Recent Progress of Energy Efficiency in Transportation Sector of Japan

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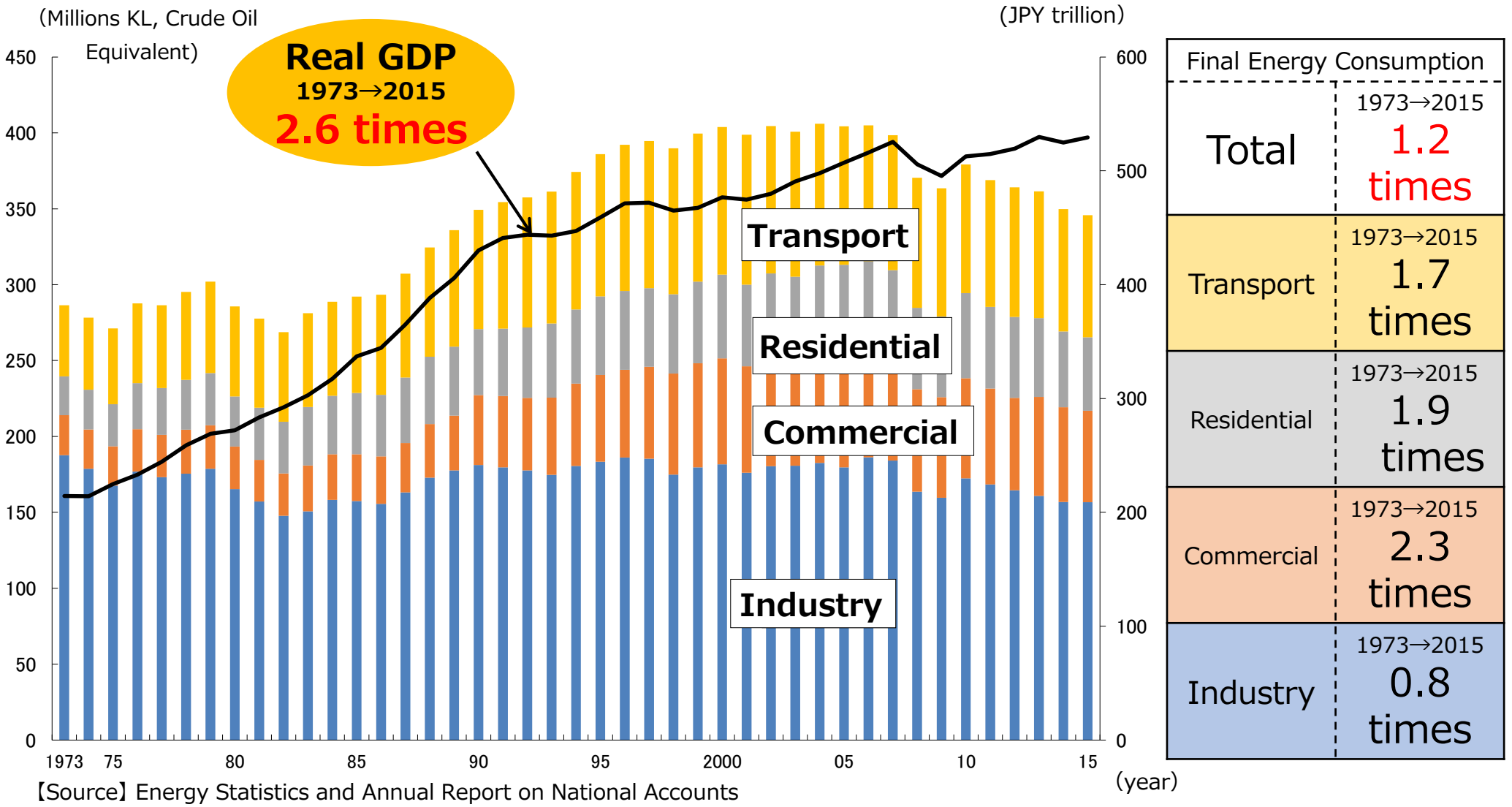
1. Energy Efficiency in General

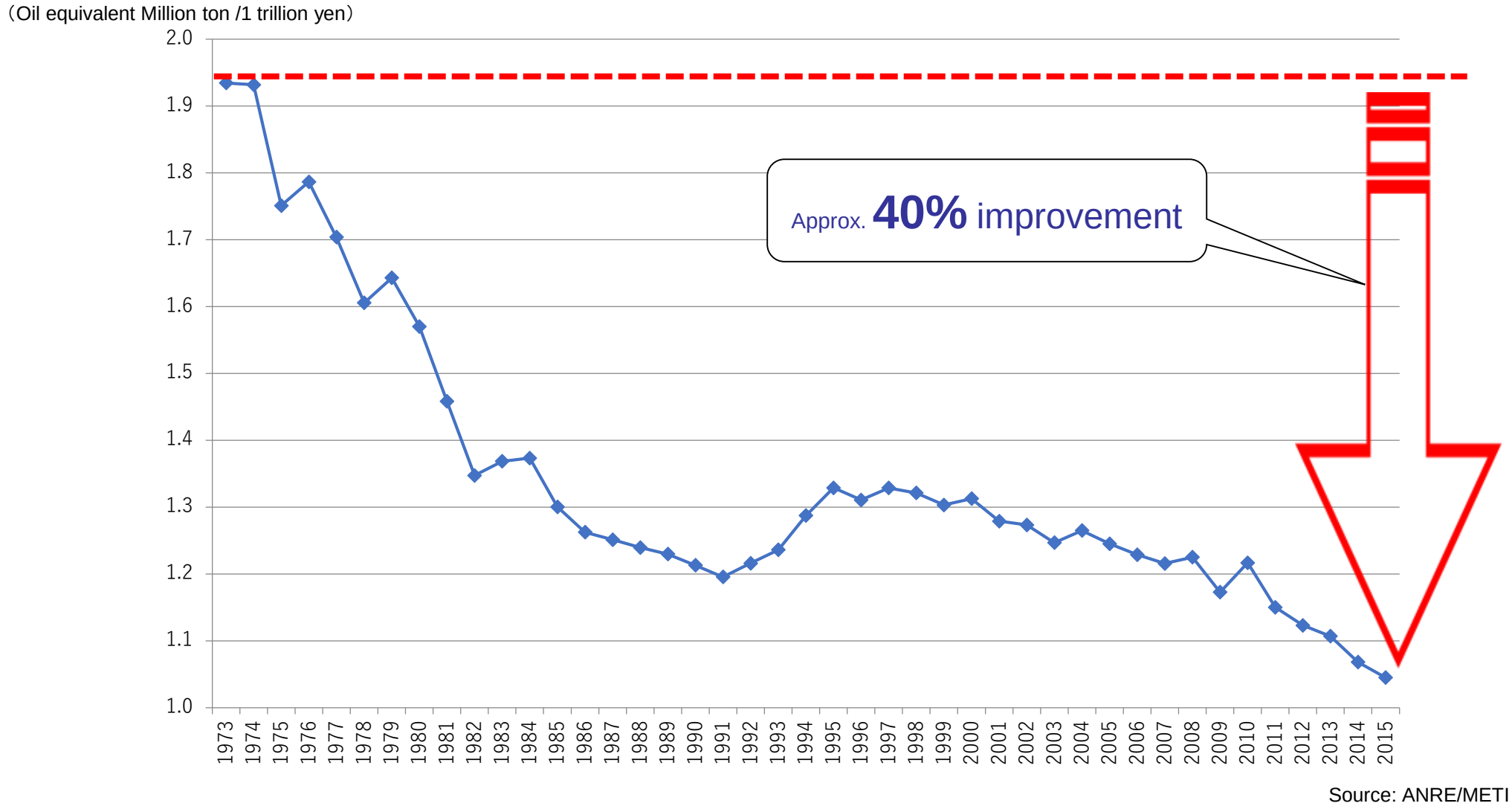
Trend of Final Energy Consumption



Final Energy Consumption	
Total	1973→2015 1.2 times
Transport	1973→2015 1.7 times
Residential	1973→2015 1.9 times
Commercial	1973→2015 2.3 times
Industry	1973→2015 0.8 times

