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Reverse Gear

Social and economic effects of imports of used vehicles to Poland

The balance of costs and benefits of mass imports of used vehicles to Poland is quickly becoming worse. A far-reaching change in the approach to transport policy is urgently needed to provide fiscal incentives and funds to support more sustainable forms of mobility.

**Piotr Chrzanowski, Joanna Fabiszewska-Solares,
Aleksander Śniegocki, Jakub Zawieska**



ENERGY, CLIMATE AND ENVIRONMENT

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Warsaw, 2021

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Abstract

- Road transport in the EU is one of the main sources of greenhouse gas emissions and local air pollution. In Poland, it is a key sector for which an increase in GHG emissions has been recorded since 2005, by as much as 85%, while they remained at the same level throughout the European Union.
- Vehicles over 10 years old dominate in Poland, and the average age of passenger cars is more than 14 years. The car fleet in Poland is outdated, and the age of vehicles has a significant impact on their technical condition.
- Since joining the EU, Poland has been the largest importer of used vehicles among the Member States, leaving other countries far behind when it comes to the number of imported vehicles. During this period, almost 14.5 million vehicles were brought into Poland, and the number of new registrations of such vehicles is almost twice as high as for new vehicles.
- Despite the growing share of younger vehicles (up to 4 years old) in import, more than half of the vehicles imported to Poland is still older than 10 years, while the average age of an imported car is over 12 years.
- The increasing age of vehicles means more failures of safety-critical components and even three times higher risk of a fatal accident. According to official statistics, the number of accidents caused by poor technical condition of vehicles is low in Poland, but data from other countries indicate that our national statistics are understated. The actual costs of accidents caused by poor technical condition can be as high as PLN 5.5 billion (EUR 1.2 bn) annually.
- Compared to new vehicles, higher emissions and fuel consumption of imported used vehicles generate a range of costs for the Polish society. During their use in Poland, vehicles imported in 2019 will:
 - worsen the balance of Poland's share in the mini-ETS system for buildings and transport by PLN 300 million (EUR 65 mn). In the coming years this cost will increase rapidly for imported cars, as they will be subject to the mini-ETS for longer periods,
 - will generate NO_x emission-related health costs of PLN 1 billion (EUR 220 mn). This cost will gradually decrease for imported cars in the subsequent years with growing import of vehicles that meet the latest EURO 6d standard,
 - will increase crude oil imports to Poland by PLN 1.5 billion (EUR 330 mn). This cost will remain at a similar level for imported vehicles in the coming years, since the fuel consumption of both used and new vehicles is going to decrease.

- The import of used vehicles with diesel engines generates almost 70% of costs related to CO₂ emissions and crude oil import, and almost 90% of health costs resulting from NO_x emissions, even though they are less than half of the cars imported to Poland. This is due to higher average mileage of diesel cars as well as higher specific emissions of harmful nitrogen oxides.
- Most of the imported vehicles are disposed of in Poland. The cancellation of the recycling fee in 2016 led to a reduction in the number of legal disposals and an increase in the used parts trade in the grey market.
- The national fiscal policy towards transport is conservative: the ratio of taxes on means of transport to GDP in Poland is significantly lower than the EU average. Therefore, there is a room for strengthening the fiscal incentives to choose low-emission vehicles and modes of transport. At the same time, this would ensure more funds available for a more sustainable transport policy, in particular the modernisation of the public transport fleet and the reduction of transport exclusion.

Introduction

The last two decades have brought a quick increase in the mobility of Poles. It was possible thanks to the growing income of citizens and the emergence of access to relatively cheap used vehicles imported from Western Europe. The current motorization level of Poland is close to the EU average, but at the cost of the negative results of mass import of obsolete vehicles and the lack of good-quality public transport outside some larger and well-connected cities. Public policy in this area is characterised by inertia: the key method to meet the mobility needs is to maintain low requirements for cars brought into the domestic market, rather than the development of public transport and systemic incentives to choose vehicles that cause less emissions and consume less fuel.

The lack of systemic measures for sustainable transport is similar to the defects of the national policy regarding the heating of buildings. Instead of focusing on improving energy efficiency and modernising the heat sources, Polish public policy has for years accepted the use of low-quality solid fuels as a temporary method to maintain low direct heating costs for households. This has led to the cumulation of the high health and environmental costs of heating and the high energy consumption in Polish buildings, while the recent attempts to remedy the situation have been a great organisational and financial challenge for the central and local governments. We can see similar dynamics in transport: increasing regulatory pressure and environmental awareness, higher expectations as to the quality of public transport services and growing dependence on oil imports mean that the balance of costs and benefits of the current transport policy is rapidly becoming worse, and the costs of necessary adjustments are raised with each year without systemic reforms.

The purpose of this analysis is to support the public debate on the changes needed in transport policy by drawing attention to the magnitude of problems generated by the dependence on the mass import of used vehicles. We also evaluate the activity of public policy in this area, which is relatively low compared to Western Europe. This indicates an urgent need and an actual possibility of a far-reaching change in the approach to ensuring versatile mobility for Polish citizens by redirecting fiscal incentives and funds towards more sustainable modes of transport.

The second chapter describes the vehicle market in Poland and the amount of greenhouse gas emissions in Poland compared to other Member States and the average in the EU. It also contains information on the number of vehicles in Poland in 2010–2019, taking into consideration the car ownership rate in Poland and the EU. The chapter also features information on new passenger cars registered in Poland, including the national production of vehicles, the age structure of new cars and information on the types of fuels used by these vehicles. The import of passenger cars to Poland in 2010–2020 is described further in the chapter. The presented data include information on the number of imported vehicles, age structure and information on the emission standards of imported vehicles.

Chapter three shows information on external costs related to the import of passenger cars. The first part of the chapter is dedicated to the costs of accidents caused by poor technical condition of imported vehicles. The second part of the chapter presents the costs of emissions and fuel combustion by imported cars. It includes both gross costs (total costs of emissions and fuel import growth) and net costs (generated by used vehicles compared to new vehicles). The last part of the chapter presents the legal framework and costs in connection with the dismantling of vehicles in Poland.

Chapter four contains information on taxes on means of transport in Poland compared to the remaining EU countries. It also shows an estimate of the volume of funds that could go to the budget if the Polish fiscal policy for transport was closer to the EU average. This was used as the basis for determining the scale of investments in sustainable means of transport, which could be supported by additional tax revenues.

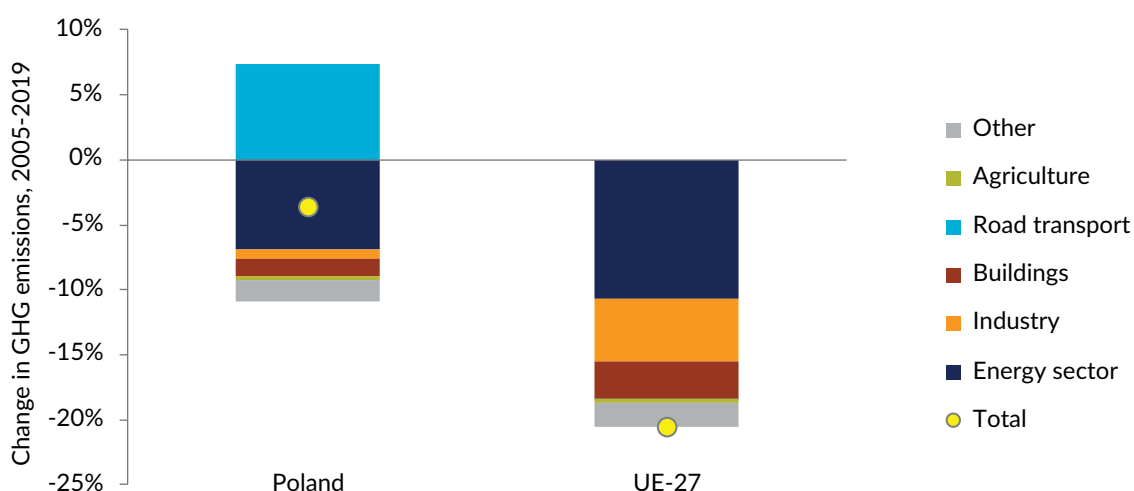
The last, fifth chapter is a summary of the analysis results and the associated conclusions.

1. The automotive market in Poland

In recent years, many changes have taken place in the car market in Poland, but road transport still remains one of the main sources of CO₂ emissions and local air pollution, generating considerable external costs.

Unlike in Western Europe, CO₂ emission in road transport has been increasing for many years in Poland. In addition, road transport is the only large sector in which CO₂ emissions have not decreased in Poland compared to 2005. On the contrary, emissions have increased by 85% in that period. In absolute terms, the increase in road transport emissions in Poland in 2005-2019 was higher than the reduction in emissions from the energy sector. Greenhouse gas emissions from road transport have not changed across the EU.

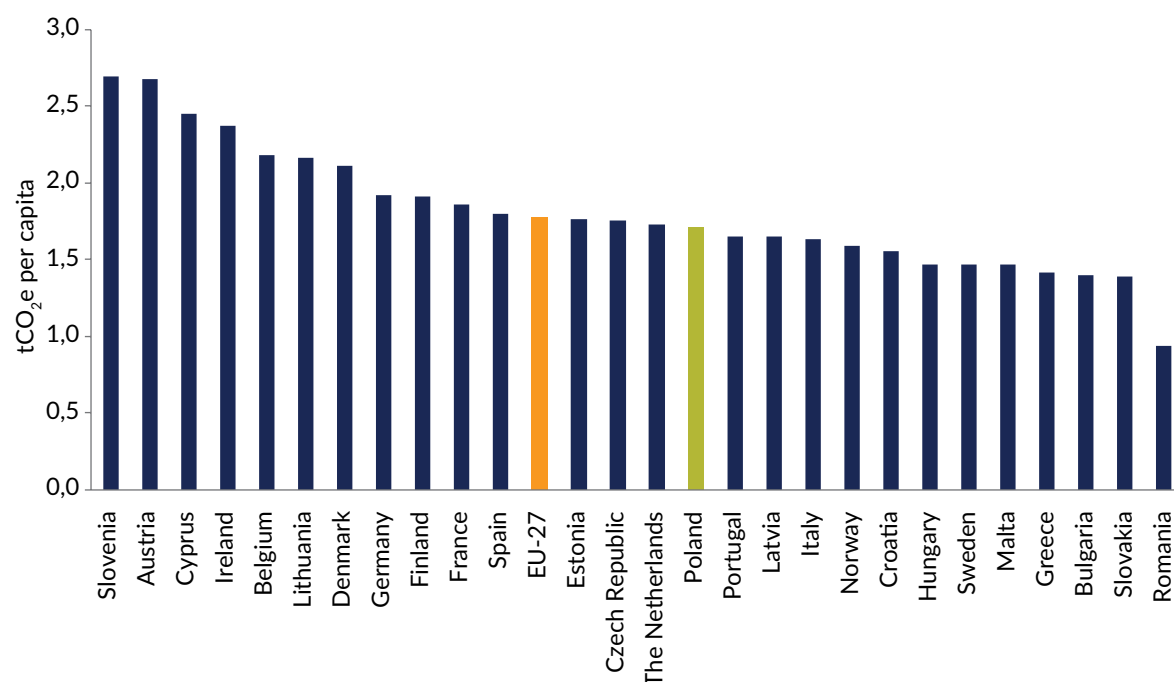
Graph 1. Contribution of various sectors to the change in greenhouse gas emissions in Poland and the EU-27 in 2005-2019



Source: WiseEuropa based on KOBiZE and Eurostat data

In 2019 Poland was 16th in the EU in terms of GHG emissions from road transport per capita, and their level (1.7 tCO₂e per capita) came close to the EU average (1.8 tCO₂e per capita). While in recent years the essential factor driving the growth of emissions was the convergence of the mobility of Poles to the level observed in Western Europe, the public policy in this area is now becoming a key factor. Without changing the current trends in the sector, mobility in Poland will be based on more emission-intensive and resource-consuming solutions.

