October 28, 2003

8-4 Energy Efficiency & Conservation in Transportation

運輸部門の省エネルギー政策
（資料）

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○ Present Status of Global Warming Issues

□ Expected Climate Changes in 21st Century

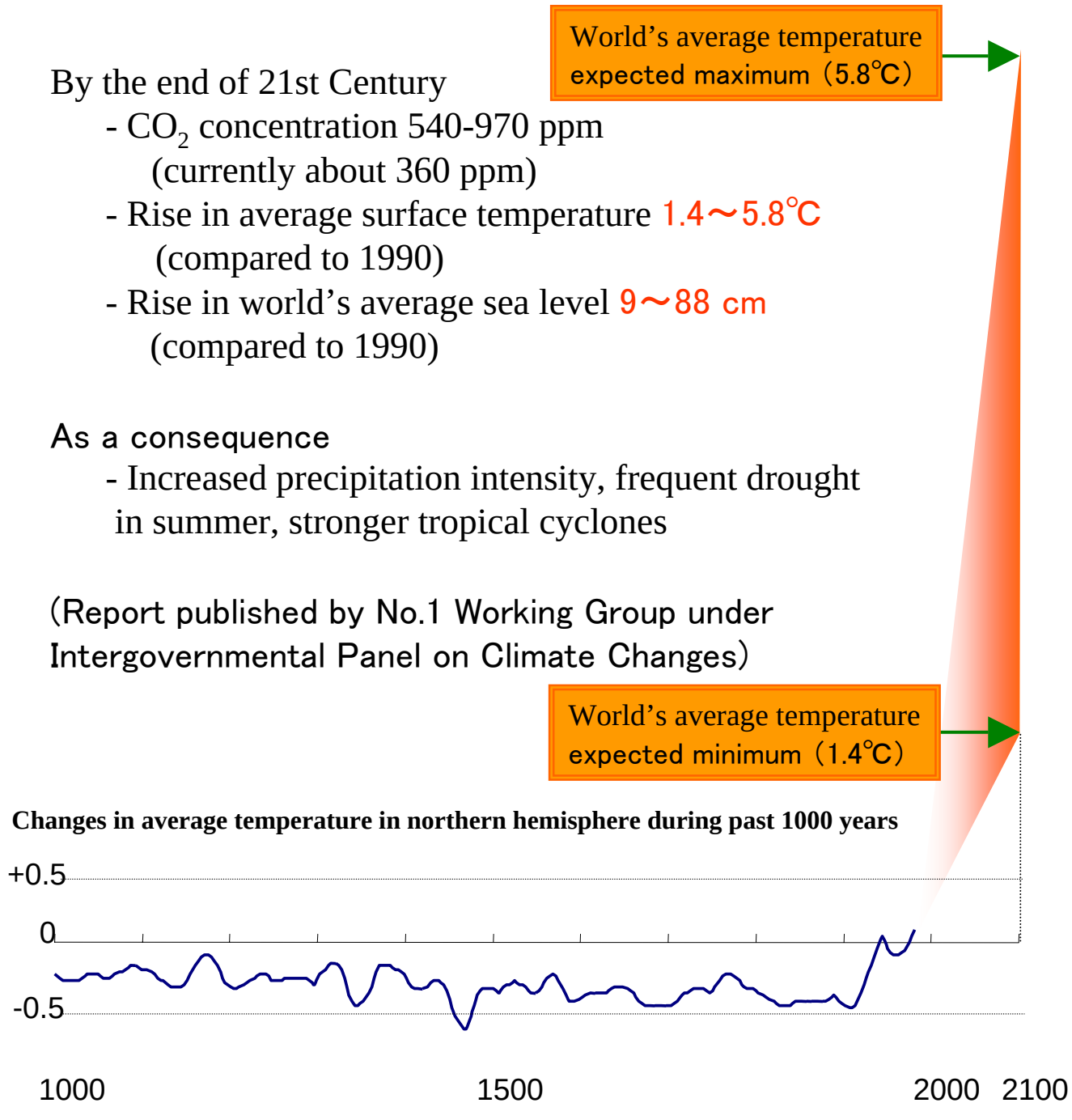
By the end of 21st Century

- CO_2 concentration 540-970 ppm
  (currently about 360 ppm)
- Rise in average surface temperature 1.4～5.8℃
  (compared to 1990)
- Rise in world's average sea level 9～88 cm
  (compared to 1990)

