

Taking into consideration the threats connected with the rise of the shadow economy, the new effective legislation should be created to provide effective regulation of the salary payments and enforcing the entrepreneurs to pay their employees the worthy salaries, and the new policy also should be directed to decrease the amount of cash in the economy.

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ELECTRIC VEHICLES POPULARITY IN NORWAY

It is an interesting question of why little Norway which has enough oil resources has a supportive policy to EV. Oil production has not changed in recent years, but resource scarcity in the future may lead to problems with the supply of gasoline to the market. The Norwegian government is also worried about the amount of carbon dioxide emissions into the air. So, it formulated a policy to increase electric cars in the country to 50,000 EV from 1990. Thus, electric vehicles became more economical for residents than ordinary cars because of tax and convenience purposes, but conventional cars did not disappear from the market.

All internal energy will be obtained through the use of hydroelectric power stations, so the decision to use electric vehicles was made by the government in 1990. Country's extensive charging infrastructure was funded by the government, but manufacturers began to finance such projects themselves in order to increase the inflow of business investment [1].

According to a study by A. Gärling and Thøgersen "Typically, market penetration starts with a small segment consisting of customers with particular characteristics, needs, or wants" [2]. Government involvement in the structure of the automobile market is due to the influence on consumer decisions. Consumers have been influenced by financial instruments and the convenience of using different types of cars.

The state has set itself a goal of increasing the number of electric cars not through a ban but through the use of green taxes. VAT had been canceled from the purchase of EV since 2001, and bus lanes had been permitted to use since 2005. However, the VAT tax was reset in 2015, but the desired amount of EVs for cars (50,000) was reached earlier than expected [3].

Therefore, the use of the system dynamics method will help to understand the impact of government policy on the market structure and what the structure of the Norwegian car market will be in the next 10 years (Figure 1).

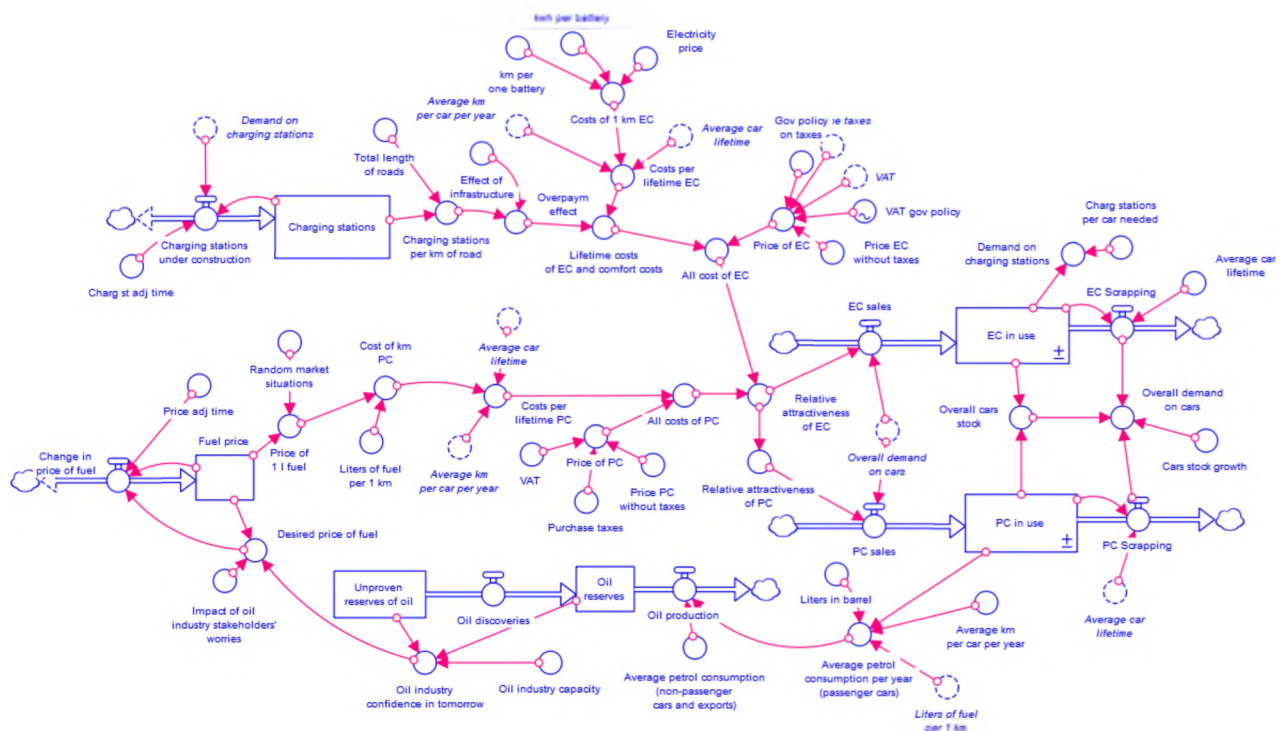


Figure 1. The dynamic model of popularity electric vehicles in Norway

There are two major causal loops in this system. The first one is a reinforcing loop about electric vehicles where the better EV infrastructure is, the smaller the comfort index becomes, the higher are the electric vehicles sales. As a result, a higher demand for the electric vehicles infrastructure in the country.

Then, the result of the balancing loop in this system: the more petrol cars used in Norway, the less oil reserve, which is a cause for higher petrol prices. As a consequence, the less is the attractiveness for petrol cars.

Comparing the data created by the model and the real data on the number of vehicles from Norway can help to understand how adequately the model explains the real process (Figure 2).