Graph 2. Greenhouse gas emissions from road transport per capita in the EU-27 in 2019



Note: the chart does not include Luxembourg, which emissions were 10 tCO₂e per capita

Source: WiseEuropa based on EEA and Eurostat data

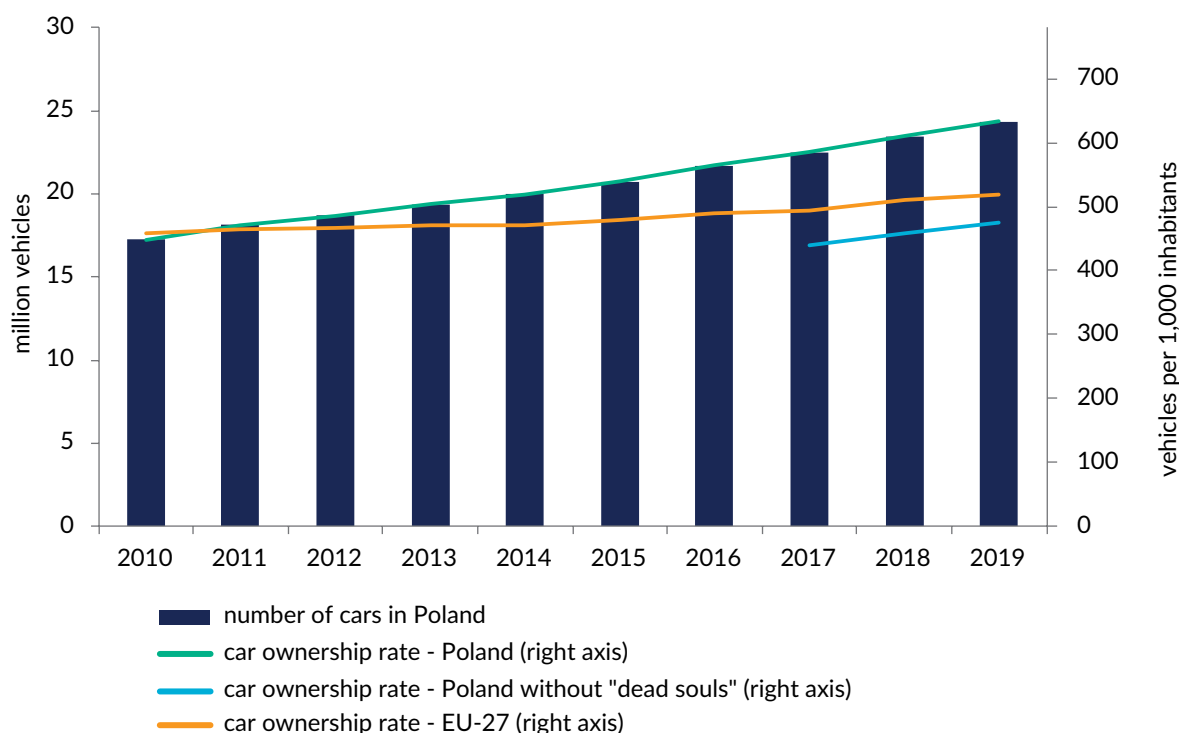
1.1 Characteristics of the passenger vehicle market in Poland

Number of vehicles

A systematic increase in the number of motor vehicles on Polish roads can be observed in recent years, with almost 32 million of vehicles in 2019. Of this group, 24.4 million are cars, which means an increase by approx. 41% compared to 2010. The remaining 8 million are trucks, tractors, buses, motorbikes, mopeds and special vehicles.¹ Poland is the fifth largest passenger car market in the EU, accounting for approx. 10% of total European demand. Every tenth car in the EU is registered in Poland. More vehicles are registered in Germany, Italy, France and Spain. We should also note a major share of registered archival vehicles, i.e. “dead souls” in the Central Register of Vehicles and Drivers (CEPiK). These are vehicles registered more than 10 years ago with their status not updated in the last 6 years. In 2018, archive vehicles constituted 25.7% in the structure of the passenger car fleet (6.09 million vehicles).²

¹ Polish Automotive Industry Association (2020). [Automotive Industry. Report 2020/2021](#)

² Automotive Market Research Institute SAMAR (2019). [Park 2018. Ranking of „dead souls” from the times of the PRL](#)

Graph 3. Number of motor vehicles in Poland and the car ownership rate in 2010–2019

Source: WiseEuropa based on GUS and Eurostat data

According to Eurostat data for 2019, 507 cars per 1,000 inhabitants on average were registered in the EU countries.³ In Poland, this indicator has exceeded the EU average and was over 635, however, after deducting the so-called "dead souls" it is around 470-480 which is below the EU average.

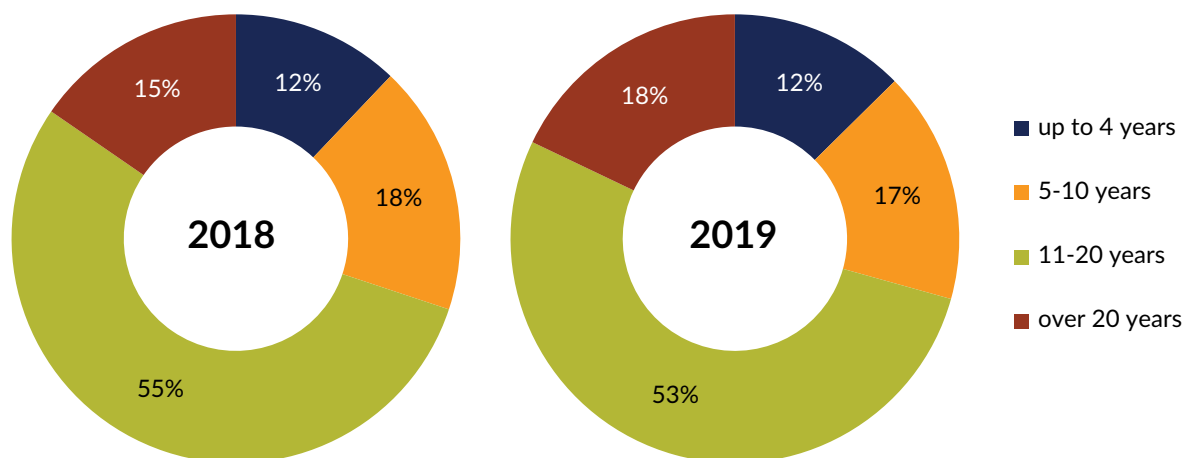
Age of vehicles

Analysis of the age of passenger cars in Poland shows alarming changes in the structure of the car fleet. In 2018 and 2019, there was a noticeable increase in the share of passenger cars older than 20 years, with the number of 11-20 year-old cars dropping from 54.5% to 52.7%. This trend also persists for 5-10 year-old cars, the share of which decreased from 18% to 16.7%. The average age of a passenger car in 2019 was 14.1 years (0.2 year more than in 2018).⁴ So the car fleet in Poland is obsolete, and the vehicle age is directly associated with its technical condition.

³ Eurostat, [Passenger cars per 1000 inhabitants](#) [access: 25/08/2021]

⁴ Polish Automotive Industry Association (2020). [Automotive Industry. Report 2020/2021](#)

Graph 4. Age of passenger cars in Poland in 2018-2019



Source: WiseEuropa based on the PZPM data.

The growing average age of vehicles in Poland has a major impact on emissions. The amount of harmful emissions depends on the age of the vehicles and the technology used in them.⁵ As older vehicles have lower exhaust emission standards, their emissions are much more harmful to the environment.

1.2 New passenger cars

Production of passenger cars

The production of passenger cars in Poland decreased by 1.7% in 2019 compared to 2018, but the drop was smaller than in the previous year (5.4%). According to the data of the Polish Automotive Industry Association (PZMP-Polski Związek Przemysłu Motoryzacyjnego), 622 thousand passenger cars and light commercial vehicles were produced in 2019. In 2020, the COVID-19 pandemic had a large role in the reduced production volume of passenger cars: a total of 451,000 vehicles were produced, which is 31% less than in the previous year.⁶

First registrations of new passenger cars

23% fewer new passenger cars were registered in Poland in 2020 than in the previous year, and this number (488 thousand) is similar to the level in 2017. According to the PZPM⁷, the decreases in first registrations also apply to new delivery vans, trucks, trailers, buses and mopeds.

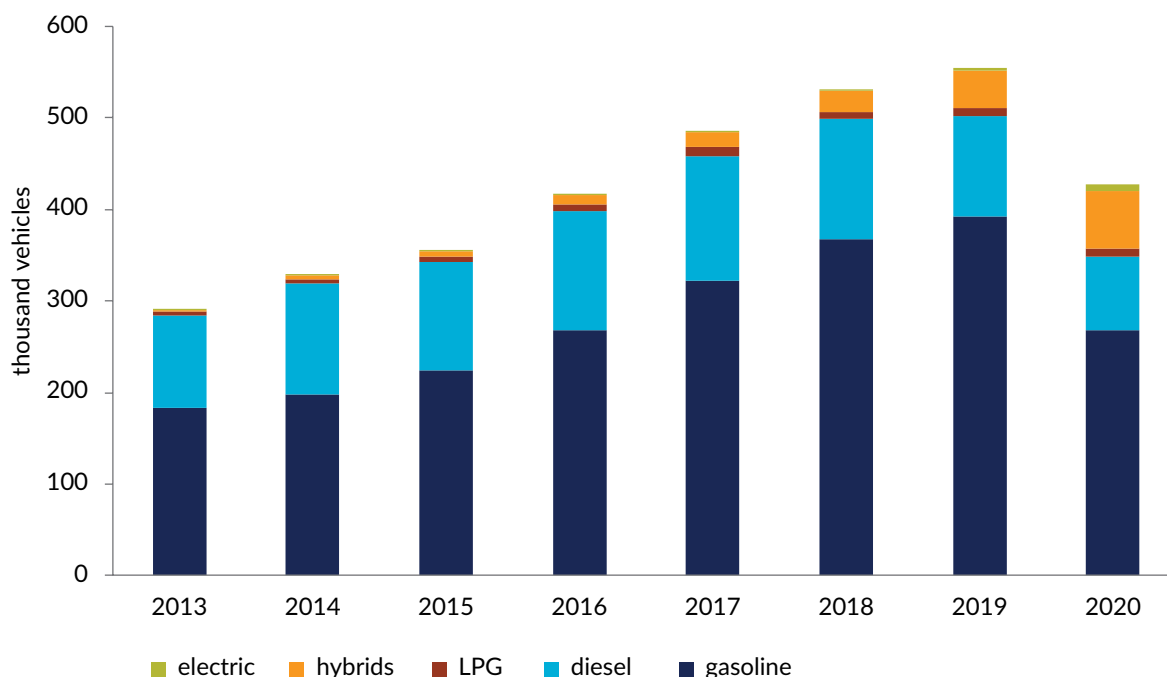
⁵ Central Statistical Office (2018), [Development of the methodology and estimation of external costs of pollutant emissions to the air from means of road transport at the national level](#)

⁶ PZPM and KPMG (2021), [Automotive industry Report by PZPM and KPMG Edition Q1/2021](#)

⁷ PZPM, [Registrations - passenger cars and delivery vans. Statistics](#) [access: 25/08/2021]

Most new vehicles in Poland are registered by companies (rather than individuals) which for many years have been responsible for approx. 70% of registrations. Almost half of new passenger vehicles in recent years belong to leasing and fleet management companies (CFM – Car Fleet Management, RC – Rent a Car).

