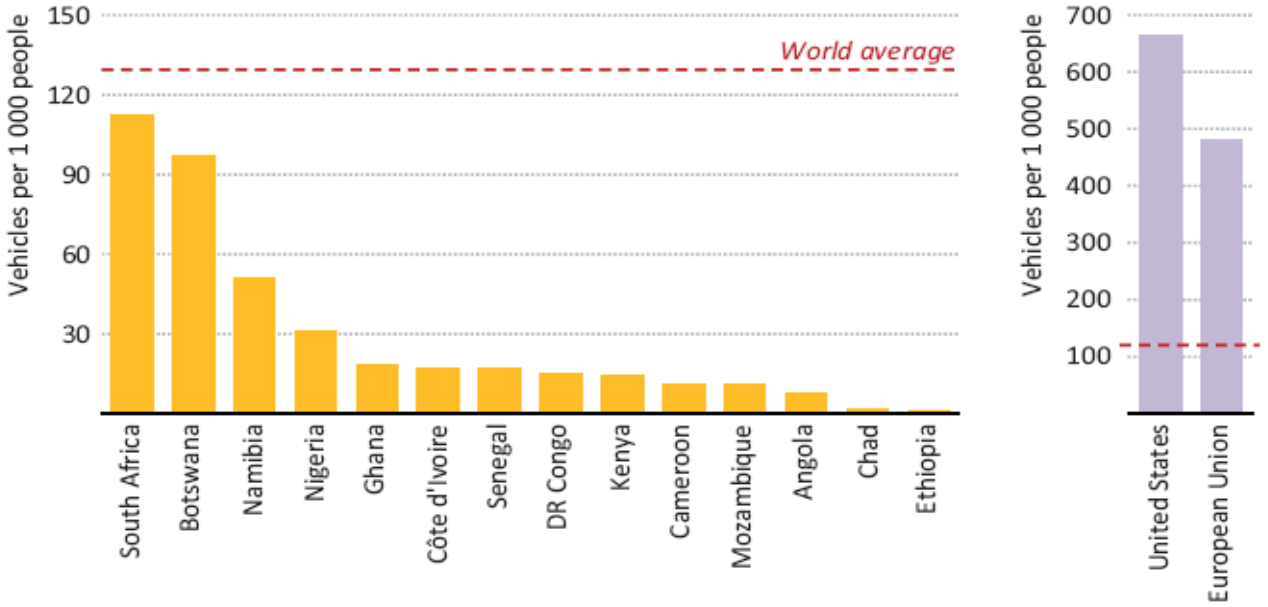
Good					Bad
0 to 0.3	0.3 to 0.45	0.45 to 0.60	0.60 to 0.75	0.75 to 0.90	> 0.90



Special challenge of vehicular pollution ....

2) Lag in fuel and technology roadmap and import of old and used vehicles

Car ownership in cities of Africa



Sources: World Bank (2014a); country communications; IEA databases and analysis.

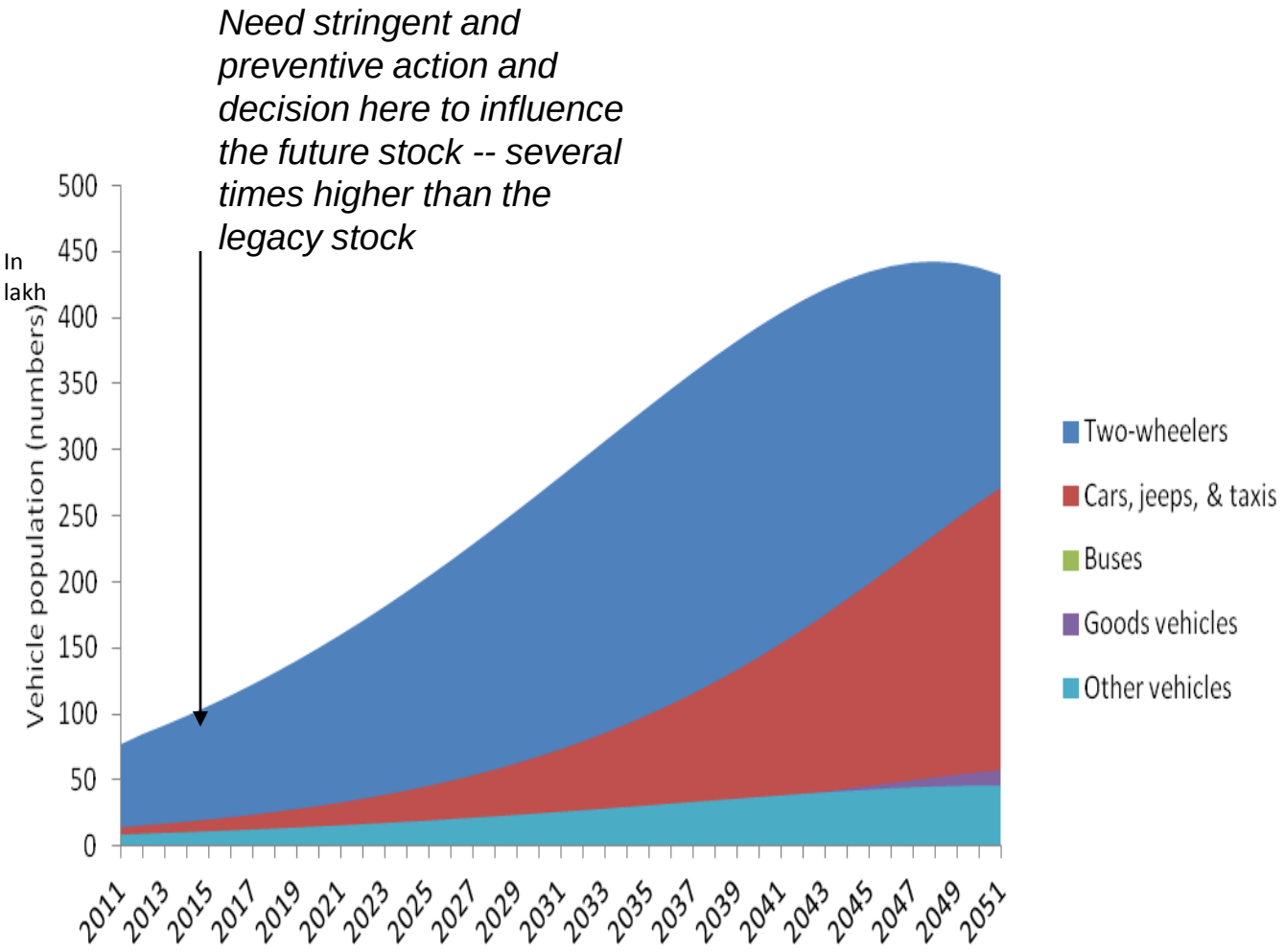
Kenya: Nearly 30% of all vehicles in Kenya in Nairobi. Nairobi's car fleet to double in just six years.

Lagos: If ownership rates grow from 0.05 per capita to 0.06 over the period from 2010 to 2025 there will be 80% increase in vehicles numbers

Addis Ababa: Base numbers are small. Poised for rapid increase.

Challenge of motorisation in global South

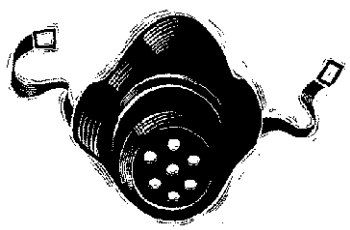
Example from India



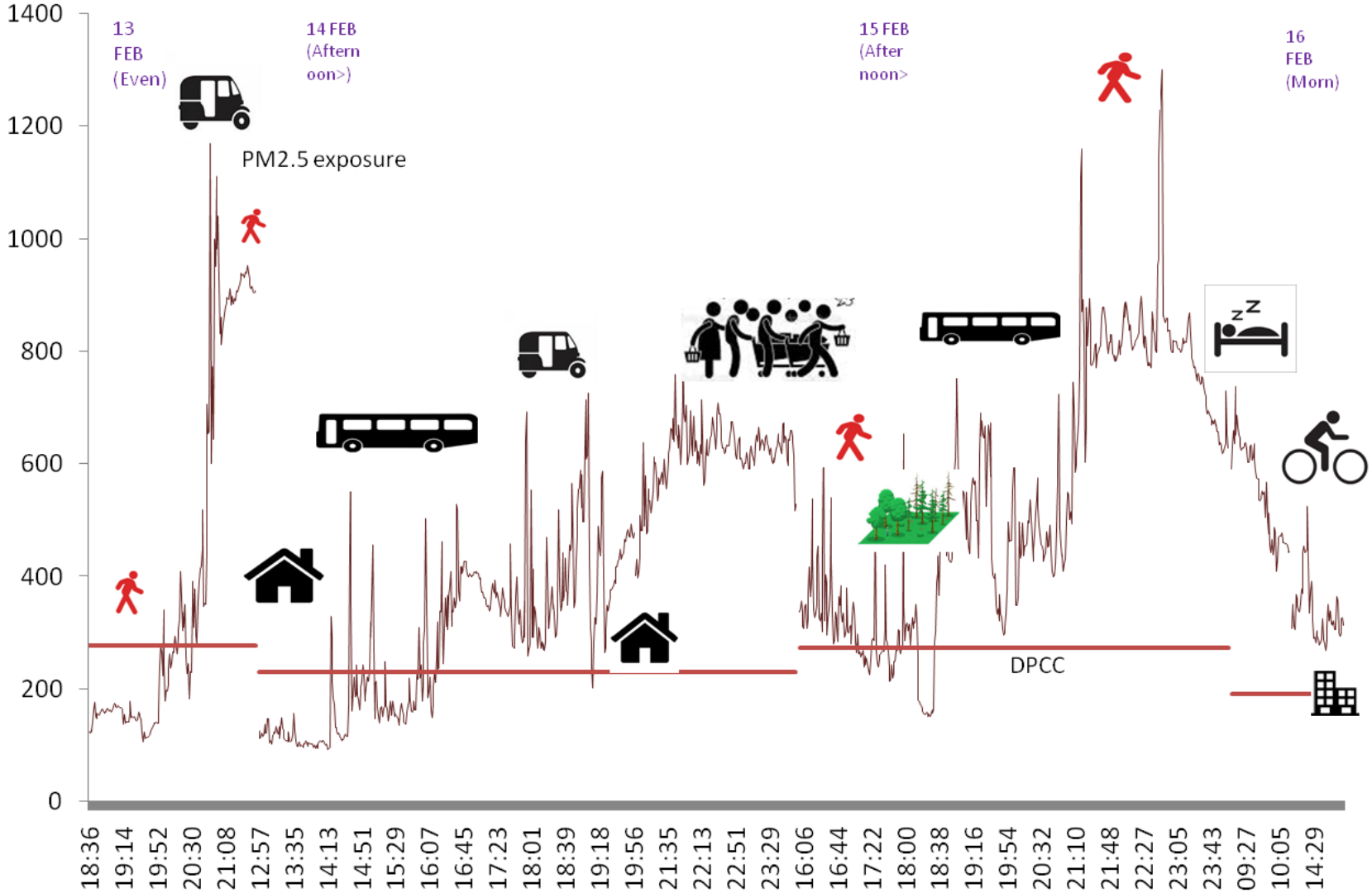
Legacy stock in India much smaller than the new vehicle stock yet to roll

