



# **STATUS AND PERSPECTIVES ON CLIMATE CHANGE, AIR POLLUTION AND MAJOR URBAN INTERVENTIONS IN LATIN AMERICA**

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# This presentation

- The Clean Air Initiative for Latin American Cities (CAI-LAC)
- Air Pollution and Climate Change in Latin America.
- The CAI-LAC Strategy
- Major Urban Interventions



# The Clean Air Initiative for Latin American Cities

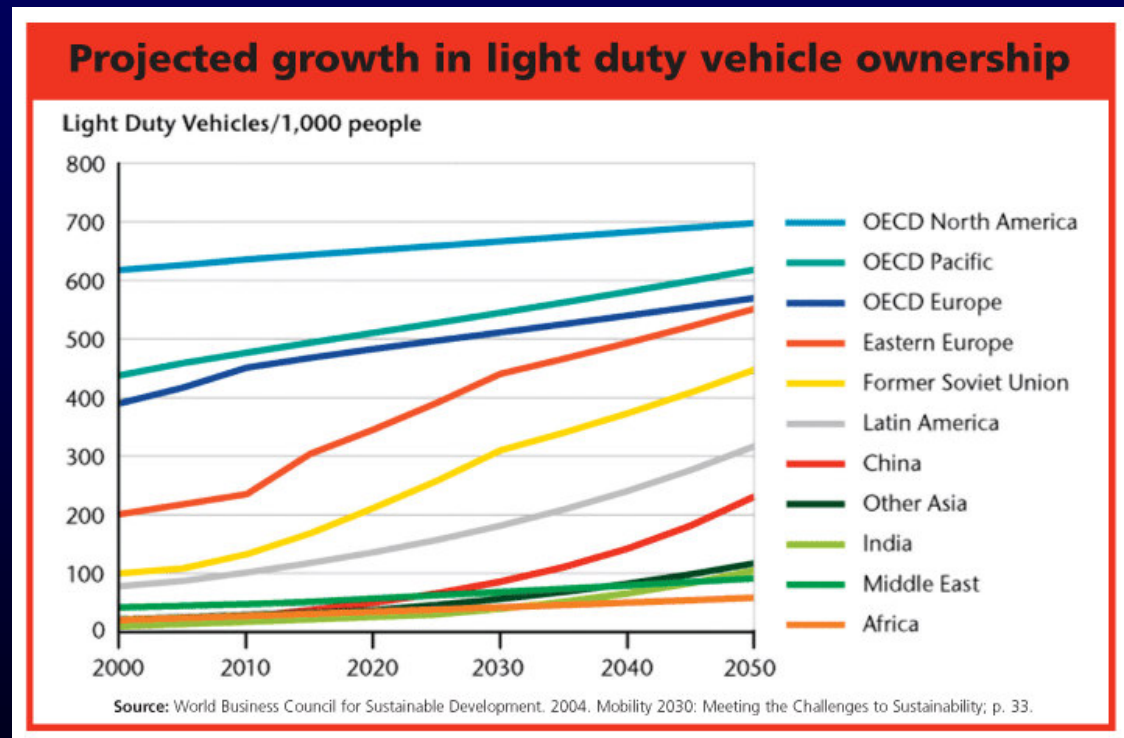
- Launched December 1998 by the World Bank and major Latin American Cities.
- A new independent phase started in 2006:
  - Membership expansion
  - Creation of the Clean Air Institute
- CAI-LAC Mission:
  - To improve air quality and reduce GHG emissions in Latin American Cities in order to protect and improve public health and welfare.





## Some major challenges to be faced in LAC for 2000-2030

- Urban population will grow 30% to reach 630 million inhabitants.
- Nearly 9/10 people living in cities.
- Energy demand is likely to double.
- Vehicle ownership is projected to triple.