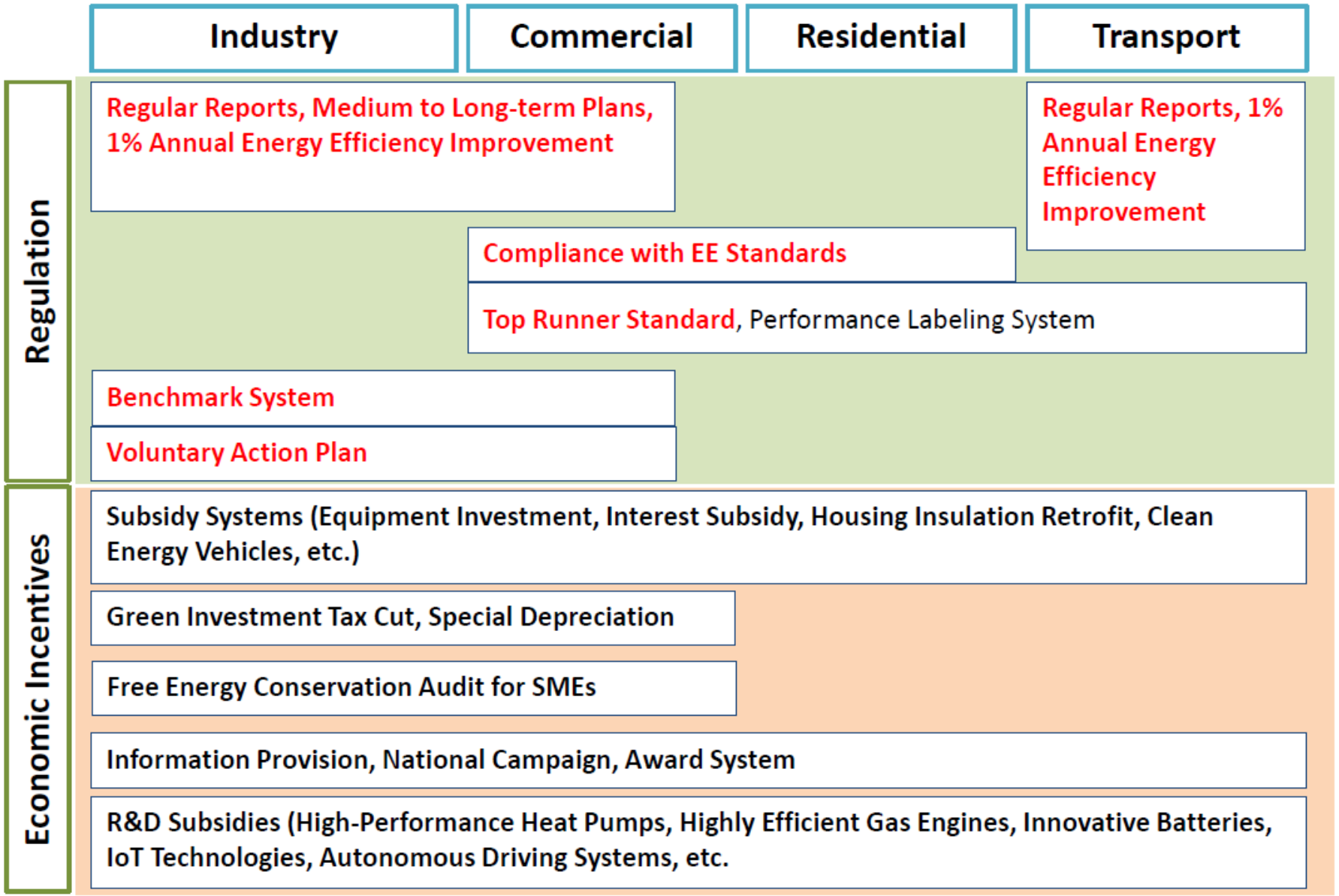
【Source】Energy Statistics and Annual Report on National Accounts

Final Energy Consumption per Real DGP



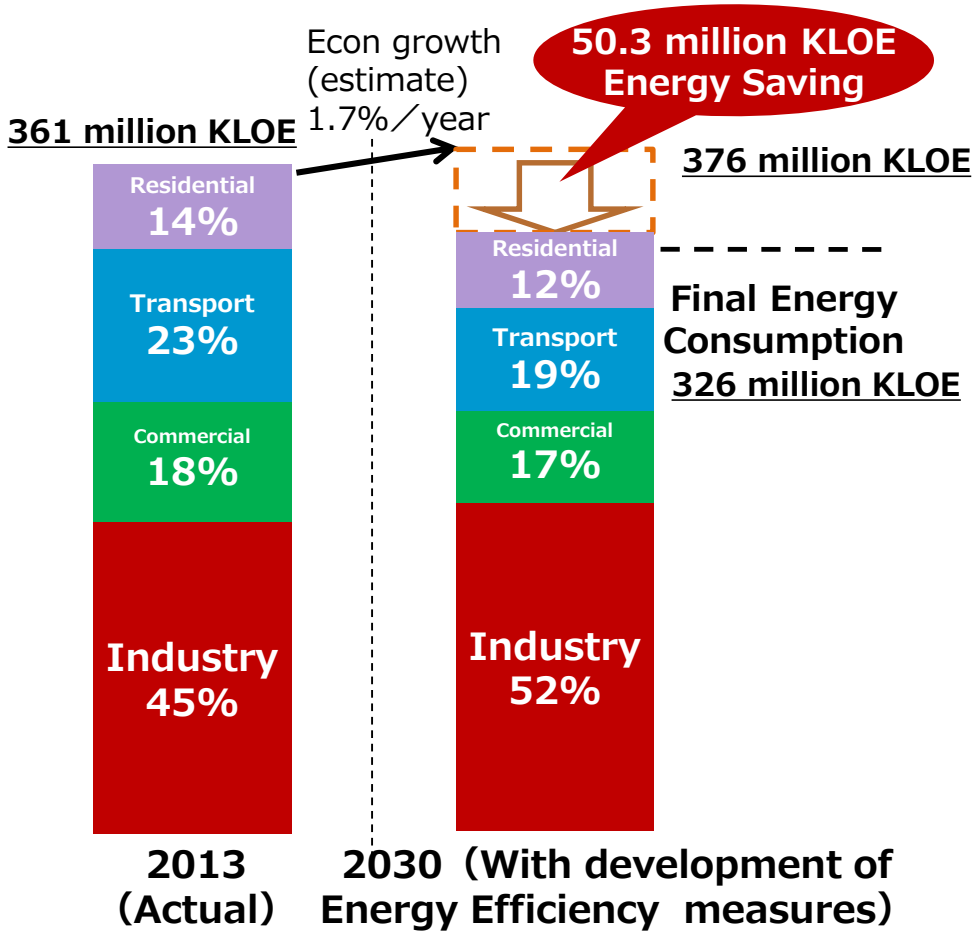
Source: ANRE/METI

Basic Framework of Energy Efficiency Policy

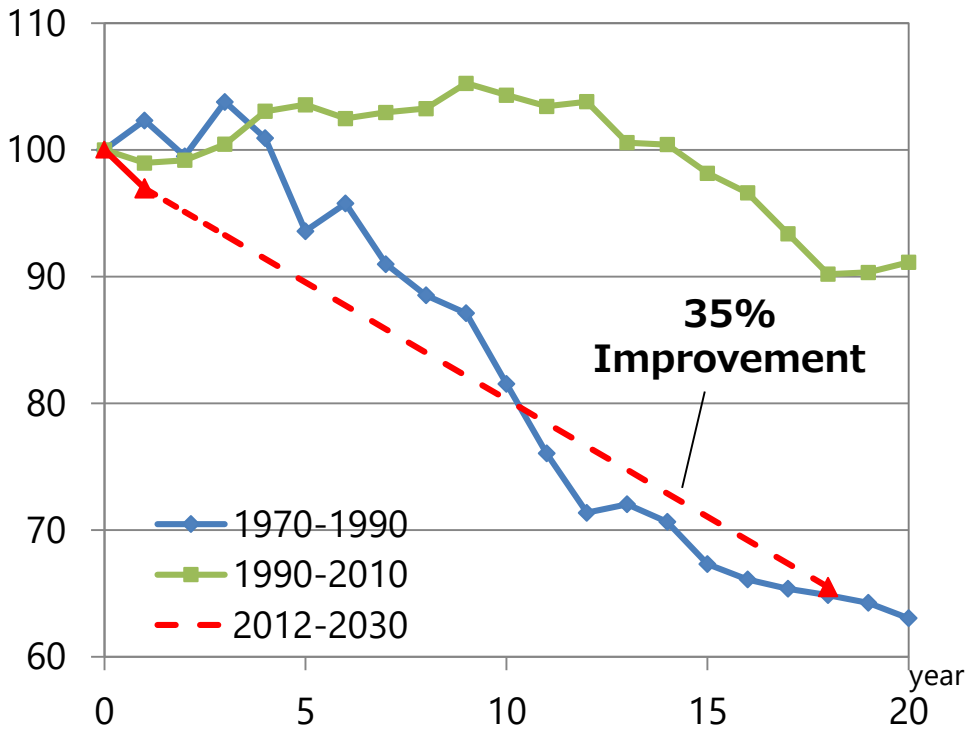


Energy Efficiency improvement towards 2030

Final energy consumption (Long-term energy demand & supply outlook)