As a consequence

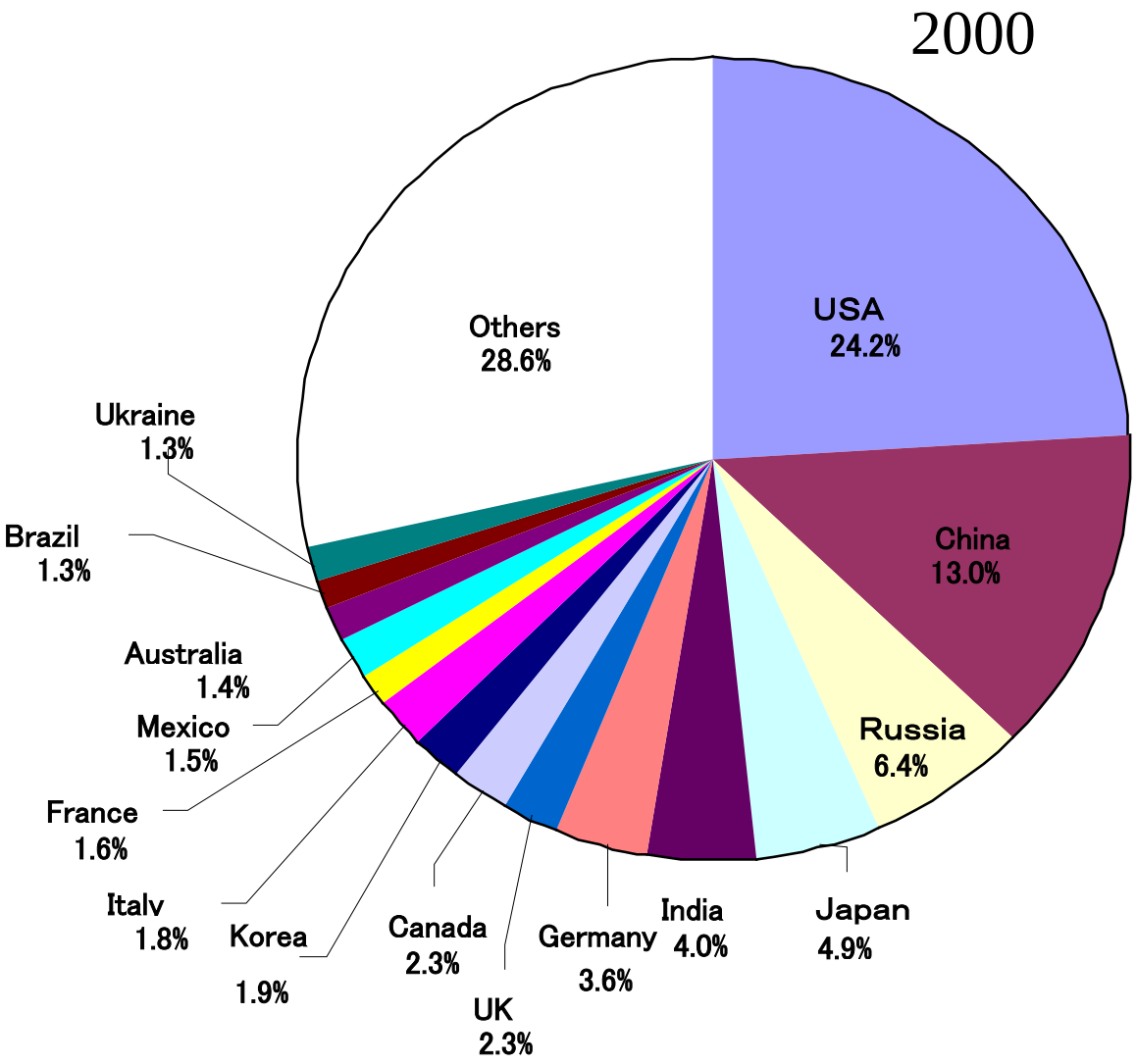
- Increased precipitation intensity, frequent drought in summer, stronger tropical cyclones

(Report published by No.1 Working Group under Intergovernmental Panel on Climate Changes)



○ Carbon Dioxide Emission in different Countries

- **Japan is world's 4th largest CO_2 emitter.**



IEA CO2 EMISSIONS FROM FUEL COMBUSTION

○ Greenhouse Effect Gas Emission Reduction Target of different Countries(relative to 1990 level)

The United Nations Framework Convention on Climate Change, which calls for the greatest efforts possible to prevent global warming, was set open for signature at the Earth Summit in Rio de Janeiro in 1992, and it came into force in 1994.

In order to ensure the implementation of this Convention, and for countries of the world to promote cooperation and accelerated rapid efforts to prevent global warming, the Third Session of the Conference of the Parties to the UNFCCC was held in Kyoto in December 1997, resulting in the adoption of the Kyoto Protocol.

