Indonesia Study:  
Assessing Indonesia Global Commitment in Reducing GHG from Transport Sector

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Board of Director, The Eastern Asia Society for Transportation Studies (EASTS)
Chairman, The International Forum for Rural Transport and Development (IFRTD)
Outline

- Indonesia **global commitment** in reducing GHG emission from transport sector
- Indonesia Transport **Challenges**: Paradox of high economic growth
- **Study LPA**: simulating national policy and visioning the future
- **Future policy change**: fundamental shift to more stringent policy with consistent practice
• Indonesia global commitment in reducing GHG emission from transport sector

  ▪ Unilateral reducing GHG emission **26% from BAU scenario by 2020** or **41%** with international support
  ▪ Presidential Decree No 61 Year 2011 on National Action Plan on GHG Emission Reduction (**RAN GRK**)
  ▪ Transport Ministerial Regulation No 201 Year 2013 on National Action Plan on GHG Emission Reduction in Transport Sector employing **AVOID – SHIFT – IMPROVE** approach
  ▪ Recently received **USD 14 Million international support** from German and UK
Indonesia Transport Challenges: Paradox of High Economic Growth

- Rapid motorization and vehicle ownership
- Diminishing share of public transport
- Urbanization coexist with inefficiency
- High consumption of energy and fuel subsidy
Rapid Motorization and Vehicle Ownership

Shift from motorcycle to car due to increasing income

Growth of Vehicle number 2000-2011

Source: Indonesian Central Statistic Agency, 2013
Diminishing Public Transport Share

Dilapidating Public transport share and stigmatized as mode just for poor

Change of Mode Share, Jabodetabek 2002 - 2010

Mode Share by Income 2010

Source: JAPTrapis 2011

Source: JUTPI, 2010
Coexistence of Urbanization and Urban Inefficiency

Urban and Rural Population Trend in Indonesia

<table>
<thead>
<tr>
<th>City</th>
<th>Km/h</th>
<th>City</th>
<th>Km/h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bandung</td>
<td>14.3</td>
<td>Surabaya</td>
<td>21</td>
</tr>
<tr>
<td>Bogor</td>
<td>15.32</td>
<td>Medan</td>
<td>23.4</td>
</tr>
<tr>
<td>Depok</td>
<td>21.4</td>
<td>Makassar</td>
<td>24.06</td>
</tr>
<tr>
<td>Bekasi</td>
<td>21.86</td>
<td>Semarang</td>
<td>27</td>
</tr>
<tr>
<td>Tangerang</td>
<td>22</td>
<td>Palembang</td>
<td>28.54</td>
</tr>
<tr>
<td>Bodetabek</td>
<td>20.12</td>
<td>Metro City</td>
<td>24.8</td>
</tr>
</tbody>
</table>

High consumption of energy and fuel subsidy

Fuel Consumption by Sector, 2011

- Industry: 38%
- Transportation
- Household
- Commercial
- Other

Source: MEMR, 2012

Subsidized Fuel Consumption by Sector 2010

- Land Transport
- Water Transport
- SME
- Fishery

Source: Reforminer, 2010
- **Study LPA** simulating national action plan and visioning future policy
  - Development Policy: RPJMN, MP3E
  - Mitigation Action Plan: RAN/RAD GRK
  - Visioning future policy
## Possible Impact of RPJMN 2010-2014

<table>
<thead>
<tr>
<th>Policies</th>
<th>Possible effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  Economic growth 6.3 – 6.8% p.a</td>
<td>Increase of transport demand and activity</td>
</tr>
<tr>
<td>2  Development of <strong>urban public services infrastructure.</strong></td>
<td>Increase urbanization, mobility demand, efficiency, and reduce urban transport pollution</td>
</tr>
<tr>
<td>3  Development of <strong>19,370 km of road</strong>, inter-mode and inter-island infrastructure</td>
<td>Increase connectivity, demand for based transportation, inter-island people and goods transportation, and sea transport</td>
</tr>
<tr>
<td>4  Enhancement <strong>transportation system and network</strong> in Jakarta, Bandung, Surabaya, and Medan</td>
<td>More efficient urban transport system</td>
</tr>
<tr>
<td>5  Implementation of <strong>National Multimode Transportation System</strong></td>
<td>Increase of transport efficiency</td>
</tr>
<tr>
<td>6  Urban <strong>electric railway</strong> transportation development</td>
<td>Reduce transport fuel consumption</td>
</tr>
<tr>
<td>7  <strong>Energy savings and alternative fuel</strong></td>
<td>Increase in urban public transport trips</td>
</tr>
<tr>
<td></td>
<td>More efficient commuting trips</td>
</tr>
<tr>
<td></td>
<td>Demand for energy efficiency vehicle</td>
</tr>
<tr>
<td></td>
<td>Decrease oil fuel consumption and increase alternative fuel utilization</td>
</tr>
</tbody>
</table>
Possible impact of MP3EI 2010-2050

