Air pollution mitigation strategies in developing cities

*Accelerating a technology shift in urban transport*

Gustavo Máñez
Climate Change Coordinator, Latin America
UN Environment
Contents

1. Air Pollution strategies: a common scheme worldwide
2. Air pollution mitigation strategies in Latin America
3. A broader perspective: What is going on with the transport sector in Latin America?
4. Going beyond: electric mobility, why not?
A common approach: carrots, sticks & sermons

- Taxes
- Fiscal incentives for cleaner technologies
- Subsidies for technology changes

- Stricter fossil fuel & emission standards
- Technical Monitoring and inspection of cars
- Vehicle restricted areas
- Low emission zones
- Driving restrictions (hoy no circula, pico y placa, etc)

- Public awareness & communication campaigns
- Labelling
<table>
<thead>
<tr>
<th>Santiago Respira</th>
<th>Aburrá Valley Decontamination Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Economic incentives for cleaner cars)</td>
<td>- Incentives for cleaner fuel vehicles</td>
</tr>
<tr>
<td></td>
<td>- Bus dismantling and disposal programme – new ones N Gas</td>
</tr>
<tr>
<td>- Stricter standards, Euro VI</td>
<td>- Stricter emission standards</td>
</tr>
<tr>
<td>- Monitoring &amp; inspection of vehicles</td>
<td>- Monitoring and inspection of vehicles</td>
</tr>
<tr>
<td>- LEZ restrictions</td>
<td>- Driving restrictions: “Pico y Placa”</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>- Labelling</td>
<td></td>
</tr>
<tr>
<td>- Mobile apps for public awareness</td>
<td></td>
</tr>
</tbody>
</table>
Electric mobility: Opportunities for Latin America

UN Environment Publication

- Summarizes economic, social and climate benefits of electric mobility
- Analyses global and regional market
- Includes policies, incentives and experiences
- Proposes a roadmap to accelerate the transition to e-mobility in Latin America
Electric public transport: a priority for Latin America
Benefits of electric buses

- Important amounts of pollution in cities are due to HDV & buses
- Price stability: electricity cost increases less than diesel cost
- Routes predictability, intensive use and closeness to people and zero noise
- It could drive electrification of all forms of transport

Particulate Matter 2.5

Clean Air Institute (for Latin America), 2014
Bus efficiency scale: ...and the winner is?

- Use of energy/ km traveled: What is the travel distance of 5 liters of diesel?
- Mexico City options

<table>
<thead>
<tr>
<th>Bus Type</th>
<th>Distance (Km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus CNG</td>
<td>8.6</td>
</tr>
<tr>
<td>Diesel bus</td>
<td>11.4</td>
</tr>
<tr>
<td>Hybrid bus</td>
<td>19.4</td>
</tr>
<tr>
<td>Electric hybrid bus</td>
<td>25.5</td>
</tr>
<tr>
<td>Electric bus</td>
<td>33.3</td>
</tr>
</tbody>
</table>

Fuente: Volvo, 2016
Constant reduction in battery cost: 14% annually

Key policies used to accelerate e-mobility

**Fiscality**
- VAT exemption
- Subsidies
- Taxes according to emissions
- Preferential electricity cost

**Regulation**
- Ban Combustion Engines (*)
- Car companies must sell EVs (*)
- Obligation to introduce changing stations (*)

**Others**
- Emission standards
- Access zones
- Free parking
- National goals

Fuentes: UNEP, 2016, IEA, 2016
Roadmap to accelerate e-Mobility in Latin America

From: Opportunities to Accelerate Electric Mobility in Latin America, UN Environment, 2016

1. Accelerate energy efficiency
   - Emissions & fuel standards
   - Energy labelling
   - Emission taxes
   - Strengthen testing & enforcement

2. Eliminate market distortions
   - Discourage fuel subsidies
   - Regulate importation of used vehicles

3. Incentivize EVs
   - Supporting policies/laws
   - Fiscal incentives
   - Tax breaks/import breaks

4. Develop EV infrastructure
   - Charging stations
   - Differentiated tariffs
   - Capacity-building
   - Public-private innovation platforms
   - Pilot projects

Important gaps remain. Status varies from country to country ...

Need to focus in parallel to steps 1 & 2 to create market and regulatory conditions.
Before taking action

E-mobility generates great interest but, eBuses need an in-depht evaluation & local adaptation so effective services can be provided.

What are the advantages of the different eBuses tecnologies available in the market in the mid term?

How do they charge? What cost? How do you address extra investment cost for charge-infrastructure?

What is needed from eBuses to operate in equivalent conditions as conventional buses do (service, trust, comfort, etc)?

Which regulatory changes are necessary for the operation of eBuses?

If challenges are not overcome through customized solutions, the consequence may be white elephants which may not meet expectations.
gustavo.manez@unep.org
Fossil fuels: impacts

- Estimated health costs of air pollution: US$ 3.9 billion (OCDE, 2010)
- ½ of these costs attributable to transport sector (OCDE, 2010)
- Main pollutants from transport sector are associated to diesel and are a known cause of cancer and other diseases (WHO)

Fuente: Carbono Cero América Latina, UNEP-DTU, 2015, OCDE, 2010