MEASURES FOR THE PRACTICAL USE OF ENVIRONMENTALLY FRIENDLY VEHICLES .EFV..

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Ministry of Land, Infrastructure and Transport
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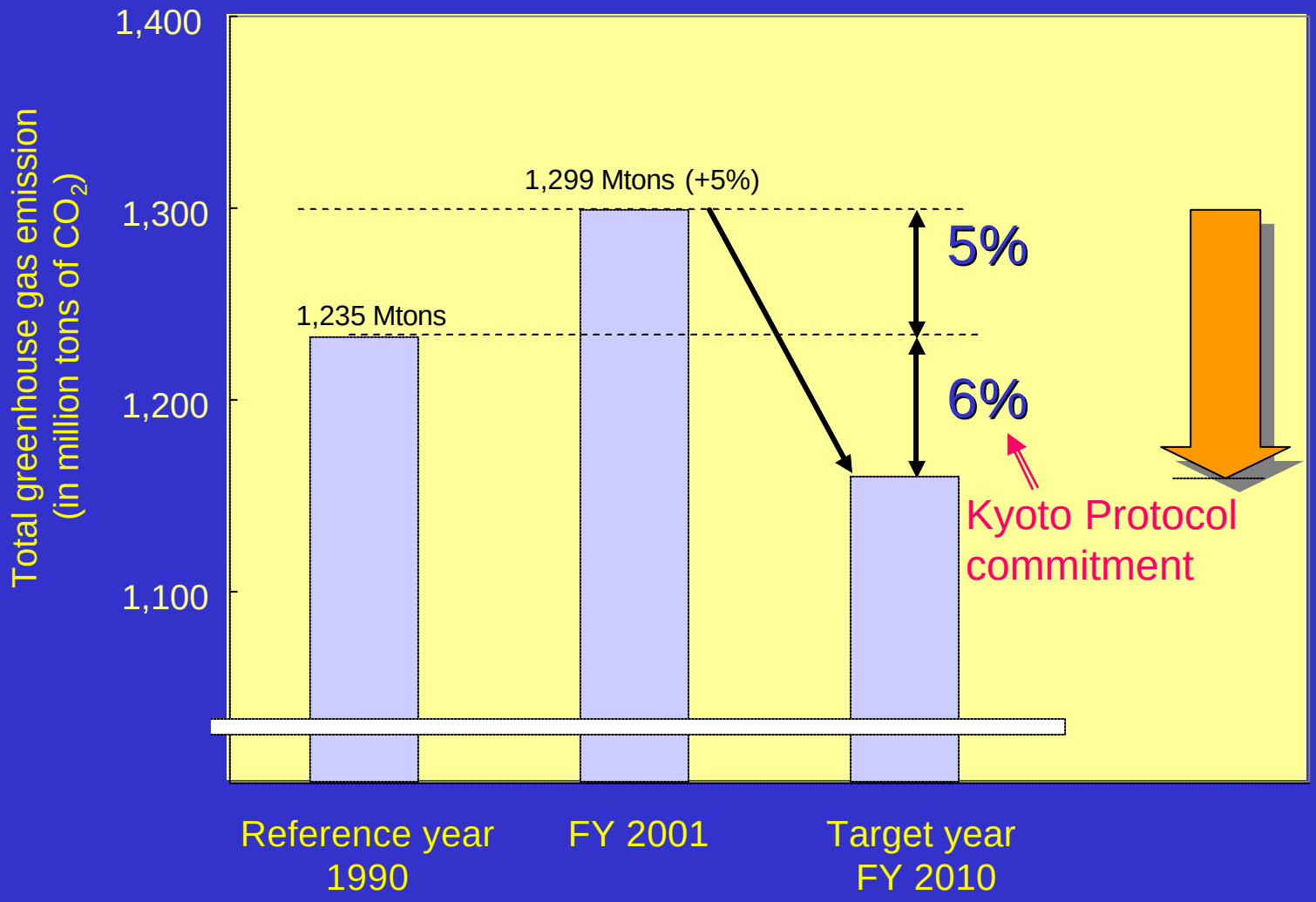
GREENHOUSE GAS EMISSIONS IN JAPAN