<table>
<thead>
<tr>
<th>No</th>
<th>Policies</th>
<th>Possible effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Promoting road infrastructure construction</td>
<td>Increase private vehicle population and demand, and increase road based freight</td>
</tr>
<tr>
<td>2</td>
<td>Revitalization of passenger and freight sea and river based transportation</td>
<td>Increase demand and volume of water based transportation</td>
</tr>
<tr>
<td>3</td>
<td>Increasing and betterment of air transportation</td>
<td>Increase air transportation demand and volume</td>
</tr>
<tr>
<td>4</td>
<td>Development of rail transportation</td>
<td>Increase rail based demand and volume</td>
</tr>
<tr>
<td>5</td>
<td>Reduction of cost for logistic system</td>
<td>Increase freight transport integration and efficiency</td>
</tr>
</tbody>
</table>
### Possible Impact of RAN/RAD GRK

<table>
<thead>
<tr>
<th>No</th>
<th>Policies</th>
<th>Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Development and implementation of ITS</td>
<td>- Better travel plan and fuel efficiency,</td>
</tr>
<tr>
<td>2</td>
<td>Traffic Impact Control</td>
<td>- Reduce congestion and emission</td>
</tr>
<tr>
<td>3</td>
<td>Congestion Charging and Road Pricing</td>
<td>- Reduce private car usage, congestion, and fuel consumption</td>
</tr>
<tr>
<td>4</td>
<td>Revitalization of public transport system</td>
<td>- Increase of public transport share and reduce private vehicle travel</td>
</tr>
<tr>
<td>5</td>
<td>Development of BRT system</td>
<td>- Increase mode share of BRT, and fuel efficiency</td>
</tr>
<tr>
<td>6</td>
<td>Development of NMT</td>
<td>- Better NMT share and fuel efficiency</td>
</tr>
<tr>
<td>7</td>
<td>Electrification of railway system</td>
<td>- Increase rail passenger and shift from private vehicle</td>
</tr>
<tr>
<td>8</td>
<td>Emission standardization, labeling and emission based tax and</td>
<td>- Reduce fuel consumption and emission</td>
</tr>
<tr>
<td>9</td>
<td>CNG converter kits</td>
<td>- Reduce fuel consumption and CO2 emission</td>
</tr>
<tr>
<td>10</td>
<td>Eco driving and speed limitation</td>
<td>- Reduce fuel consumption and vehicle emission</td>
</tr>
</tbody>
</table>
Improved RAN GRK Scenario

**Business as Usual - BAU**
- Respecting current policy taken by the government
- Predicting impact of current development and economic policy: RPJMN, MP3EI
- Elaborate scenario for current policies
- Considering dynamic in policy implementation

**Improve RAN GRK**
- Additional policy beyond RAN GRK
- Introduction of more AVOID policy options
- Advance vehicle technology
- Fuel pricing and alternative fuels
- Road pricing and behavioral change
TESTING OF SCENARIO TOTAL EMISSION (Ton eCO2/per year)

- **Business as Usual**
- **RAN GRK**
- **Improved RAN GRK**

16% by 2025

**CO- BENEFITS**
Per capita emission

**Graph Description:**
- The graph displays the change in TTW CO2/capita (tCO2/yr/person) from 2005 to 2050 for various transportation modes.
- The y-axis represents the TTW CO2/capita, ranging from 0.00 to 0.80 tCO2/yr/person.
- The x-axis lists years from 2005 to 2050.
- Different colors and categories represent various transportation modes, including FreightShip, FreightAir, FreightRail, Trailer, Truck, PassShip, PassAir, LRT, PassRail, 2W/3W, BRT, Bus, SUV, and LV.

**Transportation Modes:**
- FreightShip
- FreightAir
- FreightRail
- Trailer
- Truck
- PassShip
- PassAir
- LRT
- PassRail
- 2W/3W
- BRT
- Bus
- SUV
- LV
- Car
Total emission
Co – Benefit from policy improvement

- Transport policies devised GHG mitigation, transport efficiency, system competitiveness and energy consumption.
- Policy improvement will create co-benefit in energy consumption (61% reduction) congestion relieve (35%).
- Transport competitiveness, energy efficiency and GHG emission reduction will help Indonesia to achieve global commitment as well as improving the economic and local environmental condition.
Visioning Future Policy

- **Significant improvement is needed** to achieve national commitment and meet global target.
- **Introduction of various “avoid” policies:** promotion of TOD, higher fuel pricing,
- **Shift to more advance vehicle technology and cleaner fuel options**
- **Push policy** for transport behavioral changes: set the right price for fuel, and road pricing.
- **Capacity building** to manage and safeguard consistent policy implementation.
Combination of transport competitiveness, energy efficiency and GHG emission reduction will help the Indonesian government in achieving global climate change commitment as well as improving the economic and local environmental condition.