Graph 5. Number of first registrations of new passenger cars by fuel type in Poland in 2013–2020



Source: WiseEuropa based on the PZPM data.

In the case of new passenger cars, in 2020 passenger cars with gasoline engines once again turned out to be the most popular type, although the number of their registrations decreased by 31.6% compared to 2019. The share of gasoline in the total fuel structure for new passenger cars in 2020 was 63% and decreased by 8% compared to 2019. In the case of registrations of Diesel cars, their share dropped by 27% compared to 2019.

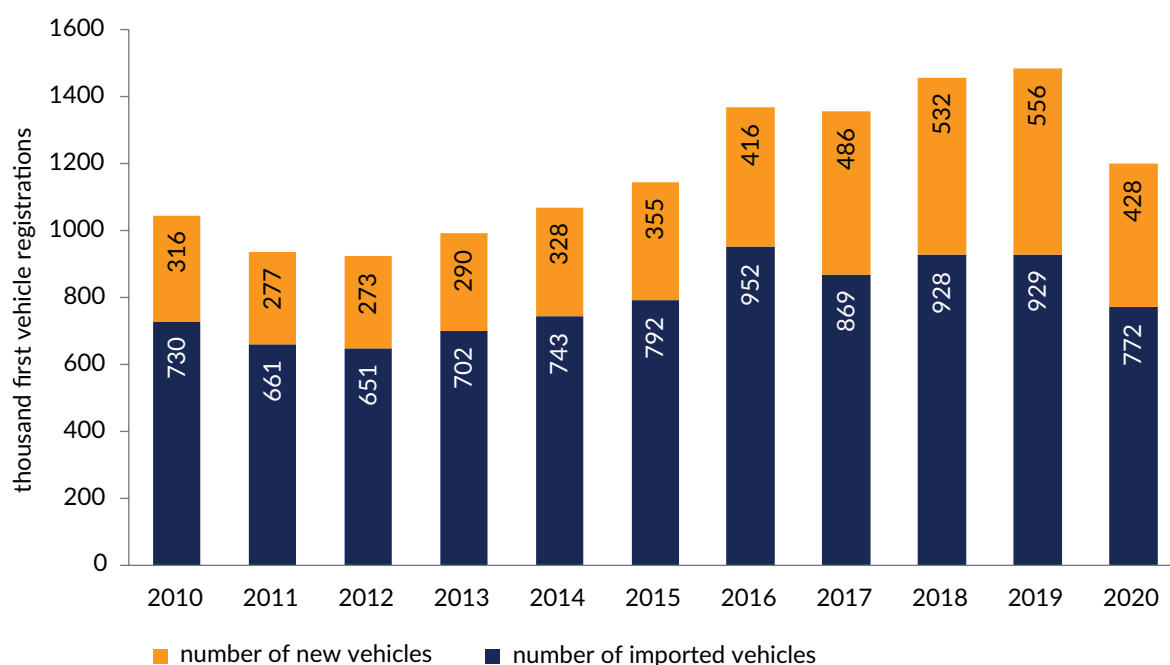
The segment of passenger cars with alternative drives has maintained a high growth rate. Since 2016, we have observed an increase in the share of hybrid vehicles (equipped with internal combustion and electric engines), which in 2020 increased by 48% compared to 2019 and was 14.5% of the market share in terms of fuel type (in 2019 the share of hybrids was 7.5%). In 2019-2020 there was also a dynamic, three-times increase in the share of electric cars, but they still have a marginal share in the market (8,000 vehicles, 2% of the market).

1.3 Imported passenger cars

Number of imported vehicles

Several European countries have a relatively high share of used car imports in the vehicle market. These include Bulgaria, Luxembourg, Latvia, Malta, Poland and Romania. For many years, Poland has been the largest importer of passenger cars in terms of both the value and volume of imported cars.⁸

Graph 6. The first registrations of passenger cars in Poland in 2010-2020, broken down into new and imported vehicles



Source: WiseEuropa based on the PZPM data.

The breakthrough moment in the used car market was Poland's accession to the EU. The right to free movement of goods from the Member States led to a radical increase in the import of used vehicles. This trend continues until today – currently in Poland there are almost twice as many registrations of imported vehicles as new ones, and almost 14.5 million passenger vehicles in total have been imported to Poland since 2004. In 2010-2020, between 650 thousand to over 950 thousand vehicles were imported to Poland annually. Meanwhile, before Poland joined the EU, car imports did not exceed 40,000 vehicles annually.^{9, 10}

⁸ Velten E. et al. (2020), [Used vehicle trade and fleet composition in Europe](#)

⁹ PZMP (2021), [Automotive industry. Report 2020/2021](#)

¹⁰ PZPM, [Registrations – passenger cars and delivery vans. Statistics](#) [access:25/08/2021]

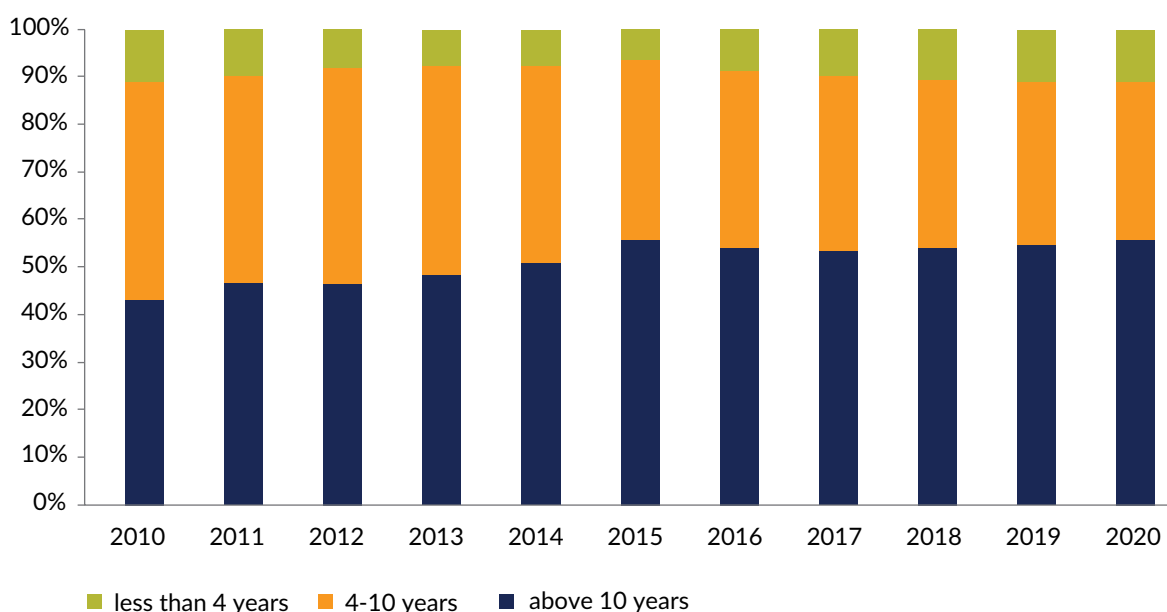
In 2020 the import of passenger cars to Poland was almost 23% lower than in 2019, mainly because of the COVID-19 pandemic and related restrictions.¹¹

In July 2021, passenger cars were mostly imported to Poland from Western Europe: Germany (61%), France (11%), Belgium (7%) and the Netherlands (5%) as well as the United States (4%).¹²

Characteristics of imported vehicles

In the last decade there has been a negative change in the age structure of imported vehicles. In 2010, vehicles 4 to 10 years old were the dominant vehicle imports. Since 2015, more than half of the imported vehicles have been older than 10 years. This trend has continued to this day. There is also a significant increase in imports of vehicles less than 4 years old. In June 2021 the average age of an imported vehicle was 12 years and 2 months.¹³

Graph 7. Age structure of imported vehicles in 2010-2020



Source: WiseEuropa based on the PZPM data.

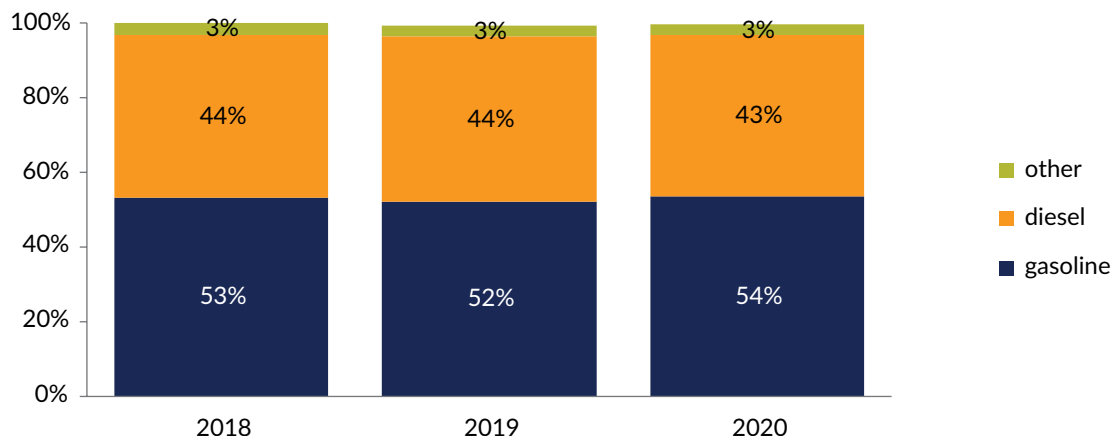
11 PZPM, [First registrations of passenger cars and delivery vans with GVM<=3.5t](#) [access: 25/08/2021]

12 SAMAR, [Import in July 2021](#) [access: 25/08/2021]

13 SAMAR, [Import in June 2021](#) [access: 25.08.2021]

Compared to the new vehicle market, diesel cars have a larger share among imported vehicles, reaching 44%. Vehicles powered by alternative fuels (natural gas), hybrid and electric vehicles are the least frequently imported group.