New motorisation must be based on best available technology and fuels

Source: CSE

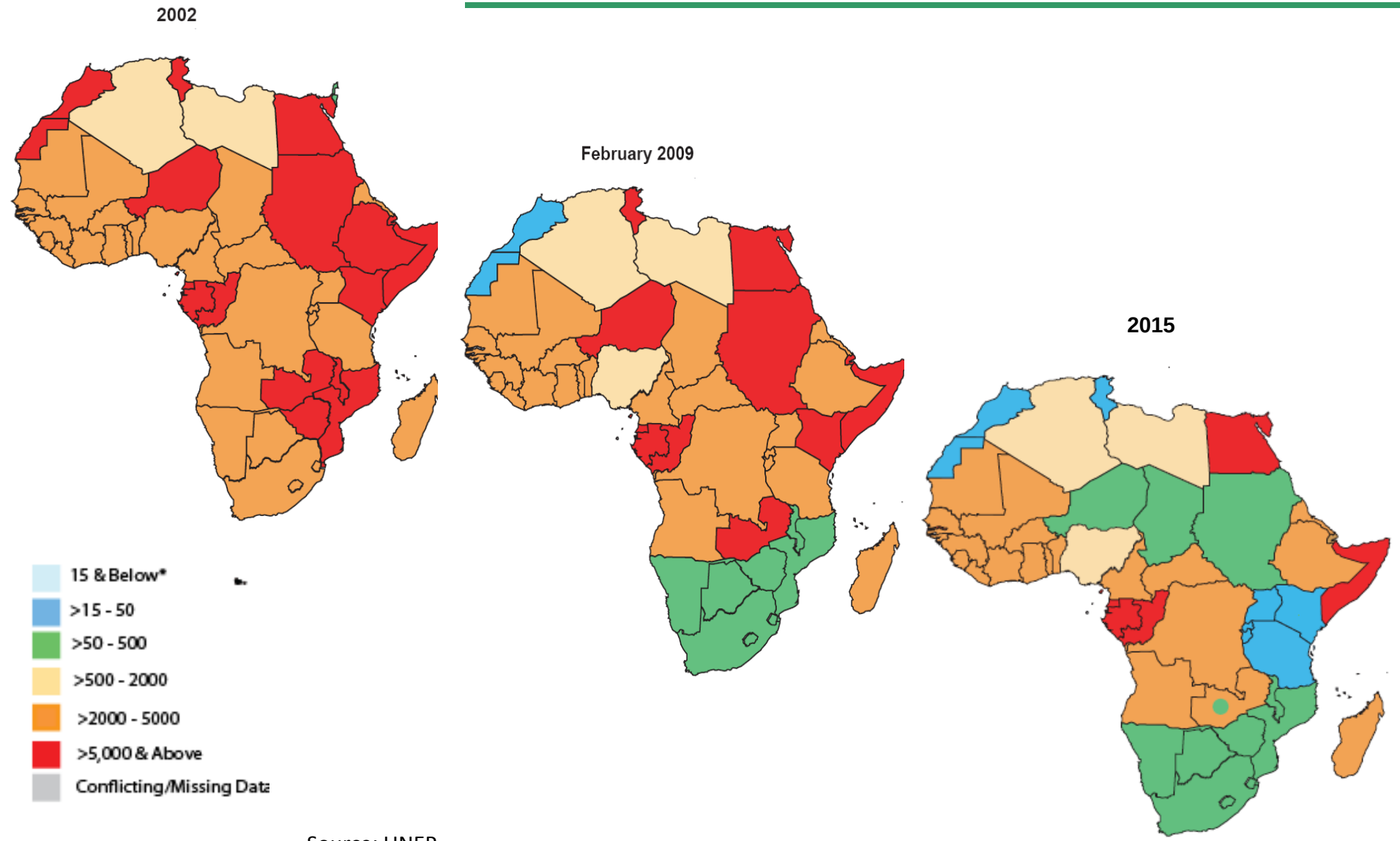


CSE study in Delhi shows high exposure to vehicular emissions



Source: Based on CSE exposure monitoring and DPCC data for ambient levels

Progress in lowering diesel fuel sulphur in Africa



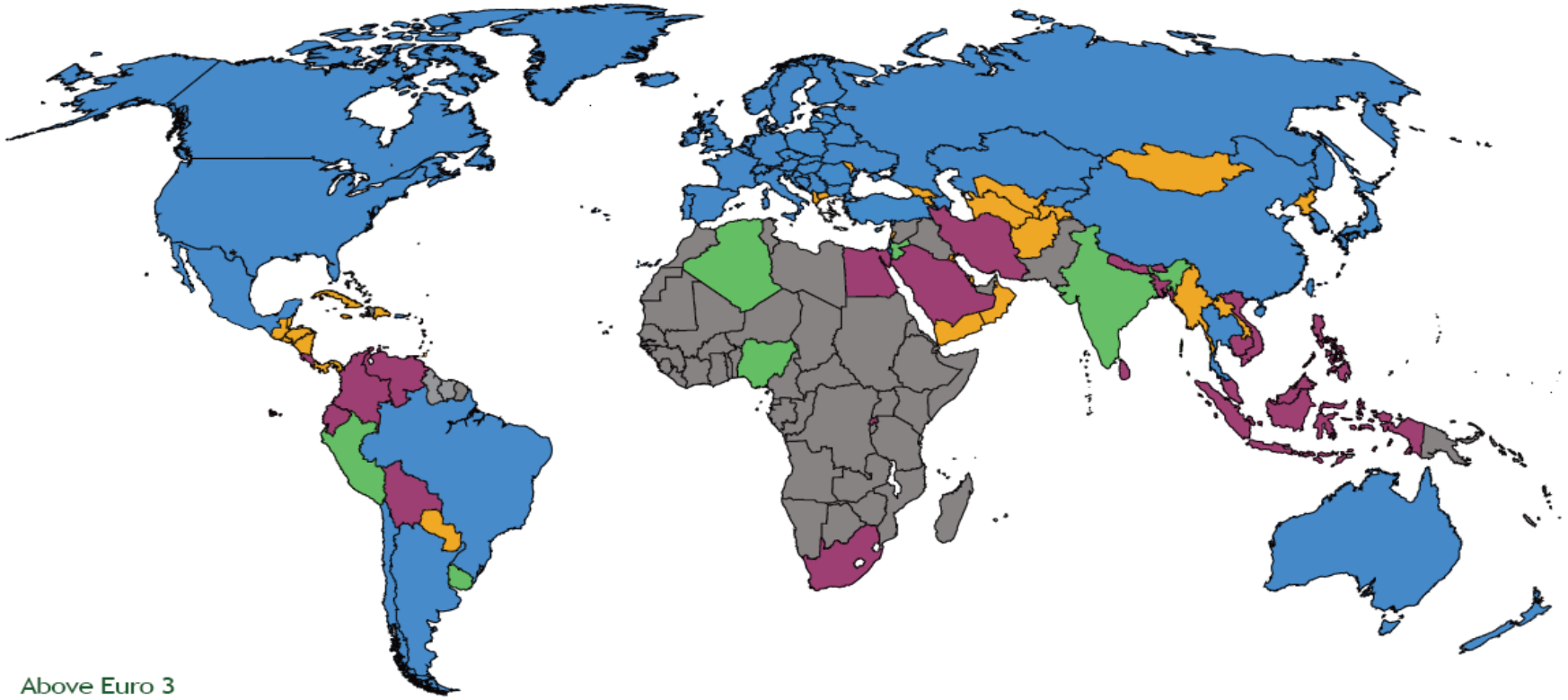
Source: UNEP

Progress in emissions standards in Africa

Partnership for Clean Fuels and Vehicles

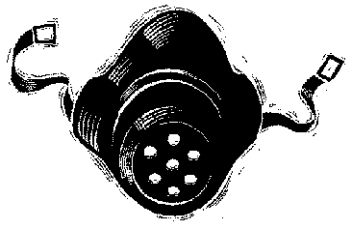
UNEP

Vehicle Emissions Standards
March 2016



www.unep.org/Transport/pcfv

Source: UNEP

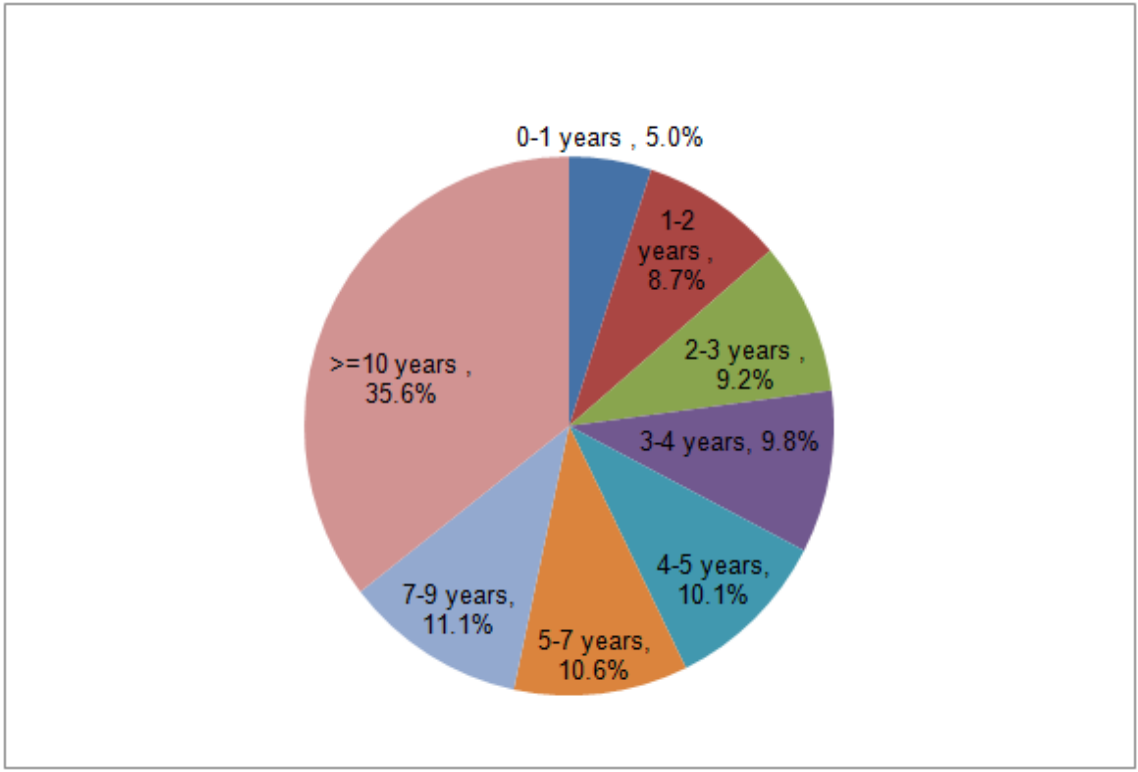


Import of used vehicles undercuts benefits of improving fuel quality

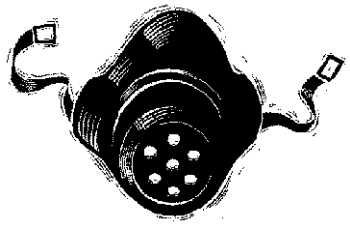
Significant proportion of vehicles in African region are imported used vehicles

Locks in enormous pollution

Age break up of cars in Ethiopia



Source: CSE based on data provided by Addis Ababa Transport Authority



Concern over dieselisation

Diesel cars are legally allowed to emit more particulate and nitrogen oxide than petrol cars

Diesel emissions are branded as class I carcinogen for strong link with lung cancer

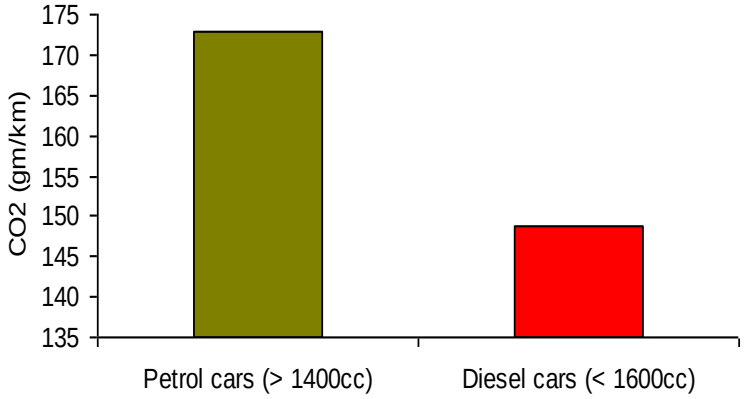
Black carbon emissions from diesel vehicles are several times more heat trapping than CO2

CO2 emissions from the upstream diesel refining process are high:

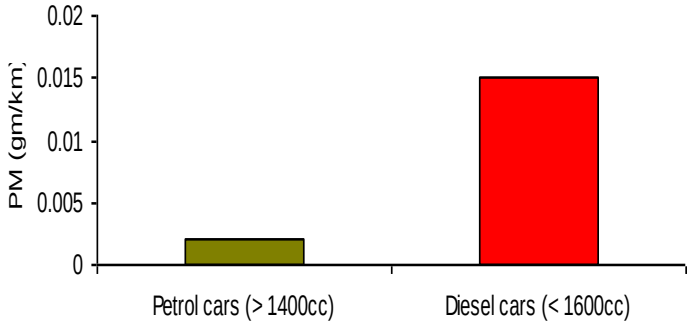
Rebound Effect: Diesel fuel has higher carbon content than petrol. If more diesel is burnt encouraged by its cheaper prices and more driving, more heat-trapping CO2 will escape.

