

Shift to zero emission transport

In 2010, almost all of Japan's domestic passenger transport was powered by Internal Combustion Engines (ICE; petrol or diesel). There were only a limited number of electric vehicles (EVs), plug-in hybrid electric vehicles (PHEVs) and fuel cell vehicles (FCVs), with their combined share accounting for less than 0.0002% of the total⁵. Zero emission transport includes battery electric (EVs) or FCVs, and electrified domestic rail, all of which have zero emissions at the tailpipe. Hybrid (HEVs) or PHEVs have both petrol/diesel engines and electric motors, and are therefore not zero emissions.

Level 1

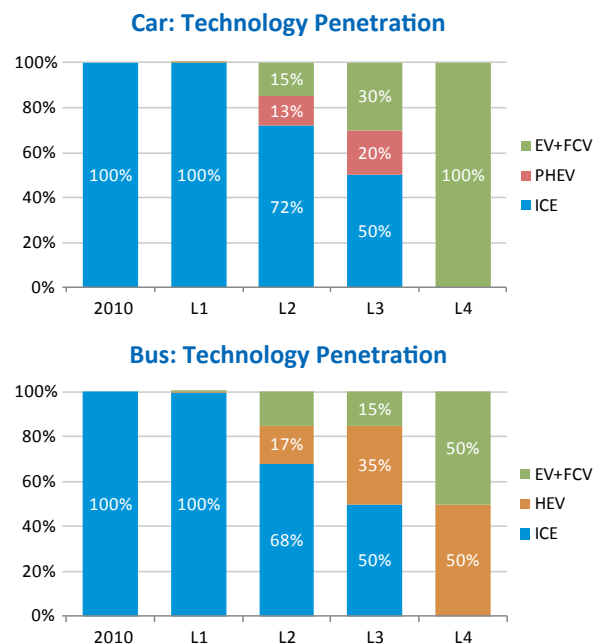
Level 1 assumes that by 2050, nearly 100% of passenger vehicle and bus transport is still ICE (including HEV). 90% of passenger railway travel is electrified.

Level 2

Level 2 assumes that by 2050, about 72% of passenger-km are travelled in conventional ICE/HEV. 13% are PHEVs and 15% are zero emission

vehicles (EVs/FCVs). About 68% of all bus transport is powered by ICEs, and HEVs and EVs/FCVs account for 17% and 15%, respectively. Passenger railway travel is 100% electrified.

Figure 1 Passenger transport technology penetration under different scenarios



Source: Authors.

Level 3

Level 3 assumes that by 2050, only 50% of passenger-km are travelled in conventional petrol or diesel engine cars. 20% are PHEVs and 30% are zero emission vehicles (EVs/FCVs). 35% of all buses are hybrids (HEVs) and 15% are EVs/FCVs. Passenger railway travel is 100% electrified.

Level 4

Level 4 assumes that by 2050, 100% of car travel is powered by EVs/FCVs. For bus travel, 50% is powered by EVs/FCVs and another 50% is powered by hybrid diesel-electric engines (HEVs). All passenger trains are electrified.

Figure 2 More and more people are likely to shift to zero emission transport



Source: IGES stock image.

⁵ Calculated based on the data of estimated number of EVs, PHEVs and FCVs in use and total number of passenger vehicles in use in 2010 provided by the Next Generation Vehicle Promotion Center (2012, 2014).