Using Intelligent Transport System (ITS) for Sustainable Development of Asia

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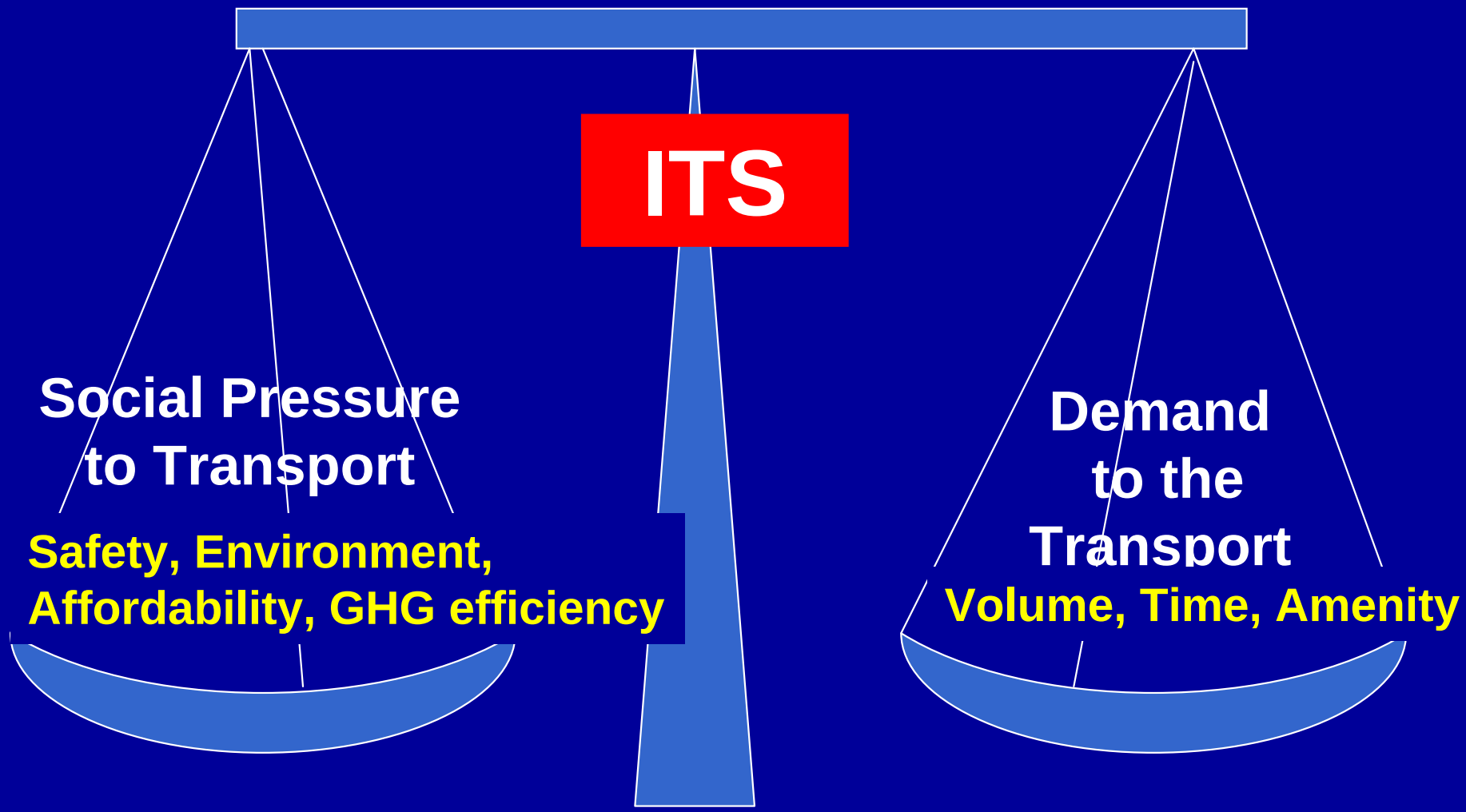
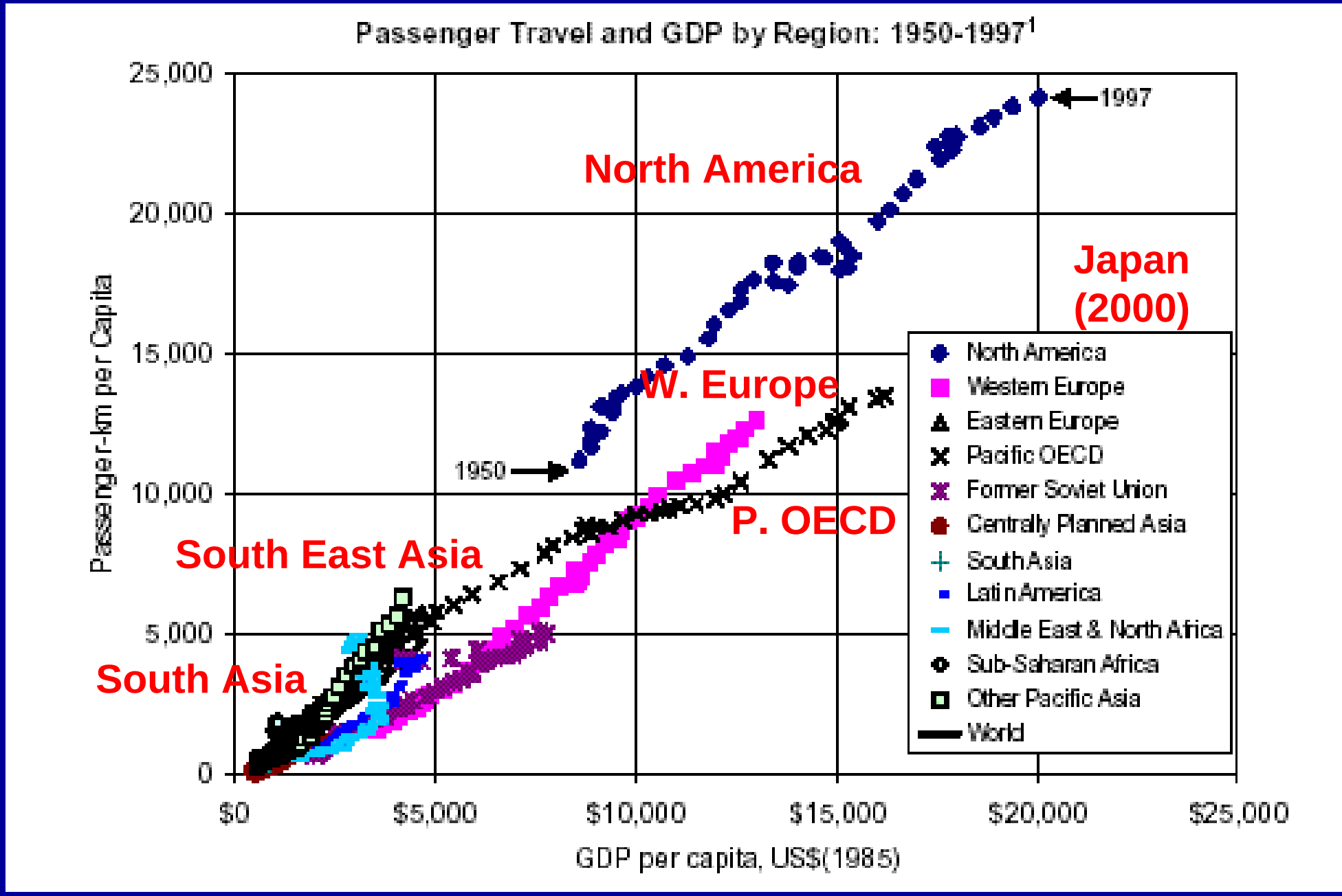
Role of ITS for Sustainable Mobility