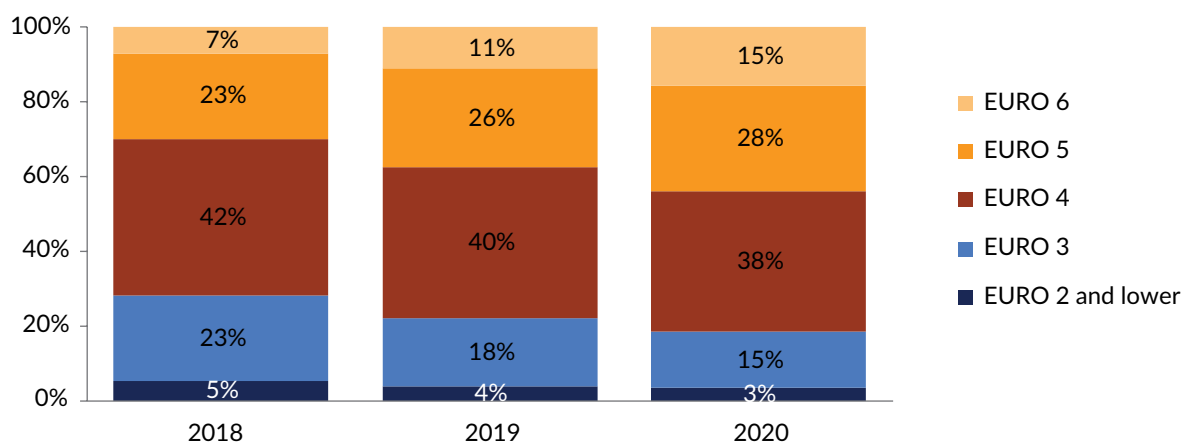
Graph 8. Structure of vehicles imported in 2018-2020 by fuel



Source: WiseEuropa based on the PZPM data.

Despite the increasing number of imports of EURO 6 emission standard cars, the EURO 4 standard remains dominant. Vehicles in this standard and lower, i.e. vehicles manufactured before 2011, were more than 55% and 56% of imported vehicles in 2019 and 2020 respectively.

Graph 9. Structure of EURO emission standards among imported vehicles



Source: WiseEuropa based on the PZPM data.

2. Social and economic costs

The functioning of the transport sector is essential for the social and economic development of each region and country. At the same time, transport is one of the main sources of environmental pollution, generating a number of significant social burdens and costs. This chapter presents an analysis of external costs related to road traffic safety, the costs of emissions and disposal of vehicles in the context of the import of passenger cars to Poland.

2.1 Road traffic safety

For many years, the low level of road traffic safety in Poland has been one of the main challenges for the transport policy. Our country is ranked one of the last in the EU in the RTS statistics. Only in the last decade (2011-2020) there were over 330,000 accidents in Poland, involving over 31,000 fatalities and over 400,000 injuries. Road accidents also generate measurable and considerable social and economic effects, estimated at more than PLN 56 billion annually¹⁴.

The level of road traffic safety and the import of used cars are interrelated areas of the transport system in Poland. The average age of passenger cars (GVM up to 3.5 t) imported to Poland is over 12 years.¹⁵ The available international DEKRA research clearly shows that the failure rate of all vehicle safety systems increases with age. According to the above data, the failure rate of the key safety components in the vehicles brought in to Poland is up to 50%.¹⁶

The results of analyses for Poland also show an increase in the accident risk with the vehicle age. According to research published in 2019, including the analysis of road incidents in 2006-2016, the risk of a fatal accident in an older car is even three times higher than in a new vehicle, and users of vehicles up to 5 years old have the best chance of surviving accidents.¹⁷

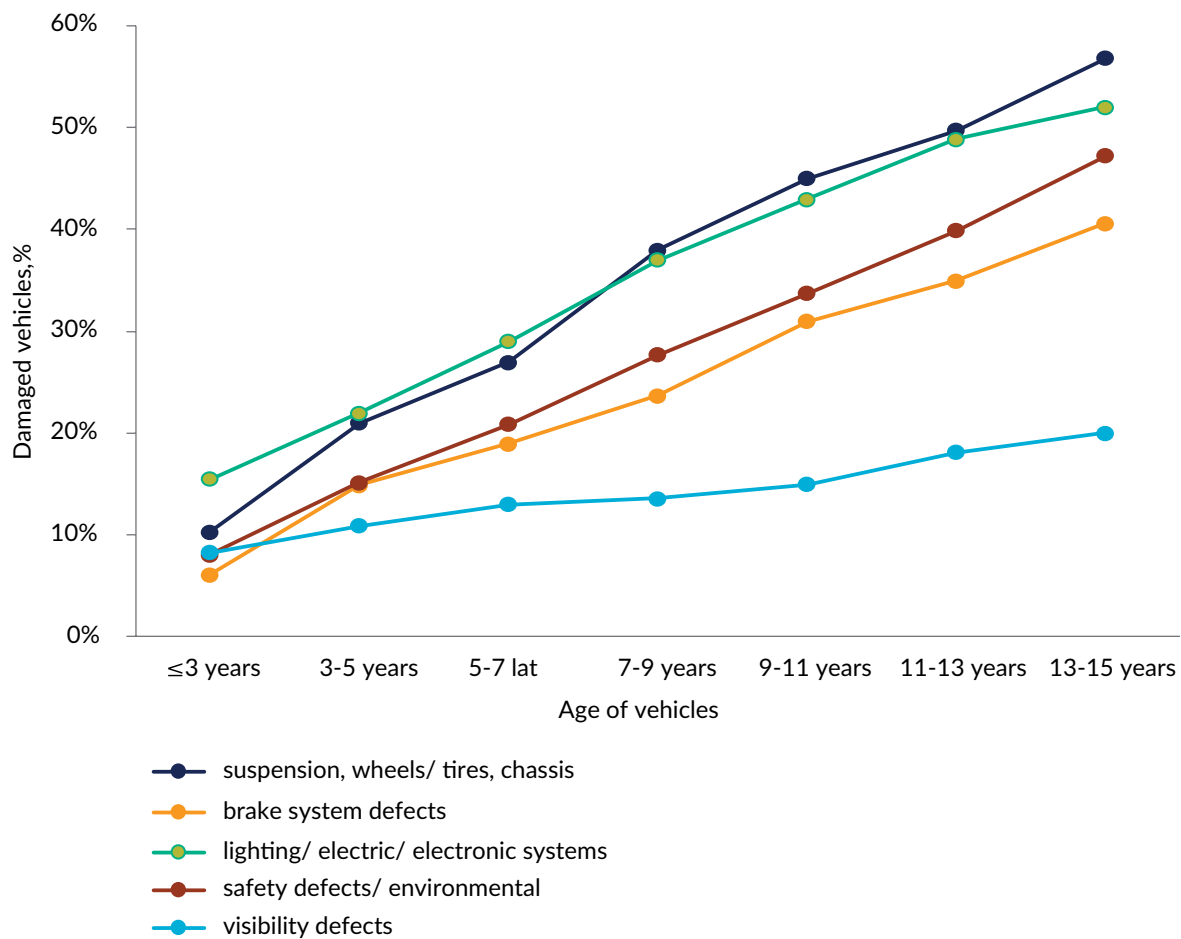
14 National Road Safety Council (2019), [Estimation of the costs of road accidents and collisions on the road network in Poland at the end of 2018, including the average social and economic costs of accidents on the Trans-European Transport Network](#)

15 SAMAR, [Import in May 2021](#) [access: 25.08.2021]

16 DEKRA Automobil GmbH (2016), [DEKRA Road Safety Report 2016 Passenger Transportation](#)

17 Sicińska K. (2019), [Age of a passenger car and its influence on accidents with fatalities in Poland](#)

Graph 10. Frequency of faults and vehicle age



Source: WiseEuropa based on Dekra Road Safety Report 2016

According to the statistics of the National Police Headquarters, in 2020 there were 64 road accidents in which a vehicle's technical malfunction was the main cause. They resulted in 8 fatalities and 80 injuries.¹⁸ The average cost of a road accident according to the data of the National Road Safety Council (KRBRD–Krajowa Rada Bezpieczeństwa Ruchu Drogowego) for 2018 is PLN 1.42 million, and therefore the social and economic costs generated by insufficient technical condition of vehicles exceed PLN 90 million.¹⁹ However, attention should be paid to gaps in the vehicle technical inspection system and a significant underestimation of the above rate. According to the report of the Supreme Audit Office (NIK-Najwyższa Izba Kontroli) from 2017, although the poor technical condition of vehicles in official statistics is responsible for only 0.12% of all accidents, police officers declare in surveys that up to 10% of all accidents are caused by this factor. Such statistics are also more consistent with European statistics and experiences, for example the technical condition is responsible for 7% of all accidents in Germany.²⁰

18 National Police Headquarters (2021), [Road accidents in Poland in 2020](#)

19 National Road Safety Council (2019), [Estimation of the costs of road accidents and collisions on the road network in Poland at the end of 2018, including the average social and economic costs of accidents on the Trans-European Transport Network](#)

20 Supreme Audit Office (2017), [Information on the results of audit KIN.4360.007.2016 Roadworthiness certificates](#)

The above data show significant gaps in the Polish vehicle inspection system. Despite having one of the oldest car fleets, there are very few negative results of roadworthiness tests in Poland compared to Europe. In 2020, out of almost 19 million tests, only 2.5% ended with a negative result. Meanwhile, in Germany, among the 10 million randomly selected roadworthiness tests carried out from June 2017 to June 2018, as many as 20% of vehicles were not approved for traffic. A similar trend is maintained in Finland, where in 2017-2020, one in five cars on average was found to have serious technical defects that excluded the tested vehicle from road traffic.²¹

Although the currently available data do not allow us to clearly determine the number of accidents involving imported cars, considering the presented data, the import of several-year-old vehicles certainly has a negative impact on the general road traffic safety in Poland. Taking into account the results of surveys among police officers, assuming that the poor technical condition is responsible for 10% of accidents in Poland, the actual social cost of these accidents exceeds PLN 5.5 billion annually. From an economic point of view, it is therefore a very considerable cost for the state. At the same time, it should be emphasised that every accident and death is a pain and suffering of victims, which cannot be quantified in a measurable way. So each action to improve the road traffic safety is twice as valuable and should be a priority for decision-makers responsible for the Polish transport policy.

2.2 Pollutant emissions and fuel combustion

Used vehicles with lower emission standards that are imported to Poland emit more pollutants than new vehicles. Older vehicle engines operate less efficiently and therefore consume more fuel.

This chapter estimates the amounts of CO₂ and NO_x emissions from vehicles imported to Poland. The emissions of these compounds differ significantly between new and used passenger cars. The calculated emissions were the basis for estimating the costs of pollutant emissions and fuel consumption of imported vehicles.

In addition, the costs are presented in gross and net amounts:

- **gross costs** represent the total amount of external costs and fuel imports by vehicles imported to Poland in a given year,
- **net costs** are the difference between the gross costs for used and new vehicles, calculated according to average indicators and standards that must be met by new vehicles.