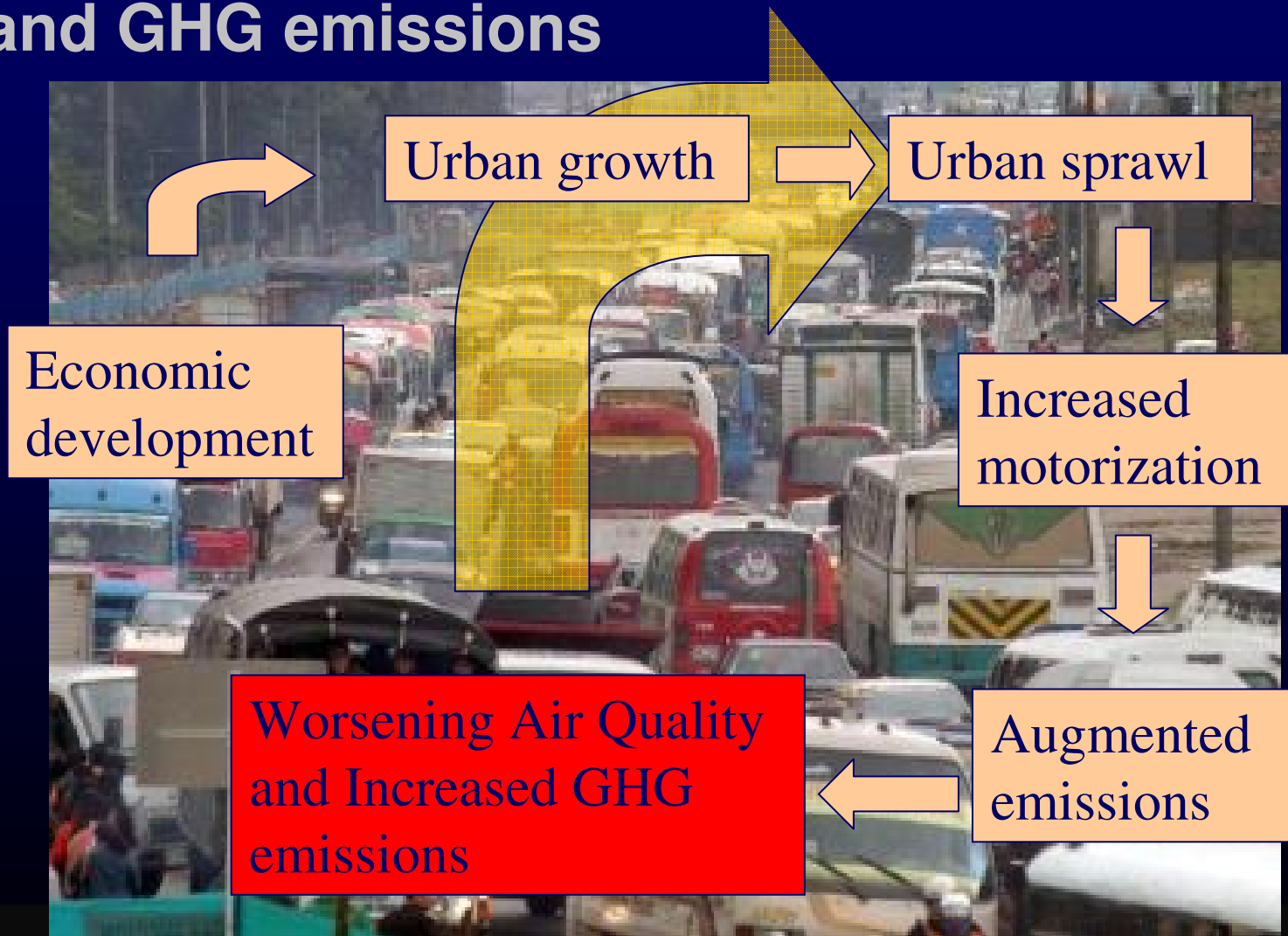
# Where are the greatest concentrations of inhabitants?