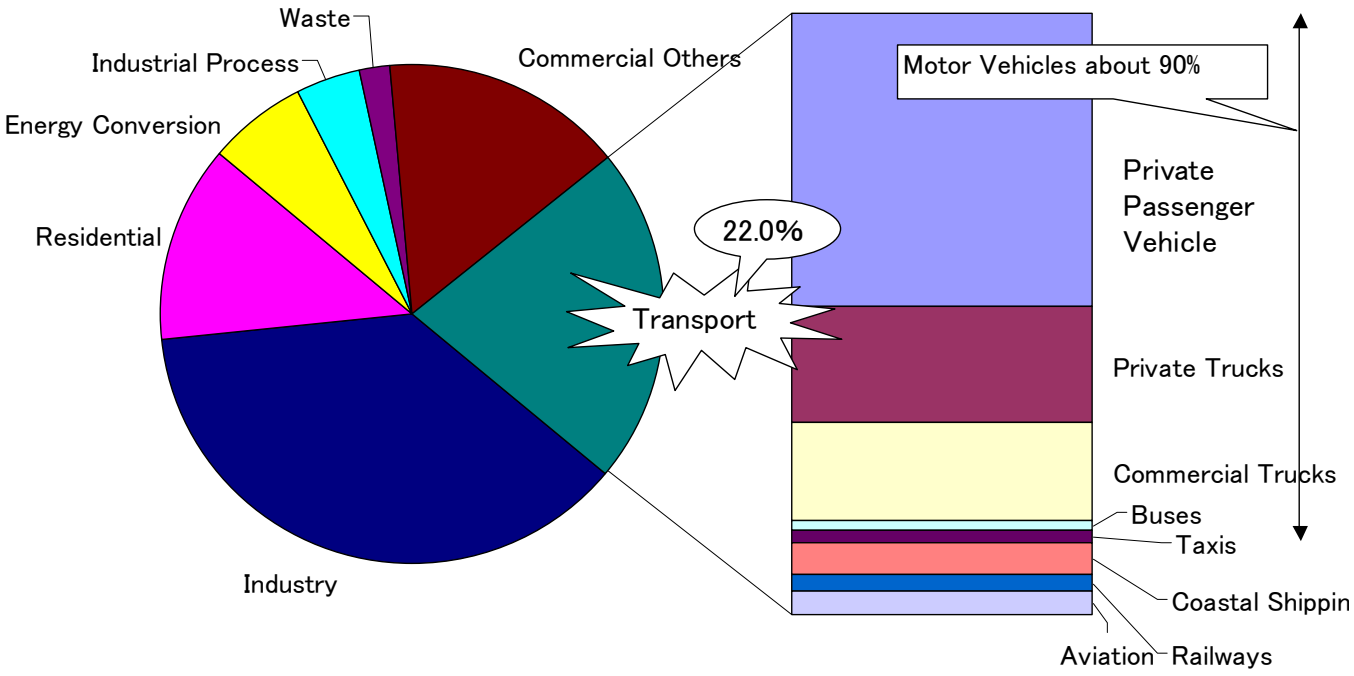
The Kyoto Protocol sets greenhouse gases (GHGs) reduction targets of each developed countries, and all of these targets will ensure the reduction of GHGs from developed countries at least by 5% from 1990 levels by the period from 2008 to 2012. Japan committed to the world a 6% reduction in the Protocol.

○ Greenhouse Effect Gas Emission Reduction Target (breakdown of Japan's reduction , relative to 1990 level)

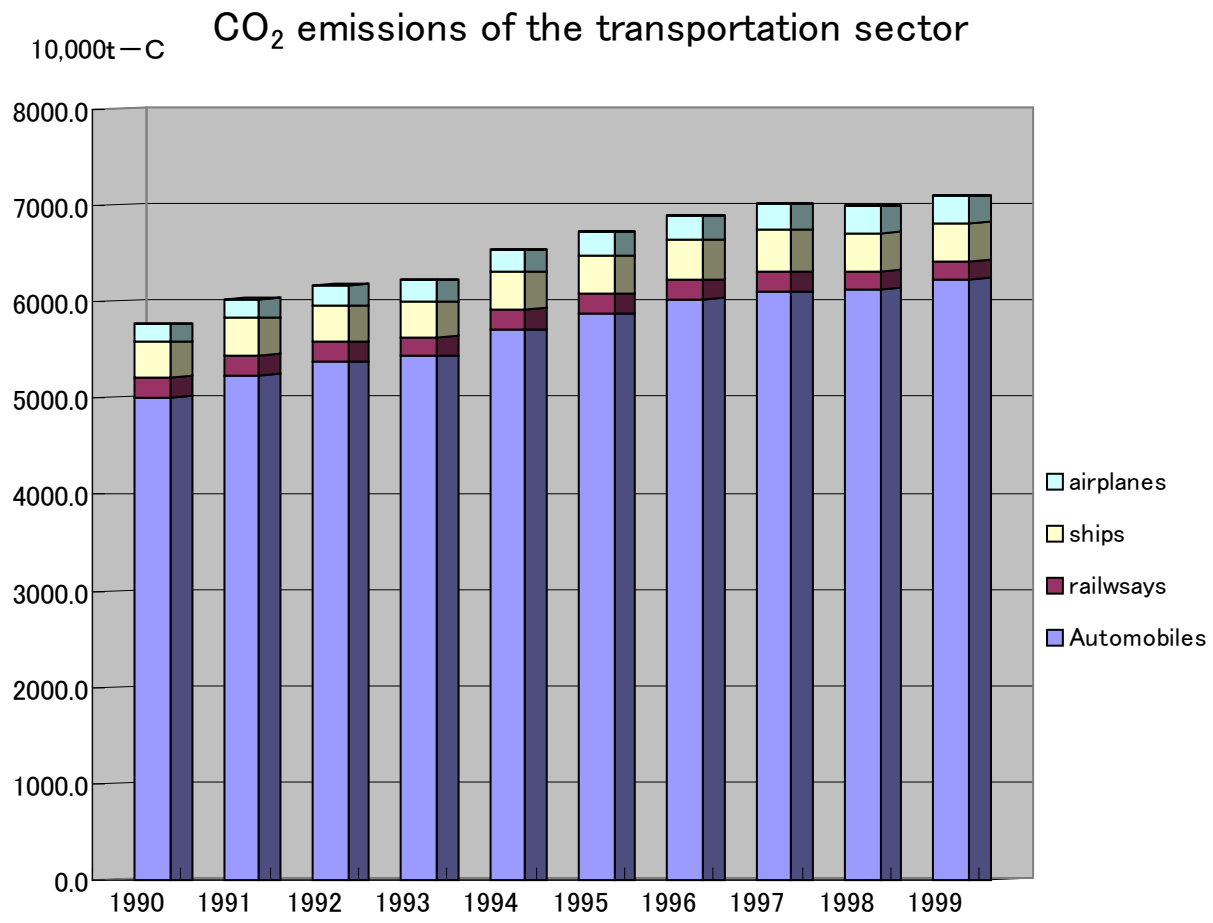
Item	Target
Carbon Dioxide Reduction Manufacturing Industries: −7% Residential/Commercial: 0% **Transport: ＋17%（BaU:＋40%）** Energy Conversion: 0% Others: 0%	0%
Introduce innovative technologies（Technology for super efficient photovoltaic power generation、sequestration of CO2, etc.）	−2.0%
Methane and nitrous oxide reduction	−0.5%
CFC alternatives reduction	+2.0%
Sinks of Japan's forests	−3.7%
emissions trading; joint implementation between developed countries	−1.8%
Total	−6.0%

