A Case Study from Russian Federation

Promotion of the Public Transport as a Base for Sustainable Urban Transport System in Moscow City

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Characteristic Features of Moscow Transport System

- Radial planning scheme and insufficient density of the city’s road network.
- Prevalent share of public transport in passenger transportation.
- Special role of metro network in urban transportation.
Moscow Road Network Scheme

- city’s territories liable to traffic congestion.
## Comparative Road Network Density

<table>
<thead>
<tr>
<th>City</th>
<th>Road network density, km/km²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chicago, Tokyo, Osaka</td>
<td>&gt;16</td>
</tr>
<tr>
<td>New-York</td>
<td>13.3</td>
</tr>
<tr>
<td>Greater London, Los-Angeles, Philadelphia</td>
<td>8.9</td>
</tr>
<tr>
<td>Budapest, Berlin, Warsaw, Hamburg, Vienna, Milan</td>
<td>5.7</td>
</tr>
<tr>
<td>Moscow</td>
<td>4.5</td>
</tr>
</tbody>
</table>

- Municipal Public Transport: 41%
- Private Transport Companies: 6%
- Private Cars: 16%
- Railway: 6%
- Metro: 31%
Moscow Vehicle Fleet Growth

Cars, units

Trucks and Buses, units


- Triangles for Cars
- Diamonds for Trucks
- Squares for Buses
Motorization and Population Welfare

Gross Domestic Product per Capita, USD.

Motorization level, cars/1000 people
Pollutants Emission Structure by Vehicle Type in Moscow

- Cars: 65%
- Trucks: 25%
- Buses: 10%
Moscow Public Transport System


- Tram: 853
- Trolleybus: 1569
- Bus: 6328
- Taxi and "Route Taxi": 8500
- Metro: 4221

Moscow Public Transport Route Network Length (2003)

- Tram: 410
- Trolleybus: 950
- Bus: 5150
- Metro: 269
Moscow Public Transport System

Moscow Public Transport Routes (2003)

- Tram: 37
- Trolleybus: 86
- Bus: 541
- Metro: 11


- Tram: 960 Million passengers
- Trolleybus: 1,171 Million passengers
- Bus: 2,635 Million passengers
- Metro: 3,200 Million passengers
Problems of Moscow Public Transport System

- Insufficiently developed metro network.
- Insufficiently developed surface rapid transit transport modes.
- Inefficient use of public transport vehicle fleets.
- Insufficient quantity and high degree of deterioration of the public transport vehicles.
- Insufficiently developed and highly deteriorated urban transport infrastructure.
- Shortage of the skilled personnel at public transport enterprises.
- Uncoordinated activity of both private and municipal transport companies.
## Municipal Public Transport Companies’ Financial State

<table>
<thead>
<tr>
<th>Mode of transport</th>
<th>Share of operational costs covered by income, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban bus</td>
<td>58.2</td>
</tr>
<tr>
<td>Suburban bus</td>
<td>61.3</td>
</tr>
<tr>
<td>Trolleybus</td>
<td>49.8</td>
</tr>
<tr>
<td>Tram</td>
<td>43.3</td>
</tr>
<tr>
<td>Metro</td>
<td>69.3</td>
</tr>
</tbody>
</table>
Some Elements of Sustainable Urban Transport Policy in Moscow City

- Development of the public transport.
- Improvement of the environmental characteristics of the public transport vehicle fleet.
- Traffic management and parking policy.
Plans For Public Transport Development

- Increase and renovation of the public transport vehicle fleet.
- Opening of the new public transport lines and development of its infrastructure (opening new lines, building public transport terminals etc.).
- Introduction of the new public transport modes (light rail and monorail).
- Improvement of the fare collection efficiency by introduction of the transport smart-cards.
- Improvements in environmental safety of the public transport vehicle fleet.
The New Modes of Transport Being Introduced in Moscow

Moscow Monorail Train

Moscow Light Railway
Improvements in Environmental Safety of the Public Transport Vehicle Fleet.

- Fuel quality management.
- Switching city owned vehicles to alternative fuels.
- Equipping vehicles in use with catalytic converters.
## Fuel Quality Requirements in Moscow

<table>
<thead>
<tr>
<th>Polluting agents content</th>
<th>Petrols</th>
<th>Diesel Fuels</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Petrols AI-92 and AI-93 (produced since 1977)</td>
<td>“City” petrols</td>
</tr>
<tr>
<td>Mass fraction of sulfur, ppm</td>
<td>( \leq 1000 )</td>
<td>( \leq 500 )</td>
</tr>
<tr>
<td>Volume fraction of benzene, %</td>
<td>Not regulated</td>
<td>( \leq 5% )</td>
</tr>
</tbody>
</table>

### Diesel Fuels

<table>
<thead>
<tr>
<th>Polluting agents content</th>
<th>Diesel fuel of “L”, “Z”, “A” class (produced since 1982)</th>
<th>“City” diesel fuel of “L” and “Z” class</th>
</tr>
</thead>
</table>
| Mass fraction of sulfur, ppm | Type 1: \( \leq 2000 \)  
Type 2: \( \leq 5000 \) | Type 1: \( \leq 500 \)  
Type 2: \( \leq 1000 \) |
| Cetane number | \( \geq 45 \) | “L”: \( \geq 49 \)  
“Z”: \( \geq 45 \) |
Traffic Management and Parking Policy

- “START” automated traffic management system operation.
- Switching congested streets to one-way traffic.
- Restriction of the trucks access to the central part of the city.
- Parking policy.
Main Problems in Sustainable Transport
Policy Implementation and Decision Making

- Lack of integral approach to urban transport problems solution.
- National legislation does not regulate issues of sustainable urban transport policy and often comes into contradiction with the legislative proposals on local and regional level.
- Lack of practice of economic and ecological evaluation in the decision making.
- Lack of funds allocated to financing of many planned and operating programmes and to their scientific and legislative support.
- Inability to work with the population to ensure favorable public opinion.