Inhabitants	No of cities	Host countries
Over 500,000	100	Almost entire continent
Over 800,000	57	(17) AR, BR, CI, CO, EC, PE, BL, VE, UY, MX, GT, NU, HO, DR, CU, HA
Over 1 million	45	(17) AR, BR, CI, CO, EC, PE, BL, VE, UY, MX, GT, UN, HO, DR, CU, HA
Over 2 million	18	(10) AR, BR, CI, CO, EC, PE, VE, MX, DR, CU
Over 5 million	8	(6) AR, BR, CI, CO, PE, MX
Over 8 million	3	AR, BR, MX

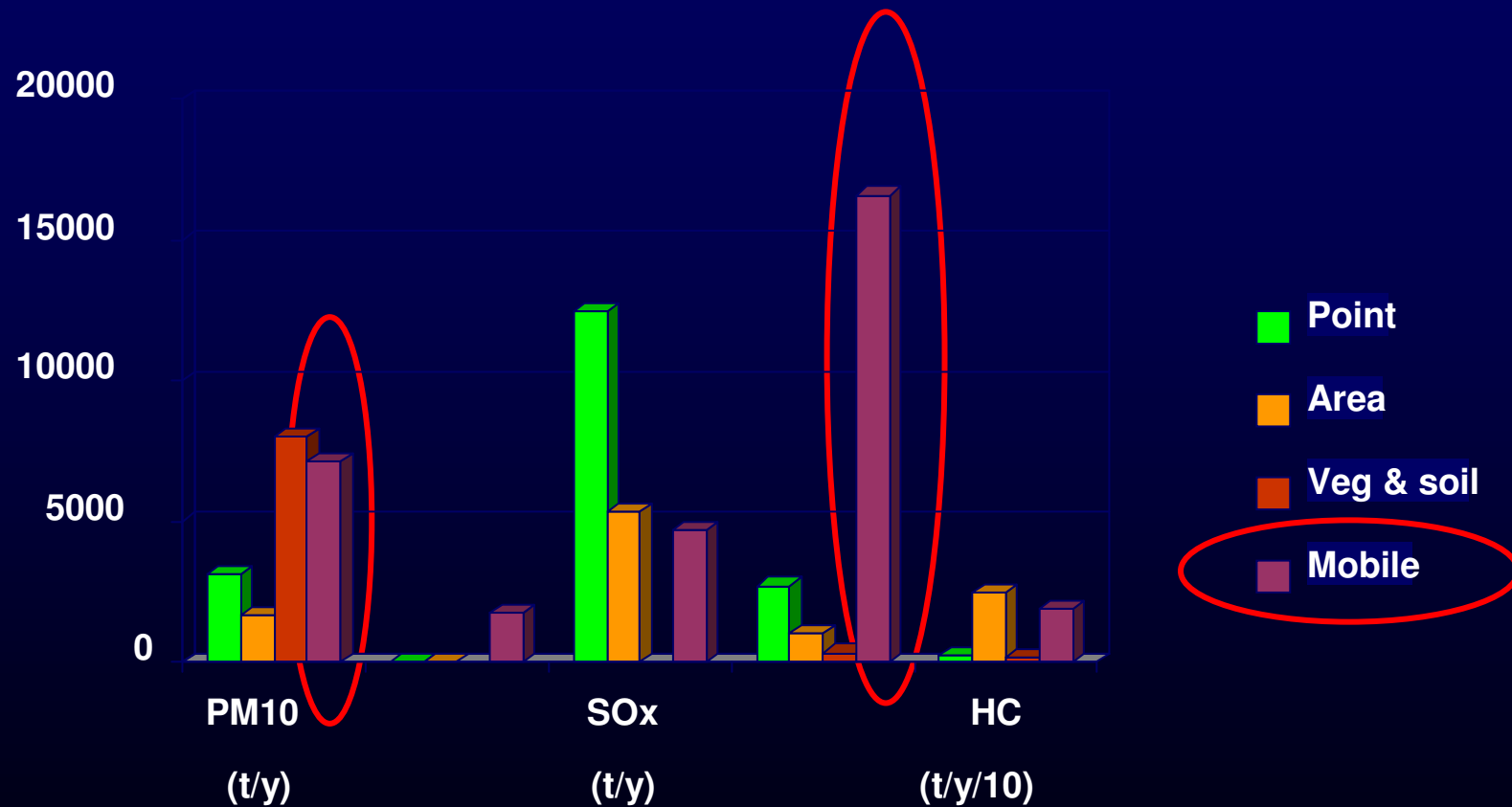
Source: The World Gazetteer



## Connection between urban transport, air quality and GHG emissions

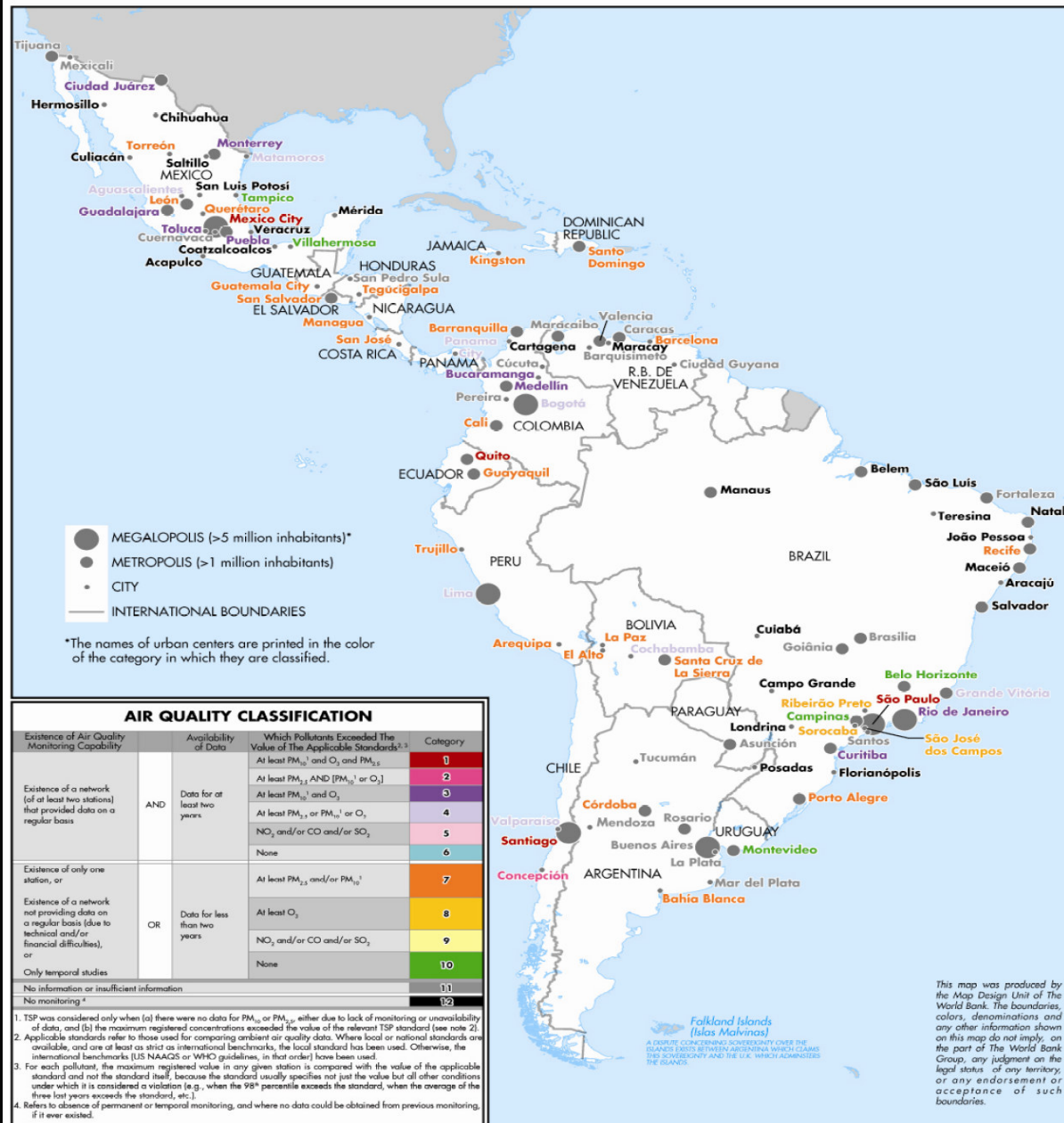


# Air pollution in LAC urban centers mostly related to motorized transportation



Mexico City Metropolitan Area

