

ODYSSEE-MURE

Synthesis of the survey on the mode of estimate of consumption of foreign vehicles

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Introduction

In some EU countries, the consumption of foreign vehicles is quite significant and deserves a special attention to separate it from the total consumption of road transport, to get more relevant indicators. The total consumption of road transport, as provided by Eurostat, is based on total sales of motor fuels. If it is possible to estimate the consumption of foreign vehicles, it is possible to derive the consumption of domestic vehicles only.

In Odyssee, 10 countries estimate the consumption of foreign vehicles and domestic vehicles. For two of them the consumption of domestic vehicles includes the consumption abroad (the Netherlands and Slovenia). For some countries, the consumption of foreign vehicles is due to the fact that foreigners cross the border to buy motor fuels because they are much cheaper than in their country: this is the case of Luxembourg, where French and German drivers, living near the border, refuel in Luxemburg. This phenomenon is called "border trade". For most of the other countries, foreign drivers crossing or going to country A have to refuel in country A (case of France or Slovenia).

Share of foreign vehicles in domestic consumption (2021)

Luxembourg	77%
Austria	25%
France	17%
Belgium	14%
Croatia	7%
Slovenia	6%
Ireland	5%
Germany	3%
Denmark	2%

Source: Odyssee.

To help countries who would be interested in doing a similar estimation, we have launched a short survey to understand how the consumption of foreign vehicles is estimated in these countries (see Annex 1). We have received answers from 7 countries. This note provides a synthesis of their answers.

Who is doing the estimation of data on border trade and consumption of foreign vehicles?

Country	Organization	Frequency
Belgium	SPF Economy	Annual
Croatia	EIHP	Annual
Denmark	Danish Ministry of Taxation	
Ireland	Sustainable Energy Authority of Ireland	Annual
Luxembourg	STATEC (NSI Luxembourg)	
Slovenia	Jožef Stefan Institute – Energy efficiency centre	Annual
The Netherlands	National Statistics Netherlands CBS ¹	Annual

¹ Data published in <https://opendata.cbs.nl/statline/#/CBS/nl/dataset/85395NED/table?dl=910E3> in table:

"Verkeersprestaties motorvoertuigen; kilometers, voertuigsoort, grondgebied"; that is "Traffic performance of motorized vehicles; kilometers, vehicle type, territory". Methodology report: <https://www.cbs.nl/nl-nl/longread/rapportages/2022/methoderapport-motorvoertuigenpark-2019-2022>

Methodology and sources of data

Country	Methodology	Data used
Belgium	Modelling	Annual energy questionnaires of Eurostat. Road transport consumption modeling data (COPERT)
Croatia	Modelling	Annual data monitored by the CSB, Croatian National Bank, on the number and type of foreign vehicle arrivals and annual survey conducted by CNB on tourists spending during their stay in Croatia. (questionnaires filled out by tourists leaving Croatia at cross-borders) ² . This survey is carried out on a sample (approx. 45000 vehicles) during the whole year.
Denmark	Modelling	Data on consumption of motor fuels compiled by the Danish Ministry of Taxation, data on the number of kilometers driven by Danish vehicles on Danish roads from the Danish Road Directorate (www.vd.dk) and data on taxable sales compiled by the Danish Ministry of Taxation.
Ireland	Modelling	National fuel consumption from the Department of Energy and Climate Change, and their Oil Obligation Levy dataset, and Biofuels Obligation Scheme. NCT data come from the Department of Transport. Vehicle efficiency data are initially obtained from a UK dataset and come from the Department of Transport. This is then integrated with the Irish data by the SEAI. Vehicle Fleet data come from either the Central Statistics Office or the Irish Bulletin of Vehicle and Driver Statistics published by the Department of Transport.
Luxembourg	Modelling	Number of foreigners by countries, number of km travelled, car sharing, average car consumption, number of worked days.
Slovenia	Modeling	Purchase of fuel with truck cards (special cards that truckers use to purchase fuel) – National Bank data Data on return of difference of actual and minimum excise duty to heavy duty vehicles (separate data for domestic and foreign trucks)
The Netherlands	Modeling	Modeling based on insured Dutch vehicles combined with kilometer registrations of a large sample of vehicles ³ . These are used to estimate kilometers travelled per vehicle type. Data come from different sources, in particular annual data from the “Rijksdienst voor het Wegverkeer (RDW)”, “Netherlands Vehicle Authority” ⁴

² Vehicles with more than 400 km driven in Croatia are considered, assuming they needed to buy fuel in Croatia. Average mileage and fuel consumption of each type of vehicle are calculated and extrapolated according to total number of foreign vehicles registered by CBS.