Economic Growth and Mobility Demand



Casualties of Traffic Accidents (WHO)

TABLE 1

Change in rank order of DALYs for the 10 leading causes of the global burden of disease

1990		2020	
Rank	Disease or injury	Rank	Disease or injury
1	Lower respiratory infections	1	Ischaemic heart disease
2	Diarrhoeal diseases	2	Unipolar major depression
3	Perinatal conditions	3	Road traffic injuries
4	Unipolar major depression	4	Cerebrovascular disease
5	Ischaemic heart disease	5	Chronic obstructive pulmonary disease
6	Cerebrovascular disease	6	Lower respiratory infections
7	Tuberculosis	7	Tuberculosis
8	Measles	8	War
9	Road traffic injuries	9	Diarrhoeal diseases
10	Congenital abnormalities	10	HIV

1.2 million

2 million ?

DALY: Disability-adjusted life year. A health-gap measure that combines information on the number of years lost from premature death with the loss of health from disability.

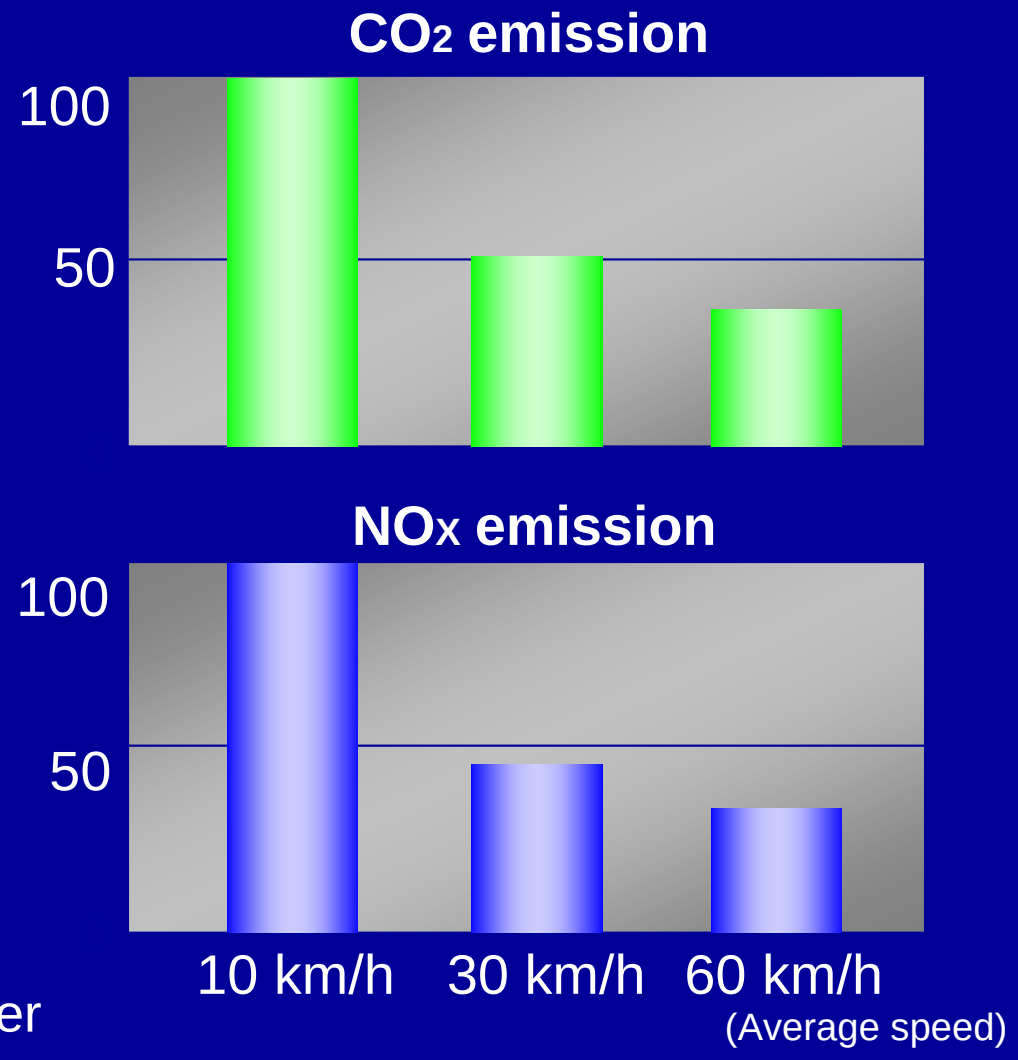
Source: reference *1*.

Congestion

Average speed on weekday morning/evening

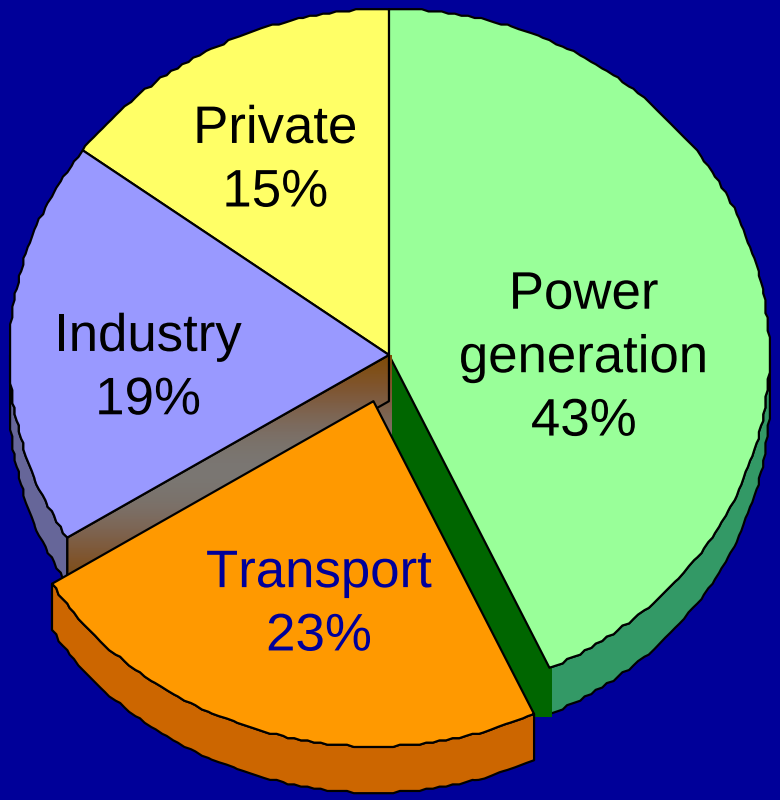
Less than 20 km/h
30 - 40 km/h
20 - 30 km/h
40 km/h or higher

