

# Consumer Preferences for Hybrid and Electric Vehicles and Deployment of the Charging Infrastructure: A Case Study of Lebanon

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This case study investigates consumer preferences and stakeholders' interests regarding hybrid electric vehicles (HEVs) and electric vehicles (EVs) in the Greater Beirut Area (GBA) in Lebanon where the market for these vehicle types is still nascent. A mixed logit model incorporating financial and technical attributes of common mid-size Internal Combustion Engines (ICE), HEVs, and EVs is estimated then used to compute Willingness to Pay (WTP) measures and evaluate the effectiveness of different monetary incentives in promoting these vehicle types. The study also uses qualitative research methods to capture the perspectives of different stakeholders regarding electric mobility in Lebanon. Data collected in 2018 through a stated preference survey reveals a WTP for a 100- km increase in driving range equal to 705 \$ and for a 1 \$ reduction in driving costs per 100 km equal to 305 \$, values that are generally lower than several values found in the literature. A policy testing exercise suggests that doubling fuel taxes could increase the potential market shares of HEVs and EVs from 9.25% to 9.59% and from 4.98% to 5.84%, respectively. The provision of charging incentives to consumers could raise the market share of EVs up to 6.96%. A combination of both policies could further increase the proportion of EVs to 7.22%. In parallel, a stakeholder analysis draws attention to a multitude of challenges regarding the HEVs and EVs uptake as well as the public charging infrastructure rollout, namely excessive delays in establishing the enabling institutional and regulatory environment and shortcomings in the electricity supply. This research shows that it is more likely for HEVs than EVs to take off in the short term and that a solid transition to electric mobility in Lebanon necessitates further planning, especially in terms of instituting a clear and effective incentives scheme.