

Market Penetration Analysis of FCVs in Japan by Using MARKAL

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The purpose of this paper is to analyze market penetration of hydrogen fuel cell vehicle (FCV)s in the passenger car sector in Japan. The analysis is based on an energy system model of Japan by using MARKAL. The model covers whole energy system from primary energy supply to final energy consumption from 1988 to 2052. Based on the results of analysis, FCVs can penetrate to the market around 2020 because of their low CO₂ emission. However gasoline hybrid electricity vehicles still have higher cost-competitiveness than FCVs. Therefore the market share of FCVs depends on targets of energy-related CO₂ emission reduction.

Keywords: energy systems analysis, energy system model, MARKAL, hydrogen fuel cell vehicle, FCV, market penetration