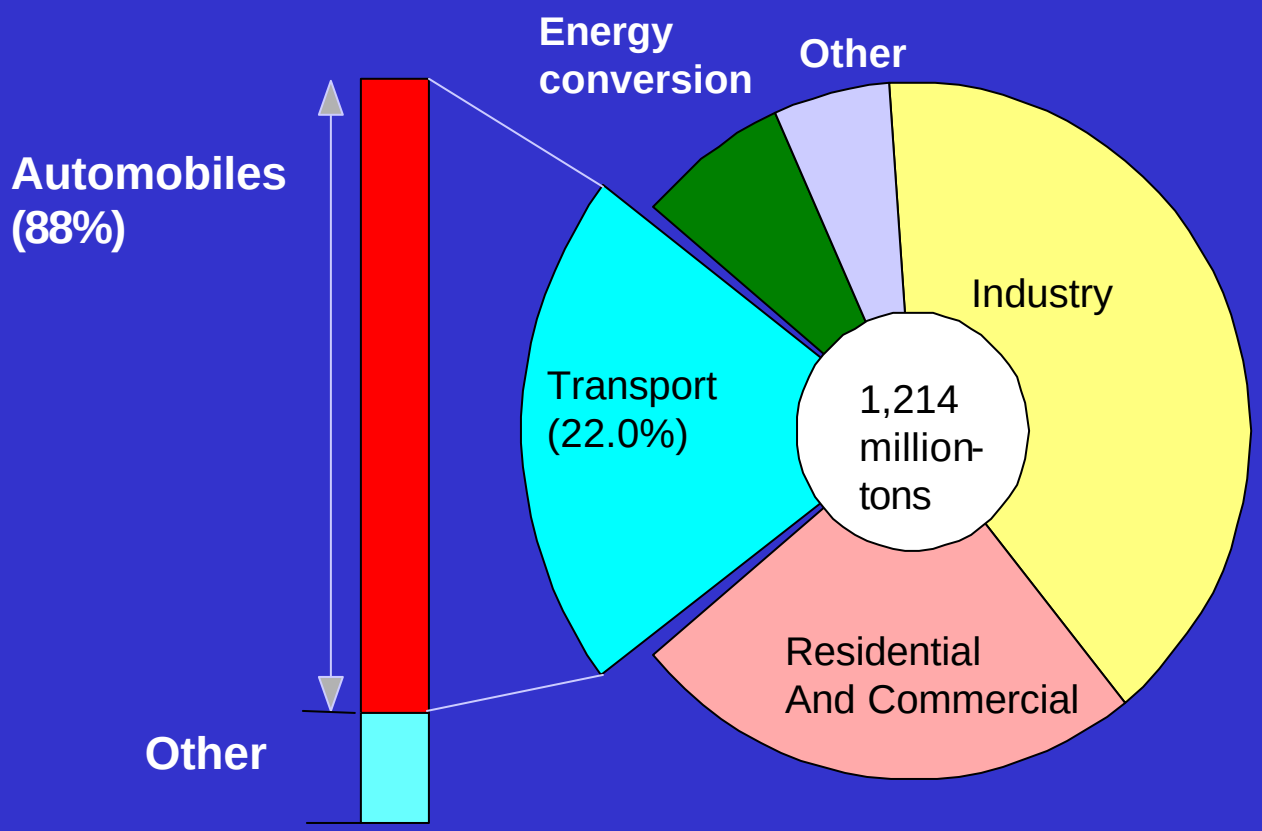
1,299 Million-tons of CO_2 Emitted in FY2001, Up 5.2% Over 1990

® To achieve the committed 6% reduction, we must reduce 11% of GHG between 2001 and 2010.