Exhaust gas emissions at different speeds



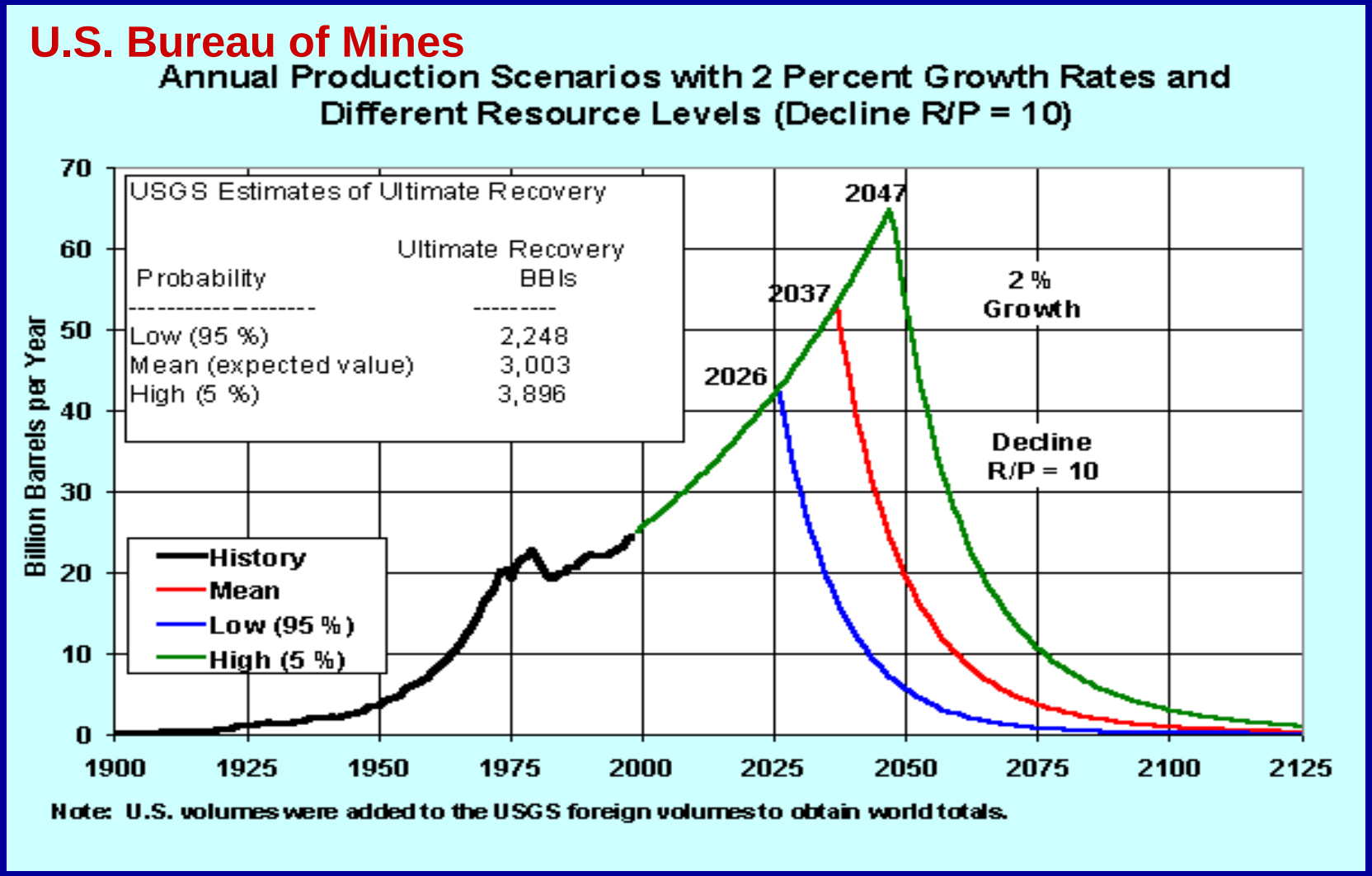
Source: Ministry of Land. Infrastructure and Transport Kanto Regional Development Bureau

Global CO_2 Emission by Sector



- **Share of the transport sector is 23%.**
- **To reduce CO_2, comprehensive measures in each sector are needed.**

Future of Petroleum



Extractable volume of crude oil may peak in 20 - 50 years.

How can ITS help in solving the problems?

ITS to help development of Asia

(1) Helping better use of road infrastructure

- ✓ Increasing traffic capacity without new roads
- ✓ Better planning of road networks by combining infrastructure and ITS

(2) Improving traffic safety

- ✓ Reduction of casualties by traffic accidents
- ✓ Robust Transportation Systems against natural Disasters

(3) Reduction of GHG emission

- ✓ Help achieving GHG reduction target
- ✓ Help adapting to climate change

(4) Improving public service

- ✓ Smooth operation of emergency vehicles
- ✓ Introducing next-generation public transport

(5) Creating new industry

- ✓ Boosting/creating environmental business
- ✓ Boosting/creating IT business

Optimization of Traffic Management

-Better use of transport infrastructure-

World's largest Traffic Control Center at Metropolitan Police Department in Tokyo