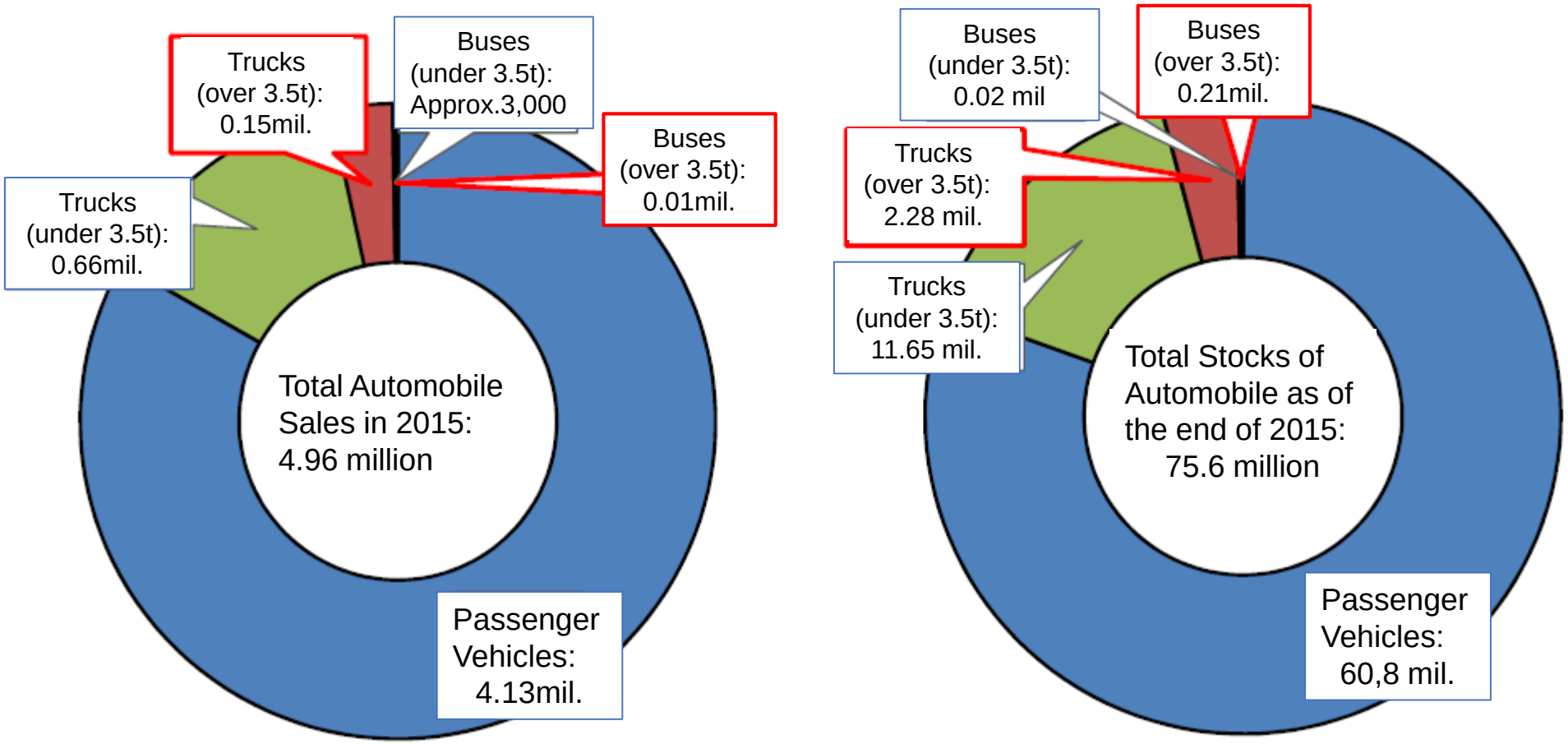
Energy Efficiency Improvement



Energy efficiency rate ＝ Final energy consumption ／real GDP

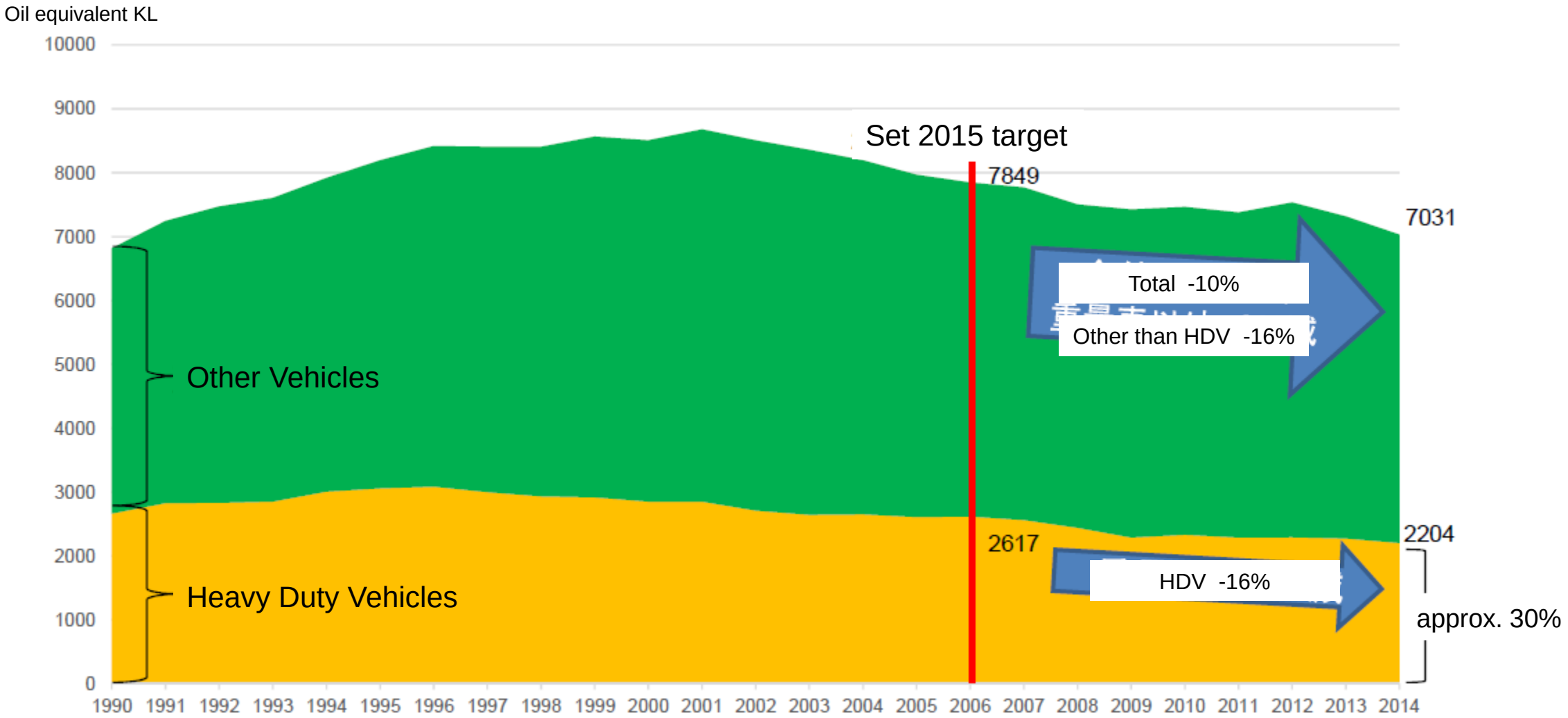
2. Energy Efficiency in Transportation Sector

Sales and Stocks of Heavy Duty Vehicles



*Trucks incl. Tractors

Trend of Fuel Consumption



Fuel Efficiency Categories for Heavy Duty Vehicles

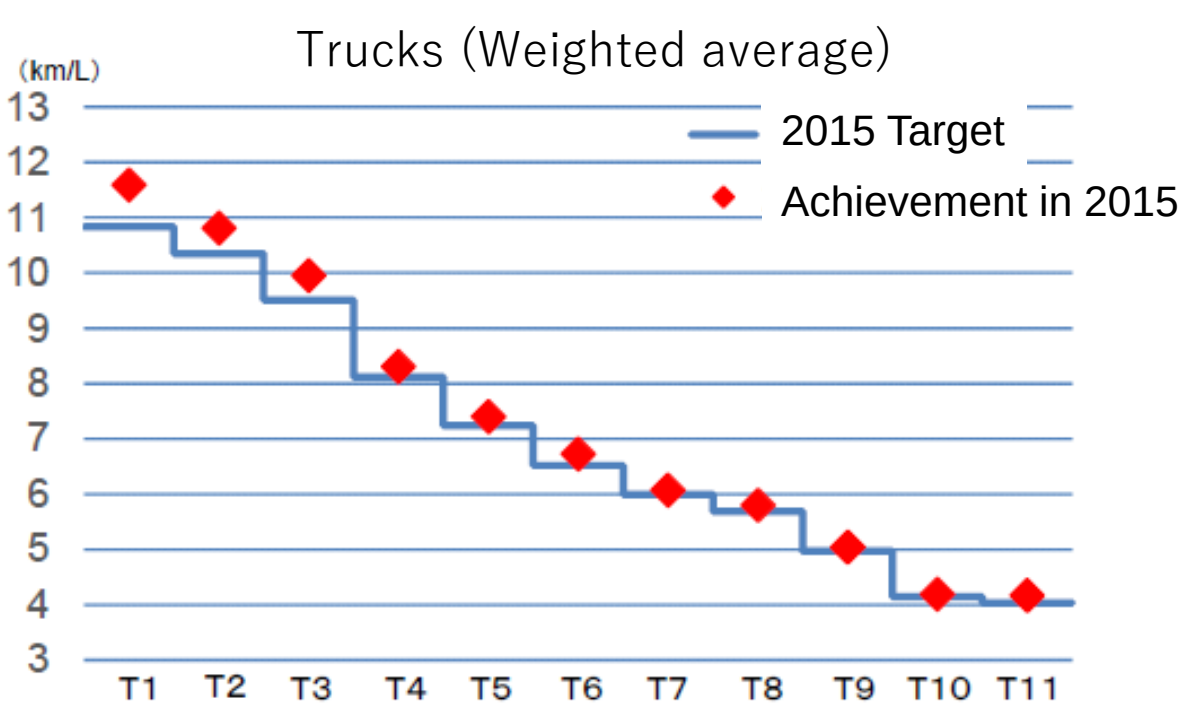
[Freight vehicles]