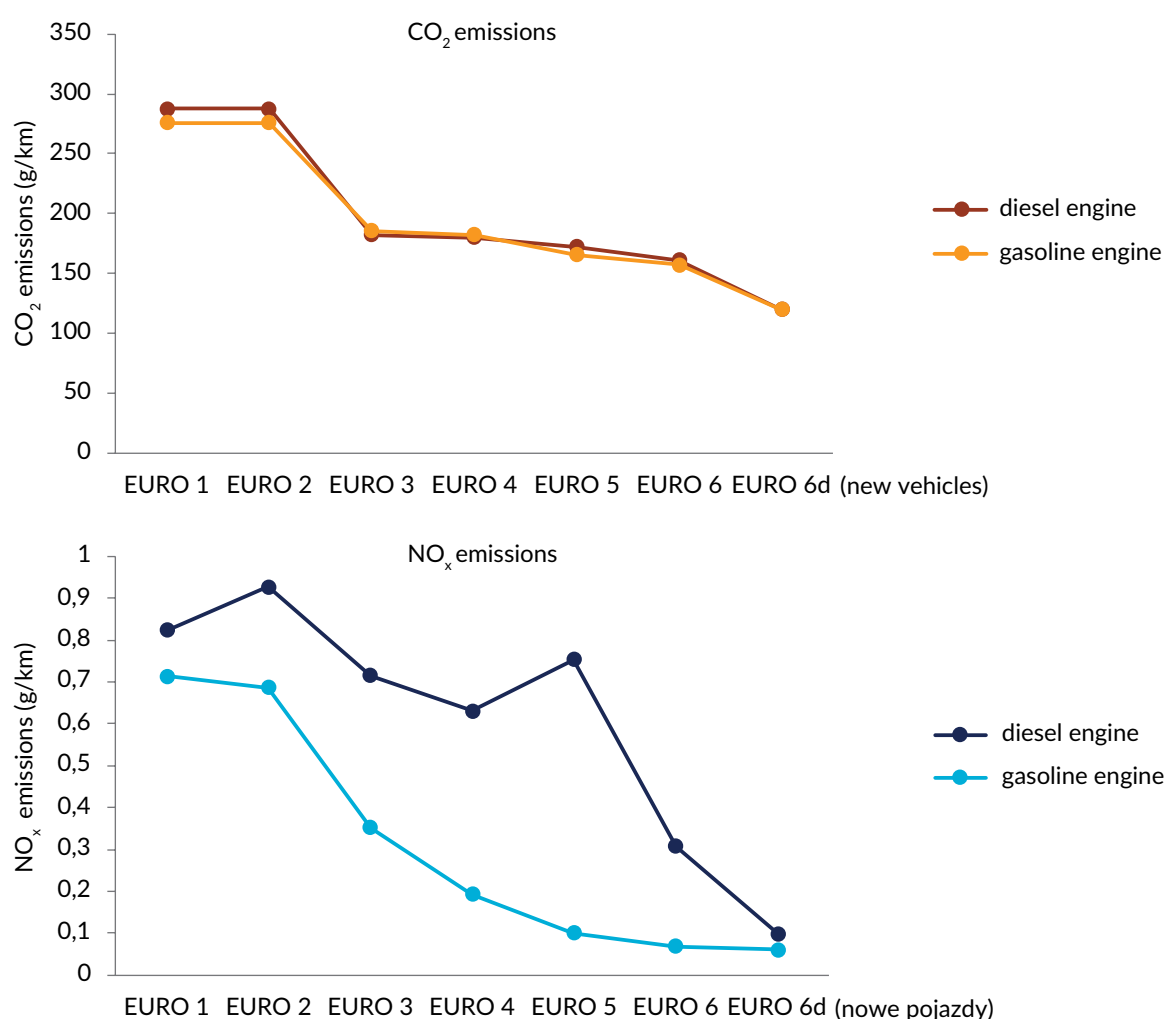
The costs are presented for the entire period in which vehicles are used in Poland, i.e. from import to dismantling. According to the available data, vehicles dismantled in Poland are 20 year old on average. Considering the current average age of imported vehicles, it was assumed that

²¹ NIK (2021), [Information on results of Safety of road users audit](#)

from the moment of import vehicles are used in Poland for 8 years, so the vehicles imported in 2018 will be disposed of in 2026, for example.

Emission estimates use the actual specific CO₂ and NO_x emissions for gasoline and diesel vehicles, broken down into vehicles with a specific EURO standard specified in the study of International Council on Clean Transportation (ICCT) for Poland, based on the example of the city of Kraków.²² Due to the application of the new rules for testing the combustion and harmful emissions in the current WLTP cycle, the emission rates indicated in the study, calculated according to the NEDC cycle, were increased by 24% and 19%, respectively.²³

Graph 11. Vehicle emission rates according to the exhaust emission standard and fuel type



Source: *WiseEuropa based on the ICCT data.*

²² International Council on Clean Transportation (2020), [Remote sensing of motor vehicle emissions in Krakow](#)

²³ ICCT (2020), [On the way to "real-world" CO₂ values: The European passenger car market in its first year after introducing the WLTP](#)

Box 1. EU vehicle testing procedures: from NEDC to WLTP

NEDC – New European Driving Cycle – was developed in the 1980s. It made it possible to study the amount of fuel used by vehicles and the CO₂ emissions of passenger cars and light commercial vehicles. The test was performed over an average distance of 11 km in 20 minutes. During the tests, urban driving (13 minutes) and extra-urban driving (7 minutes) were simulated in the laboratory. The average speed during the test was 33 km/h and the maximum speed was 120 km/h. Urban driving tests involved slow acceleration of vehicles to the speed of 15 km/h, 32 km/h and 50 km/h, each test followed by a stop, which meant that the vehicle was not moving for about 25% of the test time. In the extra-urban cycle, a vehicle is accelerated to the speed of 70, 100 and 120 km/h, then it does not stop, but slows down to 50 km/h.

The NEDC test does not match the actual fuel consumption. This is because it does not take into account additional accessories, air conditioning or technical parameters such as tire width or vehicle weight.

In September 2017, a new test procedure, mandatory for all EU countries, was introduced: **WLTP – World-wide Harmonized Light-Duty Vehicle Test Procedure**, which applies to all new and newly-registered vehicles. It is characterised by a longer and more dynamic cycle – the test distance has been extended to 23 km, and its duration is 30 minutes. The entire test consists of four phases: low, medium, high and extra-high, which are done at different maximum speeds. Compared to the NEDC test, the average and maximum speeds were increased to 47 km/h and 130 km/h respectively. The vehicle does not move for 13% of the test time. Two versions of the car's equipment (the simplest and the highest) are tested, thanks to which it is possible to examine the impact of additional equipment on fuel consumption and harmful emissions.

The WLTP test better reflects the actual driving conditions and gives more realistic fuel consumption and emissions rates for different vehicle models.

Source: WiseEuropa

It was also necessary to estimate the annual mileage of tested vehicles to determine the emission amounts. The basis for establishing these values was the information on the Odyssee-Mure project websites²⁴, showing the mileage of vehicles in the EU Member States in 2018. The results of the JRC IDEES project²⁵ were used to differentiate between the mileage for gasoline engines and diesel engines.

The fuel consumption estimates were based on emission rates and calorific values for emission reporting published by the National Centre for Emissions Management (KOBiZE-Krajowy Ośrodek Bilansowania i Zarządzania Emisjami). Fuel quality parameters were also used, as specified in the Regulation on the quality requirements for liquid fuels.²⁶

²⁴ [ODYSSEE-MURE](#) project data [access: 25/08/2021]

²⁵ [JRC-IDEES](#) data [access: 25/08/2021]

²⁶ [Regulation of the Minister of Economy of 9 October 2015 on the quality requirements for liquid fuels](#) (Dz.U. of 2015, item 1680)

The table below presents the total annual CO₂ and NO_x emissions and the fuel consumption by used cars imported in a given year. They are expressed as gross (fuel consumption and total emissions) and net values (emission and fuel consumption surplus compared to new vehicles).

Table 1. Annual gross and net emissions and fuel combustion by imported vehicles

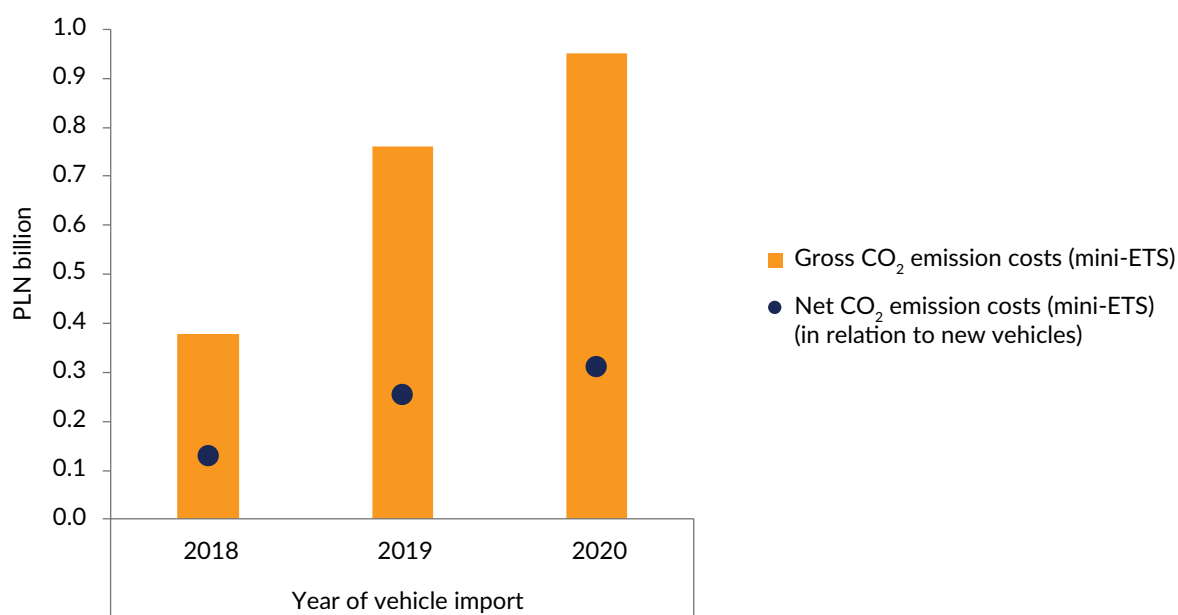
	GROSS			NET		
	2018	2019	2020	2018	2019	2020
CO ₂ emissions (thous. t) – diesel engines	848	847	684	292	284	225
CO ₂ emissions (thous. t) – gasoline engines	401	391	329	135	127	105
NO _x emissions (thous. t) – diesel engines	3,10	3,06	2,44	2,65	2,61	2,06
NO _x emissions (thous. t) – gasoline engines	0,51	0,45	0,35	0,37	0,32	0,24
Oil imports (million tonnes)	566	565	456	140	134	107

Source: calculations by WiseEuropa

The analysed costs of CO₂ emissions result from the announcement by the European Commission to include transport in the emission allowance trading system under the so-called mini-ETS starting from 2026. Users of vehicles imported in 2018-2020 will therefore not bear these costs for most of their cars' service life. At the same time, with each year, the period of using a vehicle while the mini-ETS is in effect will become longer, so the accumulated fees for emissions incurred in the vehicle life cycle will grow dynamically for each subsequent cohort. To determine the costs of CO₂ emissions resulting from the introduction of the mini-ETS in 2026, the forecast path of EU ETS allowances was used according to their current prices and KOBiZE estimates until 2030.²⁷ The total costs of CO₂ emissions generated by used vehicles in the cycle increased from less than PLN 400 million for vehicles imported in 2018 to almost PLN 1 billion for those imported in 2020. The net costs grew from approx. PLN 130 million for vehicles imported in 2018 to over PLN 300 million for those imported in 2020. It should be noted that if the mini-ETS was in force now, the net cost of the life cycle of imported vehicles in 2020 would be approx. PLN 750 million, which is more than twice as much as for the planned system introduction in 2026.