○ Present Status of Greenhouse Effect Gas Emission in Japan

- **The transport sector accounts for 22%of the carbon dioxide emissions in Japan**



Data: The Council of Ministers for Global Environmental Conservation

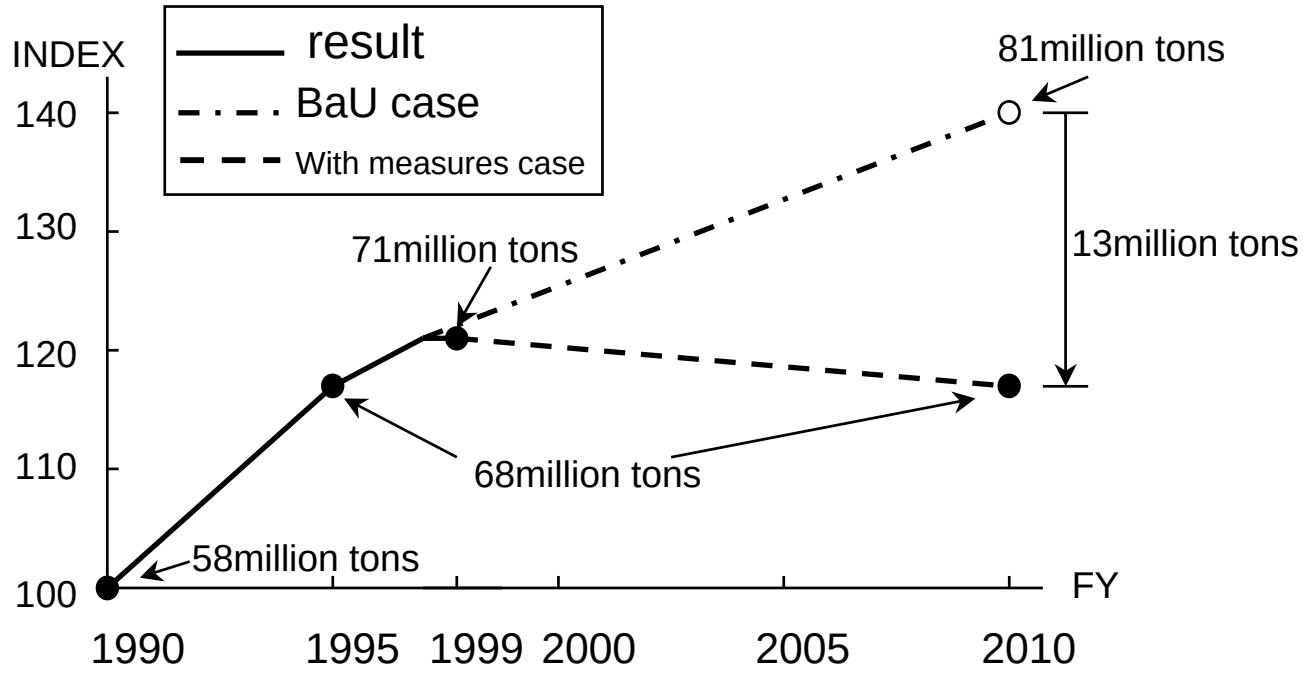

CO_2 emissions of the transportation sector
10,000t－C
8000.0
7000.0
6000.0
5000.0
4000.0
3000.0
2000.0
1000.0
0.0
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
airplanes
ships
railwsays
Automobiles

○ Carbon Dioxide Reduction Target in Transport Sector (relative to 1990 level)