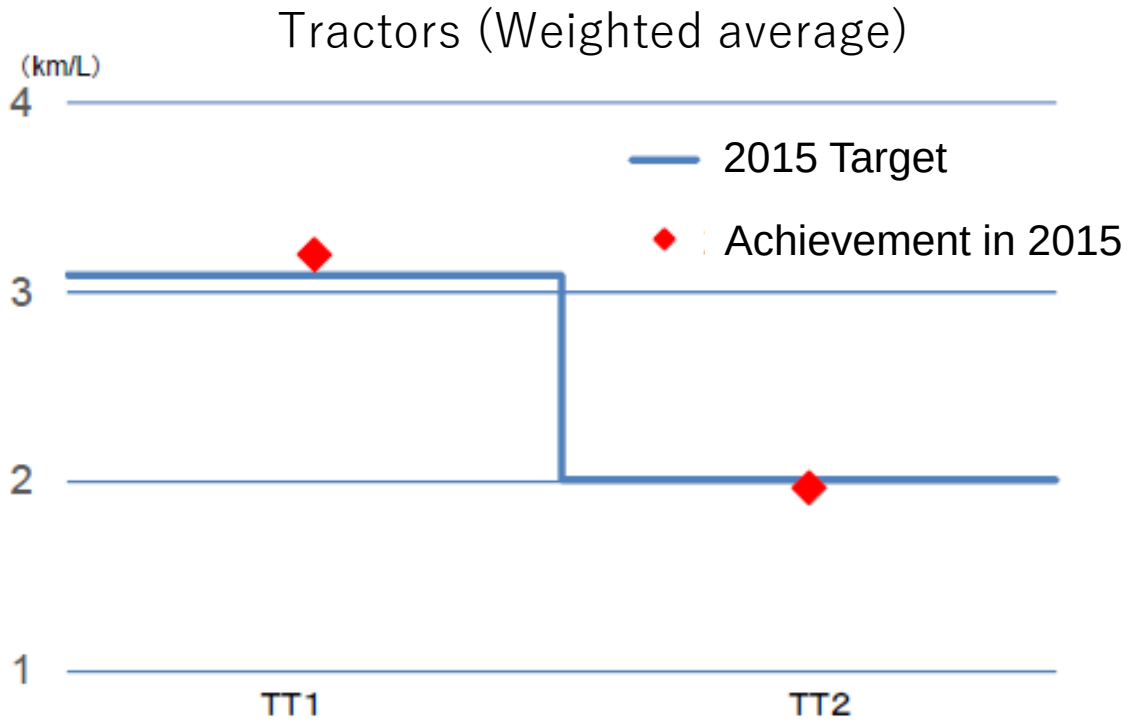
Category		Gross vehicle weight (GVW) in ton	Payload (PL) in ton
Trucks	1	3.5 < GVW ≦ 7.5	PL ≦ 1.5
	2		1.5 < PL ≦ 2
	3		2 < PL ≦ 3
	4		3 < PL
	5	7.5 < GVW ≦ 8	
	6	8 < GVW ≦ 10	
	7	10 < GVW ≦ 12	
	8	12 < GVW ≦ 14	
	9	14 < GVW ≦ 16	
	10	16 < GVW ≦ 20	
	11	20 < GVW ≦ 25	
Tractors	1	GVW ≦ 20	
	2	20 < GVW	

[Passenger heavy duty vehicles]

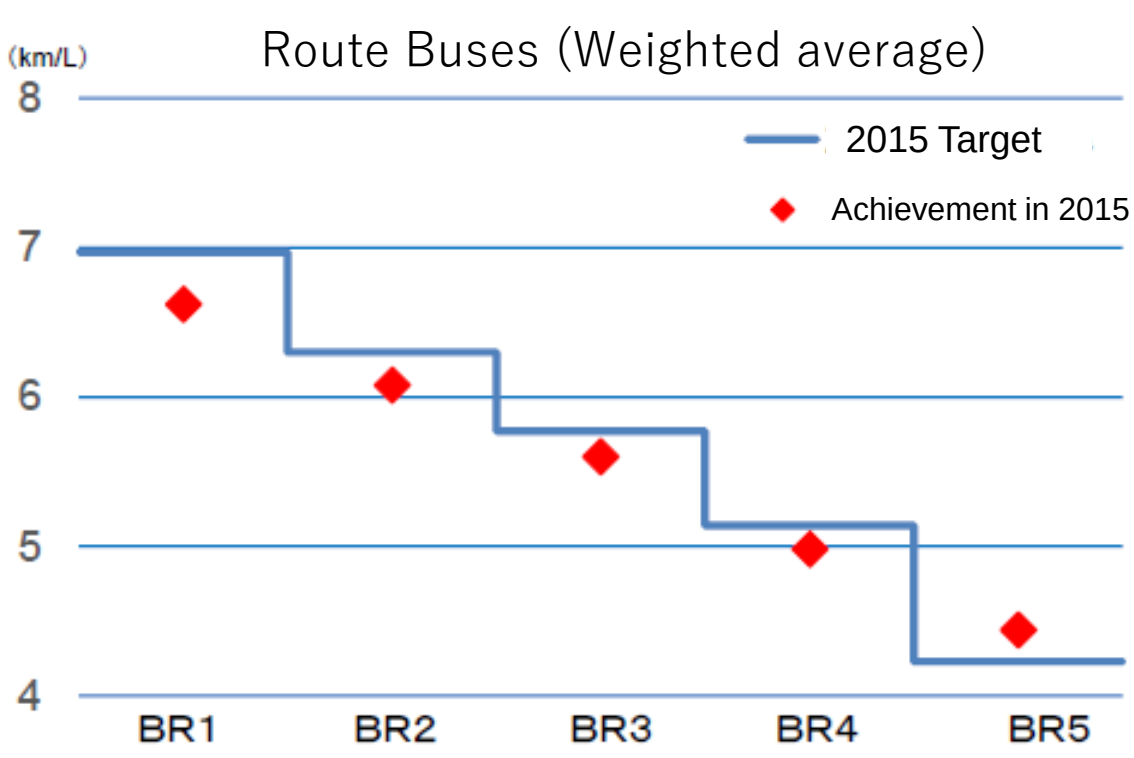
Category		Gross vehicle weight (GVW) in ton
Route buses	1	6 < GVW ≦ 8
	2	8 < GVW ≦ 10
	3	10 < GVW ≦ 12
	4	12 < GVW ≦ 14
	5	14 < GVW
Other buses	1	3.5 < GVW ≦ 6
	2	6 < GVW ≦ 8
	3	8 < GVW ≦ 10
	4	10 < GVW ≦ 12
	5	12 < GVW ≦ 14
	6	14 < GVW ≦ 16
	7	16 < GVW

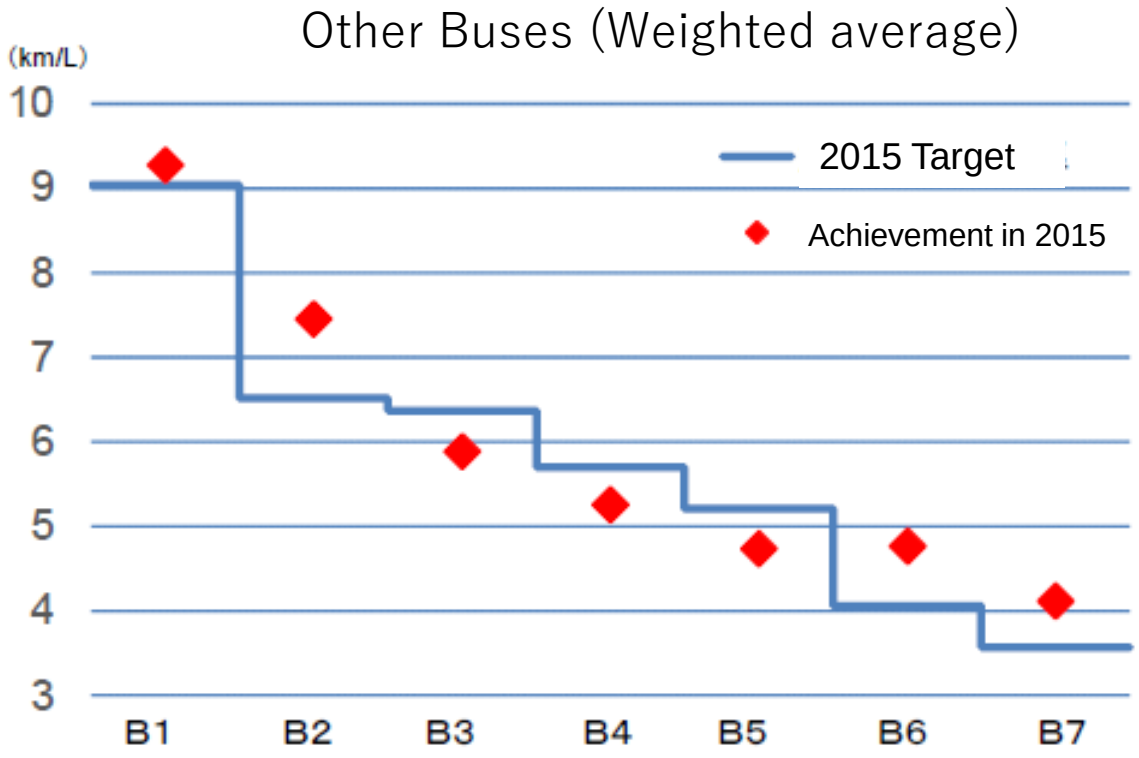
Achievement of 2015 Target (Trucks and Tractors)





