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Centre for Science and Environment

Meeting: Clean air action plan for Jaipur region: Building enhanced multi-sector Strategies

December 23, 2020
District wise registered vehicles

**Total registered vehicles**

- **Jaipur** 438
- **Kota** 324
- **Jodhpur** 223
- **Udaipur** 212
- **Ajmer** 208
- **Bhilwara** 206
- **Banswara** 204
- **Baran** 193
- **Bharatpur** 167
- **Bundi** 184
- **Barmer** 178
- **Sirohi** 175
- **Jaisalmer** 174
- **Dhodhpur** 150
- **Nagaur** 147
- **Shahjahanpur** 186
- **Shibpur** 145
- **Paragpur** 133
- **Karauli** 120
- **Jalore** 109
- **Churu** 96
- **Barmer** 94
- **Other district** 17
- **Jaipur division** 30
- **Ajmer** 7
- **Sikar** 6
- **Bhilwara** 4
- **Banswara**

**Vehicles per thousand population**

- **Jaipur** 4.2
- **Kota** 3.0
- **Jodhpur** 2.6
- **Udaipur** 2.3
- **Ajmer** 2.3
- **Bhilwara** 2.3
- **Banswara** 2.2
- **Baran** 2.2
- **Bharatpur** 2.2
- **Bundi** 2.2
- **Barmer** 2.2
- **Sirohi** 2.2
- **Jaisalmer** 2.2
- **Dhodhpur** 2.2
- **Nagaur** 2.2
- **Shahjahanpur** 2.2
- **Shibpur** 2.2
- **Paragpur** 2.2
- **Karauli** 2.2
- **Jalore** 2.2
- **Churu** 2.2
- **Barmer** 2.2
- **Other district** 2.2
- **Jaipur division** 2.2
- **Ajmer** 2.2
- **Sikar** 2.2
- **Bhilwara** 2.2
- **Banswara** 2.2

- **Total registered vehicles (in lakhs)**
  - **Jaipur** 297.2
  - **Kota** 9.4
  - **Jodhpur** 8.5
  - **Udaipur** 6.5
  - **Ajmer** 7.6
  - **Bhilwara** 6.9
  - **Banswara** 5.3
  - **Baran** 5.3
  - **Bharatpur** 5.0
  - **Bundi** 5.0
  - **Bharatpur** 4.8
  - **Sikar** 4.8
  - **Nagaur** 4.6
  - **Jhunjhunu** 3.9
  - **Banswara** 3.4
  - **Bundi** 3.0
  - **Jaisalmer** 2.9
  - **Barmer** 2.9
  - **Dhodhpur** 2.8
  - **S. Madhopur** 2.6
  - **Barmer** 2.5
  - **Rajasthan** 2.4
  - **Hanumangarh** 2.4
  - **Jalore** 2.0
  - **Churu** 2.0
  - **Sirohi** 1.8
  - **Dhodhpur** 1.8
  - **Karauli** 1.7
  - **Paragpur** 1.1
  - **Jaisalmer** 1.0
  - **Other district** 0.4
  - **Jaipur division** 0.3
  - **Ajmer** 0.2
  - **Sikar** 0.2
  - **Bhilwara** 0.2
  - **Banswara** 0.2

- **Registered vehicles per thousand population**
  - **Jaipur** 4.2
  - **Kota** 3.0
  - **Jodhpur** 2.6
  - **Udaipur** 2.3
  - **Ajmer** 2.3
  - **Bhilwara** 2.3
  - **Banswara** 2.3
  - **Baran** 2.3
  - **Bharatpur** 2.3
  - **Bundi** 2.3
  - **Barmer** 2.3
  - **Sirohi** 2.3
  - **Jaisalmer** 2.3
  - **Dhodhpur** 2.3
  - **Nagaur** 2.3
  - **Shahjahanpur** 2.3
  - **Shibpur** 2.3
  - **Paragpur** 2.3
  - **Karauli** 2.3
  - **Jalore** 2.3
  - **Churu** 2.3
  - **Barmer** 2.3
  - **Other district** 2.3
  - **Jaipur division** 2.3
  - **Ajmer** 2.3
  - **Sikar** 2.3
  - **Bhilwara** 2.3
  - **Banswara** 2.3

- **Districts**
  - **Jaipur**
  - **Kota**
  - **Jodhpur**
  - **Udaipur**
  - **Ajmer**
  - **Bhilwara**
  - **Banswara**
  - **Baran**
  - **Bharatpur**
  - **Bundi**
  - **Bharatpur**
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  - **Paragpur**
  - **Jaisalmer**
  - **Other district**
  - **Jaipur division**
  - **Ajmer**
  - **Sikar**
  - **Bhilwara**
  - **Banswara**
That how Jaipur looks

Image source: multiple web sources
The share of two-wheelers is very high (i.e. more than 70 per cent of the total registered vehicles) across the districts of Jaipur division.

