Efforts for Environmentally Sustainable Transport in Japan

February 24th, 2009

MOE : Ministry of the Environment, Japan
MLIT: Ministry of Land, Infrastructure, Transport and Tourism, Japan
Outline

- Promotion of Public Transportation Measures
- Non-Motorization Vehicles
- Land Use Measures
- Road Safety Measures and Public Health Issues
- Energy – Efficiency
- Conclusion
Act on Promotion and Restoration of Regional Public Transport (Act No.59 of 2007)

Necessities for Promotion and Restoration of Regional Public Transport

- Maintenance of the transport
- Promotion of Sightseeing
- Environmental Problems

Basic Guidelines ...
Formulated by Competent Minister
Minister of Land, Infrastructure and Transportation and Minister of Internal Affairs and Communications

1. Formulation and Implementation of Coordinative Plan

- Statutory Committee
  - Municipality
  - Public Transport business operator
  - Administrator of Roads and Ports
  - Public Safety Commission
  - Inhabitant
  - etc.

- Comprehensive Coordinative Plan of Regional Public Transport
  - Improvement of the Transfer
  - Local Railroads
  - BRT
  - "Community Bus"
  - LRT
  - Improvement of Transport by Sea

[Specified Project of Regional Public Transport]
- LRT - BRT, Promotion of "Omnibus Town Program"
- Improvement of Transport by Sea - Improvement of the Transfer - Local Railroads

Support by the Government
- Budget
- Legal Measures

Legal Measures
- Duty of the consent for the request of the participation to the committee
- Public comments
- Suggested system
- Obligation of the respect of the discussion result

2. Promotion of New Transport Services

- DMV (Dual Mode Vehicle)
- IMTS (Intelligent Multimode Transit)
- Amphibian Bus
- etc.
Seamless Transfer Using Electronic Money

- Easy to transfer using PASMO and SUICA
- Number of total cards issued: 38 million

42 million inhabitants in the Tokyo Metropolitan area
24 Train operators and 68 Bus transit Operators in the area

<table>
<thead>
<tr>
<th>Electronic Money</th>
<th>Data</th>
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</thead>
</table>
| **Suica**        | **Company**: JR East  
|                  | **No. of cards issued**: 26.99 million (December 2008)  
|                  | Mobile Suica approx. 1 million (March 2008)  
|                  | **No. of settlements**: 20.35 million/month (March 2008)  
|                  | **Associated Stores**: 33,750 stores (March 2008)  |
| **PASMO**        | **Company**: Tokyo Metro  
|                  | **No. of cards issued**: 11 million (December 2008)  
|                  | **No. of settlements**: 4.44 million/month (March 2008)  
|                  | **Associated Stores**: 4,950 stores (March 2008)  |

At the ticket gates in the station

Bus fare payment

Shopping

[Source] PASMO website
Bus Location System

- Improve convenience by sending information on real-time bus operations to mobile phones

**Bus Location System**

**System Image**

- **Base Station**
- **Bus Station**
- **Office/Home**
- **Central unit**
- **Packet communication base station**
- **Packet communication**
- **Bus approach information**
- **Location information acquisition by GPS**
- **In-car device**
- **Approach unit**

**Function**
- Monitor bus service situations
- Approach display at bus stations and on computers and mobile phones

**Effect**
- Streamline service management
- Improve user service

**On Road**

% Num. Of Use per Person

- Increase 30%
- Decrease 1%
- Not change 69%

**Source**
- Survey of Kyoto Transportation Division, 2000

[Source]
http://www.hrr.mlit.go.jp/road/hrr-conference/2nd-data2-7-8.pdf#search
The prototype of bicycle friendly development is conducted in the 98 pilot areas

- Bicycle lanes and roads 2,660km (2007) : bicycle lane per road = 0.2%
- Bicycle use is promoted by bicycle friendly network development

- Bicycles get in the way of pedestrians on the sidewalks
  - Set up a bicycle-only lane.

- Bicycles get in the way of pedestrians and vehicles on the Roads
  - Set up a bicycle-only lane.

- Too many pedestrians and bicycles cannot pass through (Set up a detour route)

- Bicycles get entangled with pedestrians on the sidewalks
  - Set up a bicycle-only lane.

