GHG reduction approaches of Transport Sector in Japan

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1. Total Target of CO2 of Japan

- 6% 1990
+7.6% 2002

Estimation by recent action in 2010

- Energy oriented CO2
  (△4.8% △59mil.t-CO2/year)

- Non energy, methane

- Freon gas
  (△1.3% △1mil.t-CO2/year)

- Conservation of forest

- International aid
  Kyoto mechanism
  (△0.4% △7mil.t-CO2/year)

※ 約束期間は2008～2012年
## 2. Sectoral Target CO2 in Japan

<table>
<thead>
<tr>
<th></th>
<th>FY1990</th>
<th>FY2002</th>
<th>(B - A) / A</th>
<th>FY2010</th>
<th>(C - A) / A</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td></td>
<td></td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Mil.t-CO2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy Oriented CO2</td>
<td>1,048</td>
<td>1,174</td>
<td></td>
<td>1,056</td>
<td></td>
</tr>
<tr>
<td>Industry</td>
<td>476</td>
<td>468</td>
<td>(-1.7%)</td>
<td>435</td>
<td>(-8.6%)</td>
</tr>
<tr>
<td>Other civil</td>
<td>273</td>
<td>363</td>
<td>(+33.0%)</td>
<td>302</td>
<td>(+10.7%)</td>
</tr>
<tr>
<td>Other industry</td>
<td>144</td>
<td>197</td>
<td>(+36.7%)</td>
<td>165</td>
<td>(+15.0%)</td>
</tr>
<tr>
<td>Home</td>
<td>129</td>
<td>166</td>
<td>(+28.8%)</td>
<td>137</td>
<td>(+6.0%)</td>
</tr>
<tr>
<td>Transport</td>
<td>217</td>
<td>261</td>
<td>(+20.4%)</td>
<td>250</td>
<td>(+15.1%)</td>
</tr>
<tr>
<td>Energy Transfer</td>
<td>82</td>
<td>82</td>
<td>(-0.3%)</td>
<td>69</td>
<td>(-16.1%)</td>
</tr>
</tbody>
</table>
2. 1. CO2 from Transportation in Japan

-21% of total CO2 is from Transportation
-90% of Transportation is from Automobiles
-60% of Automobiles is from Individual Cars

CO2 from Industrial Sections in FY2003

CO2 of Transportation in FY2003
2.3. Ground Policy

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2.2. A Trend of CO2 from Transportation

- Target Volume of Transportation is 250 mil. t-CO2/year
- From 1997 CO2 from Transportation is decreasing
- 1 mil. t-CO2/year is to be decreased every year

Trend of CO2 from Transportation

Gasoline passenger car average fuel efficiency (km/L) has improved since 1997. If road improvements result in higher average travel speeds, CO2 emissions will decrease.

Average travel speed (km/h)

※Average travel speed in the urban (DID) area is 20.6km/h
3. A trend of average fuel consumption ratio of individual cars

Ave. of new cars is being improved.
Ave. of hold cars is to be improved.
3.1. Comparison of CO2s among various automobile types

**Ratios per gasoline car (=100)**

- Gasoline
- Diesel
- Gasoline hybrid
- Gasoline hybrid in future
- Diesel hybrid in future
- Battery by hydrogen from gas
- Battery by hydrogen from gas target
- Battery by hydrogen from coal
- Battery by natural energy
- Battery by bio-mass

**Graph Key**
- Orange: Tank to Wheel
- Blue: Well to Tank
4. Better Transport Condition

Relationship between average speed and environmental load

PM  NO$_2$  CO$_2$
5. Public transport (EST model Projects)

Purposes
• to encourage spontaneous effects from local
• to advertise advanced projects

Contents
• 1/3-1/1 government subsidization
• Total 1-100 mil. JPY
• 1-2 year project

Criteria for subsidization
• consensus-building among different concerned parties including transit companies to common goal
• to be expected synergy effect concentrating on multiple measures
• to promote systematic progress after termination of the Project
5.1. Social Experiment for EST

**Example of menu of the Model Project**

- **Encouragement of mass transit use**
  - Promotion of LRT Project
  - Introduction of IC Card
  - Improvement of omnibus town services
  - Improvement of PTSP bus stop
  - Bus Location System and Non-step bus
  - Common IC Card
- **Facilitation of traffic flow**
  - Improvement of pedestrian way
  - Improvement of cycle track
  - Elimination of bottleneck crossing
  - Improvement of road maintenance and improvement
  - Reduction of roadwork
  - Promotion of countermeasures against illegal parking
- **Measures for pedestrian and cyclist**
  - Priority lane for bus
  - Promotion of pedestrian way and cycle track
  - Promotion of low-emission vehicles
- **Introduction of low-emission vehicles**
  - Encouragement to introducing CNG bus
  - Preferential treatment for low-emission vehicles
- **Diffusion and enlightenment**
  - Activities for diffusion and enlightenment
  - Promotion of LRT Project
  - Encouragement of mass transit use
  - Promotion of LRT Project
  - Promotion of omnibus town services
  - Improvement of PTSP bus stop
  - Bus Location System and Non-step bus
  - Common IC Card
  - Improvement of pedestrian way
  - Improvement of cycle track
  - Elimination of bottleneck crossing
  - Improvement of road maintenance and improvement
  - Reduction of roadwork
  - Promotion of countermeasures against illegal parking
  - Priority lane for bus
  - Promotion of pedestrian way and cycle track
  - Promotion of low-emission vehicles
  - Encouragement to introducing CNG bus
  - Preferential treatment for low-emission vehicles
### 5.2 An example of the Social Experiment in Sapporo City

<table>
<thead>
<tr>
<th>Basic policies</th>
<th>Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enriching transport system centering on mass transit</td>
<td>Amelioration of accessibility to the urban centers</td>
</tr>
<tr>
<td></td>
<td>Amelioration of services within the urban centers</td>
</tr>
<tr>
<td>Facilitating traffic flow with reasonable car use</td>
<td>Measures for disposal</td>
</tr>
<tr>
<td></td>
<td>Measures for on-street parking</td>
</tr>
<tr>
<td></td>
<td>Measures for traffic passing over urban centers</td>
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<td></td>
<td>Measures for winter traffic</td>
</tr>
<tr>
<td></td>
<td>Measures for bicycles</td>
</tr>
<tr>
<td>Realizing city revitalization by reallocation of road space</td>
<td>Classification of urban roads by function</td>
</tr>
<tr>
<td></td>
<td>Utilization of spaces for pedestrian, bicycle, and vehicle</td>
</tr>
<tr>
<td></td>
<td>Utilization of road space</td>
</tr>
<tr>
<td>Development of the Project by means of continuation of social experiment and</td>
<td>Development of the Project and rules-based approach by means of</td>
</tr>
<tr>
<td>collaboration with residents</td>
<td>continuation of social experiment and collaboration with residents</td>
</tr>
</tbody>
</table>
|                                                                                | Monitoring of traffic trend and understanding of resident assessment    | (satisfaction level)
5.2.1. Operation Area in Sapporo

- Bicycle lane
- Designated disposal space
- Bus lane
- Taxi terminal
- Cleanway (No-parking & No-standing)
- Bicycle-parking space

- Jotetsu Bus
- Donan Bus, Chuo Bus
- Chuo Bus
- Jotetsu Bus, City Bus
5.2.2. Examples in Sapporo

Bicycle Lane and Taxi Terminal

Disposal Space