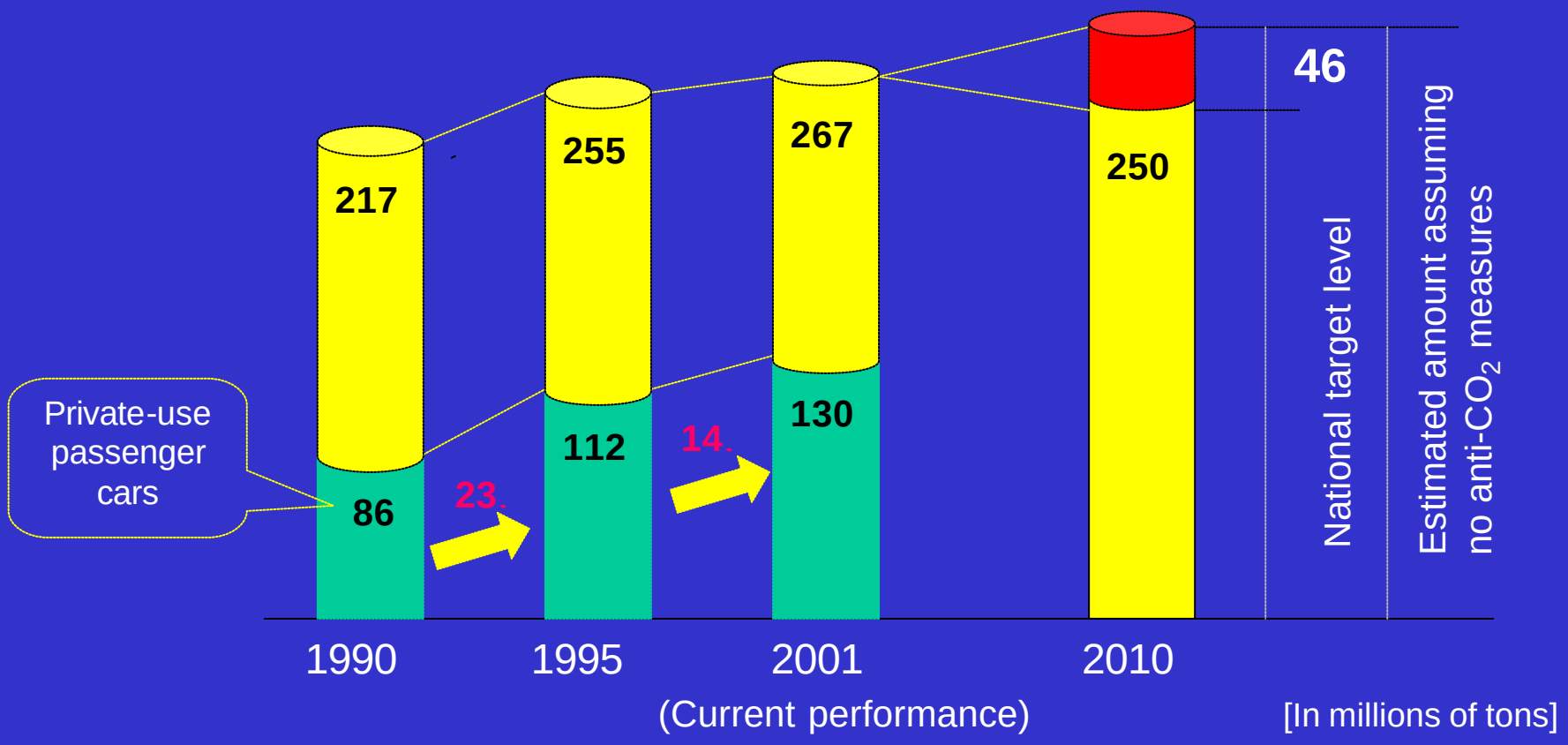
CO_2 EMISSIONS BY SECTOR IN JAPAN

* **About 20% of CO_2 from Automobiles**



CO_2 EMISSIONS FROM TRANSPORT SECTOR

* **The Transport Sector Must Achieve a 46 million-ton Cut Between 2001 And 2010.**



CO_2 EMISSIONS FROM TRANSPORT SECTOR

* Vehicle/Traffic Measures (Down 29.5 million-tons)