# LATIN AMERICA AND THE CARIBBEAN AIR QUALITY MAP



Source:  
World Bank





- **Burning fuel is the common source of both air pollution and GHG emissions.**
- **Energy and transport sectors tend to be the major contributors to both conventional pollutants and GHG emissions.**
- **An integrated approach for dealing with air quality and climate change in tandem:**
  - **improves efficiency in using scarce resources.**
  - **enables identification of synergies, and**
  - **maximizes social, economic and environmental benefits.**





## Key Elements of the CAI-LAC Strategy

- Fostering dialogue and informed participation of stakeholders.
- Supporting development and implementation of policies, plans and projects.
- Promoting and developing integrated strategic assessment.
- Implementing regional benchmarking.
- Developing collaboration networks.
- Facilitating information exchange and training.



## Priority Areas

- Advance sustainable transport.
- Accelerate deployment of clean technologies and fuels.
- Catalyze sustainability of energy sources, uses and practices.





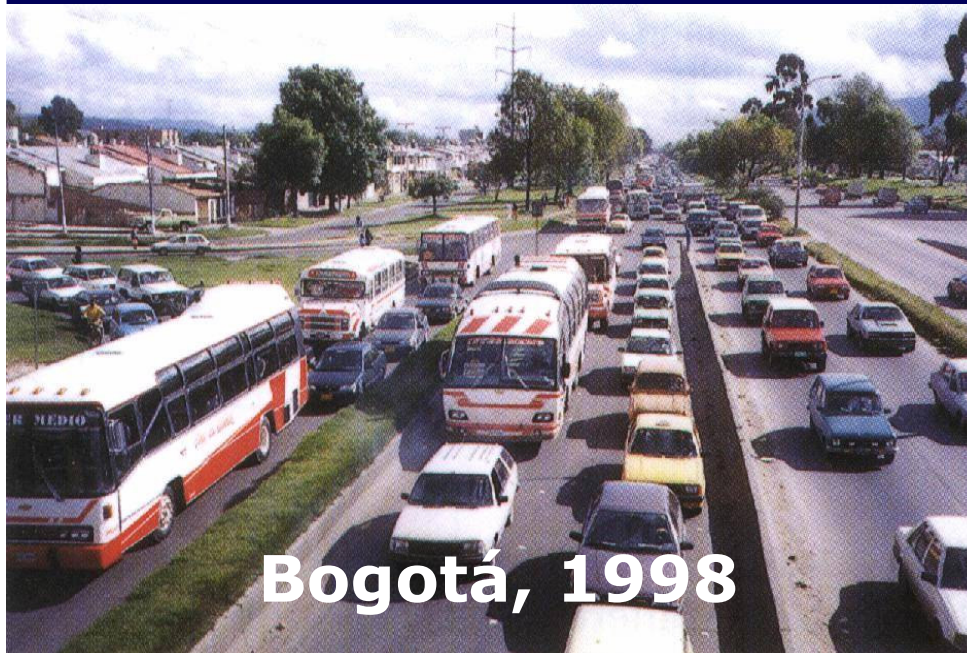
# Priority to develop high quality mass transport systems in LAC cities