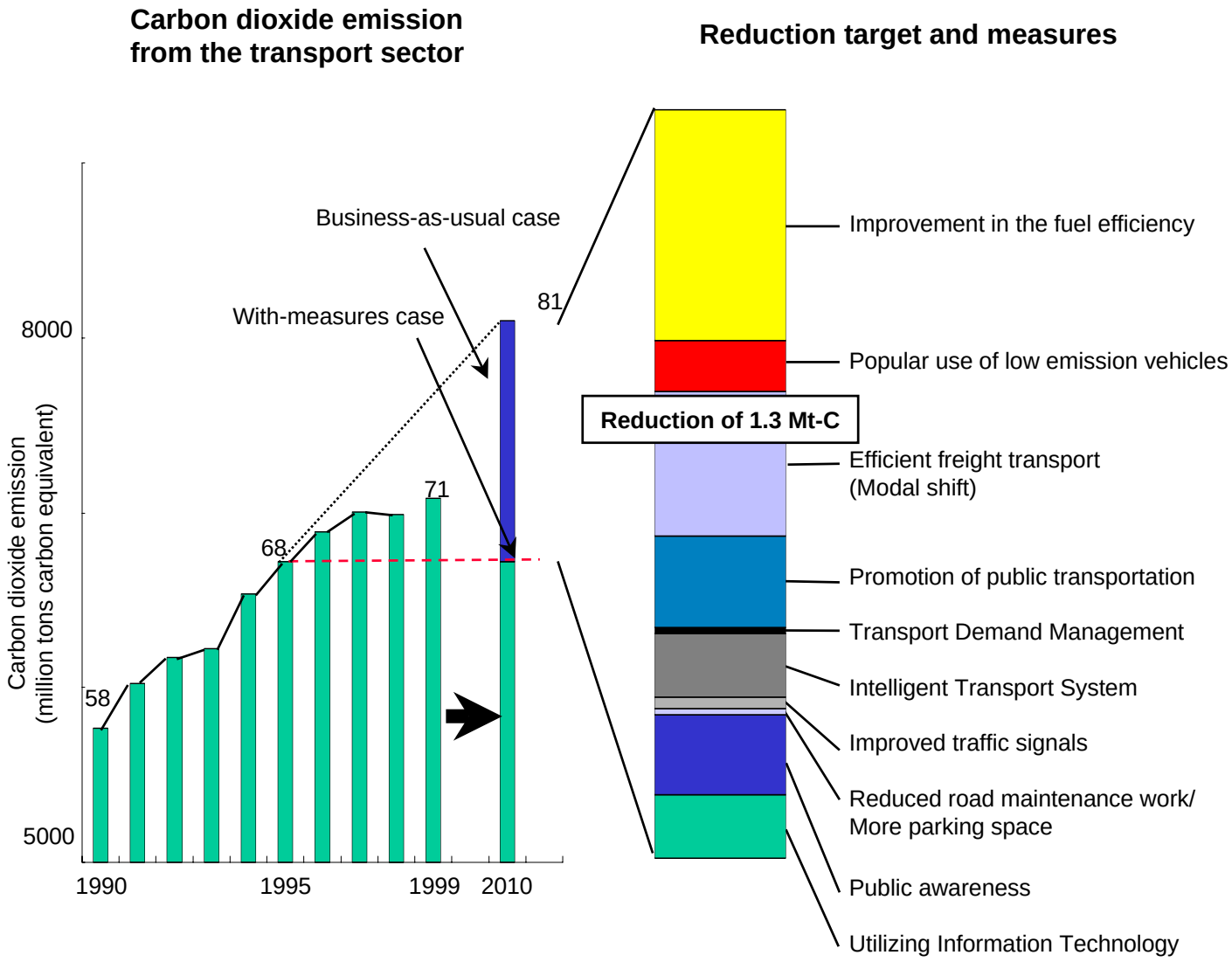
(million tons of carbon)

	Fiscal 1990 result	Fiscal 1995 result	Fiscal 1998 result	Fiscal 2010 (BaU)	Amount of CO2 reduction	Fiscal 2010 (With measures)	Growth rate (%) 2010/1990
Manufacturing Industries	１３４	１３４	１２９	１４２	▲１６	１２６	▲７
Residential/ Commercial Sector	７２	８３	８１	９９	▲２７	７２	０
Transport	５８	６８	７０	８１	▲１３	６８	１７
Energy Conversion	２１	２３	２２	２５	▲ ３	２２	５
Subtotal	２８５	３０７	３０２	３４７	▲６０	２８７	０
Others	２２	２７	２１	２２	▲１	２１	０
Total	３０７	３３３	３２４	３６０	▲６１	３０９	０

※ “Others” includes the industrial processes and the statistics errors。



○ Breakdown of Carbon Dioxide Reduction in Transport Sector



Summary of Measures to Reduce CO2 Emission from Transport Sector

Measures center on **voluntary efforts, incentives** and **the development/introduction of new technologies** so as not to adversely affect the nation's economic activities and people's daily life.

Measure in motor vehicle traffic

Reduction of CO2 emissions from private cars identified as an urgent task

(Approx.29.5 million tons)

① Development/ dissemination of low-emission vehicles (Approx.20.6 million tons)

- Accelerated introduction of vehicles satisfying "top-runner" standards
- Use of at least 10 million low-mission vehicles at the earliest possible time before 2010

Measures targeting traffic congestion, etc.