Measures on theTraffic Flow
(Down 8.9 million-tons)

Development and Dissemination of EFVs
(Down 20.6 million-tons)

* Establishment of fuel economy standards
* Promotion of vehicles complying with fuel economy reg.
* Widespread use of environmentally friendly vehicles
* Widespread use of idle-stop vehicles
* Equipping speed limiters on large trucks

* Environmental Traffic System (Down 15.8 million-tons)

Modal shifts, Efficient Freight Services
(Down 9.1 million-tons)

Promoting Use of Public Transport
(Down 6.7 million-tons)

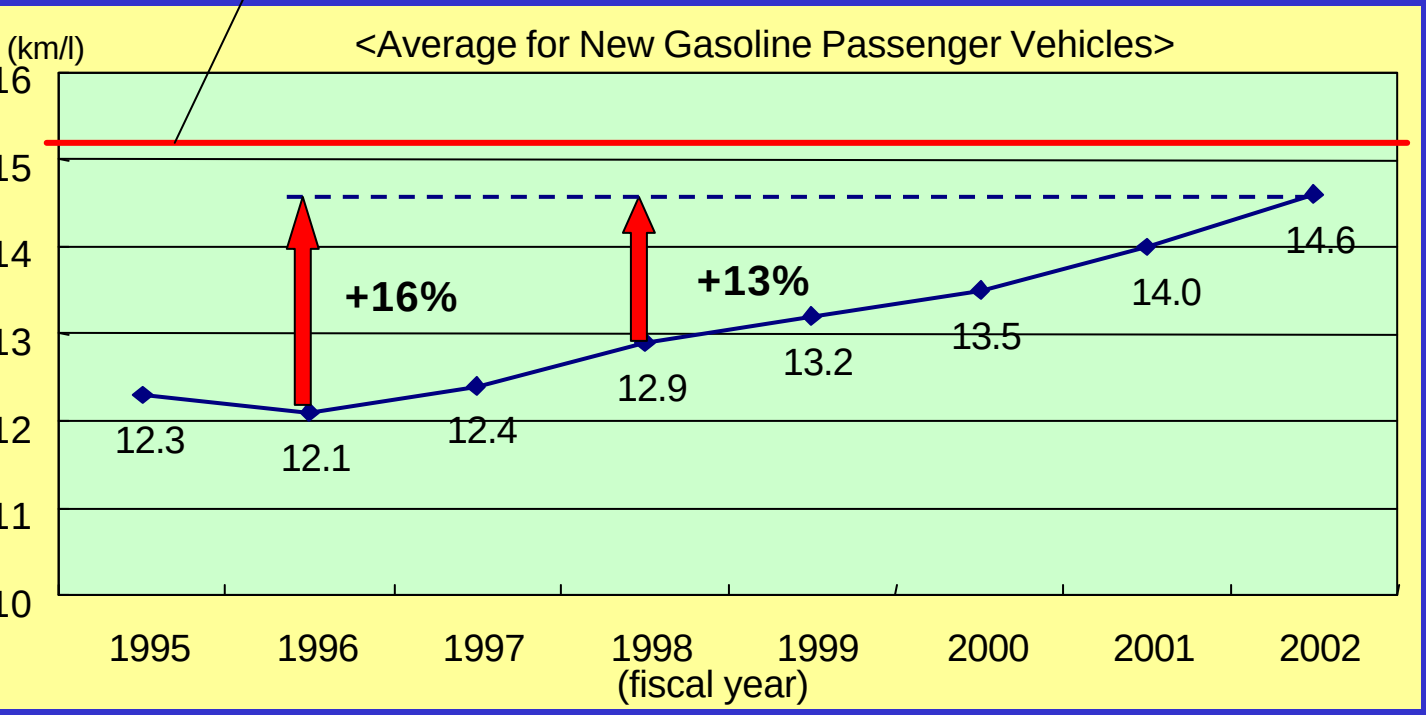
* Eco-Drive Promotion (Down 1.0 million-tons)

A Total 46 million-tons CO_2 Cut by Transport Sector (2010)