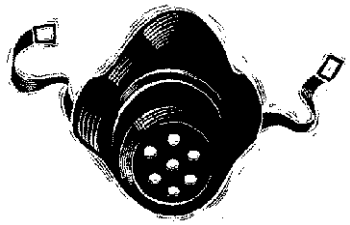
Nullifies marginal greenhouse gas reduction benefit of diesel car ……

CO2



PM



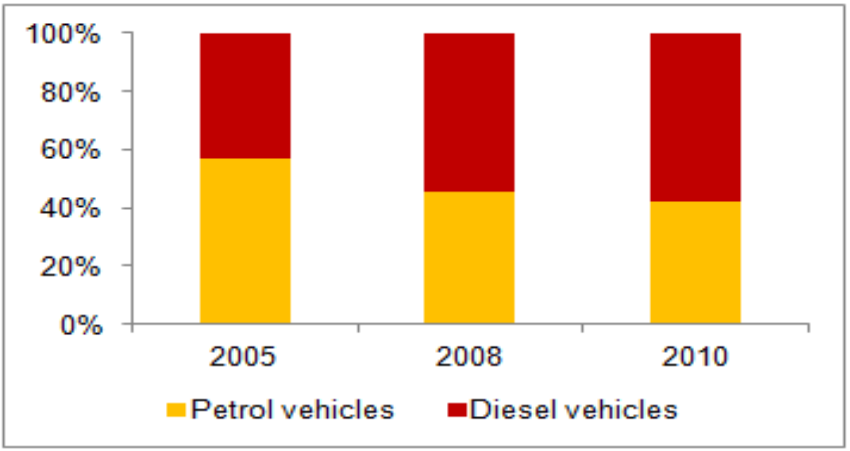


Dieselisation in Ethiopia

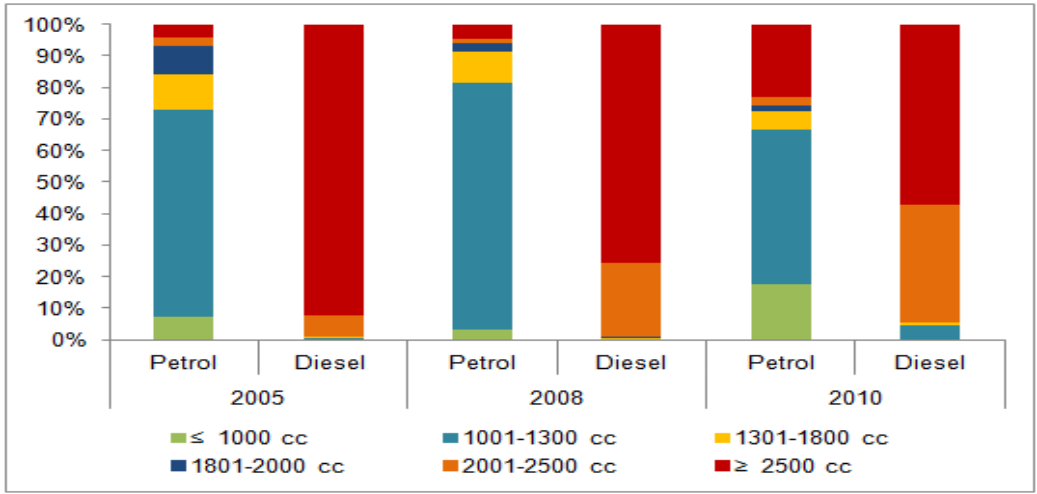
Diesel vehicles increased by 250% since 2005; petrol vehicles increased by 144%

Diesel vehicles are more in the bigger engine size class ranging from 2001 cc to more than 2,500 cc category – leads to more energy guzzling

Dieselisation of vehicular fleet in Ethiopia



More diesel cars in bigger engine size than petrol

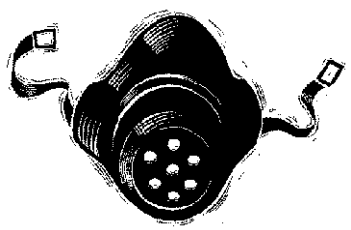


Good practice in the region

Nigeria: Price difference between gasoline and diesel has helped to lower diesel use in cars in Nigeria.

Diesel fuel price: Naira 210 per litre
Petrol fuel price: Naira 145 per litre

But its use in buses and trucks high. Need clean diesel



Need financing strategy to leapfrog

Link fiscal solutions with stringent emissions standards

-- Fiscal strategy for clean fuel fund

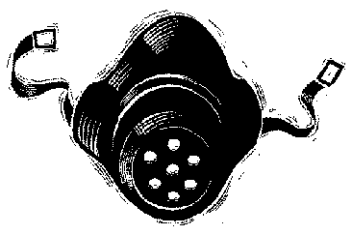
Direct tax incentive for import of clean fuel

Differentiated retail prices for clean and dirtier fuel. Revenue from higher tax to go to clean fuel fund

Even a small tax on each litre of fuel sold can help to off set costs.

-- Additional and differentiated tax on all cars can help bring more revenue for clean fuel fund

It is more cost effective to design and implement the complete system in one step rather than two.



Global action on diesel cars

London: Pre Euro VI cars not to be allowed inside the ultra low emissions zone in Central London.

France: Euro VI diesel cars not to be included in the new category 1 colour coding scheme that classifies vehicles according to how much they pollute. French government to “progressively” ban diesel vehicles. **Paris**: To phase out pre-2011 diesel cars by the end of the decade.

Madrid: To ban polluting diesel cars from the city centre from 2020.

Netherlands: In 1998 the Third National Environment Policy targeted to reduce diesel chare to only 5% in 2010. Dutch registration and circulation taxes for diesel cars are close to prohibitive. Kept share of diesel cars in Netherland lower than EU average.

Brazil Sales of diesel passenger cars and commercial vehicles below 1,000 kg are banned

Beijing has banned diesel cars as a pollution control measure. China has the lowest diesel car penetration at less than 1%. China taxes do not differentiate between petrol and diesel fuel.

Sri Lanka has imposed several times higher duties for diesel cars compared to petrol cars and have reduced diesel car sales.

Delhi: Banned registration of diesel cars with 2000 cc engines to stop misuse of low tax diesel for luxury consumption

Nigeria: CNG taxis

- **Pilot project between the Nigerian National Petroleum Corporation (NNPC) and NIPCO, through a joint venture, Green Gas Ltd.**

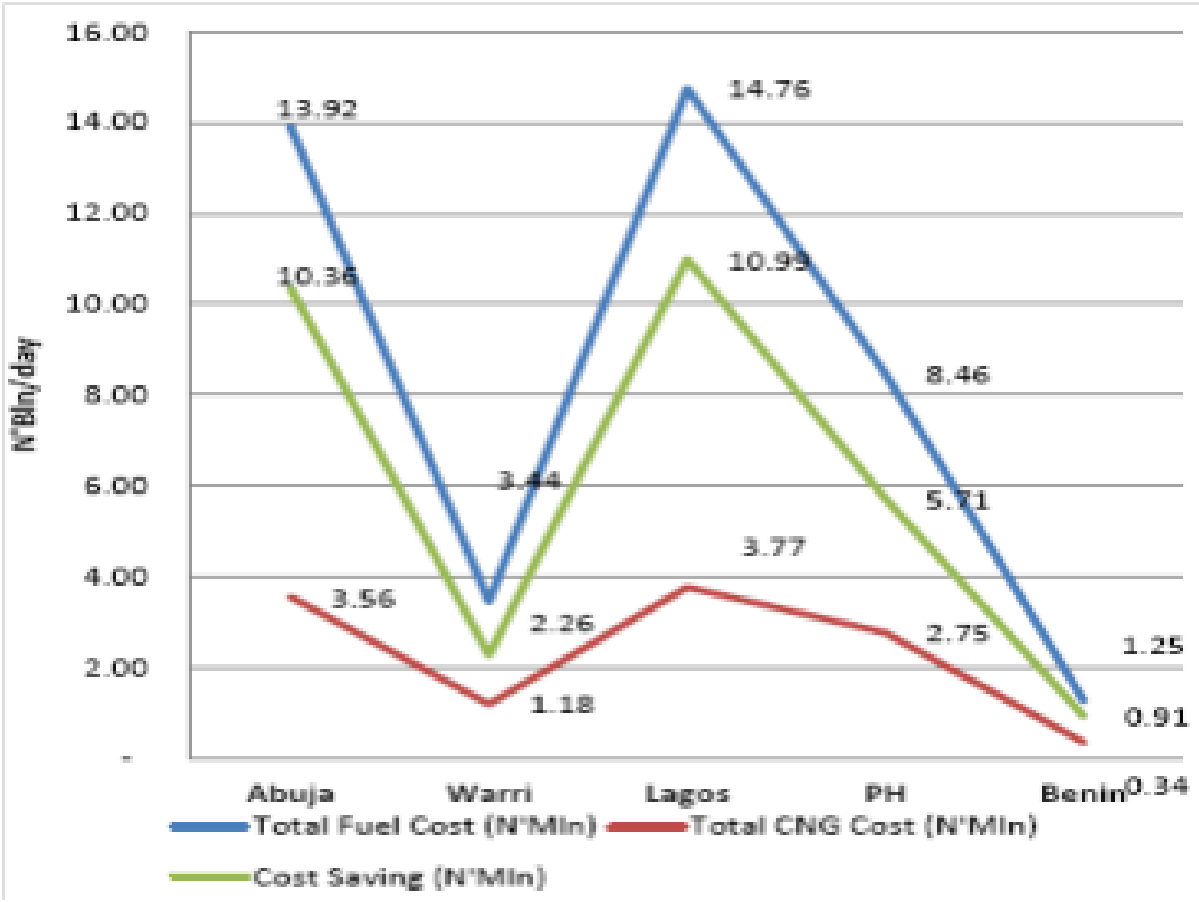
- **Significant infrastructure development in and around Benin City.**

- **Use of natural gas led to significant savings for taxi drivers. Green Gas refuels over 4,000 taxis and cars**

- **Policy and regulatory support from the government is needed**

- **Drive CNG programme with effective emissions and safety regulations; include more vehicle segment**

