
The Integrated Approach to Environmental Issues in Japan's Road Transport

August 30th, 2016

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Toyota Motor Asia Pacific

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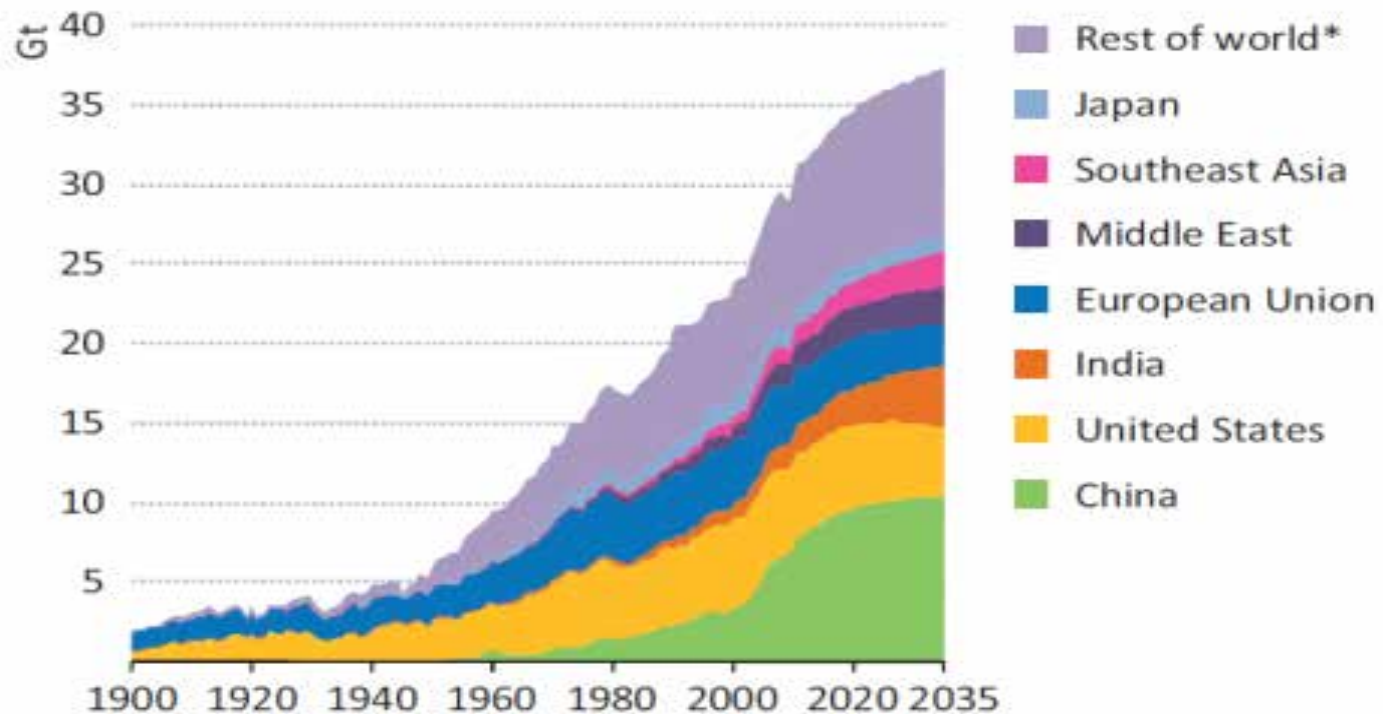
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- Current Status of CO₂ Emissions / Reduction in Road Transport
- The Integrated Approach to CO₂ Reduction in Japan's Road Transport
- The Integrated Approach: Introduction & Proposal to ASEAN

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CO₂ Emissions in Global and ASEAN

CO₂ emission is growing globally and is anticipated to continue growing.



* Rest of world includes international bunkers.

Source: *World Energy Outlook 2013*, International Energy Agency

COP21 in Paris



United Nations
Framework Convention on
Climate Change



PARIS2015
UN CLIMATE CHANGE CONFERENCE
COP21·CMP11

- The 21st session of the Conference of the Parties (COP21) to the UN Framework Convention on Climate Change was held in Paris in December 2015.



- Each participating country submitted its CO2 emissions reduction target by 2030.

CO2 Reduction Target



United Nations
Framework Convention on
Climate Change



PARIS2015
UN CLIMATE CHANGE CONFERENCE
COP21·CMP11

	Reduction from BAU* in 2030	reduction in 2030 with support by other country
Thailand	20%	-
Philippines	-	32% (in 2035)
India	33-35%	-
Indonesia	29%	41%
Vietnam	8%	25%
Malaysia	35%	45%
Korea	37%	-
Saudi Arabia	Reduction to 130 million tons in 2030	
UAE	Clean Energy will be increase to 24% in 2021	

* BAU: Business as usual

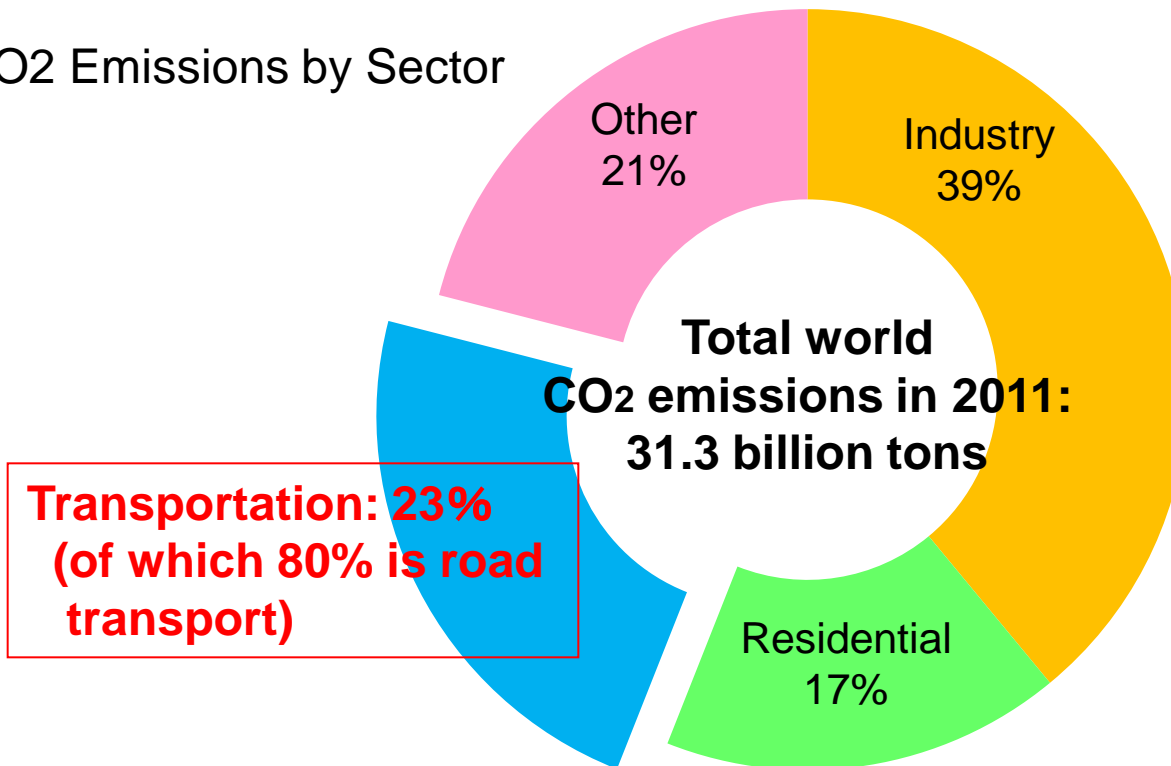
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Transport CO₂ Emissions

The transport sector accounts for approximately one-fourth of total global CO₂ emissions.

