

**Abstract for the general public: *Raising oil prices and the transition towards sustainable transport - the case of the Central Europe***

**The goal of the project:** The project examines how rising oil prices affected travel demand and the shift to sustainable transport. In particular, we investigate the effect of the demand (mobility bans during the COVID-19 pandemic) and supply shocks (cutting-off Russia from the main part of global supply chains) on the dynamics of oil and alternative fuels' prices, and hence – on the change of travel preferences. The last aspect is studied in-depth in the Vysehrad 4 group (further V4), based on survey data. The V4 economies rely heavily on Russian oil supplies. Among the V4 countries, Slovakia is the most dependent on Russian oil and petroleum products. In 2020, they accounted for over 78 % of the country's total imports of these commodities. The analogous measures for the rest of the countries are 67.5% for Poland, 44.6% for Hungary, and 29.1% for Czechia. We expect that the countries with lower GDP per capita would be more affected by the rising oil prices. Therefore, we also study the vulnerability of oil and alternative fuels' returns to two main risk factors: geopolitical situation and pressures from the financial market (which tend to intensify during turmoils). If we show that the prices of alternative fuels are more immune than oil ones to the international crises, that would add one more argument for a gradual switch to green energy sources.

**Motivation:** European Union (further: EU) had declared a gradual reduction of oil-dependent fuels and more extensive usage of the green ones. The goal formulated in the report of the Biofuels Research Advisory Council in 2006 was that up to 2030, a quarter of the EU's transport fuel needs would be met by biofuels. Although we already know that the goal would not be met, we expect that the role of alternative fuels as energy sources will be growing. We can also anticipate the growth of the consumers' interest in the alternative means of transport and alternative fuels. On the other hand, increasing oil prices would make the investment in the oil market more attractive. Thus, the transition to sustainable transport may be delayed.

**Significance of the problem:** In our research, we verify the vulnerability of alternative fuels' prices to factors that affect the oil prices to conclude whether the alternative fuels can be treated as a more stable source of energy, independent from geopolitical tensions. The latter is of special importance for countries with lower GDP per capita.

**Description of research:** The project is run in cooperation with the Czech Travel Research Centre (CDV). In the first step of the research, we verify the change in travel preferences in the Czech Republic since the pandemic outbreak. As the CDV had performed the survey about travel preferences among the Czech households just before the pandemic outbreak, the data for the period 2017-2019 are already available, and a part of it will be used as a baseline for comparison of travel preferences before and during COVID. In the first year of the project, CDV plan to run the analogous survey in the V4 group. In this way, we investigate whether the travel preferences changed and whether we can observe similar patterns of travel preferences in the whole V4.

Furthermore, we verify whether there are differences between the V4 and Western Europe. Based on spatial mobility data from Eurostat, Google and Apple, we investigate the vulnerability of people's mobility to the pandemic dynamics, seasonal bans on travel, and rising oil prices.

Next, we investigate relationships between oil prices and mobility, as well as oil prices and pressures from the financial markets. We compare the vulnerability of the alternative fuels to both factors, too. Eventually, we analyse the interrelationships between oil and alternative fuels' prices.

**Expected results:** We expect that the result of our project would allow us to better understand the behavioral aspects governing the decision-making process and enhance the theoretical models of transport choice. Such information can also be used by the central authorities to accelerate the process of de-carbonization and adjust the infrastructure to the changing transport mode.

The outcomes of our study would contribute to a better understanding of the factors that shape fuel prices. By discovering how the impulses from the financial market spill over to the crude one, we will gain more knowledge of the theoretical nature of this relationship. At the same time, such information can be utilized by policymakers to properly adjust to the changing prices of energy and fuels during crisis times. Exploring different variability of different fuels (traditional versus green ones) to the impulses from the markets may provide some insight into how the usage of the two kinds of resources may be effectively varied during turmoils.