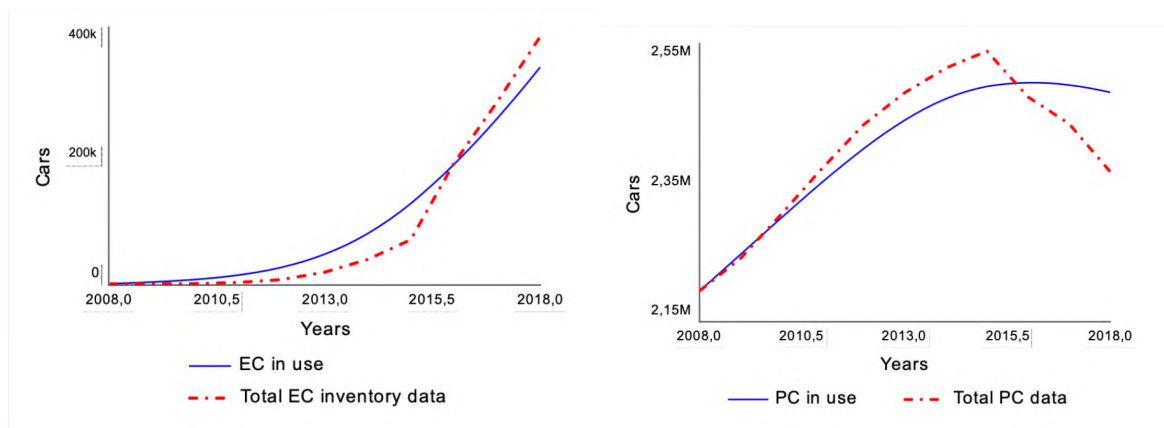


Figure 2. Comparison of model and historical data of the electric and petrol cars in use in Norway

Analyzing the graphs, the behavior of the indicators has changed over time, as a result of the influence of government policy and the coefficient of the comfort of use of cars. All statistics were taken from the official website of Statistics Norway. The simulated data are close to real, showing that the model reflects real-world mechanisms. The structure, parameter confirmation, and dimensional consistency tests were done to prove the model confidence in results.

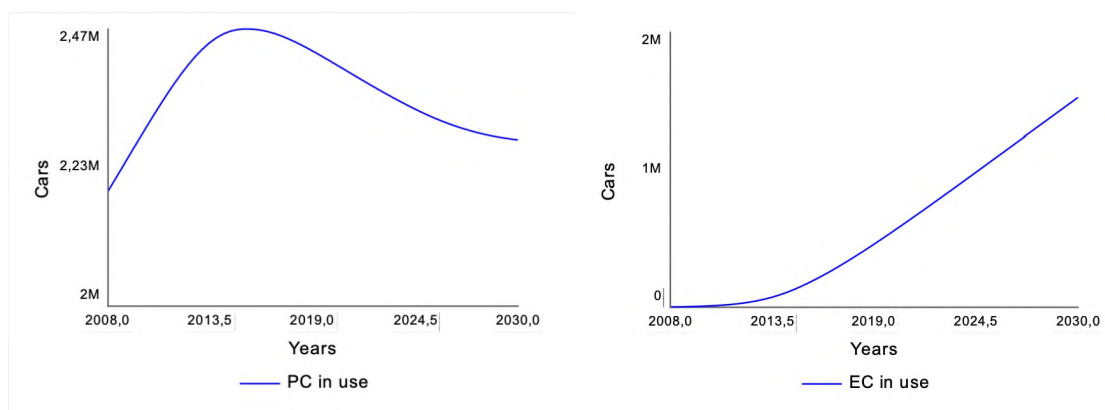


Figure 3. The forecasting for electric and petrol cars in Norway for next 10 year

The developed forecast (Figure 3) shows that in the future the number of electric cars in Norway will increase, but the number of cars on petrol will not be much reduced. The reason for this is the willingness of buyers to pay extra for the convenience of the petrol cars (it has more mileage without the additional use of fuel, faster time for refueling). However, the state-sponsored electronics change program has worked, as the government has achieved its target and created demand for the use of electric vehicles for everyday use in the city.

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MODELLING OF FISCAL TRANSMISSION CHANNELS USING SYSTEM DYNAMICS METHOD

In the process of fiscal transmission, impulses from the State fiscal service of Ukraine are transmitted through dedicated channels to the real economy and facilitate the stimulation or slowdown of business activity of business entities, which leads to a change in macroeconomic indicators and revenues in budgets of all levels, and therefore affects the level of economic development in country.

Each of the taxes is transformed into a channel of fiscal transmission in the process of determining its main components: the taxpayer, the object of taxation, the tax rate, as well as tax benefits, restrictions and payment frequency [3].

The problem of tax system is an insufficient amount of tax earnings to the budget. The amount of tax earnings is increasing last years, but Ukraine still has the deficit of the state budget. This is due to the fact that Ukraine has a large share of the shadow economy as we have high tax rates compared to other countries. That is why, state budget doesn't have enough revenues and it becomes the main problem of economy. To solve this situation, it is necessary to use mechanism of the fiscal transmission.

Considering the main hypothesis in the model, it may be accented that:

taxes ↓ → available income ↑ → aggregate demand ↑ → consumption ↑ →
production volume ↑ → unemployment rate ↓ → state budget revenues ↑ → ;
taxes ↑ → available income ↓ → aggregate demand ↓ → consumption ↓ →
production volume ↓ → unemployment rate ↑ → state budget revenues ↓ → [3].