STATUS OF IMPROVEMENT ON FUEL ECONOMY

- **The 2010 fuel economy regulation was introduced in 1998, based on a top runner method.**
- **Fuel economy is steadily improving, thanks to tax incentives and the manufacturers' technological development.**

The 2010 fuel economy target: 15.1 km/liter



Fuel economy regulatio
for gasoline car
(Target year: 2010)

Vehicle weight (kg)	Target level (km/L)
Up to 702	21.2
703-827	18.8
828-1015	17.9
1016-1265	16.0
1266-1515	13.0
1516-1765	10.5
1766-2015	8.9
2016-2265	7.8
over 2265	6.4

ACTION PLAN FOR DEVELOPMENT AND DISSEMINATION OF LOW EMISSION VHECLES

By Ministry of Economy, Trade and Industry;
Ministry of Land, Infrastructure and Transport;
Ministry of the Environment - July 2001

(1) Target: 10 million EFV. (CNG powered, electric, hybrid, methanol fueled, certified low carbon/clean vehicles) in use by 2010.

(2) Encourage the development of fuel cell cars and other next-generation EFV..
   * Fuel cell cars: 50,000 units in use by 2010
   * Development of DME/next-generation hybrid vehicles and super clean diesel vehicles

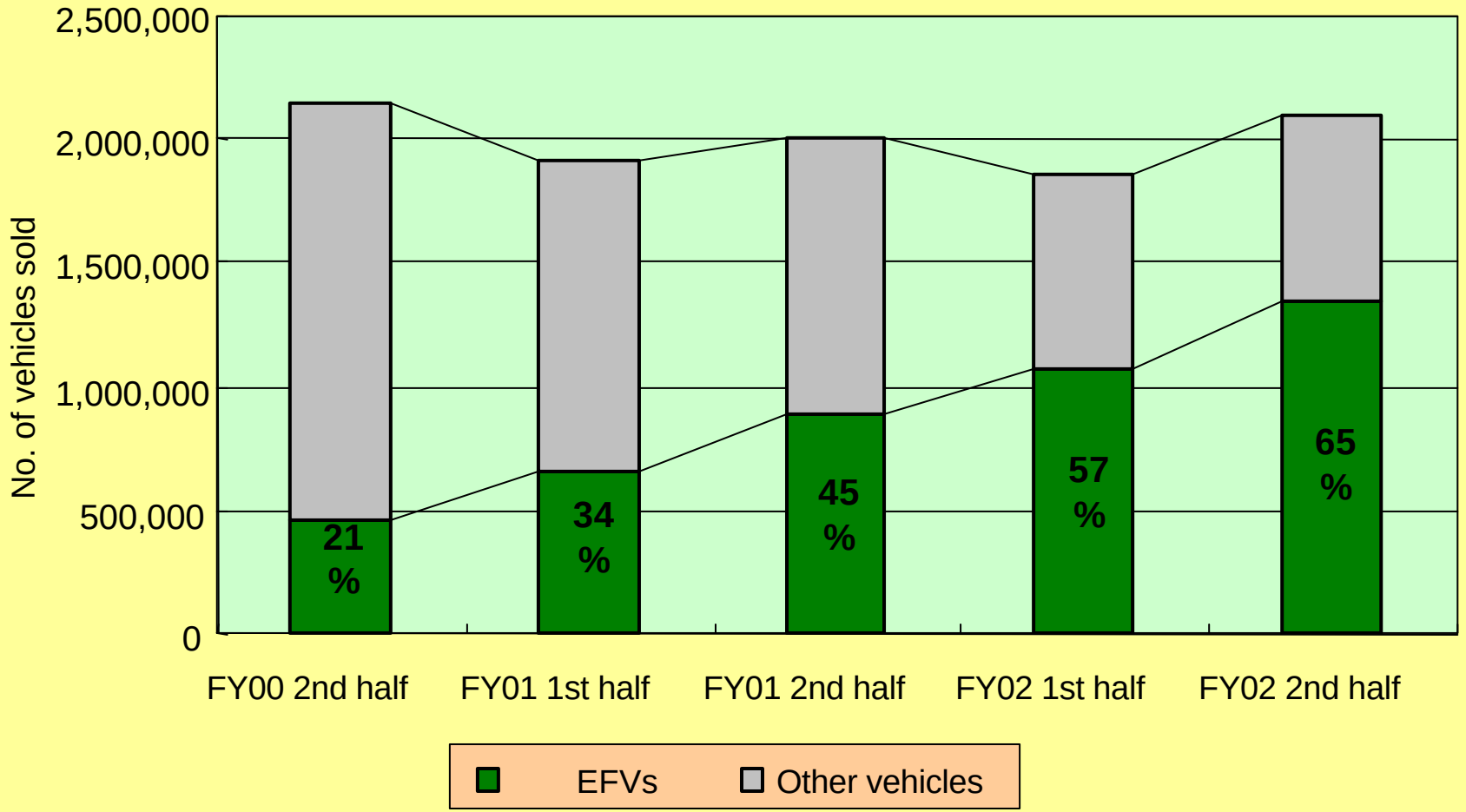
(3) Implement various measures to encourage the above-planned vehicle development and dissemination.