Cost saving benefits with CNG use in Nigerian cities

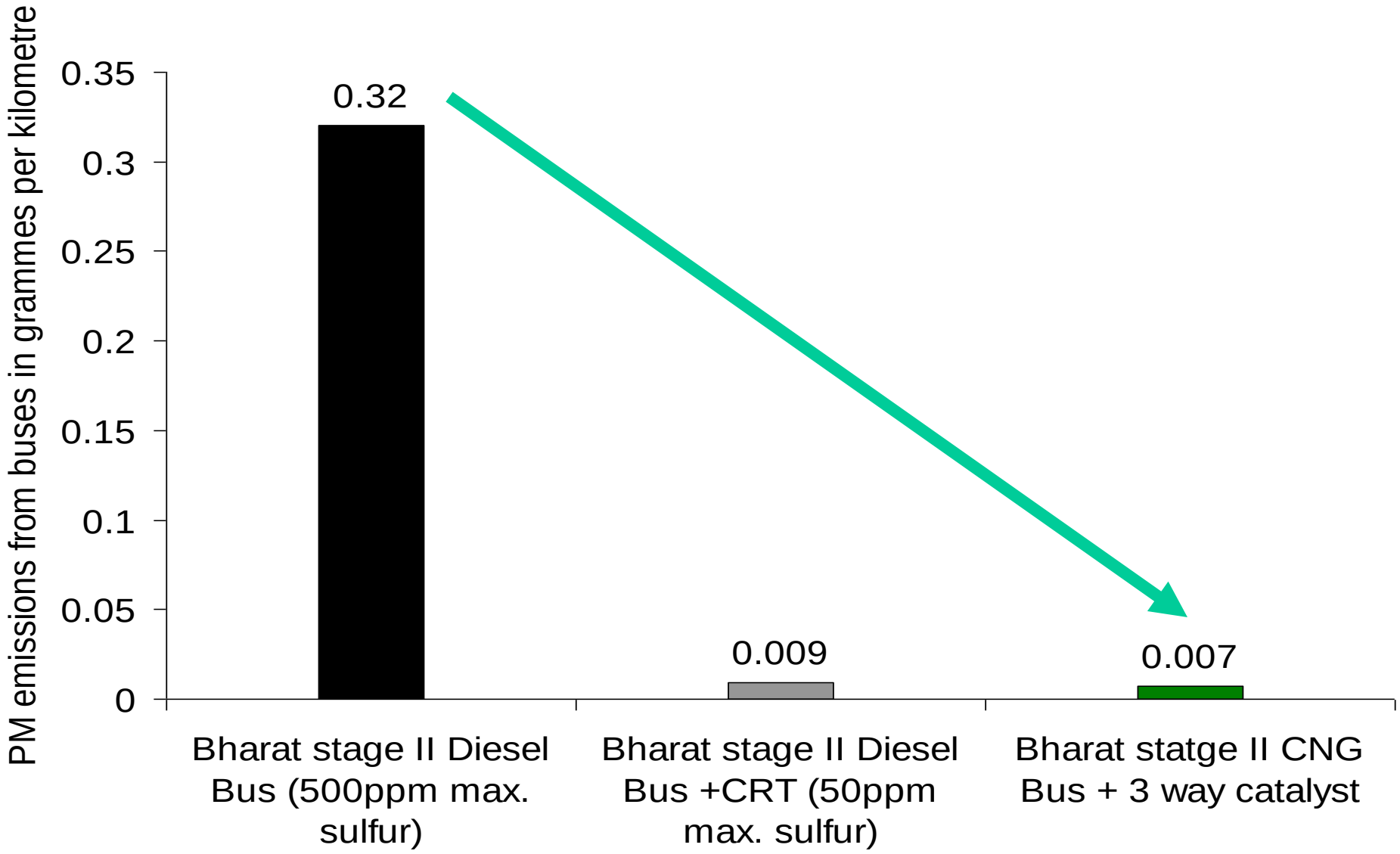


- If 40% of vehicles in Nigeria switch to CNG, the government will save 28% of foreign exchange. (UNEP)
- Enormous pollution savings

Source: Batatunde Bakare 2016, Alternative Fuels: Compressed Natural Gas, UNEP

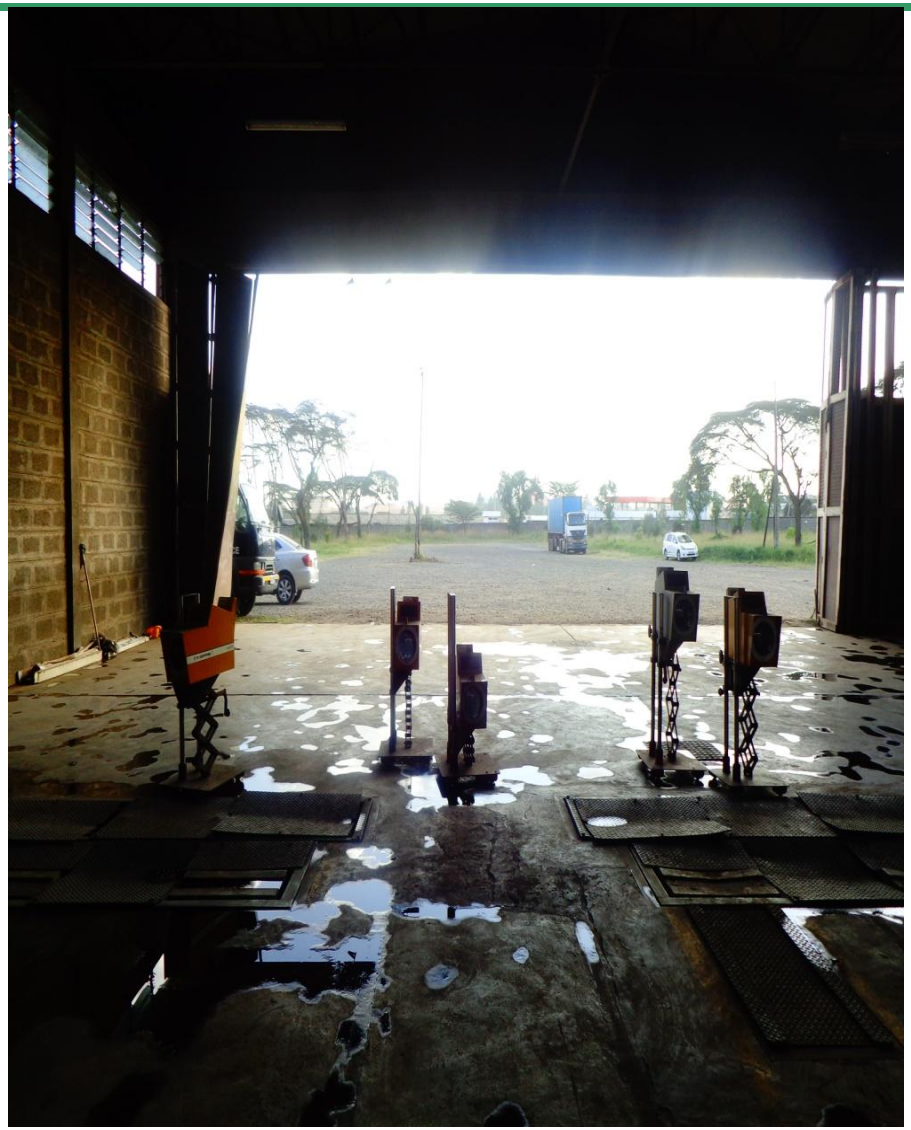
CNG helped Delhi to leapfrog: Euro II diesel bus emits nearly 46 times higher PM than Euro II CNG bus in India.

CNG Bus Emissions in 2004



Source: Teri

Vehicle inspection drawing attention



•**Kenya**

• There are 19 vehicle inspection centres in Kenya including one at Likoni Road, Nairobi

• Mainly public service vehicles and commercial vehicles – matatus, buses, tuk-tuks, taxis and trucks come for annual inspection

• From January 2015, all private vehicles more than 4 years to undergo the inspection

• **Emissions testing – limited**

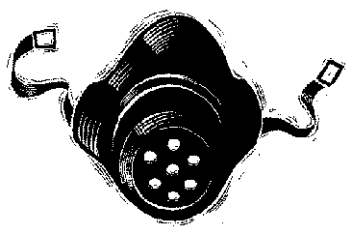
•**Rwanda – strengthening I/M systems**

Challenge of the car bulge

Nairobi: Jammed….

- Traffic jams cost the Nairobi City County approximately KSh 30- 50 million daily in fuel consumption, productive time loss and cancelled business appointments

- During peak hours it takes 2 to 3 hours to reach CBD In Nairobi



Traffic congestion in Nigerian cities

- **Lagos – A study (Bashiru and Waziri 2008): 57% of commuters spend between 30 to 60 minutes more on road due to traffic congestion.**

- **Abuja: (Study by Agbonika 2011): Worst congestions occur during peak hours. 18.57% of commuters live in the city centre. Major offices away from residential areas.**
- **This induces huge traffic**

Ethiopia: Jammed….

A study of East-West Corridor:
On an average about 18,000 veh-min or 38 Veh-day and about 169,000 per-min or 352-person-day are wasted at each major intersection entry.

The city incurs about 5-8 million Birr per intersection only for vehicle and fuel cost annually.

The average traffic speed is about 10km/hour in peak hour. Reduces effectiveness of public transport.

Long waiting time for bus and taxi.

Normal commuting time has increased significantly during peak hours

Opportunity in Africa and India
Our inherent strength……

How people travel in India?

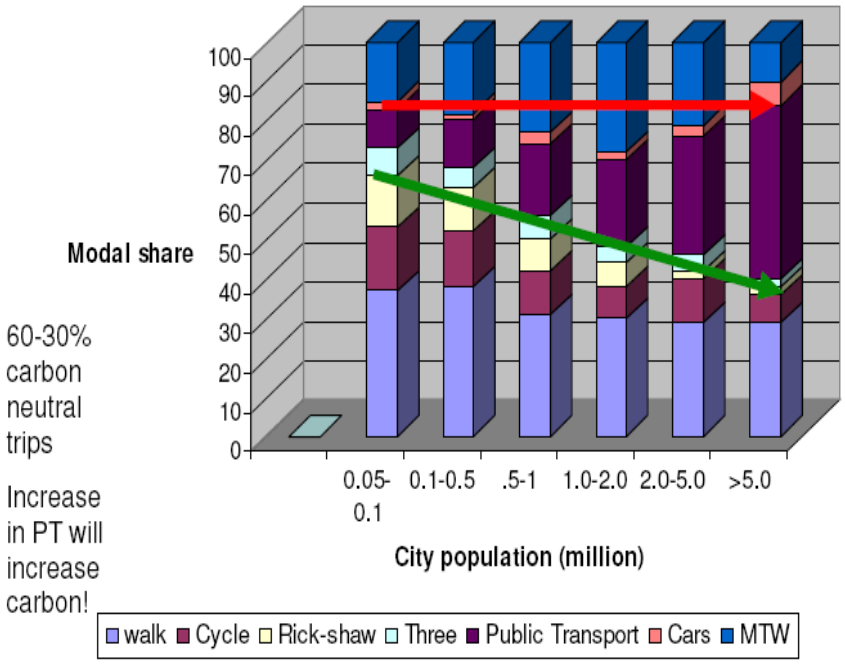
- **We have built walkable cities:**
  - 30-60% trips carbon neutral.

How people travel in Africa?

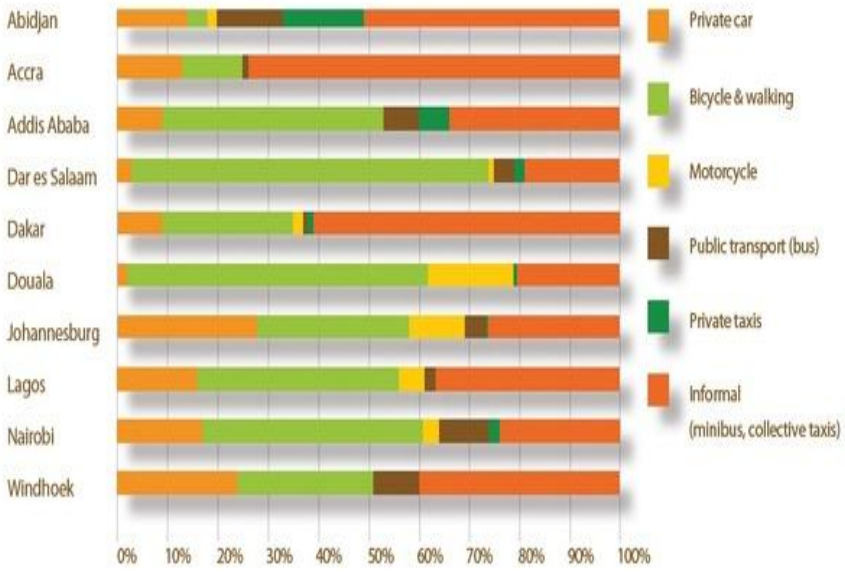
- **Majority walk and use public transport**

