Alternative fuel vehicles (AFVs) have the potential to reduce gasoline consumption as well as resulting greenhouse gas emissions and air pollutants. Successful diffusion of these vehicles will depend on the readiness of the consumer market, which in turn, depend on consumer awareness, attitudes and interests, travel patterns and access to recharging/ refueling infrastructure.

Recently, Polish government has announced a Plan for Development of Electro-mobility and introduced the Act on Electromobility and Alternative Fuels. As the Report 'Charging Poland'[1] indicates, those documents create incentives for the deployment of market of battery electric vehicles (BEVs) and plug-in hybrid vehicles (PHEVs) in Poland (i.e. lowered the excise tax on electric cars, enabled drivers of such vehicles to use the bus lanes in cities, removed their paid parking fees, etc.). Already nowadays, according to the reports of the European Automobile Manufacturers' Association (ACEA) the number of BEVs registered in Poland has increased by 130% between the first quarters of 2017 and 2018 (but BEV market share is still close to zero (0.1%)). On the other hand, Polish consumers are mainly interested in hybrid electric vehicles – HEVs. Poland is one of the EU countries with the highest sales rates of HEVs. Hence, in our survey we will focus mainly on those types of light-duty passenger AFVs, like: BEVs, PHEVs and HEVs that have the largest chance of further market development in Poland.

 Within this project by the means of the **two-part survey** on the representative sample of Poles we want to investigate and explore consumers' social and technical readiness to adopt AFVs. In particular, we plan to: assess consumers' awareness of AFV technologies; identify and characterize Polish consumer segments based on AFV interest, valuation of attributes, values and lifestyle and to quantify consumers' valuation of AFV attributes, like: price, driving range and recharging infrastructure. We will use following research methods: questionnaire, design game and stated choice experiment. To analyze consumers' preferences we will use among others: factor choice analysis, cluster analysis and latent-class model.

Additionally, based on our findings, we want to specify and calibrate an **agent-based model** (ABM) to simulate and evaluate various policies and scenarios enhancing further diffusion of AFV market (limited to those sorts of light-duty passenger AFVs that are and will be available for Polish consumers). For modelling a complex system consisting of autonomous agents which interact with each other within realistic environments we will resort to Monte Carlo simulations. For code prototyping and scenario analysis we will use Matlab programming environment. Real-world network structures will be also tested within NetLogo platform.

The importance of the project lies in two areas. **From the point of view of basic research it contributes to**: (1) The development of the research field in *behavioral economics* by establishing and conducting a large field study examining consumer preferences and willingness to pay; (2) The development of the research field in *computational economics*, by elaborating simulation models of innovation diffusion and examining relations between micro level of social interactions and macro level of economic variables (i.e. price, subsidy, tax). **From the point of view of economic and societal impact this project contributes to**: (1) Shedding light on the heterogeneity in consumer motivations, including values and lifestyle engagement, which can improve understanding of the motivations behind consumer interest in AFV technologies; (2) Developing tools and policies that can be useful in designing future marketing campaigns enhancing AFV adoption rates.

Additionally, as the first part of the project will be consulted with Canadian scientists, experienced in the evaluation and analysis of consumers' preferences in the AFVs market, our study will create the opportunity of developing and extending scientific cooperation between the Wroclaw University of Science and Technology and Simon Fraser University. Last but not least the proposed project creates an opportunity for a young researcher and a Ph.D. / Master student to start their academic career.

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[1] Report 'Charging Poland", 2018 by Cambridge Econometrics and the Electric Vehicles Promotion Foundation