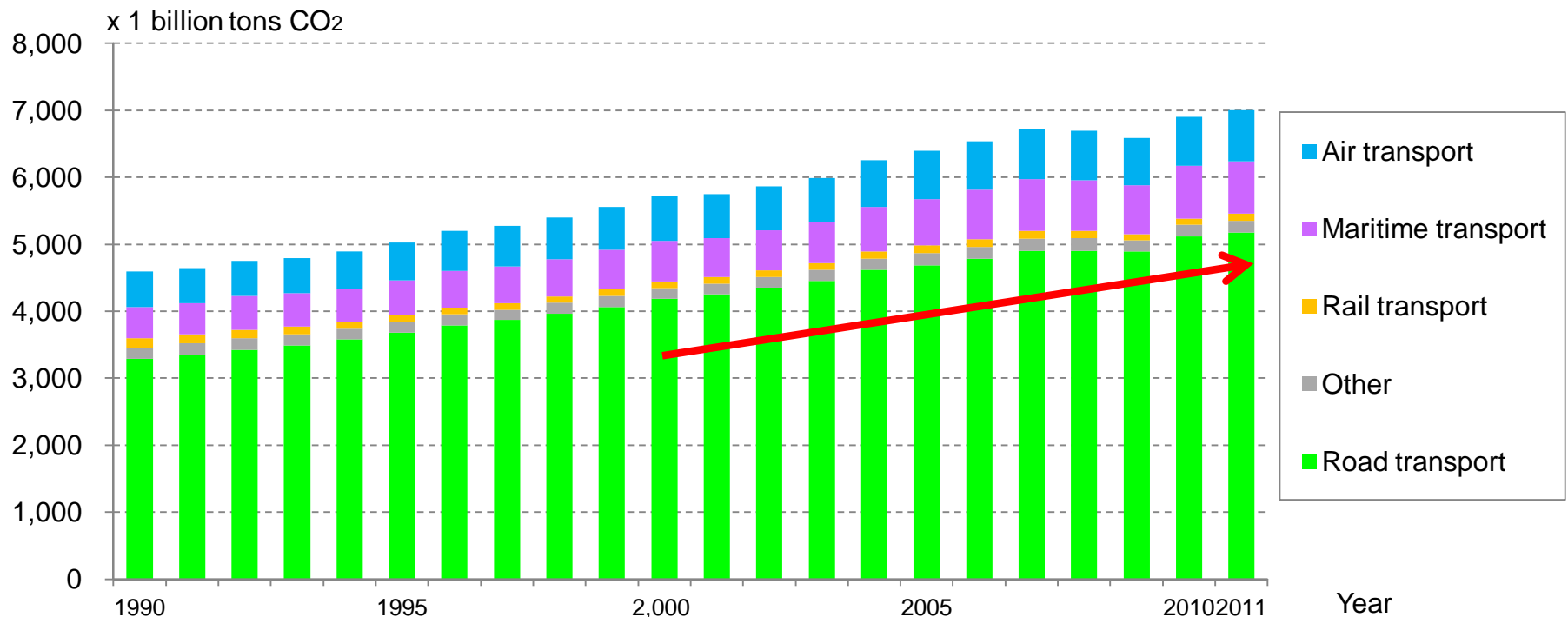
World CO₂ Emissions by Sector
(2011)



Source: *CO₂ Emissions from Fuel Combustion*, International Energy Agency (2013)

Road Transport CO2 Emissions - Global

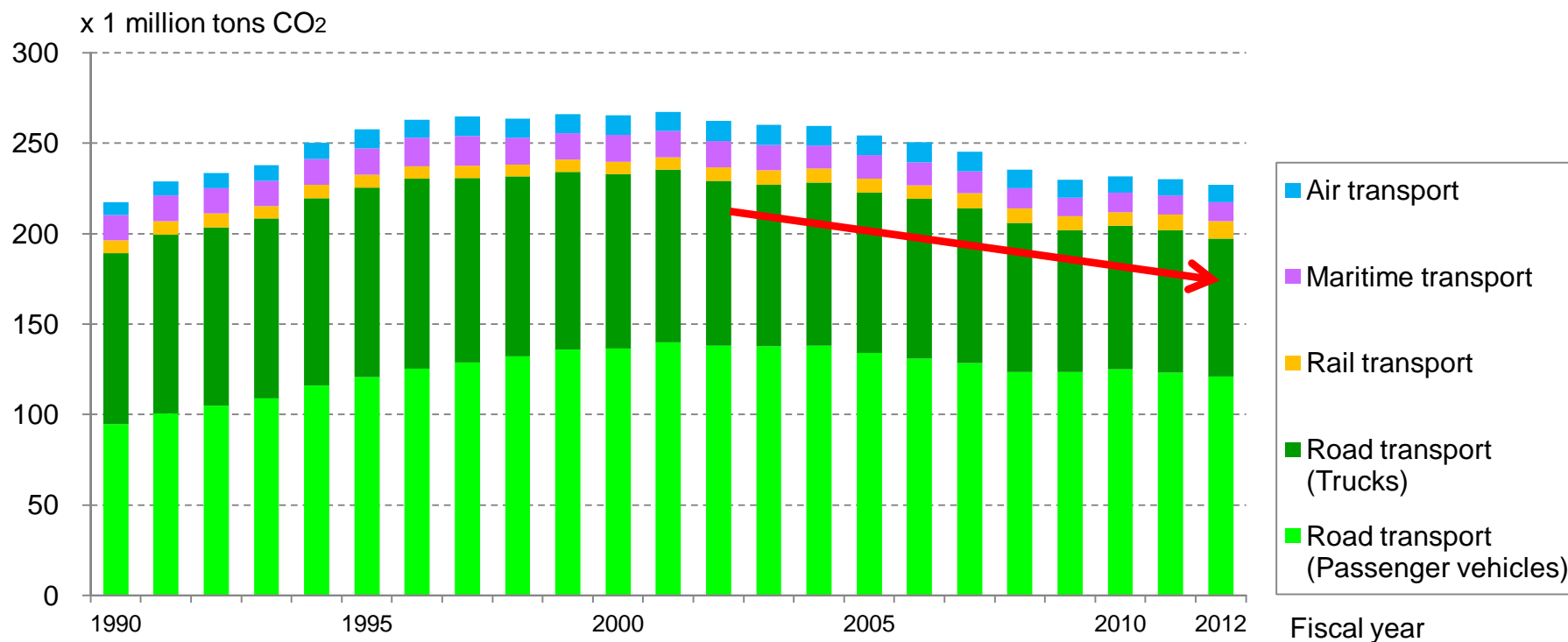
There has been a steady increase in CO2 emissions as a result of expanding motorization across the globe.



Source: CO₂ Emissions from Fuel Combustion, International Energy Agency (2013)

Road Transport CO₂ Emissions - Japan

CO₂ emissions in Japan's transport sector have declined significantly since the early 2000s.