■ Character information board

■ Small (character) information board

■ Preset message board

■ Variable message board

■ Formulated information board

■ Roadside radio transmitter

■ Parking guidance system

■ Variable road sign

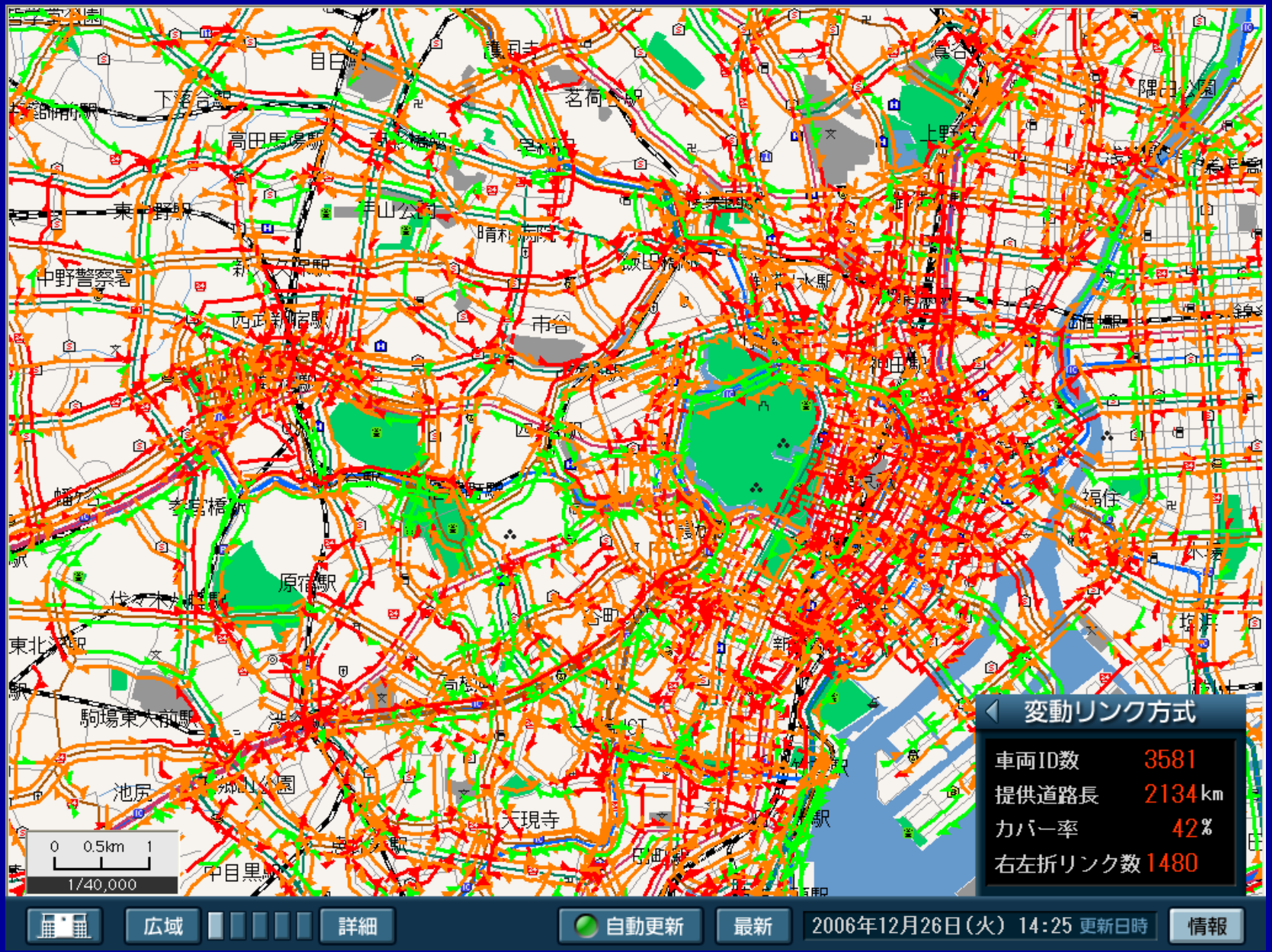
■ Personal traffic information service

■ Small (travel time) information board

source: UTMS

New Urban Transport System

Traffic Management System with Probe Data Collection



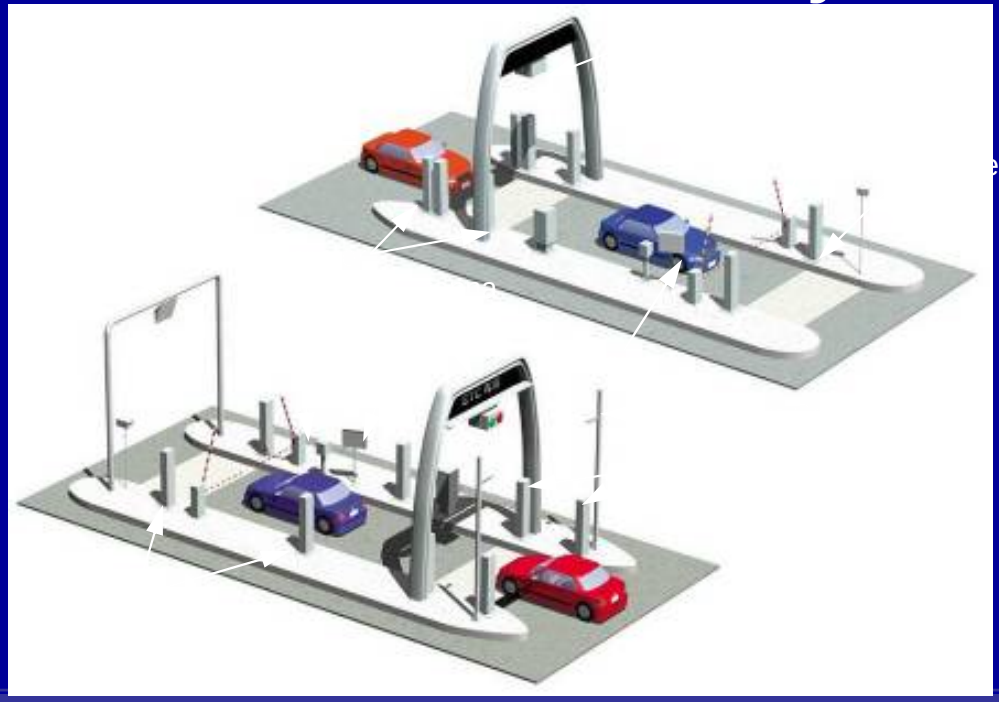
1. Next-generation Navigation Systems

Dynamic Route Guidance

Traffic Information

Private Sector Services

2. Electronic Toll Collection Systems



etector

Easing Traffic Congestion by linking road development and ITS from planning stage

Transport Demand Management in Toyota City

[Behavioral Change of People]

- Modal shift
  (2,000 cars to public transport)
- Flexible working hours
- Park and ride

[Upgrade of Road Infrastructure]

- Additional lanes
- Dedicated lanes for turning

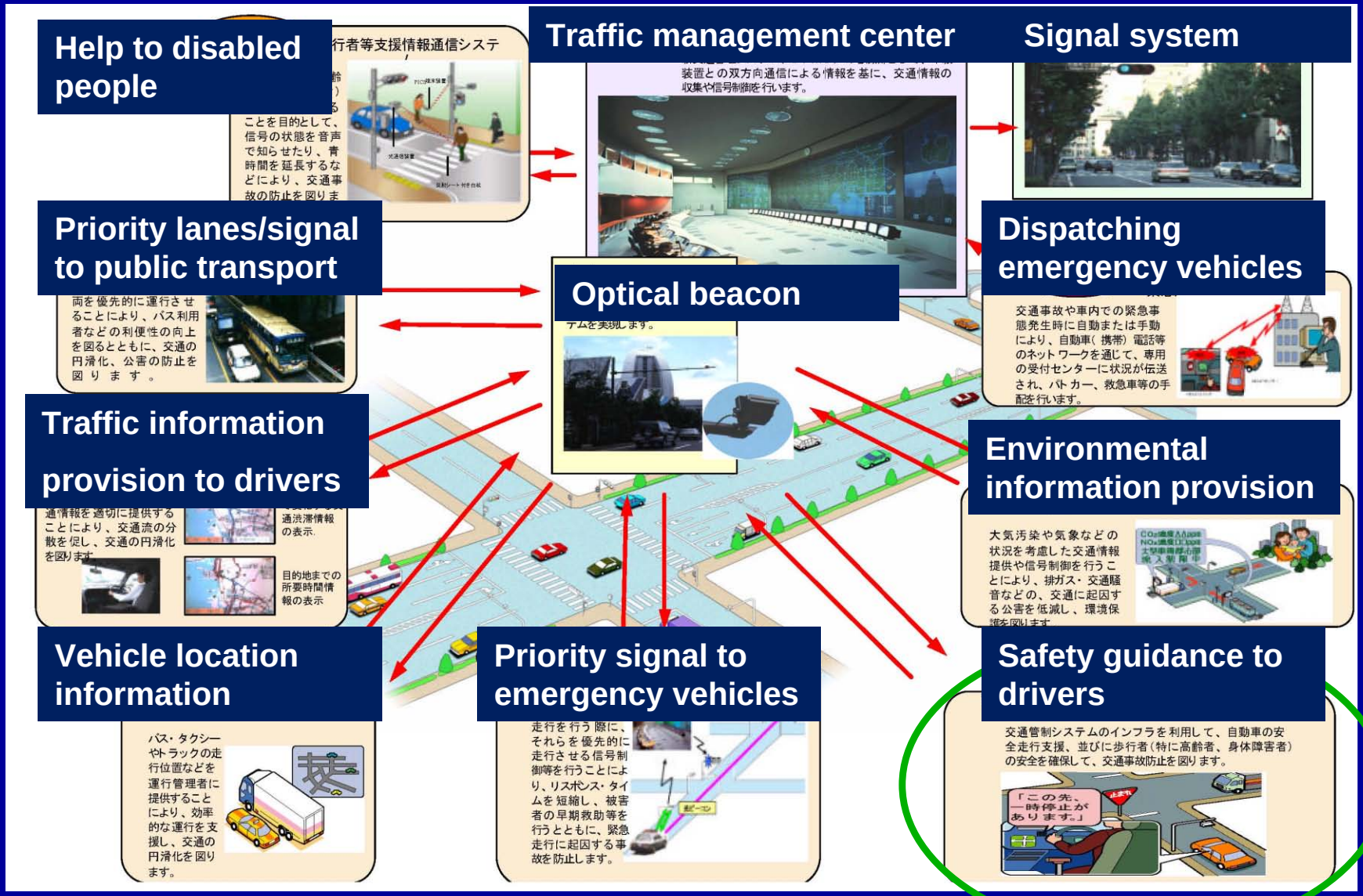
[New Technologies of ITS]