- Bicycles get in the way of cyclists on the sidewalk/bicycle lane
  - Clearly show where bicycles are allowed to cycle on the sidewalk/bicycle lane

- Too many pedestrians and bicycles cannot pass through (Set up a detour route)
Promote Bicycle Use (2)

Case example of the “Bicycle Lane”

- Reduce vehicle Lane to create New Bicycle Lane
In Japan, there are many companies that permit their employees to commute by car even if it is a short distance.

On the other hand, there is a movement that environmentally conscious private companies encourage their employees to shift from car commuting to bicycle commuting.

[Source] “Status of automobile management for commuting and work” (Labour Relations Report No. 3698)
Low-Carbon Community Development Local Measures Promotion Project

**Objective**  
Change the existing “community” to a low-carbon community by changing its city structure and social capital through the control of vehicle transportation demands, the improvement of public transportation convenience and the utilization of un-used energy and national capital, to create a model low-carbon society.

- Construct a community/city structure where amenities are allocated within walking distances
- Make a thorough, low-carbonate community concurrently with the town reorganization by ensuring “wind paths” and intensively introducing renewable energy.

<table>
<thead>
<tr>
<th>1st year</th>
<th>Next Year</th>
<th>3rd year onwards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set up a CO₂ reduction goal</td>
<td>Implement CO₂ reduction simulation</td>
<td>Implement local measures described in the plan,</td>
</tr>
<tr>
<td>Formulate a low-carbon community development plan including multiple local countermeasures</td>
<td>Low-carbon community development plan</td>
<td>Delegation 450 million yen</td>
</tr>
<tr>
<td>- Set up a CO₂ reduction goal</td>
<td>- Countermeasures to achieve the goal</td>
<td></td>
</tr>
<tr>
<td>- Measures to control vehicle transportation demands</td>
<td>- Measures to improve public transportation convenience</td>
<td></td>
</tr>
<tr>
<td>- Measures to promote the efficient land use</td>
<td>- Measures to promote efficient energy use</td>
<td></td>
</tr>
<tr>
<td>- Utilize un-used/renewable energy</td>
<td>- Develop a low-carbonate community by utilizing natural capital</td>
<td></td>
</tr>
<tr>
<td>- Measures to promote the efficient land use</td>
<td>Others</td>
<td></td>
</tr>
</tbody>
</table>

**Support**
- MOE
- Global Warming Countermeasures Regional Committee
  - Local government, transport companies, large commercial facilities, local residents, etc
- MLIT

**Advise**
- MOE
- Global Warming Countermeasures Regional Committee
  - Local government, transport companies, large commercial facilities, local residents, etc
- MLIT

**Delegation** 450 million yen  
- New: 20 million yen x 10 places  
- Continued: 10 million yen x 25 places  
- Delegated to: Regional committee or private companies participating in the regional committee

**Subsidies** 500 million yen (new)  
- Large: 200 million yen x 1 place  
- Medium: 100 million yen x 2 places  
- Small: 50 million yen x 2 places  
- Paid to: Implementer of a project described in a plan, or of an environmental model city  
- Payment share: 1/2 (3 years at max)

**Promotion of public transportation usage by introducing IC cards and visualizing CO₂ reductions**

**Introduction of community bicycles and car-sharing**

**Introduction of transit malls and Park & Ride**

**Development of apartments which use solar power systems**

**Introduction of regional air conditioning concurrently with re-development of the area**

**Ensuring of “wind paths” and green spaces which function as a cold source in the area**
The Number of Traffic Accident Fatalities Has Been Steadily Decreasing

- Annual traffic fatalities in 2008 were 5155, having achieved the goal of making the annual number less than 5500 by 2010, two years earlier.
- Within the next 10 years or so starting from this year, we will decrease traffic fatalities by 50% and work towards the realization of the world’s safest road traffic.
Fatalities occurred most frequently among those riding in automobiles.

Total traffic accident fatalities were reduced through the decrease in riding in automobiles.