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Japan's emissions reduction target of 26% below 2013 emission levels by 2030.

Transport sector: 225 Mt in 2013 ⇒ 163 Mt in 2030

- Through the wider use of next-generation vehicles (HEVs, EVs, PHEVs, FCVs, Clean Diesels)
- Through increased vehicle fuel efficiency
- Through the wider adoption of Eco-Driving
- Through improved traffic flow
- Through the more efficient use of vehicles

Integrated Approach to CO2 Reduction

- To achieve CO2 reduction, joint efforts by road users, infrastructure and vehicles are effective countermeasure.
- Overall activity is lead by Government, while Industry conducts approach mainly on vehicle improvement and road users education

Industry involvement

- Technology Development
- Promotion of Eco-Driving

Fuel Efficient vehicles



Vehicles

Road users

More Efficient Use of vehicle

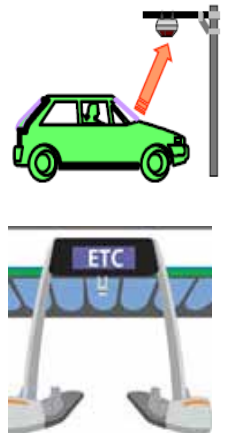


Lead by Government

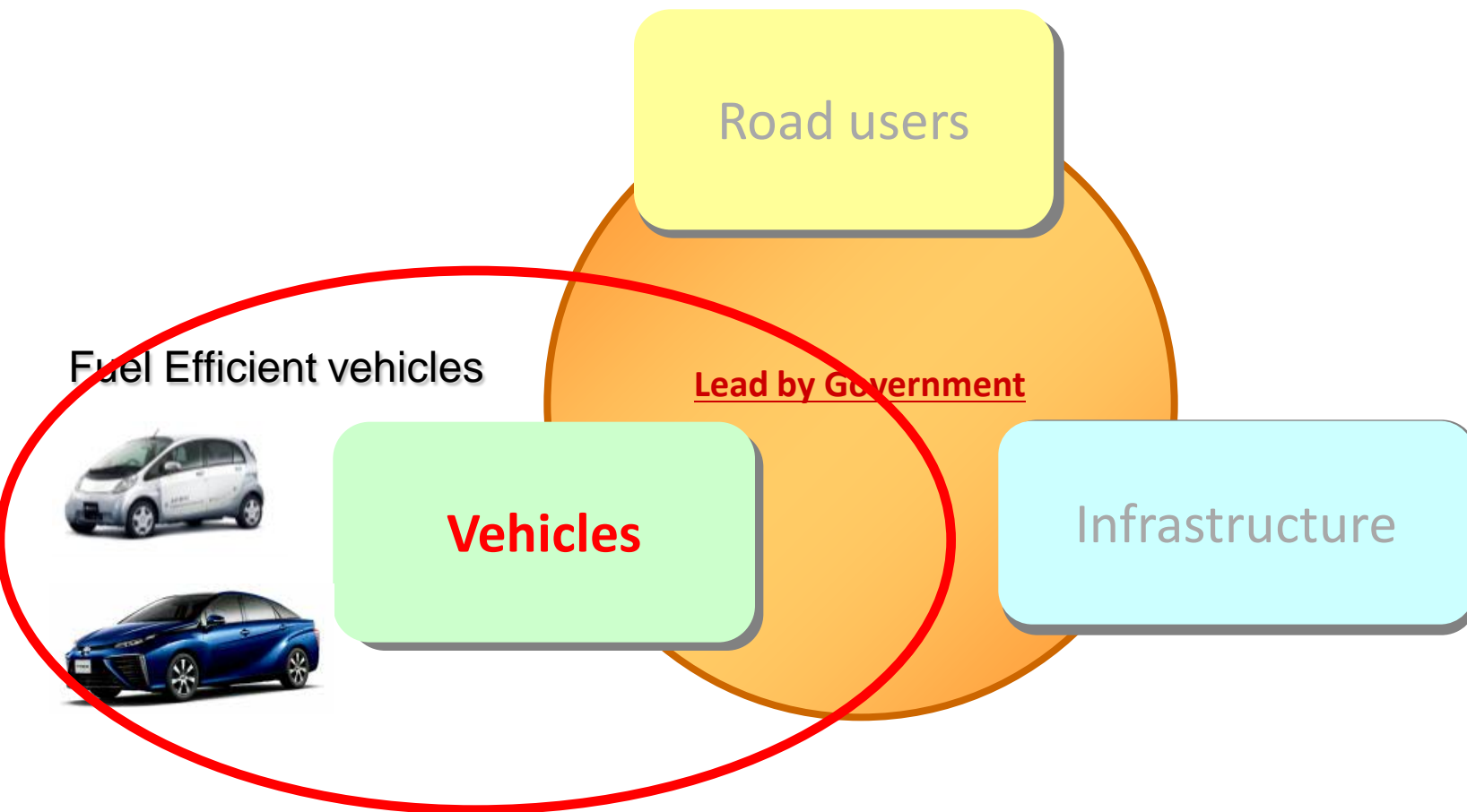
Integrated
approach to
reduce CO2

Infrastructure

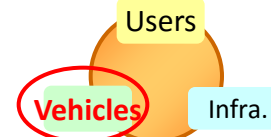
Improvement of
traffic flow



Integrated Approach to CO2 Reduction



Development of Fuel-Efficient Vehicles



Development of new technologies for fuel-efficient conventional (internal combustion engine) vehicles and next-generation vehicles.

Fuel-efficient conventional vehicles



Certified fuel-efficiency labelling (example):
37.0 km/L
(JC08 test cycle-based)