- Traffic Simulation
- Traffic Management System
  (MODERATO)

<Before upgrading road>

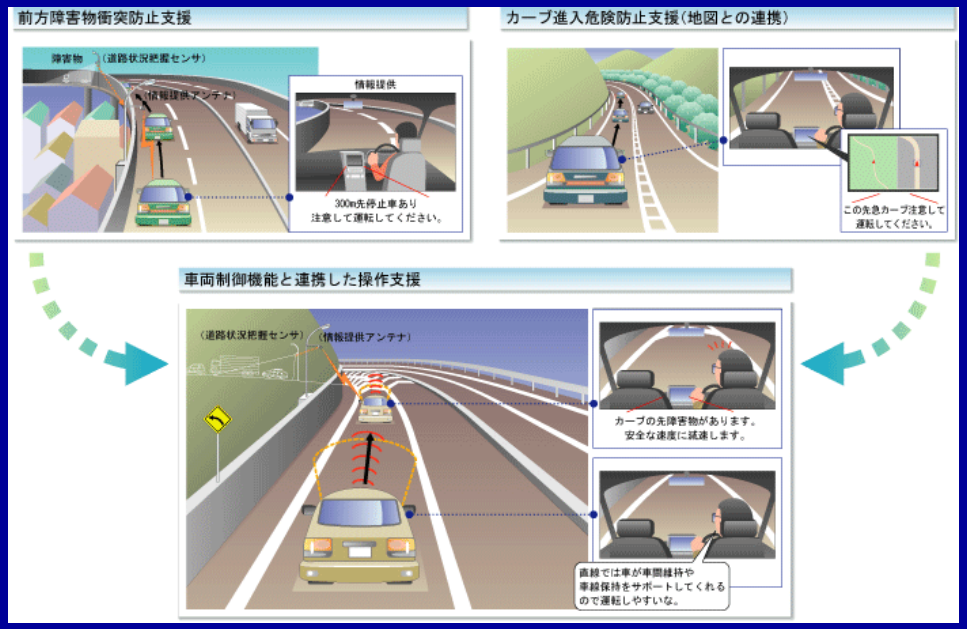
<After upgrading road>

Vehicle-Infrastructure Integration for Safety

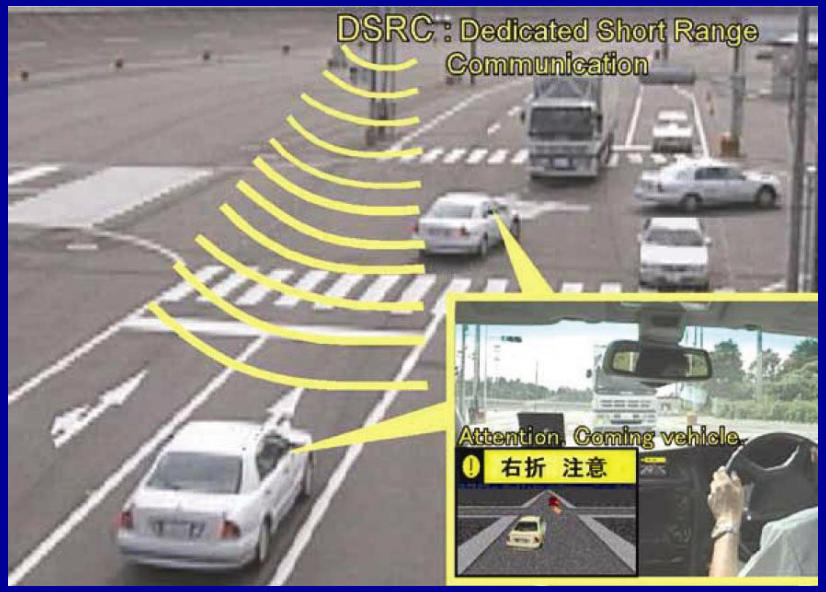


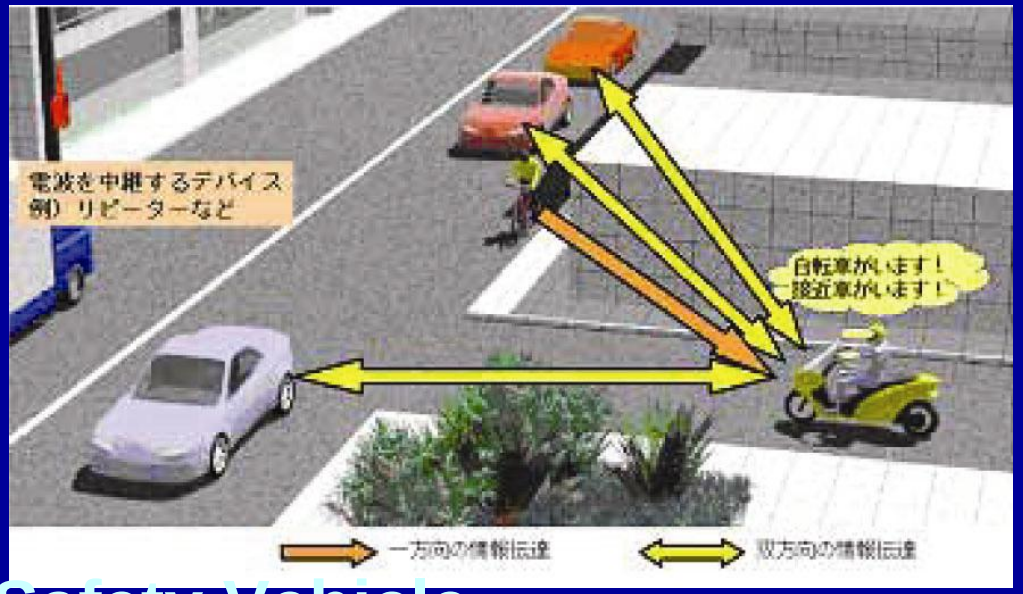
Driving Safety Support Systems

Vehicle-Infrastructure Integration for Safety



Advanced Cruise-Assist Highway System





ASV:Advanced Safety Vehicle

Support to Pedestrians

Ad-hoc support to pedestrians

- ✓Safety guidance
- ✓Pedestrian navigation

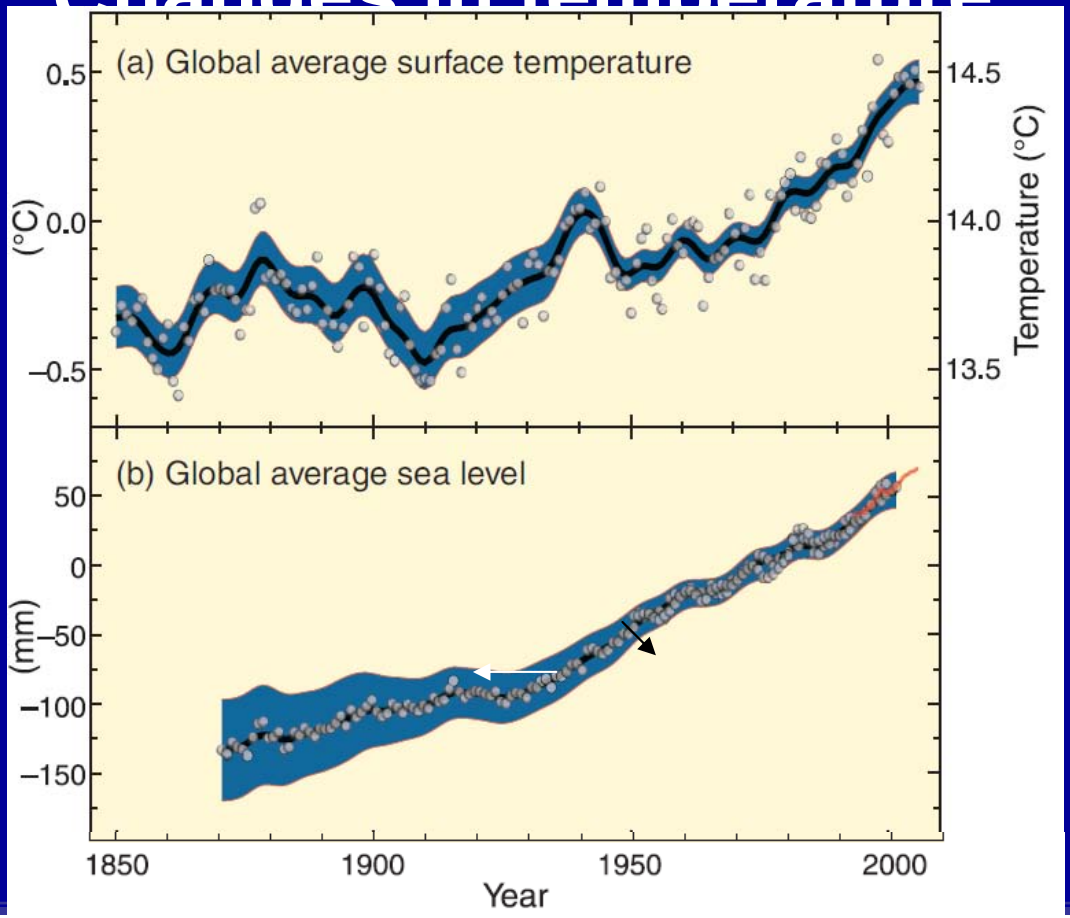