Changes in Traffic Accident Fatalities, by Mode of Transportation

- 4,835 (1993)
- 2,359 (2006)
- Decrease of 559 per 2 years

Notes:
1. Source: National Police Agency (figures for “Other” omitted)
2. Figures in parentheses show percentage (%) of fatalities by mode of transportation.
Decrease of fatality rates by fasten seatbelt

Decrease of fatality rates as the percentage of persons who fasten seatbelts increases

Difference in fatality rates (2007)
- When fastening seatbelts: 0.16%
- When not fastening seatbelts: 1.53%

+: 1.53 per 0.16=9.4times

1. Source of information: the National Police Agency
2. Percentage of persons who fasten seatbelts = Number of persons killed/injured when fastening seatbelts (while driving) / Number of persons killed/injured (while driving) x 100
3. Fatality rate (while driving) = Number of persons killed (while driving) / Number of persons killed/injured (while driving) x 100

Fewer Drunk Driving Fatalities (Down by Half From 10 Years Ago)

The reduction in drunk driving fatalities in recent years is the effect of reinforced drunk driving penalties and other measures. Established heavier penalties for driving while intoxicated (DWI) and anti-drunk driving efforts led by relevant agencies and groups. The Law for Partial Amendment of the Road Traffic Law (Law No. 51 of 2001)

Number of Fatal Road Accidents (Primary Party), by Alcohol Consumption

Notes: 1. Source: National Police Agency
2. Primary party is the party most to blame for the accident, or, when the parties involved share nearly equal fault, the party that suffered the least harm.
In accordance with the Air Pollution Control Law, state of air pollution is constantly monitored throughout Japan at 2,006 monitoring stations by prefectural and ordinance-designated municipal governments.

- 1,561 ambient air pollution monitoring stations
- 445 roadside air pollution monitoring stations

Air quality has been improved in general, however there remain still some areas, where it should be further improved, mainly in metropolitan areas.

[Source] Road side air pollution monitoring Stations
Special measures for air pollution in metropolitan areas

- **Target Areas**
  - Metropolitan Areas
    - Tokyo metropolitan area, Nagoya, Osaka, and Kobe

- **Goal**
  - To comply with EQS (NO$_2$ & SPM) by 2010

- **Measures**
  - Total Emission Reduction Master Plan by Local Governments
  - Restriction of outdated vehicles’ renewed registration
  - Vehicles Management Plan by Enterprises
Automobile NOx/PM Law (2)

Target areas

Nagoya Area

Osaka/Kobe Area

Tokyo Area

Trend in EQS Attainment of NO\textsubscript{2} in Metropolitan area

Trend in EQS Attainment of SPM in Metropolitan area
• **Date of enforcement**  January 1, 2008  

• **Goal**  To achieve EQS by 2010 as soon as possible  

• **New measures**
  
  (1) Measures for local pollution  
  • Designation of “Priority area” by prefectural governor  
  • Obligation of measures for new specified buildings  

  (2) Measures for inflow vehicles  
  • Expanding to surrounding areas where vehicle operation businesses are obliged to make measures  
  • Obligation of effort for cargo owner
Expanding to surrounding areas for obligation of measures

Flow of designation of surrounding area

1. Priority area of measures for inflow vehicles is designated

2. Surrounding area where many vehicles inflow to the above area is designated
Vehicle Emission Standards Framework of Vehicle Emission Control

**Air Pollution Control Law**
- Ministry of the Environment
- Maximum permissible level of vehicle emissions

**Road Transport and Motor Vehicle Law**
- Ministry of Land, Infrastructure, Transport, and Tourism
- Establish emission standard in vehicle safety standard
- Vehicles fail to meet the standard are not qualified for initial registration
Trends of regulations (Vehicle Emission Standards)

Transition of emission regulation on NOx in Japan

<table>
<thead>
<tr>
<th>Year</th>
<th>NOx (g/kWh)</th>
<th>PM (g/kWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>0.13</td>
<td>0.03</td>
</tr>
<tr>
<td>2009-2010</td>
<td>0.027</td>
<td>0.013</td>
</tr>
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</table>

Maximum permissible level of vehicle exhaust for Air Pollution Control Law after 2009 has revised in December, 2007

Comparison of emission regulation Japan, USA, EU

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<td>USA (2010-)</td>
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<td>0.027</td>
<td>0.013</td>
</tr>
<tr>
<td>Europe (2008-)</td>
<td>0.03</td>
<td>0.03</td>
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Setup of environmental criteria for micro particle matters with a small diameter (PM 2.5) in December, 2008.
CO₂ Emissions in Japan’s Transport Sector

- CO₂ emissions from transport have been decreasing after peaking in FY2001.