Hybrid vehicles



Electric vehicles



Fuel-cell vehicles



Clean diesel vehicles









Plug-in hybrid vehicles



Incentives for Fuel-Efficient Vehicles

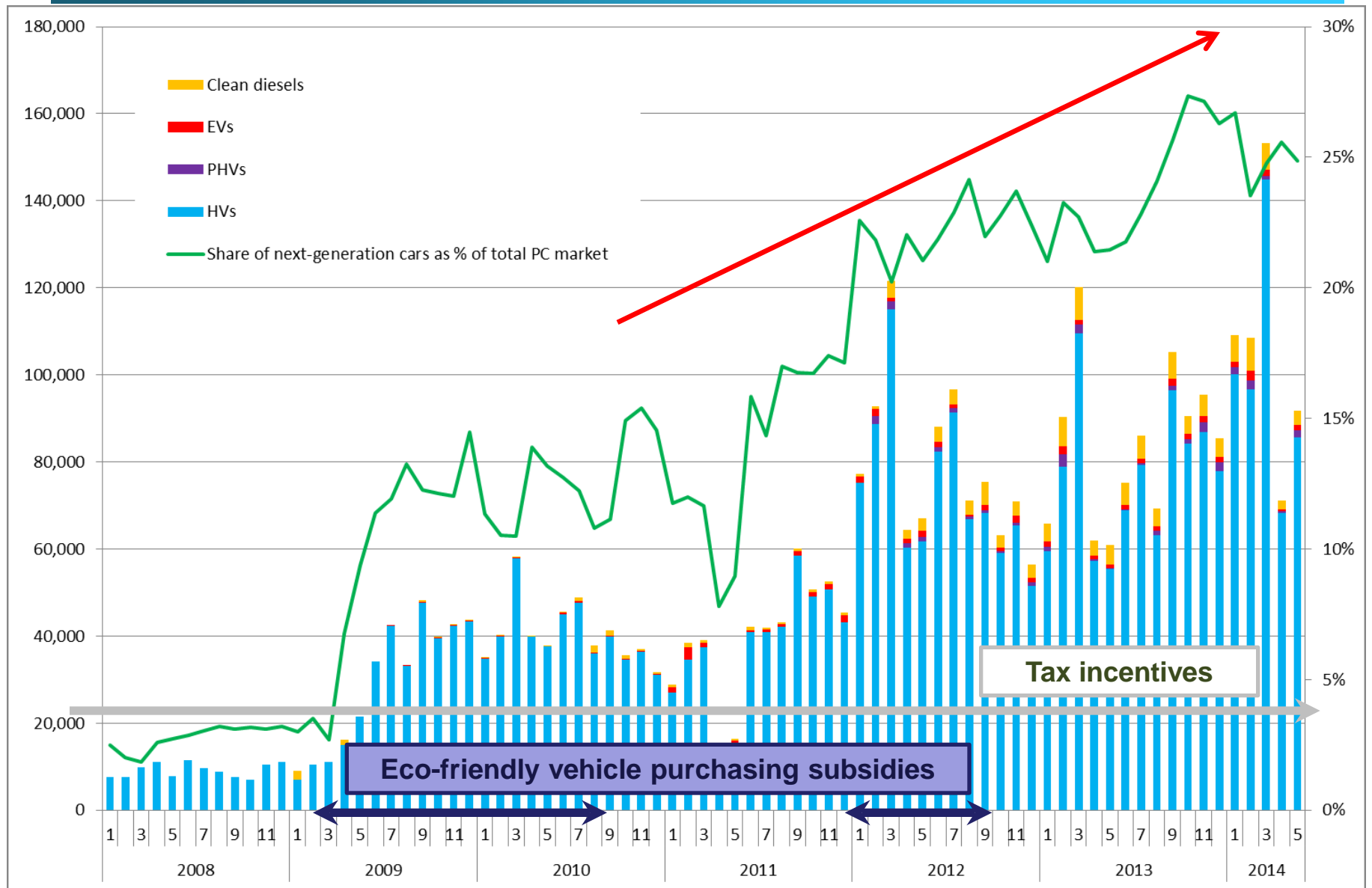
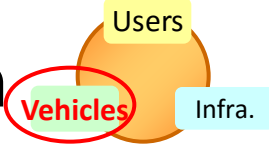
- Replacement of older vehicles with new models is stimulated by tax incentives for fuel-efficient and low-emission vehicles that are designated by an environmental performance certification and labelling system.
- All vehicle types (including trucks and buses) are awarded incentives. All users can therefore choose a vehicle with high fuel efficiency.

Japan's Tax Incentives for Fuel-Efficient and Low-Emission Vehicles (partial listing)

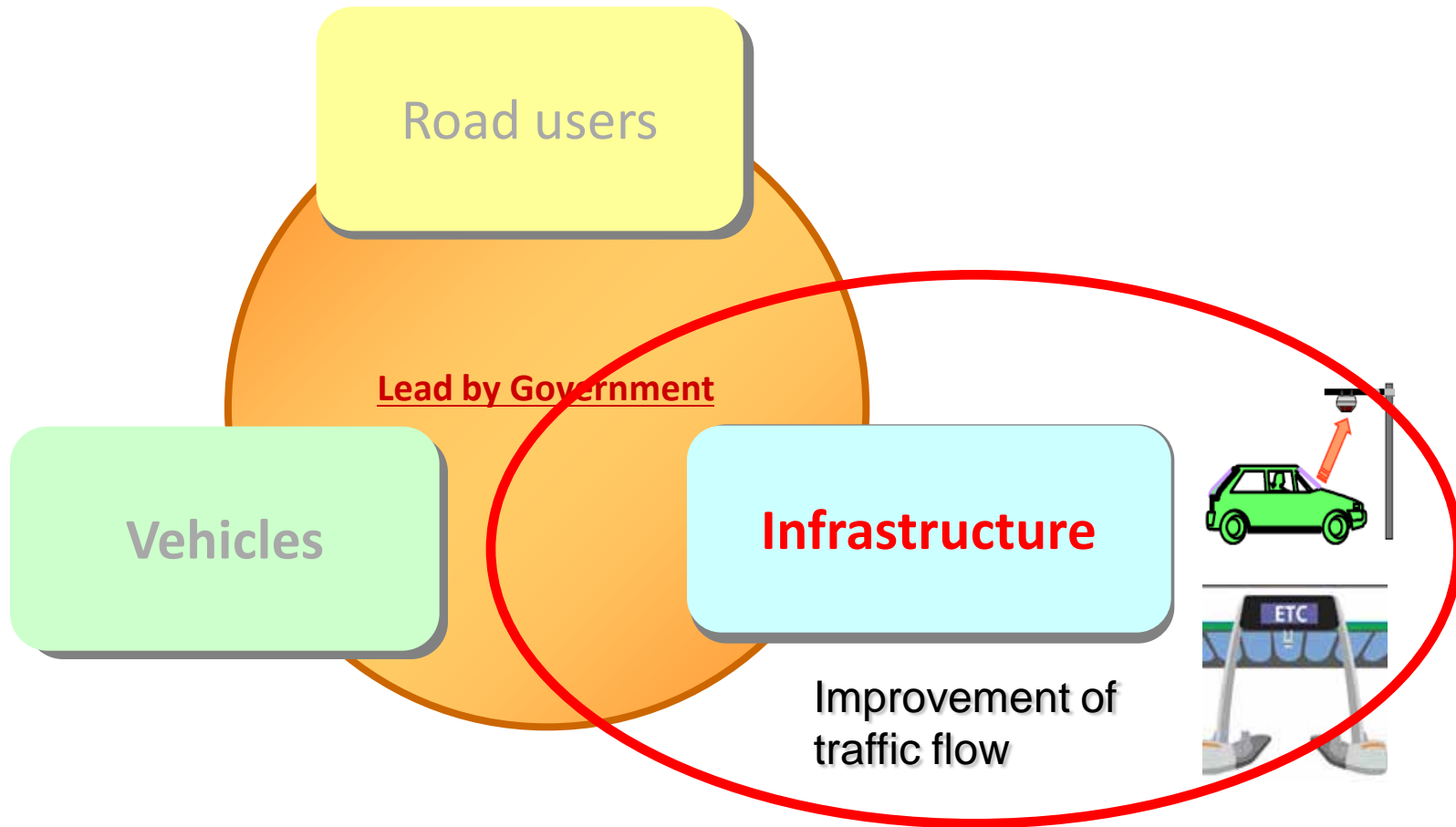
	Fuel Efficiency Criteria	Emissions Performance Criteria	Incentive	
			Acquisition Tax	Tonnage Tax
Next-Generation Vehicles	Electric (including fuel-cell), plug-in hybrid, clean diesel and natural gas vehicles		Exempt	Exempt
Passenger Cars	Compliant +20% with 2020 fuel efficiency standards 	Emissions down by 75% from 2005 standards 	Exempt	Exempt
	Compliant +10% with 2020 fuel efficiency standards 		75% reduction	75% reduction
Heavy-Duty Vehicles	Compliant +15% with 2015 fuel efficiency standards 	Compliant with 2009 emission standards, with NOx and PM emissions down by 10% from those standards 	Exempt	Exempt
	Compliant +10% with 2015 fuel efficiency standards 		80% reduction	75% reduction