② Improvement of traffic flow (Approx. 8.9 million tons)

- Reduction/elimination of traffic congestion to increase motor vehicle traveling speeds and thus reduce their CO2 emissions

Develop of roads

A long-established measure, which is incorporated in the projection of baseline CO2 emission level for 2010.

- Development of arterial road networks and clearing up of traffic bottlenecks

A reduction of about 46 million tons in the transportation sector

Running of national campaigns Promoting of eco-drive (Approx. 1-1.8million tons)

- Campaigns aimed at encouraging people's voluntary effort, such as eco-driving
- Appeals to people to utilize public transportation systems for leisure and other activities

Developing of environmentally friendly transport systems

(Approx. 15.8 million tons)

Modal shift, streamlining of freight transport (Approx. 9.1 million tons)

- Reduction of CO2 emissions by 4.4 million tons through a modal shift to marine transport and other measures
- Reduction of CO2 emissions by 4.7 million tons through the establishment of environmentally friendly freight transport systems by streamlining freight transport

Promoting of the use of public transportation systems, and other measures (Approx. 6.7 million tons)

- Development of urban rail networks, etc.
- Improvement of the service quality and convenience of rail and bus transportation
- Improvement of the energy efficiency of transportation systems

Green Automobile Taxation (～2003.3)

1.The automobile tax (tax on the possession of the automobile) on new vehicles of which impacts on the environment are small is reduced, while the heavier tax is levied on old vehicles, which have heavy impacts on the environment.

2.The reform of the automobile taxation is designed not to alter the level of revenue.

Reduction

- Electric vehicles,Compressed Natural Gas vehicles,methanol fueled vehicles. **Reduction of 50%(For two years)**
- ☆☆☆ and fuel-efficient vehicles. **Reduction of 50% (For two years)**

(☆☆☆: vehicles of which exhaust emission is no more than ¼ of the latest regulation.)

- ☆☆ and fuel-efficient vehicles. **Reduction of 25%(For two years)**

(☆☆:vehicle of which exhaust emission is no more than ½of the latest regulation.)

- ☆ and fuel-efficient vehicles. **Reduction of 13%(For two years)**

(☆:vehicle of which exhaust emission is no more than ¾ of the latest regulation.)

※ Fuel-efficient vehicles :Motor vehicles that satisfy 2010 fuel efficiency target standards.
(For example for a passenger car of which the weight is between 1,016kg and 1,266kg, the target is 16.0km/l)

Raised taxation

- Diesel motor vehicles of more than 11 years old: increase of 10%
- Gasoline motor vehicles of more than 13 years old:increase of 10%

※ Except buses or low emission vehicles.

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- ☆☆ and fuel-efficient vehicles. **Not applied**

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New Mileage Standard

	New Standard (compared to 1995)	Old Standard (compared to 1990)
Gasoline Passenger vehicle	22.8% Improve (2010)	8.5% Improve (2000)
Gasoline Cargo Vehicle	13.2% Improve (2010)	
Diesel Passenger Vehicle	14.9% Improve (2005)	
Diesel Cargo Vehicle	6.5% Improve (2005)	

Modal Shift

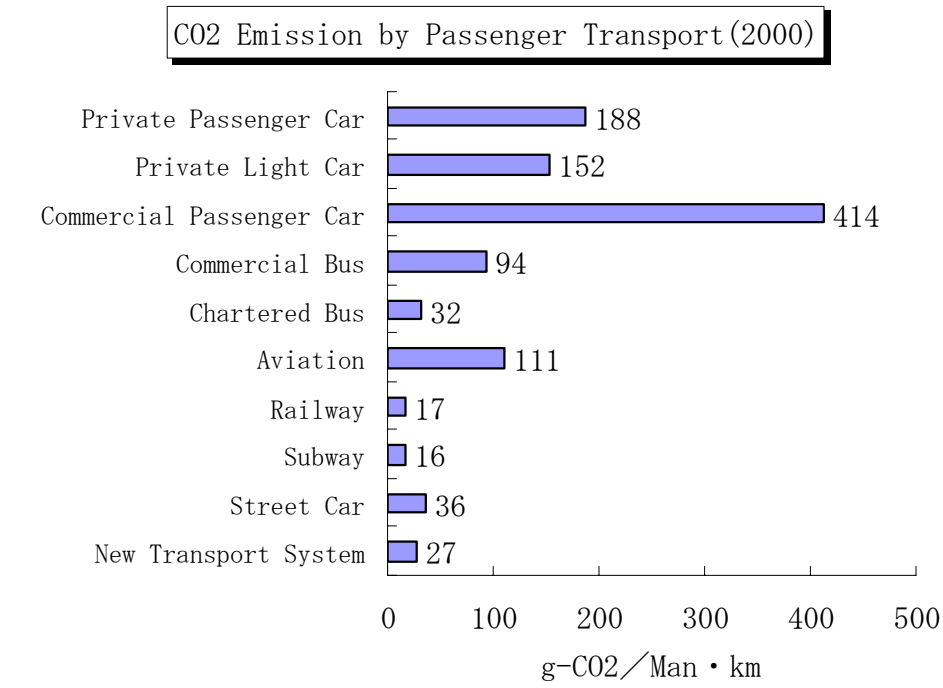
Modal Shift is to change the mass transport from trucks on the main roads to the maritime or railroad transport.

