SMART MOBILITY PRACTICES IN GREATER JAKARTA

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2. Demand Management: 3 in 1 odd and even ERP

3. Public Transport Development:
   - Mass Transit development (MRT, LRT, BRT)
   - HOV/Bus lane in Toll Road

4. Concluding Remarks
1

Current Transport Status of Greater Jakarta
Motorcycle: 18.5 million units (74%)

Private car: 5.9 million units (24%)

Buses: 512 thousand units (2%)

Number of Vehicle: 24.9 million
Number of Population: 31 million

Jakarta has been “crowned” as the city with the worst traffic in the world based on Castrol’s Stop - Start Index.

Commuting Trip in Greater Jakarta/Jabodetabek: 47.5 million/day
Traffic Statistics in Jakarta

- 700 cars per day
- 3100 motorcycles per day
- Extremely high growth rate

<table>
<thead>
<tr>
<th>Vehicle Types</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>Y-o-Y (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motorcycles</td>
<td>8,764,130</td>
<td>9,861,451</td>
<td>10,825,973</td>
<td>11,949,280</td>
<td>13,084,372</td>
<td>10.54%</td>
</tr>
<tr>
<td>Private Car</td>
<td>2,334,883</td>
<td>2,541,351</td>
<td>2,742,414</td>
<td>3,010,403</td>
<td>3,266,009</td>
<td>8.75%</td>
</tr>
<tr>
<td>Trucks and Lorries</td>
<td>565,727</td>
<td>581,290</td>
<td>561,918</td>
<td>619,027</td>
<td>673,661</td>
<td>4.46%</td>
</tr>
<tr>
<td>Bus</td>
<td>332,779</td>
<td>363,710</td>
<td>358,895</td>
<td>360,223</td>
<td>362,066</td>
<td>2.13%</td>
</tr>
<tr>
<td>Special Vehicle</td>
<td>-</td>
<td>-</td>
<td>129,113</td>
<td>133,936</td>
<td>137,859</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>11,997,519</td>
<td>13,347,802</td>
<td>14,618,313</td>
<td>16,072,869</td>
<td>17,523,967</td>
<td>9.93%</td>
</tr>
</tbody>
</table>

Registered Vehicle in Jakarta 2014

- Motorcycles: 17,523,967 (75%)
- Private Car: 2,000,000 (8%)
- Trucks and Lorries: 310,000 (1%)
- Bus: 3,000,000 (4%)
- Special Vehicle: 1,000,000 (2%)

Graphs showing vehicle growth from 2010 to 2014.
THREE STRATEGIES IN JAKARTA TRANSPORTATION MASTERPLAN (Governor Decree 103/2007)
PUBLIC TRANSPORT SHARE

- **2016**: 20%
- **2019**: 40%
- **2024**: 50%
- **2029**: 60%
MRT development is expected to give high impact to traffic improvement, but needs much cost and time.

Introduction of ERP is the most effective measure which realizes the Jakarta’s goal of easing traffic congestion.
Demand Management
3 in 1, odd and even, ERP
3 in 1 Policy (2003-2016)

Limiting access to a part of the central business district (during peak hours) to car containing more than 3 people (the 3-in-1 policy)

With regards to the implementation of the 3-in-1 policy, young children (Jockey) observed earning cash by accompanying drivers within the zone—who would otherwise be subject to a fine. This anecdotally suggests that enforcement of the 3-in-1 policy has been met with challenges.
Odd and Even license plate Policy (July 2016)

- Jakarta implemented a 3-in-1 Policy (HOV Lane) for 13 years.
- Since August 2016, the policy was changed into Odd-Even Plate, as a transition phase before the ERP will be applied.

This system is valid from Monday to Friday, at 07:00 WIB to 10:00 WIB, and at 16:00 WIB to 20:00 WIB in certain roads. On odd dates, only vehicles with the last number of odd plates may pass, and vice versa. The last digit 0 (zero) is considered an even number.

THIS POLICY IS NOT APPLICABLE FOR:
- President RI + escort
- Vice President RI + escort
- State High Officials (RI plat) + escort
- Vehicle Service (Dinas plate)
- Firefighters
- Ambulance Car
- Public Transport Car (yellow plate)
- Goods Transportation (with dispensation) Pergub 5148/1999 Determination of prohibition time for freight cars
- Bicycle /motorcycle (except for the ban area motorcycle)

Indicators | During Odd-Even
---|---
Travel Time | - 19%
Average Speed | 20%
Traffic Volume | -15%
BRT Pax Corr1 | 32.57%
BRT Pax Corr2 | 27.17%
It is one of the traffic restrictions strategies, which are supposed to replace the 3 in 1 or Odd_Even policy.

ERP is a 'congestion charging' that is imposed on private vehicles on certain roads and at certain times.

ERP systems are organized in order to manage traffic needs to improve the efficiency and effectiveness of the use of road spaces and control road traffic.