Source: Ministry of Land, Infrastructure, Transport and Tourism (MLIT)

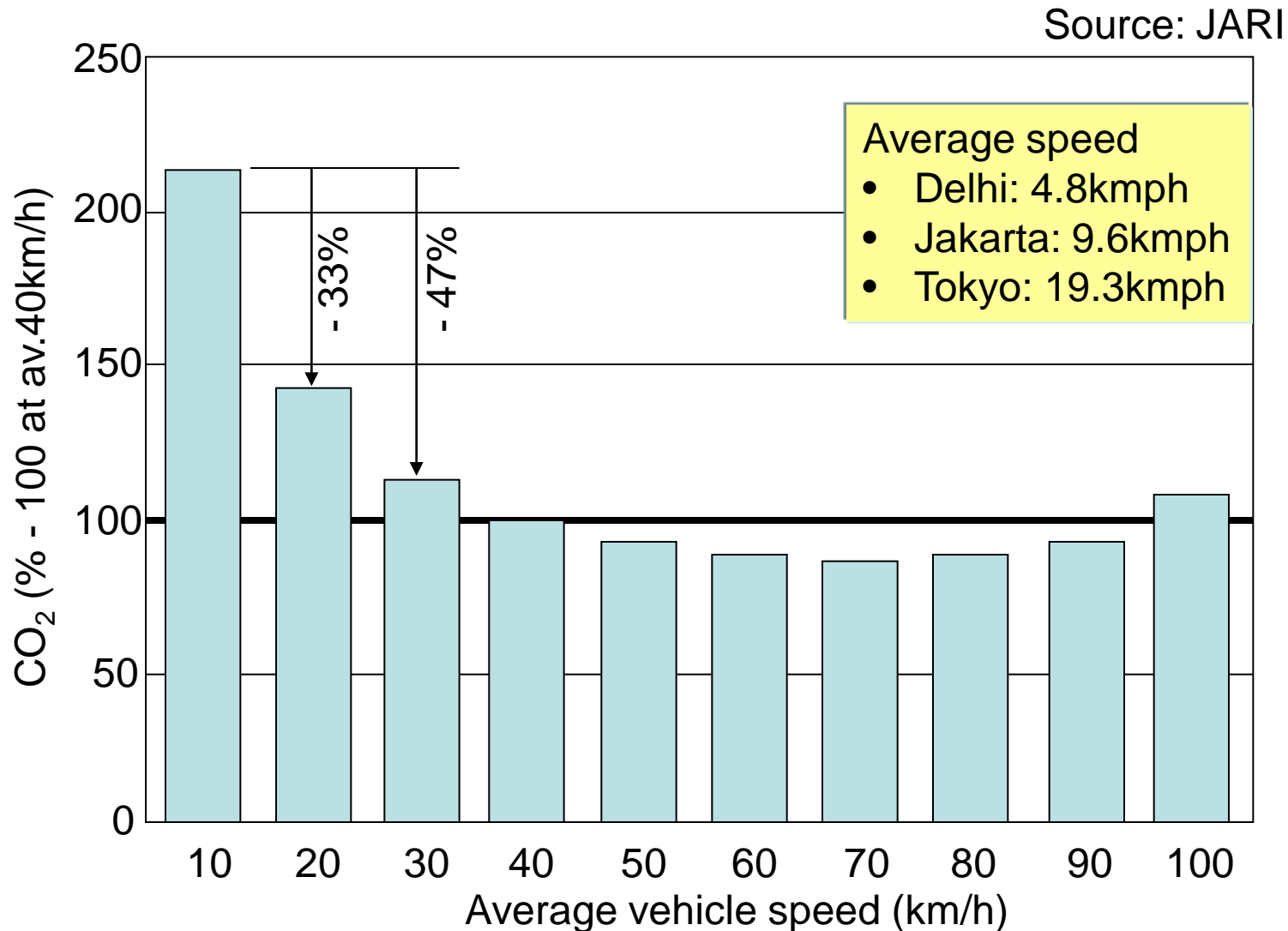
Increase in Fuel-Efficient Vehicle Sales in Japan



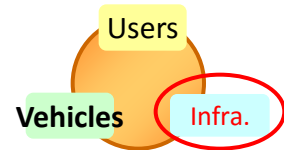
Integrated Approach to CO2 Reduction



Expected Impact by Traffic Flow Improvement



Expanding Intelligent Transport Systems



Electric toll collection and Two way road-vehicle communications system providing real-time road traffic information contributed to reducing congestion.

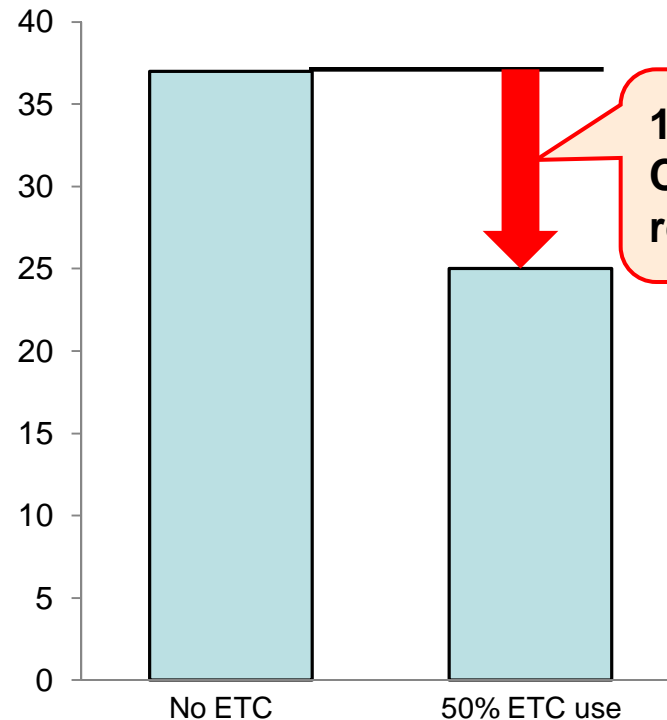
(1) Electronic Toll Collection



**ITS “spot” devices:
Approx. 1,600 sites**

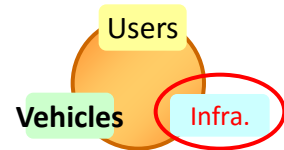
**ETC gates:
Approx. 1,000 sites**

10K ton-CO₂/year

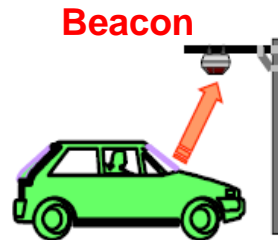


**130,000 ton-
CO₂/year, 34%
reduction**

Expanding the Use of Intelligent Transport Systems



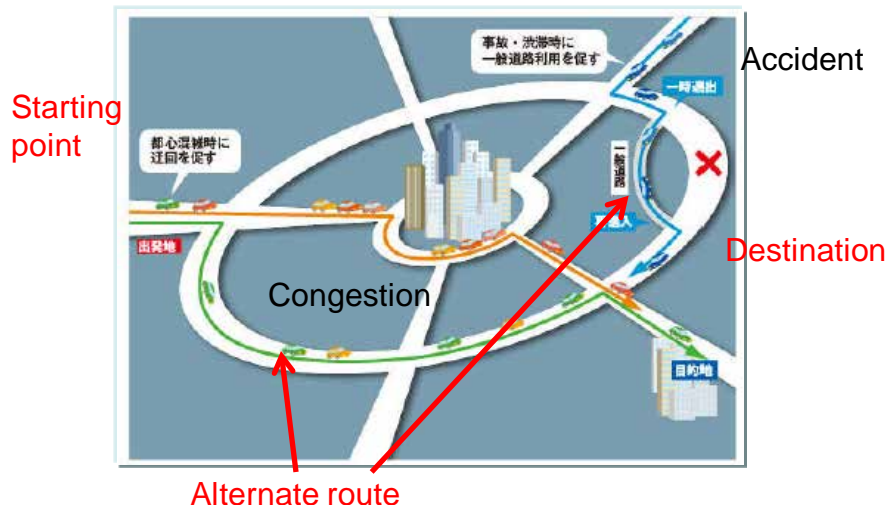
(2) Two way road-vehicle communications system