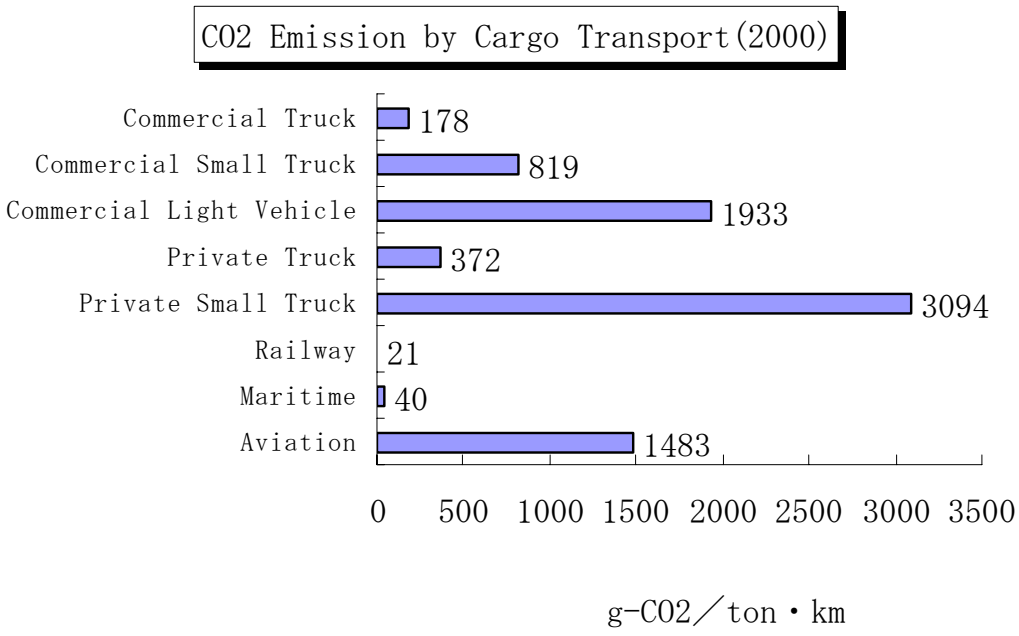
Energy Efficiency(/ton·km)

Railway	Maritime	Commercial Truck	Private Truck
238kJ	570kJ	2692kJ	15517kJ

- CO_2 emission reduction
- Labor force reduction
- Transport cost reduction
- Time increase

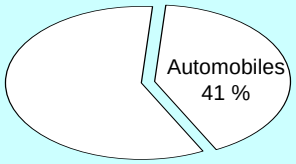
CO2 Emission by individual mode





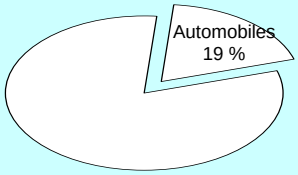
Traffic Demand Management (TDM) experiment

MLIT will subsidize TDM experiments to improve public transport services, introduce environmentally friendly vehicles and ensure efficient freight services in the city center, aiming at “the comfortable and environmentally friendly urban transport” in close cooperation with relevant authorities.



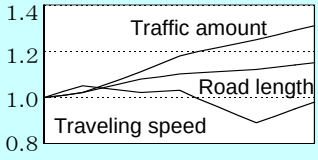
Regional environment

Automobiles emit about 40 % of NOx in the urban area.



Global environment

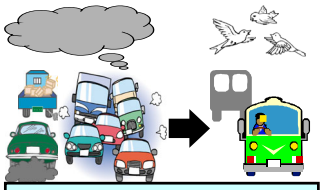
Automobiles emit 19 % of CO_2 in Japan.



Loss caused by congestion

Congestion caused loss of 1.2 bln yen pa. Traffic amount exceeded the construction of roads.

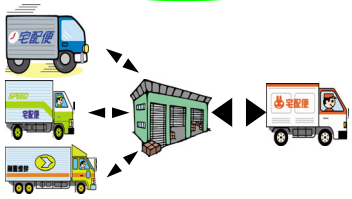
Improving the public transport



Frequent services, one-coin services

Conversion from the private car to the bus reduces CO2 emission per capita by 60 %.

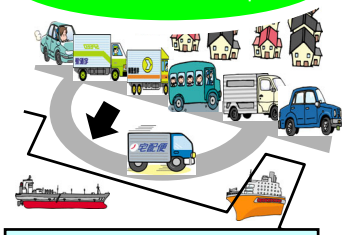
Efficient urban freight services



Joint collection/delivery

The number of trucks were reduced by 70 % in Fukuoka. Similar plan in Tokyo.