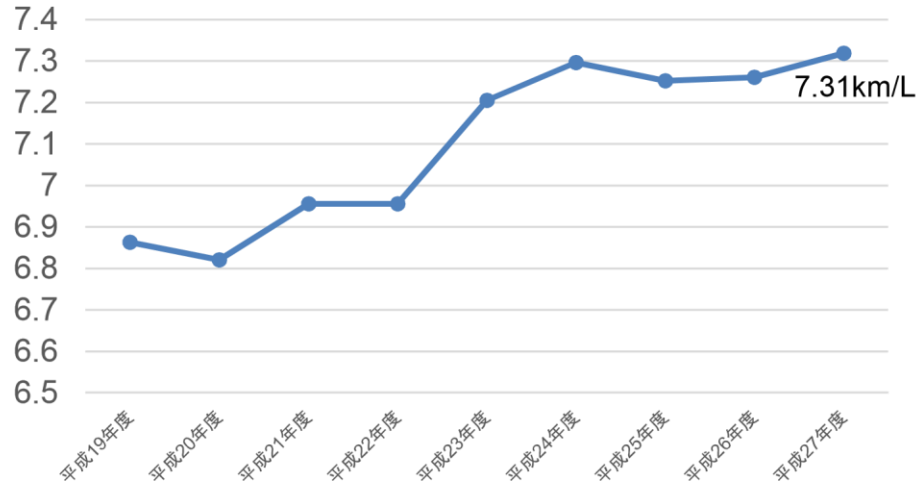
Achievement of 2015 Target (Buses)



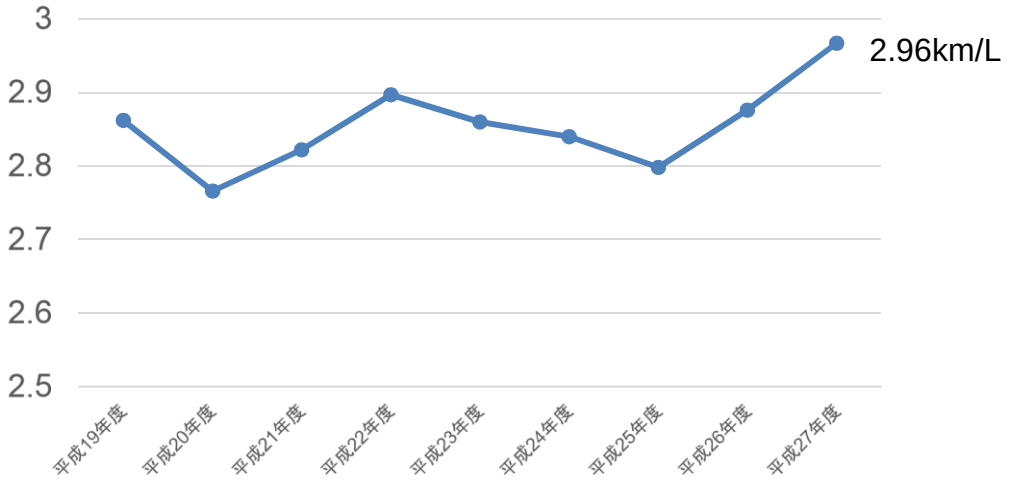


Trend of Weighted Average of Fuel Consumption

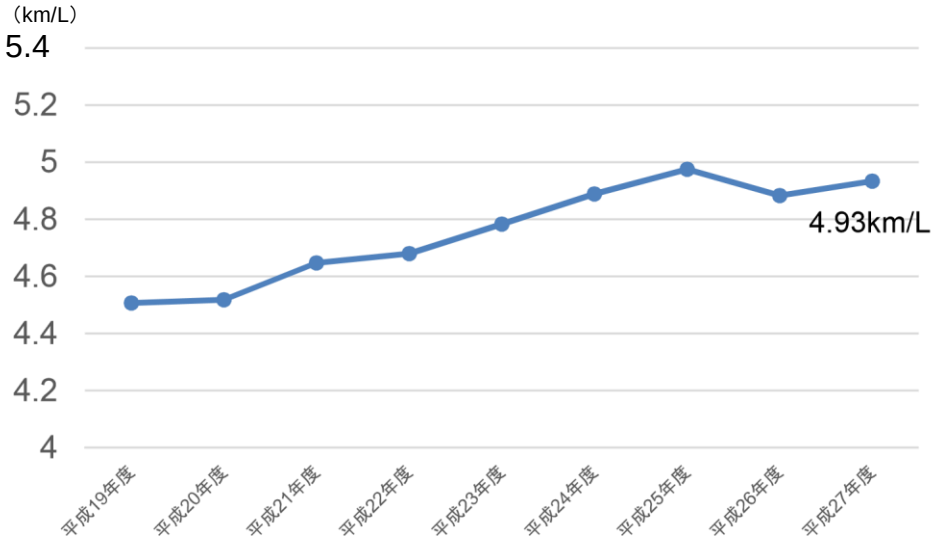
Trucks (Weighted average)



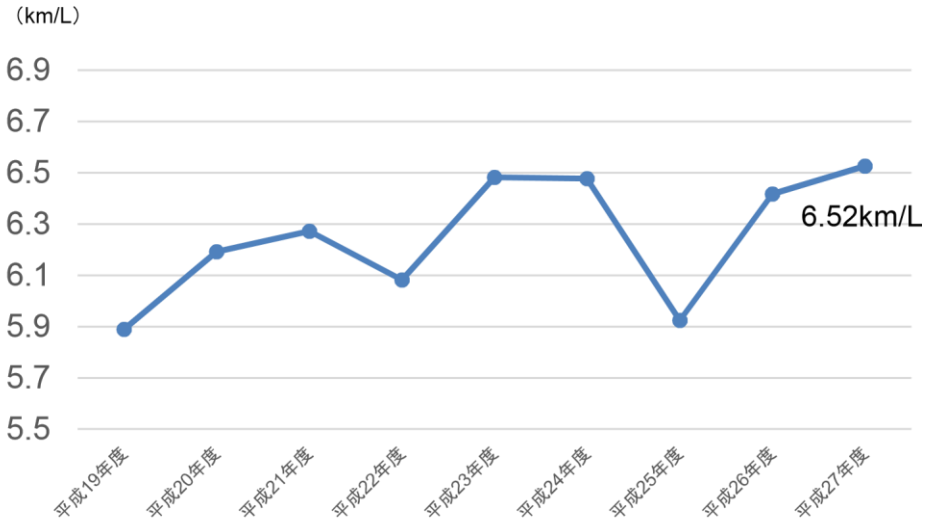
Tractors (Weighted average)



Route Buses (Weighted average)



Other Buses (Weighted average)



How to set the Target Standards

(1) Selection of the Top Runner

- ✓ The Top Runner shall be the most fuel-efficient heavy vehicle in each category currently available on the market in FY2014, having the best fuel-efficiency in the heavy vehicle mode in each category.

(2) Evaluation of the improvement in fuel efficiency achievable by technical development

- ✓ In establishing the target standards, the expected technical improvement rate in fuel efficiency based on the following concept shall be also reflected.

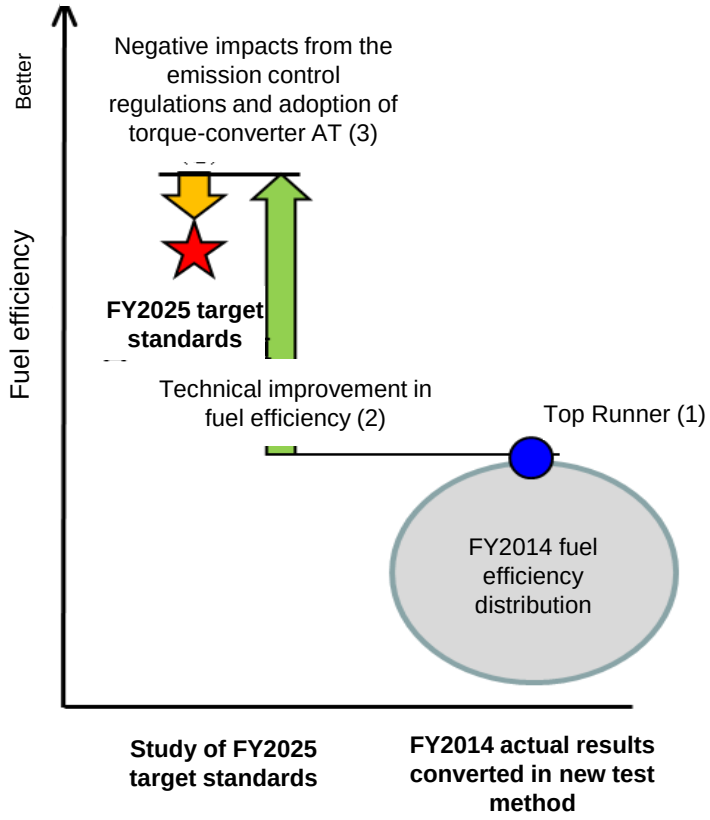
  Expected technical improvement rate
  = Σ [(Popularity in FY2025) x (Technical improvement rate in fuel efficiency)]

- ✓ However, the technology already adopted in the Top Runner is exempted from this evaluation as its efficiency is already proven.