Vehicle sensors,
infrared beacons:
Approx. 34,000 sites

ITS provide route guidance and
real-time road traffic information.

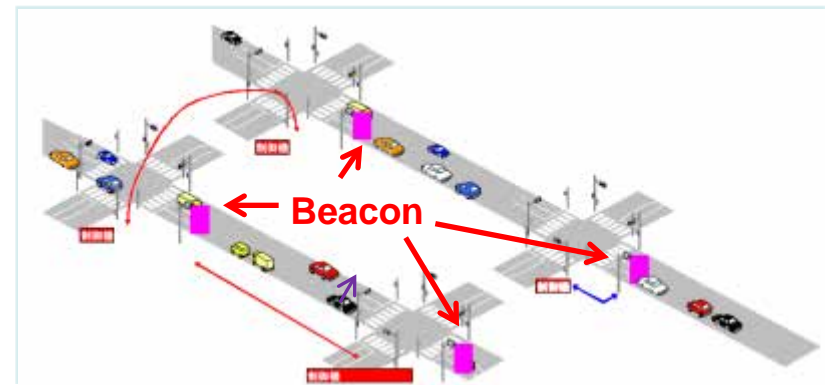
Optimal route guidance to drivers
via in-vehicle screen displays



Source: Ministry of Land, Infrastructure, Transport and Tourism

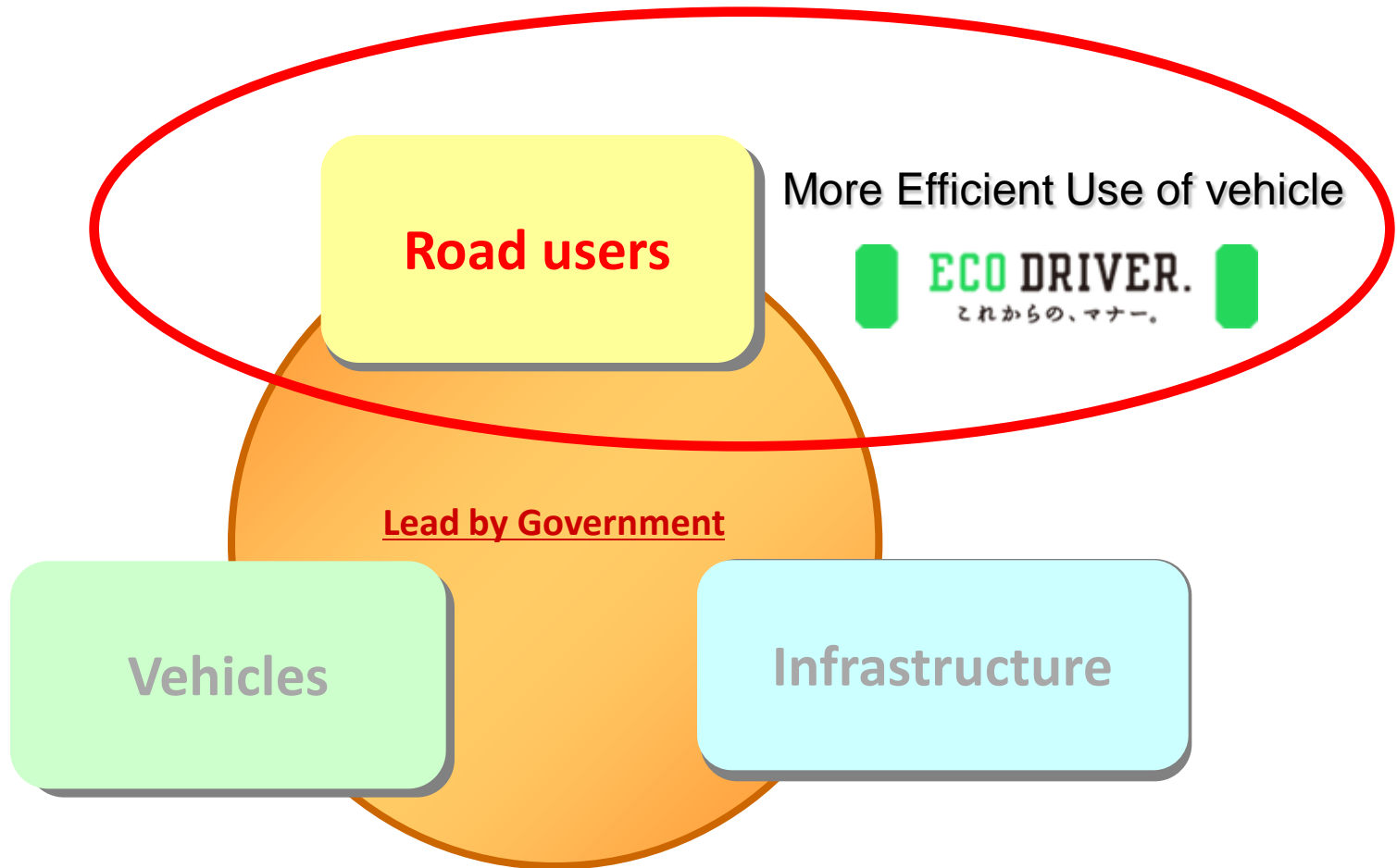
ITS provide advanced road-to-vehicle
information on traffic signals.

Real-time wide-area information on
status of signals and traffic flow



Source: Japan Automobile Research Institute

Integrated Approach to CO2 Reduction



Promoting Eco-Driving

On-road CO2 emissions are estimated to decrease by about 10% with the adoption of Eco-Driving.

Fun to Share x eco-driving

ECO DRIVER.

Fun to Share

環境省
Ministry of the Environment
Government of Japan

All of us sharing together to create a low-carbon society.

ECO DRIVER.
これからの、マナー。

ECO DRIVER Project

“Eco-driving” is more than just about helping to *improve fuel efficiency* and *prevent climate change*. It's various advantages also include *reducing traffic accidents* and *leading to greater confidence from fellow passengers and others*.