²⁷ Institute of Environmental Protection - National Research Institute (2020), [The effects of the introduction of the border tax on GHG emissions in the conditions of tightening EU climate policy until 2030.](#)

Graph 12. Net and gross costs of CO₂ emissions (mini-ETS) in the life cycles of imported vehicles in 2018-2020



Source: calculations by WiseEuropa

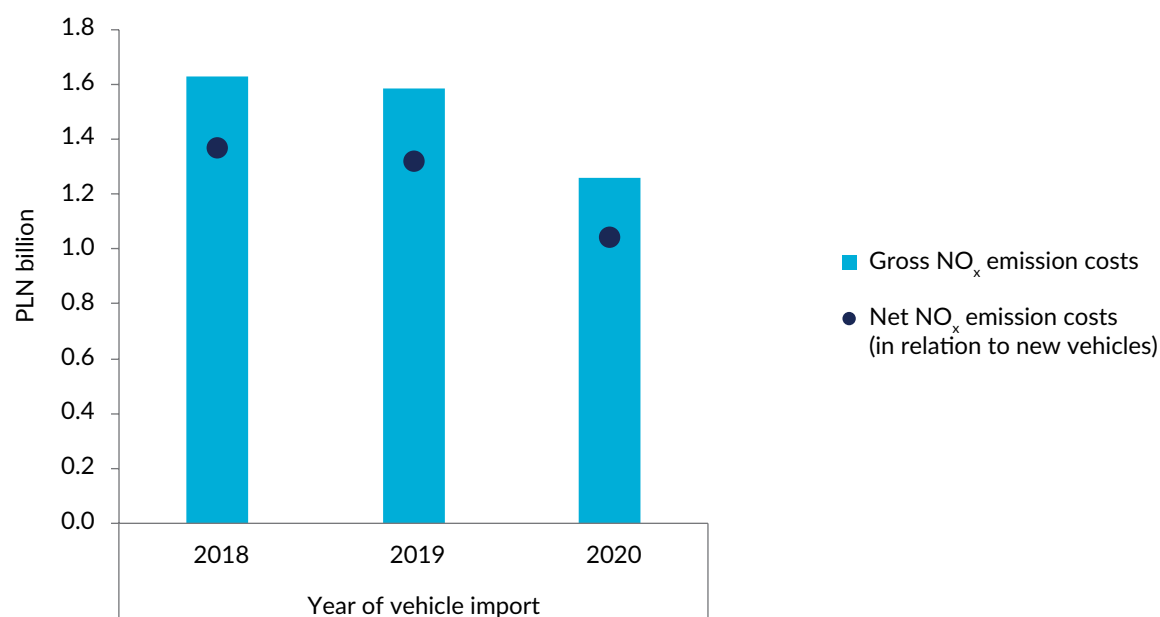
It should be noted that regardless of the introduction of the mini-ETS, emissions in the transport sector are also subject to the EU reduction targets in non-ETS sectors until 2030, which will also generate potential costs for the state budget in the late 2020s.²⁸ Due to the limited impact of imported vehicles in the analysed period on the emissions at the end of the 2020s, this study focuses only on the costs generated by the balance of participation in the mini-ETS.

The costs of nitrogen oxides (NO_x) emissions were determined according to specific external costs for road transport for 2019, published by the European Commission.²⁹ Due to the large differences between the actual NO_x emissions of vehicles manufactured before the tightening of control and the introduction of the new EURO 6d standards and new cars, the difference between gross and net costs is limited in this case. For vehicles imported in 2020, they will be PLN 1.3 and 1.0 billion, respectively, over the period of vehicle use on Polish roads. A gradual decrease in external costs related to NO_x emissions by imported vehicles should be expected in the coming years, combined with a gradual increase in the share of cars that meet the latest emission standards.

²⁸ A detailed discussion of the emission fees mechanism in non-ETS sectors is presented in the study by WiseEuropa (2021), [The Forgotten Foundation. Buildings and energy efficiency in the new system of fees for emissions in the EU](#).

²⁹ KE (2019), [Handbook on the external costs of transport](#).

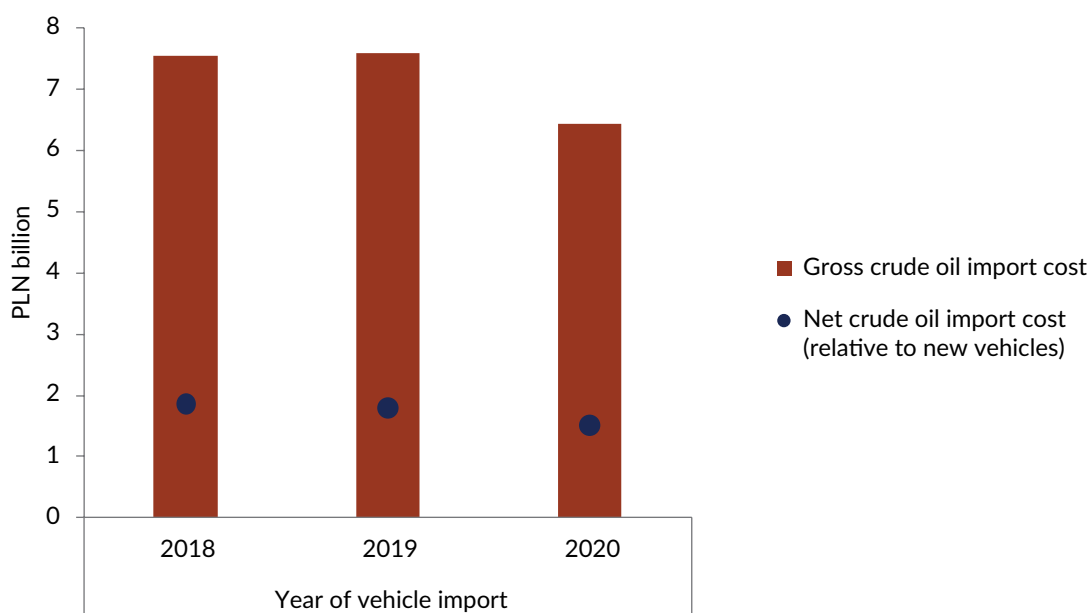
Graph 13. Net and gross external costs of NO_x emissions in the life cycles of imported vehicles in 2018-2020



Source: calculations by WiseEuropa

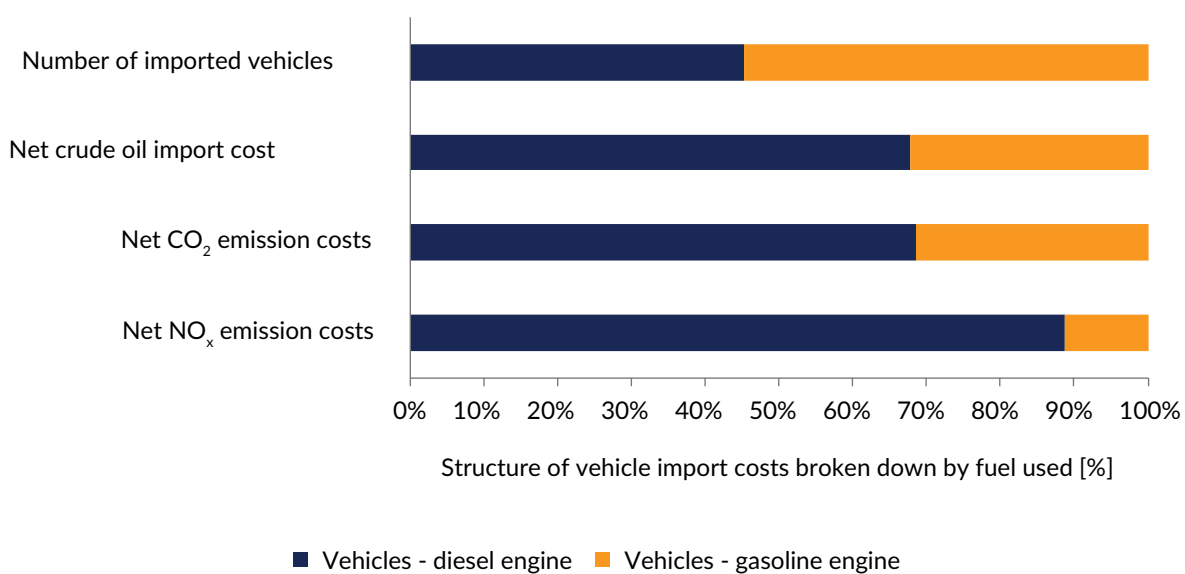
The cost of crude oil imports resulting from the fuel consumption by imported used vehicles is based on estimated CO₂ emissions, the emission rates of individual fuels and oil price forecasts published by the World Bank³⁰. Used vehicles imported in 2020 will increase the costs of crude oil imports to Poland by a total of PLN 6.4 billion in the period they will be driving on Polish roads. This amount is PLN 1.5 billion higher than if new cars with lower fuel consumption were purchased instead of used vehicles. The decrease of oil import cost for imported vehicles in 2020 compared to the ones imported in previous years was caused mainly by the lower number of imported cars. In the following years, we should expect that the net costs will remain at a similar level and the gross costs will gradually decline due to the reduction of fuel consumption in both used and new vehicles.

30 The World Bank (2021), [Commodity Markets Outlook – April 2021](#).

Graph 14. Net and gross costs of oil imports in the life cycles of imported vehicles in 2018-2020