Jaipur being an urban district has highest share of registered cars (i.e. 14 per cent).

Source: Statistical Abstract 2018–19, Transport Department, GoR.
Vehicular growth

- Although rural districts such as Jhunjhunu, Dausa, and Sikar are far below than Jaipur district in terms of number of registered vehicles but exhibit a higher growth rate.
- Growth rate of cars higher than two-wheelers.
- In case of Jaipur city, vehicles are increasing at a growth rate of 9 % per annum which is even higher than Delhi at 6.9 % per annum (cars are increasing at an even higher rate, i.e. 11 per cent per annum).

Source: Statistical Abstract 2018–19, Transport Department, GoR.
More than 50 per cent of the total trips across the division (except in Jaipur district) are being made by NMT and end within 5 km distance.

As these trips are within potential walking/bicyclable distance, improving NMT infrastructure will help in retaining the existing NMT users along with attracting the potential users.
High share of motorized transport and declining share of shared transport: Jaipur city

To achieve desired modal share

- Increase by almost **three times** along with IPT
- Reduce almost **half**

**Source:** Traffic and Transportation Study for Detailed Project Report for Proposed Jaipur Metro, 2010; CTTS for Jaipur Region, 2018
## Mobility scenario

<table>
<thead>
<tr>
<th>City/towns</th>
<th>Road transport</th>
<th>Railway</th>
<th>Airways</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Inter-city bus</td>
<td>Intra-city bus</td>
<td>Metro</td>
</tr>
<tr>
<td>Jaipur</td>
<td>RSRTC</td>
<td>CBS and BRT by JCTSL/private mini</td>
<td>JMRC</td>
</tr>
<tr>
<td>Alwar</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Sikar</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Dausa</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Jhunjhunu</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>
What has already been done: Jaipur city

**CBS**
- 293 buses
- 40-50 km network coverage
- 1.6 lakhs of daily ridership

**BRT**
- Began in 2010
- 7 km network coverage
- 6,622 passenger of daily ridership

**Metro**
- 8,288 passenger of daily ridership
- 40 coaches
- 9.63 km of network coverage

**PBS**
- 5.5 lakhs spent on docking stations
- 2 cycle stations with 40 cycles
Need to improve intra-city transport

- All cities/town are connected with RSRTC bus routes but infrastructure availability is inadequate and needs considerable improvement.

- Lack of designated bus stops which creates inconvenience to public in boarding and alighting
- Inefficient utilization of space inside Sindhi camp bus terminal
- Poor condition of public convenience facilities
- Encroachment by hawkers and haphazardly parked IPT vehicles
- Lack of designated IPT pick-up and drop-off points near bus terminal
**Need more buses: Jaipur city**

Existing fleet is less as per required fleet

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Existing</th>
<th>Desired</th>
<th>Gap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus per lakh population as per Urban Bus Specifications (CBS+BRT+minibuses)</td>
<td>24</td>
<td>60 or above</td>
<td>36</td>
</tr>
<tr>
<td>Percentage of organized public transport (CBS+BRT+Metro)</td>
<td>48%</td>
<td>60 % or above</td>
<td>12</td>
</tr>
</tbody>
</table>

More phase out of buses than increase in new buses

- 215 buses

Gradual phasing out of buses due to ‘age of fleet’ is decreasing available total fleet in operation

Note: Calculations have been in terms of equivalent standard buses for the projected population for the year 2020
- One standard bus = 4 minibuses
- One standard bus = 1/3 metro coach

Source: CTTS for Jaipur Region, 2018; Right to Information (RTI) filed by CSE
The lack of adequate fleet results in overcrowding during the peak hours.

The 2,186 private minibuses and IPT also compete with the JCTSL buses because their routes are not properly rationalized. These buses are poorly maintained and are usually overcrowded.

Operational performance of buses is poor compared to optimal values which puts risk on the financial stability of the SPV.