## Reforms in Bogotá: Images before and after



Source: GTZ





## Reforms in Bogotá: public space improvements



**Before**

**After**



Source: GTZ





# Reforms in Bogotá: Quality Improvement

## Calle 13 – Av. Caracas



1998



Source: GTZ

CAI-LAC: Working together to improve air quality and mitigate climate change

2004





# Reforms in Bogotá: Quality Improvement

## Avenida Caracas Sur



1997



2004

Source: GTZ











**Preference to pedestrians and cyclists for using public spaces, connected to the mass transit system**













**Quito**



**Medellín**



**Guadalajara**



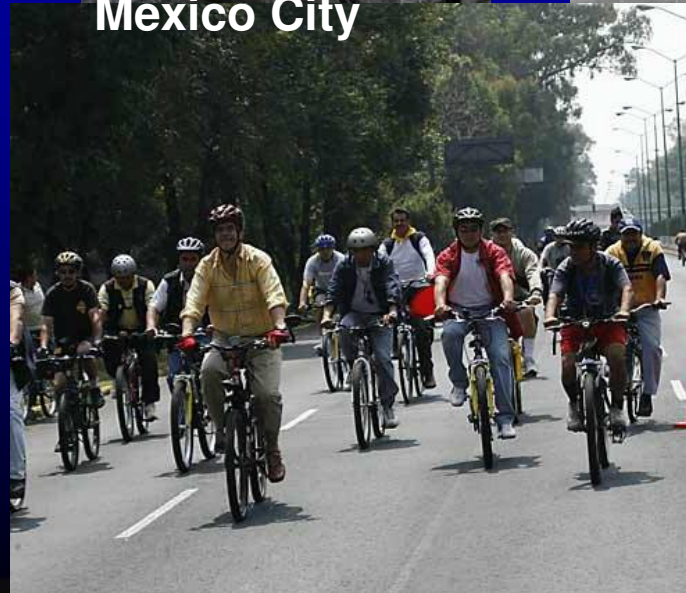
**Mexico City**



**Santiago de Chile**



**Bogota**







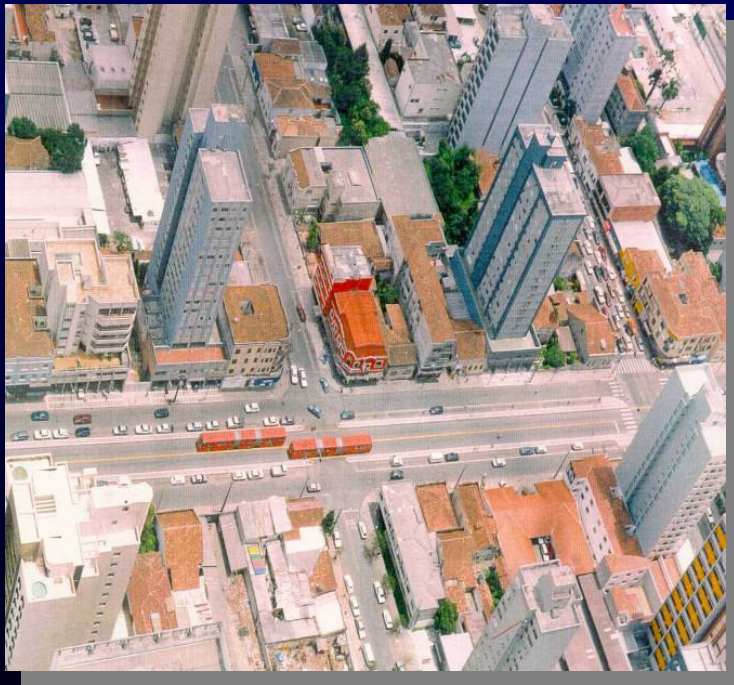
# Restricting private car use







# Developing and Implementing integrated strategies for transport, land use, air quality/climate change



CAI-LAC: Working together to improve air quality and mitigate climate change





# Integrated improvement of the freight system







Este camión lleva  
**Aire+Limpio**

PROGRAMA PILOTO  