Source: calculations by WiseEuropa

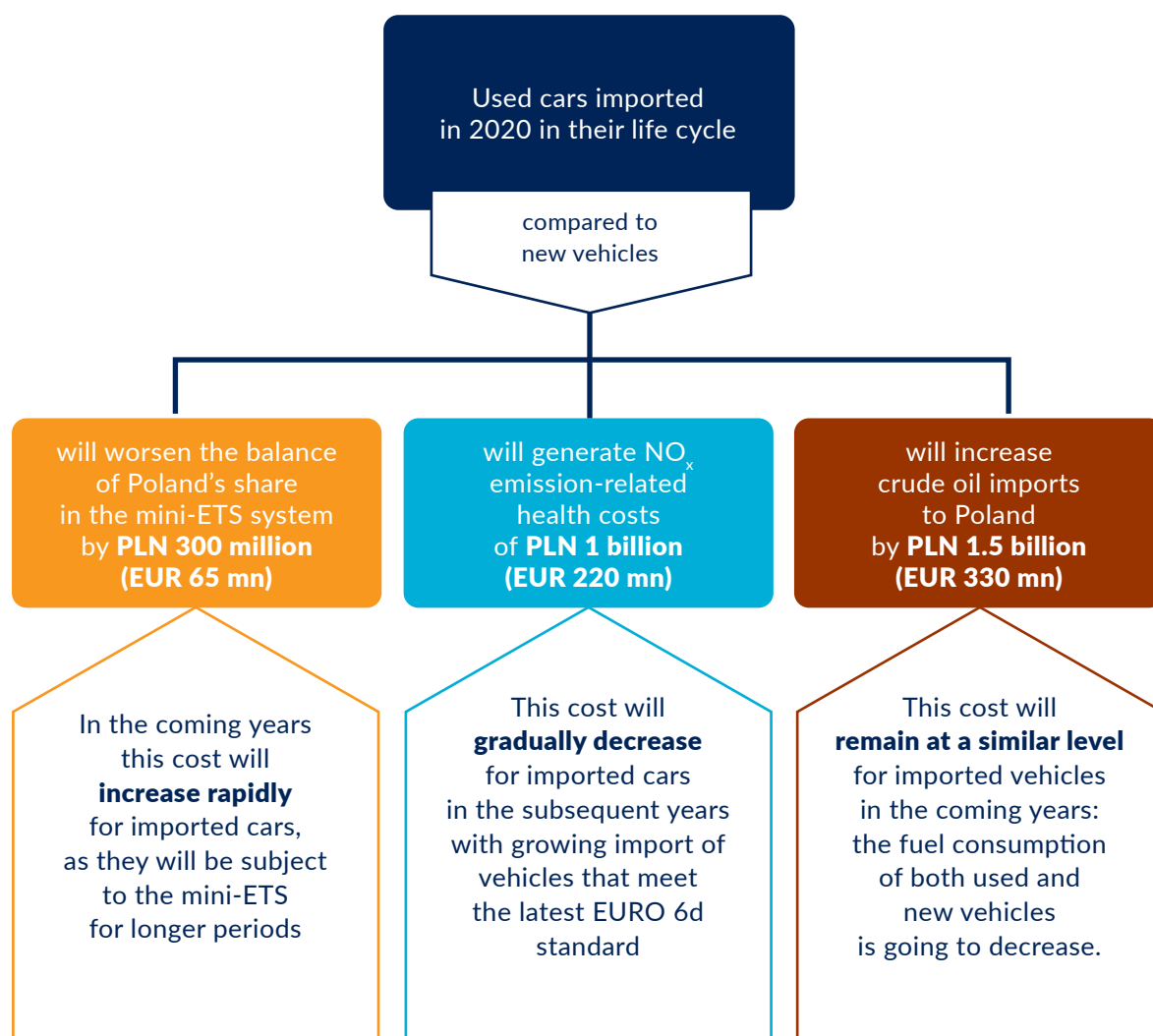
The analysis distinguishing the types of fuels used by imported cars demonstrates that diesel vehicles play a dominant role in the cost structure. This is due to higher average mileage of diesel cars as well as higher specific emissions of harmful nitrogen oxides. Regarding the net costs of CO₂ emissions and crude oil imports, diesel vehicles account for almost 70% of the net costs, and for almost 90% of net costs of NO_x emissions.

Graph 15. Structure of net costs of import of diesel and gasoline engine vehicles

Source: calculations by WiseEuropa

The diagram below summarizes the key effects of the import of high-emission and fuel-intensive used vehicles to Poland in 2020. Partial replacement of the import of used vehicles with the purchase of new cars that meet higher emission standards (including electric vehicles) could significantly reduce air pollution and improve the Polish trade balance and participation in the mini-ETS. Even greater impact could be made by avoiding the need to purchase vehicles or limiting their use through improvement of public transport in Poland.

Diagram 1. Summary of the social and economic effects of the import of used vehicles to Poland in 2020



Source: calculations by WiseEuropa

2.3 Vehicle scrapping

According to IBRM SAMAR data, in 2020 almost 2/3 of dismantled (scrapped) cars went to Poland as imported used cars.³¹ The disposal of used cars, including imported ones, is governed by the Act on the recycling of end-of-life vehicles³². According to the regulation, before 01/01/2016, the owner of a used car paid a recycling fee of PLN 500 when importing a used car from abroad. The fee was fully refunded after legal deregistration of that vehicle.

The amendment to the above-mentioned Act abolished the obligation to pay the fee after 01/01/2016. The owners of end-of-life passenger cars can now take their cars to a special dismantling (scrapping) stations and earn on the returned parts. The price per kg varies depending on the voivodeship or car type. The average price per 1 kg of scrap from passenger cars is approx. PLN 0.3-0.4. Scrapping is allowed for vehicles that are not fully operational and have missing components, but are covered by the civil liability insurance. Under the current regulations, legal deregistration of a vehicle is possible after legal dismantling, and the obligation to pay civil liability insurance will expire after deregistration. As a result, even 95% of the entire vehicle can later be legally recycled and the rest disposed of pursuant to the regulations.³³

Unfortunately, the latest data show that the cancellation of the recycling fee, and therefore the lack of a financial incentive, has reduced the number of scrapped vehicles. In 2020, the number of dismantled cars has decreased and the grey market of spare parts keeps on growing.³⁴ Parts that cannot be resold are very often left in the woods or burned.³⁵ It should be noted that the current lack of sanctions for not registering a vehicle may suggest that the data on the number of imported vehicles or their dismantling are also incomplete. Official data³⁶ suggest that more than 400,000 passenger cars were dismantled in 2020, i.e. 13.6% and 19.6% less than in the previous year and in 2018 respectively (Graph 16). Regarding the age of dismantled cars, most of the vehicles dismantled in 2020 were models from 1999 – their number was 62 thousand, meaning over 15% of all dismantled passenger cars in Poland. Another frequent models were those produced in 1998 (50.7 thousand cars) and in 2000 (49.5 thousand cars).³⁷

After 2016 (when the recycling fee was cancelled), the number of deregistrations due to dismantling began to decline and was exceeded by the number of new vehicle registrations. The current lack of any financial incentive can strengthen this trend even further, supporting the development of illicit trade in parts and the decline of legal dismantling stations.

31 SAMAR, [Dismantling of passenger cars in 2020](#) [access: 25/08/2021]

32 Act of 20 January 2005 on the recycling of end-of-life vehicles ([Dz.U. of 2005, No. 25, item 202, as amended](#))

33 National Fund for Environmental Protection and Water Management, [Recycling fee](#) [access: 25/08/2021]

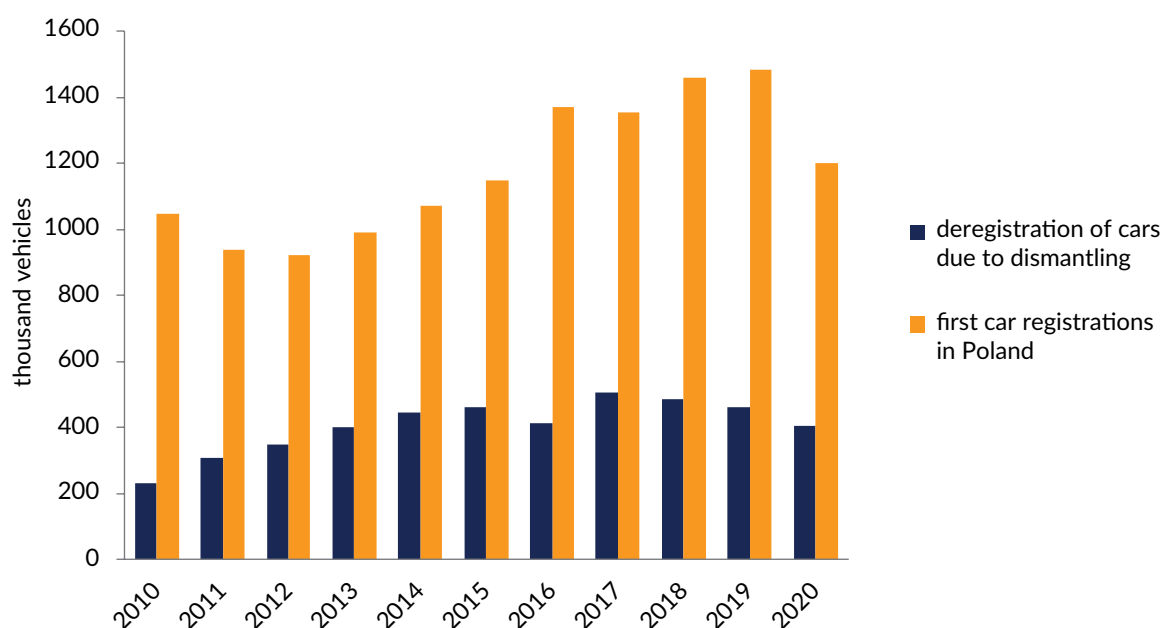
34 SAMAR, [Dismantling of passenger cars in 2020](#) [access: 26/08/2021]

35 EC (2019), [Environmental Implementation Review for 2019. Country Report - Poland](#)

36 SAMAR, [Dismantling of passenger cars in 2020](#) [access: 25/08/2021]

37 SAMAR, [Dismantling of passenger cars in 2020](#) [access: 25/08/2021]

Graph 16. Comparison of the number of deregistrations of passenger cars due to dismantling with the number of first registrations of passenger cars in Poland in 2010-2020



Source: WiseEuropa based on IBRM Samar³⁸ and FORS data^{39,40,41}

An end-of-life vehicle is also a great threat to the natural environment because of hazardous materials such as: metals, oils, batteries, glass, coolants and plastics. According to EU Directive 2000/53/EC on end-of-life vehicles⁴², since 2015 no more than 5% of a scrapped car weight should be disposed in landfills and the remaining materials should be recycled for reuse. Meanwhile, research on the implementation of that directive shows that approx. 1/3 of all illegally dismantled cars in the EU have been illegally dismantled in Poland. This means that even 1 million vehicles may be illegally dismantled in Poland every year. Dismantling in the grey market prevents fair competition. Legally operating entrepreneurs are burdened with additional costs, such as taxes, environmental issues and quality control, which keep on increasing each year.⁴³

There are currently no direct costs for the vehicle owner (only the cost of transporting the vehicle to a dismantling station), but there are external costs, especially environmental ones.

38 SAMAR, [Dismantling of passenger cars in 2020](#) [access: 25/08/2021]

39 FORS (2018), [Analysis of the vehicle recycling market after the cancellation of scraping subsidies](#)

40 FORS, [Record numbers of scrapped vehicles in 2017](#) [access: 25/08/2021]

41 FORS, [Data on the number of vehicle deregistrations in Poland in 2007-2015](#) [access: 25/08/2021]

42 Directive 2000/53/EC of the European Parliament and of the Council of 18 September 2000 on end-of-life vehicles

43 EC (2019), [Environmental Implementation Review for 2019. Country Report - Poland](#)

Table 3. Costs related to the disposal of passenger cars in Poland.

TYPE OF COST	DESCRIPTION	
	before 01/01/2016	after 01/01/2016
costs incurred by the owner	<ul style="list-style-type: none"> recycling fee – PLN 500 (full refund upon deregistration) cost of transport to the dismantling station 	<ul style="list-style-type: none"> no recycling fee cost of transport to the dismantling station
costs incurred by the dismantling station owner	legal dismantling station	illegal dismantling station
	<ul style="list-style-type: none"> dismantling costs costs of non-recyclable material storage costs of adapting the station to environmental requirements tax-related costs 	<ul style="list-style-type: none"> dismantling costs no storage costs for non-recoverable waste and non-recyclable materials no costs of adapting the station to environmental requirements no tax-related costs
external costs	<ul style="list-style-type: none"> environmental costs (mainly caused by illegal landfilling of non-recyclable waste) 	

Source: WiseEuropa

3. Regulatory environment for imported vehicles

The first registration of a passenger car in the Republic of Poland requires the payment of an excise duty. The tax applies to both used and new vehicles, previously unregistered in Poland.⁴⁴ Therefore, the issue of excise duty applies to vehicles that are registered in Poland for the first time, and that could be imported, acquired within the EU or manufactured in Poland.