Integrated pedestrian support system

- ✓Pedestrian locating by IT tags
- ✓Probing vehicle location
- ✓Warning to drivers through next generation navigation system system

Rising temperature & sea level

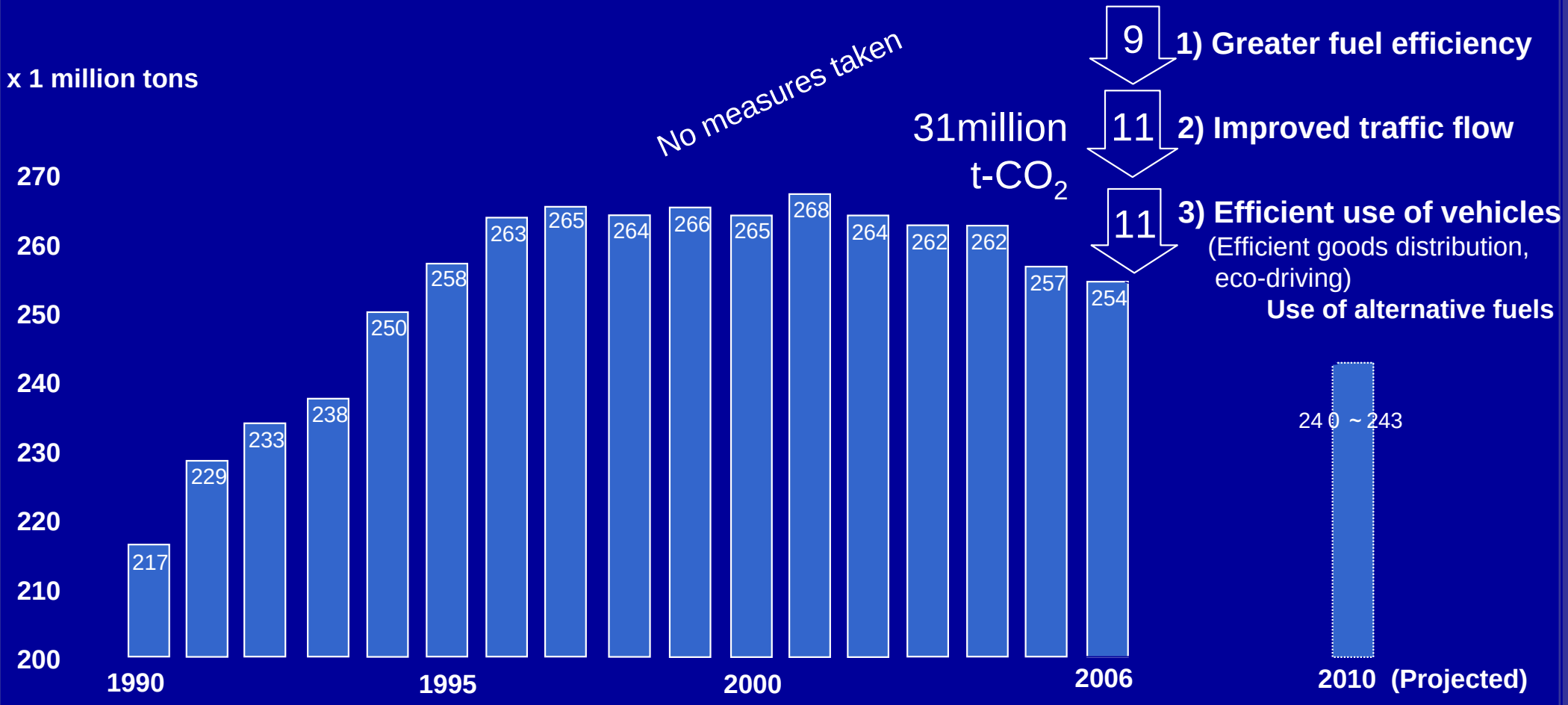
- ✓Global average surface temperature rises 0.74 degrees Celsius/100yrs
- ✓Global average sea level rises 17cm/100yrs
- ✓Faster increase of the both in recent years

Changes in temperature



Source: IPCC SR4

Road Transport CO_2 Emission in Japa



Source: Ministry of the Environment (Japan)