³ See <https://www.cbs.nl/nl-nl/onze-diensten/methoden/onderzoeksomschrijvingen/korte-onderzoeksbeschrijvingen/verkeersprestaties-personenauto-s>

⁴ See <https://www.rdw.nl> or <https://www.rdw.nl/en>

Detail of modelling methodology

Country	Data used
Belgium	The estimation is calculated as the difference between Eurostat annual energy questionnaires data for road transport (fuel sold) and COPERT modelling data (fuel used).
Croatia	The average specific consumption of tourist's cars is calculated from the total consumption of tourist's cars, the stock of tourist's cars and the average distance travelled by a tourist car. Such specific consumption can only be calculated if data on distance travelled by car are available. Therefore, a model was created for estimation of kilometres travelled during the stay of a tourist based on data about cities she/ he visited. A distinction can be made between type of fuels used.
Denmark	The Danish Ministry of Taxation calculate the border trade of motor fuels as the difference between domestic consumption and taxable sales ⁵ . Consumption is compiled by the Danish Ministry of Taxation, and it is based on figures for the number of kilometers driven by Danish vehicles on Danish roads ⁶ . Assumptions are made on energy efficiency and foreign vehicles on Danish roads. Figures for taxable sales are compiled by the Danish Ministry of Taxation.
Ireland	A logarithmic regression model is run, based on the IE-UK price differential and working under the assumption that the Northern Ireland fleet closely resembles the Irish one. Data also includes petrol and diesel use in motorcycles, on-road use of agriculture and forestry vehicles, military use, etc. (buses, trains, shipping and planes are accounted in their own transport modes.
Luxembourg	Consumption of cross-border commuters who have a leased car and cross-border commuters who do not have a leased car. Variables used for this estimate are number of foreigners by countries, number of km travelled, car sharing, average car consumption, number of worked days. The consumption of tourists and foreign professionals is calculated by difference in the energy balance.
Slovenia	The amount of fuel sold to foreign vehicles is estimated with the COPERT model. First consumption of fuel by domestic vehicles is assessed by using domestic vehicle fleet with driven kilometers. Specific fuel consumptions are taken from COPERT. Driven kilometers are determined on the basis of data from odometer readings at technical checks of vehicles. Calculated fuel consumption is then compared to the fuel sold in Slovenia based on statistical data. Difference is attributed to different vehicle types based on data on return of excise duty (heavy duty trucks) and the rest to light duty and personal cars (majority). Based on the data on return of excise data for domestic vehicles we also estimate the amount of fuel that is purchased abroad by Slovenian vehicles so that more realistic values for border trade is calculated.
The Netherlands	Kilometers travelled by different vehicle types are divided into three types of travel: Dutch and foreign vehicles combined within the Netherlands, Dutch vehicles within the Netherlands, and Dutch vehicles outside the Netherlands. For this distribution, the study travel behaviour (OVG), Mobility Research Netherlands (MON) and the study Travel in the Netherlands (OVIN) were used. Since 2008, a moving average of MON/OVIN of the car driver kilometres has been used (is equivalent to Dutch passenger cars in the Netherlands).

⁵ Last report from 2017 (<https://www.skm.dk/aktuelt/publikationer/rapporter/status-over-graensehandel-2017/>) (only available in Danish).

⁶ The source for these figures is the Danish Road Directorate (www.vd.dk).

Reasons for doing the estimate

Belgium: SPF Economy does this estimation for the Odyssee and IEA energy efficiency questionnaires. However, similar calculations are done to determine the "surplus carburant", or what is bought in Belgium and used outside of Belgium, within the framework of emissions reporting.

Denmark: Traditionally border trade has been compiled as a supplement in the Danish energy statistics. It measures the motor fuels purchased by private persons and haulage contractors on one side of the border and consumed on the other side due to differences in consumer prices.

Luxembourg: With fuel prices lower than in neighboring countries, the consumption of foreign vehicles in Luxembourg is a major activity, accounting for over 70% of national fuel consumption. The estimated quantities will be used in econometric models to test the impact of changes in taxes and excise duties on consumption volumes and tax revenues.

The Netherlands: to know more about both fuel consumption and traffic within the Netherlands than can be derived from the amount of fuel sold in the Netherlands because of traffic, energy and climate policies.

Slovenia: More accuracy in transport breakdown. We also can also include or exclude it when looking at national statistics, and scenario factors can be incorporated when modelling future demand if desired.

Ireland: We know physical consumption (purchases) in the state, and we know theoretical consumption of the Irish fleet based on accurate calculations and vehicle data. Ignoring rail, aviation and shipping, we know that in some years, fuel tourism + "not-elsewhere specified", totalled nearly 30% of reported (road) transport consumption, with a large portion of that being from fuel tourism. On that basis, it was advantageous to be able to split this portion out of not-elsewhere specified and report it as an independent item.

Annex 1: Questionnaire

Name of country:

Who is doing the estimation of data on Border trade and consumption of foreign vehicles?

What are the data used and their sources?

- Surveys
 - Annual?
- Customs data

What is the methodology?

- Modeling (describe briefly how it is modeled or estimated)
 - Annual?
 - Or some duplication

What is the reason for doing the estimate and how it is used in your country and for which purpose?