(3) Evaluation of negative impacts in fuel efficiency

- ✓ In heavy vehicles, negative impacts in fuel efficiency shall also be estimated and reflected in establishing the target standards, such as the introduction of new technologies to reduce NOx and PM in association with the stricter emission control regulations to be enforced on all vehicles by FY2019 and the adoption of torque-converter AT, which in general has lesser fuel efficiency compared with MT.

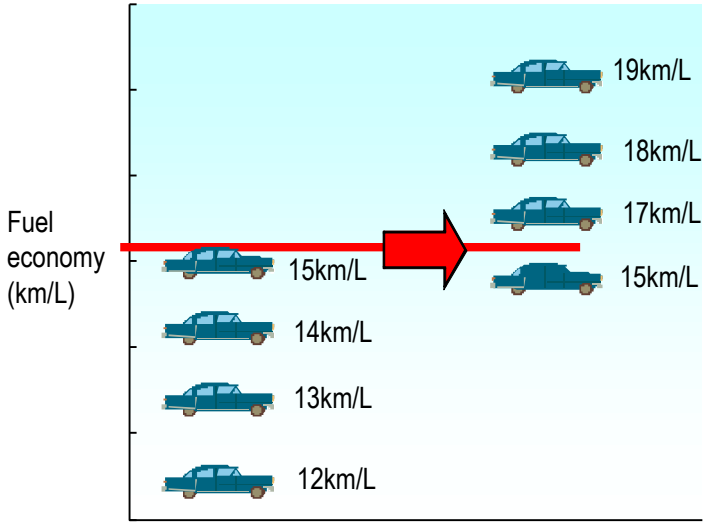
Image of target standard evaluation



Target standards = Top Runner's fuel efficiency (1) + Technical improvement rate (2) - Negative impacts in fuel efficiency (3)

Top Runner Programme in Transportation Sector

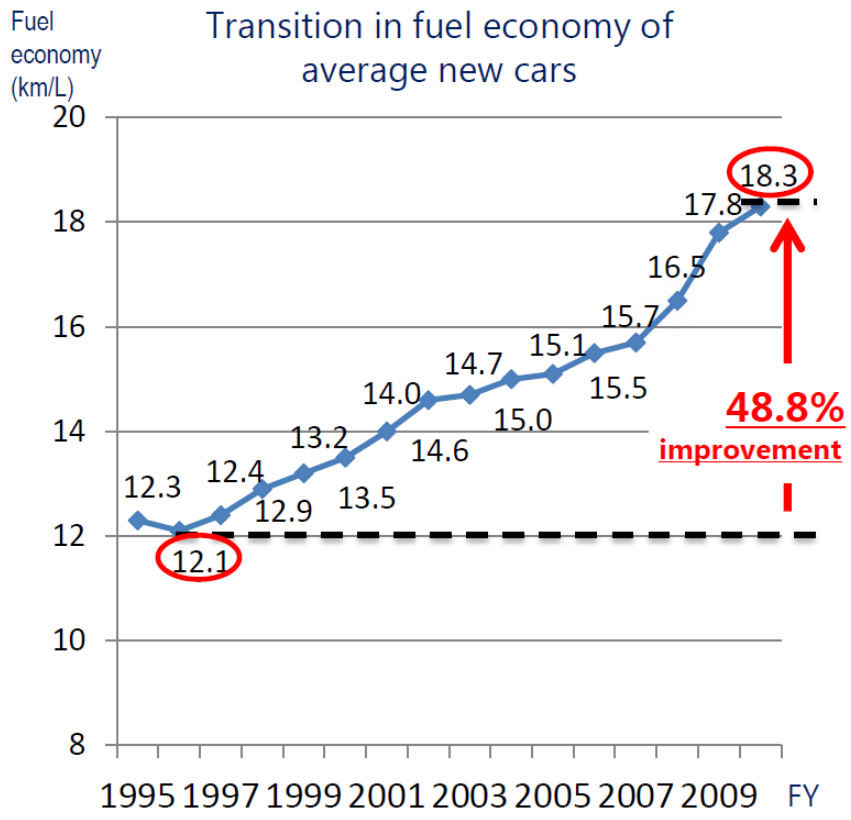
Example of Top Runner Program



32equipment and materials

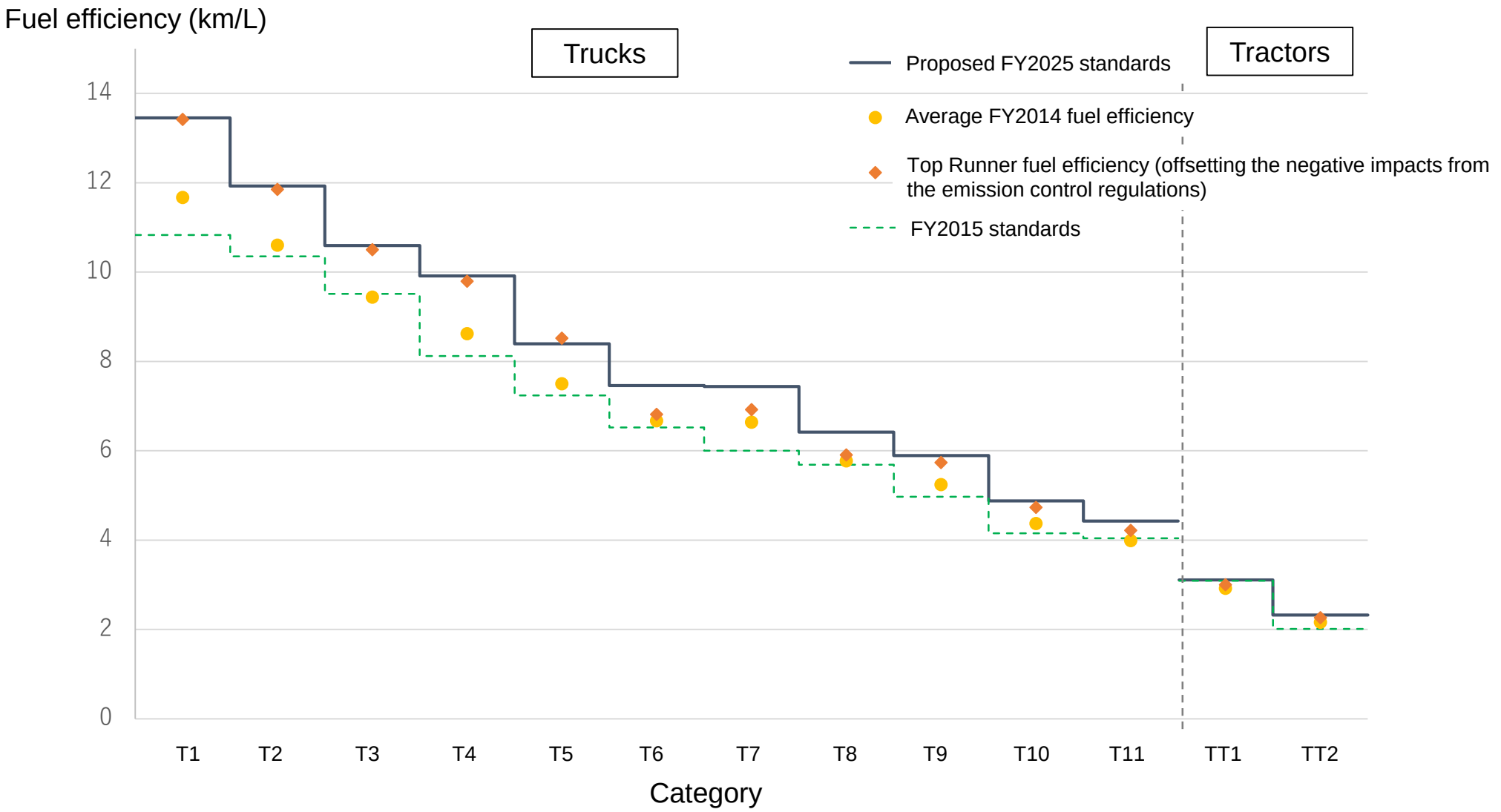
1. Passenger vehicles
2. Air conditioners
3. Lighting equipment
4. TV sets
5. Copying machines
6. Computers
7. Magnetic disk units ....etc.