  filtros  
partículas  
diesel

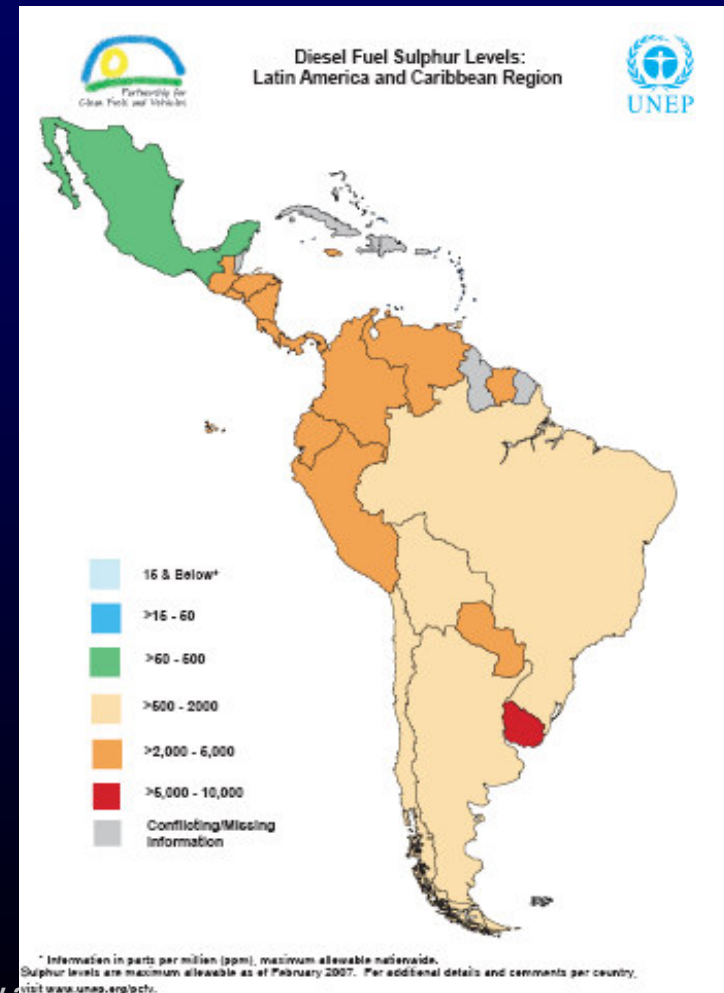




# Accelerate deployment of clean technologies and fuels

## ■ Opportunities for new fleets

- Establishment of world class emission standards and fuel efficiency requirements along with clean fuels.
- Goal for phasing-in 50 ppm sulfur diesel (maximum) in the LAC region by 2010 (PCFV Conference 2007 in Quito).
- Integrated assessment of biofuels and synthetic fuels, as well as hybrids, electric and fuel cell technologies, etc.







# Accelerate deployment of clean technologies and fuels

## ■ Opportunities in existing fleets

- Fleet modernization with clean and efficient vehicles.
- Retrofit and repower.
- Inspection and maintenance programs.



## Retrofit is feasible in LAC heavy duty fleets

- Mexico City: 90% reduction in particle emissions were observed in electronic injection buses retrofit with Dual Particle Filters using Ultra Low Sulfur Fuels.

Source: CTS et al. (2006)

- Santiago de Chile: emission reductions ranging 90-99% by using DPF and 30-35 ppm sulfur diesel in buses.

Source: EPA.