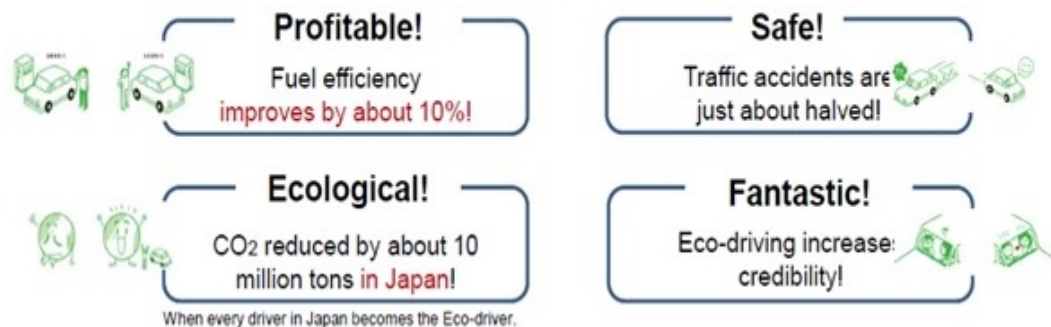
The **ECO DRIVER Project** was therefore launched in **2013** with an aim of sharing “eco-driving” nation wide.

The group of eco-drivers is spreading throughout Japan as part of the “**Fun to Share**” campaign.

Eco-Driving awareness-raising event at Tokyo Motor Show



Four kinds of happiness to be derived from eco-driving



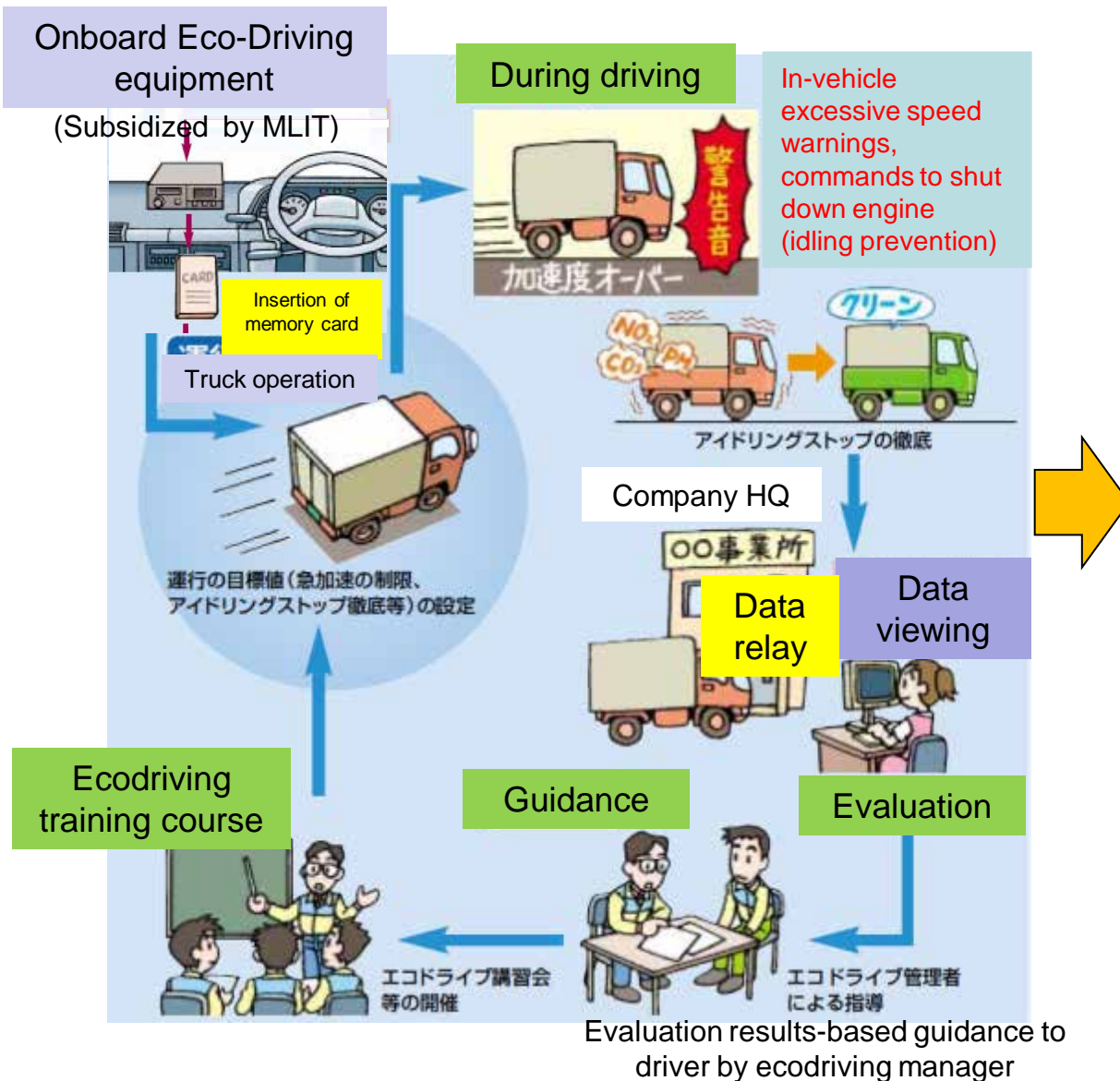
Japan's Ongoing Promotion of Eco-Driving

Ten Tips for Fuel-Conserving Ecodriving (as promoted in Japan)



1. Accelerate gently.
2. Maintain a steady speed and keep your distance.
3. Slow down by releasing the accelerator.
4. Make appropriate use of your air conditioner.
5. Don't warm up or idle your engine.
6. Plan your itinerary to avoid congested routes.
7. Check your tire pressure regularly.
8. Reduce your load.
9. Respect parking rules and regulations.
10. Check the readings on your fuel efficiency-monitoring equipment.

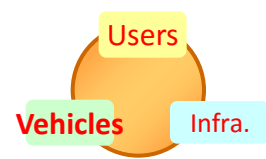
Eco-Driving Management Systems (“EMS”)



Results of EMS implementation:

- **Fuel consumption down by an average of 26.3%** (according to MLIT survey)
- Rapid adoption of Eco-Driving practices by drivers
- **Reduced fuel costs**
- **Greater safety** in truck operation, reduced accident occurrence
- **Reduced maintenance costs**

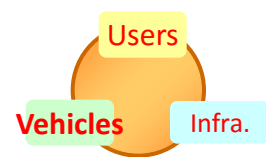
The Integrated Approach: Policy Assessment Summary