[Passenger cars]

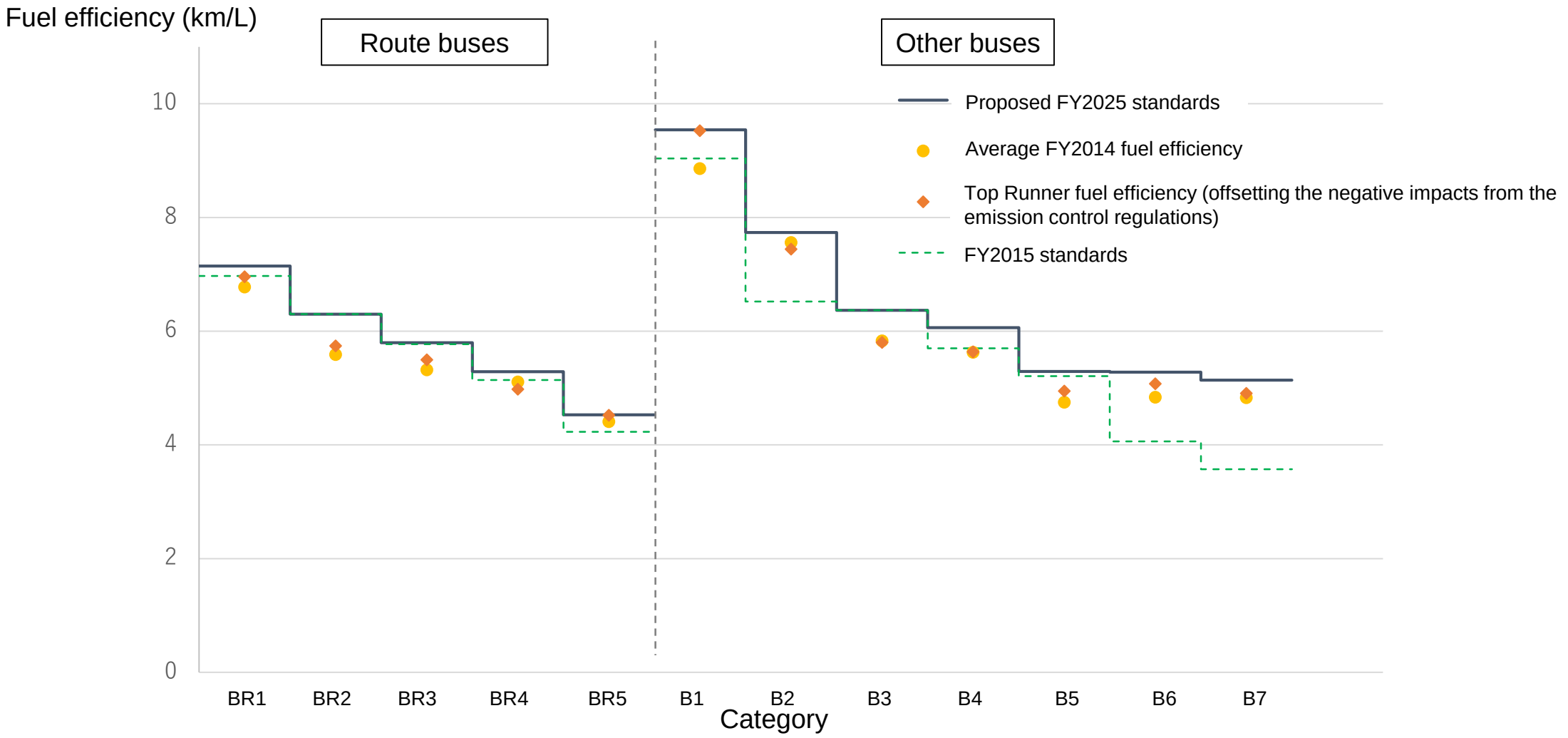


(Note) Fuel economy values for the 10-15 mode.

Proposed 2025 Target Standards (Trucks and Tractors)



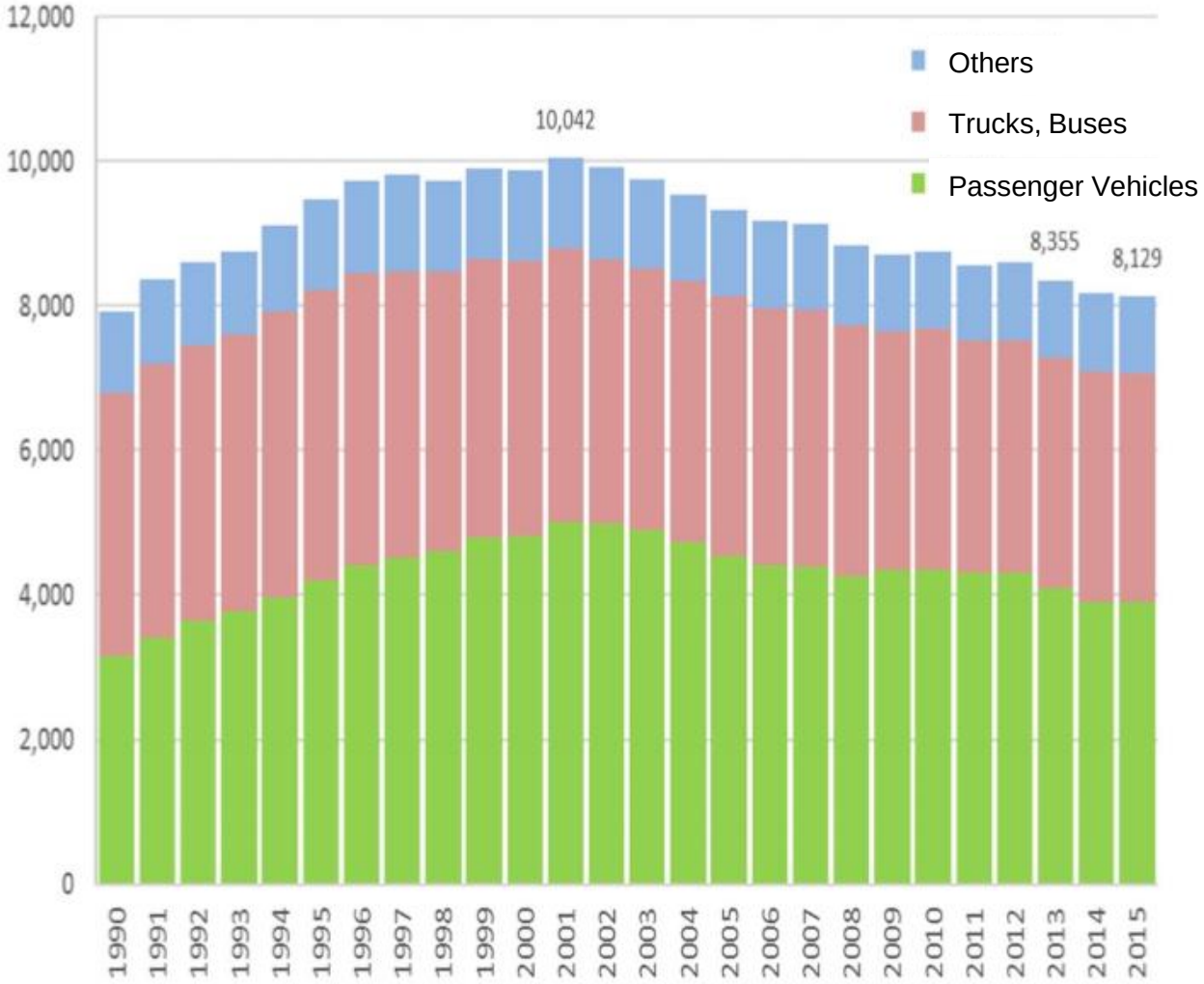
Proposed 2025 Target Standards (Route Buses and Other Buses)