The tax amount depends on the tax base, i.e. the value of the car and its technical parameters: engine capacity and the type of drive:

- 18.6% of the tax base for passenger cars with an engine capacity above 2,000 cm³ and hybrid passenger cars (HEV, mHEV, PHEV) with an engine capacity greater than 3 500 cm³,
- 9.3% of the tax base for hybrid passenger cars (PHEV, HEV, mHEV) with an engine capacity of 2,000 to 3,500 cm³,
- 1.55% of the tax base for hybrid passenger cars (HEV, mHEV) with an engine capacity up to 2,000 cm³,
- 3.1% for combustion engine and plug-in hybrid cars (PHEVs) with an engine capacity of up to 2,000 cm³.

Electric and hydrogen-powered vehicles are exempt from excise duty.⁴⁵ During the registration, fees are paid for issuing a registration certificate, license plates and control sticker – the total cost is approx. PLN 180.

Revenues from excise duty on passenger cars in Poland have shown an upward trend in recent years. They were approx. PLN 1.3 billion in 2011, PLN 1.2 billion in 2014, and in 2019 they reached over PLN 3 billion. In 2020 the tax brought the budget PLN 2.3 billion, while the reduction in revenue may result directly from the COVID-19 pandemic.⁴⁶

In many EU countries there are fees determined by the amount of pollutant emissions from the vehicle and its environmental impact. Such fees are either a one-time payment, usually made when registering the vehicle, or they are paid as an annual tax on the ownership of a specific type of vehicle.

⁴⁴ [Excise Tax Act](#)

⁴⁵ [Act on electromobility and alternative fuels](#)

⁴⁶ Ministry of Finance, Funds and Regional Policy (2021), [response to the petition to amend the provisions of the Excise Tax Act regarding the amount of excise duty rates on passenger cars imported from abroad](#)

For example, the Spanish legislation provides for several types of car ownership fees. The purchase of a new vehicle is subject to a 21% VAT rate. Used vehicles are not subject to VAT, but they require an ownership transfer tax of 4%. Each time any type of vehicle is registered, it is necessary to pay a registration fee of EUR 95.8.⁴⁷ There is also a one-off fee for emissions caused by the vehicle, which must be paid when the vehicle is registered for the first time. The highest fee amount, 14.75%, is imposed on the most emission-intensive vehicles emitting more than 200 g of CO₂/km. Vehicles emitting less than 120 g of CO₂/km are exempt from the fee. The fee amount might be adjusted by the regional authorities, who often decide to increase it for the most emission-intensive vehicles.

Vehicle owners also have to pay an annual vehicle ownership tax depending on engine power – the minimum fee is EUR 12.62 and the maximum is EUR 112 (in Madrid, EUR 20 and EUR 224 respectively). The authorities of major cities in Spain reduce annual tax rates for fuel-efficient and electric vehicles by 75%.

In Hungary, there is a 27% VAT on purchases of vehicles. When buying a new or used vehicle, a tax must be paid on the purchase depending on the vehicle age and engine power. The higher the engine power, the higher the fee is, and the older the car, the lower the fee is. The highest rate of EUR 2.35/kW applies to engine power above 120kW, and the lowest of EUR 0.83/kW to the power lower than 40 kW.

Vehicle registration for the first time also requires a registration fee, which depends on the engine capacity and EURO emission standard. The fee increases for higher engine capacities and lower EURO standards. The fee amount ranges from approx. EUR 125 to 22,150 for internal combustion vehicles and approx. EUR 210 for a HEV. The more time has passed since the first registration, the lower the tax is for imported vehicles (even 90% after more than 169 months from the first registration).

Hungary also introduced an annual car ownership tax based on vehicle age and engine power. The tax amount varies between approx. EUR 75/kW for new vehicles up to 4 years old and approx. EUR 35.5/kW for vehicles older than 16 years.

The Hungarian government introduced exemptions from the said taxes for clean vehicles, i.e. electric cars and plug-in hybrids.

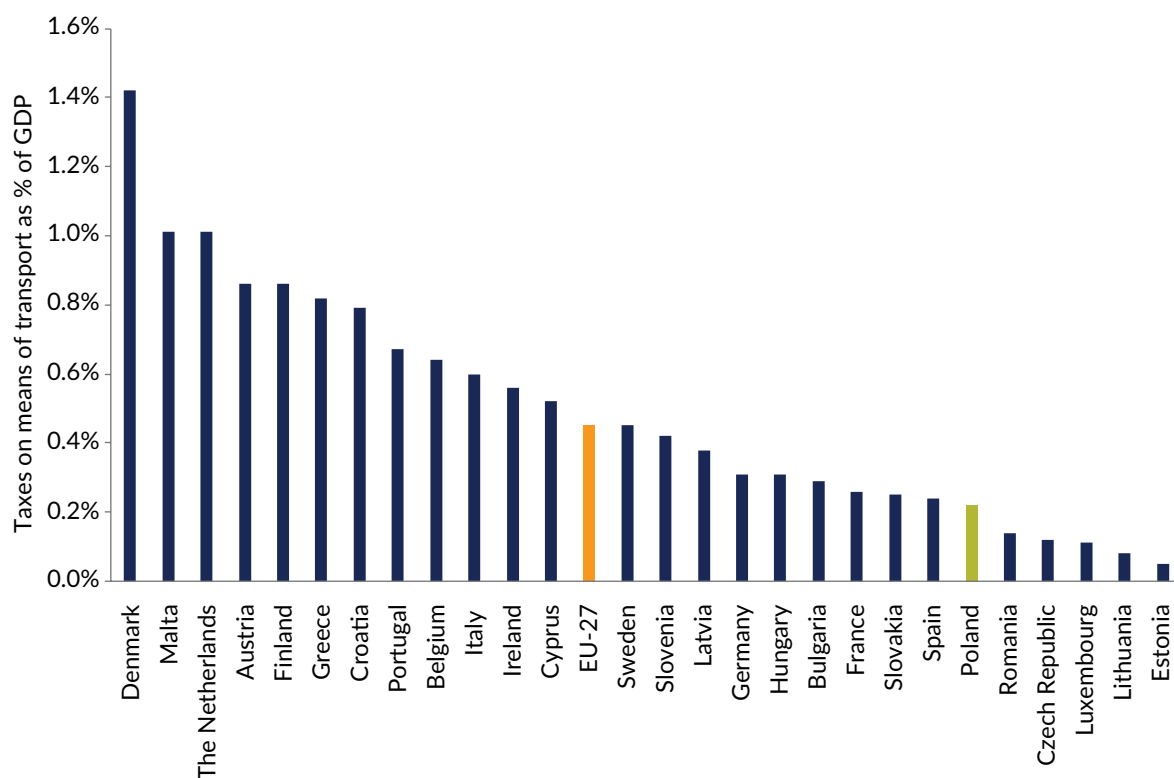
In the case of the car purchase tax and the car ownership tax in Hungary, the lower tax rates apply to old, non-operational vehicles, which emit a lot of pollutants. There are no clear messages regarding the promotion of eco-friendly solutions in transport. To compare, the advantage of the Spanish solution is that the fee is linked to the vehicle price in such a way that cleaner vehicles are subject to a lower fee than high-emission vehicles.

⁴⁷ Here and later in this chapter, data from ACEA (2021), [Tax Guide](#)

Poland has not yet decided to introduce fees depending on pollutant emissions by a vehicle. This action is entered in the Electromobility Development Plan under the name of *Introduction of a fee related to the price and emission rate of a motor vehicle*. According to the information from the audit by the Supreme Audit Office, it was not implemented due to a possible negative public perception.

In Poland, there are no taxes on vehicles depending on their emissions. In addition, the taxation of means of transport is relatively low in Poland, as indicated by Eurostat data. Taxation data on means of transport (including road tolls, vehicle registration fees, excluding fuel) indicate a low ratio of these taxes to GDP, so vehicle taxation in Poland is lower than in Western Europe and the European Union. The chart below shows the amount of tax revenues from means of transport in relation to GDP.

Graph 17. Taxation of means of transport (excluding fuel) in the EU, 2019



Source: WiseEuropa based on the Eurostat data.

Currently, the transport taxes to GDP ratio is approx. 0.22%, while the average for France and Germany is 0.29% and the EU average is as high as 0.45%. Raising taxes in Poland to these levels would result in an increase of budget revenues of over PLN 5 billion. Taxation of emissions is an opportunity to introduce a more active transport policy and obtain funds for the modernisation of transport. The funds that can be obtained are almost the equivalent of the proceeds to the state budget from the emission fee (if equated to the average for Germany and France) or more than three times the proceeds when the tax amount is made equal to the European average.

A systemic reform of transport policy, using additional funds from transport taxation to finance low-emission alternatives to used vehicles, may lead to a qualitative change in access to them in the coming years. This is indicated by the calculations shown in Table 4: making the taxation of means of transport in Poland equal to the EU average would make it possible to finance the purchase of 1.6-2.2 thousand electric buses annually, support the purchase of almost 200,000 electric passenger cars or to increase 27 times the financing of the Bus Transport Development Fund.

Table 4. Investments that can be realized by adjusting the taxes on means of transport to the EU average

	Poland – currently	Average for France and Germany	EU Average
Share of transport taxes in GDP [%]	0.22%	0.29%	0.45%
Increase in tax revenues from transport in Poland if taxes at a given level are introduced [PLN billion annually]	0	1.5	5.3
Possible additional investments in sustainable transport financed by increased tax revenues:			
Purchase of 18.5 m electric MEGA buses, large cities (vehicles annually)	0	455	1 610
Purchase of 8.9 m MIDI buses, small towns (vehicles annually)	0	628	2 223
Purchase of fuel cell buses (vehicles annually)	0	275	972
Co-financing the purchase of electric passenger cars (vehicles annually)	0	54,700	194,000
Co-financing the purchase of electric delivery vans (vehicles annually)	0	21,500	76,100
Increased financing for the Bus Transport Development Fund	0	8x	27x

Source: calculations by WiseEuropa based on available market sources and information on support programs

Summary

In many areas, the public policy in Poland does not take into account the external costs generated by human activity. Import of used passenger cars is one of the examples of how the short-term fulfillment of citizens' needs have long-term costs for society as a whole. The most important negative effects of importing old, used vehicles to Poland include reducing the level of road traffic safety by allowing hundreds of thousands of cars in poor technical condition to be used in traffic, financial and health costs of pollution, as well as an increase in dependence on oil imports.

It should be noted that the problem of used passenger cars imports is complex and does not require systemic solutions. In many regions of Poland, used cars are the only widely available means of transport, and the scale of transport exclusion is connected with many basic social and economic aspects of everyday life. Therefore, limiting the import of high-emission and fuel-intensive used vehicles must be accompanied by developing the alternative means of transport required to meet socio-economic needs.

The purpose of this study is not to declare the need to eliminate the import of used passenger cars, but to stimulate public debate on this issue to develop socially acceptable solutions and pursue a more rational public policy. The presented estimates are to indicate the scale of social and economic costs generated each year by maintaining the status quo as well as potential sources of funding for policy alternatives.



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Other publications:

"Green Recovery. From crisis to sustainable recovery",
Maciej Bukowski, Paweł Leszczyński, Zofia Wetmańska, Warsaw 2020.

"Less is More. The role of energy efficiency in the transition to climate neutrality",
Piotr Chrzanowski, Aleksander Śniegocki, Izabela Zygmunt, Warsaw 2021.

"A new chapter. Shifting Poland towards net-zero economy"
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