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Existing</th>
<th>Optimal</th>
</tr>
</thead>
<tbody>
<tr>
<td>High dead km</td>
<td>8.90%</td>
<td>0-2 %</td>
</tr>
<tr>
<td>Lower bus productivity (operated km / no. of buses held per day)</td>
<td>190-240 km</td>
<td>181 km</td>
</tr>
<tr>
<td>Low load factor</td>
<td>53%</td>
<td>70%</td>
</tr>
</tbody>
</table>

Note: Optimal values are taken from the current practices in City bus operation; ASRTU annual reports
Organize IPT service: Jaipur city

Caters 7 per cent of travel demand.

- IPT services in the city consist of a variety of smaller modes like e-rickshaws, auto-rickshaws, shared autos, Tata Magic (tempo), taxi, etc.

![Graph showing travel demand by different modes in Jaipur city.](source)

Large number of private hire and shared auto-rickshaws older than 10 years

- The capacity utilization ratio of tempos is higher than one (i.e. 1.8) which indicates overcrowding.

[Image source: multiple web sources]
Improve NMT connectivity and infra: Jaipur city

- Caters 31 per cent of the travel demand
- Absence of footpath on Dalda Road
- The only painted 1 km bicycle lane
- Exclusion of street vendors from road design
- Footpaths encroached by parked vehicles in walled city
- Poorly maintained PBS station
More vehicles but where to park???

- **62 per cent of road network** is covered by authorized or unauthorized on-street parking facilities.
- Except authorized parking space in walled city, all other on-street parking is free.
- Compliance with **Rajasthan High Court order for showing proof of parking before getting the vehicle registered** is poor.

Current space required for parking 2,807 hectares

Almost 4 times of the walled city area

62 % of road network covered by parking

Image source: multiple web sources
More vehicles but where to park???

Multiple lanes of parking causing hindrance to traffic

Image source: multiple web sources
Mobility scenario in other towns of Jaipur division

Image 16: IPT services in Dausa town

Image 17: People waiting for RSRTC buses near the flyover in Dausa town

Image 18: Haphazardly parked vehicles in Dausa town
Heavy duty vehicles and freight traffic

- Proximity to the **Golden Quadrilateral and presence of industrial townships** is a major factor for considerable movement of goods freight.

- No formal truck terminals are present in Jaipur and Sikar district.

- In absence of truck terminals, **long queues of parked trucks** at various locations such as Gopalpura Bypas, Sikar Road can be found. Also **overloading** of vehicles is another major issue.

- Strategy to control emissions from heavy duty trucks. A targeted scrappage policy is needed to replace old trucks with BS VI compliant trucks that can give 90 per cent emissions reduction benefits.
Way Forward: Strategies to improve bus Service

- **Augment bus fleet and operations** (rationalize routes, improve bus operation and maintenance practices).

- **Technological interventions** in scheduling practices, ticketing, and information.

- **Infrastructure improvement** (multi-modal integration, depot improvement, bus shelters and their design)

- Escalate transition to EV in public transport
  (*procurement of 100 electric buses is in progress*)

Difficulty in boarding/alighting
Way Forward: Strategies to improve IPT Service

- **Organize IPT system** (enforcement of safety standards, driver training and licensing)
- **Phase out old IPT vehicles** and link it with incentives to purchase BS VI/ electric IPT.
- **Infrastructure integration for IPT service** (auto stands, halt and go points)

![Image of Black smoke emitting auto-rickshaws](image1.png)

![Image of Lack of designated halt and go points for IPT services](image2.png)
**Way Forward: Prioritize low carbon modes**

**Roads for all**

- Restructure roads in principle of *complete road design*
- Identify network/tourism loops to prioritize Non-Carbon modes such as e-auto, e-rickshaw, walking, cycling infrastructure

**Fast forward adoption of EV Policy**

- Notify the draft EV policy and prepare a robust and time-bound implementation roadmap.
- Special tax exemption for electric vehicles especially buses and e-auto.
- Amend building byelaws and regulations for EV.
- Develop EV vehicle infrastructure ecosystem.
- **Link electric mobility with eco-tourism** will be an important opportunity.

*Complete street design for all road users: Nanded city*
Way Forward: Parking as a travel demand management strategy

- Introduce a **comprehensive parking policy and parking area management plans**

- **Demarcate and rationalize all parking supply** (residential, commercial, and other areas)

- All **parking supply should be paid** (time and location based variable parking prices)

Parking of vehicles in residential areas of Jaipur
THANK YOU