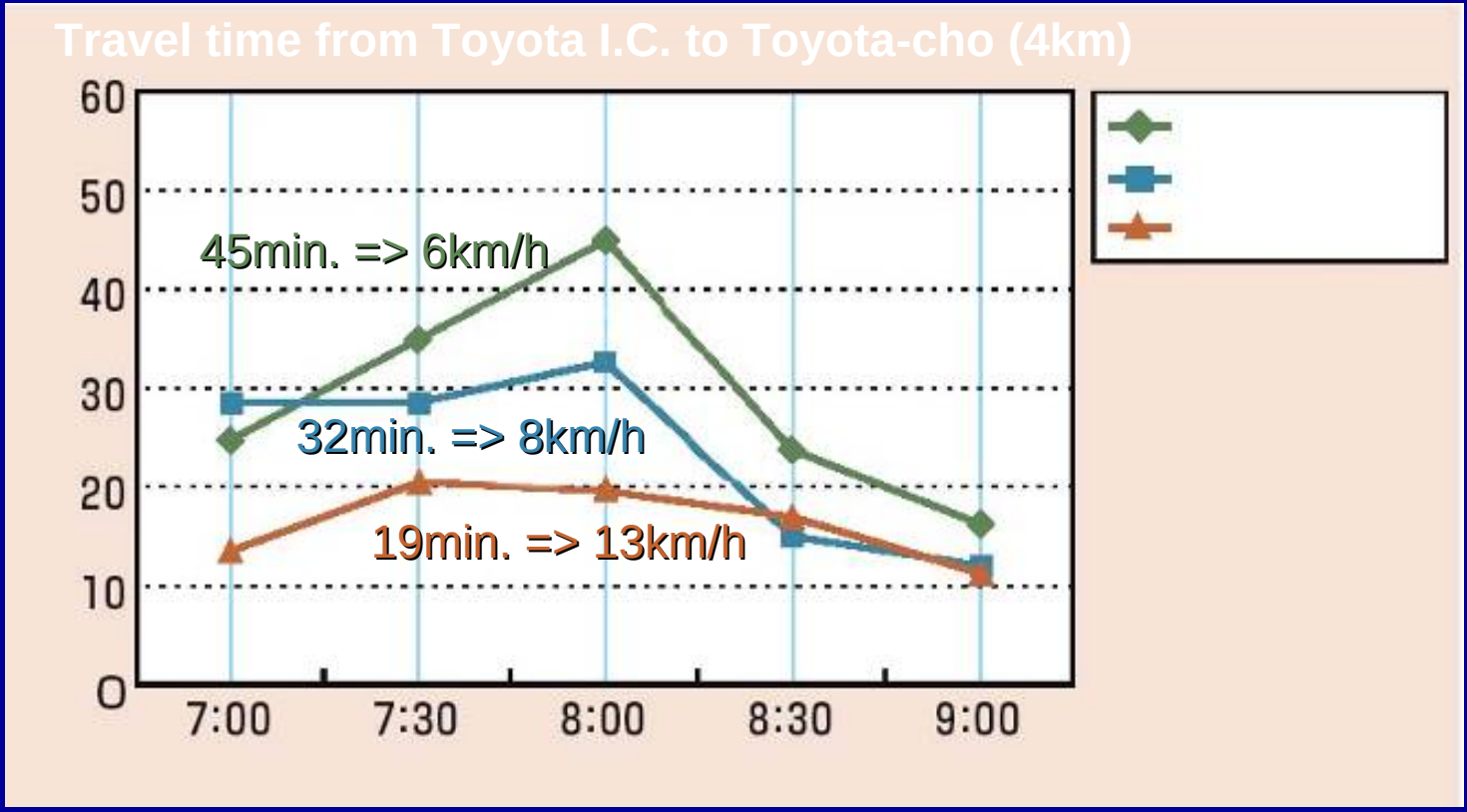
Early Effort : Easing Traffic Congestion

CO_2 emission is reduced by higher travel speed although traffic volume has increased.

Modal Shift Effect
Travel time: down by 30%
CO_2 emission: down by 14%

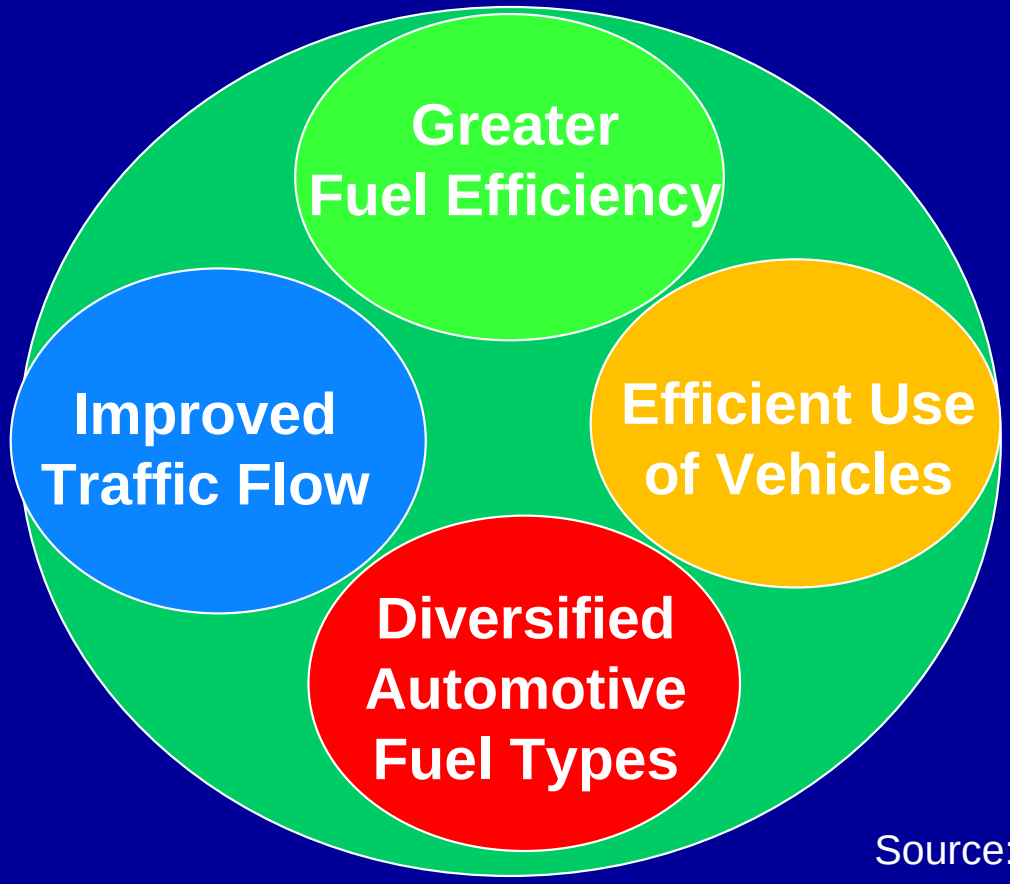
+

Road Upgrade Effect
Travel time: down by 60%
CO_2 emission: down by 17%



Integrated Approach for GHG reduction

Sectoral Approach to reduce CO_2 emission in road transportation sector, which comprises of four areas of effort/activity involving automobile manufacturers, government, fuel suppliers and vehicle users:

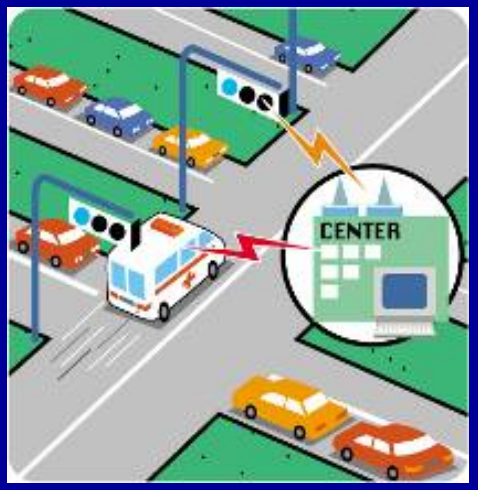


Source: JAMA

Improving public service

Emergency Vehicle Operations

Emergency Call



Priority Signal Control

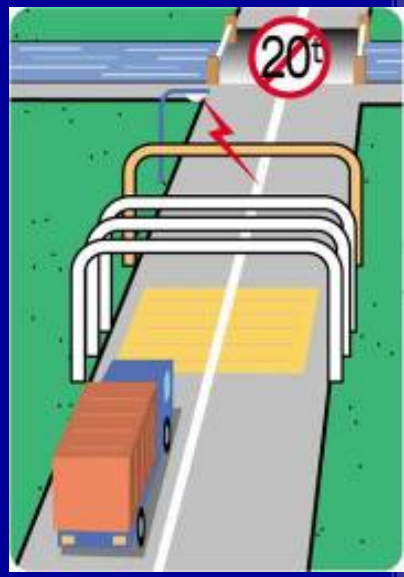
Dispatching Rescue Helicopter

Support for Public Transport

- Operation schedule and status information provision
- Operation management

Increasing efficiency in Road Management

- Road maintenance
- Management of special vehicle
- Construction work related information management



ITS for future industrial and social development

ITS to support the diverse forms of cities.
- Punctual, Selectable, immediate and seamless mobility

ITS to support safe and comfort travel.
- People from all over the world can travel safe and comfort.

Source : Council on Competitiveness-Nippon

Flexible and diverse mobility

ITS to support the elderly, physically-challenged, and children for traveling easily.
- Barrier free mobility

Source : NISSAN MOTOR CO, LTD.

Contribution to economic growth and social activities.

ITS to support more efficient mobility for the public.

- More speedy and more seamlessly

Source : Council on Competitiveness-Nippon

Logistics revolution through ITS

Concept of Multimodal Logistic Operation Hub

Steps to develop transport sector by ITS

1. Key tracks to follow

1) Effective deployment of transportation infrastructure with ITS taken into account
2) Active application of advanced IT and ITS technologies
3) Market mechanism activation to introduce new technology
4) Awareness and participation by citizens and industries
5) Strategic policy decision and its implementation

Approaches

2. Public private partnership

Led by industry initiative with their commitment

then coordinated as national project

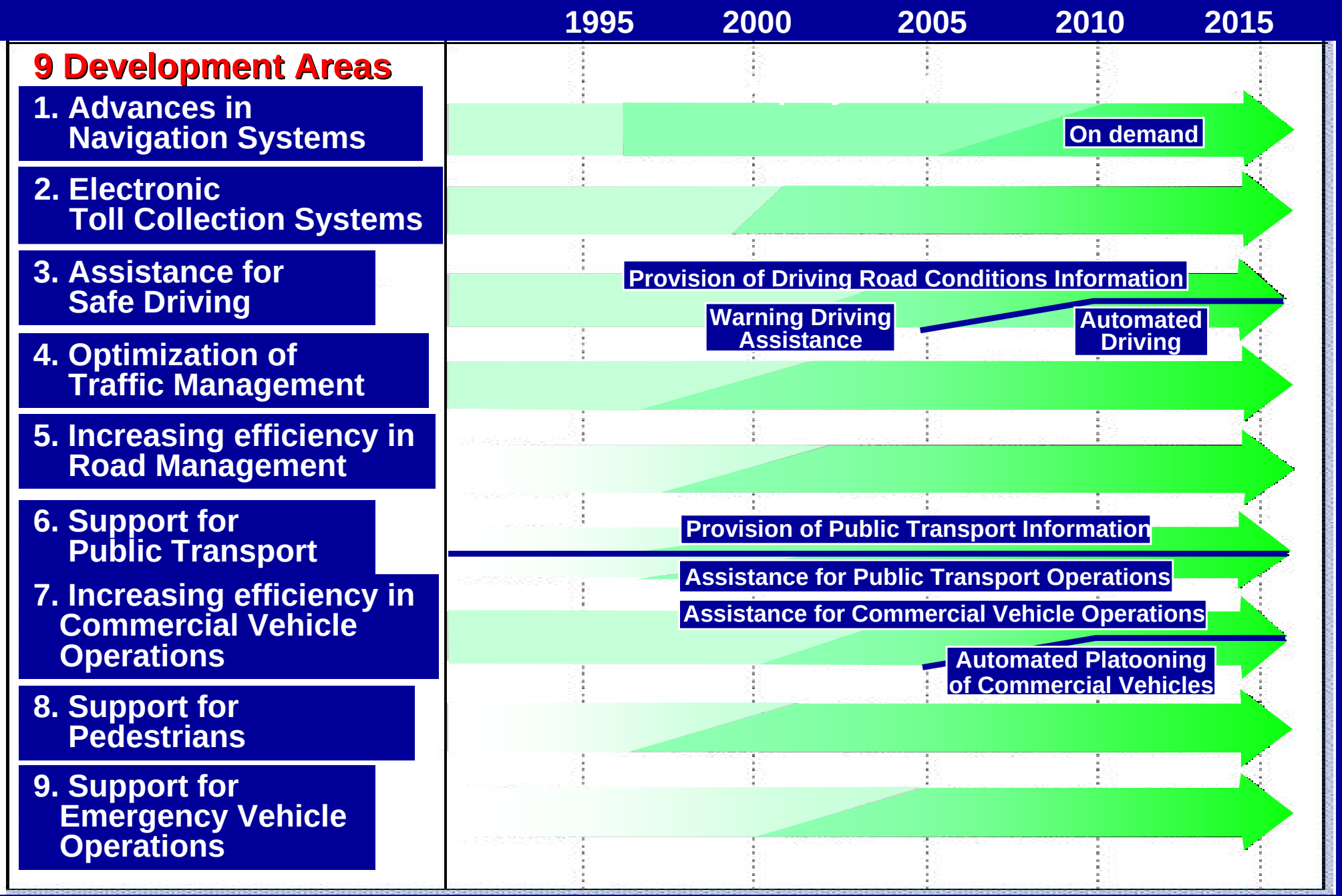
3. Large scale field operation test for ITS

at designated model city or model route

under special exemption of existing regulations

to accelerate practical implementation

ITS Technology in Progress



Workshop on Intelligent Transportation System for Asia

Objective

To share knowledge and experience on Intelligent Transportation System (ITS) with special focus on technological transfer to developing countries in Asia enabling on reduction of congestion and traffic accidents, reduction of carbon dioxide, and improvement of public transportation.

Dates: 3 days in February-March, 2009

Venue: Asia Development Bank Institute, Tokyo

Participants

Around 50-100 participants from Asia and Japan, including ADB staff, UN representatives, country government officials, researchers, private sector and civil society representatives

Organizer/Host: ADBI

Co-organizers (tbc): ADB and Cabinet Office of Japan

Program

1. Opening
2. Keynote lecture
3. Sessions
   - Sessions 1 (ITS in Asian countries)
     - Country presentation
   - Session 2
     - Technical presentation/case studies
     - ITS technology applicable in Asia
       - for reduction of traffic congestion and accidents
       - for reduction of carbon dioxide
       - for improving public transportation
     - Public and private partnership for ITS in Asia

Session 3

Panel discussion (How can ITS be used to help sustainable development of Asia?)

4. Closing

Summary of the Conference

Closing remarks

Thank you