Urban Mobility

PT and NMV based, MTW majority personal vehicles

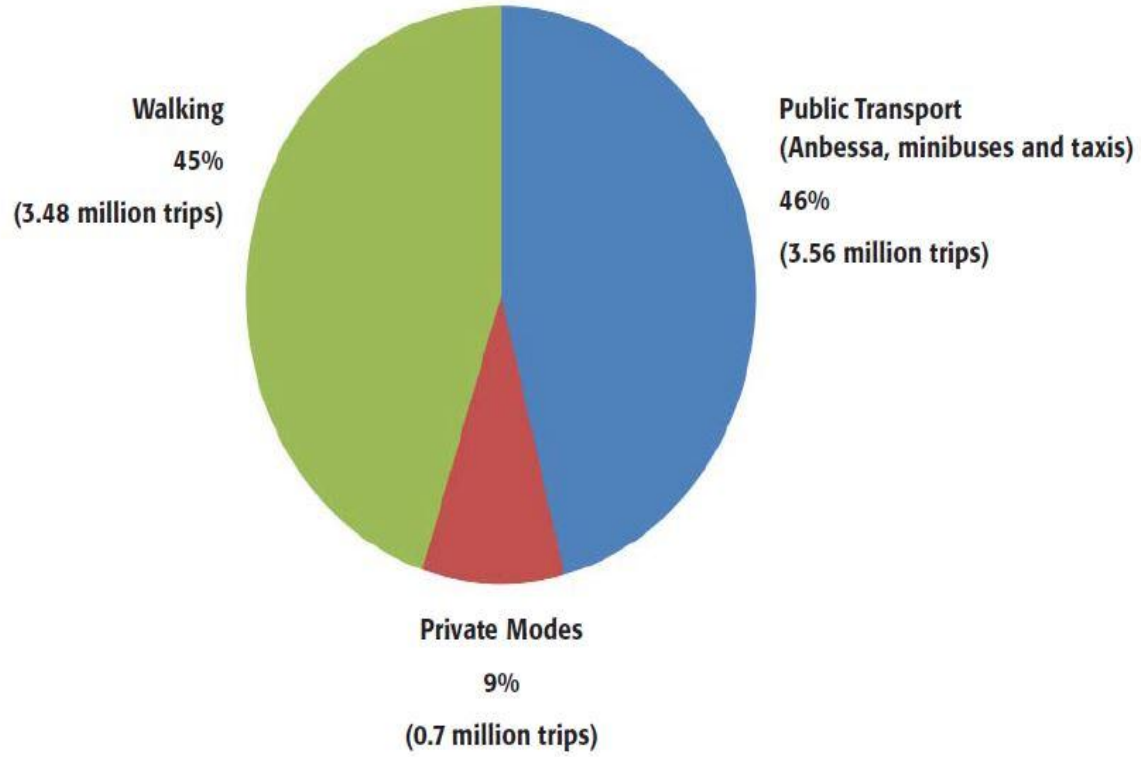


Transport modal share of the cities



Based on: International Association of Public Transport (2010) 'Major Trends and case studies'

Strength and advantage of Addis Ababa….

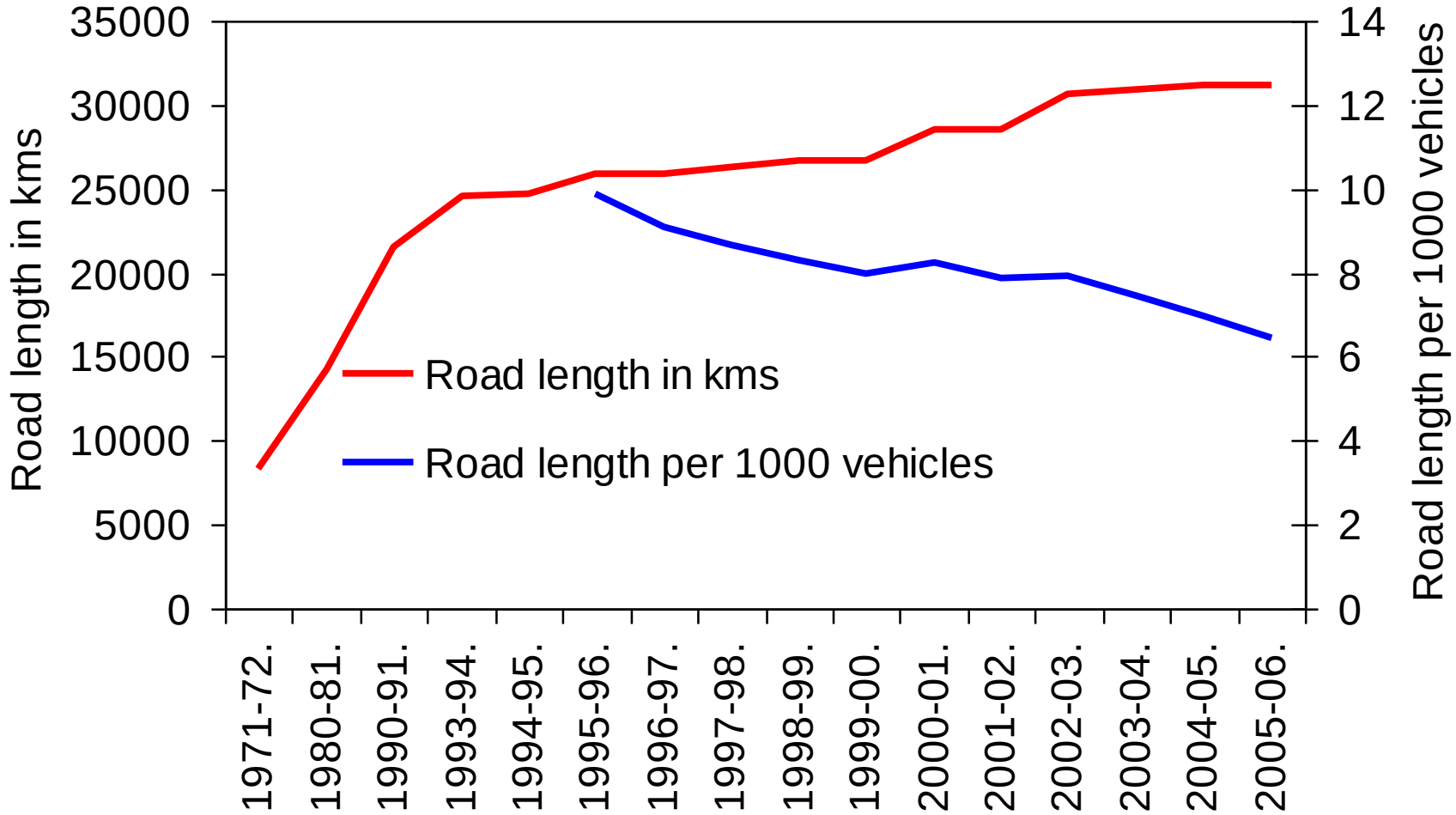


91% of people walk and use public transport.

Yet jammed -- More than one third of the country's population and most of country's vehicles in Addis Ababa.

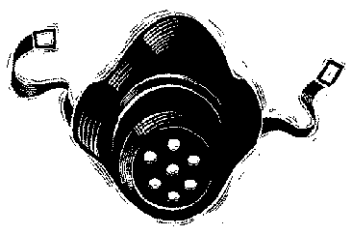
Addis Ababa Modal Share

More roads are not the answer …Lesson from Delhi



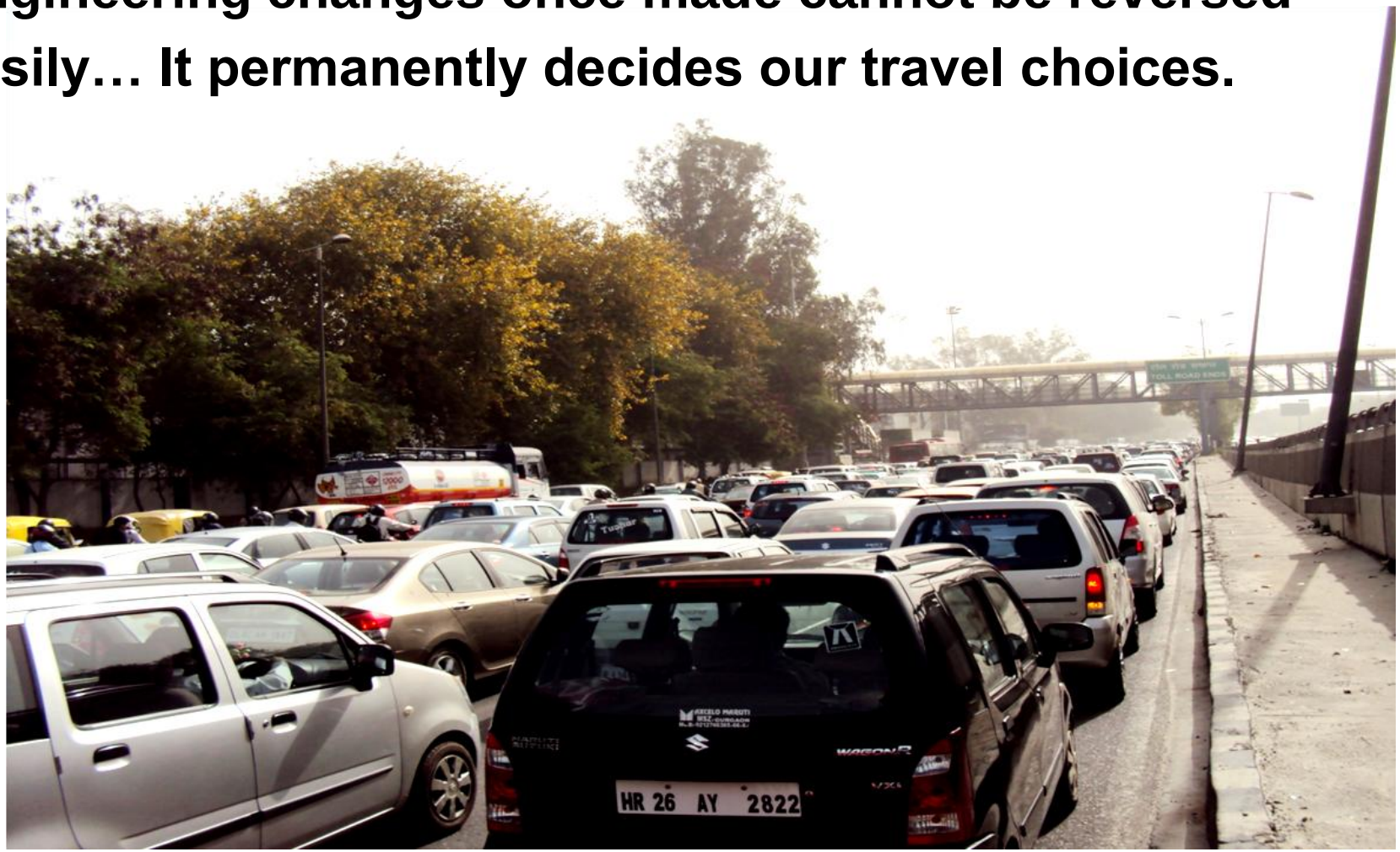
Source: On the basis of Economic Survey, Delhi Govt

Car centric infrastructure in Abuja



Roads not designed for public transport
walking and cycling can lock in more pollution