TAX INCENTIVES ON EFV.

	Automobile tax	Automobile purchasing tax (business use 3%, home use 5%)
CNG vehicles, etc.	50% tax cut .Passenger Car: about 100. reduction)	2.7% cut against purchasing piece (Passenger Car: about 300.reduction)
Hybrid vehicles	50% tax cut .Passenger Car: about 100. reduction)	Buses, trucks 2.7% cut Passenger cars 2.2% cut
Certified low carbon/clean vehicles		\300,000(1500.) exemption from purchasing price

SALES OF EFVs

- **Over 60% of sold vehicles were classified as the EFVs, as of 2nd half of FY 2002.**



PROMOTION OF FUEL CELL VEHICLES

Target: Use of 50,000 Fuel Cell Vehicles by 2010

Current in-use status
* Cars : 32
* Buses: 5
* Trucks: 1

Purchasing by government (since Dec. 2002)

Regulatory review for use of fuel cells (by 2005)

* **Hydrogen/fuel cell test project (FY2002-2004)**
* **Creation of hydrogen service stations**

Start of fuel cell bus public service (since Aug. 2003)

FUEL CELL VEHICLE PROMOTION PROJECT

Goal: Development of Safety and Environmental Regulations in FY2004

<Examples of ongoing study items for the development of regulations

- Preventing concentration of leakage of hydrogen gas
- Safe emission of hydrogen gas purged from fuel cell stack etc.

-Safety measures against leakage of hydrogen gas by trouble
- Safety measures against collision

- Safety of gas container, container accessories, etc.