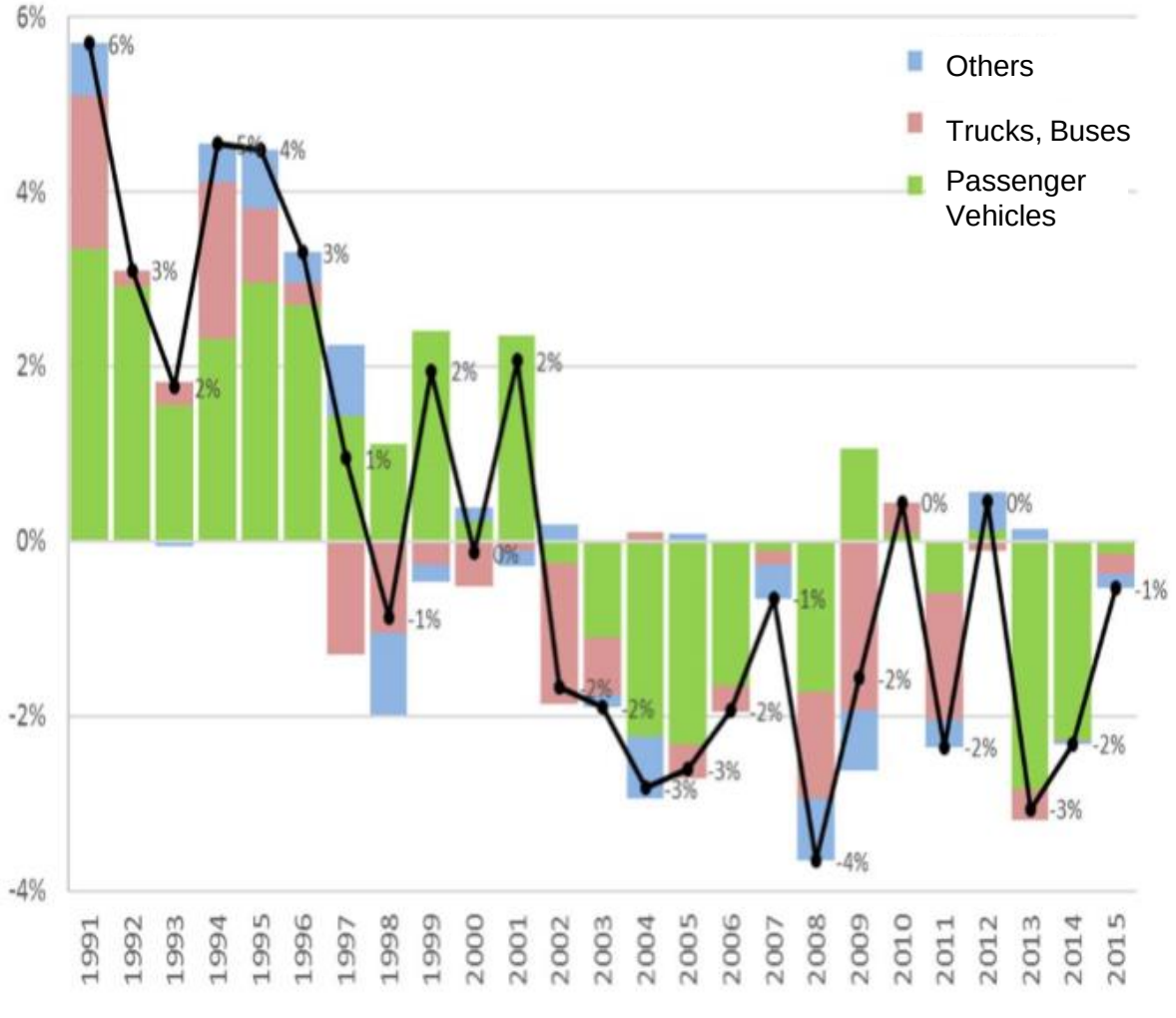
3. Next Steps

Trend of Energy Consumption in Transportation Sector

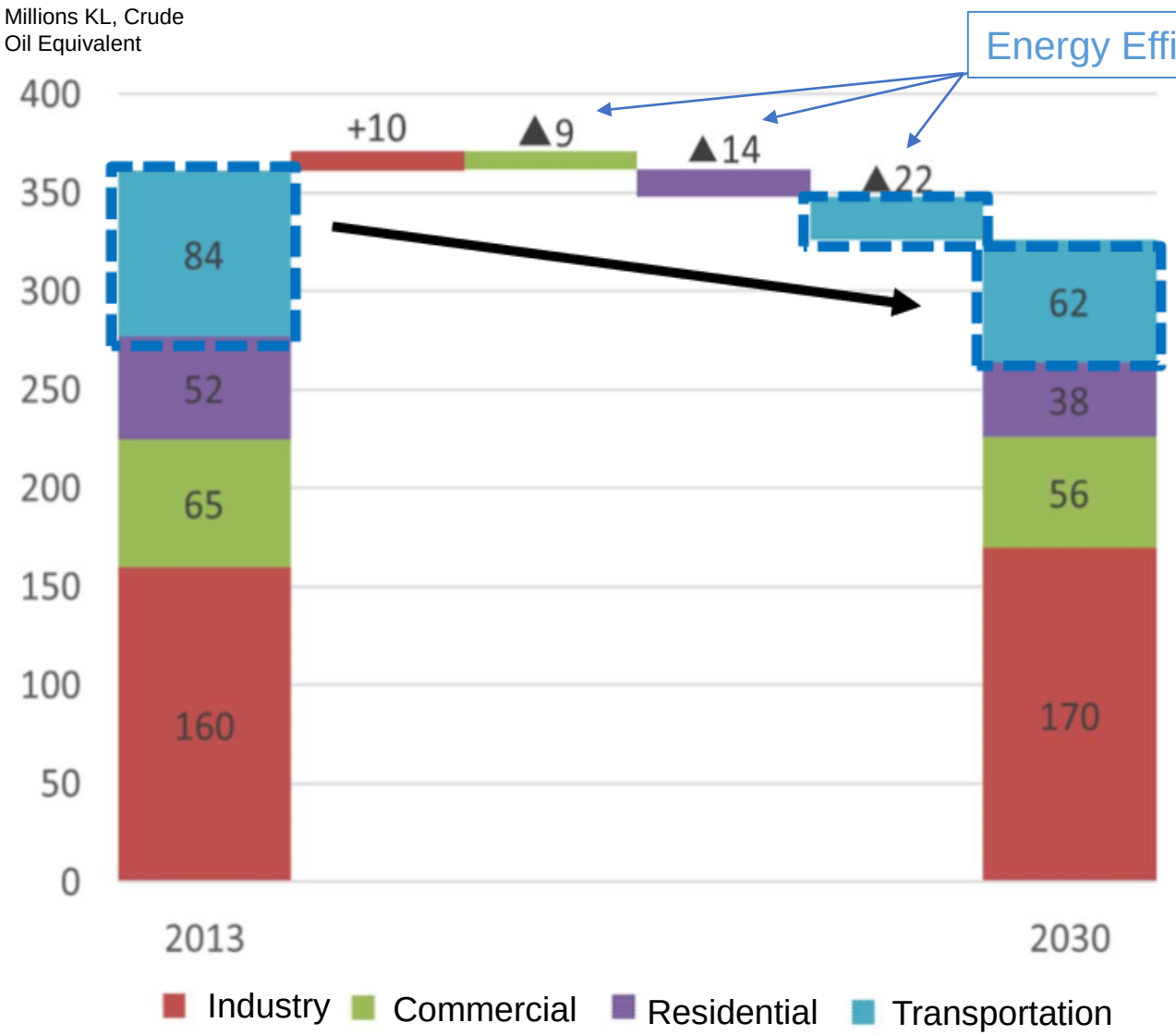
10,000 KL, Crude
Oil Equivalent



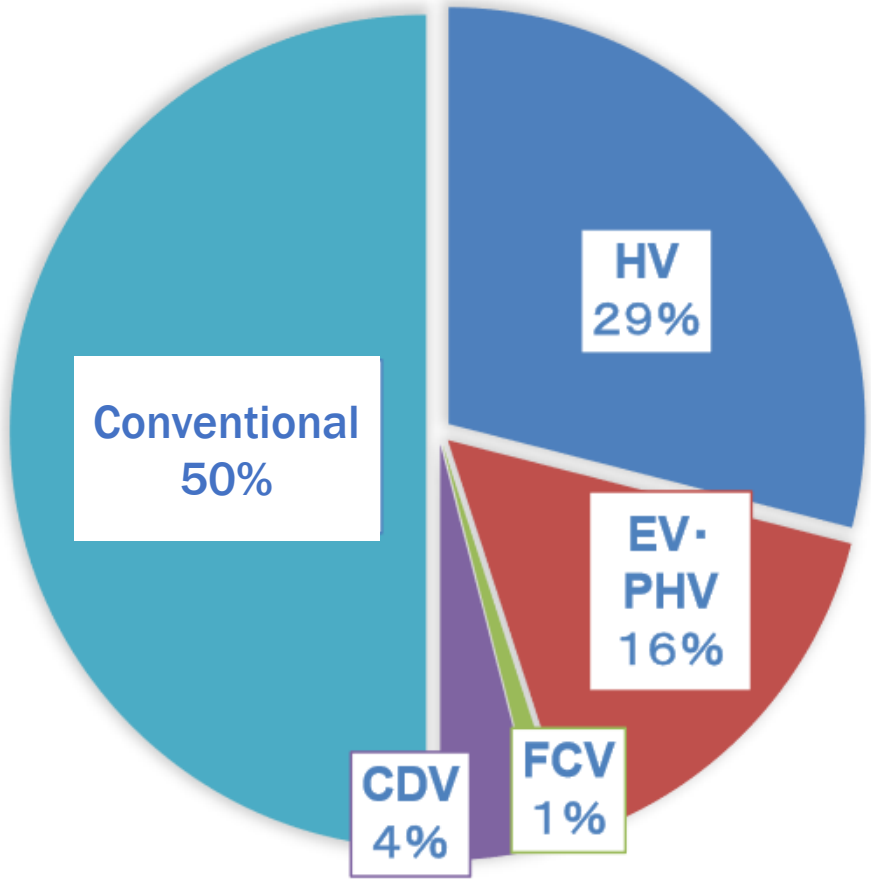
Compared to previous year



Energy Consumption in 2030



Outlook of Final Energy Consumption in 2030



Outlook of Ratio of Automobile Type in 2030

THANK YOU !

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