* “Other Modes” includes emissions from buses, taxies, railways, ships and aircraft.
Environmental technologies have become the new competitive force. Widespread use: accum. 1 million cars

**Japan’s targets (the long-term goal):**
Reducing 60 to 80 percent of its current level of emissions by 2050

**For example:** *Introduction of next-generation vehicles*

**Target:** By 2020, make next-generation cars account for 50% of new car sales in order to promote emission cuts in the transportation sector that accounts for approx. 20% of carbon dioxide emissions in Japan.

*Prius*

Hybrid Vehicle, Toyota

*i MiEV*
Scheduled to be released in summer of 2009

Electric Vehicle, Mitsubishi Motors

Photo at the Japan National Press Club in June 2008, The Prime Minister at the time was Yasuo Fukuda.
Promoting the use of Eco-cars that are environmentally friendly through financing subsidiaries, loans and tax breaks, Pilot project to Launch EV.

**Financing Subsidiaries**
- 1/2 of the difference in value between current vehicles for the introduction of CNG buses / trucks, authorised hybrid buses / trucks
- 1/3 of upgrading costs for upgraing to CNG vehicles

**Loans**
- Low-interest Loans from the National Treasury for Medium and Small Businesses

**Tax breaks**
- Electric vehicles (including fuel cell vehicles), natural gas vehicles, methanol vehicles and low-consumption or low-emission gas authorised vehicles (including LPG vehicles) are, when they are registered as new vehicles in 2006 or 2007, eligible for vehicle tax reductions for one year in the following year.

[Source ] Ministry of Land, Infrastructure and Transport)
Current fuel efficiency standards (Target year: 2015)

- March 2006: World’s first standards for heavy-duty vehicles (trucks, buses etc.)
- July 2007: Stricter standards for light-duty vehicles

Average Fuel Efficiency of New Gasoline Vehicles

[Source] Ministry of Land, Infrastructure and Transport
Promotion of Eco Driving (Green Driving)

Kyoto Protocol Goal Achievement Plan (approved by cabinet) (extract) (Overall revision on Mar 28, 2008)

- Promotion of environmentally conscious vehicle usage
  - Diffuse and promote Eco Drive (Stopping engine idling when vehicle is stopped or parked, safe driving at a constant speed according to the traffic levels, etc).
  - To achieve the above, raise the nation’s awareness through PR activities by the Eco Drive Diffusion Network consisting of the 4 concerned ministries playing the central role, and prepare the environment for Eco Drive diffusion (the rest is omitted)

Action Plan for the Diffusion and Promotion of Eco Drive
Eco Drive Diffusion Network June, 2006

- Position November as “Eco Drive Promotion Month” and aggressively work to diffuse and promote Eco Drive.
- Formulate a new “10 tips for Eco Drive” and use it commonly for the diffusion and promotion of Eco Drive.
  1. Softly depress the accelerator “e Start”
  2. Drive with less acceleration and deceleration
  3. Release the accelerator early
  4. Use the air conditioner moderately
  5. Stop idling
  6. Properly perform warm-up.
  7. Utilize traffic information
  8. Frequently check the air pressure of the tires
  9. Leave unnecessary items
  10. Don’t park the car illegally

The project covers things that the government, local governments, private organizations and drivers, etc must work on with an aim of sufficient diffusion and implementation of Eco Drive.
Promotion of Eco Driving (Green Driving)

**Promotion of Eco Driving technique**

**Case example 1**
Fuel consumption improved by approx. +15%

**Case example 2**
Reduce Accidents -31% per year

**Eco Drive Management System**
Pay part of the expenses when truck/bus/taxi companies purchase Eco Drive-related devices necessary to implement EMS (Eco Drive Management System) in cooperation with the Ministry of Economy, Trade and Industry, in order to continuously implement Eco Drive according to the plan for trucks, buses, taxis, etc and to integrally instruct those companies about driving conditions.