Particle filter  
applied to a bus



Inlet



Outlet

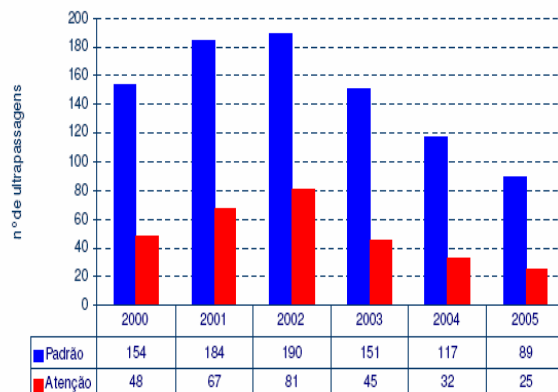
Source: Bertelsen, EETPI





# Economic growth is compatible with air quality improvement

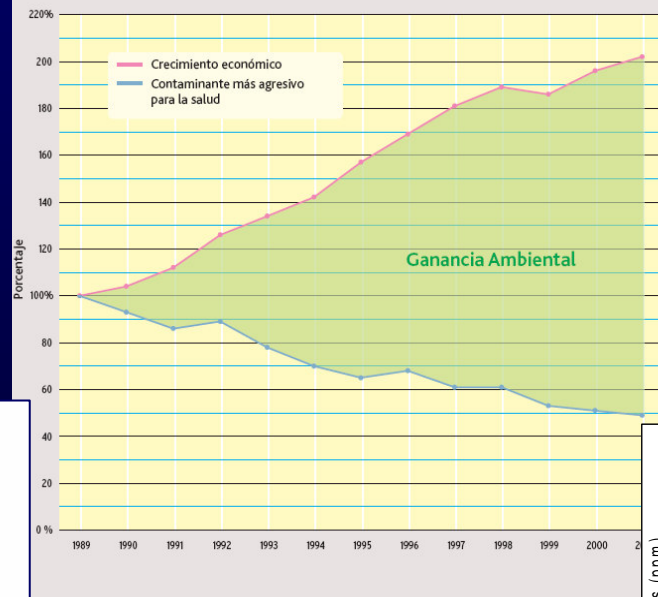
## Sao Paulo



Base: Estações Moóca, Ibirapuera, São Caetano do Sul, Mauá e Diadema

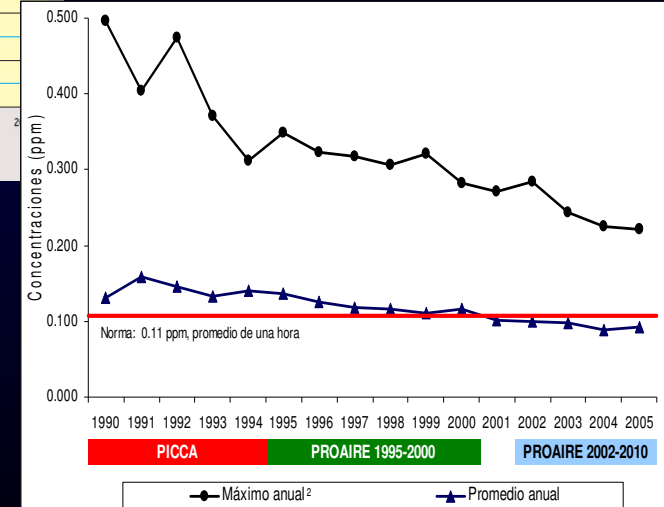
Figura 40 - O<sub>3</sub> - Número de ultrapassagens do padrão por ano - RMSP

4: Crecimiento económico de la Región Metropolitana y descontaminación



## Santiago de Chile

## Mexico City





# Conclusions

- An integrated approach is crucial for successfully reducing air pollution, mitigating GHG emissions and improve quality of life in Latin American Cities
  - Integrated mass transport systems
  - Non Motorized Transport integrated to urban transport systems
  - Integrated Land Use and Transport Planning
  - Travel Demand Management
  - Comprehensive Freight Management
  - World class fuels and new vehicles are a must to ensure clean and efficient future fleets.





# Conclusions

- **Latin American cities are pioneering the development of innovative, efficient and clean transportation systems.**
  - Most (BRT) systems reviewed have improved travel conditions and the quality and performance of public transport.
  - The main achievement has been travel time savings as well as enhanced reliability and safety.
    - As efficiency has improved, systems have also reduced energy consumption and emissions,
    - Urban enhancements are also evident in Curitiba, São Paulo (Passa-Rápido), Bogotá, Quito Trolebús, Pereira and Guayaquil where the appalling conditions of the corridors prior to systems implementation have dramatically improved.



## Conclusions

- **Implementation of sustainable transport plans, policies and projects have real and visible benefits in the short and medium term.**
- **Latin American cities are global partners for reducing GHG emissions while improving air quality and quality of life.**
- **Europe and Latin America are mutually benefitted from strengthening cooperation to address common interest issues.**





**Municipalities, national governments, private sector businesses, international development organizations, universities, professional associations, social community organizations, communities and individuals**

***Working together to improve air quality and mitigate climate change***



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