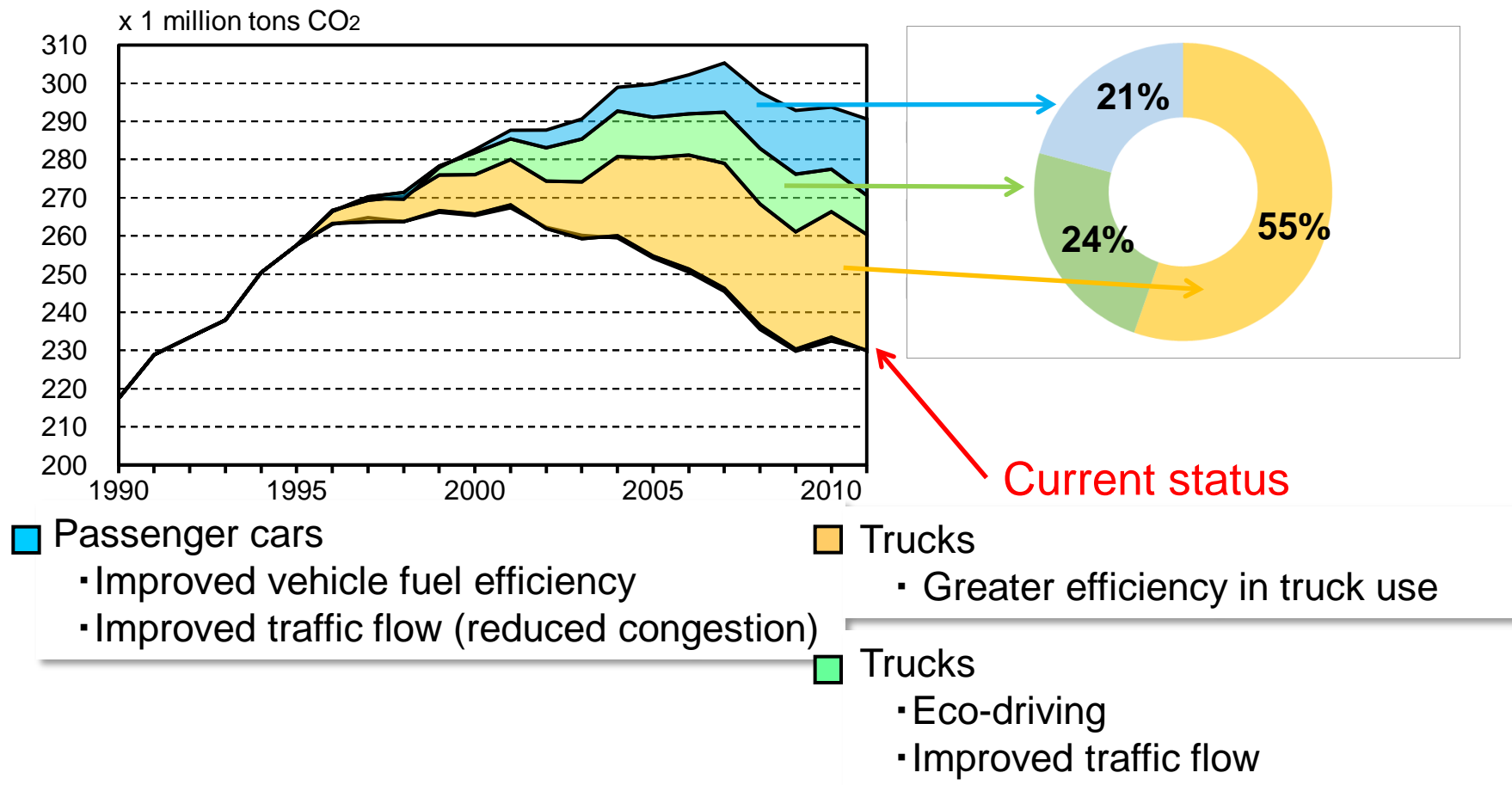
	Effect	Target	Cost	Results timing
FE labeling	+	<u>New vehicles only</u>	Low	Early
FE-based incentives	++		High	Early
Regulations on average FE	++		High for vehicles	Over 10 years
Introduction of next-generation vehicles	+++		Huge for vehicles and infra.	Long-term
Eco-Driving	++	<u>All in-use vehicles</u>	Low	Immediate
Introduction of “EMS”	++		Medium	Early
Increased efficiency in freight transport	+++		Low	Long-term
Improved traffic flow	+++		Huge	Long-term

Note: + Small, ++ Medium, +++ Big

Contributing to CO₂ Reduction in the Transport Sector



CO₂ reduction in the transport sector is mostly attributable to increased vehicle fuel efficiency and greater efficiency in truck use.



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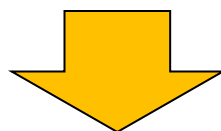
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The Integrated Approach: Introduction & Proposal to ASEAN

Introduction of the Integrated Approach

- Aug. 3, 2015, the Japan Automobile Manufacturers Associations (JAMA) and AMEICC Secretariat co-hosted high level Special Seminar at the 16th AMEICC Working Group on Automobile Industry (WG-AI) in Siem Reap, Cambodia.
- JAMA introduced and recommended the adoption of the integrated approach to ASEAN countries since we believe that our experience and knowledge in Japan are useful.

Proposal



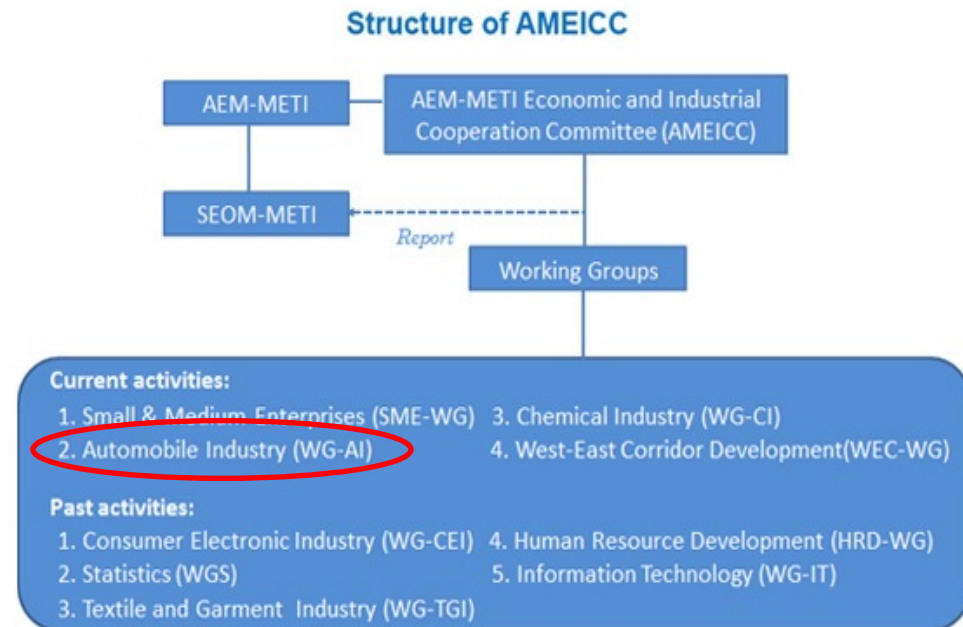
To conduct continuous discussion on creating action plans appropriate for each country by holding meetings of stakeholders in the integrated approach and acquiring a comprehensive understanding of the measures required.

The Integrated Approach: Introduction & Proposal to ASEAN

AMEICC

- ASEAN Economic Ministers and Japan's METI (AEM-METI) Economic and Industrial Cooperation Committee (AMEICC) was established in 1998.

- Annual meeting
- For policy consultations to discuss :
 - i) enhanced industrial cooperation,
 - ii) improvement of ASEAN's competitiveness
 - iii) development cooperation assistance



The Integrated Approach: Introduction & Proposal to ASEAN

JAMA Proposal to ASEAN countries

- November 11th, 2015 Thailand (TAIA-JAMA)
- November 17th, 2015 Indonesia (GAIKINDO-JAMA)
- February 17th, 2016 Thailand (TAIA-JAMA)

17th AMEICC WG-AI Meeting

- October 5 and 6, 2016 in Kuala Lumpur
- JAMA will present the activity report on the Integrated Approach in Thailand and Indonesia, and propose expansion of the activities to other ASEAN countries.

Thank you!