[Source] “Eco Driving contest in Japan”
Case Example of Eco Driving (Green Driving) measures

Outline of Eco Drive (EMS)

- Introduce the device
  - Device on board

- Driving
  - Start driving
  - Excess the acceleration speed limit
  - Prevent sudden starting/sudden acceleration
  - Warning beep

- Clean Emission
  - Thoroughly ban idling

- Seminar
  - Set up driving-related targets (controlling sudden acceleration, thoroughly ban idling, etc)

- Device for companies
  - Evaluate a series of driving conditions

- Driving instruction
  - Organize Eco Drive Seminars, etc

- Company A
  - Data
  - Instruction given by the Eco Drive manager
Asian Model for Low Carbon & Sound Material-Cycle Society
Develop economically while living in harmony with the environment to build a sustainable society

Propose a model of harmony with nature
Improve soft and hard infrastructure for adaptation measures
Understand/foresee impact/vulnerability through observation and research

Formulate a Vision for Sound Material-Cycle Society in East Asia
Support the 3Rs in each country using Japan’s technologies. Stop improper transfer of recyclable resources across borders.
Promote effective utilization of recyclable resources throughout Asia

Clean Asia Initiative
Support for the Asian Economic and Environmental Community Vision

Objectives of policies and their fundamental direction

**Achieve a low-carbon and low-pollution society**
- Share a vision to accelerate the shift to a low-carbon society
- Promote co-benefit type development that simultaneously achieves countermeasures against environmental pollution and global warming

**Achieve a sound material-cycle society**
- Formulate a Vision for Sound Material-Cycle Society in East Asia
- Support the 3Rs in each country using Japan’s technologies. Stop improper transfer of recyclable resources across borders.

**Adapt to climate change and achieve a society in harmony with nature**
- Propose a model of harmony with nature
- Improve soft and hard infrastructure for adaptation measures
- Understand/foresee impact/vulnerability through observation and research

**Cross-sectional Goals:**
Promote “greening” in the market
- Promote green purchasing and greening of the supply chain
- Promote environmentally friendly economic activities in financial and capital markets

**Establish Fundamental Partnerships**
- Strengthen partnerships that support a society in harmony with nature
- Standardize and network environmental monitoring and countermeasures
- Preserve the mutual supportiveness of environment and trade
- Develop and utilize human resources

(Expand a package composed of Japan’s experiences/technologies/organizations/systems while taking into consideration country’s traditions and culture)

**Promote and support** The Regional EST Forum in Asia through the Clean Asia Initiative
INNOVATION FOR A GREEN ECONOMY AND SOCIETY (1)

**Basic Idea**

- Support originality in the region (Support)
- Drastic Expansion of scales and functions of regional environment funds in prefectural and city governments
- Promote public buildings with low carbon emissions

**Examples of concrete measures**

- Take the first step from consumption and a community which is connected directly with peoples’ life.
- Explosive dissemination of energy saving home appliances (Spark)
- Eco Action Point model matching gift (Government supports Eco Point)
- Start the environment and energy finance (Start)
- Promote financing for companies addressing eco. Establish the structure and the interest-free loan system (interest subsidy)

- An windmill built with citizen funds
- Velib in Paris

Support some of East Asia cities intensively, and form a model city of a low carbon society and a sound material society
INNOVATION FOR A GREEN ECONOMY AND SOCIETY (2)

Support some of East Asia cities intensively, and form a model city of a low carbon society and a sound material society

On how to progress study
(Assemble wisdoms from various fields)

- Interview wise men of various industries including Minister of the Environment.
- Invite opinions and ideas widely through the internet (gnd@env.go.jp)
- Gain cooperation with parties concerned widely, including ministries and government departments, and get a consensus.

Davos Conference
(28 Jan. - 1 Feb.)
Aerial view of Davos in winter

Conclusion of Innovation for Green Economy and Society

Ad-hoc Working Group meeting on the United Nations Framework Convention on Climate Change
- Report on examination’s progress of mid-term target
  (29 March - 8 April)
- Discussion on negotiation draft for the next framework
  (1 - 12 June)

At about end of March (Potential)

G8 Summit
(July)
La Maddalena island (Italy)
For more information, please visit our Website

Ministry of the Environment

Ministry of Land, Infrastructure and Transport