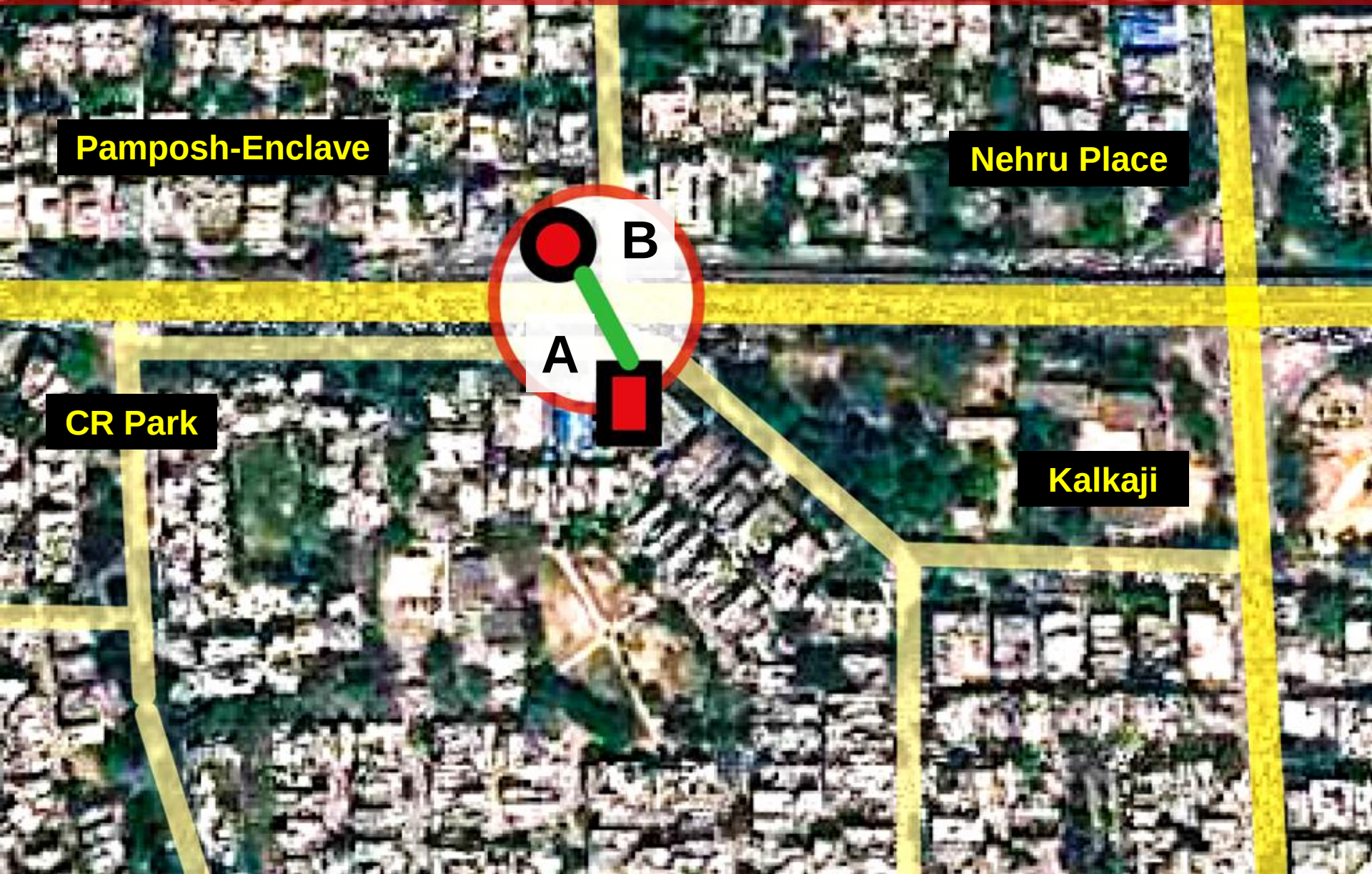
Engineering changes once made cannot be reversed easily… It permanently decides our travel choices.



Case Study – Outer Ring Road (Nehru Place Flyover)

Travelling from A to B

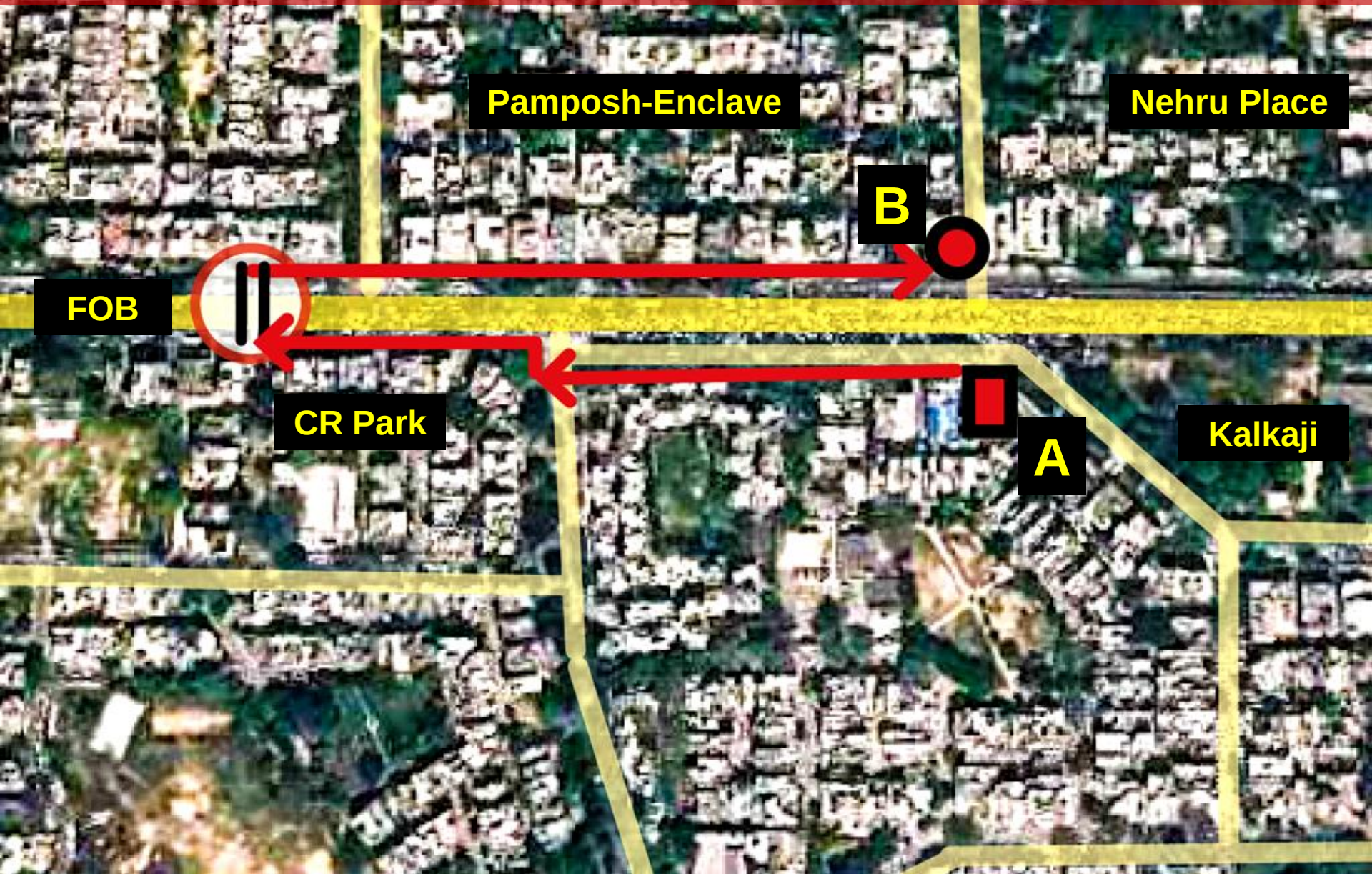
Originally 30M across the road



Case Study – Outer Ring Road (Nehru Place Flyover)