- Safety of high voltage
- Measures against electromagnetic wave

- Environmental issues

FUEL CELL BUS ROAD RUNNING TEST

Public road test on 4 buses, Sep. 2002

Public service driving by 1 bus, Aug. 2003

Ministry of Land, Infrastructure & Transport

Ministry of Economy, Trade & Industry

Tokyo Metropolitan Government

Vehicle manufacturers

NEXT-GENERATION EFVs DEVELOPMENT PROJECT BY MLIT

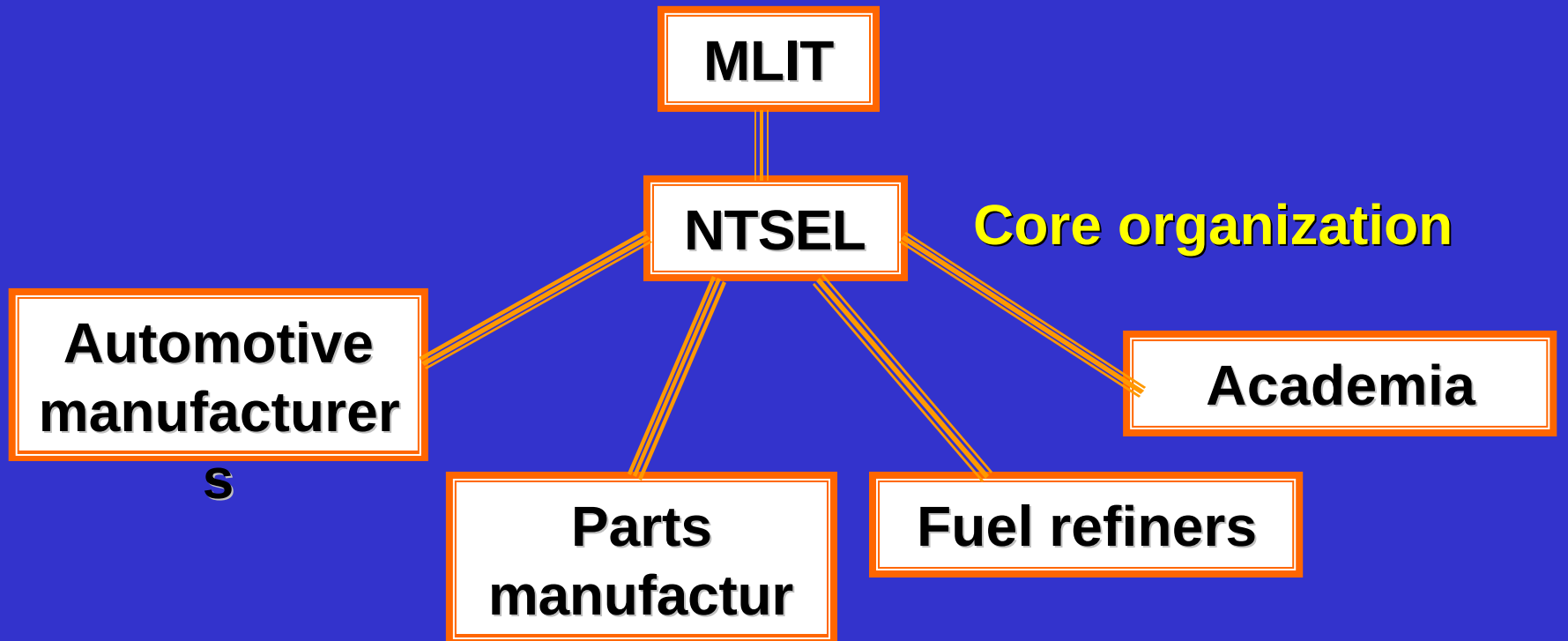
Implement 3-year (\5 billion) project from FY 2002 for the development of next-generation EFVs that will replace large diesel vehicles.

* **Developing Vehicles**
  - **Hybrid Vehicles**
  - **Super Clean Diesel Vehicles**
  - **DME Vehicles**

NEXT-GENERATION EFVs DEVELOPMENT PROJECT (Cont'd)

Participants

Automotive manufacturers, Parts manufacturers, Fuel refiners, Academia



SERIES HYBRID BUS DEVELOPMENT

City bus with 78-passenger (GVW 14 tons)

TARGET
Emission: NOx . 0.5 g/kWh
PM . 0.007 g/kWh
Fuel Economy: 50% up

Technical Features

* Diesel engine used for electric power generation only and aiming ultra low emission with new combination method and one-point steady state operation.
* Optimum engine control for continuous regeneration DPF.

PARALLEL HYBRID TRUCK DEVELOPMENT

Heavy-Duty truck of GVW 13 ton

TARGET
Emission: NOx . 0.2 g/kWh
PM . 0.003 g/kWh
Fuel economy: 50% up

Technical Features

* **Downsizing of diesel engine by increasing electric power assist.**
* **High efficiency power regeneration and non-contact battery charging with IPT system.**

CONCLUSION

* Necessary to develop environment friendly vehicles from the standpoint of protection against both air pollution and greenhouse effect.
* Effective development of environmentally friendly vehicles through the cooperation of government, industry and academia.
* Measures to promote the widespread use of environmentally friendly vehicles as important as measures to develop their technologies.