

Abstract

This study explores the economical, ecological, and social impact of potential rise of the number of electric vehicles in the Czech Republic. For this purpose, the methodology of agent-based modelling and cost-benefit analysis is used. Particularly, a simple agent-based model in the NetLogo software is created and calibrated to the Czech environment. It enables us to examine the impact of possible policies aimed at increasing electric vehicles' market potential.

Results of the cost-benefit analysis suggest that under the current Czech conditions, over their whole life cycle, electric vehicles produce less CO₂ emissions in comparison to conventional internal combustion engine vehicles and thus, are more ecological. With the actual policy without any financial incentives, however, electric vehicles' total costs connected to their purchase, usage and maintenance for an average Czech consumer are still higher compared to conventional vehicles. If the government would intend to significantly increase electric vehicles' market share, both financial incentives and policies making their everyday usage easier are suggested to be implemented. Purchase discounts together with accessibility advantages are, according to this analysis, the most effective ways. Charging infrastructure development and electricity cost reductions are also important but they act more as a psychological tool.