Plenary Session 3:

“Alternative & Renewable energy and emerging vehicle technologies in Public Transport: Air quality and climate co-benefits for transport”
Busworld Foundation in the World

MISSION: To promote optimal conditions for the implementation of state-of-the-art bus and coach systems in the global multimodal mobility offer.
Lessons learned from this COVID crisis

1. PT is NECESSARY
2. PT is VULNARABLE
3. PT is UNDER-VALUED
Plenary Session 3:

“Alternative & Renewable energy and emerging vehicle technologies in Public Transport: Air quality and climate co-benefits for transport”
## Emission reduction Euro (Bharat) 1=> 6

Pollutants with the strongest evidence for public health concern, include, particulate matter (PM), ozone (O₃), nitrogen dioxide (NO₂) and sulphur dioxide (SO₂).

<table>
<thead>
<tr>
<th>Stage</th>
<th>Date</th>
<th>CO</th>
<th>HC</th>
<th>NOₓ</th>
<th>PM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>g/kWh</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Euro I</td>
<td>1992, ≤ 85 kW</td>
<td>4.5</td>
<td>1.1</td>
<td>8.0</td>
<td>0.612</td>
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<tr>
<td></td>
<td>1992, &gt; 85 kW</td>
<td>4.5</td>
<td>1.1</td>
<td>8.0</td>
<td>0.36</td>
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<tr>
<td>Euro II</td>
<td>1996.10</td>
<td>4.0</td>
<td>1.1</td>
<td>7.0</td>
<td>0.25</td>
</tr>
<tr>
<td></td>
<td>1998.10</td>
<td>4.0</td>
<td>1.1</td>
<td>7.0</td>
<td>0.15</td>
</tr>
<tr>
<td>Euro III</td>
<td>1999.10 EEV only</td>
<td>1.5</td>
<td>0.25</td>
<td>2.0</td>
<td>0.02</td>
</tr>
<tr>
<td></td>
<td>2000.10</td>
<td>2.1</td>
<td>0.66</td>
<td>5.0</td>
<td>0.10</td>
</tr>
<tr>
<td>Euro IV</td>
<td>2005.10</td>
<td>1.5</td>
<td>0.46</td>
<td>3.5</td>
<td>0.02</td>
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<tr>
<td>Euro V</td>
<td>2008.10</td>
<td>1.5</td>
<td>0.46</td>
<td>2.0</td>
<td>0.02</td>
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<tr>
<td>Euro VI</td>
<td>2013.01</td>
<td>1.5</td>
<td>0.13</td>
<td>0.40</td>
<td>0.01</td>
</tr>
</tbody>
</table>
Global CO₂ emission all time high

Source: Global carbon Project
Asian urban GHG emissions amount to approximately 4.26 billion metric tons of CO2e in 2000 (30% of the world production). The largest share of Asian urban emissions are for energy production (61.8%), followed by industry (11.5%), and transportation (10.1%).
Estimated rise in individual car use

RISE IN MOTOR VEHICLE USE

- 2000: 14,000T of annual vehicle km
- 2015: 24,000T of annual vehicle km
- 2050: 48,000T of annual vehicle km
Consequences of the increase of individual car usage in India

Between 2011- 2030:
-- Daily travel trips will become double;
-- Share of public transport trips shall decline from 26% to 16%;
-- Share of personal vehicle trips to increase from 34% to 51%;
-- Peak traffic to crawl at 8km/hour compared to 16 km/hour.

Source: CSE, India
From individual to collective motorized passenger transport by road, except for specific on demand & last mile solutions

Implementation of life time cycle zero emission passenger transport modes

1 bus/car = 30 autos
A COMPLEX CONTEXT

- Lack of capital funds for fleet replacement, low maintenance capacity
- Diverse stakeholders and interest groups: public and private actors and civil society
- Multitude of service providers, often with low service, fare integration
- Network effect-inter-connectivity with other urban transport services
- Limited availability of urban space; road space is at a premium
- Low cost recovery, use of subsidies to sustain urban transport services
- Dynamic urban environment and political context
- Urban mobility is a strategic public policy agenda-strong tendency for political interference
KEY BARRIERS FOR THE IMPLEMENTATION OF MODERN BUS SYSTEMS

<table>
<thead>
<tr>
<th>Technical Barriers</th>
<th>Financial Barriers</th>
<th>Institutional Barriers</th>
<th>Lack of Scalability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of knowledge</td>
<td>Difficulties for agencies to change procurement practices</td>
<td>Lack of institutional resources</td>
<td>Cities stuck on the pilot carousel</td>
</tr>
<tr>
<td>Technical limitations of the e-buses and charging infrastructure</td>
<td>Lack of longterm, scalable financing options</td>
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WAYS TO OVERCOME THESE BARRIERS

1. New actors entering the transport ecosystem
2. Changes in the ways of operating and contracting
3. Innovations in technologies
4. Public Private Partnership
Happy to get in touch

www.busworld.org & www.busworldacademy.org
jan.deman@busworld.org
+32.473.70.90.84

EST Forum - Post Event :

The strengthened role of public road transport in the new normal
organized by Busworld Foundation & UN CRD, supported by UCLG ASPAC & UN Habitat.