Travelling from A to B – Pedestrian Route 1

1000M via FOB

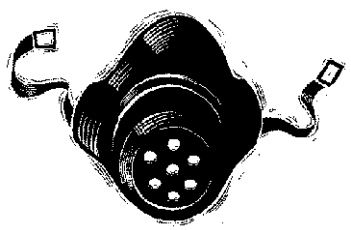


It is possible to transform streets to make them people friendly

Connaught Place

- Streets of Delhi retrofitted

Source: CSE

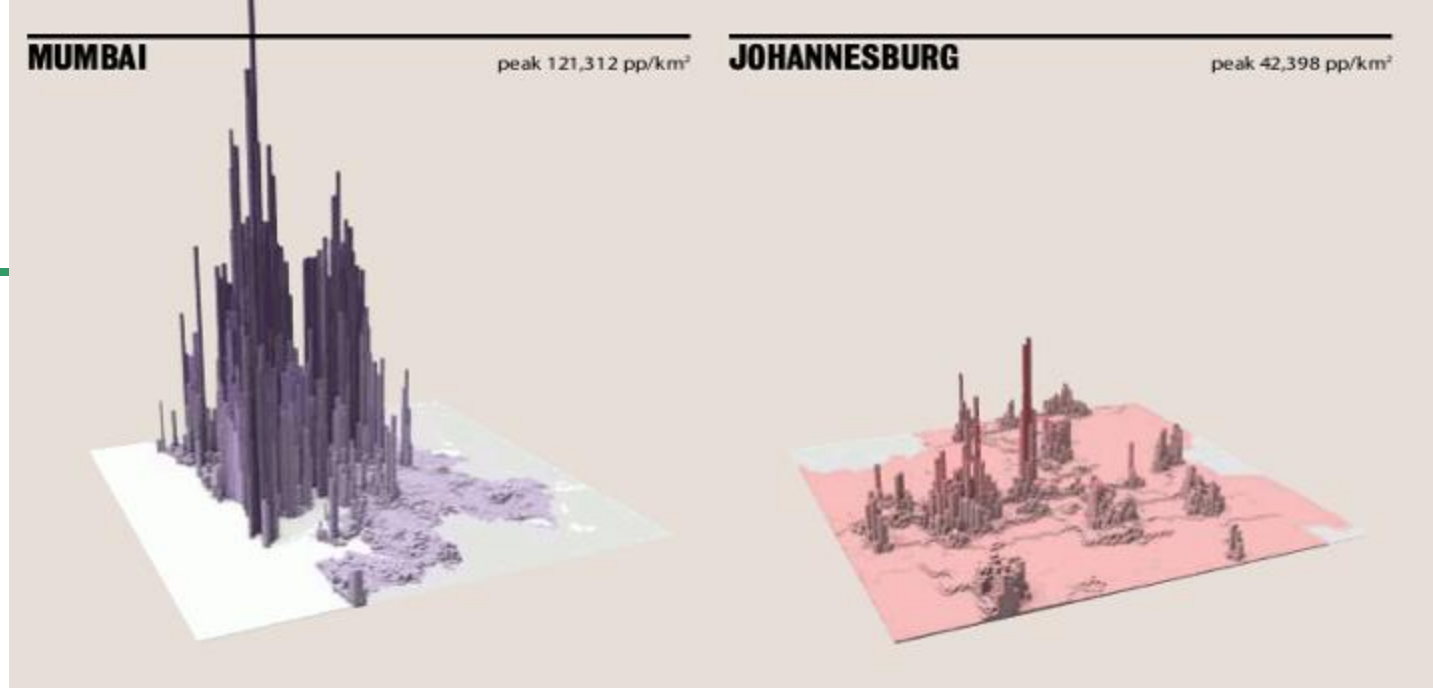


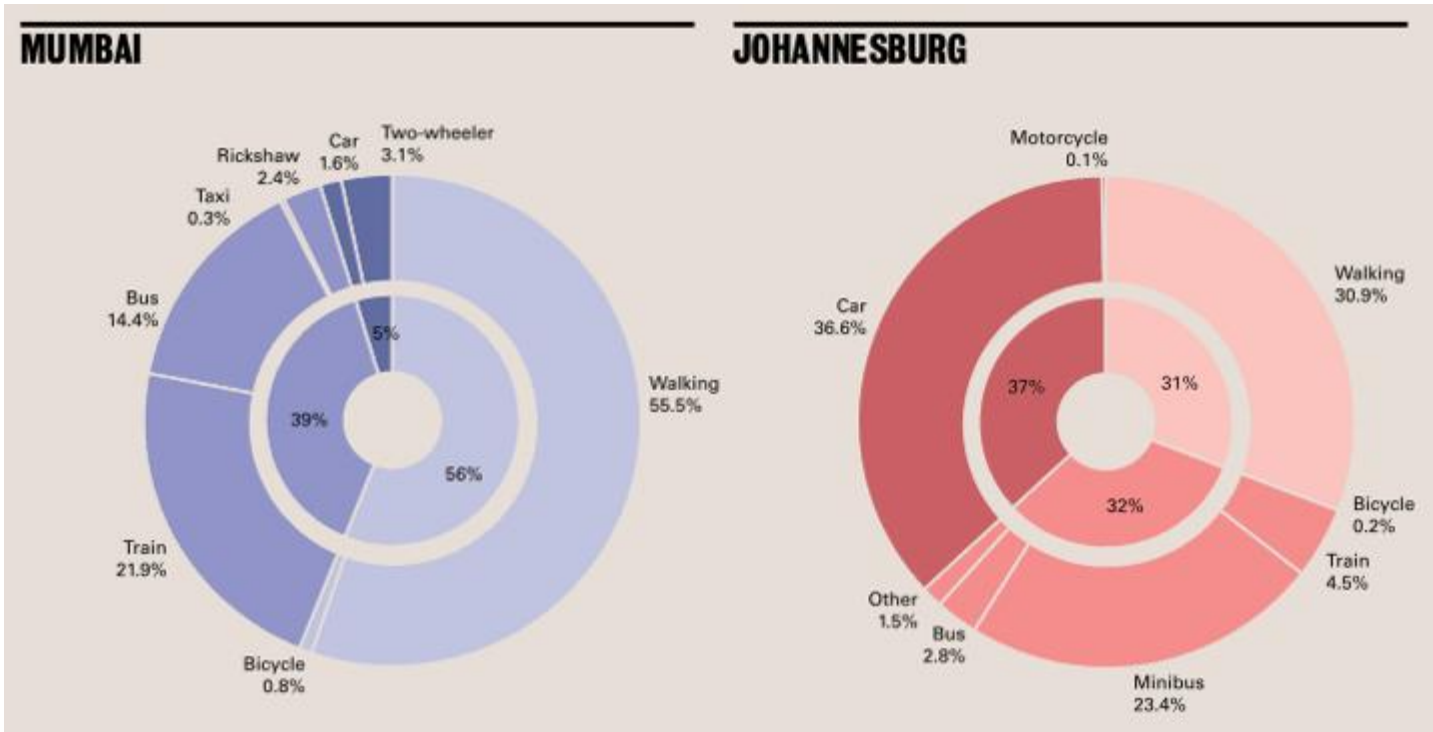
Lot depends on how we design our cities

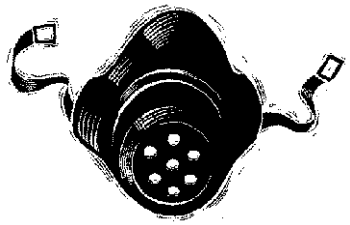
Mumbai: High density development -- cars 1.6%, Walk 56%

Johannesburg: More sprawled cars 37%, walk 31%

Source: Urban Age







Delhi setting norms for high density requirements

Delhi framing Transit Oriented Development Policy (DDA/UTTIPEC)

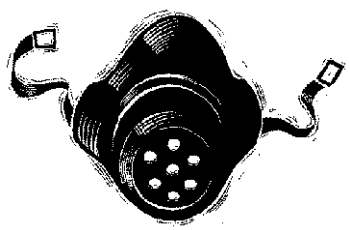
Density minimums as per the table below:

Gross FAR (site)	Minimum permissible density (with ±10% variation)	
	Residential dominated project (Residential FAR ≥ 50%)	**Predominantly non-residential** (Residential FAR ≤ 30%)
Below 1.0	Under-utilization of FAR (not permitted)	Under-utilization of FAR (not permitted)
1.1 - 2.0	200- 400 du/ha	100 - 200 du/ha
upto 3.0	400 - 600 du/ha	250 - 400 du/ha
3.1 - 4.0	600 - 800 du/ha	400 - 600 du/ha

*** Site level FAR shall be based on Approved TOD Influence Zone Plan.**

-- Mixed land-use norms: At least 30% residential and 20% Commercial & Institutional use of FAR is mandatory within the Influence Zone

-- Mixed income building typologies – low income, middle and high income, shelterless, chronically poor

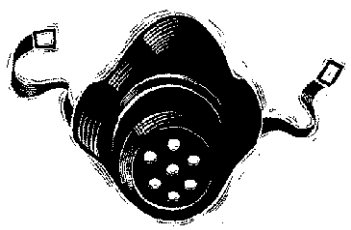


State of bus in cities of Africa

- **Bus seats per thousand people:**
  - World Bank's Urban Transport Indicators database-- average number of bus seats per thousand urban residents of Latin America, Asia, the Middle East, and Eastern Europe is around 30 – 40.
  - In Africa the average number is 6 bus seats per thousand residents.
- **Transport affordability:**
  - High travel costs… The average cost of a one-way trip is about 0.30 $, which is high in relation to the average household budget.
  - This has increased walk share

.

http://www.eurist.info/images/Projects/UBA_Finance_Africa.pdf



3. Balancing formal and informal public transport services....

Cities in Africa modernising public transport systems

Lagos: Bus Rapid Transit

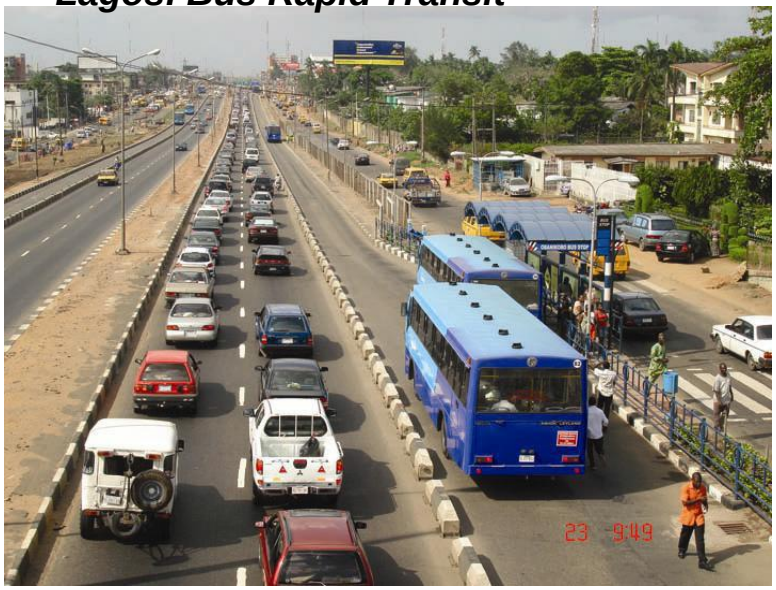
•Reduced journey time

•Potential modal shift

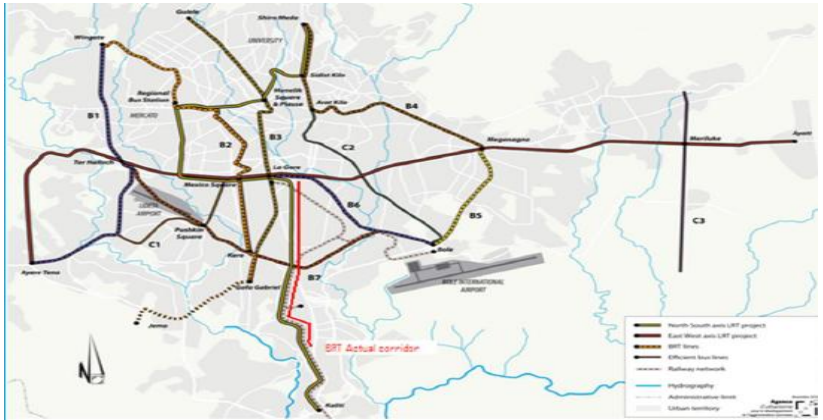
Addis Ababa

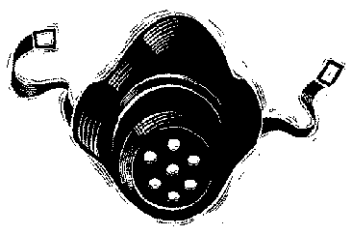
•BRT and LRT systems to give overall health benefits in the range of $41 to $45 million per year in 2035. (ICCT)

Lagos: Bus Rapid Transit



Addis Ababa transit lines in Addis Ababa





Public transport action under discussion

-- Augment public transport infrastructure

-- Improve bus fleet utilisiation

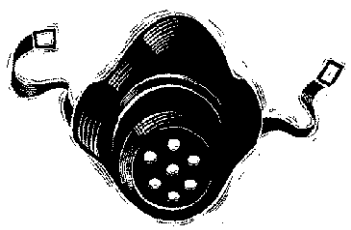
-- Service level benchmark and service guarantee

-- ITS for monitoring of bus operations

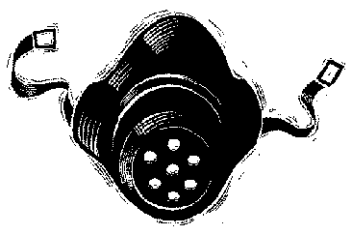
-- Improve overall economic efficiency of public transport

-- Integrate all systems well.

-- Design public transport network to minimises interchange



But do not ignore informal and smaller systems that are reliable, efficient and affordable....

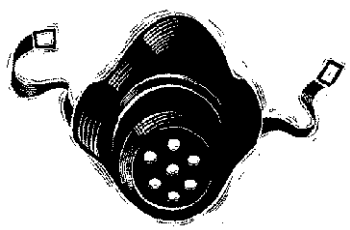


Protect and organise intermediate public transport systems:
Mini bus taxis – lifeline of affordable public transport

Modal share of public transport modes
Addis Ababa

PT-mode	Seating Capacity	Fleet size	Passenger Carried daily	Share %
Mini Bus Taxi	11	10,500	1.6 million	73%
Midi Bus (Higer)	25	439	180,000	8%
Anbessa Bus	100	750	420,000	19%
Total	-	-	2.2 million	100%

Lagos is more sustainable than Los Angeles



Why small para transit is important?

These are high frequency services with very high throughput of passengers

Provides the most reliable and frequent service both during peak and non-peak hours

Can penetrate deep into neighbourhoods and provides the most efficient last mile and first mile connectivity

Involves least interchange and therefore allows lower cost of travel

Demand for this service will remain strong in cities with high population densities.

Initiative in some cities to organise and integrate informal systems

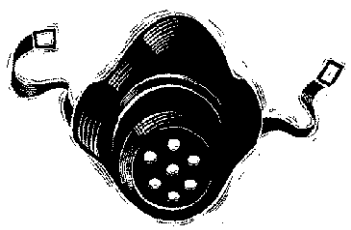
-- Addis Ababa

--- Owners of blue and white taxis organised under 13 owners' associations based on the zoning system reintroduced in 2011.

-- Number of members in each association varies, with a minimum number of 500. These associations engage in service route management

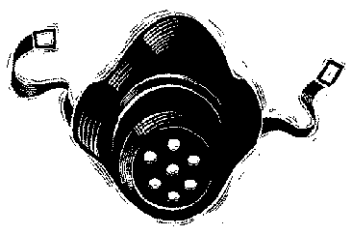
-- The 13 minibus taxi owners associations reorganized into two bigger share companies. -- Members of the associations are expected to change their vehicles into midi buses, with a capacity of up to 24 passengers.

-- Initiatives in Nairobi, Lagos, Uganda, South Africa to integrate informal systems with formal systems



4. Promote walking cities.....

Promote alternatives to restrain vehicle numbers....



Protect and increase pedestrian traffic for clean air

Compact and closely built city design allow shorter travel distances.