Bypassing the automobile transport

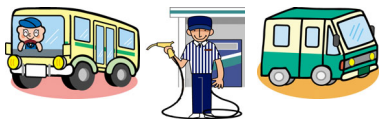


Onboard ETC system

Increased speed (20 to 40 km/h) reduces NOx and PM by 30 %.

e.g.: Environmental road pricing

Introduction of environmentally friendly vehicles



Menus of measures are being developed in more than ten cities reflecting specific requirements in each city.

Introducing environmentally friendly vehicles and low-sulfur oil

e.g.: CNG buses and trucks emit NOx 70 – 90 % less and no PM.

TDM experiments will be supported in close cooperation of
- police
- road authority
- city planning authority
- transport authority.

Total amount of the budget in FY 2001: 700 million yen.

Green Management (Truck)

Green Management
（Eco Mo Faoundation

～FY2001　Guideline of Green Management
2002FY～ Popularization of Green Management

2002～
①Buses and Taxis
2003～
②Coastal Shipping

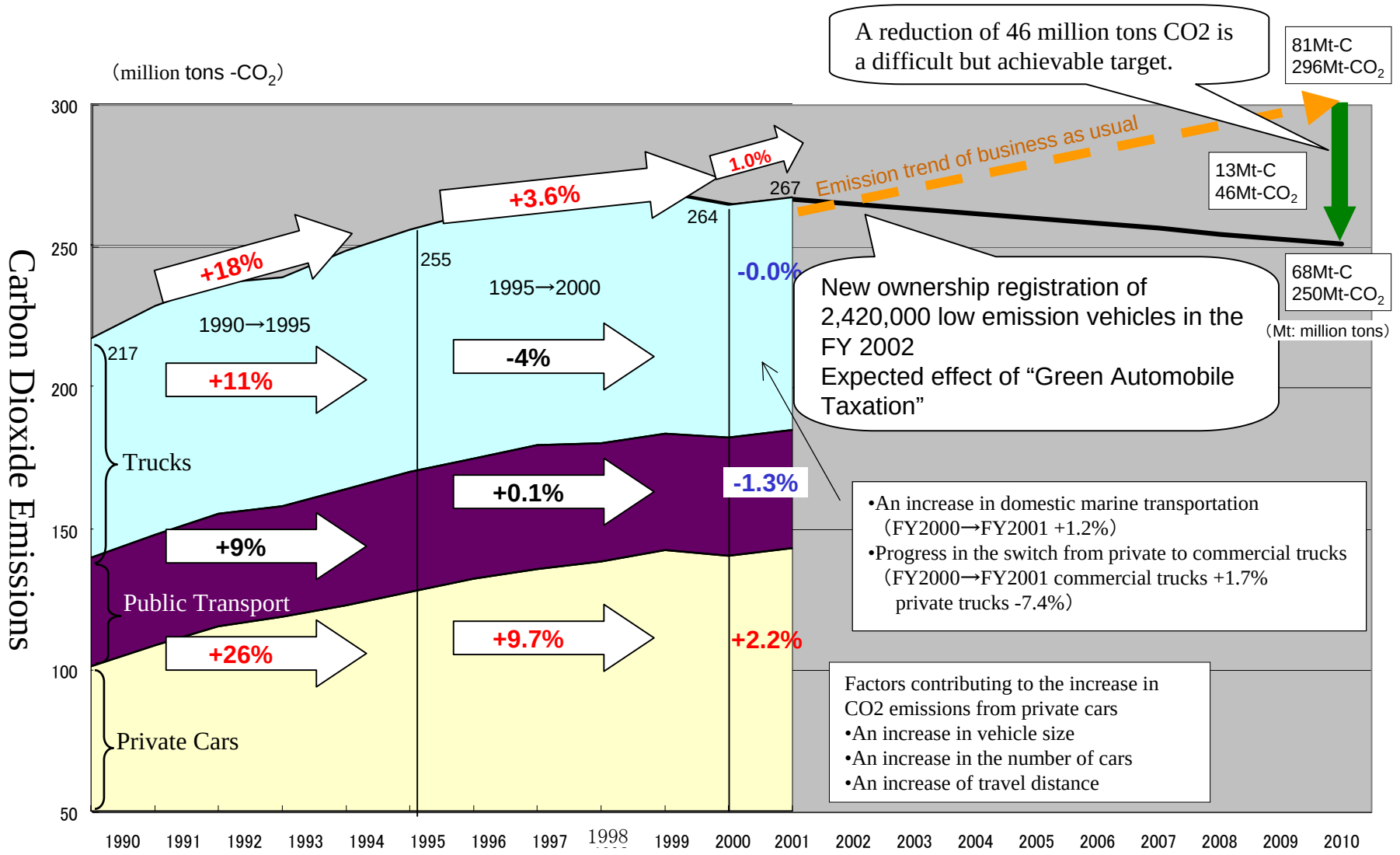
How to Green Management

◎Manual of Green Management
↓
◎Check list of Green Management
↓
◎Certification system of Green Management

Important Points of Green Management Manual

- Introduction of LEV
- Eco friendly Driving
- Appropriate Maintenance
- To purchase eco friendly goods

Trends in Carbon Dioxide Emissions from Transportation Sector



Public transport: bus, taxi, railway, passenger ferries, domestic marine transportation and domestic air transportation