

Clarifying the future roadside environmental load reduction effects of the penetration of next-generation vehicles

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1. Introduction

Cargo vehicles produce 34% of all CO₂ emissions from the transport sector¹⁾, and it is important to introduce cargo vehicle environmental load countermeasures. This research trial calculated the future roadside environmental load reduction effects of the penetration of next-generation vehicles.

2. Trial calculation conditions

The table presents an outline of the trial calculation conditions. In addition, traffic volume, traveling speed, next-generation vehicle penetration rate and CO₂ emission factor were set with reference to source documents²⁾³⁾⁴⁾⁵⁾⁶⁾⁷⁾.

3. Trial calculation results

As a result of the trial calculation of CO₂ emissions by the procedure shown in Figure 1, the CO₂ emissions in 2050 were calculated as 45% lower than in 2010. At this time, CO₂ emissions by small-sized vehicles and heavy vehicles are almost equal, but because the penetration rate of large next-generation vehicles will be lower than that of small-sized next-generation vehicles, the trial calculation revealed that in 2050, heavy vehicles will emit between 60% and 70% of all CO₂ (Fig. 2).

4. Summary

The trial calculation clearly shows that even among cargo vehicles, it is important to promote measures to spread the use of next generation vehicles as heavy vehicles in particular.

Table. Outline of Trial Calculation Conditions

Items	Settings
Object of calculation	Carbon dioxide (CO ₂)
Calculation period	2010, 2020, 2030, 2040, 2050
Calculation range	Sections where normal traffic volumes are surveyed during the road traffic census
Next-generation vehicles considered	Hybrid vehicles, plug-in hybrid vehicles, electric vehicles, fuel cell vehicles, clean diesel vehicles, gasoline vehicles
Level of penetration of next-generation vehicles	Zero: (penetration rate same as in 2010) Low: (case where penetration rate is estimated as low) Medium: (average penetration rate) High: (case where penetration rate is estimated as high)

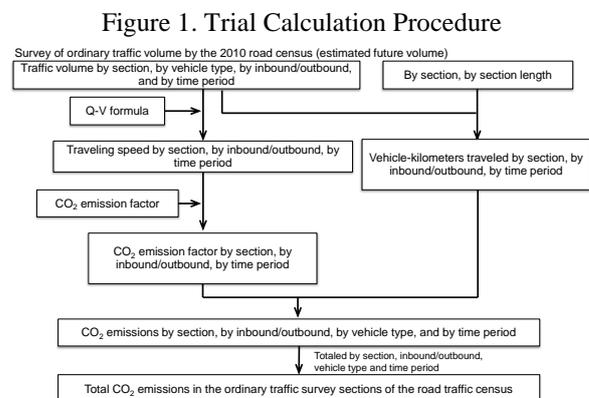
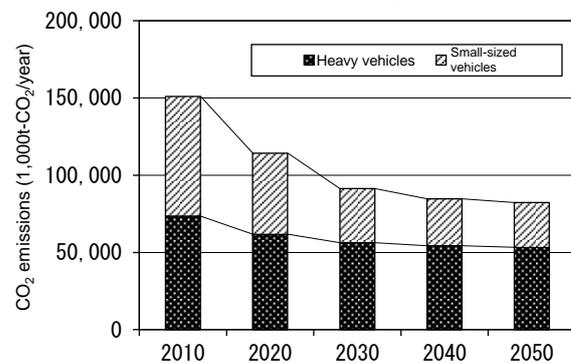


Figure 2. Trial Calculation of CO₂ Emissions (Penetration level: high)



[Sources]

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