The results of acceptance of the implementation of ERP System will be used only for the cost of improving mass-based public transport services and improving the performance of road traffic (earmarking policy).
ERP _ BENEFITS

FOR COMMUNITY
a. Reduce Noise generated by vehicles
b. Lowering Air Pollution Derived from Vehicle Smoke
c. Minimization of Economic Losses Due to Traffic Congestion

FOR ROAD USERS
a. Drive Comfort
b. Travel Becomes More Timely
c. Reduce Congestion

d. Ease of Shifting Mode to Public Transportation
b. Easing Traffic Restraint Implementation
c. Transition of Personal Vehicle Mode to Public Transport
d. Improving Effectiveness and Efficiency of Demand Management
Map of the Traffic Restriction Plan (Perda 1 thn 2012)
IMPLEMENTATION PART 1

2. Koridor Kuningan – Cokroaminoto (Panjang ± 4,3 km) jalan yang dilalui : Jalan Rasuna Said.

IMPLEMENTATION PART 2

1. Mampang – Ragunan (Panjang ± 9 km).
2. Pinang Ranti – Pluit (Panjang ± 28,8 km).
3. Ciledug – Tendean (Panjang ± 9,3 km).
The concept of Technology Selection is based on traffic characteristics in Jakarta, where:

1. The level of public compliance with traffic regulations is still low.
2. Existing vehicle number plate system is not uniform.
3. The condition of roads in Jakarta that many access (open space / urban environment).
4. Development of ERP System should be done in stages, will be implemented on roads that have mass public transport.

Condition Requirement of ERP Implementation:

1. At least, the road consist of two sides and each side consist of two lanes.
2. Having mass public transportation system network which has complied Minimum Service Standard (Ministry Regulation).
3. Minimum VCR = 0.9 at peak hour.
4. Average speed ± 10 km/hour (at peak hour).

Provincial Government of DKI Jakarta as the user, must choose technology that has been proven and is the best practice implementation of ERP in the world.
✓ Multi lane free flow (MLFF), which the technology that can detect multi lane vehicle doesn’t need to stop for payment.

✓ Using a camera that can detect / recognize vehicle license plates and auto classify vehicle types.

✓ Using single piece OBU system which is OBU as the electronic identity for payment media connected to account at central system.

✓ Using technology of tariff collection based on time / corridor / segment in Electronic Paid Traffic Control Area.

✓ The Electronic Money Instrument to be used in the application of the ERP System is Server Base.

✓ The method of using electronic money in the application of ERP System for the initial stage is 'Single Purpose Prepaid'.
ERP SPECIFICATION

Supported Indonesian regulations:
Permenkominfo No. 27 / 2009

Electronic Identity Tool:
- Has a unique international numbering scheme
- On the OBU device contains the electronic identity of the vehicle owner, so that an electronic ticket can be applied in case of a violation.

SINGLE PURPOSE PREPAID

Best practice and proven technology

ERP TOOL

International Standard: Open standard technology, ISO and EN standard.

Safe: Safe technology for payment system because it has international standards.

Interoperability: Technology that enables cooperation among operators.

Multi-vendor and multi-operator: So as to support the establishment of healthy bidding competition, which is required for the development of an ERP system in the future.
TIME LINE

- **2017** Open tender
- **2018** Contract Signing & Construction (1 – 1,5 y)
- **2019** Phase I Implementation / Operation
- **2021** Phase II Implementation / Operation
Corridor Blok M - Kota

Corridor Kuningan - Cokroaminoto
## Prediction of modal shift from car to public transport by ERP

<table>
<thead>
<tr>
<th>Item</th>
<th>BRT Corridor1</th>
<th>BRT Corridor6</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shifting factor (Shifting from motor vehicles)</td>
<td>20%</td>
<td>20%</td>
<td>Impact Survey (JICA ERP Study Team)</td>
</tr>
<tr>
<td>Current traffic volume</td>
<td>1,799 vehicle/hour</td>
<td>1,249 vehicle/hour</td>
<td>Traffic volume Survey (JICA ERP Study Team)</td>
</tr>
<tr>
<td>Shifted traffic volume (Additional BRT passengers)</td>
<td>741 person/hour</td>
<td>602 person/hour</td>
<td>*2.06, **2.41 person/vehicle (JICA ERP Study Team)</td>
</tr>
</tbody>
</table>
Pull policy:
Mass Transit development
HOV/Bus lane in Toll Road’
‘ Residence Connexion’ ;
MASS PUBLIC TRANSPORT DEVELOPMENT

BRT/BUSWAY
- 13 CORRIDOR OPERATED
- CORRIDOR 13 (ELEVATED)
- JR /RESIDENCE CONNEXION
- JA/AIRPORT CONNEXION
- HOV/BUS LANE IN TOLL ROAD (BOS and Contra Flow)

MRT/SUBWAY/COMMUTER LINE
- NORTH_SOUTH CORRIDOR
- EAST_WEST CORRIDOR
- AIRPORT RAIL
- HIGH SPEED TRAIN
- DDT (DOUBLE-DOUBLE TRACK)

LRT / MONORAIL
- 7 LINES LRT DKI JAKARTA, PRIORITY CORRIDOR DEVELOPMENT
- DEVELOPMENT OF LRT JABODEBEK CENTRAL GOVERNMENT
Corridor 13 has just been unveiled:

• Corridor Length: ± 9.3 Km
• Route: Ciledug - Tendean
• Number of Stops: 12 Bus Stops
• Operated: 2017
MASS TRANSIT INTEGRATION IN GREATER JAKARTA UP TO 2029

Integrated Transport Network Map

JANGKA PENDEK – 2019
JANGKA MENENGAH – SAMPAI DENGAN 2024
JANGKA MENENGAH – SAMPAI DENGAN 2029

LALADON MULYAHARJA

MASS TRANSIT INTEGRATION IN GREATER JAKARTA UP TO 2029

LEGENDA

RUTE

TRANSJAKARTA
KOMUTER JABODETABEK
KUMPULANPENJARINGAN
KMPN
LEBAN JAKARTA
LRT - BANDUNG
LRT - CIREBON
LRT - EMERGENCY
LRT - SURABAYA
LRT - TANGERANG
LRT - TANGERANG RAYA
LRT - TENGKAON
LRT - TEGAL
LRT - TIRTA DUA
LRT - YOGYAKARTA
LRTJAKARTA
KOMPONEN PERBANDINGAN

SUPPORTED BY:
MRT / SUBWAY

Number of Corridors (Lane)
- 2 Corridors
  - South – North Corridor
  - East – West Corridor

Number of Stations
- 21 Stations
  - South – North Corridor
  - 48 Stations
  - East – West Corridor

Length of Lane
- 26 Km
  - South – North Corridor
- 87 Km
  - East – West Corridor

Estimated time of Operation
- 2018
  - Phase I South – North Corridor
- 2020
  - Phase II South – North Corridor
- 2024-2027
  - East – West Corridor
7 LINES LRT NETWORK IN JAKARTA

<table>
<thead>
<tr>
<th>Line</th>
<th>Route</th>
</tr>
</thead>
<tbody>
<tr>
<td>Line 1</td>
<td>Kebayoran Lama - Kelapa Gading</td>
</tr>
<tr>
<td>Line 2</td>
<td>Pulo Mas - Tanah Abang</td>
</tr>
<tr>
<td>Line 3</td>
<td>Joglo - Tanah Abang</td>
</tr>
<tr>
<td>Line 4</td>
<td>Puri Indah - Tanah Abang</td>
</tr>
<tr>
<td>Line 5</td>
<td>Pesing - Kelapa Gading</td>
</tr>
<tr>
<td>Line 6</td>
<td>Ancol - Kemayoran</td>
</tr>
<tr>
<td>Line 7</td>
<td>Bandara Soetta - Kemayoran</td>
</tr>
</tbody>
</table>
**JARAK PERJALANAN : 25,7 KM**

**Travel Time**

- **Departure:** 0600
- **Arrival:** 07:15 (1 hour 15 minutes)
- **Speed:** 20,6 Km/h

**Time saved:** 30 minutes

**TRY OUT**

1. Bus On Shoulder (2 weeks Trial; 27 July – 11 August 2017)
2. The very Right lane
3. Contraflow

**Route Development**

1. Bekasi Barat – Pasar Senin
2. Bekasi Barat – Blok M
3. Bekasi Barat – Tanah Abang

**HOV alternatives Line**

15,38 km/h

8,13 km/h

24,67 km/h

10,66 km/h

44,78 km/h
Concluding Remarks
## ERP and Mass Transit Evaluation (MARS model)

Mode use in absolute number of trips (in millions per day)

<table>
<thead>
<tr>
<th>Mode</th>
<th>do-nothing</th>
<th>do-infra</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily trips</td>
<td>2030%</td>
<td>2030%</td>
</tr>
<tr>
<td>Pedestrian</td>
<td>25.6 (20%)</td>
<td>23.1 (19%)</td>
</tr>
<tr>
<td>Bus</td>
<td>13.4 (10%)</td>
<td>11.8 (9%)</td>
</tr>
<tr>
<td>Rail</td>
<td>1.5 (1%)</td>
<td>8.0 (6%)</td>
</tr>
<tr>
<td>MRT</td>
<td>0.0 (0%)</td>
<td>0.8 (1%)</td>
</tr>
<tr>
<td>Car</td>
<td>21.8 (17%)</td>
<td>19.1 (15%)</td>
</tr>
<tr>
<td>Motorcycle</td>
<td>66.1 (52%)</td>
<td>61.2 (49%)</td>
</tr>
<tr>
<td>total</td>
<td>128.3 (100%)</td>
<td>124.0 (100%)</td>
</tr>
</tbody>
</table>

Delhi metro carried 2.59M passengers per day in 2015/6. Their network length is 212km.
Towards Smart Mobility in Greater Jakarta, Transport Demand Management Policies conducted by restraint the private Car Vehicles movement by Electronic Road Pricing/ERP.

2. Private Car Restraint Policy, such as ‘3 in 1’ and ‘Odd_Even’ policies has been trying; however without Technology Deployment it cannot reach an effective results.

3. Combination of policies; Car Restraint and Mass Public Transport Development are essential to move towards sustainable urban transportation system