Average trip length in most African cities less than 5 km. This makes city very accessible and walkable

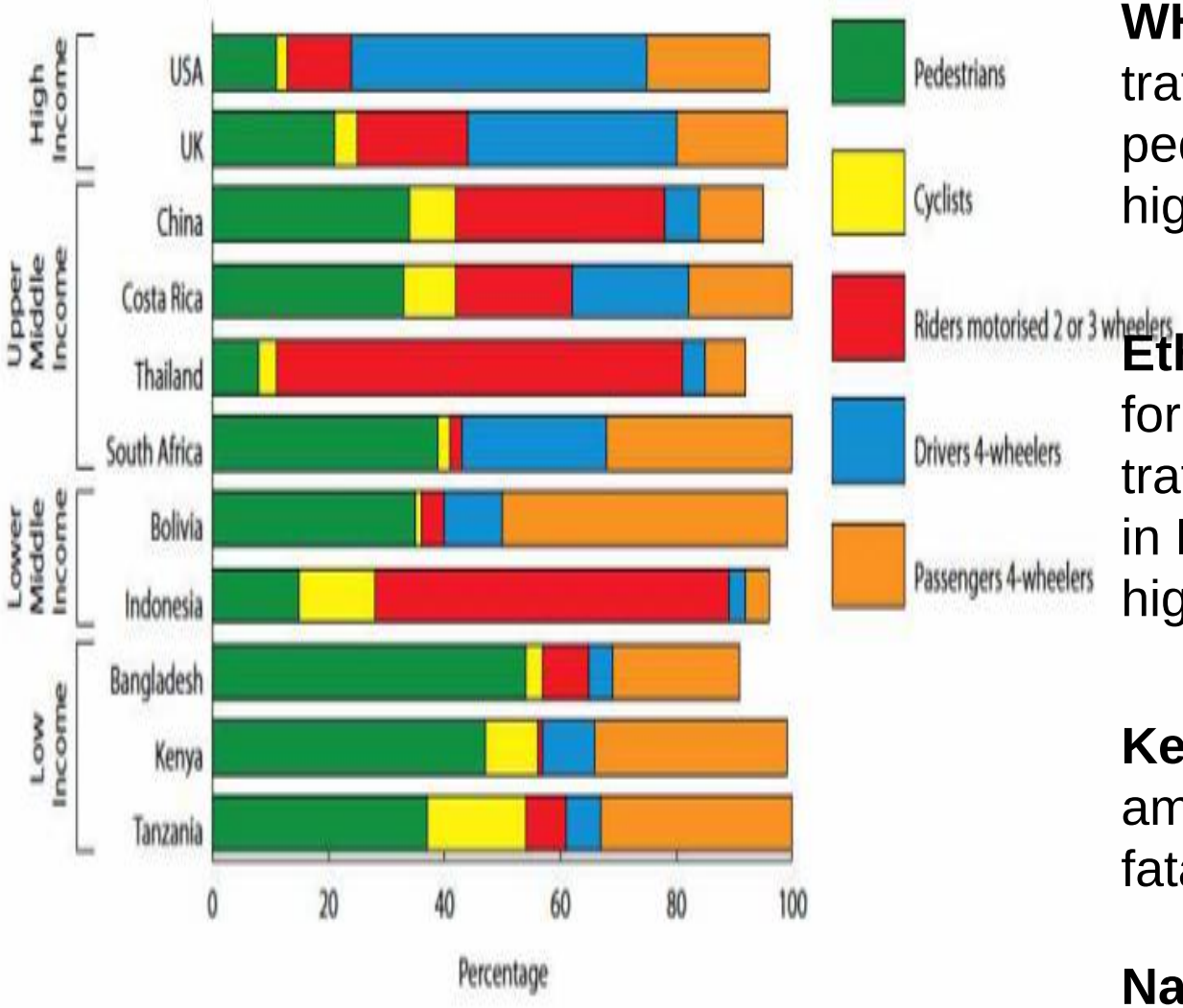
Delhi: wrong road design force people to cross in unsafe manner. This compromises public transport usage

Public transport needs safe walk access

In Delhi accidents near foot over bridges have increased

Source: Delhi Traffic Police

Road casualties by transport mode
Pedestrians and cyclists are the most vulnerable…..

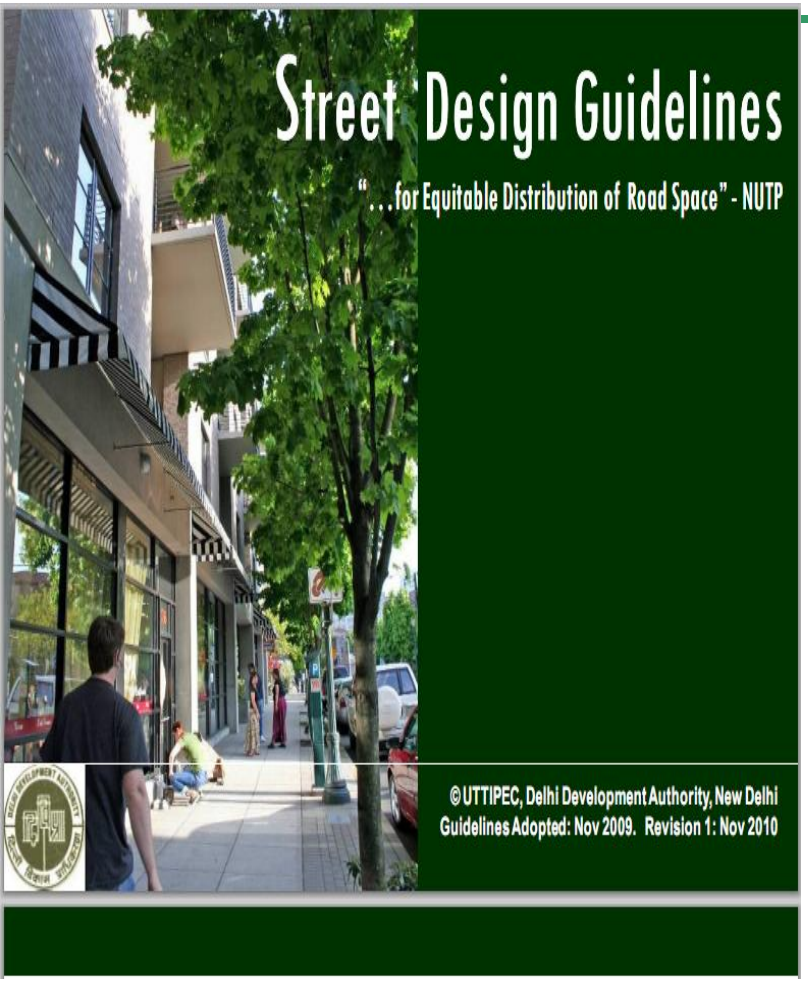


WHO 2013: 38% of road traffic deaths in Africa involve pedestrians -- 16 percent higher than the world

Ethiopia: Fewer than 10 cars for every 1,000 people. Road traffic deaths twice as high as in India and seven times higher than UK.

Kenya: Pedestrians (47%) among reported road traffic fatalities

Nairobi: 50-70% of accidents involve pedestrians



India : Delhi has adopted street design guidelines Indian Road Congress guidelines for roads reformed to make pedestrian and cycling friendly

•**Kenya:** National Transportation Safety Authority established to manage road safety ; Nairobi has adopted non-motorised transport policy

• **Uganda:** Nation wide non-motorised transport policy

• **Gambia:** Developing an inter-ministerial committee on road safety.

• **Senegal:** An inter-ministerial committee on road safety initiatives

• **Nigeria:** Road safety programme

Whiff of change……
Abuja drafting cycling policy
Car free day Kampala, Uganda

http://www.fabio.or.ug/page19.php

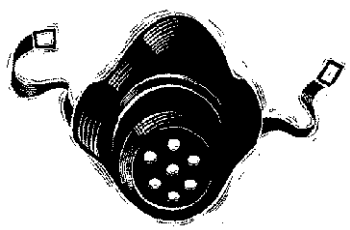
Design roads for all street activities

Integrating street activities with road design for services and safety

Addis Ababa

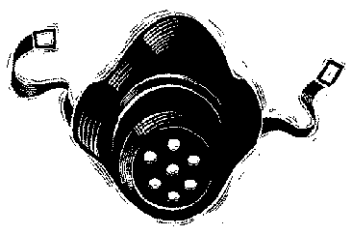
Bhubaneswar, India

Source: CSE



Unlimited parking incites motorisation

- **Insatiable demand for land:**
- **Eg. In Addis Ababa the parking demand of the existing car fleet is equivalent to 110 football fields**
- **Parking takes away walkspace, urban common, green spaces, etc**



Parking and clean air

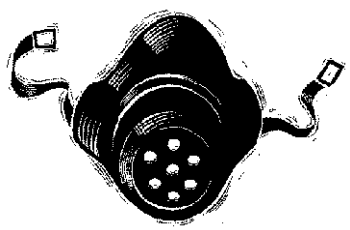
It is still not clear to many how parking management and restraints can reduce air pollution and give public health benefits

Boston froze their parking requirements at a level that is only 10 per cent higher than the 1973 level to meet the Federal clean air standards.

New York: very high parking fees and limited parking supply have lowered car ownership far below the average rates in other US cities.

Amsterdam -parking fees expanded to meet EU directives regarding NO2 and PM10 emissions. Car plate numbers are registered with emissions information. Trucks are allowed to unload for a maximum of 15 minutes in spots where they are not allowed to park

Zurich considers total NO2 emissions when determining the amount of parking to be allowed.



Global parking pricing levers

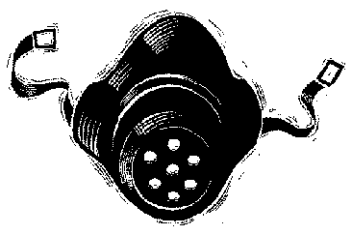
Japan

Proof of parking regulations and ban on night parking on streets: Vehicle owner procures a “garage certificate” from the Police department for vehicle registration. This is re-issued in case of change of ownership or address .

Singapore and Hong Kong have stringent approaches towards restraining car ownership and usage.

Hong Kong has been more effective in restraining car ownership – about 60 cars per 1000 people vs 110 cars per 1000 people in Singapore. Singapore has three times more private car kilometres of travel per person than Hong Kong.

This is explained by the Hong Kong’s more expensive parking.



Effectively priced parking can make a difference

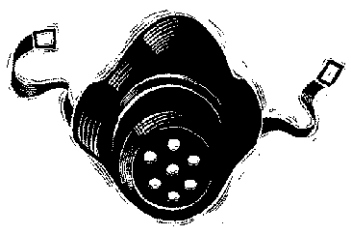
No meters

Meters

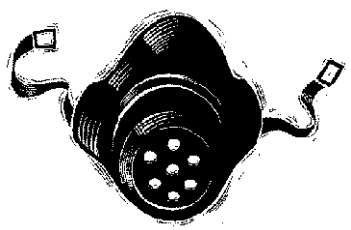
Prices quadrupled

Grosvenor square, London

Source: TRL in ITDP (2011): Europe‘s Parking U-Tu



5. Clean air action plan in cities to meet clean air targets



Towards clean air action plan

Nigeria, Ethiopia taking lead to implement pollution-source-wise action plan

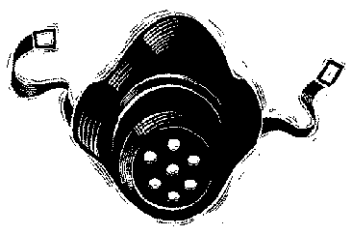
-- List action with time line and attribute it to the ministry/department responsible for implementation

-- Harmonise action across departments

--- Set up inter-departmental task force to monitor implementation

-- Taking stock to further refine and upgrade the plan.

-- Adopting strong legal framework for implementation and compliance



ASTF Action Framework

For 4 key areas -- road safety, accessibility and infrastructure, emissions and enabling conditions… This needs support and action

Priority area	Actions	Time bound target
Road safety	Implement the African Action Plan for the Decade of Action for Road Safety 2011 – 2020	
	Set up dedicated institutions for road safety and allocate funding	2017
	Insure comprehensive data collection and reporting mechanisms on road safety incidents and trends	2015
	Develop and adopt a Non-Motorised Transport Policy	2015
	Develop and adopt Non-Motorised Transport Design Guidelines	2015
Vehicle emissions and energy efficiency	Ensure air quality monitoring takes place in all main cities	2017
	Develop vehicle emission standards and suitable inspection and testing	2016
	Develop vehicle import regulations at both regional and national levels, based on either vehicle age, mileage or emissions	2016
	Develop regulations for the adoption of cleaner fuels - especially low sulphur fuels - at a national level	2017
	Undertake a country level fuel economy analysis and develop a national level policy to improve fuel economy	2017
Accessibility and sustainable infrastructure	Develop a national policy on sustainable urban transport	2017
	Develop integrated transport plans with a specific focus on multi-modal transport	2018
	Undertake an assessment and develop a national policy on mass-transit systems	2017

Cities are moving away from car centric infrastructure…….Let us not repeat the mistake

Before

After

Seoul's Cheonggyecheon restoration project

Cities that have destroyed roadways

San Francisco

Milwaukee

New York

Portland

Toronto

Seoul

Thank You